

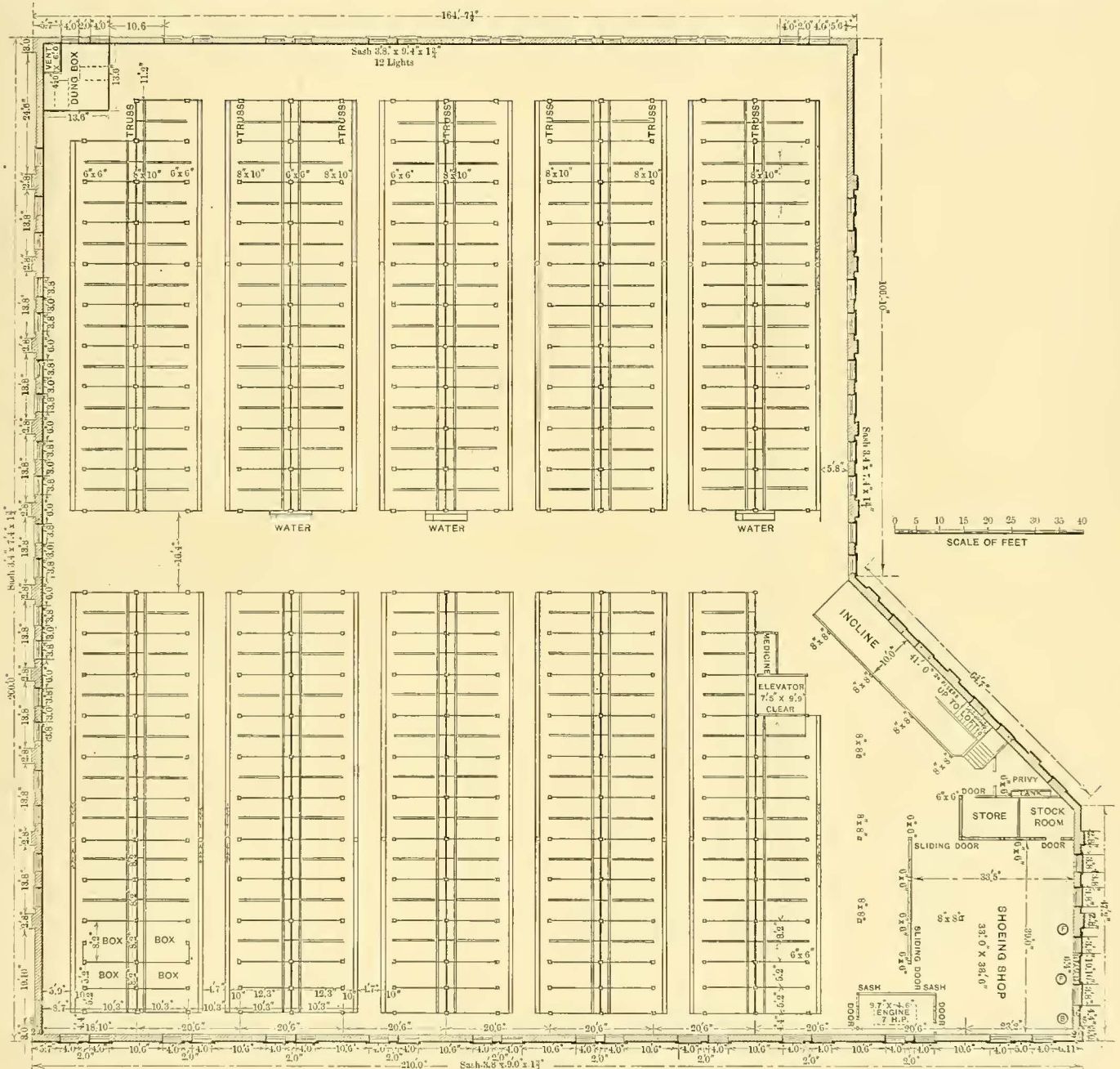
LIBRARY
 OCT 2 1890
 U.S. PATENT OFFICE

THE STREET RAILWAY JOURNAL

VOL. II. { NEW YORK: }
 { 32 Liberty Street. }

MAY, 1886.

{ CHICAGO: } NO. 7.
 { Lakeside Building. }



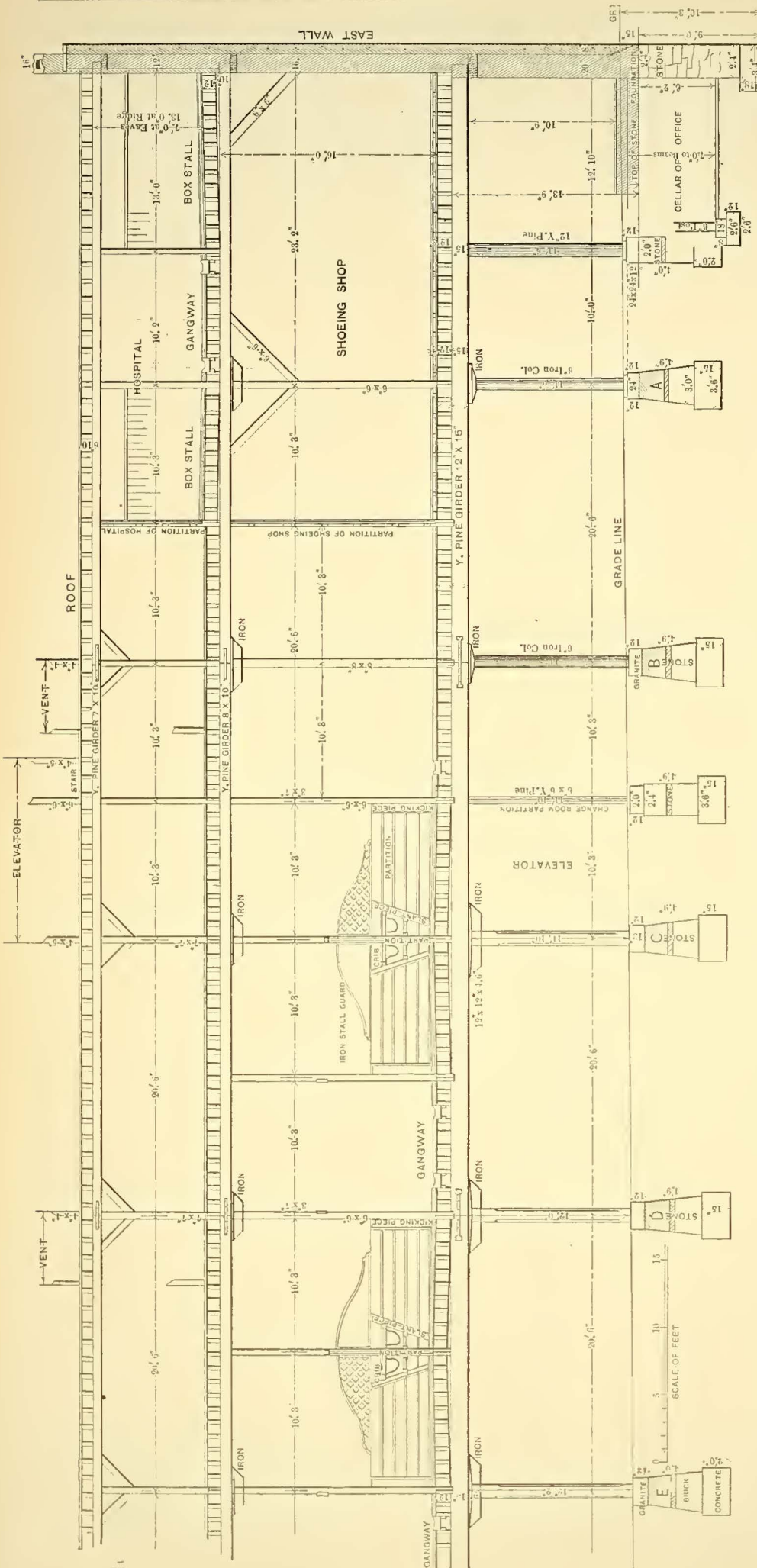
PLAN OF SECOND STORY.

A Model Stable.

The Brooklyn City R. R. have recently completed a stable for the use of the Putnam Avenue and Halsey Street line of cars that may be regarded as a model both of simplicity and convenience. It is not as large

as many other stables that might be found in either New York or Brooklyn, but its appointments are first class and we think it will be found more interesting to a large class of readers than the stables of greater capacity would be. Few roads have need of accommodations for three or four

thousand horses, and yet it is not uncommon to find as many hundred under one roof. Through the courtesy of the officials and especially of Mr. Dickey the architect for the company we are enabled to give complete illustrations showing the arrangement and construction of the building.



The Halsey Street line having outgrown its original accommodations on Gates avenue, it was decided to erect these stables on their present site. They stand at the end of the line, facing Halsey street, and west of Broadway, having stall capacity for about 400 horses.

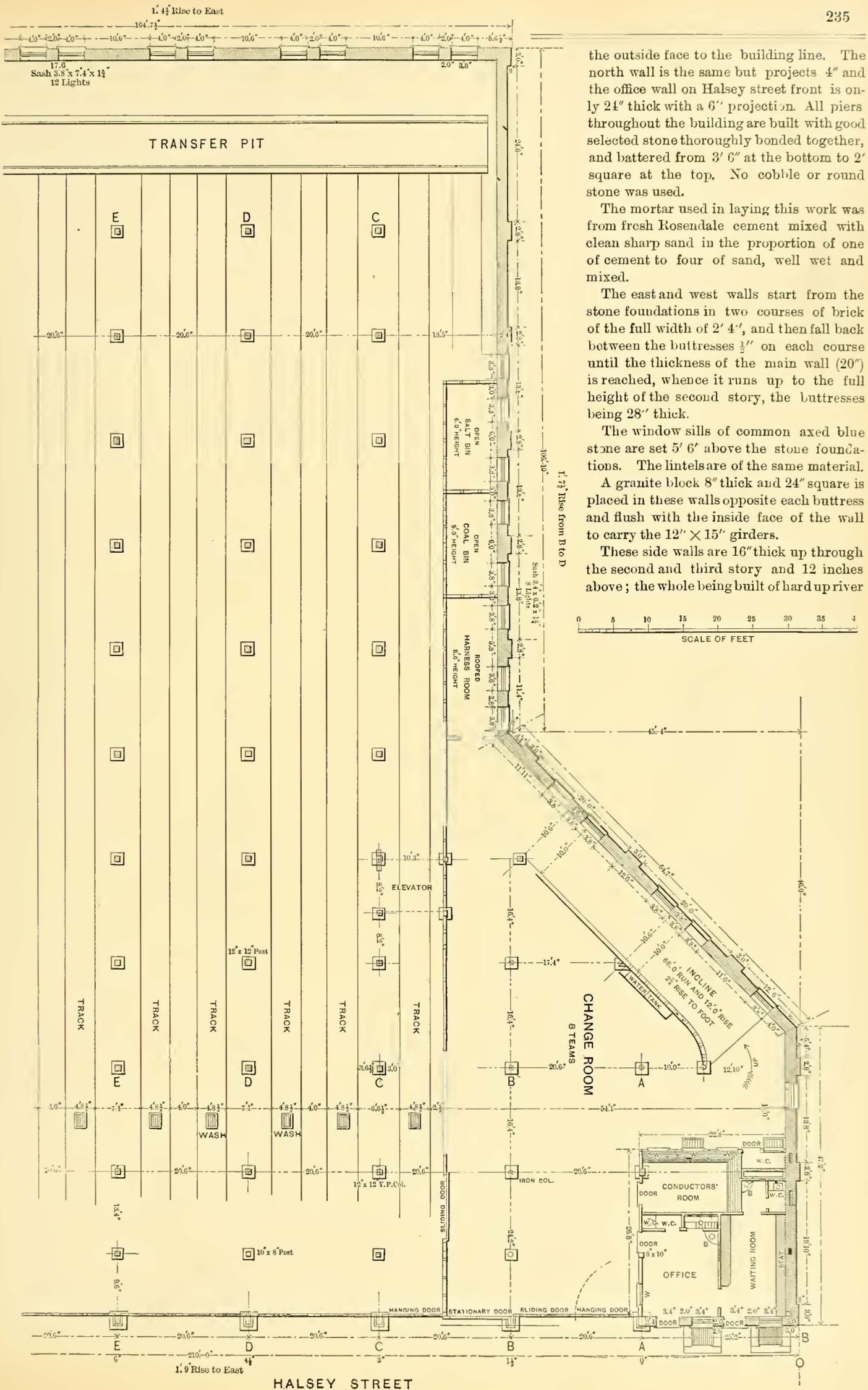
The construction of the building was carried on in a most thorough and workmanlike manner. The walls are of brick; the front being supported on iron columns across the car shed, leaving openings for the tracks; while the interior is of wood neatly whitewashed. Below the offices which are located in the southeast corner of the building, there is a small cellar, with light holes. There is seven feet of headroom here clear of the beams, with the floor six feet below the top of the main walls. The trench for the front wall of this cellar was sunk to the same depth as that of the main foundations, while the inside walls run down to 12" below the floor. The trench for the walls at the northwest corner of the building was 3' deep and wide enough to receive a 24" concrete base. The excavations for the piers on the Halsey street front were carried down to 7' below the top of each capstone and were 3' 6" square at the bottom. The same was done at the elevator and runway.

All the dirt that was removed from these excavations was left upon the premises and after the walls were down, was carefully rammed into place, and what remained was used for grading.

The concrete placed in the trenches for the stonework to rest upon was made from fresh Rosendale cement, mixed with clean sharp sand, broken stone or screenings, in the proportion of one barrel of cement to three barrels of fine stone or screenings and two of sharp sand, thoroughly wet and mixed in boxes before being placed in the trenches. Before placing it in position, however, the trenches were carefully cleaned out and squared up to the proper size and depth and the mixture then placed in before setting. After this it was rammed and settled down into place. In this work all sand or screenings containing any loam whatever was rejected. This concrete was laid in a course of 3' 4" wide and 12" deep under the main foundations, and under the piers it was made in squares 3' 6" x 3' 6" and 15" deep. The inside walls of the office and cellar being lighter have a footing course of only 24" wide and 12" deep; the same being used for the inside walls of the dung yard.

Concrete was used as a flooring of the cellar. This was floated to a depth of 4" and drawn down hard and smooth. A 3" filling of the same material was placed between the sleepers of the change room floor. It was used as a deafener beneath the floors of the shoeing shop and the engine room, and served as a bed for the iron gutter boxes on the two fronts.

The foundation walls and piers are of New York boat stone, laid in cement mortar, well bedded and tied together and leveled off on top to take the brickwork. The east and west sides are 2' 4" thick built with



the outside face to the building line. The north wall is the same but projects 4" and the office wall on Halsey street front is only 2 1/2" thick with a 6" projection. All piers throughout the building are built with good selected stone thoroughly bonded together, and battered from 3' 6" at the bottom to 2' square at the top. No cobble or round stone was used.

The mortar used in laying this work was from fresh Rosendale cement mixed with clean sharp sand in the proportion of one of cement to four of sand, well wet and mixed.

The east and west walls start from the stone foundations in two courses of brick of the full width of 2' 4", and then fall back between the buttresses 1/2" on each course until the thickness of the main wall (20") is reached, whence it runs up to the full height of the second story, the buttresses being 28" thick.

The window sills of common axed blue stone are set 5' 6" above the stone foundations. The lintels are of the same material.

A granite block 8" thick and 24" square is placed in these walls opposite each buttress and flush with the inside face of the wall to carry the 12" x 15" girders.

These side walls are 16" thick up through the second and third story and 12 inches above; the whole being built of hard up river

brick. The buttresses run to the roof the full thickness. The side walls are further coped above the roof with 3 feet \times 16 inches coping stone, the buttresses with 3 inches \times 24 inches of square edged common axed blue-stone, and the chimney is capped by a 5 inch \times 24 inches \times 5 inches \times 4 inches perforated blue-stone cap square edged and common axed.

The rear wall is 20 inches thick on first story, 16 inches on second and 12 inches on third, laid up in the same manner as we have indicated for the side walls.

The front wall is 16 inches thick at the office with the door sills 21 inches above the top of the main foundation, projecting 2 inches beyond the face of the wall and are leveled to throw the water out. On the second floor the front wall is 16 inches thick and 12 inches on the third. All sills and lintels on this front are of fine axed blue stone, and the whole front is faced up with a first quality of Collabar fronts laid in fine cement mortar, with level joints having a projecting transverse cornice with dustal course in the frieze.

The mortar used in laying up the brick work was made up, first with a scant mixing of Thomaston lime with clean sharp sand, thrown into piles and allowed to slack for two days; it was then tempered up with fresh Rosendale cement.

The iron columns supporting the Halsey street front, are of east-iron 11 feet 6 inches long over all, and are rectangular 12 inches \times 16 inches outside measurement with 1 inch thickness of metal throughout, and with lugs cast on the back to take the door hinges. On the tops of these columns are placed three heavy rolled iron 15 inch beams, making 27 in all. Each section of these beams is thoroughly bolted together, and anchored at the extreme ends in the brick wall. The inside and outside rows are drilled and tapped for $\frac{3}{4}$ inch bolts, two each 30 inches of length, in order to hold the furring.

On the first or car house floor there are 74 yellow pine 12 inch \times 12 inch posts and eight 8 inch \times 10 inch, to support the upper floors of the building. These posts rest on the granite base blocks to which they are attached by a 1 $\frac{1}{2}$ inch dowel pin extending 6 inches upward into the post and down into the base; they are further fitted with heavy cast iron caps 4 feet long. In the change room, however, five iron columns are used to carry the upper floors, and afford hitching posts for the horses that are waiting for their cars.

In the second story the posts are all 6 inch \times 6 inches yellow pine except seven at the back, where the spacing on the first floor is greater than the average, on account of the span over the pit of the transfer table. On the third floor the posts are all 7 inches \times 7 inches yellow pine with 6 inch \times 7 inch braces.

The second story is carried by 12 inches \times 15 inches and 10 inches \times 15 inches yellow pine girders resting on the posts of the first story, and the walls with 12 inches bearing on the latter. The third story is carried in a similar manner by 8 inch

\times 10 inch and 8 inch \times 12 inch girders.

The floor and roof beams throughout are of spruce, and of the following dimensions: office floor 3 inch \times 10 inch with 4 inch \times 10 inch sills, and spaced 18 inch between centers; second floor 3 inches \times 12 inches for single lines and 4 inches \times 12 inches for double lines of stalls; the third floor 3 inches \times 12 inches throughout; the roof 3 inches \times 10 inches.

The floor beams of the stable are laid butting one against the other in single courses on the center of girders while the double beams butt against the 6 inch \times 6 inch posts, and are strap anchored across on both sides of these posts. The 14 inch double beams that are placed at the head of the stalls rest directly on the girders and have the top edge 14 inches above them.

For leveling up on the walls no wood was allowed, only slate being used. All beams resting at least 8 inches on the front walls, and have a row of 2 $\frac{1}{2}$ inch \times 1 $\frac{1}{2}$ inch bridging well nailed with 10 penny nails.

The office floor is laid in 3 inch \times 1 $\frac{1}{2}$ mill-worked yellow pine floor plank, in single continuous courses and thoroughly nailed to the floor beams. The floor of the change room was laid in the following manner. There was first laid upon the ground heavy 6 inch sawn chestnut sleepers in single courses from front to rear and 20 inch between centers over the entire space from the east wall out to the partition, and back under the harness room, coal and salt bins and under the run to the second floor to the front doors, with the exception of where a basin is formed under the water trough. These sleepers were then well settled on the ground and tamped until they were perfectly true on top and flush with the tops of the pier stone. Between the sleepers the dirt was cleaned out to a depth of 3 inches below their top faces, and the space filled with a good mixture of fine concrete floated even with the top. The entire space was then covered with 2 inch \times 12 inch yellow pine plank well spiked to the sleepers.

In the shoeing shop and engine room on the second story, a 1 inch \times 4 $\frac{1}{2}$ inches mill-worked pine floor was first laid over the entire space. On top of this floor strips of 2 inches \times 3 inches spruce were fastened, one over each beam. The spaces left between these strips were then filled with a fine concrete floated down flush with the top, and when it was properly set the whole was covered with three thicknesses of roofing paper stuck together with hot No. 6 roofing pitch. A second floor was then laid in the hot pitch with 2 inch \times 6 inch yellow pine plank and well fastened down.

All the gangways on the second floor that circulate about the outside walls of the stable floor, as well as those running through the center, were first covered with a 1 inch pine floor, from east and west walls out to the gutters, from the front wall out to the stalls, and in the central gangways from gutter to gutter. This floor was then covered with a three-ply thickness of roofing paper, in the same manner

as for the shoeing shop, except that it was turned up at the walls and at the ends of each separate row of stalls. At these points a 1 $\frac{1}{2}$ inch \times 9 inch pine base plank beveled on the top edge was placed and spiked to the brick walls, or to the head of each row of stalls. This part of the floor was then laid with a second covering of 2 inches \times 6 inches yellow pine laid in hot pitch and well spiked to the beams. The stall floors are laid in the same manner from the gutters up to the head of the stall, with the addition that a third floor 2 inches thick is laid on top. After the stall and head partitions had been set, this third floor was laid beginning at the head for 3 feet 8 inches out and down towards the gutters, then a 1 $\frac{1}{2}$ inches \times 9 inches spruce plank was placed against the side partition on each side running from the 2 inch spruce at the head down to the gutter. Then six 1 $\frac{1}{2}$ inches \times 4 $\frac{1}{2}$ inches spruce slats from these 9 inch plank towards the center of the stalls, leaving a $\frac{3}{4}$ inch joint between each slat, the space in the center being filled in solid. The ends of the slats being chamfered at the gutter end.

The hospital on the third story is floored over in exactly the same way, with the exception that the slats cover the entire floor of each stall. The mixing box floor is the same with the exception of the slats. The remainder of the hayloft floor is covered first with narrow worked pine boards, laid across beams, covered with one thickness of resin sized 12 oz. sheathing paper on which is laid a floor of square edged spruce laid diagonally on the pine floor.

The roof was first covered with a good quality of 1 inch \times 10 inches tongued and grooved pine, and on this was placed a five-ply felt cement and gravel roof. The first ply was of dry sheathing, and each succeeding ply of tarred felt with every lap struck with hot cement and fastened with metal and wooden cleats, each strip having a felt hob applied with hot cement. The entire surface was then covered with hot cement and screened gravel.

The run or incline from the change room up to the stable floor was built in the following manner. From the two 12 inch \times 12 inch supporting columns under the second floor a 6 inch \times 12 inch bearing pieces of yellow pine was run across to the brick wall. These pieces are tenoned into the post and have an 8 inch bearing on the wall. Between the two posts already mentioned and the post at the foot of the run, a 6 inch \times 6 inch yellow pine post was set up, reaching to the top of the guard or side which is 5 feet above the floor of the run. These posts also have bearing pieces crossing to the wall like the 12 inch \times 12 inch posts already mentioned. On these bearing pieces six 3 inch \times 12 inch carriage timbers are placed, with their feet splayed to rest on the floor of the change room, shouldered to rest square on the bearing pieces, where they break butts. The upper ends are thoroughly secured to the carrying timbers and brick wall with bolts and lag screws. The floor is then placed. It is composed of

3 inch yellow pine plank spiked to the carriage pieces and cleated with 2 inch X 3 inch oak strips 12 inches apart to prevent the horses from slipping.

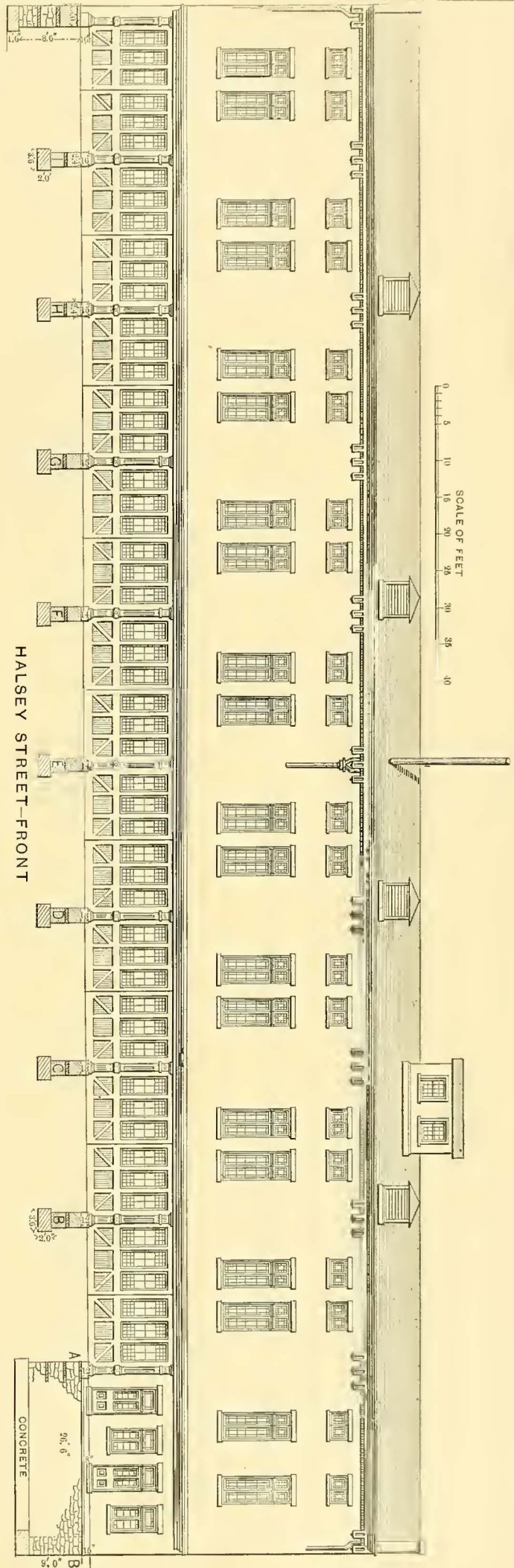
In the northwest corner of the building there is placed a dung shoot that is a model of convenience and neatness. It is partitioned off from the main rooms of the building and has a separate ventilator, so that none of its odors have any tendency to penetrate into the main portion of the building. Furthermore the manure need not be handled but once on the premises. When it is once gathered and dumped into the shoot, the whole work is done. It does not fall to the ground but into a box with a door at the bottom, so that it is only necessary to back a wagon underneath, open the door, allowing the dung to run out until the wagon is loaded; close the door and drive away, thus saving time and labor beside adding to the healthfulness of the building.

The medicine room, store room, privy and elevator on the second floor are studded with 3 inch X 5 inch studding and lateral pieces and ceiled up with 1 1/2 inch pine ceiling on the stable side; the elevator from floor to floor and the other rooms 8 feet high. The front of the elevator on this floor has a strong batton door hung with a cord and counterbalance weight, so as to slide up out of the way.

The meal rooms on the third floor are studded with 3 inch X 5 inch spruce and lateral pieces like the rooms on the floor below, and ceiled on the outside with one thickness of wide ceiling boards. The mixing box is built in the following manner. The front and ends are built of 3 inch X 5 inch joist 4 feet high, ceiled on the outside with wide one sided ceiling boards, and on the inside with 1 1/2 inches by 9 inches spruce square edged boards, all around including the brick wall. Then three thicknesses of roofing paper struck with roofers' pitch were put on, and turned up on all sides. Then a 1 1/2 inch worked yellow pine flooring laid in thick white lead was put against all four sides, and the joints slushed with roofers' pitch, and finally it was boxed up all around with 1/2 inch worked yellow pine flooring with white lead joints. This renders the box practically tight and prevents meal from working into cracks and souring.

The ventilator shafts which form so important a feature in the healthfulness of a stable are numerous, being 13 in number, and sufficient to perform their work in a satisfactory manner. They are simply boxes extending from the second story to the roof and serve to carry off all impurities. On the occasion of a recent visit to the stable on a comparatively warm day, when the windows were all closed and there were over two hundred horses in the stable, the air was so pure that there was no perceptible difference between that and the outside.

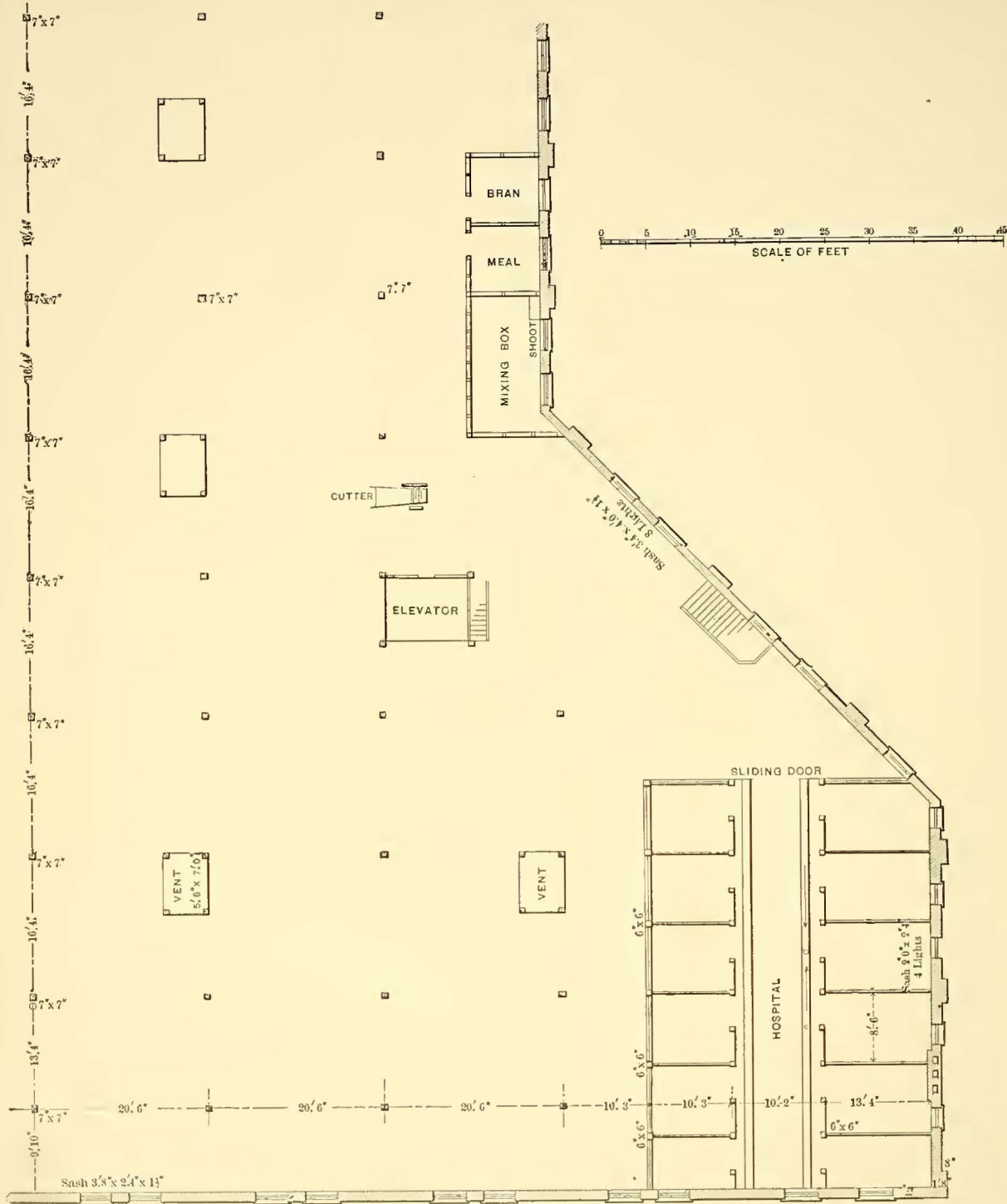
The head partitions of the stalls are of 1 1/2 inches by 9 inches tongue and groove spruce plank 8 feet high, cut and fitted between the 6 inch by 6 inch posts secured to the floor and with the top let into a



plowed 3 inches by 4 inches spruce cap. The side partitions are formed of 2 inches by 9 inches spruce plank square edged cut between the head and foot posts. On the top of the second plank and laid through

are made of a perfect stick of yellow pine, sound to the ends and each stick 6 inches by 12 inches and 41 feet long. The two edges are beveled $\frac{3}{8}$ inch, making the top face $11\frac{1}{4}$ inches and the bottom 12 inches

construction of the building and is sufficient to show that it has been put up in a thorough manner. An examination of our published plans will show that the internal arrangements are such that convenience for



THIRD FLOOR.

each line of stalls are two 3 inch by 6 inch spruce timbers notched down on this plank to suit the height of the mangers. One of these carrying timbers lies against the head posts and the other is set fair with the front of the manger. The mangers are of artificial stone. On top of the side partitions are the iron guards the shape and design of which is clearly shown in our sectional view of the building.

The gutters at the foot of all the stalls

wide. The top face is also guttered out from nothing at the outer ends to $1\frac{1}{4}$ inches at the inside ends where they meet and make a perfect butt joint and take a hard wood feather. The joint was then bored through for a cast lead ferrule, the box for flanging the same, and also for an iron strainer. These were then put in position and the connections made with the drain pipes.

This completes a resume of the general

doing the work required coupled with safety in case of fire or by accident have taken precedence over all other considerations. The gangways and run are so arranged that the animals may be removed from the building with the least possible delay whether it be in case of danger or for the regular passage back and forth in every day work. Care has also been exercised to provide so large a number of watering troughs and so conveniently located that the stock may be

watered with the least possible amount of work; while they are fed from large feeding boxes placed upon wheels that are run down through the gangways whenever that work is to be done, and the horses fed by hand in the ordinary way.

The hospital is equipped with all the necessary appliances for the care of the sick, and horses are taken to and from it on the elevator; although up to the time of our visit it had yet to receive its first patient, which is speaking well for the healthful arrangement and management of the stable. As safety and convenience was the first consideration in the construction so cleanliness comes first in the management. The car sheds, stalls, gangways, shoeing rooms, lofts and yards are swept and cleaned as for an exhibition, and as early as nine in the morning not a wisp of straw nor a shovelful of litter will be found about the premises. The horses are groomed and the floors are made so tight that no litter is sifted down them upon them from above.

The waiting rooms and foreman's office are neat and convenient, the latter being provided with closets, wash basin, water closet and desks.

The third floor is of sufficient size to hold all the hay that will be needed for one year's use. It will be seen from what we have said that this building is indeed a model stable, and the owners may well be satisfied, while it might serve as a model for other roads whose work requires more or less horses than this is intended to accommodate.

Forged Steel Wheels.

A Sheffield (Eng.) concern have been constructing for some time for the use of mines and street railways some forged steel wheels, under the Eyre patent, from a single block of steel, so that the wheel is made without any welding whatever. These wheels have the hub and the web in an expanded form, taking the place of the ordinary spokes and a tire. They do not resort to any banding except in cases where they desire exceptional strength. These offer a greater resistance than those of cast steel, as will be shown by the following figures obtained from comparative tests for deflection:

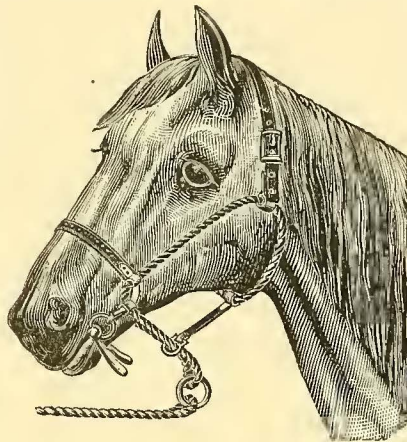
Load in tons.	Deflection in inches.
13	1-64
19	2-32
23	3-32
28	5-32
30	6-32
32	7-32
34½	10-32

Cast steel wheels fourteen inches in diameter:

Load in tons.	Deflection in inches.
6	1-32
7	2-32
9	3-32
13	10-32
15	16-32
17½	1
19	Spokes broken.

The Eclipse Halter.

This halter* is a combination rope and strap halter that is easily adjusted to the horse and one that can readily be changed to a bridle if so desired. The strap portions are the crown piece, the nose piece, and strap running under the throat. At the extremities of the crown strap there are rings or tubes for holding the rope. The same is the case with the other two straps. The rope belonging to the halter proper is a long loop, passing single through all of the loops as shown in the cut except



through the throat strap where it is double. In the loop formed in this passage there is the ring to which the leading rope is attached. It will be seen from this that there is plenty of slack, allowing the halter to be slipped over the horse's head, and when once in position the leading rope tightens it so that it fits perfectly and so that it cannot be shaken off. The throat strap prevents the horse from being choked in pulling.

To change to a bridle, it is only necessary to snap a bit into the rings shown by the nose piece. It will be seen that the rope does not come in contact with the horse in any way so as to wear and cut either the mane or hair.

*J. C. Lighthouse, Rochester, N. Y.

New Compressed Air Motor.

A Pittsburg mechanic claims to have invented a compressed air motor for street car travel, an entirely new and economical principle. The front wheels are unusually large, and there are small air pumps, three inches stroke by three diameter, set in the periphery of the wheels. The force of the air pump is exerted by the weight of the car over the wheel, calculated at 1,000 pounds to each wheel. The air thus compressed passes into the hollow hub of the wheel, whence it carries its force into the receiver.

We are informed, in answer to a query, that fifty-six pound steel rail costs \$3500 per mile complete. This is a very low figure. We don't remember of having a quotation of less than \$4500, exclusive of removing paving and replacing it, an expense of at least \$700 a mile.

An Electric Motor.

A decided departure from the practice hitherto followed in the construction of electric machines for working tramways has recently been introduced in an electric locomotive on the London (England) North Metropolitan Tramway, by a Mr. Elieson. The London Times refers to this new device as follows: Instead of the electric motor being a fixture, and having motion transmitted from it through belt gearing to the wheels of the car, the motor itself revolves, the motion being transmitted through bevel gearing. The system is the invention of Mr. Elieson, and the locomotive has been built by the Electric Locomotive and Power Company, of London. The locomotive is similar in appearance to a short tram-car, and carries a secondary battery, consisting of fifty cells. This battery is connected up with the electric motor, the motion shaft of which projects horizontally about two feet, and carries at its end a spur wheel, which gears into a fixed circular rack. Thus when the motor is started it is, by means of this gearing, rotated. A vertical shaft is attached to the under side of the motor, carrying at its lower end a bevel wheel which gears into one or other of two similar wheels on the driving axle of the engine. The miter gearing is fitted with a friction clutch, by means of which the locomotive can be run either backward or forward. The fifty cells are equal to 280 amperes, and as the average consumption is stated to be forty-five amperes per hour, it follows that there is a good six hours' supply of power carried. The machinery is so arranged that a speed of eight miles an hour cannot be exceeded. Both the locomotive and the tram-car can be electrically lighted at night from the battery by means of glow lamps. We recently inspected the working of this locomotive at the tramway company's depot at Stratford, which was satisfactory in the limited space at command. It was started, stopped and reversed very readily. The machinery is of a simple character, and can be adapted to the tram-car itself in new stock. The electric locomotive company are building a more powerful engine, in order to demonstrate the application of the system on railway lines.

A dealer in city railway securities, Mr. Samuel M. Smith, commenting on the proposition now before the legislature to take away the Broadway charter, says:

"Does any one believe that the Twenty-third Street Railway will be held to their guarantee of \$375,000 Broadway Surface Railway bonds which they gave in good faith for the privilege of running their Bleecker street cars down Broadway; that this privilege can be taken away and the Twenty-third Street still be held for the above-mentioned bonds? Is this common sense? I think not. You will find by and by that the city will be made responsible for the doings of her Aldermen."

Over half of the street railways pay their conductors and drivers by the day, about one-fifth pay by the trip, one-fifth by the month and a few by the hour and week.

an hour; it thus becomes necessary to introduce some mechanical reducing gear between the motor shaft and the driving axle.

The gearing used for this purpose consists of a worm on each motor shaft and worm wheels on the driving axle, giving a ratio of about 1 to 12. This worm gearing is boxed in, as is likewise the motor, and the wheels run in oil. Dirt is thereby excluded and the lubrication kept perfect. Access to the work is readily obtained through doors in the floor of the car.

In order to vary the speed and power recourse is had to a compound switch, which arranges the motor circuits so that the machines shall work in series in parallel or singly, thus varying the resistance of the circuit, which accordingly produces a variation in the power and speed. When a greater range is desired, the motor circuits are still further divided by arranging the field magnet wires apart from the armatures. This obviates cumbersome gearing, which would add to the weight and expense by increasing the first cost and maintenance.

The driver has full control over the motive power, one handle sufficing for all the operations of starting, stopping, and varying the speed or power. There is no useless electrical resistance, and therefore no waste of energy at whatever speed the car may be traveling. Both ends of the car are provided with these details, so that the driver has only to remove the handles and two connections when reaching the end of the route, and then proceed on the return trip.

It would be an easy matter to vary the speed by decreasing or increasing the number of cells, thereby varying the electromotive force. This method, however, is injurious to the accumulators, because some of the cells would be discharged sooner than the others, and when they are all re-charged in series, some would have to be very much overcharged before the rest could receive their proper share. There would not only be a waste of power occasionally by the evolution of gases for no purpose, but the life of the cells and their efficiency is reduced by this irregular treatment.

On each platform there is the usual vertical shaft and brake handle. A chain being wound upon this shaft when the handle is turned and eight brake blocks are simultaneously pressed against the corresponding number of wheels. The car can be stopped almost instantaneously, but beside this there is an electrical brake, so that the motors act as dynamos driven by the momentum of the car or by the car running down an incline; the whole power stored up in the momentum of the car is converted into electricity and the current generated is utilized in magnetizing the brake shoes, thereby increasing their grip upon the wheels. Arrangements are being made to render this electric brake automatic, so that the main circuit will be broken and the brake circuit closed automatically when the speed of the car reaches a certain maximum.

It has already been said that the capacity of the car is 150 ampère hours; but this does not entirely exhaust the battery, as a margin of at least 20% is left after this service. A charge of 120 ampère hours is sufficient to propel the car full of passengers for two hours or about 12 miles over an average road with frequent stoppages. When charging sixty cells at the rate of 32 ampères for four hours, and replacing the accumulators in the car every two hours, and steam power is required to the amount of 15 indicated horse power per car.

Assuming that the car has to run 72 miles a day, and that we are supplying several cars at the same time from one engine, the fuel consumed need not exceed 4 lbs. per indicated horse power per hour. The charging takes place during 12 hours of the day only. Thus 7 cwt. of coal per car per day will give a consumption of about 10 lbs. of coal per mile. Reckoning the price of coal at \$4.25 per ton*, the fuel per car mile would be about two cents! By working longer hours smaller engines could be used, but, of course, with the same consumption of coal per car mile. The most economical steam street railway locomotives burn from 9 to 11 lbs. of coal per mile or about the same as quoted for the electric car.

There are two reasons for this consumption. First, the steam locomotive weighs four times as much as the accumulators and electric motor and driving gear, it therefore requires more power for its own propulsion; second, a street railway locomotive boiler and engine cannot be expected to compete with a large stationary engine as regards economy. The loss thus arising from the conversion of steam power into electricity, and the reconversion of electricity into mechanical power, is more than compensated by corresponding advantages. When water power is available within reasonable distance from the depot an additional economy will be manifest through its utilization.

As to the cost; the steam engines, boilers, dynamos and shafting, and all needful apparatus for a charging station to supply a dozen electric cars, including spare power, the English price would be about \$19,500, and the complete equipment of twelve two-horse cars, inclusive of ample spare gearing, may be estimated at \$29,000. The superintendence of machinery at the charging station will cost \$5,350 per annum; fuel at \$4.25 per ton, water, oil, waste, \$6,800; depreciation, at 10 per cent., on engines, boilers and dynamos, \$1,950; and an estimated depreciation of 35 per cent. on the whole propelling apparatus. This gives a total expenditure of \$24,300 per annum, which is equivalent to 7 cts. per mile run. It will be observed that these figures are thoroughly reasonable and allow of a good margin. It would be necessary to almost annihilate the whole concern at the end of the year, in order to bring the working costs to such an amount as is now allowed

*We give the author's figures for the price of coal, although it is somewhat higher than current rates in this country.—Eds.

by some street railway companies for horsing.

In a resume of the paper the following claims were made for the advantages of the system: the economical cost of running; that the cars now in general use can be readily converted; the small number of parts of the wearing mechanism; the light weight of the whole mechanism; the possibility of using the driving current to lighten the car; the decreased cost in maintaining the permanent way; the less space required for the plant than for stabling the horses; and that the same plant that is used for charging the storage batteries may be used for electric lighting purposes.—Iron.

Street Railway Companies' Liabilities.

Street railways, as common carriers, are bound to the exercise of a high degree of care and diligence in their business, in the care and protection of the persons and lives of their patrons and passengers; are bound to exercise that high degree of care and diligence in the protection of the persons of its patrons, as is usually exercised by very prudent persons in their own business, under like circumstances, and are liable for injuries resulting to passengers from their negligence or want of such care and negligence. Where a person, without negligence on his part, and while the cars are standing still waiting for passengers, endeavors to go aboard the car, with the intention of paying fare and becoming a passenger, and the conductor of the car, without giving such person reasonable and sufficient time to enter, negligently caused or suffered the car suddenly to start, whereby the person attempting to board the same is injured, the company will be liable. But where the injury was caused by the person's want of care and prudence in attempting to get on the car while it was in motion; or where his own negligence or want of care contributed in any manner to produce the injury, there can be no recovery.—*Van de Venter v. Chicago City Railway Co.* Circuit Court, N. D. Illinois, 1885. 26 Fed. 32.

Three Cent Bill for Buffalo.

The street railway company operating lines in Buffalo, N. Y., is making a stubborn fight against a bill introduced into the legislature by Mr. Giese, making three cents the fare for children. It seems that a year ago the regular fare was six cents, with a half fare for children. An attempt was made to reduce the fare to five cents, and this was acceded to by the company on condition that the half fare should be abolished. Having accomplished the desired full-fare reduction, the attempt is now being made to re-establish the half fare. Mr. Henry W. Box is the attorney for the company, and represents that the change would entail such new expenses upon the company that the receipts would fall below the outlay.

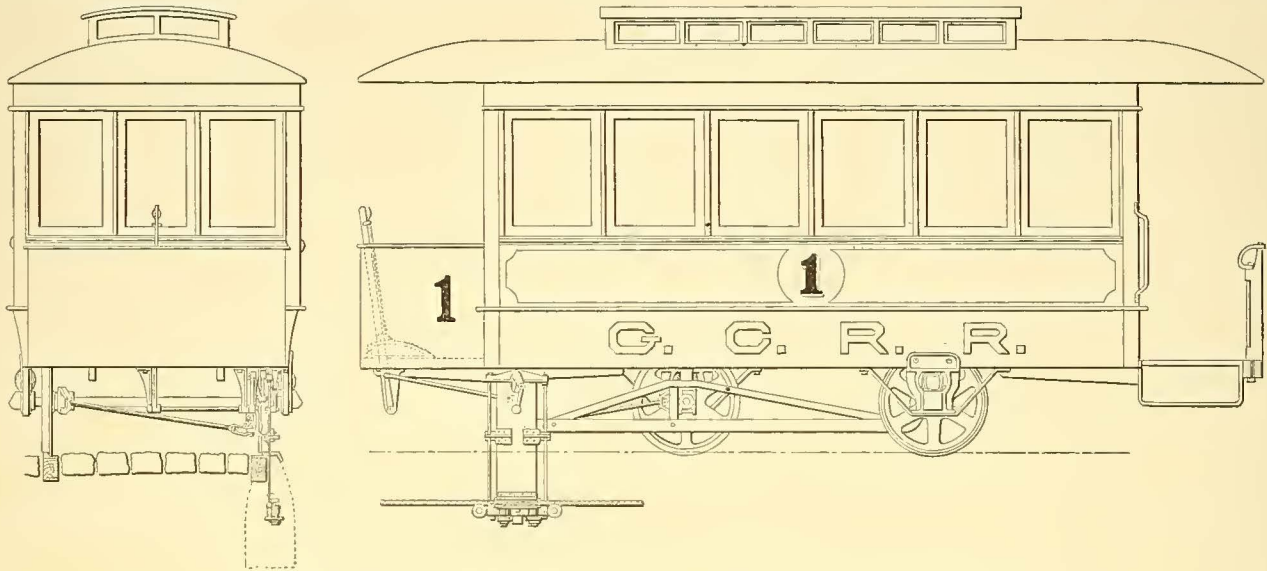
When wanting Street Railway Supplies, consult our Directory.

Gould's System of Cable Railways.

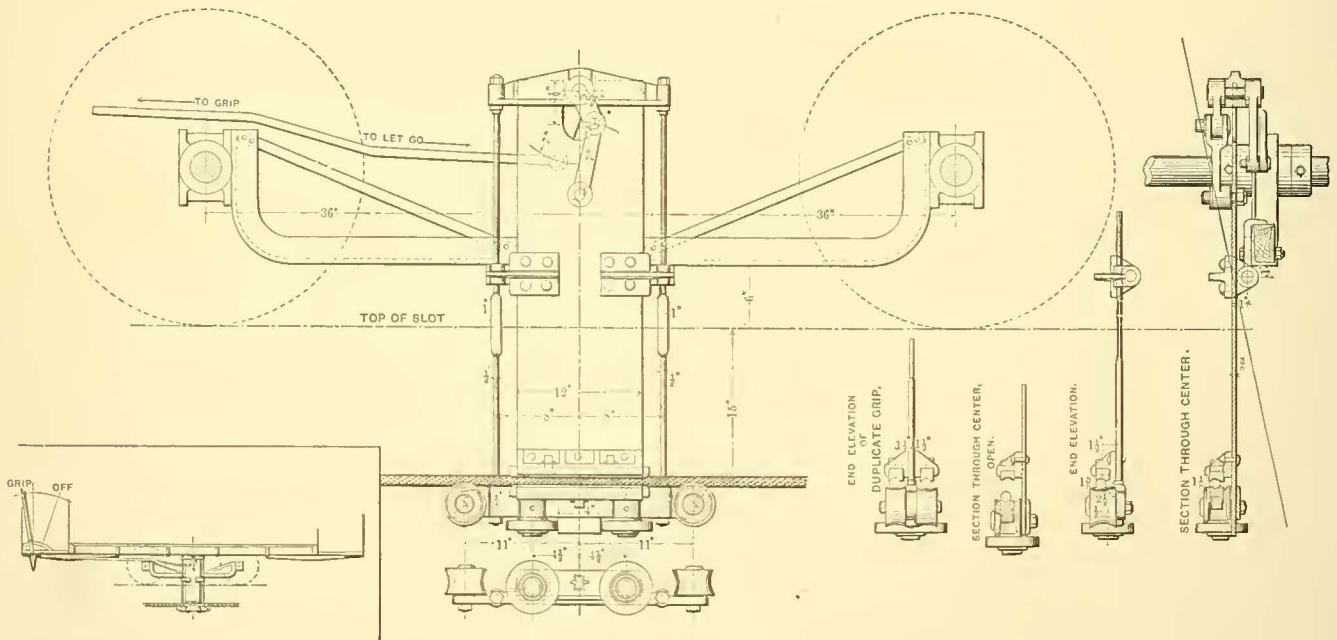
In our November issue we published a description of this invention illustrated with several small cuts. The accompanying engravings give the complete details of the conduits and grips of the new system of cable railway traction. The peculiarity of the system lies in the method of constructing the conduit and the utilization of one portion for the use of electric wires. Heretofore there has been but one conduit and this has been placed in the center between the

are laid to be tied directly and rigidly together. In order to accomplish this the slot to admit the grip is placed outside of the rails. The method of road construction is very clearly shown in the cross sections, elevation and plans of the conduits given in our engravings. Something over three feet below the surface of the pavement cross-ties of 8x2 inch channel irons are placed. These may be laid in a sub-foundation of concrete or well-rammed gravel when the soil is light or marshy, or directly upon the natural ground when it is suitable;

end of the channel iron cross-tie that is extended on that side of the road for the purpose. The interior of the conduit is made of sufficient size to receive the wheels with their journal bearings that are used to carry the cable. If the twin system of traction is used, the conduit is made of sufficient size to receive the two wheels as shown in the lower section. Manholes may be placed in the street at each wheel, allowing of close inspection, and as it is located outside of the rails it will not interfere with the cross-ties or central bearing. An opening for one



END AND SIDE ELEVATION, SHOWING APPLICATION OF GRIP TO CAR.



DETAILS OF THE GRIP.

rails, rendering it impossible to tie the rails together except by means of the castings of the conduit itself; and as these had the longitudinal slot extending throughout the entire length of the road the strain upon the bottom must necessarily be very severe if it is required to hold the rails together. To overcome this difficulty the rails were secured rigidly and independently in place.

The system under consideration does away with the central conduit entirely and allows the rails or stringers upon which they

dependent of course upon the judgment of the constructing engineer in charge. To the upper lip of these channels the sections of the conduits are riveted, this work being done before the structure is put in position.

The conduits are formed of 3-16 inch boiler plates riveted together and strengthened by means of light angle bars. The conduit for the conveyance of the driving cable is furthermore braced laterally by means of a 1/2 inch rod running from the top diagonally downward and outward to the

of the manholes is shown in the side elevation of the conduit.

The second conduit which is shown at the right of the sectional engravings is intended to be utilized for carrying electric or other wires, or as shown in the lower section for the use of steam, water or gas companies. The construction of this conduit is identical with that of the one intended for the cable with these exceptions: It does not require the outward bracing and extension of the cross-tie that is given to its mate, but has in addition a set of shelves, as shown in the

upper section. These shelves are formed by riveting bars of light angle iron along the inside of the conduit plate, and these carry the cross-bars of wood or iron upon which the wires are to be placed.

When gas or steam is to be placed in the structure provision is made by enlarging the sectional area of the conduit and providing a suitable supporting foundation for the same. Over these pipes the shelves or slats for carrying the electric wires are placed. Access is had to the whole by means of manholes placed at suitable intervals, and arranged to admit the examiner or workman from outside the rails.

If it is desired to construct this road in the open country where there are no wires or piping that should be provided for, the second conduit may be dispensed with and

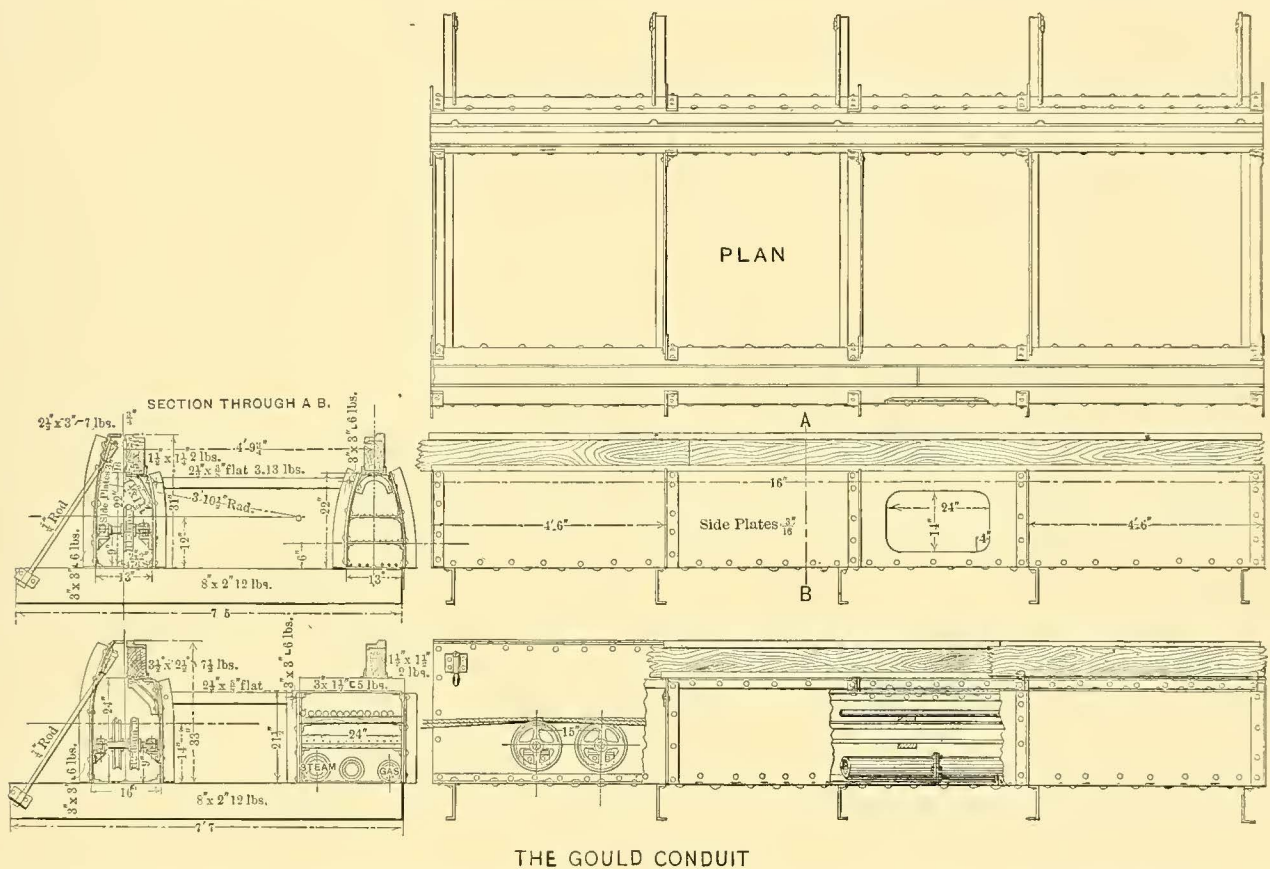
dition to those of the conduit. The main frame for the support of the grip is made of a bar of 2½ inch angle iron riveted to the journal boxes of the car. It is shaped somewhat of the form of the equalizing bar in use upon the trucks of a passenger car of a steam railroad, and is braced by bars of flat iron riveted just outside of the grip and running to the top of the box.

The grip is securely fastened to this bar and all vertical strains are kept within its own compass so that nothing but the power required to haul the car is brought to bear upon the angle iron brace. The construction is very simple.

An examination of the end elevation of the cross sections will show its adaptability. The cable is received upon two carrying wheels, one at each end, and be-

there is a shaft with journals running boxes cast in solid. A crank is attached to the shaft connected by a rod to the gripping lever at the front of the car by whose movement the shaft is rotated and by means of a knee-joint connection the jaw is raised and lowered. This knee-joint permits of an enormous pressure being applied to the cable so that no slipping can occur if it is desired to run the car at cable speed. When a slower motion is required the grip may be slackened and the cable allowed to slip.

Below the grip cuts we show the outlines of its attachment to the car. This is done again in the outline engraving of the car complete, and a modification is shown of the grip placed in advance of the wheels. The grip can be braced across to the oppo-



the rail that it would carry be laid in the ordinary way or as the constructing engineer may direct, while on the other hand, a steam road may be constructed on this principle, dispensing with the cable and slot, and utilizing both conduits for electric wires or piping.

The rails are spiked on stringers in the ordinary way. The stringers are securely bolted to channeled seats that are riveted to the top of the conduit; they are tied together by cross-ties of iron or wood bolted fast. Iron is preferred for this purpose because of the less space occupied and the greater strength and ease of construction. The methods employed are clearly shown in our sectional engravings.

For a cable located as this one is, a new grip differing in some of its essential details from those ordinarily in use became necessary. We give the details from working drawings of this piece of mechanism in ad-

tween them lies upon the lower jaw which is made of hard wood grooved out to receive it. The frame of the lower jaw of the grip is a strong malleable iron casting with boxes cast in to receive the journals of the four inch wheels that carry the cable, with pockets for the tie rods and the horizontal guide wheels. The wooden shoe is held in position by a lug upon its bottom side through which a key is driven. This bottom frame is connected to the top where the operating mechanism is placed by two light, round rods, flattened to ⅜ inch where they pass through the slot.

The upper jaw is made a counterpart of the lower as far as the shoe is concerned. The malleable casting in which it is placed is lighter and is riveted to a ⅜ x 12 inch plate extending through the slot and to the top of the framework and guided by two eyes running over the round tie rods already referred to. At the top of the frame

site side of the car, from that on which it is located, so that all tendency to swing or slew the car out of line of the rails by the side draught is avoided.

An advantage that is claimed for this system is that when carriages or wagons are being driven with the horses between the rails, there is the regular pavement to drive upon and there is no danger of the horses slipping upon the iron plates or getting the toe-calks caught in the slot. Then when the road is once laid the street need not be torn up for repairs or examination of the cable.

It is needless to enter into the details of the dimensions and sizes that will be used in the construction of either the conduits or the grip. They are clearly shown by the figures in the engravings for the style and size intended for ordinary use on the average size of car. Strength can easily be assured and the simplicity is shown by our illustrations.

*Gould System, N. E. cor. 9th and Market street s, Philadelphia, Pa.



MONTHLY, \$1.00 PER YEAR

E. P. HARRIS, General Manager.

American Railway Publishing Co.,

32 LIBERTY ST., LAKESIDE BUILDING,
NEW YORK. CHICAGO.

G. H. FAXON, Treasurer.

BRANCH OFFICES:

Boston, Mass., 44 HIGH STREET. H. M. SWET-
LAND, Manager.

Philadelphia, Pa., 119 So. FOURTH ST. J. H. Mc-
GRAW, Manager.

J. H. McGRAW, Manager Subscription Department.

Our readers will note that our directory of street railways has received a very thorough overhauling this month and last, our request for changes in business management or equipment having been very generally answered. Over two hundred roads report increased track and stock equipment and many roads have changes in the officers. The data in our directory is all official, received direct from the roads' officers themselves, and can be relied upon.

The Knights of Labor have come to be recognized as a mere striking organization. The only code they seem to recognize is one of force and intimidation. The talk of arbitration can only be a pretense because when it is proposed they so hem their delegates in by absolute and unreasonable demands that the other party has no chance to speak but must yield or have a strike installed. These excesses are losing them many sympathizers and will in the end do much to weaken their power of good or evil.

A street railway builder and owner of twenty-five years experience speaking of the desirability of equipping a new road temporarily with second hand cars says: "I would advise you not to invest in second hand cars. They are very deceiving things to buy. New cars are the most profitable and cheapest in the end. Rails and other equipment are different; the rails and curves that have to be taken up in a large city might do efficient and satisfactory service for years in a small town where truck traffic is light."

"Eureka" is the exultant title inscribed upon the dashboard of a new machine designed by Mr. Randal, for removing the snow from street railway tracks. Its practical value has not been demonstrated as yet by trial. If it proves a success it will be a most desirable auxiliary to street railway equipment as its expense cannot be excessive and it will do away with the army of shovellers that every snow storm calls out. It is a combination of the regulation snow sled and scraper and loads itself. We shall describe it more fully and perhaps illustrate it in a future issue.

Car No. 22, running on the Fourth Avenue line, New York, is in good condition and

promises many more years of active service. This car was built in 1857 by John Stephenson and has been in continual use ever since. As a proof of the actual service of the original car, and that it is not merely the number that has been running, the panels have not been removed, and in the interior there are some quaint decorations that were put in by Mr. Stephenson's master painter at that time, and which, owing to their originality, have not been touched up or obliterated.

Some time since we queried as to practicability of relieving rush on "bobtail" lines with two horse cars with conductors. The road in Altoona, Pa., does just that thing quite satisfactorily to itself and the public. They run nine one horse cars on ten and twelve minute headway; they put on two horse box cars night and morning for the rush of workmen to shops and manufactories, and to carry passengers to and from the Opera House at night, or whenever there is a rush of travel. When the open cars are run the one horse cars are taken off. Conductors are used on the two horse cars. The average cost is about five dollars a day for each car, which includes every expense.

That so great a public convenience as the Broadway (N. Y.) street railway, the removal of which would be protested against by the entire populace, should require thirty years of constant agitation before its accomplishment is a striking illustration of the perversity of human nature. And if, now that there seems to be no doubt it was really born in corruption and bribery, the charter is taken away from it by the courts, the bill to repeal it having passed the assembly, the property owners can congratulate themselves that it is still there. All the anti-street railway cranks of the Empire State could not prevent a street railway on Broadway henceforth, and the parties fortunate enough to control it in the future will have a hearty goodspeed from the very men who so strenuously and unremittently opposed its construction.

On another page will be found a digest of returns from some ninety established roads of their experience in the street railway business. The "gist" of the best of them is that a street railway, thoroughly built and equipped, and properly managed, in towns of 7,000 or upwards, is a good investment. It requires an actual investment of money, a good track, good cars, good stock, polite and attentive drivers and conductors and a constant effort on the part of all hands to please the public. Cars must be run as frequently and rapidly as public safety will permit, and as nearly as possible on exact schedule time. If it don't pay under these conditions the town is too "slow" and capital in any line of business wants to shun it. It is not impossible for outside or non-resident capitalists to make roads pay, but it is desirable that most of those interested in its management should be identified with the business and social circles of the place.

The recent strikes and "tie up" on the New York roads have worked adversely to the men on one road at least. The Houston, West Street and Pavonia Ferry Railway Company were paying for six round trips from Chambers street to Forty-second street thirty-six cents a trip or \$2.16 a day: the trip consumed 115 minutes or eleven and a half hours a day. On the Chambers Street and Tenth Street Ferry trips, they paid twenty-three cents a trip for ten trips or \$2.30 a day. On the morning their men struck, forced on as they admitted by the outside executive committee, the company had posted a notice that they should in the future pay \$2.40 on the Forty-second street route and proportionately on the other line. Most of the men preferred to take the higher wages and make an extra trip but they were compelled by the organization to accept \$2.00 and twelve hours. The company granted their demands and covers the rest of the time from five A. M. to twelve at night by "extras."

There are probably few cities in the world that have such a novel service of street railways as the free city of Hamburg. Scarcely a street of any importance is without its steam or horse railway, whilst in a great number of streets in Hamburg and Altona the peculiar feature is the adoption of a vehicle that can be run either upon the rails as a car, or upon the ordinary road as a carriage. The conveyance in question has five wheels, four ordinary coach wheels, with a radiating leading axle, when used upon the paved streets, and when used upon the rails a small flanged wheel, under the control of the driver, is lowered upon the rail, when by its flange running in the groove of the rail, the car is kept on the metals, and assuming the curves to be properly constructed no difficulty is experienced, whilst in the event of any obstruction upon the line, the matter of the diversion of the car is exceedingly simple.

The secretary of a Baltimore road writes us: "We had intended making an extension of one mile double track and other additions but the unsettled condition of the labor question has made our road give up the idea." The Wilmington (Del.) road give up intended improvements for the same reasons, and the secretary of the Federal Street and Pleasant Valley Passenger Railway Company of Pittsburg in reply to our query says: "Plans abandoned. An organization rendered paramount to law, by the honest though badly mistaken force of public opinion, has rendered street railway property nearly worthless by reason of excessive demands of the employees." These are only three instances. It is probable that the new enterprises stopped in the same way in railway and other interests, by this same unwise and revolutionary organization, has deprived many more laborers of profitable employment than those engaged in the strikes. It is said that one car building company in Maryland has refused contracts for over three-quarters of a million dollars because of the uncertainty

of what the laborers would demand that might render it impossible to fill them.

Notwithstanding the troubles that the labor organizations are making, there is a very gratifying activity in street railway building, extension and improvements. Numerous returns received at the office of the STREET RAILWAY JOURNAL in the past month indicate an active demand for street railway supplies of all kinds. Many roads report their plans as not sufficiently matured to be announced but most of the roads are making or will make improvements and additions to a greater or less extent in their track, motive power and rolling stock, stables, car houses, parks and entertainment facilities. There is now being built or will be built this spring one hundred and four miles of extensions to old roads, nine miles of it cable road; three hundred and thirty-nine new cars and twelve hundred and thirty-three new horses, and two locomotives, will be added to their equipment; twenty-one new stables and car houses are being built or will be commenced at once; about seventy miles of old track is being relaid and paved, new turnouts added, etc.; several roads are grading and otherwise improving parks and pleasure grounds to increase travel; new repair shops are being provided by several companies, and other improvements amounting in all to \$2,196,000.00. Thirty-one roads report additions to track and equipment now in process or soon to be begun, the expenses of which they cannot now tell, but which will bring the total up to \$3,500,000.00. When we remember that there are still a large number of roads unreported with probably much more expenditure in improvements, and add the many new roads now building or to be built during the coming summer, a most active and profitable season for contractors and supply men seems assured.

The New York Evening Post commenting editorially on the recent strikes on the surface roads says: "It has been commonly observed, since the Dry Dock Railroad strike, that the manners of the conductors of the street railroads in New York have deteriorated, and that the tone which they have taken on toward their employers has been in numerous instances taken toward their passengers also. Of course this has not become general, but it is true to an extent sufficient to be remarked. It is very easy to account for, because it would be the natural consequence of a conductor's holding himself responsible, not to his employers, but to the Empire Protective Association. The average member of this association will insensibly copy the manners of his immediate superior, the Walking Delegate, and will use upon occasion as much discourtesy to the passenger as he thinks will be tolerated by the union to which he belongs. In short, the new system which O'Donnell and his Executive Board are seeking to establish is a demoralizing one in its complete transfer of discipline from the Directors of the companies to the Directors of the Empire Protective

Association. The conductors of the street railroads are no better than the rest of us, and we should all be exposed to the deterioration of manners if we were responsible to no authority higher than ourselves."

Horse Expenses of Street Railways.

The accompanying tables of horse expenditure and passenger transportation on the Houston West Street and Pavonia Ferry Railway Company, New York city, will be found interesting and valuable to our readers. The road is an average one as to size, having five miles of track and running fifty cars and about four hundred horses. From its happy location in the center of New York business life, its traffic is exceptionally heavy, which of course makes its horse expense give a more favorable showing than many roads less favorably

aged 4,163,928, and estimating expenses for stable service at \$20,000 it would seem that about forty per cent of the receipts from passengers goes to this item of horse expenses alone. We shall be glad to receive like information from other roads, the publication of which for comparison and study will be found profitable to all interested in street railway interests.

The De Kalb Avenue Stables.

The De Kalb Avenue Railroad Co. have some large and well appointed stables on Myrtle avenue in Brooklyn, N. Y. The ground floor is utilized for the storage of cars, for office purposes and for a small repair shop. The arrangement of the tracks is particularly worthy of attention from the fact that the cars can be run in and out of the building without the use of switches or

THE HOUSTON, WEST STREET AND PAVONIA FERRY RAILWAY COMPANY.
STATEMENT OF THE COST OF HORSES AND FEED FOR FIVE YEARS ENDING SEPTEMBER 30TH, 1884.

A. D.	Number of Horses kept during the year.	Pounds of Hay and Straw purchased.	Pounds of Meal and Bran purchased.	Total Pounds of Pro- vender.	Cost of Feed for the year.	Lbs. of hay and straw per each horse p. day.	Cost of same.	Lbs. of meal and bran p. each horse p. day.	Cost of same.	Total lbs. of all feed per horse per day.	Total cost of feeding each horse per day.	Cost of feeding each horse for the year.
							cts.		cts.	lbs.	cts.	
1880	358	1,535,105	1,916,945	3,452,050	\$32,009.53	11.75	8.90	14.67	15.45	26.41	24.35	\$89.42
1881	376	1,556,392	1,916,923	3,473,315	36,216.65	11.34	11.24	13.96	15.24	25.80	26.38	96.10
1882	376	1,556,136	1,939,119	3,495,253	41,188.01	11.35	9.54	14.12	20.33	25.47	29.93	109.24
1883	378	1,569,273	1,959,927	3,529,206	36,110.71	11.37	8.48	14.14	17.63	25.51	26.16	95.55
1884	356	1,607,448	1,959,030	3,566,470	32,536.77	11.37	7.62	13.87	15.40	25.23	23.02	84.29
5 av.		1,564,872	1,936,589	3,501,467	35,610.90	11.43	9.15	14.15	16.83	25.58	25.96	95.04

A. D.	Number of horses.	Paid for Horses purchased during the year.	Average price paid for each horse.	Average price received for each horse sold.	Cost pro rata of maintaining horse stock for year.	Cost pro rata of maintaining horse stock per day.	Cost of shoeing each horse per month.
1880.	358	\$8,563.00	\$20.85	\$7.93	\$23.97	.0150-100	\$1.28
1881.	376	7,442.50	131.42	53.53	19.78	.0542-100	1.01
1882.	376	7,162.50	144.84	45.63	19.04	.0522-100	1.10
1883.	378	8,030.00	151.73	54.49	21.24	.0682-100	1.25
1884.	356	7,430.00	160.45	58.09	19.25	.0525-100	1.22
5 years average.		\$7,723.60	\$141.85	\$50.50	\$20.65	.0585-100	\$1.17

STATEMENT OF PASSENGER TRANSPORTATION OF THE HOUSTON, WEST ST. & PAVONIA FERRY R. R. COMPANY.

Month.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Oct.	318,637	286,316	276,058	280,197	297,754	316,307	342,760	378,569	390,801	391,491
Nov.	270,902	252,108	233,224	265,755	268,444	389,012	303,779	344,812	337,451	350,658
Dec.	264,202	247,817	205,542	251,206	263,367	294,029	298,341	340,944	331,035	321,886
1875.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Jan.	240,246	230,694	209,863	245,551	240,698	286,717	289,129	324,651	310,913	312,424
Feb.	210,447	213,680	215,192	215,119	222,879	264,855	261,074	282,215	283,409	311,716
March.	231,203	235,054	260,785	258,229	255,523	303,768	311,470	328,368	319,125	343,236
April.	261,334	246,805	273,368	270,965	270,153	302,921	310,796	332,890	331,292	355,431
May.	292,378	269,652	302,117	293,097	295,697	337,630	346,631	367,537	365,060	355,776
June.	296,807	276,117	292,664	298,655	307,757	346,294	360,386	361,760	377,365	391,698
July.	320,469	290,958	318,464	330,558	343,159	385,220	382,367	399,772	411,069	397,919
August.	327,098	289,783	323,575	335,473	358,210	388,441	407,373	435,540	411,142	426,036
Sept.	307,803	285,208	302,567	312,456	326,332	365,036	394,994	403,798	405,050	400,634
	3,341,547	3,124,092	3,213,399	3,357,261	3,451,072	3,880,220	4,009,100	4,268,820	4,273,800	4,387,699

located; but we judge the wear and tear on stock on most roads of this size is about the same, and the cost pro rata of maintaining horse stock will not vary much from their average of \$20 a year. They feed twelve pounds of hay and fifteen pounds of meal and bran mixed to each animal daily, and the average expense for feed per year is \$95.04 for each horse. About fifteen per cent of their stock has to be replaced each year, which is below the average of street railways, twenty-one per cent being a generally allowed estimate. The passenger transportation for the past five years has aver-

transfers. This is accomplished by joining incoming and outgoing rails in the form of a U, allowing the various U's thus formed to intersect and cross each other in the ordinary way, so that a car when driven in passes down to the rear of the stable, makes a turn and comes back to the door on what is in reality a single line of rail s.

At the center of the front there is a small office for the starter, and entrance to the incline plane which affords a means for leading the horses to and from the stalls upon the second story. Back of the offi-

ces and in the car house there is an elevator with a capacity of ten tons. In the center of the platform of this elevator there is a set of scales, by means of which the loads upon the elevator can be determined, and the amount of supplies checked off at the same time.

The second story contains the stables, which are of the ordinary type and possess no marked feature. They have merely the ordinary capacity and accommodation necessary for four hundred horses. The ventilation, however, is most excellent, and is accomplished by means of a large number of ventilating shafts which keep the air in a remarkably pure condition, so that even to the stranger coming in from the outside the atmosphere is not offensive.

The third story affords a large store loft for cars and fodder and it also contains a small grist mill with two run of stone. One is generally used for grinding corn and the other for oats. In an adjoining room the fodder is mixed in the following proportions, for one day's rations: 6000 lbs of chopped hay; 4000 lbs. corn meal, and 1080 lbs. of oatmeal, which makes an average of about twenty-six pounds of fodder per day per horse. This is somewhat higher than that usually allowed although not so much as to be improbable. These figures were obtained from the miller and should be accurate.

In the room next to the mixing room there is the hay cutter where all of the hay is cut up, and it has one attachment that is very valuable. This is a fan run by power which takes out all of the dust that makes hay dirty and gives it at times that suffocating odor. This dust is drawn out by a draught sufficient to thoroughly cleanse the hay, and one would be surprised to see the amount of this fine powder that thoro is. It is so soft and fine that it is almost impalpable to the touch and so light that the slightest breath is sufficient to blow it away. Instead of feeding this indigestible dirt to their horses, it is blown into an air tight room, and afterwards sent off with the other refuse of the stables.

The company have also provided themselves with their own water supply. In the cellar there are some wells from which water is pumped into three tanks in the upper portion of the building, which have a capacity of 500 gallons each. From these the water is drawn off for the use of the building. There is also a connection made with the city water mains, but this is intended for use only in case of fire; as the well water is softer, sweeter and purer than that supplied by the city.

The building is of brick with the interior of wood and is constructed in a thoroughly substantial manner.

A Superintendent of a successful western street railway company say, truly: "The street railroad business is not all sunshine. It needs the closest attention, and but few men are adapted to make such business a success in small towns."

See our Supply Directory for anything in the street railway line.

The New York Strikes.

As we went to press with our March issue a strike of a most riotous character was in progress on the Dry Dock line in New York, and the Brooklyn roads of which William Richardson, Esq., is President. The determined stand taken by President Richardson and his associates was most gratifying to those concerned in the permanent prosperity of street railway interests. The demands made, nearly twenty in number, were so unreasonable and arbitrary that the granting of them was entirely out of the question, and the prospect of a long and bitter fight between the two sides seemed inevitable. The organization of the men, known as the "Empire Association," was so complete, however, that on the third day they ordered a general strike on all the roads on the ground of "sympathy with the men already out," and every street car line in the city was "tied up," although they had just granted every demand of their men. The inconvenience and damage to the public was so great and the public demand for service on the several roads by their patrons so urgent that the road managers concluded to satisfy the men and end the trouble at once. They therefore granted the concessions as to wages and hours and left the remainder of the matters to be arbitrated upon by State Railway Commissioner O'Donnell. There is no doubt if the companies had held out long enough for the public to have ascertained the real causes of their inconvenience, the blame would have been put where it belonged, on the men, and the backbone of the strike broken. The folly of compromising or granting any concessions during a strike that would not be granted without that pressure has been most completely illustrated in these cases, for the very road that as we understand "weakened" first in the above "tie-up," the Third avenue road, is now in the throes of the most extended street railway strike experienced in that city yet.

It seems that the company have in its employ seven men who have served them faithfully from seven to twelve years; and the Empire Association, the street railway men's branch of the Knights of Labor, finished with their complete and easily won series of victories, demanded that these seven tried and trusted servants of the company should be discharged, because they were not Knights. Of course the company could not listen to such an insulting proposition without acknowledging that the entire management of its affairs was vested in its conductors and drivers. They unequivocally refused, and a committee of the association ordered a strike on their road. Every conductor and driver, stableman, etc. stopped but the seven proscribed men. Still the company did not weaken. On the contrary they called on the police for protection, advertised for more men, announced their position plainly to the public, and their purpose to fight the matter out to a finish.

The Knights as in the previous strikes call-

ed upon the State Railroad Commissioners to bring the directors to terms, but received a chilly disappointment when the commissioners informed them that they could only demand that the road do all in its power consistent with public safety to carry out the requirements of its charter. That they had was clearly established by the evidence of Supt. Murray and Inspector Steers. Foiled here another general "tie up" was ordered and every road in New York excepting the Eighth and Ninth avenue lines was stopped on April 19th.

On that day the Third avenue road attempted to run its cars, resulting in riot and bloodshed, a driver and conductor, two policemen, and six of the mob receiving serious injury. The sturdy fight made by the police though finally overcame the mob and the cars were run into the stables for the day. During the day and night many hours were spent by the Railroad Commissioners in trying to bring the two sides to an understanding. The company would agree to no compromise until the strike was declared off and that all men engaged during the strike would be retained, the company agreeing to fill vacancies with former employees. They also agreed to leave all questions referring to money and hours to the Railroad Commissioners. The Empire Association then offered to leave the entire affair to arbitration, but the road refused to allow any arbitration or dictation as to its right to employ or discharge its help as its own best interests demand.

The public were so much inconvenienced and the cause of the association was so manifestly weak that popular sentiment was setting strongly in the road's favor, and the general tie up was ordered off. Further efforts at conciliation resulted on the fourth day in the company's ultimatum that "it would discharge no men who had been employed during the strike and would not receive its old employees back in a body. They must come singly and apply for work as individuals or not at all."

Both sides have settled down to the fight with a determination that bodes a long battle. Since the riot above noted the strikers have committed few overt acts, but propose to win by buying off the company's new men, running opposition stages, "boycotting," etc. They claim to have plenty of money, are paying heavy relief money and have contracted for one hundred free stages to run from City Hall to Harlem.

On the other hand the road is constantly increasing its force, has a full complement of inside, stable, shop, and blacksmith help, etc., and is running cars under five minute headway during the day.

At this writing, (May 1) the road has nearly a full complement of help, is running its cars on the old schedule time during the day and reiterates its determination not to give in. The strikers are trying at Albany to obtain a charter for their stage line, and about a dozen strikers are under bond for trial, for conspiring to injure the road's business, etc. Now that the issue has come we trust that it will be settled once for all.

Street Railway Construction and Management.

A few months ago the citizens of a small town in Indiana concluded that they needed a street railway. In order that they might work understandingly, and profit by the successes and mistakes of established roads, they issued a circular to some ninety or a hundred companies, nearly all of which responded. The Secretary has very courteously loaned us the answers and in the following paragraphs we condense the information they contain. Being grounded on actual experience it is particularly worthy of the attention of those intending to enter the field of street railway enterprise.

The questions asked were as to length of track, gauge, weight of rail, number and kind of cars and number of horses or mules. As to management how often they run their cars; if suburban traffic was profitable, and how far; if freight was handled; rates of fare; systems of collecting and registering and what if any inducements were offered to increase travel; how late and early they run cars and what if any extra charges were collected after certain hours; the average cost of running one and two horse cars, and any other suggestions that were thought valuable.

In the returns from towns under 5000 population, the standard gauge and a light rail are endorsed. The average length of road is three miles and the cars required are eight to ten. From twenty to twenty-five horses or mules are needed. Most of these roads use one-horse cars with three or four open cars. The cars average about fifteen minutes headway, ten minutes time being the lowest reported in this size of town. One road with a park in the suburbs reported suburban traffic profitable. Another says no. The general opinion expressed is that if the route is not over $3\frac{1}{2}$ miles, and fairly populous, it pays and with any attraction like parks, ball grounds, summer gardens, etc., it is very profitable.

Freight traffic is almost universally condemned as unprofitable. The fare in all but one instance is five cents. Tickets are sold at a reduction if taken in quantities, varying from 10 to 24 per cent. according to quantity. Most of these roads use fare boxes. The cause of increased travel in a few instances was fairs, amusements and summer gardens. Running on schedule time, clean cars, good stock, polite employees were the most general and successful means to this end. 5.30 in the morning and 10 o'clock at night seems to be the average hours of running, and all roads reporting, but one, charge extra after 9 or 10 P. M. As to the difference in running expenses of one or two horse cars the prices range from \$1.60, \$2.50, \$3.50 per day for one horse and \$1.85, \$5.00 \$7.00, for two horse. The difference in these returns from different roads is that some reckon only the drivers wages and shoeing bill, others include feed, others include all expenses of live and rolling stock departments added together and divided equally between the cars. The difference in cost of running the two kinds

averages about one-third more on all the roads of this size for two horse cars. One road in addition to the above questions said that "if grades are light one horse can handle a ten foot car with ease. Our grades are from five to eight feet in a hundred and we find an eight foot car heavy enough for two horses. However, one double platform car will carry thirty to forty passengers and the ten foot 'bob-tail' would take no more. We have in this city from ten to eleven miles of track, a part of which forms a belt-line around on the suburbs of the city. It doesn't pay operating expenses. For a city comparatively level, with cars to be operated by one horse, I would prefer a three foot gauge to the standard gauge."

The returns from towns of five to fifteen thousand inhabitants show an average length of five and one-half miles. The gauge is almost uniformly the standard. The T and center bearing steel rail predominate. A few roads use light rails but most have forty pound or heavier, the traffic of other vehicles in cities of this size rendering it necessary that the rail should be more substantial. Only two roads of this class report the use of one-horse cars. The number of cars averages about three to a mile though one road runs five to the mile and one seven. Four horses and five mules to each car is about the average, a four mile road requiring twelve cars and forty-eight or fifty horses or sixty mules. Roads in this size of town seem to average about fifteen minutes headway. One road in Illinois, five miles with sixteen cars and seven horses and two steam motors, run under thirty minutes headway. No road reports less than ten minutes headway. Those that run into the suburbs report the traffic profitable, the places of this population naturally spreading over considerable ground, not packing so close as is the rule in larger places. None handle freight except in a few instances where trunks are carried for passengers. Average fare five cents; some special fares over four mile routes in Michigan and Illinois, ten cents. Nearly all roads sell tickets at a reduction. Some roads sell season tickets, man and wife for \$30, single tickets \$20. One road sells twenty-five tickets for a dollar, another thirty-three. No road in this grade reports any special or extra feature to induce increase in travel but several say "clean cars warm in winter, open in summer, with polite and attentive employees." Most cars stop at 11 P. M. One runs one car an hour all night. Sixty per cent. of these roads use registers, one uses fare boxes and one has discarded both and relies on its conductors and inspectors. The cost of running cars in towns of this size is somewhat more than in the smaller places. One road gives "bob-tails" \$4.50, "double-enders" \$6.50, another "two-horse" \$5.25." A road in central New York reports average cost of running cars for 1884 and to April, 1885, \$4.59 each. Another says: "The average cost of running a car is a difficult question to reply to as it depends largely on whether a company has a floating or fixed debt. Our average daily expense for operating

the road is about \$4.00 per car, which includes taxes, insurance, interest on floating debt; in fact everything that costs." This is, of course, a fair way to figure cost of running a car, but for the purposes of this article, we would want the legitimate running expenses, which would count out several items he includes that are more correctly chargeable to the plant or improvement account.

Another road says: "We are using twelve foot cars; takes no more stock to pull them than a ten foot car, as we have some hills to climb. In a rush of traffic we can handle it better in large cars. Six mules to a car; cost of running two horse cars about four dollars a day."

Another says: "If your city is hilly and streets crooked use two-horse cars. If level and streets straight make your gauge three feet three inches, and run one horse cars. One-horse cars are not run much cheaper than two-horse, because the lighter team for a two-horse car cost only fifty to seventy-five dollars more than the heavier single horse for the short car and the single horse will consume eight pounds more grain a day than the small horses."

A road in Wisconsin reports: "13,000 population, $3\frac{1}{4}$ mile track, three feet six inch gauge, twenty-seven pound steel rail and ten 'bob-tail' cars, which are run on ten minutes time from 6 A. M. to 10.30 P. M. Rates of fare five cents; tickets in quantities at reduced rates. Suburban lines profitable to extent of two miles where thickly settled. Average cost of running one-horse car \$3.50 a day, two-horse \$4.75 a day. Use fare boxes on both kinds, Would not advise use of double end cars. Would enclose front platform with guards for reason that getting on and off frightens inexperienced horses more or less, and accidents to passengers thereby are frequent, deplorable, and expensive."

The cities of 15,000 to 50,000 report about same average length, number of cars per mile and horses per car as the next smaller towns. Three run on five minutes headway, two seven minutes, two eight and the average is about nine minutes for the class. More report from these places that suburban traffic is not profitable than from all the others. Where roads run from one place to another or a city to a village, or through well-settled suburbs, the traffic is good and pays. Otherwise it is necessary to provide attractions at the end of the line to make it profitable. In the summer months this can be made very profitable. Fare in every instance but one is five cents, that one six. Most of the roads make discount for tickets in quantities, 21 for \$1, 225 for \$10, 22 for \$1, 1000 for \$38, etc. The same inducements to increase travel as mentioned before. Most of them run till 11.30 o'clock or midnight.

Two-horse cars cost to run per day \$5.50 to \$6, \$10, \$5, \$4.50, \$3, \$2.10, \$1.75, \$6, 30 cents a mile, etc.; and one-horse cars \$3, \$5, \$2.95, \$2.50, \$1.95, \$5.10, 20 cents a mile, etc. Here is a wide difference in prices, which will probably be accounted for by the different methods of book keep-

ing. We note though that where the two kinds of cars are estimated on by one company the proportion of expense is about as \$4 for one horse to \$5.75 for two horse; and the grades of streets have much to do with this item, by the necessary increase of stock they entail.

An Indiana road says: "Our gauge of track is five feet full; we use both tram and T rail. The 20 lb. T rail is the best and easiest for a short distance, provided the city will permit them to be put down. Mules are best for street railway business as they are not so liable to be stove up or sick as horses. For single cars use five mules a day, double cars six mules. Freight on street roads is not profitable, unless travel is very light. It takes up room, makes cars look untidy, and is very objectionable to passengers, especially ladies. A good fare box and lively superintendent are the best collectors with fairly honest drivers. Tickets are sold at twenty per cent. discount to induce travel, but polite employees and cleanliness are the best inducement that can be offered. Cost of operating (driver's wages \$1.20, and feed of stock five head at eighteen cents a day) \$2.10. Use revolving brooms to keep track clean of snow and dirt. They cost about \$65 a set and your blacksmith can adjust them to any car. We salt for sleet and ice by removing wheel house in car and inserting a three and one-half foot sheet-iron shoot. My road *pays*."

Nearly all these roads have the Day or other plows. A few use scrapers of a primitive nature made in their own shop. We shall illustrate a very efficient and inexpensive homemade scraper in a later issue. One road in a very populous city uses men and shovels alone to keep the track clear.

The larger cities, 50,000 to half a million people, report much longer lines, the average being about thirty miles; cars average about same to a mile, but they run more horses to a car, the average being six. The headway runs from one-half minute to fifteen, the average being three and one-half minutes. Suburban lines of these large cities are invariably reported profitable. None of them handle freight. All but one use the five cent cash fare system. That one sells six tickets for a quarter.

The cost of operating one and two-horse cars is considerably higher but the proportion is the same as in the other cities. One report from Indiana says: "Two small mules cost less than one horse on a bob-tail car." Nearly all have amusements or other attractions at end of route to stimulate travel. Most of them run night cars. To keep track clear, they all answer snow plow, sweepers and salt.

The larger cities use pretty generally the heavy 50 to 65 pounds center bearing steel rail. These ninety roads in their different reports very strongly endorse different manufacturers of rails, cars, fare boxes, and registers. We do not print their comments here but would note that every one mentioned are represented in other pages of this paper, and the voluntary testimonials from all parts of the country are an assur-

ance that their dealing will be found more than satisfactory by our readers.

Street Railway Strikes.

We last month gave numerous answers to the question "What in your opinion is the best way to prevent and cure strikes among street railway employees," from prominent companies. We have received answers from nearly two hundred roads but can find room for only a few in this issue, on account of the pressure on our space.

The names of the companies are withheld as most of them request it, but all are representative men in the street railway interests.

The President of a road on the Pacific coast says "We have never had any experience in the matter. Have never had any strikes, and are not aware of any organization among street railway men. On this coast probably not three per cent of the drivers or conductors enter the business with any idea of remaining in it for any length of time. It is only as a makeshift. The good men make acquaintances and soon drop out into other business, and their ranks are recruited by new comers. Thus where the *personnel* is so constantly changing it would be difficult to maintain an organization among them."

The Superintendent of a Canadian road writes as follows: "We hardly think that his very commendable views, in conjunction with the wages and hours on his road, would satisfy the average driver and conductor in the States: "To prevent strikes use men like men. Give them a good day's pay, and have some regard for the men in the employ of the company. We should take into consideration that street car men are exposed to all kinds of weather, and have very little time that they can call their own. We should have a tender regard for all in the employ of the company."

A Texas Superintendent says: "To have as little to do with labor organizations as possible, and when they strike starve them out and give preference to unorganized labor, or cease running cars."

Another, manager of one of the most successful roads in the middle states, who lives up to his doctrine and yet is reported to be on the ragged edge of a strike, writes as follows: "Treat your men kindly, so that none will hesitate to approach you. Grant their small requests when it will result in mutual convenience to them and no detriment to you. Make reasonable and practical rules. Govern with strict impartiality, and sustain your men in carrying out your own orders. Pay \$2 per day for twelve hours' work, if you can afford to do so, and do not resort to tricks or quibbles to reduce the pay of a few men. Give the best places to men longest in your service, and let the balance stand in regular order for promotion. Discharge men only for just cause, and tell them the reason."

A New York President who has just been through the trial says: "Having conceded everything which could be reasonably asked, if the employees, intoxicated by their partial success, make still further de-

mands, they will alienate public sympathy and hoist themselves by their own petard. The 'Knights' will go to pieces of their own weight."

A Massachusetts Superintendent says: "Treat the men fairly, and as well in regard to wages as can be done consistently with the general interests of the business of the road, and protect them against the caprices, personal spites, and arbitrary treatment of starters, foremen, etc."

An Ohio President who has since practically succeeded in his fight, says: "The Lord only knows. I am in the midst of one now, and I have been stopped for a week to-day. The Louisville system, however, in my judgment is the best."

The following are from Illinois, Missouri, Pennsylvania and Texas: "Pay the men more than they ask. Let them run your business, and make up deficiencies out of your own pocket."

"Do away as much as possible with union men."

"Do not believe in street railways ever yielding to the strikers."

"We employ no union men. I would favor judicial arbitration."

The replies to the question should labor unions be recognized and treated with by street railway companies are almost unanimously in the negative. We give below all we have space for, without comment. They come from all parts of the country.

"It looks to me as though labor unions would have to be recognized by street railway companies and everybody else. I can not see how any objection to treating with them. No street railway will pay more than they can afford to, and I suppose the labor unions will not demand more."

"No. No corporation, company, or individual should be compelled to call in a second party or employees to manage their affairs."

"It can not be disputed or denied that any class of persons have as much right to organize and co-operate for their own protection as have corporations and individuals to 'pool' for the same purposes. The present system of labor unions, however, as they now exist, is detrimental to both members and employers of such members as a rule."

"I think not. I never permit unions or employees to dictate terms."

"Can't help it."

"I think not, but you cannot always help it."

"No. Don't allow yourself to be forced to it. If there is any danger, anticipate it by some concessions, unsolicited, and thereby make better terms for yourself than they will."

"Decidedly no. While the right to organize among themselves in each stable might not be objectionable, their pledge to abide by and obey the orders of an outside committee is what makes the trouble."

"No. Treat with men individually, and with no committees or organizations."

"I do not believe in labor unions nor strikes."

"I believe it against the interest of street

railway companies to recognize labor unions, but believe it fair to treat with employees to the extent of giving their grievances complained of a careful consideration and to meet them where just as far as the circumstances and financial ability of the company will permit."

"I can see no reason for officially recognizing the labor unions, and it seems to me that no good can come from so doing. It seems to me to be the only true principle to hold each individual employee accountable for his work; and to relinquish the right to discharge an employee if he does not discharge his duty satisfactorily, or to even refer the matter to arbitration, would seem to me suicidal."

"It would not be necessary."

"I think not. Companies may have to yield to the pressure when it comes, but should never be ruled by mob law."

"No; especially outside organizations."

"Yes, and with respect."

"Labor unions should be recognized."

"I think not."

"I think all trouble should be settled by the men and company without outside interference."

"Companies must recognize unions, as public feeling seems to point that men have a right to organize."

"We have to recognize the union."

"I don't think labor unions should be recognized at all in connection with street railways."

"We can regulate labor if our property is protected."

Notes and Items.

Asbury Park, N. J.

The Asbury Park road is having considerable opposition in getting under way. The road will be built; the people want it, but like all enterprises of this kind, there is a lot of kickers somewhat like the dog in the manger.

Aurora, Ill.

THE AURORA CITY RAILWAY Co. will build an extension one mile long, and expend \$9,000 in cars, mules and other improvements.

Baltimore, Md.

The Midnight Assembly of Car Drivers held a meeting April 24, which continued until after sunrise. The drivers on the Frick lines determined to hold out. New drivers are on the cars and most of them are running. The company will make no concession and in a few days all the lines will be supplied with new men, there being plenty of applicants for the places.

Boston, Mass.

The Board of Aldermen of the city of Boston gave hearings Monday, April 5, to various parties desiring to head off the Cable Railroad Company having designs on Beacon street. This street is the only one leading out of the city which is not taken up by horse-car lines. At the meeting referred to, the Cable Company asked to have the matter referred to a committee. Then in order followed Pres. Hersey of the South Boston Horse Railroad Company;

Pres. Richards, of the Metropolitan; Pres. Merrill, of the Highland; and Pres. Powers, of the Middlesex. The petitions were that the Board of Aldermen grant them the right to use cable or electric motors as motive power in place of horses. It was objected that on account of drawbridges a part of the roads could not use cables, and that the crowded condition of many of the streets, necessitating low rate of speed, would be the cause of excessive wear on cables, which at best are short-lived and exceedingly expensive. It was admitted that for the crowded sections of Boston many improvements and inventions would be needed to make a cable system feasible and successful. The streets in the business portion of Boston abound in curves and turns to a degree hard to be realized by those who have had to do only with cities laid out with streets running at right angles.

Beaver Falls, Pa.

THE BEAVER VALLEY STREET RAILWAY Co. have ordered three new cars, and will put down three new sidings and buy ten horses this month.

Brooklyn, N. Y.

THE BROOKLYN CITY RAILROAD COMPANY has granted permission to a New York firm to put electric lights in several street cars. The battery which will supply the electricity will be placed under the seats.

Chief Engineer John Y. Culyer reports upon the cost of a proposed tunnel road on Atlantic avenue, from South Ferry to the city line. Distance five miles and the total cost \$8,976,000. He thinks such a road should be completed in 18 months.

THE BROOKLYN ELEVATED RAILROAD COMPANY's plans for an elevated road in Myrtle avenue were approved April 20, and work will be begun immediately.

Buffalo, N. Y.

The Buffalo street railway companies have given their men an extra swing day, reducing the actual working time about one-ninth. The old system gave four days' work, then a swing, three days' work and a swing, making two swing days in nine. The new system gives three days' work, then a swing, two days' work and another swing, thus giving two swings in seven days. The swings have been arranged differently, making the hours for working on those days much more convenient for the men than formerly. Instead of working three times a day as formerly, one section will swing for breakfast and dinner, and another section for supper.

Chicago, Ill.

THE ARCADE RAPID TRANSIT COMPANY has been incorporated. Capital stock, \$5,000,000. Samuel I. Whipple and others are incorporators.

THE NORTH CHICAGO STREET CAR men are in doubt about the proposition of President Yerkes to present them with a beneficial organization which shall be self-supporting and cost nothing to belong to. The plan was first broached to a committee of two from each line, whose account of the offer was received with incredulity, but on

the 29th, the elaborate plan was issued in writing, one copy being sent to each of the barns. As far as can be learned the plan imposes but one condition upon the employee—that he shall not belong to the Knights of Labor. To any one who belongs to no trades organization and who is rendered eligible for membership under certain usual restrictions, is to be given one-third of his full pay during any sickness exceeding one week and less than three months in extent, while at death his dependent relatives shall receive a sum varying from \$300 to \$500, according to the class to which he belonged. The pertinence of the proposition is said to be owing to the fact that on Sunday last an assembly of the Knights of Labor was formed, with 250 members, and that a majority of the other employees were expected to join.

Cairo, Ill.

CAIRO STREET RY. Co. expect to extend their track a third of a mile this spring and add three horses and one car, these improvements costing \$3,000.

Chattanooga, Tenn.

CHATTANOOGA STREET R. R. Co.'s improvements consist of four or five miles of track and twelve to fifteen cars.

Denver, Col.

The first successful attempt at trial trips of the new cable car has been made over a portion of the track of the Denver Electric and Cable Railroad Company, on Fifteenth street. The car ran a considerable distance, and at the satisfactory rate of eight miles per hour. A dynamo 20 horsepower furnishes the motive power for the car. The company hope to get their cars running in six weeks or a month. The car which is now being used in making trial trips is shaped and fitted up very much like an ordinary street car, and is fully as handsome in its style and appointments as any street car in Denver.

Suit has been commenced in the Superior Court, at Denver, Col., by the Denver Electric and Cable Railway Company against the Denver City Railway Company for the right of way to cross Fifteenth and Holladay streets and also for a crossing 150 feet south of the bridge across the Platte river on Fifteenth street.

Denison, Tex.

THE DENISON STREET RY. Co. will build an additional mile of track this summer to cost \$4,500 to \$5,000.

Galveston, Tex.

THE GULF CITY STREET RY. & Real Estate Co. are extending their lines on about eight miles of street and adding twenty new cars and seventy mules to their stock equipment. It will take over \$70,000 to pay for these improvements.

Grand Rapids, Mich.

THE STREET RAILWAY COMPANY of Grand Rapids will buy six open cars and thirty horses this month.

Havana, Cuba.

During the past year, the street car company of Havana transported 5,022,322 passengers, whose fares amounted to \$729,363.15 in bank bills, and the number of persons, members of the company, of the

police and other persons that traveled gratis on same, amounted to 99,094.

Helena, Montana.

A new road will be built here this season.

Kalamazoo, Mich.

THE MAIN STREET horse railway will be extended this spring.

Kansas City, Mo.

Robert Gillham has been tendered the position of Chief Engineer of the Grand Avenue Cable Railway Co., and refused the position because of the demands on his time by the elevated road of which he is Chief Engineer, and other professional engagements.

Knoxville, Tenn.

KNOXVILLE STREET RAILWAY Co. will extend their track about a mile and add to live and rolling stock this season.

THE MARKET SQUARE AND ASYLUM STREET RY. Co. is now operating their new road. Pres., Peter Kern; Sec., W. H. Simmonds.

THE MABRY, BELL AVENUE, AND HARDEE STREET RY. Co. have got their new road in operation with R. N. Hood, President, and B. L. Smith, Secretary.

Lynn, Mass.

THE LYNN AND BOSTON HORSE RAILROAD will extend its tracks in Sangus. Edwin C. Foster, Superintendent, Chelsea.

Mankato, Minn.

Ground will soon be broken for a new road here, to be finished this fall.

Middletown, Ohio.

THE MIDDLETOWN HORSE RAILWAY Co. will double-track the main street of that place this summer. Have just purchased six horses.

Montgomery, Ala.

THE ELECTRIC STREET RAILWAY is a success, that is settled. The cars on the Court street line commenced running by the electric motor system at 10 o'clock yesterday morning and continued through the day. Everything went smoothly, and the success of the enterprise has now been demonstrated beyond all question. The electric motor system is the invention of Mr. Charles Van Depoele, the celebrated and successful electrician and scientist.—Montgomery Advertiser, April 16.

Mobile, Ala.

THE DAUPHIN & LAFAYETTE STREET RY. Co. will buy two new cars soon.

Minneapolis, Minn.

THE MINNEAPOLIS STREET RY. Co. will build ten miles of track, forty cars, and add 350 horses to their equipment, all to cost over \$175,000.

Nashville, Tenn.

MCGAVOCK AND MT. VERNON HORSE RAILROAD Co. has purchased the thirty-eight-pound Johnson rail.

Several months ago, a charter was secured for the Summer Street and West Nashville Street Railroad Company. The stockholders held a meeting and elected directors, a president, secretary and other officers. They raised capital stock and went ahead in the matter of arranging for the immediate construction of the line. In the meanwhile however, the directors of this projected road and of the Church, Spruce, Broad and

West End Street Railroad Company began to discuss the affairs of the two roads amongst themselves and finally hit upon plans which have since resulted in a consolidation of interests and objects. An incorporated company will take the old fair grounds in charge, beautify and adorn them and make the park a resort of which all may, indeed, be proud. A fine double-track road will be built from the Maxwell House out Church and Spruce, through Broad street and West End avenue past Vanderbilt University to the Park and Fair Grounds. The new company will also run a track from Broad street out McNairy to Division, or Laurel street, thence probably to Belmont avenue. In the other direction, a track will be extended out North McNairy to the penitentiary. Separate cars will be run from the terminus of each of these lines to the Public Square and return. It is intended to stint no expenditure to make the enterprise first-class in every respect.

Natick, Mass.

NATICK & COCHITUATE STREET RY. reports three miles of 35 lb. rail, 4 feet 8½ inch gauge, 6 cars, and 17 horses. Have added 30x76 feet to their car sheds, and 28x31 feet to their horse barn, and have one new open car; the cost of these improvements being \$800. Geo. F. Keep is Superintendent.

Newark, N. J.

The Combined Horse Railroad Co. are making some alterations and improvements, building double track where single track with turnouts have been in use heretofore, re-building other portions of their routes, using a heavy steel rail. The company are re-building their stables and car-houses, adding a large number of new cars and horses to their already well equipped roads and with their live practical President, Mr. S. S. Battin, the company are on the sure road to success.

NEWARK & IRVINGTON STREET RY. Co. report a new car house, 40x300 feet, costing \$7,000. Have 7 miles of 47 lb. track, 5 feet 2½ inch gauge, 28 cars and 130 horses.

New York City.

THE CHAMBERS STREET RY. Co.'s new cars, twenty in all, were built at the factory of the John Stephenson Company. They are very dressy looking cars with all the latest improvements. We note that the lettering is very plain and easily distinguishable at a distance, a very desirable feature in car painting.

One of the cables on the Tenth Ave. cable road was cut on the 5th inst. by an inexperienced grip man employed in place of a striker. The two ends were drawn in the depot and preparations made to splice the cable on the following day. Superintendent Lyon (brother of the President) said the accident occurred in the forenoon and it was half an hour before the second rope was put in operation and traffic resumed. We are told that this is the first detention to traffic caused by the motive power since the starting of the road last August.

The amendments which Gov. Hill insists upon having added to the Arcade Railroad bill are, first, an indemnity bond of \$3,000,000 to secure protection to property-owners

along the line of the road, and second, a guarantee that 3 per cent. of the gross receipts shall be paid yearly into the city treasury. This practically kills the bill.

THE KINGSBRIDGE CABLE RAILWAY Co. made application to the Board of Aldermen April 20, to construct and operate a street surface railroad from the Boulevard and Fifty-ninth street and Eighth avenue, along the Boulevard to Sixty-fifth street, in Ninth avenue to One Hundred and Sixth street, to New avenue, to St. Nicholas avenue, to the Kingsbridge road. The matter was referred to the Committee on Railroads.

THE JOHN STEPHENSON Co. are building ninety summer cars for St. Louis, Mo., thirty for Brooklyn and one for San Diego, Cal. They are also shipping to Buenos Ayres, Auckland, N. Z., Mexico and Ecuador. Twenty very handsome cars for the St. Paul City Railway Co. are going out of their factory also.

JOSEPHINE D. SMITH'S establishment is furnishing 40 new-style double lamps for the Tenth Avenue Cable Road cars now building.

THE THIRD AVENUE R. R. Co. have contracted with the Jonson Foundry & Machine Co., 118th street and Harlem River, for the building of a cable railroad along 125th street from the East River to Fort Lee Ferry. The Jonson Foundry & Machine Co. are to supply every requisite, ready for the running of the road. Work is to be commenced at once.

Gov. Hill signed the bill to annul the charter of the Broadway road, and the bill to sell the consents of the property-owners along the line of the road, May 4. The third bill, for the winding up of defunct corporations, which was withdrawn from the Executive for the purpose of correcting several engrossing errors, was corrected, re-engrossed and passed by the Senate.

Ottawa, Ill.

A new street railway is being talked up. Philadelphia, Pa.

The Arbitration Board of the Car Drivers and Conductors' Assembly had a conference with President Parsons at the People's Line depot, Eighth and Danphin streets, April 24th, in reference to the complaints of the grievance committee of the Green and Coates Streets Line that some of the men were compelled to work thirteen hours. The men work on the swing system and every third week a conductor works thirteen hours and seven minutes a day. The other two weeks he works about eleven hours and a half. A complaint that the road was also violating the rules of the assembly on the Lombard and South was also submitted. It was explained that on Sundays the one-horse cars on the West End Railway, on account of heavy and late travel, are furnished with conductors, who work sixteen hours per day, for which they are paid \$3. As this is only done one day in the week, extra men have to be secured to run the cars, and twenty-one men are thereby given a day's work.

The board also made inquiry about several men who have recently been dis-

charged by the company. It was shown that the men were discharged for cause and the board expressed themselves satisfied with the explanations.

LYNN & PETTIT, extensive manufacturers of cocoa chain car mats, are very busy, their trade for these goods having exceeded all previous years. For cleanliness and convenience these mats are highly recommended.

J. G. Brill & Co. have just shipped six light cars, three open and three closed, eight foot body, five seats, reversible backs, etc. One of these was a "directors' car," and very handsomely fitted up, having inlaid panels, veneers, leather seats and backs, and all modern improvements. The Brill equalizing gear, which has been in use a year and proven very successful, was put on these cars and with the order went twenty sets of gears for the cars now in use on the road. They have also constructed three closed eight wheel and three open eight wheel and four four wheel cars for the Elyton Land Company of Birmingham, Ala., and Seneca Falls & Waterloo (N. Y.) Company. Six cars are just completed for Chili and several new orders are in from that country; also from Lima. Several steam (motor) cars are in process of construction for the Bushwick Railway Co. of Brooklyn.

Pittsburg, Pa.

THE SOUTH SIDE PASSENGER R. R. Co. will build a half mile of double track to cost about \$10,000.

Portland, Ore.

PORTLAND STREET RY. Co. have completed an addition of three-eighths of a mile of track, and put on a car to operate the same; are building two cars and an addition to the car shed; and have added five horses; these improvements costing \$4,000.

TRANSCONTINENTAL STREET RY. Co. will build a branch line this summer.

Richmond, Va.

THE RICHMOND & MANCHESTER RAILWAY and Improvement Company is a new corporation with a single track road two and a half miles long, running four cars and twenty-six head of stock. B. N. Selden, Superintendent.

Sherman, Texas.

THE SHERMAN CITY RY. Co. are building a mile and a quarter of new track, and have bought two new cars and twelve mules. Cost of improvements and additions \$4,500.

St. Louis, Mo.

St. Louis's first cable road was opened for business April 15. The line runs from the corner of Sixth and Locust streets to the northwestern suburb.

Withers, of the street car dynamiters, is on trial. He is the man who is said to have gone to Louisville and purchased the dynamite at the time of the strike.

St. Paul, Minn.

THE ST. PAUL CITY RAILWAY Co. will add forty-two cars and one hundred and fifty horses to their equipment and build eleven miles of new track, at an expense of about \$150,000.

Streator, Ill.

Has a road on paper. Some of its solid men are pushing the scheme and it may mature this summer.

Springfield, Mo.

It is rumored that some parties will ask the new City Council for a franchise to build a road on Walnut street.

Springfield, Mass.

THE BEMIS CAR BOX COMPANY are shipping fifty of their patent car boxes and gear to the Minneapolis Street Railway Co., making 100 sets in all now in use on that line, with thirty on the St. Paul road. They are also sending twelve sets to St. Paul Street Railway Company to be placed under their old cars. They recently shipped twenty-five sets to Mobile, and made shipments to Buffalo, Providence, San Antonio, twenty sets to Denver, also to Salem and Danvers road, and six sets to the Houston Street Railway Co., Houston, Texas, also to Worcester, Citizens of Pittsburgh, Gloucester Street Railway Company, Cream City Street Railway Company and Milwaukee. The gear seems to be giving abundant satisfaction as is shown by their order book showing duplicate orders from several lines where the box has been subjected to severe tests.

San Francisco, Cal.

H. D. Morton, Esq., formerly Superintendent of the Geary Street, Park & Ocean R. R., has been Superintendent of the Market Street Cable Railway system during the past year.

St. Louis, Mo.

A new road is asking for a charter to run from the Union Depot to the Fair Ground.

Taunton, Mass.

THE CENTRAL STREET RAILWAY COMPANY having secured their franchise, and the location from the Board of Aldermen for a mile of track; will be ready to build as soon as the City Government determines the grade of Cohannet street, which will probably be fixed in a week or ten days. It will be a single track from City Hall to Old Colony Railroad Station, 3000 feet, with loop for turning at the City Hall the curve representing a half circle of about seventy-five feet radius, making say 175 to 200 feet additional. This portion will have three turnouts, and the street is now macadamized. Cohannet street will probably be raised some three feet, in which case about 350 feet will be laid on the filling, when the Street Department is finishing the grading. From the Railroad Station at the corner of High and Oak streets, to present terminus at foot of Agricultural avenue, 2000 feet, (and one turnout) the street is graveled. The entire track will be paved inside the rail with round stone, and the graveled portion i. e., from High street to Agricultural avenue, will have a rim-row outside the rail. The road will use steel rails about thirty-five pounds, new cars, and all its equipment will be first class in every respect.

Toledo, O.

THE TOLEDO CONSOLIDATED STREET RAILWAY Co. will change 2½ miles of 3 feet 6 inch gauge track to 4 feet 8 inch gauge, about one-fifth of which will be double track, and will use 42½ lb. steel rail. The whole will be paved with Medina and boulder stone. They will also remove from the side to the center of the street 1½ miles of T rail track and relay the same with 42½ lb. steel rail and pave the same with stone as above, also pave a portion of their track not now paved and may build some new track. Will add 6 new cars and rebuild 5 or 6 others. Will add 50 more horses and enlarge two car-houses and stables and make other improvements, at a total cost of \$60,000.

Trenton, N. J.

THE TRENTON HORSE R. R. Co. will extend their road into Chambersburgh soon, running the entire length of Clinton street. This road a few years ago was a poor one horse affair, but under the management of Gen. Lewis Perrine, the President, it is in a fair way of being a good paying road. It was first built with one track with turnouts and was always unsatisfactory and incon-

venient to the public and unprofitable to the company. A few years ago Mr. Wm. P. Craig of New York changed nearly the whole route into double track and it has been improving ever since.

CITY RY. Co. have added two miles of track this year, also three new cars and thirty-five horses, and built a new stable for sixty horses; the cost of the improvements being \$50,250.

Vicksburg, Miss.

THE VICKSBURG STREET RAILROAD Co. is laying track on Washington street.

Washington, D. C.

THE WASHINGTON & GEORGETOWN R. R. Co. are extending one of their stables to accommodate fifty-six more horses. They will increase their live stock by the purchase of one hundred horses and add six cars to their rolling stock. Total expense of improvements over \$30,000.

CAPITAL CITY, No. O St. & So. WASHINGTON R. R. are making alterations in their stables at Third and B streets for the purpose of workshops, storage, etc., at an expense of \$10,000.

As a token of their gratitude for the action of the directors in reducing the hours of labor after May 1, to twelve per day, the employees of the Washington & Georgetown Railroad, presented President Hurt with an elegant goldheaded cane on the 30th ult. After thanking them Mr. Hurt asked the spokesman to wait a moment, when he stepped to his desk and drew up a check for \$500, payable to the order of the committee, this action being greeted by a perfect storm of cheers from the sixty men waiting outside. Superintendent Sailer was then presented with a fine set of harness by the men. On the 1st of May the three cent cars were taken off of Pennsylvania avenue altogether, and twenty-nine more large cars added. An increase from 280 to 414 has been made in the number of trips of the avenue cars, and those of Seventh street from 220 to 408. The "bobs" will be taken off from the avenue. It is proposed to use the \$500 check presented to the men as the nucleus of a disability fund.

Waterloo, Iowa.

THE WATERLOO STREET RAILWAY is a new institution just started. The road is now in operation, we are informed.

Wilmington, Del.

WILMINGTON CITY RY. Co. will lay 1,500 feet of steel rail to replace worn-out iron rail, will build four new cars and repair ten old ones.

Windsor, Canada.

An electric railway is being built from Windsor to Walkerville.

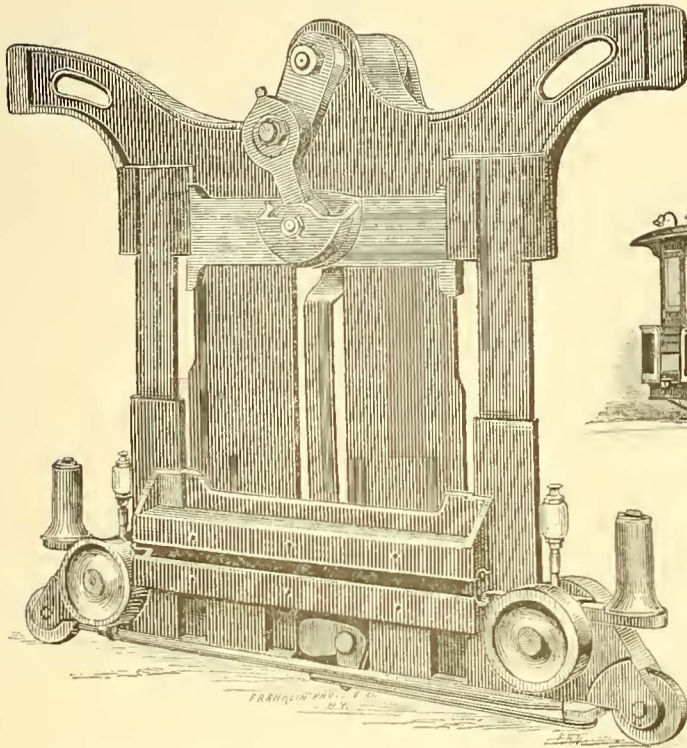
Owing to the activity manifested in cable railways at the present time, we feel justified in dropping a few precautionary words to those preparing to build.

It should be borne in mind that a mistake is not discovered until after it is made, and the managers of nearly all cable roads yet constructed have far exceeded their estimates of cost in building the same.

This is occasioned by starting with the construction before the entire cost of finishing is ascertained, and to avoid this embarrassment it would be advisable to have contracts drawn covering every detail, on which accurate estimates can be obtained from reliable firms, and this can be done prior to making any contracts, thereby insuring the company against excessive expenditure. Bills for extra work and materials will accrue in proportion to the defects in specifications embodied in the contract. The good or bad management at the start will be developed and made manifest in the quality of work and the expense account at the completion of the road.

The Miller Grip.

The cable grip* illustrated is the one intended for use upon the Kingsbridge R. R. It consists of a strong frame work of wrought iron bolted through the slotted holes in the yoke to the framing of the car. The lower portion is stationary and is supported by the outside bars shown in the cut. It carries the right portion of the grip and also the sheaves at each end over which the cable is to lay. The journals of these sheaves are supported on springs so that when the cable is relieved they lift it from close contact with the lower grip.



As the grip is intended for use upon the double cable system some provision had to be made for throwing the cable on and off the sheaves. This is done by the uprights at the ends of the mechanism, which are given a lateral motion by levers connected with the bell crank shown in the center at the bottom. This in turn receives its motion from the narrow bar in the center.

The movable jaw is operated by the broad intermediate vertical bars, attached to the cross bar near the top. This cross bar slides in grooves in the yoke and is connected by a toggle joint to the crank shaft at the top. Wear of the jaws is taken up at the connection between the crank and the toggle lever. The pin is put in a small cam that can be turned toward the end of the crank, thus lengthening the connection and thus compensating for all wear.

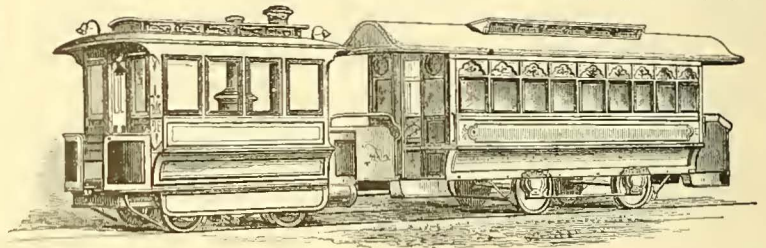
The material and workmanship of these grips is first class in every particular. The suspender bars connecting the stationary jaw to the yoke are made of spring steel $\frac{3}{4}$ inch by three inches made in two pieces and held together by splice bars so arranged that the upper section can be replaced as it wears, this wear being caused by their coming in contact with the slot rail. The movable jaw is attached to the sliding

crosshead by two plate irons $\frac{1}{4}$ inch by $6\frac{1}{2}$ inches. The shaft, crank, link and cam are made of good steel. The crosshead is of cast iron fitted with not more than 1-32 inch play.

*J. D. Miller, 234 Broadway, N. Y.

Steam Street Railway Motor.

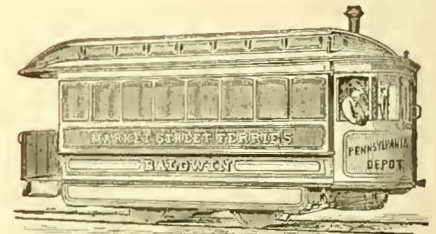
Among the numerous devices that have been put upon the market for the propulsion of street cars without the aid of horses, steam has of course played a prominent part as being the first in the field. In 1876 the Baldwin Locomotive Works built a motor



After the pavement is left behind the road runs over a sandy country road. Walking in this road is a most laborious piece of work, as at each step the foot sinks deep into the soft red sand. Passing wagons and carriages carry the dust and sharp gritty sand upon the rails, and the engine and cars keep it well stirred up. The cars in use upon this line are of the ordinary double bogie truck description and have a seating capacity for about fifty persons. From two to four of these cars form a train for a single motor.

Inquiring into the efficiency of the motors we were surprised at the good reports given of their wearing qualities. The journals and other working parts are so thoroughly protected from the sand and dirt that the wear is very slight, and the economy is demonstrated for this particular line, by the very fact of their continued use by a company that is most distinctively a horse railroad company. The cyl-

inders are outside, 10" in diameter and 14" stroke, with a wheel base of seven feet, and weigh in working order about eleven tons. They are equipped with all of the appliances of a regular locomotive in the way of cylinder lubricators, injectors, etc., carry their own fuel and water, are readily stopped and started. On the road under consideration they are equipped with the Eames vacuum brake. The wheels are steel tired and connected by side rods like an ordinary engine. The noise of escaping steam is deadened by the use of mnt-



flers upon the exhaust, cylinder cocks and safety valves so that in ordinary working nothing is heard from this cause. Smoke is abated by the use of coke or anthracite coal, so that little or none appears. It will be seen that by the use of the short wheel base, so little in excess of the ordinary street car, that ordinary street curves may be passed with great facility, the engine rounding those of twenty-five feet radius with perfect ease.

The speed is easily regulated, and depends more on the condition of the track and the traffic of the street than upon the engine. The latter, however, with an ordinary train, quickly attains a speed of twelve or fifteen miles an hour, and this may be maintained or any other speed down to that of a slow walk. The cost of operation and maintenance is estimated at about eight lbs. of coke or coal per mile, \$1.25 per day for oil, waste, tallow, repairs and incidentals, and the wages of an engineer and fireman at ruling prices.

car of which we give an illustration. This car was run on the Market Street Railroad in Philadelphia for about four months during the Centennial Exhibition with good results. Experiments with the car led to various improvements, and finally to the adoption of a separate motor for drawing the cars, as shown in our engraving. We recently had an opportunity to examine into the construction and working of some of these motors upon the Fort Hamilton line of the Brooklyn City R. R.

These motors are furnished with a boiler of the regular locomotive type, standing on four wheels, and run with equal facility in either direction, the throttle valve and reverse lever being so located that the view from the engineer's position is unobstructed in either direction. The road over which these motors run presents almost every conceivable type of badness. Starting from the poorly paved quarter west of Greenwood cemetery, where the streets, originally paved with cobble stones, are broken and rough so as to be impassable by wagons except upon a walk, and entering this strip of road from a cross street on a curve of not more than thirty feet radius, they are run over this rough, dirty street for several miles to the outskirts of the city.

Personal.

Mr. Edward Brill, of the firm of J. G. Brill & Co., recently returned from an extended trip South and West. He reports business good, and that his firm have all the orders they can well attend to. Foreign orders are looking up.

Mr. F. T. Lerner, General Agent for Andrews & Clooney, left St. Louis on the 24th for a trip to San Francisco, and through the Pacific Slope.

A letter from Augustine W. Wright advises us of his resignation as engineer of the North Chicago R. R. Co., and of his connection with the Wright Construction Co.

Mr. Landgrave, of the San Francisco house of Willis & Landgrave, is on an Eastern trip arranging for the manufacture and sale of their improved Fare-box, Change Gate, Safety Brake, etc.

The late J. B. Slawson had a life policy for twenty thousand dollars in the Equitable Life Insurance Co.

William Richardson has obtained the consent of the majority of the property owners to construct a cable road on the streets now occupied by the Vanderbilt Avenue Line of horse cars.

Timber Track vs. Metallic Way, Again.

EDITORS STREET RAILWAY JOURNAL:—

In adding a few words to what has been said in the columns of the JOURNAL, by Mr. Gibbon and myself in relation to the comparative merits of the stringer track and the patent metallic way for street railroads, I wish it understood that it is not and has not been my purpose to decry any man's invention, but simply to present the claims of that which I believe to be the best method of construction.

There are some commendable points in all the patent tracks that have been introduced, especially that of Mr. Longstreet, but these new devices have not yet been sufficiently perfected and freed from objectionable features to enable any of them to take the place of our stringer track.

In adopting a style of track a railway company takes into consideration the various items of first expenditure, cost of maintenance, convenience of making connections, curves, switches, turn-outs, etc., facility of taking up, relaying and making general repairs with the least obstruction of street, adaptability to paving, durability of pavement and cost of repairing it, and so on; and it is my belief that in almost all, if not quite all of these items the advantage lies with the stringer track as compared with any metallic way that has yet been introduced.

Another important item to be taken into account is the supply of materials that may subsequently be needed for extensions, alterations and repairs. It is generally desirable, for obvious reasons, to be able to purchase needed supplies in an open and competing market, and not to be obliged to send to a particular place and purchase them of a particular party who, having a monopoly of

the business, can fix his own price, and whom some unforeseen contingency may render incapable of promptly filling orders.

This objection applies more or less to all patented articles; and while it is true that a great many articles so protected have enough merit to secure their adoption, notwithstanding that embarrassment, yet it is well not to forget this point when considering the question of the adoption of a device the merits of which are not so clear. I have had some unpleasant experience in the way of obtaining supplies of articles that were monopolized by a single manufacturer.

As to the incompatibility of iron and timber when placed in contact, that idea, so far as their use in railway tracks is concerned, is a fallacy. But the manner in which they are joined is important.

We have estimated the life of timber at twenty years, under very adverse circumstances, one of which is the light iron that has been used. Good yellow pine timber will last about twice as long under a 60 pound rail as it will under a 35 pound rail. The lighter the rail the more difficult it is to keep it spiked firmly to the stringer, and when the rail becomes loose the stringer is much sooner worn out than it otherwise would be. A light rail has often been adopted by railway companies at first because the first cost is less, but experience has taught them that the heavy rail is the most economical in the end. It is about as difficult to give the life of yellow pine in the ground under favorable conditions as it is to give the life of iron in the ground, but I feel quite certain that the metal will not last enough longer than the wood to offset the difference in cost.

Without going into an examination of the figures by which my friend tries to show the superior economy of his longitudinal iron sleepers, I wish to be understood as no more endorsing them than the conclusion he arrives at, especially the sinking fund of expense saved that is to defray all cost of maintenance after a certain time!

The longitudinal iron sleeper is ideally very pretty, and if we could have an ideal road bed, and one which would not be subject to disturbance from rains, drainage, and excavations for laying and repairing water pipes, gas pipes, telegraph wires and sewers, it might work very well, but under the existing conditions the wooden stringer will be found more reliable, more easily protected from disturbances of the road bed, and possibly more durable.

During my twenty-five years experience in the construction and repair of street railways, I have found that the companies for whom I worked did not generally consider the cost so much as the quality of the work; they wanted to get the best roads; and I have had ample opportunity to test different methods and determine which were in my judgment the best.

If I were going to put what little I possess into a street railway, to build, hold and operate it, I would use a sixty pound center bearing steel rail, five by seven Florida pine stringers and ties, placing the ties five feet from center to center, two and a half, four and five pound cast knees, four to each tie, channel joint plates well fitted to the stringer and set in tar, with the necessary spikes, etc., to make a first class track.

With all due respect for the eminent authorities quoted by my friend, I question whether any of them excepting Mr. Longstreet have had much experience either in the construction or maintenance of street railways. Furthermore, their testimony seems to be only in respect to iron sleepers, as used in Europe and Asia, and is not wholly pertinent to the question under discussion.

WM. P. CRAIG.

Single vs. Duplicate Cables.

EDITORS STREET RAILWAY JOURNAL:

In reply to the criticisms of the Duplicate Cable System in your April issue,

1st. The writer states that delays for repairing a stranded rope last from ten to thirty minutes, except on rare occasions, and refers to records on cable roads to sustain the statement.

Will he please state where a copy of said records can be obtained? If there are such to which one can refer they should be given publicly. A strand may be cut from the cable in from ten to thirty minutes, but it is very detrimental to the cable to operate it in such condition as it will surely lose its normal shape. After several hours use if the sixth strand is replaced, the strain will in all probability be unequally distributed, either assisted by the five strands, or borne by the new one inserted. The section of cable so treated would be totally ruined or very seriously damaged, furthermore, this method is not universally practiced.

The grip men on the 10th Avenue Cable Road (some of whom emigrated from the Golden City) are possessed of average intelligence, but it is impossible to ascertain which cable is in use without seeing the interior of conduit or the operating room, except at terminus of the road, where close inspection would reveal the elevating sheave in operation.

Where duplicate cables are in use, the ropes can be changed at any time without grip men, conductors, or passengers being aware of the same.

2nd. I did not misrepresent facts and the Kansas City correspondent makes a serious mistake in so accusing me. My statements in your March issue were correct and the information was obtained from the President of the road. Mr. L. says "the duplicate cable was not damaged on the curve," but I learned from an official of the road during the summer of '85 that it was.

Mr. L. asserts that the running rope will not "retain its normal line." In October 1885 an inspection of the Kansas City Cable Road revealed the fact that the carrying pulleys were placed zig-zag, or rail fence fashion, some on one side of the slot, and some on the other, and under such conditions the cables would undoubtedly chafe. It is doubtful whether the second or even the first rope could be operated economically under the circumstances.

3rd. The second rope retaining grit. Mr. L. refers to his experience. By reference to remarks in other places this proves to have been very limited with the duplicate system, as in his March letter he says, the road was not operated until June 1885, and the duplicate cable was taken out in July 1885.

4th. A splicer must be retained by a single rope road but his services can be in a measure dispensed with by the duplicate system as when one rope needs splicing the second can be put to immediate service and a splicer from a single rope road can be called. We obtained the splicer from Chicago last August, and have required none since last September. So long as the single rope roads retain these men at a steady salary and the duplicate roads can secure their services when actually needed, we have no reason to complain.

In regard to a stranded rope, see remarks in this letter under 1st. The Kansas City correspondent states that the road was started in June and only gives the number of stops from December, since which time new cables have been in operation, consequently there should unquestionably be a good showing, for the difficulty with a cable is in the latter half of its use. He states that the road has stopped four times, once forty minutes, two stops of one hour each, and one of twenty-five minutes. These four

detentions occurred inside of ninety days. While this is not so bad as it might be, for a single rope road, it is inconveniencing the public altogether too much, and when the cable becomes worn, the stops will be more frequent. Stoppage must be made for repairs to both machinery and cables. A slight and hasty inspection may be made during the night, but it cannot be thorough owing to the limited amount of time. The machinery should be stopped for several days in succession to allow the examination of every bolt, nut and bearing, as well as other parts of the motive power. With single rope roads, where such stops are not allowed, we find the machinery has literally torn itself to pieces for the want of this care.

In reference to the last three paragraphs of the Kansas City letter in the April issue, will say, without in any way disparaging Mr. L.'s abilities, that the failure of the second rope in Kansas City was wholly due to bad management, and this assertion can be substantiated by facts. The operating expenses per mile of a duplicate cable road are less than those of a single rope road. I wish to emphatically reiterate my previous statements that the duplicate system is a complete success. It does and will work satisfactorily, much more so than a single rope road, if details are properly carried out.

The officials of the Third Avenue R. R. Co. say that they would not advise the construction of a cable road unless two ropes were used.

We intended to illustrate the grip in the March issue, but the artist failed to prepare the work in time. The cut was in possession of the STREET RAILWAY JOURNAL in season for the April issue, and it was not the fault of the writer that it failed to appear. Mr. L. takes the same stand as many others, viz: that every new road must be the same as roads in the west.

Nearly every cable railroad company of San Francisco is either directly or indirectly interested in the San Francisco patents, and they denounce every improvement made east of the Rocky Mountains.

The Tenth Avenue Cable Road of New York City is superior in every detail to other cable roads.

The road bed, conduit and drainage, carrying pulleys, switches, wheel vaults, curves, driving machinery and steam power far surpasses anything of the kind yet constructed, and it has cost less than any road of its length of which we have any knowledge. Those who have already constructed cable roads would hesitate, if building another, to repeat in every detail their former plans, consequently the duplicate system must be acknowledged as the only complete system of cable roads in existence.

There seems to be one point on which Mr. L. and myself are in unison, and that is, the inadvisability of experimental work at the expense of other people merely to advance personal interests, although we may possibly differ as to the application of the remark.

When criticising the superintendence of the Kansas City road, I was not aware that our western friend had any jurisdiction over the motive power, and no personality was intended, although from the malevolence manifested in the last communication, I should judge great umbrage was taken, and am extremely sorry that any one should imagine me capable of such incivility.

In the March letter, Mr. L. writes that "as evidence of the excellence of this (Kansas City) plant it may be here stated that not one minute's delay has been occasioned on its account since the starting of the road." Mr. L. will please accept my heartfelt thanks for this kindly commendation of the motive power.

D. J. MILLER.

OFFICIAL LIST OF THE STREET RAILWAYS IN THE UNITED STATES & CANADA.

Compiled from data furnished the editors of "The Street Railway Journal," by the officers of the various roads.

ABBREVIATIONS—m, miles; g, gauge; lb r, pounds rail to the yard; c, cars; h, horses; mu, mules. Officers' addresses are the same postoffice as the company unless otherwise specified.

AKRON, O.—Akron St. Ry. & Herd Co. 2 1/2 m, 6c, 31 h. Pres. Ira M. Miller, V. Pres. James Christy, Treas. B. L. Dodge, Sec. F. M. Atterholt, Supt. John T. Metlin.

ALBANY, N. Y.—Watervliet Turnpike R.R. Co. 7 1/2 m, 26-45 lb r, 27 c, 143 h. Pres. Chas. Newman, Sec. & Treas. P. Way, Supt. M. C. Foster.

ALLENTOWN, PA.—Allentown Pass. R.R. Co. 3 1/2 m, 6 c, 22 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Ballet, Supt. Russel A. Thayer.

ALTON, ILL.—Alton & Up. Alton Horse Ry. Co. ALTONA, PA.—City Pass. Ry. Co. of Altoona. 3 1/2 m, 5-3 g, 43 lb r, 17 c, 38 h. Pres. John P. Levay, Sec. & Treas. L. B. Relfsneider, Supt. John J. Buch.

AMSTERDAM, N. Y.—Amsterdam St. Ry. Co. 1 1/2 m, 4-8 g, 25 lb r, 3 c, 10 h. Pres. Henry Herrick, Treas. David Cady, Sec. M. L. Stover. President's office 112 Front St., L. Island City, N. Y.

APPLETON, WIS.—Appleton Electric St. Ry. ASHTABULA, O.—Ashtabula City Ry. Co. 4 m, 4-8 1/2 g, 40 lb r, 9c, 60 h. Owner & Prop. Jno. N. Stewart.

ATCHISON, KAN.—Atchison St. Ry. Co. 5 1/2 m, 4-8 1/2 g, 20-30 lb r, 19 c, 60 h. Pres. & Gen. Man. J. H. Beeson, Treas. H. M. Jackson, Sec. J. P. Adams. Gate City St. R.R. Co. 2 1/2 m, 4-8 1/2 g, 16 lb r, 7 c, 26 h. Pres. L. B. Nelson, V. Pres. L. DeGlive, Sec. & Treas. John Stephens, Solicitor, A. Remharat. Metropolitan St. R.R. Co.

West End & Atlantic R.R. Co. 2m, 4-8 1/2 g, 20 lb r, 6 c, 34 mu. Pres. J. D. Turner, V. Pres. T. L. Langston, Sec. & Treas. B. H. Brumhead, Man. & Pur. Agt. Jno. S. Brumhead.

ATLANTA, GA.—Atlanta St. Ry. Co. 13 m, 4-8 1/2 g, 42 lb c, B. rail, 40 two h cars, 150 horses. North Atlanta Line 1 m. Decatur St. Line 1.50 m. Marietta St. Line 2.50 m. McDonough St. Line 1.50 m. Peachtree St. Line 2.50 m. West End Line 2.50 m. Whitehall St. Line 1.50 m. Pres. Richard Peters, Sec. & Treas. J. W. Cuipepper, Supt. & Purch. Agt. E. C. Peters, Office, 49 Line St.

ATLANTIC, N. J.—Atlantic City Ry. Co. AUBURN, N. Y.—Auburn & Owasco Lake R.R. Co. 1 1/2 m, 4-8 1/2 g, 28-30 lb r, 3c, 12 h. Pres. D. M. Osborne, Sec. & Treas. C. B. Koster, Supt. B. F. Andrews.

East Genesee & Seward Ave. Ry. Co. 1 1/2 m, 4-8 1/2 g, 30 lb r, 6 c, 25 h. Pres. David M. Osborne, Sec. & Treas. C. B. Fosters, Supt. B. F. Andrews.

AUGUSTA, GA.—Augusta & Somerville R.R. Co. AURORA, ILL.—Aurora City Ry. Co. 5 m, 4-8 1/2 g, 28 lb r, 7 c, 30 h, 30 mu. Pres. H. H. Evans, V. Pres. S. W. Thatcher, Sec. A. J. Hopkins, Treas. E. W. Trask, Supt. J. B. Chattle.

BABYLON, N. Y.—Babylon Horse R.R. Co. 1 1/2 m, —g, —lb r, 2 c, 3 h. Pres. W. F. Norton.

BALTIMORE, MD.—Baltimore & Potomac Ry. Co. 6 m, 5-4 1/2 g, 4 c, 17 h. Pres. & Treas. E. D. Freeman, Sec. R. B. Clark, Supt. I. M. Ketricik.

Baltimore City Pass. Ry. Co. 40 m, 5-4 1/2 g, 46 & 47 lb r, 160 c, 1076 h. Pres. Oden Bowie, Treas. John Boglano, Sec. S. L. Bridge.

Baltimore Union Pass. Ry. Co. Supt. T. C. Robbins. Baltimore & Catonsville Ry. Co. 6 m, 5-4 1/2 g, 35 lb r, 15 c, 51 h. Pres. J. C. Robbins, Supt. & Pur. Agt. G. W. Appleby. Office Pratt St. & Frederick Ave.

Baltimore & Halls Spring R.R. Co. Baltimore & Pimlico & Pikesville R.R. Co. Central Ry. Co. 5 1/2 m, 5-4 1/2 g, 40 lb r, 22c, 180 h. Pres. Peter Thompson, Sec. & Treas. Walter Blackstone. Citizen's Ry. Co. 20 m, 5-4 1/2 g, 46 lb r, 34 c, 360 h. Pres. Jos. S. Hagarty, Treas. Wm. S. Hammersley, Supt. C. C. Speed.

Monumental City Ry. Co. North Baltimore Passenger Ry. Co. 11 m, 5-4 1/2 g, 45 lb r, 7 c, 400 h. Pres. Jas. L. McLane, Treas. Dan'l J. Foley, Sec. Thos. J. Wilson.

People's Ry. Co. 5 1/2 m, 5-4 1/2 g, 42-45 lb r, 30 c, 200 h. Pres. R. E. Hamilton, Treas. Gustavus Ober, Sec., Supt. & Pur. Agt. Wm. A. House, Jr. Office, Fort Ave. & Johnson St. Soon move to Druid Hill Ave. York Road R.R. Co.

BATTLE CREEK, MICH.—Battle Creek Ry. Co. 5 m, 3-6 g, 28 lb r, 8 c, 18 h, 3 mu. Pres. Geo. Det-J. White, V. Pres. H. H. Brown, Sec. Chas. Thomas, Supt. John A. White, Gen. Man. J. W. Hahn.

BAY CITY, MICH.—Bay City St. Ry. Co. 7 1/2 m, 4-8 1/2 g, 18 lb r, 13 c, 35 h. Pres. James Clements, Treas. Wm. Clements, Sec. Edgar A. Cooley.

BEAVER FALLS, PA.—Beaver Valley St. Ry. Co. 3 1-10 m, 5-2 1/2 g, 33 lb r, 5 c, 32 h. Pres. M. L. Knight, V. Pres. Col. J. Weyand, Sec. & Treas. J. F. Merriman, Supt. L. Richardson.

BELLAIRE, O.—Bellaire St. R.R. Co. BELLEVILLE, ONT., CAN.—Belleville St. R.R. BELLEVILLE, ILL.—Citizen's St. Ry. Co. 1 1/2 m, 5 c. Pres. D. P. Alexander, Man. & Treas. H. A. Alexander, Sec. J. E. Thomas.

BEREA, O.—Berea St. Ry. Co. 1 1/2 m, 3-6 g, 28 lb r, 2 c, 2 h. Pres. C. W. D. Miller, V. Pres. T. Chinchwad, Sec. & Treas. A. H. Pomeroy, Supt. A. W. Bishop.

BINGHAMTON, N. Y.—Washington Street & State Asylum R.R. Co. 4 1/2 m, 4 g, 16-25 lb r, 13 c, 23 h. Pres. R. H. Meagley, V. Pres. Geo. Whitney, Sec. I. J. Meagley, Treas. F. E. Ross.

Binghamton Central R.R. Co. 3 1/2 m (2 1/2 m laid), 3 g, 28 lb r, 6 c (not in operation). Pres. Geo. L. Crandall, V. Pres. Nelson Stow, Sec. & Supt. Chas. O. Root, Treas. H. J. Kneeland. Offices 63 Court St.

Binghamton & Port Dickinson R.R. Co. 5 m, 4-8 1/2 g, 20-30 lb r, —c, —h. Pres. Harvey Westcott, Sec. & Treas. G. M. Harris, Supt. N. L. Osborn. (Leased to Mr. Osborn). Offices 112 State St. Main, Court & Chenango St. R.R. 5 m, 4-8 g, 40 lb r, 10 c, 25 h. Supt. & Lessee, N. L. Osborn. Offices 83 Washington St.

BIRMINGHAM, ALA.—Birmingham St. Ry. Co. 5 1/2 m, 4-8 g, 16 lb r, 13 c, 40 m. Pres. Geo. L. Morris, Supt., Sec. & Treas. W. H. Morris. Highland Avenue R. R. 6 1/2 m, 4-8 1/2 g, 30 lb r, 9 c, 28 h. Pres. H. M. C. Idwell, Supt. W. J. Milner, Owners The Elyton Land Co.

Birmingham & Pratt Mines St. R. R. Pres. J. A. Van Hooser. **BLOOMFIELD, N. J.**—Newark & Bloomfield R. R.

BLOOMINGTON, ILL.—Bloomington & Normal Horse Ry. Co. 5 1/2 m, 4-8 1/2 g, 36 lb r, 10 c, 60 h. Pres. & Proprietor A. H. Moore, Sec. Edw. Sharp.

BOONE, IA.—Boone & Boonsboro St. Ry. Co. 1 1/2 m, 3 g, 20 lb r, 3 c, 10 h. Pres. L. W. Reynolds, Treas. Ira B. Hodges, Sec. and Supt. A. B. Hodges.

BOONSBORO, IA.—Twin City & Des Moines River Motor St. Ry. Co. 3 m, 3-6 g, 2 motors, 3 c. Pres. & Supt. J. B. Hodges, Treas. A. B. Hodges, Sec. S. K. Huntsinger.

BOSTON, MASS.—Highland St. Ry. Co. 19 m, 4-8 1/2 g, 45 lb r, 187 c, 1000 h. Pres. Moody Merrill, Clerk R. B. Fairbairn, Treas. Samuel Little, Supt. J. E. Rugg.

Lynn & Boston. 3 1/2 m, 4-8 1/2 g, 25-48 lb r, 114 c, 514 h. Pres. Amos F. Breed, Treas. & Sec. E. Francis Oliver, Supt. Edwin C. Foster.

Metropolitan R. R. Co. 80 m, 4-8 g, 50 lb r, 700 c, 3,600 h. Pres. C. A. Richards, Sec. H. R. Harding, Treas. Chas. Boardman, Office, 16 Kilby St.

Middlesex R.R. Co. 26 m, 4-8 1/2 g, 50 lb r, 150 c, 700 h. Pres. Chas. E. Powers, Treas. J. H. Studley, Jr., Supt. John H. Studley. Address, 27 Tremont Row, So. Boston Ry. Co. 13 m, 4-8 1/2 g, 42-50-60 lb r, 193 c, 900 h. Pres. Chas. H. Hersey, V. Pres. Jas. C. Davis, Sec. & Treas. Wm. Reed, Supt. Daniel Coolidge.

BRADFORD, PA.—Bradford & Kendall R.R. Co. 1 1/2 m, 4-8 1/2 g, 38 lb r, 3 c, 4 h. Pres. James Brodey, Sec. N. B. Parsons, Gen. Man. & Supt. Enos Parsons.

BRENHAM, TEX.—Brenham St. Ry. Co. 2 m, 4 g, 20 lb r, 3 c, 22 mu. Pres. T. J. Pampell, Sec. John A. Randle, Treas. D. C. Giddings.

BRIDGEPORT, CONN.—The Bridgeport Horse R.R. Co. 5 m, 4-8 1/2 g, 42 lb r, 16 c, 80 h. Pres. Albert Eamer, Sec. & Treas. F. Hurd, Supt. B. F. Lashar.

BROCKTON, MASS.—Brockton St. Ry. Co. 1 1/2 m, 4-8 1/2 g, 35 lb r, 32 c, 150 h. Pres. W. W. Cross, Treas. Z. C. Keith, Supt. H. B. Rogers.

BROOKLYN, N. Y.—The Atlantic Avenue R.R. Co. of Brooklyn. 3 1/2 m, (leased and owned). 4-8 1/2 g, 50-60 lb r, 297 c, 1139 h. Pres. William Richardson, Sec. W. J. Richardson, Treas. Newburg H. Frost. Office cor. Atlantic & Third Aves.

Broadway R.R. Co. 10 1-10 m, 4-8 1/2 g, 45-50-60 lb r, 166 c, 657 h. Pres. W. H. Husted, V. Pres. Edwin Beers, Sec. & Treas. Robert Sealey, Supt. Joshua Crandall. Office 21 Broadway, E. D.

Brooklyn Cross Town R.R. Co. 8 m, 4-8 1/2 g, 40-60 lb r, 72 c, 400 h. Pres. Henry W. Slocum, V. Pres. Ezra B. Tuttle, Sec. & Treas. John R. Connor, Supt. D. W. Sullivan. Offices 585 Manhattan Ave.

Bushwick R.R. Co. 20 m, 4-8 1/2 g, 45-50-60 lb r, 172 c, 600 h. Pres. Frank Cromwell, V. Pres. Wm. H. Husted, Treas. & Sec. S. D. Hollowell, Supt. Wm. Morrison. Office 32 Broadway, N. Y.

The Brooklyn, Bushwick & Queens Company R.R. 6 m, 4-8 1/2 g, 42-47 lb r, 41 c, 117 h. Pres. Richard H. Green, V. Pres. James W. Elwell, 59 South St. N. Y. Sec. John D. Elwell, Treas. Wm. W. Greene.

Brooklyn City R.R. Co. 44 m, 4-8 1/2 g, 60 lb r, 761 c, 3,045 h. Pres. William H. Lazzard, V. Pres. William M. Thomas, Sec. & Treas. Daniel F. Lewis, Asst. Sec. Francis E. Wrigley. Offices 8 & 10 Fulton St.

Brooklyny City & Newtown R.R. Co. 11 m, 4-8 1/2 g, 45-60 lb r, 125 c, 419 h. Pres. Louis Fitzgerald, N. Y. City, Sec. & Treas. H. A. Schuz, Supt. H. W. Bush. Office cor. DeKalb & Central Aves.

Calvary Cemetery, Greenpoint & Brooklyn Ry. Co. Coney Island and Brooklyn R.R. Co. 11 2-5 m, 45 lb r, 4-8 1/2 g, 103 c, 316 h. Pres. James Jourdan, Sec. Ed. F. Drayton, Supt. William Farrell. Office cor. Smith & Huntington Sts.

Coney Island, Sheepshead Bay & Ocean Avenue R. R. Co. Pres. A. A. McClemer, V. Pres. Daniel Mone, Sec. John McMahon, Sheepshead Bay, Treas. Horace Valkulch. Office 16 Rod Hook Lane.

Cross-town Line, Hamilton Ferry to Bridge. Grand St. & Newtown R.R. Co. 8 1/2 m, 4-8 1/2 g, 45-50 lb r, 72 c, 230 h. Pres. Martin Joost, Sec. & Treas. Wm. E. Horwill, Supt. Walter G. Howey. Office 129 First St.

Grand Street, Prospect Park & Flatbush R.R. Co. 4 1/2 m, 4-8 1/2 g, 50 lb r, 75 c, 244 h. Pres. Louis Fitzgerald, 120 Broadway, N. Y., Sec. & Treas. Duncan B. Cannon, Supt. Jno. L. Heins. Offices Franklin Ave. and Prospect Place.

Greenpoint & Lorimer St. Prospect Park & Coney Island R.R. Co. 4 7-10 m, 45-50 lb r, 4-8 1/2 g, 69 c, 214 h. Pres. A. R. Culver, Treas. A. C. Washington, Sec. George H. Smith, Eng. Supt. R. Schermhorn, Supt. Robert Atlesley. Offices Ninth Ave., 19th & 20th Sts. (Leased to Atlantic Ave. R. R. Co.)

Prospect Park & Flatbush R.R. 1 1/2 m, 4-8 1/2 g, 34 lb r, 70 c, 360 h. Pres. Loftis Wood, Sec. & Treas. Sam'l Parkhill, Supt. Loftis Wood.

South Brooklyn Central R.R. Co. 7 m (4 1/2 m laid), 4-8 1/2 g, 60 lb r, 42 c, 192 h. Pres. Wm. Richardson, Sec. Wm. J. Richardson, Treas. N. H. Frost, Supt. James Ruddy.

The New Williamsburgh & Flatbush R. R. Co. 6 1/2 m, 4-8 1/2 g, 47-50 lb r, 74 c, 255 h. Pres. Geo. W. Van Alten, 54 Ann St., New York, Sec. W. B. Waltz, 34th St. & 9th Ave., New York, Treas. C. B. Cottrell, 8 Spruce St., N. Y. City, Supt. Chas. E. Harris, Nostrand Ave. & Carroll St., Brooklyn.

The Union Railway Co. of the City of Brooklyn (not in operation). Van Brunt St. & Erie Basin R.R. Co. 1 1/2 m, 4-8 1/2 g, 45 lb r, 7 c, 24 h. Pres. John Cunningham, Sec. & Treas. Edmund Terry.

BRUNSWICK, GA.—Brunswick St. R.R. Co.
BUFFALO, ILL.—See Mechanics Building, Ill.
BUFFALO, N. Y.—Buffalo St. R.R. Co. 17 1/2 m, 4-8 1/2 g, 50 lb r, 9 c, 510 h. Pres. Henry M. Watson, V. Pres. P. Pratt, Sec. S. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards.
 Buffalo East Side St. R.R. Co. 24.4-5 m, 4-8 1/2 g, 42 lb r, 47 c, 218 h. Pres. S. S. Spaulding, V. Pres. Joseph Churchyard, Sec. H. M. Watson, Treas. W. H. Watson, Supt. Edward Edwards. Office 346 Main St.
BURLINGTON, IA.—Burlington City R.R. Co. 2 1/2 m, 4-8 1/2 g, 22 lb r, 9 c, 30 h. Pres. John Patterson, Sec. & Man. C. T. Patterson.
 Union St. Ry. Co. 8 1/2 m, 4-8 1/2 g, various r, 19 c, 85 h. Pres. Geo. E. Rust, Sec. & Supt. F. G. Jones.
CAIRO, ILL.—Cairo St. Ry. Co. 2 m, 3-6 g, 25 lb r, 3 c, 9 h. Pres. J. A. Goldstone, V. Pres. H. Bloms, Supt. & Treas. Thos. Lewis, Sec. H. Schulz.
CAMBRIDGE, MASS.—Cambridge R.R. Co. 51-59 m, 4-8 1/2 g, 50 lb r, 25 c, 1,428 h. Pres. Prentiss Cummings, Treas. & Clerk Franklin Perrin, Exec. Com. I. M. Spielman, P. Cummings, O. S. Brown, Clerk of Directors, O. S. Brown, Supt. Wm. A. Bancroft.
 Charles River St. Ry. Co. 12.188 m, 4-8 1/2 g, 50 lb r, 60 c, 356 h. Pres. Chas. E. Raymond, Corp. Clerk C. E. Harden, Treas. Daniel U. Chamberlin, Supt. John N. Akerman.
CAMDEN, N. J.—Camden & Atlantic St. Ry. Camden Horse R.R. Co. 9 m, 5-1 g, 35-47 lb r, 26 c, 85 h. Pres. Thos. A. Wilson, Sec. Wilbur F. Rose, Treas. & Supt. John Hood.
CANTON, O.—Canton St. R.R. Co. (new road).
CAPE MAY, N. J.—Cape May & Schellenger Landing Horse R.R.
CARTHAGE, MO.—
CEDAR RAPIDS, IA.—Cedar Rapids & Marion St. Pass. Ry. Co.
CHAMPAIGN, ILL.—Champaign R.R. Co. Urbana & Champaign St. R.R. Co. (See Urbana.)
CHARLESTON, S. C.—Charleston City Ry. Co. 8 1/2 m, 4-8 1/2 g, 38-42 lb r, 22 c, 84 h. Pres. Jno. S. Riggs, Treas. Evan Edwards, Sec. Frank Whelden, Supt. Jno. Mohlenhoff.
 Enterprise R.R. Co. 12 m, 5 g, 42 lb r, 14 c, 51 h. Pres. A. F. Ravenel, Sec. & Treas. U. E. Hayne, Supt. T. W. Passalunger.
 Middle Street Sullivan Island Ry. Co. 2 m, 6 c, 12 m. Pres. B. Callaghan, Sec. & Treas. Frank F. Whilden, Supt. B. Buckley.
CHATTANOOGA, TENN.—Chattanooga St. R. R. Co. 5 1/2 m, 4-8 1/2 g, 25-45 lb r, 12 c, 54 h. Pres. and Treas. J. H. Warner, Sec. C. R. Gaskill.
CHESTER, PA.—Chester St. Ry. Co. 5 1/2 m, 5-2 1/2 g, 47 lb r, 14 c, 66 h. Pres. Richard Peters, Jr., Treas. Sam'l H. Seeds, Sec. & Manager, E. M. Cornell.
CHICAGO, ILL.—Chicago City Ry. Co. 87 m, 4-8 1/2 g, 45 lb r, 567 c, 1,416 h, cable doing work of 2,509 h. Pres. C. B. Holmes, Sec. H. H. Windsor, Treas. T. C. Pennington, Supt. C. B. Holmes.
 Chicago West Division Ry. Co. 40 m, 4-8 1/2 g, 40 lb r, 620 c, 3,425 h. Pres. J. K. Jones, Sec. George L. Webb, Supt. Jas. K. Lake.
 Chicago & Hyde Park St. —m,—g,—1h r,—c,—h. Pres. Douglas S. Clarke.
 North Chicago City Ry. Co. 35 m, 4-8 1/2 g, 45 lb r, 316 c, 1,700 h. Pres. & Gen. Supt. V. C. Turner, V. Pres. Chas. T. Yerkes, Sec. & Treas. Hiram Crawford, Supt. of Track & Construction, Augustine W. Wright, Asst. Supt. Fred L. Thredy, Supt. Horse Dept. Robt. Atkins, Purch. Agt. John W. Roach, Master Mechanic J. Miller.
CHILlicothe, O.—Chillicothe St. R.R. Co. 1 1/2 m, 3 g, 16 lb r, 7 c, 10 h. Pres. E. P. Safford, Sec. A. E. Wenis, Treas. William Polanel, Supt. Eweil McMartin.
CINCINNATI, O.—Cincinnati Inclined Plane Ry. Co. 3 m, 5-2 1/2 g, 43 lb r, 24 c, 150 h. Pres. Geo. A. Smith, Sec. & Supt. James M. Doherty, Treas. Jos. S. Hill.
 Cincinnati St. Ry. Co. Pres. Jno. Kilgour, V. Pres. Albert G. Clark, Treas. R. A. Dunlap, Sec. & Auditor, Jas. A. Collins, Supt. Jno. Harris, Pur. Agt. B. F. Haughton.
 Columbia & Cincinnati St. R.R. Co. 3 1/2 m, 3 g, 35 lb r, 3 c, 6 dummy r. Pres. C. H. Kilgour, V. Pres. John Kilgour, Treas. B. F. Branman, Sec. A. H. Meler, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O.
 Mt. Adams & Eden Park Inclined R.R. Co. 3 1/2 m, 5-2 1/2 g, 42 lb r, 40 c, 320 h. Pres. & Treas. J. P. Kerper, Sec. J. R. Murdoch, Supt. Chas. Whitten.
 So. Covington & Cincinnati. (See Covington, Ky.)
CLEVELAND, O.—The Brooklyn St. R.R. Co. 8 1/2 m, 4-8 1/2 g, 52 lb r, 66 c, 375 h. Pres. Tom. L. Johnson, V. Pres. A. J. Moxham, Sec. J. B. Hoefgen, Treas. John McConnell, Supt. A. L. Johnson.
 Broadway & Newburg St. R.R. Co. 6 m, 4-8 1/2 g, 10 c, 160 h. Pres. & Supt. Joseph Stanley, V. Pres. Sam'l Andrews, Sec. & Treas. E. Fowler.
 Superior St. R.R. Co. 15 m, 4-8 1/2 g, 45 lb r, 46 c, 225 h. Pres. Frank De H. Robison, V. Pres. John Koch, Sec. & Supt. M. S. Robison, Jr.
 The East Cleveland R.R. Co. 20 m, 4-8 1/2 g, 35-40 lb steel r, 103 c, 520 h, 1 electric motor. Pres. A. H. Everett, V. Pres. & M. C. B. Chas. Wason, Sec. & Treas. H. A. Everett, Supt. E. Duty. Offices, 1154 & 1158 Euclid Ave.
 Woodland Avenue & West Side St. R.R. Co. 20 m, 4-8 1/2 g, 42-45 lb r, 124 c, 555 h. Pres. M. A. Hanna, V. Pres. C. F. Emery, Sec. J. B. Hanna, Gen. Supt. George G. Mulhern.
 South Side St. R.R. Co. 3 1/2 m, 3 g, 40 lb r, 8 c, 60 h. Pres. Tom L. Johnson, Supt. A. L. Johnson, Sec. & Treas. J. B. Hoefgen.
 St. Clair Street Ry. Co.—m—g,—1br—c,—Pres. Chas Hathaway.
 West Side R.R. Co.
CLINTON, IA.—Lyons & Clinton Horse R.R. Co. (See Lyons.)
COLUMBUS, GA.—Columbus St. R.R. Co. 3 m, 4-8 1/2 g, 16 lb r, 6 c, 25 h. Pres. Cliff B. Grimes, Sec. L. G. Schnessler, Treas. N. N. Curtis, Supt. J. A. Gaibourh.
COLUMBUS, O.—Columbus Consolidated St. R.R. Co. 19 m, 5-2 g, 30-46 lb r, 83 c, 350 h. Pres. A. Rodgers, V. Pres. H. T. Chittenden, Sec. & Treas. E. K. Stewart, Supt. J. H. Atcherson.
 Glenwood & Greenlawn St. R.R. Co. 4 1/2 m, 3-6 g,

24 lb r, 9 c, 25 c. Pres. A. D. Rodgers, V. Pres. B. S. Brown, Sec. R. R. Rickly, Treas. S. S. Rickly, Supt. Jonas Wilcox.
CONCORD, N. H.—Concord Horse R.R. Co. 8 m, 3 g, 30-33 lb r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey, Treas. H. J. Crippin, Clerk E. C. Hoag.
CORTLAND, N. Y.—Cortland & Homer Horse Ry. Co. 4 m (2 1/2 laid), 4-8 1/2 g, 25-30 lb r. Pres. Chas. H. Garrison, Troy, N. Y., Sec. J. M. Milne, Treas. S. E. Welch, Supt. S. E. Welch. (Leased to D. N. Miller.) Office 23 No. Mercer St.
COUNCIL BLUFFS, IA.—Council Bluffs St. R.R.
COVINGTON, KY.—So. Covington & Cincinnati St. Ry. Co. 17 1/2 m, 5-2 1/2 g, 43 lb r, 46 c, 296 h. Pres. F. E. Abbott, Sec. J. C. Benton, Treas. G. M. Abbott.
DALLAS, TEX.—Dallas St. Ry. Co. 4 1/2 m, 4-8 1/2 g, 20-38 lb r, 12 c, 4 h, 72 mu. Pres. Wm. J. Keller, Sec. Harry Keller, Supt. C. E. Keller.
 Commerce & Ervay St. R.R. 1 1/2 m, 4-8 1/2 g, 20 lb r, 5 c, 24 mu. Pres. A. C. Ardrey, Sec., Treas. & Man. H. W. Keller.
DANVILLE, ILL.—Citizens' St. Ry. Co. 4 m, 4 g, 20 lb r, 8 c, 35 mu. Pres. Wm. P. Cannon, V. Pres. & Gen. Man. Wm. Stewart, Sec. & Treas. Adam R. Samuel.
DAVENPORT, IA.—Davenport Central St. R.R. 2 1/2 m, 4-8 1/2 g, 20 lb r, 12 c, 36 h. Pres. James Grant, V. Pres. W. L. Allen, Treas. J. B. Fidler, Supt. B. Rumsey, Sec. O. S. McNeil.
 Davenport City Ry. Co. H. Schultger, Lessee.
DAYTON, KY.—Newport & Dayton St. Ry. Co. 2 m, 5-2 1/2 g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.
DAYTON, O.—Dayton St. R.R. Co. 7 1/2 m, 4-8 1/2 g, 44 lb r, 24 c, 80 h and mu. Pres. J. W. Stoddard, V. Pres. H. S. Williams, Sec. C. A. Craighead, Supt. A. W. Anderson.
 Oakwood St. Ry. Co. 6 m, 4-8 1/2 g, 38 lb r, 14 c, 56 h. Pres. Charles B. Clegg, Sec. H. V. Perrine.
 The Wayne & Fifth St. R.R. Co. 3 1/2 m, 4-8 1/2 g, 34-38 lb r, 5 c, 30 h. Pr. S. Geo. M. Shaw, Sec. & Treas. Eugene Winchet, Supt. N. Routhahn.
DECATUR, ILL.—Decatur Horse Ry. Co.
 Citizens' Street R.R. Co. 2 m, 4-8 1/2 g, 20 lb r, 7 c, 47 h & mu. Pres. D. S. Shellabarger, Sec., Treas. & Supt. A. E. Kinney.
DENISON, TEX.—Denison St. Ry. Co. 3 m 3-6 g, 16 lb r, 5 c, 22 mu. Pres. C. A. Walterhouse, Supt. S. A. Robinson.
DENVER, COL.—Denver City Ry. Co. 16 m, 3-6 g, 16 lb r, 50 c, 250 h. Pres. Geo. H. Holt, 10 Wall St., New York City, Sec. G. D. Lullier, 10 Wall St., New York City, Treas. & Man. G. E. Randolph.
DES MOINES, IA.—Des Moines St. Ry. Co. 10 m, 3 g, 25-30-38-52 lb r, 18 c, 100 h. Pres. M. P. Turner, Sec. M. A. Turner.
 Des Moines & Westopol St. Ry. Co.
DETROIT, MICH.—Fort Wayne & Elmwood Ry. Co. 6 m, 4-8 1/2 g, 45 lb r, 30 c, 180 h. Pres. H. B. Brown, V. Pres. Edward Kanter, Treas. George B. Pease, Sec. N. W. Goodwin, Supt. Geo. S. Hazard.
 Detroit City Ry. 30 m, 4-8 1/2 g, 40-43 1/2 lb r, 130 c, 700 h. Includes Jefferson Ave. line, Woodward Ave. line, Michigan Ave. line, Gratiot Ave. line, Brush St. line, Cass Ave. line, Congress & Baker line. Pres. Sidney D. Miller, Treas. George Hendrie, Sec. James Heugh, Gen. Supt. Robert Eell, Mast. Mech. John Willis.
 Grand River St. Ry. Co. 2 1/2 m, 4-8 1/2 g, 43 lb r, 13 c, 110 h. Pres. & Treas. Jos. Daley, Sec. J. W. Daley, Supt. C. M. Daley.
DOVER, N. H.—Dover Horse R.R. Co. 5 m, 3 g, 30 lb r, 4 c, 14 h. Directors, Z. S. Wallingford, Chas. H. Sawyer, Jas. E. Lothrop, C. W. Wiggins, Harrison Haley, Frank Williams, Cyrus Littlefield, Treas. Harrison Haley.
DUBUQUE, IA.—Dubuque St. R.R. 5 m, 4-8 1/2 g, 21 c, 45 h. Pres. J. A. Rhonberg, Sec. & Treas. B. E. Linehan, Supt. J. J. Linehan.
DULUTH, MINN.—Duluth St. Ry. Co. 5 m, 3-6 g, 33-51 lb r, 17 c, 90 h and mu. Pres. Sam'l Hill, V. Pres. Thos. Lowry, Sec. & Treas. A. S. Chase, Man. & Supt. T. W. Hloopes.
EAST OAKLAND, CAL.—Oakland, Brooklyn & Fruitvale R.R. Co.
EAST SAGINAW, MICH.—Street R. R. Co. of East Saginaw. —m,—g,—1br—c,—Pres. & Treas. W. J. Barton, Sec. W. H. Hark, Treas. J. B. Peter.
EAST ST. LOUIS, ILL.—East St. Louis St. R.R. Co.
EASTON, PA.—The Easton & So. Easton Passenger Ry. Co. 1 1/2 m, 5-2 1/2 g, 45 lb r, 4 c, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Elisha Burwell, So. Easton.
 The West End Passenger Ry. Co. 1 1/2 m, 5-2 1/2 g, 45 lb r, 6 c, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Samuel Berry.
EAU CLAIRE, WIS.—Eau Claire City Ry. Co.
ELGIN, ILL.—Elgin City Ry. Co. 2 c. Pres. Sec. Treas. Supt. & Owner, B. C. Payne.
ELIZABETH, N. J.—Elizabeth & Newark Horse R.R. Co. 14 m, 5-2 1/2 g, 41 1/2 g, 30 lb r, 24 c, 74 h. Pres. & Treas. Jacob Davis, Sec. & Supt. John F. Pritchard.
ELKHART, IND.—Citizens' Ry. Co. 3 1/2 m, 4-8 1/2 g, 30 lb r, 6 c, 30 h. Pres. F. W. Miller, V. Pres. G. C. Johnson, Sec. E. C. Bickel, Treas. A. R. Burns.
ELMIRA, N. Y.—The Elmira & Horseheads Ry. Co. 9-2.3 m, 4-8 1/2 g, 25-30-40 lb r, 18 c, 34 h. Pres. & Treas. George M. Diven, V. Pres. G. W. Hoffman, Sec. Wm. S. Kershner, Supt. Henry C. Silsbee. Officers, 212 E. Water St.
EL PASO, TEX.—El Paso St. Ry. Co. 2 1/2 m, 4-8 1/2 g, 20 lb r, 8 c, 25 h. Pres. G. B. Zimpelman, V. Pres. A. Krockauer, Treas. F. Magoffin, Sec. & Supt. I. A. Tays.
EMPORIA, KAN.—Emporia City Ry. Co. 3 1/2 m, 5 g, 20 lb r, 6 c, 23 m. Pres. Van R. Holmes, Treas. A. F. Crowe, Sec. & Man. J. D. Holden.
ENTERPRISE, MISS.—Enterprise St. Ry. Co. 1 1/2 m, 3-6 g, 24 lb r, 2 c, 6 h. Pres. John Kampe, V. Pres. E. B. Gaston, Sec. & Treas. J. W. Gaston.
ERIE, PA.—Erie City Passenger Ry. Co. 5 1/2 m, 4-8 1/2 g, 30-40 45 lb r, 20 c, 85 h. Pres. Wm. W. Reed, Treas. Wm. Spencer, Sec. W. A. Demorest, Supt. Jacob Berst.
EUREKA SPRINGS, ARK.—Eureka Springs City Ry. Co.

EVANSVILLE, IND.—Evansville St. Ry. Co. 12 m, 4 1/2 g, 28 lb r, 31 c, 190 mu. Pres. John Gilbert, Sec. P. W. Bateigh, Treas. John Gilbert, Supt. W. Bahr.
FALL RIVER, MASS.—Globe St. Ry. Co. 12 m, 4-8 1/2 g, 40-46-47 lb r, 40 c, 160 h. Pres. Frank S. Stevens, Treas. F. W. Brightman, Sec. M. G. B. Swift, Supt. John H. Bowker, Jr.
FORT SCOTT, KAN.—Lourbon County St. Ry. Co. 1 m, 4 g, 22 lb r, 2 c, 4 m. Pres. Isaac Tadden, V. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph.
FORT SMITH, ARK.—Fort Smith St. Ry. Co. 2 m, 3-6 g, 16-28 lb r, 5 c, 16 h. Pres. Sam'l M. Loud, Sec. & Treas. Geo. T. Sparks.
FORT WAYNE, IND.—Citizens' St. R.R. Co.
FORT WORTH, TEX.—Fort Worth St. Ry. Co. 7 1/2 m, 4 g, 25-35 lb r, 16 c, 73 m. Pres. K. M. Vanzandt, Treas. W. A. Huffman, Acting Sec. & Gen. Man. S. Mims, Supt. J. T. Payne.
FRANKFORT, N. Y.—Frankfort & Ilion Street Ry. Co. 2 1/2 m, 5 g, 4 c. Pres. A. C. McGowan, Frankfort, Sec. D. Lewis, Ilion, Treas. P. Remington, Ilion, Supt. Fredk. Gates, Frankfort.
FREDONIA, N. Y.—Dunkirk & Fredonia R.R. Co. 3 1/2 m, 4-10 g, 25 lb r, 5 c, 8 h. Pres. Wm. M. McClinty, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.
GAINESVILLE, FLA.—Gainesville St. Ry. Co.
GAINESVILLE, TEX.—Gainesville St. Ry. Co. 2 1/2 m, 3-6 g, 17 lb r, 4 c, 12 h. Pres. C. N. Stevens, V. Pres. J. T. Harris, Sec. & Treas. F. R. Sherwood.
GALESBURG, ILL.—College City St. Ry. Co. 3 m, 4 1/2 g, 18-20-48 lb r, 4 c, 16 h. Supt. Geo. S. Clayton.
GALVESTON, TEX.—Galveston City R.R. Co. 18 m, 4-8 1/2 g, 30 lb r, 68 c, 169 mu. Pres. Wm. H. Sinclair, Sec. & Treas. F. D. Merritt, Supt. M. J. Keenan. Gulf City St. Ry. & Real Estate Co. 15 m, 4 g, 20-30 lb r, 30 c, 90 mu. Pres. J. H. Burnett, Sec. & Treas. F. D. Allen.
GLOUCESTER, MASS.—Gloucester City R.R. Gloucester St. Ry. Co. Pres. & Supt. Morris C. Fitch, V. Pres. Walter A. Jones, Treas. Francis W. Homans, Sec. David S. Presson.
GRAND RAPIDS, MICH.—Street Ry. Co. of Grand Rapids, Mich. 14 1/2 m, 4-8 1/2 g, 25-40 lb r, 29 c, 190 h. Pres. C. A. Otis, Cleveland, O., V. Pres. L. H. Withey, Grand Rapids, Treas. C. G. Swensberg, Grand Rapids, Sec. I. M. Weston, Grand Rapids, Supt. A. Bevier, Grand Rapids.
GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8 1/2 g, 23 lb r, 3 c, 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolph Rogers.
GREENVILLE, S.C.—Greenville City Ry. Co. 11 m 5 g,—1b r, 5 c, 20 h. Proprietors, Gilreath & Harris.
HAMILTON, O.—The Hamilton St. Ry. Co. 4 m, 3 g, 28 lb r, 11 c, 12 h. Pres. James F. Griffin, Sec. O. V. Parrish, Treas. H. L. Morey, Supt. J. C. Bigelow.
HANNIPAL, MO.—Hannibal St. Ry. Co. 2 m, 4-8 1/2 g, 36 lb r, 6 c, 22 h. Pres. & Supt. M. Doyle, Sec. & Treas. James O'Hern.
HARRISBURG, PA.—Harrisburg City Passenger Ry. Co. 5 m, 5-2 1/2 g, 42-47 lb r, 26 c, 65 h, Pres. H. A. Kelker, V. Pres. Daniel Epply, Sec. John T. Ensminger, Treas. R. F. Kelker, Supt. S. B. Reed.
HARTFORD, CONN.—Hartford & Wethersfield Horse R.R. Co. 12 m, 4-8 1/2 g, 45 lb r, 49 c, 250 h. Pres. & Treas. E. S. Goodrich, Sec. Geo. Sexton.
HAVERTHILL, MASS.—Haverhill & Groveland St. Ry. Co. 4 1/2 m, 4-4 1/2 g, 30 lb r, 12 c, 30 h. Pres. & Gen. Man. Jas. D. White, Treas. John A. Colby-Haverhill St. Ry. Co.
HELENA, ARK.—Helena St. Ry. Co.
HERKIMER, N. Y.—Herkimer & Mohawk St. Ry. Co. 1 1/2 m, 4-8 1/2 g, 25 lb r, 3 c. Pres. J. M. Ansmen, Sec. Joab Small, Treas. H. D. Alexander.
HOBOKEN, N. J.—North Hudson County Ry. Co. 16 1/2 m, 4-7 g, 50-60 lb r, 116 c, 630 h. Pres. John H. Bonn, Sec. F. J. Mallory, Treas. Fredk. Mickel, Union, Supt. Nicholas Goetz, Union.
HOLYOKE, MASS.—Holyoke St. Ry. Co. 2 m, 4-8 1/2 g, 35 lb r, 8 c, 26 h. Pres. Wm. A. Chase, Treas. C. Fayette Smith, Supt. H. M. Smith.
HOT SPRINGS, ARK.—Hot Springs R.R. Co. 3 m, 4 g, 25 lb r, 11 c, 30 h. Pres. S. W. Fordyce, Sec. C. E. Maurice, Supt. J. L. Butterfield.
HOUSTON, TEX.—Houston City St. Ry. Co. 14 m, 4-8 1/2 g, 20-30-40 lb r, 40 c, 118 m. Pres. Wm. H. Sinclair, Galveston, V. Pres. & Gen. Man. H. F. MacGregor, Houston, Supt. Henry Freund, Houston, Sec. & Treas. E. H. Bailey.
HUTCHINSON, KAN.—Hutchinson St. Ry. Co.
ILION, N. Y.—Frankfort & Ilion Ry. Co. 2 1/2 m, 5 g, 25 lb r, 4 c, 6 h. Pres. A. C. McGowan, Sec. D. Lewis, Treas. P. Remington, Supt. Frederick Gates.
INDIANAPOLIS, IND.—Citizens' St. Ry. Co. 35 m, 4-8 1/2 g, 30-35-38-40-52 lb r, 70 c, 535 h. Pres. A. W. Johnson, Indianapolis, Treas. Tom L. Johnson, Cleveland, O. Sec. A. A. Anderson, Indianapolis, Man. W. T. Steele, Indianapolis, Auditor P. Woolbridge, Louisville, Ky.
JACKSON, MICH.—Jackson City Ry. Co. —m,—g,—1b r, 11 c, 40 h. Pres. Hiram H. Smith, Treas. Samuel Hopewell, Gen. Supt. Henry H. Smith.
JACKSON, MISS.—Jackson Street Ry. Co.
JACKSON, TENN.—Jackson Street Ry. Co.
JACKSONVILLE, FLA.—Pine St. R.R. Co. 2 1/2 m, 5 g, 25 lb r, 4 c, 18 m. Owner & Gen. Man. G. H. Backstae, Sec. & Treas. F. W. Backstae.
 Jacksonville St. Ry. Co. 2 1/2 m, 5 g, 25 lb r, 10 c, 36 m. Pres. H. S. Haines, Savannah, Ga., V. Pres. & Sec. Geo. R. Foster, Treas. W. P. Hardee, Savannah, Ga., Supt. G. W. Haines.
JACKSONVILLE, ILL.—Jacksonville [Ry. Co. Supt. B. F. Sibert.
JAMAICA, N. Y.—Jamaica & Brooklyn R.R. Co. 10 m, 4-8 1/2 g, 56-60 lb r, 29 c, 56 h. Pres. Aaron A. Degrauw, Sec. Martin J. Durea, Treas. Morris Fiedok, Supt. Wm. M. Scott.
JAMESTOWN, N. Y.—Jamestown St. Ry. Co. 3.6 m, 4-8 1/2 g, 30-42 lb r, 13 c, 15 h. Pres. R. N. Marvin, V. Pres. F. B. Gifford, Treas. A. N. Broadhead, Supt. G. E. Matty, Sec. & Atty. C. R. Lockwood.
JERSEY CITY, N. J.—Jersey & Bergen R.R. Co. 21 m, 4-10 g, 60 lb r, 73 c, 494 h. Pres. Chas. B. Thurston, V. Pres. Wm. Keeney, Treas. C. B. Place, Sec. Warren E. Dennis, Newark, Supt. Thos. M. Sayre.

JOHNSTOWN, N. Y.—The Johnstown, Gloversville & Kingsboro Horse R.R. Co. 5½ m, 4-8½ g, 26 lb r, 6 c, 16 h. Pres. James Younglove, V. Pres. R. Fancher, Sec. & Treas. J. McLaren.

JOHNSTOWN, PA.—Johnstown Pass. R.R. Co. 7½ m, 5-3 g, 41-43 lb r, 13 c, 73 h. Pres. James McMullen, Sec. B. L. Yeagley, Treas. W. H. Rosensleht, Jr.

JOLIET, ILL.—Joliet City R.R. Co. 3¼ m, 4-8½ g, 40 lb r, 16 c, 30 h. & mu. Owner, J. A. Henry, A. Bischnan, Cash. J. E. Henry.

JOLIET, MO.

KALAMAZOO, MICH.—Kalamazoo St. Ry. Co. 10 m, 4-8½ g, 35 lb r, 28 c, 80 h. Pres. Fred Bush, Sec. J. W. Boynton, Treas. P. H. Brown.

KANSAS CITY, MO.—Kansas City Cable Ry. Co. 2½ m, 4-8½ g, 45 lb r, 10 pass. cars, 10 dummy cars. Pres. Wm. J. Smith, Sec. W. H. Lucas, Eng. Robert Gillham, Supt. Edward J. Lawless.

Corrigan Consolidated St. Ry. Co. 20 m, 4-1 g, 30 b r, 80 c, 350 h. Pres. Bernard Corrigan, Gen. Man. Thos. Corrigan, Sec. Jas. T. Kelley.

Jackson County Horse R.R. Co.

Kansas City & Rosedale St. Ry. Co.

Kansas City & Westport St. R.R. Co.

KEOKUK, IA.—Keokuk St. Ry. Co. 4 m, 4-8½ g, 27 lb steel r, 12 c, 40 h. Pres. Jas. H. Anderson, V. Pres. J. G. Anderson, Sec. R. James Anderson, Treas. & Supt. W. E. Anderson.

KINGSTON, ONT., CAN.—Kingston St. R.R. Co. 3¼ m, 3-6 g, 9 lb r, 10 c, 36 h. Pres. Robert Carson, Sec. & Treas. F. Sargent, Man. William Wilson

KNOXVILLE, TENN.—Knoxville St. R.R. Co. 2 m, 4-8½ g, 22 lb r, 5 c, 2 hacks, 30 h. Pres. W. P. Chamberlain, Sec. Treas. & Supt. T. L. Beaman.

Mabry Bell Ave. & Hardee St. Ry. Co. Pres. R. N. Hood, Sec. B. L. Smith.

Market St. & Asylum St. Ry. Co. Pres. Peter Keru, Sec. W. H. Simmonds.

LA CROSSE, WIS.—Laconia & Lake Village Horse R.R. 2¼ m, 3 g, 34 lb r, 5 c, 17 h. Pres. A. G. Folsom, Treas. Edmund Little, Man. Bela S. Kenniston.

LA CROSSE, WIS.—City Ry. Co. of La Crosse. 2¼ m, 4-9 g, 24 lb r, 5 c, 16 h, 3 mu. Pres. Geo. F. Gund, V. Pres. Jas. Vincent, Sec. Mills Tonetlotte, Treas. Fred Tillman, Supt. Geo. F. Smith.

La Crosse St. Ry. Co. Pres. B. E. Edwards, Treas. G. VanSteenyck, Sec. Mills Tourtelotte, Supt. Peter Valler.

LAFAYETTE, IND.—Lafayette St. Ry. 2¼ m, 4-8½ g, 35 lb r, 6 c, 38 h. Pres. F. B. Caldwell, Lafayette, Sec. & Treas. E. G. Jones, Decatur, Ill., Supt. F. Greer, Lafayette.

LAKE CITY, FLA.—Lake City St. Ry. Co.

LAMPASAS SPRINGS, TEX.—Lampasas City Ry. Co. 3¼ m, 4-8½ g, 22 lb r, 6 c, 15 h. Owned by Mrs L. R. Snodgrass. Gen. Man. Geo. M. Snodgrass.

LANCASTER, PA.—Lancaster & Millersville St. Ry. Co. 4-8½ g, 30 lb r, 4 c, 11 h. Pres. J. C. Hager, V. Pres. H. S. Shirk, Sec. & Treas. Chas. Dennes. Lancaster City St. Ry. Co.

LARCHMONT, N. Y.—Larchmont Manor Co. 1 m, 4-8 g, 25 lb r, 2 c, 8 h. Pres. C. H. Murray, Treas. S. H. French, 35 East Fourteenth St., N. Y. City.

LAWRENCE, KAN.—Lawrence Transportation Co. 5 m, 4-1 g, 38 lb r, 7 c, 34 h. Pres. H. Tisdale, Sec. W. H. Bangs.

LAWRENCE, MASS.—Merrimack Valley Horse R.R. Co. 4-5 m, 4-8½ g, 48 lb r, 20 c, 70 h. Pres. Wm. A. Russell, V. Pres. Jas. Walton, Mchuen, Clerk & Treas. James H. Eaton, Supt. A. N. Kimball, Lawrence.

LEWISTON, ME.—Lewiston & Auburn Horse R.R. Co. 7¼ m, 4-8½ g, 32 lb r, 10 c, 45 h. Pres. Frank W. Dana, Lewiston, Clerk, H. C. Little, Lewiston, Treas. H. C. Packard, Auburn, Supt. E. P. Stinchfield, Auburn

LEXINGTON, KY.—Lexington City Ry. Co. 5 m, 4-10 g, 20 lb r, 20 c, 85 h. Pres. John Cross, V. Pres. C. R. Diver, Sec. & Supt. Bert. Cross.

LEXINGTON, MO.—Lexington St. Ry. Co.

LIWA, N.—Liwa St. Ry. Co.

LINCOLN, NEB.—Capital City Ry. Co. 4m, 4-8-1 g, 25 lb r, 8 c, 64 h. Pres. & Treas. E. B. Durfee, Sec. & Supt. H. B. Durfee.

Lincoln St. Ry. Co. 6½ m, 10 c, 60 h. Pres. Frank L. Sheldon, Supt. L. P. Young.

LITTLE ROCK, ARK.—Little Rock St. Ry. Co. 4½ m, 5-10 g, 36 lb r, 9c, 50 mu. Pres. T. J. Darragh, Sec. A. J. Thoupson, Treas. C. F. Penzel, Supt. J. A. Garrett. Citizens' St. Ry. Co. 4½ m, 4-10 g, 20 lb r, 22 c, 80 h. Owned and operated by Little Rock Street Railway Co. Same officers.

LOGANSPOIT, IND.—Logansport Ry. Co. 2 m, 4 g, 28 lb r, 6 c, 29 mu. Pres. Frank G. Jaques, Sec. M. Jaques, Supt. Wm. P. Jaques, Office, Urbana, Ill.

LONDON, CAN.—London St. R.R. Co. 3 m, 4-8½ g, 30 lb r, 12 c, 30 h. Pres. V. Cronga, Sec. Jas. H. Flock, Supt. Henry Thos. Smith.

LONG ISLAND CITY, N. Y.—Stelway & Hunter's Point R.R. Co. 30¼ m, 4-8½ g, 47 lb r, 65 c, 154 h. Pres. Wm. Stelway, Stelway Hall, N. Y. City. V. Pres. Henry A. Cassebeer, Jr., Stelway P. O., Long Island City, N. Y. Sec. & Treas. Chas. F. Trethar, Stelway Hall, N. Y. City. Supt. Chas. J. Campbell. Offices Stelway Hall, N. Y.

Dutch Kills & Hunter's Point R.R. Co. — m, — g, — lb r, — c, — h. Pres. R. J. Gleason.

Long Island City & Newtown Ry. Co. 3 m, 4-8½ g, 45-55 lb r, 25 c, 60 h. Pres. Isaac Buehnanan, N. Y. City, Sec. Geo. S. Crawford, Brooklyn, N. Y., Treas. Patrick J. Gleason, Supt. Michael Conway. Officers 112 Front St.

LONGVIEW, TEX.—Longview & Junction St. Ry. 3¼ m, 3-6 g, 2 c, 4 h. Pres. F. T. Rembert, Sec. R. B. Levy, Treas. F. L. Whaley, Supt. C. W. Booth.

LOS ANGELES, CAL.—Boyle Heights R.R. Co. Central R.R. Co. and the Sixth & San Fernando St. R.R. Co. 7 m, 3-6 g, 16 lb r, 13 c, — h. Pres. E. T. Spence, Sec. R. X. Palmer, Supt. J. A. Fairchild, 19 City R.R. of Los Angeles. 4½ m, 4-8½ g, 36 lb r, 9 c, 75 h. Pres. J. M. Hellman, V. Pres. W. J. Brodrich, Sec. John O. Wheeler, Supt. W. H. Hawks.

Los Angeles & Alliso Ave. St. R.R. Co.

Main St. & Agricultural Park R.R.

LOUISVILLE, KY.—Kentucky St. Ry. Co. 5 m, 5-2 g, — lb r, 22 c, — h. Pres. T. J. Minery, Sec. & Treas. Thos. Dontgan.

Central Pass. R.R. Co. — m, — g, — lb r, — c, — h. Pres. —, V. Pres. Thos. J. Minery, Sec. —, Supt. —, Office Hill Ry. Co.

Louisville City Ry. Co. 65 m, 5 g, 55 lb r, 214 c, 1300 mu. Pres. Maj. Alexander Henry Davis, Syracuse, N.

Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell.

LOWELL, MASS.—Lowell Horse R.R. Co. 6 m, 8½ g, 28-47 lb r, 28 c, 100 h. Pres. Wm. E. Livingston, Gen. Man. J. A. Chase.

LYNCBURG, VA.—Lynchburg St. R.R. Co. 2 m, 5-1 g, 26 lb r, 6 c, 31 h. Pres. Stephen Adams, Treas. John L. Adams, Supt. William M. Payne.

LYONS, IA.—Clinton & Lyons Horse Ry. Co. 4¼ m, 3-8 g, 19-30 lb r, 15 c, 40 h. Pres. D. Joyce, V. Pres. & Man. R. N. Raon.

MACON, GA.—Macon & Suburban St. R.R. Co. 5 m, 4-8½ g, 20 lb T r, 12 c, 60 h & mu. Pres. J. S. Bransford Sec. & Supt. Jno. T. Voss, Office, 151 Second St.

MADISON, IND.—Madison St. Ry. Co. 2¼ m, 4 g, 15 lb r, 7 c, 8 h, 10 mu. Pres. Jacob Wendle, V. Pres. Peter F. Robenulus, Supt. & Treas. Chas. F. Tuttle.

MADISON, WIS.—Madison St. Ry. Co. 2¼ m, 3 g, 23 lb r, 6 c, 24 h. Pres. E. W. Keyes, V. Pres. Sec. & Treas. D. K. Tenney, Supt. G. W. Carse.

MANCHESTER, N. H.—Manchester Horse R.R. 5¼ m, 3-½ g, 27-34 lb r, 14 c, 55 h. Pres. S. N. Bell, Treas. F. Smith, Clerk J. A. Weston, Supt. A. Q. Gage.

MARSHALLTOWN, IA.—3 m, 4 g, 25 lb r, 7 c, 20 h. Pres. B. T. Frederick, Treas. T. E. Foley, Sec. C. C. Gillman, Supt. A. E. Shorthill.

MARYSVILLE, CAL.—City Pass. R.R. Co. (No returns.)

MAYSVILLE, KY.—Maysville St. Ry. & T. Co. 3 m, 20 lb r, 4-8½ g, 6 c, 32 mu. Pres. L. W. Robertson, Sec. & Treas. W. S. Frank.

MECHANICSBURG, ILL.—Mechanicsburg & Buffalo Ry. Co. 3¼ m, 3-10 g, 16 lb r, 3 c, 4 mu. Pres. J. N. Fullenwelder, Treas. A. T. Thompson, Sec. H. Thompson.

MEMPHIS, TENN.—Memphis City R.R. Co. 15 m, 5 g, 28-40 lb r, 66 c, 320 h. Pres. R. Dudley Frayser, V. Pres. Thos. Barrett, Supt. W. F. Shippey.

MERIDIAN, MISS.—Meridian St. Ry. Co. 2 m, 4-8 g, 16 lb T r, 5 c, 11 mu. Pres. Geo. S. Conant, V. Pres. and Sup. J. L. Handley, Treas. J. A. Kelly, Sec. R. M. Houston.

MIDDLETOWN, O.—Middletown Horse R.R. Co. Pres. John W. Douglas, Sec. & Treas. Jas. K. Guy.

MILLERSVILLE, PA.—Lancaster & Millersville St. R.R. Co.

MILWAUKEE, WIS.—Cream City R.R. Co. 8-1-6 m, 4-8½ g, 27-35 lb r, 74 c, 307 m, 2 h. Pres. Winfield Smith, V. Pres. Christian Preusser, Treas. Ferdinand Knech Sec. Wm. Dankoehler, Eng. Man. D. Atwood, Supt. H. J. C. Berg.

Milwaukee City Ry. Co. 30 m, 4-8½ g, 27 lb iron & 45 lb steel r, 50 c, 150 h. Pres. Peter McCooch, Sec. & Treas. Geo. O. Wheatcroft.

West Side St. Ry. Co. Owner & Manager, Washington Becker, Supt. — McNaughton.

MINNEAPOLIS, MINN.—Minneapolis St. Ry. Co. 32 m, 3-6 g, 27-35-45 lb r, 186 c, 1050 h and mu. Pres. Thos. Lowry, V. Pres. C. Morrison, Treas. W. W. Herrick, Sec. C. G. Goodrich, Supt. D. W. Sharp.

MOBILE, ALA.—City R.R. Co. 17¼ m, 5-2 g, 35 lb T r, 68 c, 240 h. Pres. Jno. Maguire, Sec. I. Strauss, Treas. Myer I. Goldsmith, Supt. A. Moog.

Dauphin & Lafayette Ry. Co. 2 m, 5-2½ g, 40 lb r, 9 c, 10 h, 12 m. Pres. D. P. Bestor, V. Pres. & Sec. G. Y. Overall, Treas. & Acting Sec. Jas. W. Gray, Pur. Agt. & Man. J. B. Robertson.

Mobile & Spring Hill R.R. Co. 8 m, 5-2½ g, 35 lb r, 15 c, 35 h, 1 dummy. Pres. Daniel McNeill, Sec. & Treas. C. F. Sheldon, Man. F. Ingate.

MOHAWK, N. Y.—Mohawk & Hon R.R. Co. 1½ m, 4-8½ g, 30 lb r, 4 c (contract for motive power). Pres. O. W. Bronson, V. Pres. J. Brown, Sec. H. O. Alexander, Treas. R. M. Devendorf, Supt. O. W. Bronson.

MOLINE, ILL.—Moline Central St. Ry. Co. 1½ m, 4-8½ g, 30 lb r, 3 c, 10 h. Pres. S. H. Velle, V. Pres. P. H. Wessel, Sec. W. R. Moore, Treas. C. F. Hemeuway.

Moline & Rock Island St. Ry. Co. 5 m, 4-8½ g, 30 lb r, 13 c, 41 h. Pres. J. Hinton, Sec. I. M. Butord, Treas. C. Lyons, Supt. Wm. Gamble.

MONTGOMERY, ALA.—Capital City St. Ry. Co. Electric motor.

MONTREAL, CAN.—Montreal City Pass. Co. 21 m, 4-8½ g, — lb r, 70 c, 465 h. Pres. Jesse Joseph, V. Pres. Alex. Murray, Sec. & Man. Ed. Lusher, Supt. T. H. Robillard.

MOULTRIEVILLE, S. C.—Middle St. & Sulhuva's Landing Ry.

MUSCATINE, IA.—Muscatine Cit. Ry. Co. 3¼ m, 3-6 g, 21 lb r, 7 c, 19 h. Pres. Peter Musser, V. Pres. D. C. Richmond, Sec. T. R. Fitzgerald, Treas. S. M. Hughes, Supt. O. J. Chapman.

MUSKOGEE, MICH.—Muskegon Ry. Co. 4¼ m, 3-6 g, 20 lb r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V. Pres. Chas. Merriam, Boston, Mass, Sec. Thomas Munroe, Treas. G. R. Sherman, Supt. C. H. Newell.

NASHUA, N. H.—Nashua St. Ry. Co.

NASHVILLE, TENN.—Nashville & Edgefield R.R. Co. Fatherland Street Railway Co. North Edgefield and Nashville St. R.R. Co., one management. 5 m, 5 g, 16-20-32 lb r, 21 c, 100 mu Pres. Jno. P. White, Sec. & Treas. H. B. Stubblefield, Supt. Daingerfield Deaderick.

McGavock & Mt. Vernon Horse R.R. Co. 7¼ m, 5 g, 16-20-28-32 lb r, 25 c, 140 h & mu. Pres. John P. White, V. Pres. B. F. Wilson, Sec. & Treas. H. B. Stubblefield, Supt. Daingerfield Deaderick.

South Nashville St. R.R. Co. 4½ m, 5 g, 16-20 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec. Treas. & Supt. C. L. Fuller.

NATICK, MASS.—Natick & Cochituate St. Ry. 3 m, 4-8½ g, 35 lb r, 6 c, 17 h. Supt. Geo. F. Keep.

NEW ALBANY, IND.—New Albany St. Ry. Co. 6 m, 4-11½ g, 25 lb r, 15 c, 55 h & mu. Pres. Geo. T. Vance, Treas. Letitia W. Vredenburg, Supt. & Pur. Agt. Wm. L. Timberlake.

NEWARK, N.J.—The Newark & Bloomfield St. R.R. Co. 7 m, 5-2½ g, 47 lb r, 22 c, 140 h. Pres. S. S. Battin, Sec. W. L. Mulford, Supt. H. F. Totten. Consolidated with Essex Pass. Ry. Co.

Broad St. R.R.

Newark & Irvington St. Ry. Co. 7 m, 5-2½ g, 47 lb r, 28 c, 130 h. Pres. S. S. Battin, Sec. W. L. Mulford, Supt. H. F. Totten.

NEW BEDFORD, MASS.—New Bedford & Fairhaven St. Ry. Co. 7¼ m, 4-8½ g, 35-45-50 lb r, 42 c, 140 h. Pres. Warren Ladd, Treas. & Clerk. A. G. Pierce, Acushnet St. R.R. Co. 6 m, 4-8½ g, 35 lb r, 23 c, 103

h. Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith.

NEWBURGH, N. Y.—Newburgh St. R.R. Co. Pres. D. S. Haines, Sandy Hill.

NEWBURYPORT, MASS.—Newburyport & Amesbury Horse R.R. Co. 6-1-3 m, 12 c, 54 h. Pres. W. A. Johnson, Treas. N. H. Shepard, Sec. Geo. H. Stevens, Lessee E. P. Shaw.

NEW HAVEN, CONN.—Fair Haven & Westville R.R. Co. 7 m, 4½ g, 42 lb r, 23 c, 150 h. Pres. H. B. Ives, Sec. & Treas. L. Candee, Supt. Walter A. Graham.

New Haven & Centreville Horse R.R. Co. 2¼ m, 4-8½ g, 42 lb r, 4 c, 30 h. Trustee Cornelius Pteron, State Street Horse R.R. Co. 2¼ m, 4-8 g, 43 lb r, 4 c, 40 h. Pres. C. A. Warren, Sec. & Treas. C. G. Blatcheu.

The Whitney Ave. Horse Ry. 2¼ m, 4-8½ g, 25 lb r, 3 c, 25 h. Pres. Geo. H. Watrous, Sec. George D. Watrous, Treas. Ed. Whitney, jr.

NEW ORLEANS, LA.—Canal & Claiborne St. R.R. Co. 13 m, 5-2½ g, 37 lb r, 40 c, 200 h. Pres. E. J. Hart, Sec. & Supt. Jos. H. DeGrange.

Crescent City R.R. Co. 26 m, 5-2½ g, 35 45 lb r, 90 c, 400 h. Pres. Frank Roder, Sec. & Treas. Jno. J. Jnden, Supt. A. V. Smith.

New Orleans St. R.R. Co.

Orleans R.R. Co. — m, — g, — lb r, 32 c, 140 h. & mu. Pres. & Supt. H. Larique, Sec. & Treas. P. Cougrot. Office, cor. White & Lahaer Sts.

St. Charles St. R.R. Co. 15 m, 5-2½ g, 43 lb r, 60 c, 366 m. Pres. & Supt. Aiden McLellan, Sec. Vincent Riviere.

New Orleans & Carrollton R.R. Co. 8 m, 4-8½ g, 30-45 lb r, 65 c, 200 h, 19 engines. Pres. Wm. Beuthuyson, Sec. Walter F. Crouch, Supt. C. V. Halle.

New Orleans City & Lake R.R. Co. 64 m, 5-2½ g, 46-40 lb r, 180 c, 89 coaches, dummy engines, 1050 mu. Pres. J. A. Walker, Sec. W. E. Iverich, Supt. F. Wintz.

NEWPORT, KY.—Newport St. R.R. Co.

NEW YORK, N. Y.—Ninth Ave. R.R. Co. 8 m, 4-8½ g, 60 lb r, 52 c, 550 h. Pres. W. H. Hays, Sec. & Treas. James Affleck, Supt. Herman D. Wilson. Offices, Ninth Ave., cor. 54th St.

Broadway & Seventh Ave. R.R. Co. 7 m, 4-8½ g, 47-60 lb r, 150 c, 1,350 h. Pres. James W. Foshat, Sec. & Treas. Thos. B. Kerr, Supt. Henry A. Newell. Office 761, Seventh Ave.

Central Crosstown R.R. Co. 5-22 m, 4-8½ g, 52 lb r, 45 c, 24 h. Pres. Geo. S. Hart, V. Pres. A. Cammack, Sec. & Treas. Milton I. Masson, Office 355 Ave. 14.

Central Park North & East River R.R. Co. 4 m, 4-8½ g, 60 lb r, 162 c, 1,223 h. Pres. J. H. Scribner, V. Pres. C. D. Wyman, Sec. H. Scribner, Treas. J. L. Valentine, Supt. M. W. A. Harris. Office, Tenth Ave., 53d & 54th St.

Christopher & Tenth St. R.R. Co. 5 m, 4-8 g, 45 lb r, 47 c, 290 h. Pres. Jacob Sharp, Treas. W. T. Hatch, Sec. & Supt. G. W. Lynch. Office, 168 Christopher St.

Dry Dock, East Broadway & Battery R.R. Co. 11¼ m, 4-8½ g, 60 lb r, 187 c, 1,132 h. Pres. William White, Auditor E. T. Laudon, Sec. & Treas. Richard Kelly, Supt. Fred E. White. Offices, 605 Grand St.

Eighth Ave. R.R. Co. 10 m, 4-8½ g, 60 lb r, 112 c, 1,155 h. Pres. W. H. Hays, Sec. & Treas. James Affleck, Supt. H. B. Wilson. Office, Eight Ave. & 50th St.

Forty Second Street & Grand Street Ferry R.R. Co. 5¼ m, 8-4 g, 64 lb r, 50 c, 500 h. Pres. Chas. Curtis, Sec. & Treas. W. S. Allen, Supt. John M. Calhoun. Office, 653 W. 23d St.

Harlem Bridge, Morrisania & Fordham Ry. 16-27 m, 4-8½ g, 45 60 b r, 65 c, 313 h. Pres. and Supt. H. Spratley, V. Pres. Richard M. Hoe, Sec. & Treas. Wm. Caudwell. Office, North Third Ave. near 170 St.

Houston, West Street & Pavonia Ferry R.R. Co. 5 m, 4-8½ g, 60 lb r, 50 c, 150 h. Pres. Richard Kelly, Sec. & Treas. Daniel B. Hasbrouck. Office, 415 E. 10 St.

Jerome Park R.R. 1 m, 4-8½ g, 50-56 lb r. Pres. Leonard M. Jerome, Sec. Fred A. Lovcraft, Treas. Theodore Moss. Office, cor. 5th Ave. & 23d St.

New York City St. Ry. Co. 10 m, (not in operation). Pres. Loomis L. White, Sec. W. L. McCorkle, Treas. Wm. L. Skidmore.

New York & Harlem R.R. Co. 17¼ m, 4-8½ g, 60 75 lb r, 161 c, 1,560 h. Pres. —, V. Pres. —, Sec. Cornelius Vandenberg, Treas. Ed. V. W. Kossiter, Supt. Alfred Skitt, Pur. Agt. P. S. Femis.

Sixth Ave. R.R. Co. 4 m, 4-8½ g, 60 lb r, 127 c, 1,296 h. Office, 756 Sixth Ave.

South Ferry Ry. Co. ¾ m, 4-8½ g, 60 lb r, 13 c, 41 h. Pres. Henry Hart, Sec. Wm. N. Cohen, Treas. Albert J. Elias, Supt. Chas. H. Meeks. Office 20 Whitehall St.

The Second Ave. R.R. Co. 13 m, 4-8½ g, 60 lb r, 316 cars, 1750 h. Pres. W. Thorn, V. Pres. J. Wadsworth, Sec. & Treas. J. B. Underhill. Office Second Ave. cor. 96th St.

The Third Ave. R.R. Co. 16 m main line, 6½ m 10th Ave. cable line, 4 m 125th street cable line, 4-8½ g, 60 & 74 lb r, 318 c, 2150 h. Pres. Lewis Lyon, 739 Madison Ave., V. Pres. Henry Hart, 110 Tribune Building, Sec. Alfred Lazarus, 436 W. 61st St., Treas. John Beaver, 211 E. 112th St., Supt. John H. Robertson, 307 E. 65th St.

Twenty-third St. R.R. Co. 7 m, 4-8½ g, 54 lb r, 102 c, 692 h. Pres. Jacob Sharp, Sec. Thos. H. McLean, Treas. Lewis May, Act-Supt. George Ferry. Office 621 West 23d St.

NIAGARA FALLS, N. Y.—Niagara Falls & Suspension Br dge Ry. Co. 2¼ m, 4-8½ g, 38 42 lb r, 8 c, 26 h. Pres. Benj. Flagler, Sec. W. J. Mackay, Treas. A. Scherlock.

NORFOLK, VA.—Norfolk & City R.R. Co. 3¼ m, 5-2 g, 44 lb r, 18 c, 65 h. Pres. John B. Whitehead Treas. H. C. Whitehead, Supt. E. W. Savage.

NORTHAMPTON, MASS.—Northampton St. Ry. Co. 3¼ m, 4-8½ g, 32 lb r, 7 c, 26 h. Pres. Oscar Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C. Clark.

NORWALK, CONN.—Norwalk Horse R.R. Co. 2 m, 4-10 g, — lb r, 7 c, 20 h. Pres. James W. Hyatt, V. Pres. & Sec. Edwin G. Hoyt, Sup. James W. Hyatt.

NORWICH, CONN.—Norwich Horse R.R. Co.

OAKLAND, CAL.—Alameda, Oakland & Piedmont R.R. Berkley Villa R.R. Broadway & Piedmont St. R.R. Co. Fourteenth St. R.R. Co. 6 m, 5 g, 30-30 lb r, 6 c, — h. Pres. & Supt. Walter Blair, Sec. P. J. Van Lobeu. Oakland R.R. Co.

OGDEN CITY, UTAH.—Ogden City Ry. Co.

3 m, 4-8 1/2 g, 20 lb r, 4 c, 21 h. Pres. L. W. Shurtle
Ogden City, V. P. & Supt. O. P. Arnold, Salt La
City, Sec. & Treas. H. S. Young, Ogden City.

OLEAN, N.Y.—Olean St. Ry. Co. 1-10 m, 3-6 g,
25 lb r, 3 c, 8 h. Pres. M. B. Fobes, Sec. & Treas. M. W.
Barse.

OMAHA, NEB.—Omaha Horse Ry. Co. 15 m,
4-8 1/2 g, 35 lb r, 40 c, 300 h. Pres. Frank Murphy, V.
Pres. Guy C. Barton, Treas. W. W. Marsh, Supt. W.
A. Smith.

ONEIDA VILLAGE, N. Y.—Oneida Ry. Co. 2
m, 4-8 1/2 g, 47 lb r, 3 c, 6 h. Pres. Jerome Hickox,
Sec. & Treas. W. E. Northrup, Supt. Chas. Bonta.

OSHKOSH, WIS.—Oshkosh St. R. R. Co. 3 1/2 m,
4-8 1/2 g, 27 lb r, 9 c, 24 h. Pres. Leander Choate, V.
Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Supt. F. L.
Thompson.

OSWEGO, N.Y.—Oswego St. Ry. Co. 2 m, 4-8 1/2
g, 45 lb r, 3 c, 23 h. Pres. Jas. F. Johnson, V. Pres.
R. J. Ollphant, Sec. Haynes L. Hart, Treas. Robt. G.
Post, Gen. Man. James O'Connor.

OTTAWA, ONT.—Ottawa City Passenger Ry. Co.
3 m, 4-8 1/2 g, 30 lb r, 9 c, 40 h. Pres. Thomas C. Keef-
er, V. Pres. R. Blackburn, Sec. James D. Fraser.

OTUMWA, IA.—Otumwa St. R. R. Co. 2 m, 3-6
g, 27 lb r, 4 c, 2 h, 14 mu. Pres. J. M. Hedrick, Sec. &
Treas. H. L. Hedrick, Supt. C. M. Hedrick.
Mineral Springs St. Ry. 1 m, 3 1/2 g, 16 lb r, 1 c, 4 h.
Owner, L. E. Gray.

PADUCAH, KY.—Park R.R. Co.

PARIS, TEX.—Paris St. Ry. Co.

PATERSON, N. J.—Paterson & Passaic R.R. Co.
7 m, 4-10 g, 23 lb r, 16 c, 24 h. Pres. John N. Ter-
lune, Treas. John I. Brown, Sec. E. S. Brown, Man.
& Pur. Agt. Ambrose T. King, Supt. M. O. Rourke.
Paterson City R.R. Co. 6 1/2 m, 4-8 1/2 g, 35 lb r, 12 c,
51 h. Pres. Garrett Planteu, Treas. Helmas Romalne,
Sec. Albert A. Wilcox.

PENSACOLA, FLA.—Pensacola St. Ry. Co.

PEORIA, ILL.—Central City Horse Ry. Co. 4 1/2
m, 4-8 1/2 g, 40 lb r, 60 c, 335 h. Pres. H. R. Woodward,
Sec. M. Pfeiffer, Treas. Elliot Callender, Supt. John
strong.
Fort Clark Horse Ry. Co.—m,—g,—lb r,—c,—h.—
Pres. J. H. Hall.
Peoria Horse Ry. Co. 7 1/2 m, 4-8 1/2 g, 40 lb r, 63 c,
140 h. Pres. H. Woodward, Sec. M. Pfeiffer, Treas.
B. N. Wheeler, Supt. John Strong.

PETERSBURG, VA.—Petersburgh St. Ry. Co.
3 1/2 m, 4-8 1/2 g, 42 lb r, 9 c, 44 h. George Beadle, Pro-
prietor, Treas. H. S. Young, Supt. W. A. Smith.

PHILADELPHIA, PA.—Citizens Pass. Ry. Co.
10 1/2 m, 5-2 g, 45-47 lb r, 92 c, 420 h. Pres. John Mc-
Carthy, Sec. & Treas. J. A. Adams, Supt. Sam'l Cline.
Frankford & Southwark Phila. City Pass. R.R. Co.
18 m, 5-2 g, 47 lb r, 102 c, 8 dummy c, 618 h. Pres.
Alfred Smith, Sec. & Treas. Geo. S. Gandy, Supt. W. H.
Janney.
Hestonville, Mantua & Fairmount Pass. R.R. Co. 20
m, 5-2 g, 43 lb r, 50 c, 480 h. Pres. Charles F. Laffer-
ty, Sec. & Treas. W. C. Foster.
Lehigh Ave. Pass. Ry. Co. Pres. John Lamont, Sec.
Chas. A. Porter, Treas. John L. Hill, [Track not laid].
Lombard & South Sts. Pass. Ry. Co. —m,—5-2 g, 43
lb r, 51 c, 278 h. Pres. John B. Parsons, Sec. & Treas.
Francis Hazelhurst Supt. Jno. M. Gaughen.
People's Pass. Ry. Co. 4 1/2 m, 5-2 g, 47 lb r, 125 c, 1,080
h. Pres. C. J. H. Harrah, V. Pres. C. J. Harrah, Jr., Sec.
& Treas. Jno. C. Dessolet, Supt. Wm. Hagenswiler.
Philadelphia City Pass. Ry. Co. 7 m, 5-2 g, 47 lb r,
—c,—h. Pres. Wm. W. Colket, Sec. & Treas. T. W.
Pennybacker. (Leased to Phila. Traction Co.)
Philadelphia Traction Co. 109 m, 5-2 g, 45-78 lb r,
594 c, 2,942 h. Pres. W. H. Kemble, V. Pres. P. A. B.
Widener & W. L. Elkins, Treas. D. W. Dickson.
Philadelphia & Gray's Ferry Pass. R.R. Co. 10-1 3
m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C.
Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lov-
ett.
Ridge Avenue Pass. Ry. Co. 14 m, 5-2 g, 47 lb r, 55
c, 352 h. Pres. E. B. Edwards, V. Pres. John Lamb-
ert, Sec. & Treas. Wm. S. Blight, Supt. Wm. Ingles.
Second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669 h.
Pres. Alexander M. Fox, Treas. William R. Miller,
Sec. Charles D. Matlack, Supt. David W. Stevens.
Seventeenth & Nineteenth Sts. Pass. Ry. Co. 7 1/2 m,
Pres. Matthew S. Quay, Sec. & Treas. John B. Ped-
die. [Leased to Philada. Traction Co.]
Thirteenth & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-2
g, 43 lb r, 73 c, 452 h. Pres. Thos. W. Ackley, Sec. &
Treas. Thos. S. Harris, Supt. Wm. B. Cooper.
Union Pass. Ry. Co. 70 m, 348 c, 1,724 h. Pres.
Wm. H. Kemble, Sec. & Treas. John B. Peddie, Supt.
Jacob C. Petty. (Leased to Phila. Traction Co.)
West Philadelphia Pass. Ry. Co. 18 1/2 m, 122 c, 646
h. Pres. Peter A. B. Widener, Sec. & Treas. D. W.
Dickson. (Leased by the Phila. Traction Co.)

PHILLIPSBURGH, N. J.—Phillipsburgh Horse
Car Ry. Co. 2 1/2 m, 4-8 g, 35 lb r, 4 c, 13 h. Pres.
Daniel Buukle, Sec. & Treas. James W. Long.

PITTSBURGH, PA.—Central Pass R.R. Co. 3 m,
16 c, 95 h. Pres. J. F. Cluley, Sec. F. L. Stephenson,
Treas. E. R. Jones, Supt. R. G. He nor.
Beaver Falls & New Brighton Ry. Co.
Citizens Pass. Ry. Co. 16 1/2 m, 5-2 1/2 g, 47 lb r, 40 c,
337 h. Pres. Jno. G. Holmes, Sec. C. M. Gormily,
Supt. Murry Verner.
Federal St. & Pleasant Valley Pass. Ry. Co. 26 m,
5-2 1/2 g, 46-50 lb r, 20 c, 154 h. Pres. Wm. H. Creery,
Sec. R. F. Ramsey, Treas. James Boyle, Supt. Wm. J.
Crozier, Allegheny City.
People's Park Pass. Ry. Co. 2 m, 5-2 1/2 g, 45 lb r,
10 c, 75 h. Pres. Wm. McCreery, Sec. R. F. Ramsey,
Treas. James Boyle, Supt. Wm. J. Crozier, Allegheny
City.
Pittsburgh, Allegheny & Manchester Pass Ry. Co.
5 m, 5-2 1/2 g, 46 lb r, 40 c, 275 h. Pres. Chas. Atwell,
Sec. & Treas. Chas. Selbert, Supt. James C. Cotton.
Manager J. P. Soper.
Pittsburgh, Oakland & East Liberty Pass. Ry. Co.
11 m, 5-4 1/2 g, 47 lb r, 32 c, 110 h, 61 mu. Pres. J. T.
Gordon, Sec. John G. Traggardh, Treas. A. W.
Medlon, Supt. H. M. Cherry.
Pittsburgh Union Pass. R.R. Co. 5 m, 5-2 1/2 g, 45 lb
r, 29 c, 170 h. Pres. Chas. Atwell, Supt. James C.
Cotton, Sec. & Treas. Chas. Selbert, Cash. Saml. C.
Hunter.
Pittsburgh & Birmingham Pass. R.R. Co. 3 1/2 m, 5-
2 1/2 g, 45 lb r, 20 c, 170 h. Pres. W. W. Patrick, Sec.
D. F. Agnew, Treas. John G. Holmes.

35Pittsburgh & West End Pass. Ry. Co. 3 1/2 m, 5-2 g,
T. H. R. 13 c, 75 h. Pres. John C. Reilly, Sec. & Treas.
Thomas S. Bigelow, Supt. William J. Burns.
Pittsburgh & Wilkinsburg St. Ry. Co.
Second Avenue Pass. Ry. Co. 3 1/2 m, 5-2 1/2 g, 47 lb r,
8 c, 60 h. Pres. Geo. Fawcett, Sec. Jas. F. Fawcett,
Treas. W. J. Fawcett.
South Side Pass. R.R. Co. 2 1/2 m, 5-2 1/2 g, 45 lb r, 12
c, 80 h. Pres. D. Z. Brickell, Sec. & Treas. W. T. Wal-
lace, Supt. W. M. Rosborough.
Transverse Pass. Ry. Co. 6 1/2 m, 5-2 g, 52 lb r, 39 c,
243 h. Pres. C. L. Magee, V. Pres. C. F. Klopfer, Sec.
& Treas. Wm. R. Ford, Supt. Miller Elliot.
PITTSBURGH, PA.—Pittsburgh St. R.R. Co. 1 1/2 m,
3 c, 5 h. Pres. Thomas Griffith, Treas. M. W. Morris,
Sec. William Allen.

PORT HURON, MICH.—Port Huron St. Ry. Co.
6 1/2 m, 4-8 1/2 g, 7 c, 22 h. Pres. Jno. P. Sanborn, V. Pres.
Frank A. Beard, Sec. Treas. & Man. J. R. Westall.
PORTLAND, ME.—Ocean St. R.R. Co.
Portland R.R. Co. 7 1/2 m, 4-8 1/2 g, 30-33-45 lb r, 34 c,
154 h. Pres. H. J. Libby, Treas. & Gen. Man. E. A.
Newman, Supt. Geo. W. Soule.
PORTLAND, ORE.—Portland St. Ry. Co. 2 m
3-6 g, 25-42 lb r, 11 c, 40 h. Pres. D. P. Thompson, Sec. &
Supt. C. K. Harbaugh.
Multnomah St. Ry. Co. 2 1/2 m, 3-6 g, 30 lb r, 19 c, 65
h. Pres. A. N. King, Sec. E. A. King.
Transcontinental St. Ry. Co. 7 m, 3-6 g, 38 lb r, 15
c, 65 h. Pres. Walter F. Burrell, D. W. Wakefield,
Sec., Tyler Woodward, Supt.

PORTSMOUTH, O.—Portsmouth St. R. R. Co.
2 m, 3-6 g, 18 lb r, 4 c, 10 h. Pres. James Skelton,
Treas. Sec. & Supt. Enas Reed.

POTTSVILLE, PA.—People's Ry. Co. 9 1/2 m, 16c, 56h.

POUGHKEEPSIE, N. Y.—City R.R. of Pough-
keepsie. 3 m, 4-8 1/2 g, 35-42 lb r, 11 c, 38 h. Pres. Geo. B.
Adrance V. Pres. & Treas. Hudson Taylor Sec. A.
B. Smith, Supt. C. M. Davis. Office 491 Main St.

PROVIDENCE, R. I.—Union R.R. Co. 53 m, 4-
8 1/2 g, 47-54 lb r, 230 c, 1,300 h. Pres. Jesse Metcalf,
V. Pres. & Gen. Man. D. F. Longstreet, Sec. and
Treas. C. A. Babcock.

QUEBEC, CAN.—Quebec St. Ry. Co. 3 m, 4-8 1/2
g, 55 lb r, 9 c, 40 h. Pres. Chas. St. Michel, Quebec,
V. Pres. G. R. Renfrew, Quebec, Sec., Treas. & Supt.
Samuel Moore.
Quebec R.R. Co.
St. John St. Ry. Co. 1 1/2 m, 4-8 1/2 g, 35 lb r, 4 c, 23 h.
Pres. Jos. W. Henry, V. Pres. A. Robertson, Sec. &
Man. W. W. Martin.

QUINCY, ILL.—Quincy Horse Ry. & Carrying
Co. 6 m, 5 g, 71 lb r, 21 c, 118 mu. Pres. Lorenzo Bull,
Sec. C. H. Bull, Supt. E. K. Stone.

RACINE, WIS.—Belle City St. Ry. Co. 4 m 4 g 30
lb r, 9 c, 40 h. Pres. John T. Fish, Sec. & Treas. E. S.
Dodge, Gen. Man. Geo. B. Hathaway.

RAPID CITY, DAK.—Rapid City St. Ry. Co.
Pres. Fred T. Evans.

READING, PA.—Reading City Pass. Ry. Co.
2-1 5 m, 5-2 1/2 g, 45 lb r, 19 c, 44 h. Pres. B. F. Owen,
V. Pres. Jas. L. Douglass, Sec. & Treas. H. A. Muhlen-
berg, Supt. J. A. Riggs.
Perkomen Ave. Pass. Co. 2-1 5 m, 5-2 1/2 g, 45 lb r,
14 c, 36 h. Pres. Chas. Brenesler, Sec. & Treas. Isaac
Hester, Supt. John B. Houpp.

RED OAK, IA.—Red Oak St. R.R. Co. 1 1/2 m, 4-2 1/2
g, 1at r, 2c, 2h, 2 mu. Pres. J. W. Judkins, V. Pres. G.
West, Sec. F. M. Byricket, Treas. & Supt. F. O. Judkins.

RICHMOND, IND.—Richmond City Ry. Co. 3 m,
3 g, 9 lb r, 10 c, 30 h. Pres. J. Y. Miller, V. Pres. Jos.
Rathbun, Treas. H. I. Miller, Supt. F. M. Francisco.

RICHMOND, ILL.—Richmond St. R.R. Co.

RICHMOND, VA.—Richmond City Ry. Co. 7 1/2 m,
4-8 1/2 g, 30-45 lb r, 40 c, 180 h. Pres. J. L. Schoolcraft,
Sec. & Treas. Walter Kidd, Man. C. M. Bolton, Supt.
Charles Seiden.
Richmond & Manchester Ry. & Imp. Co., 2 1/2 m, 26 h,
4 c. Supt. B. R. Seiden.

ROCHESTER, N. Y.—Rochester City & Brighton
R.R. Co. 37 m, 4-8 1/2 g, 25-30-45 lb r, 142 c, 596 h.
Pres. Patrick Barry, Sec. C. C. Woodworth, Treas.
C. B. Woodworth, Supt. Thomas J. Brower.
Citizens' St. Ry. Co. Pres. Wm. H. Jones, Sec. &
Treas. J. E. Pierpont, Supt. S. A. Green.

ROCKFORD, ILL.—Rockford St. Ry. Co. 6-2 5
m, 4-8 1/2 g, 30 lb r, 13 c, 52 h. Pres. Anthony
Haines, V. Pres. L. Rhodes, Sec. Miss A. C. Arnold,
Treas. N. E. Lyman, Supt. Fred. Haines.

ROCK ISLAND, ILL.—Rock Island & Milan St.
Ry. Co. 7 m, 4-8 1/2 g, 20-30-42 lb r, 10 c, 7 h. Pres.
& Supt. Badly Davenport, Sec. E. H. Hunt, Treas. J. F.
Robinson, 2 m, with horses, 5 m, with motor.

RONDOUT, N. Y.—Kingston City R.R. Co. 2-4 5
m, 4-8 1/2 g, 40 lb r, 10 c, 40 h. Pres. James G. Linsley,
V. Pres. S. D. Cokendoll, Sec. & Treas. John C.
Romeyer, Supt. Wm. H. DeGarmo.

SACRAMENTO, CAL.—Sacramento City St. R.R.
Co.

SAGINAW, MICH.—City of Saginaw St. R. R. Co.
2 1/2 m, 4-8 1/2 g, 42 lb r, 10 c, 50 h. Pres. David H.
Jerome, V. Pres. Geo. F. Williams, Sec. & Treas. Geo.
L. Burrows, Supt. Fred G. Benjamin.

SALEM, MASS.—Salem & Danvers St. Ry. Co.
6 m, 4-8 1/2 g, 35-47 lb r, 15 c, 45 h. Pres. Benj. W. Rus-
sell, Sec. G. A. Vickers, Treas. Geo. W. Williams,
Supt. W. B. Furgurson, Asst. Supt. David N. Cook.
Naumkeag St. Ry. Co. —m,—4-8 1/2 g, 30-35-45 lb r, 50
c, 140 h. Pres. Chas. Odell, Clerk Joseph F. Hickey,
Treas. Henry Wheatland, Supt. Willard B. Ferguson.

SALT LAKE CITY, UTAH.—Salt Lake City
R.R. Co. 13 m, 4-8 1/2 g, 20 lb r, 20 c, 115 mu. Pres. John
Taylor, Sec. David McKenzie, Treas. James Jack,
Supt. Orson P. Arnold.

SAN ANTONIO, TEX.—San Antonio St. Ry. Co.
15 m, 4 g, 30 lb r, 38 c, 125 mu. Pres. A. Belknap, San
Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas.
I. Withers, San Antonio, Sec. E. R. Norton, Supt
John Robb.
Prospect Hill St. Ry. Co.

SANDUSKY, O.—Sandusky St. Ry. Co. 2 m, —
g,—lb r,—c.—h. Pres. Chas. B. Ods, Sec. & Treas.
A. C. Morse, Supt. Clark Rude.

SAN FRANCISCO, CAL.—California St. R.R. Co.
Central R. R. Co. 12 m, 5 g, 45 lb r, 31 c, 290 h
Pres. Chas. Matn, V. Pres. S. C. Bigelow, Treas. A.
J. Gunnison, Sec. C. LeBreton, Supt. J. F. Clark.
Clay St. Hill R.R. Co. 1 m, 3-6 g, 30 lb r, 11 c, 12

dummy cars. Pres. Joseph Britton, V. Pres. James
Moffit, Treas. Henry L. Davis, Sec. Chas. P. Camp-
bell, Supt. Joseph Britton.
Clay St. Park & Ocean R.R. Co.
Market St. Cable Ry. Co. 10-9-10 m, 4-8 1/2 lb r, 137 c,
2 motors, 73 h. Pres. Leland Stanford, V. Pres. Chas.
F. Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt,
Controller J. T. Fairbanks.
North Beach & Mission R.R. Co. 8 m, 5 g, 46 c, 400
b. Pres. Carl Appel, Sec. H. W. Hathorne, Treas.
Wm. Alvord, Supt. M. Skelly.
Omnibus R.R. & Cable Co. 8 1/2 m, 5 g, 25-45 lb r, 50
c, 364 h. Pres. Gustav Sutro, V. Pres. E. Callaghan,
Sec. G. Ruegg, Supt. M. M. Martin.
Portrero & Bay View R.R. Co. 1 1/2 m, 5 g, 25 lb r,
20 c, 64 h. Pres. Leland Stanford, V. Pres. Chas.
Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt.
Sutter St. R.R. Co. 5 1/2 m, 4-11 g, 25-45 lb r, 40 c,
180 h. Pres. R. F. Morrow, Sec. A. K. Stevens, Treas.
M. Schmitt, Supt. James McDord.
Telegraph Hill R.R. Co. 1,700 ft, 4-11 g, 36 lb r,
2 c, —h. Pres. Gustave Sutro, V. Pres. C. Kohler,
Sec. & Supt. Chas. J. Werner.
The City R.R. Co. 11 m, 5 g, 45 lb r, 72 c, 280 h.
Pres. R. B. Woodward, V. Pres. Geo. E. Rauran, Sec.
M. E. Willis, Treas. Jas. H. Goodman, Supt. William
Woodward.

SAN JOSE, CAL.—San Jose & Santa Clara R.R. Co.
First St. & San Pedro St. Depot R.R. Co.
Market St. & Willow Glen R.R. Co.
North Side R.R. Co.
People's R.R. Co.

SANTA BARBARA, CAL.—Santa Barbara St.
R.R. Co. 1 m, 3-6 g, 3 c, 8 mu. Pres. A. W. McPhall.

SARINIA, CAN.—Sarnia St. Ry. Co. 2 1/2 m, 4-8 g,
32 lb r, 2 c, 9 h. Pres. J. F. Lister, Sec. & Treas. Thos.
Symington, Supt. Henry W. Mills.

SAUGATUCK, CONN.—Westport & Saugatuck
Horse R.R.

SAVANNAH, GA.—City & Suburban Ry. Co. 18 1/2
m, 5 g, 16-30 lb r, 49 c, 110 h, 3 engines. Pres. J. H.
Johnson, Asst. J. W. Alley, Treas. E. Schmidt.
Coast Line R.R. Co. 7 m, 5 g, 30 lb r, 17 c, 37 h.
Pres. Geo. Parsons, New York, Sec., Treas. & Gen.
Man. R. E. Cobb, Savannah.

SAYRE, PA.—Sayre St. Ry. Co. Pres. Howard
Elmer (organization not completed).

SCRANTON, PA.—People's St. Ry. Co. 9 1/2 m,
4-8 1/2 g, 25-52 lb r, 19 c, 70 h. Pres. Wm. Matthews,
Sec. & Treas. J. C. Platt.

SEARCY, ARK.—Searcy & West Point R.R. Co.
8 m, 4-8 1/2 g, 20 lb r, 7 c, 6 mu. Pres. A. W. Yarnell,
Sec. W. H. Lightle, Treas. Jasper Hicks.

SEATTLE, W. T.—Seattle St. Ry. Co. 3 1/2 m,
4-8 1/2 g, 35 lb r, 5 c, 20 h. Pres. F. H. Osgood, Sec.
Geo. Kinnear.

SEDALLA, MO.—Sedalla St. Ry. Co. 2 1/2 m, 4-10
g, 22 lb r, 6 c, 25 h. Pres. Joseph D. Sicher, V. Pres.
Louis Deutsch, Treas. F. H. Guenther, Sec. Chas. S.
Conrad.

SELMA, ALA.—Selma St. R.R. 2 1/2 m, 18 lb r, 5
c, 8 h. Pres. E. Gilman, Sec. & Treas. J. H. Hollis,
Supt. W. Bohlia.

SENECA FALLS, N.Y.—Seneca Falls & Waterloo
Ry. Co. 7 m, 4-8 1/2 g, 40 lb r, 4 c, dummies.

SHERMAN, TEX.—Sherman City R.R. Co. 3 1/2 m,
5-2 g, 20 lb r, 7 c, 32 mu. Pres. C. W. Batsell, Treas.
J. M. Batsell, Sec. C. W. Batsell, Jr.

SHREVEPORT, LA.—Shreveport City R.R. Co.
1 1/2 m, 4-4 g, 46 lb r, 6 c, 14 b. Pres. Peter Youree.

SILVER CLIFF, COL.—Silver Cliff St. R.R. Co.

SIoux CITY, IA.—Sioux City St. Ry. Co. 5 m,
4 g, —r, 8 c, 52 mu. Pres. Fred. T. Evans, V. Pres.
D. A. Magee, Sec. & Treas. Fred Evans, Jr.

SOUTH CHICAGO, ILL.—Chicago Horse &
Dummy R.R. 5 m, 4-8 1/2 g, —lb r,—c,—h. Pres.
D. L. Huff, Treas. A. C. Calkins, Sec. E. R. Bliss.
[Not in operation.]
South Chicago City Ry. Co. 4 c, 8 h. Pres. Andrew
Rehn, Sec. & Supt. A. Krimbill, Treas. H.
Shearer.

SOUTH PUEBLO, COL.—Pueblo St. R.R. Co.

SPRINGFIELD, ILL.—Citizens' St. R.R. Co.
9 1/2 m, 3 g, 20-36 lb r, 23 c, 100 h. Pres. J. H. Schrick,
Treas. Frank Reich, Sec. Chas. F. Harman.
Springfield City Ry. Co.

SPRINGFIELD, MASS.—Springfield St. Ry. Co.
4-8 1/2 g, 39-40 lb r, 30 c, 120 h. Pres. John Olmstead,
Auditor L. E. Ladd, Clerk Gideon Wells, Treas. A.
E. Smith, Supt. F. E. King.

SPRINGFIELD, MO.—The People's Ry. Co. of
Springfield, Mo. 3 1/2 m, 4-10 g, 33 lb r, 5 c, 30 h. Pres.
J. C. Gravens, Sec. Benj. N. Massey, Treas. Chas.
Sheppard, Supt. H. F. Denton.

SPRINGFIELD, MO.—The People's Ry. Co. of
Springfield, Mo. 2 m, 30-40 lb r, 4-8 1/2 g, 7 c, 19
h, 19 mu. Pres. C. W. Rogers, St. Louis, Sec. & Treas.
B. F. Hobart, Supt. J. A. Stoughton, No. Springfield.

SPRINGFIELD, O.—Citizens' St. R.R. Co. 10 m,
4 g, 29 c, 185 h. Pres. D. W. Strud, V. Pres. A. S.
Bushnell, Treas. Rose Mitchell, Sec. F. S. Penfield,
Supt. W. H. Hanford.

STATEN ISLAND, N. Y.—Staten Island Shore
Ry. Co.

ST. CATHARINE'S, ONT.—St. Catharine's, Mer-
riton & Thorold St. Ry. Co. 5 1/2 m, 4-8 1/2 g, 30 lb r, 8
c, 32 h. Pres. E. A. Smyth, Sec. S. K. Smyth, Supt.
E. A. Smyth.

ST. JOSEPH, MO.—Citizens' St. R.R. Co. 3 m,
4 8 1/2 g, 28 lb r, 14 c, 52 mu. Pres. Richard E. Turner,
Sec. & Treas. Arthur Kirkpatrick, Supt. John F.
Mer lam.
Frederick Ave. Ry. Co. 1 1/2 m, 3 g, 16 lb r, 6 c, 16 h.
Pres. Thos. E. Tootle, V. Pres. Winslow Judson, Sec.
W. D. B. Motter, Treas. Thos. W. Evans, Supt. Rowen.
St. Joseph & Lake St. R.R. Co.
Union Ry. Co.

ST. LOUIS, MO.—Baden & St. Louis R.R. Co.
3 1/2 m, 4-10 g, —lb r, 7 c, 21 h. Pres. George S. Case,
V. Pres. William Z. Coleman, Supt. J. H. Archer.
Benton & Bellefontaine Ry. Co. 7 1/2 m, 4-10 g, 45 lb r,
29 c, 200 h. Pres. J. G. Chapman, V. Pres. Chas.
Parsous, Sec. & Treas. Robert McCulloch.
Cass Avenue & Fair Grounds Ry. Co. 8 1/2 m, 4-10 g,
38 lb r, 39 c, 285h. Pres. W. R. Allen, V. Pres. Geo. W.
Allen, Sec. & Treas. J. W. Wallace, Supt. G. G. Gibson,
Cashier O. H. Williams.
Citizen's Ry. Co. —m,—g,—lb r,—c,—h. Pres.
Julius S. Walsh, V. Pres. J. P. Helfenstein.

Forest Park, Laclede & Fourth St. Ry. Co. Pres. Chas. H. Turner, Sec. H. B. Davis.
 Jefferson Ave. Ry. Co. Pres. John M. Gelkeson, Gen. Man. John Scullin, Sec. C. K. Dickson.
 Lindell Ry. Co. 1 1/2 m, -g, -r, 65 c, 475 h. Pres. John H. Maquon, V. Pres. John H. Lightner, Sec. & Treas. Geo. W. Baumhoff, Supt. Jos. C. Llewellyn.
 Northern Central.
 Missouri R.R. Co. -m, -g, -lb r, -c, -h. Pres. P. C. Maffit, Sec. W. D. Henry.
 Mound City R.R. Co. Pres. John Scullin, Sec. & Treas. C. M. Seaman, Supt. Jas. Sullivan.
 People's Line. Pres. Chas. Green, Sec. John Mahoney, Supt. Patrick Shea.
 Southern Ry. Co. 7 1/2 m, 4-10 g, 35-52 lb r, 49 c, 250 h. Pres. E. R. Coleman, Sec. J. S. Minary, Man. W. L. Johnson.
 St. Louis R.R. Co. 11 m, 4-10 g, 28-44 lb r, 58 c, 375 h. Pres. C. M. Seaman, Sec. & Treas. K. B. Jennings, Supt. Chas. Ischer.
 St. Louis Cable & Western Ry. Co. Pres. M. A. Downing, V. Pres. F. M. Colburn, Sec. & Treas. E. F. Claypool, Man. Geo. F. Branham.
 Tower Grove & Lafayette Ry. Pres. Chas. Green, Sec. John Mahoney, Supt. Patrick Shea.
 Union Depot R.R. Co. -m, -g, -lb r, -c, -h. Pres. John Scullin, V. Pres. & Treas. C. M. Seaman, Supt. Jas. H. Roach.
 Union Ry., Co. Pres. Julius S. Walsh, V. Pres. J. P. Helfenstine, Sec. & Treas. M. J. Moran, Supt. Michael Moran.
STONEHAM, MASS.—Stoneham St. R.R. Co. 2 1/2 m, 4-8 g, 33 lb r, 10 c, 28 h. Pres. A. V. Lynde, Melrose, Treas. & Clerk Lyman Dyke, Supt. John Hill.
ST. PAUL, MINN.—St. Paul City Ry. Co. 37 m, 4-8 g, 45-52 lb r, 82 c, 600 h. & mu. Pres. Thos. Lowry, V. Pres. C. G. Goodrich, Sec. A. Z. Levering, Treas. Clinton Morrison, Supt. A. L. Scott.
STILLWATER, N. Y.—Stillwater & Mechanicsville St. Ry. Co. 4 1/2 m, 4-8 g, 25-30 lb r, 3 c, 6 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. Edw. L. Wood, Treas. E. H. Smith.
STROUDSBURG, PA.—Stroudsburg Passenger R.R. Co. 1 1/2 m, 4-8 g, 25-30 lb r, 3 c, 9 h. Pres. & Treas. J. Lantz, Sec. Jacob Houser.
SYRACUSE, N. Y.—Syracuse & Onondaga R.R. Co. 2 3/5 m, 4-8 g, 28-47 lb r, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas. Lyman C. Smith, Supt. W. B. Thompson.
 Central City Ry. Co. 2 1/2 m, 4-8 g, 40 lb r, 12 c, 37 h. Pres. Daniel Pratt, V. Pres. Jonathan C. Chase, Sec. & Treas. James Barnes, Supt. George Crampton.
 4 Syracuse Savings Bank Building.
 Fifth Ward R.R. Co. 2 1/2 m, 4-8 g, 35-56 lb r, 8 c, 30 h. Pres. P. B. Brayton, Sec. & Treas. O. C. Potter, Supt. Hugh Purnell. Office W. Washington St. Geddes St. Ry. Co.
 Genesee & Water St. R.R. Co. and Fourth Ward R.R. Co. 4 m, 4-8 g, 18-30 lb r, 10 c, 35 h. Pres. Robt. G. Wynkoop, Sec. & Treas. Geo. J. Gardiner, Supt. W. J. Hart. Onondaga Savings Bank Building.
 New Brighton & Onondaga Valley R.R. Co. 1 1/2 m, 4-8 g, 16-35 lb r, 2 c, 6 h. 1 dummy. Pres. Matthias Britton, Sec. T. W. Meacham, Treas. J. H. Anderson, Supt. J. H. Anderson.
 Seventh Ward Ry. Co.
 Syracuse & Geddes Ry. Co. 2 m, 4-8 g, 35-45 lb r, 10 c, 32 h. Pres. R. Nelson Gere, Sec. & Treas. Rasselas A. Bonta, Supt. Wm. J. Hart.
 Third Ward Ry. Co. Pres. W. B. Cogswell, Sec. & Treas. W. S. Wales.

TAUNTON, MASS.—Taunton St. Ry. Co. 4 1/2 m, 4-8 g, 14 c, 44 h.
TERRE HAUTE, IND.—Terre Haute St. Ry. Co. 4 1/2 m, 4-8 g, 28 lb r, 16 c, 48 h. Pres. T. C. Buntin, V. Pres. Josephus Collett, Sec. John R. Ilagen, Supt. John T. Shriver.
TEXARKANA, ARK.—Texarkana St. Ry. Co.
TOLEDO, OHIO.—Toledo Consolidated St. Ry. Co. 17 1/2 m, 4-8 g, 42 1/2 lb r, 41 c, 200 h. Pres. J. E. Bailey, Sec. A. E. Lang.
 Adams Street Ry. Co.
 Metropolitan St. Ry. Co. 10 m, 3 g, 23-35 lb r, 31 c, 101 h. Pres. & Sec. Jno. J. Shepherd of Cleveland, Treas. H. E. Wells of Cleveland, Gen. Man. T. F. Shepherd, Supt. Jno. A. Watson.
 Monroe Street R.R.
 The Central Passenger R.R. Co. of Toledo, O. 8 m, 3 g, 27 lb r, 17 c, 70 h. Pres. F. E. Seagrave, Treas. & Man. A. K. Seagrave, Supt. Joseph Murphy.
TOPEKA, KAN.—Topeka City Ry. Co. 9 m, 4 g, 25-48 lb r, 25 c, 90 h. Pres. Joab Mulvane, V. Pres. D. W. Stormont, Sec. & Treas. E. Wildes, Supt. Jesse Shaw.
TORONTO, CAN.—Toronto St. Ry. Co. 60 m, 4-10 g, 30 lb r, 160 c, 750 h. Pres. Frank Smith, Sec. James Gunn, Supt. John J. Franklin.
TRENTON, N. J.—Trenton Horse R.R. Co. 1 1/2 m, 5 2/2 g, 43-47 lb r, 10 c, 31 h. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, Jr., Supt. Thomas Sillorris.
 City Ry. Co. 7 m, 5-2 g, 35 lb r, 19 c, 110 h & m. Pres. Adam Exton, V. Pres. W. H. Skirm, Sec. H. B. Howell, Treas. & Mang. Director Chas. Y. Bamford.
TROY, N. Y.—Cortland & Homer Horse R.R. Co. 4 m, 4-8 g, 25-30 lb r, 2 c, -h. Pres. C. H. Garrison. Troy, V. Pres. E. A. Fish, Cortland, N. Y., Treas. Jas. M. Allen, Cortland, Sec. S. E. Welch, Cortland.
 Troy & Albion Street Ry. Co. 3 1/2 m, 4 g, 35-45 lb r, 9 c, 41 h. Pres. Thos. A. Knickerbocker, Sec. & Treas. Theo. E. Hasehurst, Supt. W. R. Bean.
 Troy & Lansingburgh R.R. Co. 20 1/2 m, 4-8 g, 47 lb r, 91 c, 466 h. Pres. William Kemp, V. Pres. Charles Clemishaw, Sec. & Treas. Joseph J. Ilagen, Supt. L. C. Brown, Asst. Supt. C. H. Smith. 295 River St.
URBANA, ILL.—Urbana R.R.
 Urbana & Champaign St. Ry. Co. 2 m, 4-8 g, 33 lb r, 4 c, 20 h. Pres. Wm. Park, Sec. & Treas. Frank G. Jaques, Supt. Wm. Park.
UTICA, N. Y.—Utica, Clinton & Binghamton St. R.R. 7 1/2 m, 4-8 g, 43-56 lb r, 17 c, 82 h. Pres. Isaac Maynard, Sec. & Treas. Robt. S. Williams, Supt. Roger Rock.
 The Utica & Mohawk R.R. Co. 2 1/2 m, 4-8 g, 25-40 lb r, 9 c, 5 h. Pres. Chas. W. Hutchinson, V. Pres. Nathan S. Haynes, Sec. Geo. M. Weaver. Treas. Joshua W. Church.
 Utica Belt Line St. Ry. Co.
VALEBURGH, N. J.—Newark, So. Orange, Ferry St. & Hamburg Place R.R. Co.
VALEJO, CAL.—Valejo St. Ry. Co.
VICKSBURG, MISS.—Vicksburg St. Ry. Co. 11 1/2 m, 4-8 g, 35-56 lb r, 8 c, 30 h. Pres. P. B. Brayton, Sec. & Treas. O. C. Potter, Supt. Hugh Purnell. Office W. Washington St. Geddes St. Ry. Co.
VINCENNES, IND.—Vincennes St. Ry. Co.
WACO, TEX.—Waco St. Ry. Co. 5 m, 4-8 g, 14 lb r, 9 c, 44 h. Pres. E. Rotan, Sec. & Treas. W. R. Kellum, Supt. J. W. Sedbury.
WALTHAM, MASS.—Waltham & Newton St. Ry. Co. 3 1/2 m, 3-8 g, 30 lb r, 7 c, 18 h. Pres. R. E. bbins, Sec. & Treas. Henry Bond.
WASHINGTON, D.C.—Capital, No. O. St. & So. Washington R.R. 13 1/2 m, 4-8 g, 35 lb r, 45 c, 176 h. Pres. C. White, Sec. & Treas. W. E. Boughton, Supt. Andrew Glass.

Anacostia & Potomac River Ry. Co. 3 m, 4-8 g, 37 lb r, 9 c, 24 h. Pres. H. A. Griswold, Sec. Edward Temple, Treas. T. E. Smithson.
 Columbia R.R. Co. of the District of Columbia. 2 1/2 m, -g, -lb r, 19 c, 56 h. Pres. H. A. Willard, Sec. & Treas. Wm. H. Clayette, Supt. Thos. E. Benson.
 Metropolitan R.R. Co. 2 1/2 m, 4-8 g, 38 lb r, 90 c, 400 b. Pres. George W. Pearson, V. Pres. A. A. Wilson, Sec. & Treas. William W. Moore, Supt. L. W. Emmart.
 Washington & Georgetown R.R. Co. 20 m, 4-8 g, 42 lb r, 173 c, 850 h. Pres. H. Hurt, Sec. & Treas. C. M. Kooner, Gen. Supt. C. C. Saller.
WATERFORD, N. Y.—Waterford & Cohoes R.R. Co. 2 m, 4-8 g, 45 lb r. Pres. Thos. Breslin, Sec. & Treas. C. C. Ormsby. (Leased by the Troy & Lansingburgh R.R. Co.)
WATERLOO, IA.—Waterloo St. Ry. Co.
WEST HURON, CONN.—New Haven & West Haven R.R. Co.
WESTPORT, CONN.—Westport & Saugatuck Horse R.R.
WHEELING, W. VA.—Citizens Ry. Co. 10 m, 5-2 g, 45 lb r, 20 c, 55 h. Pres. Dr. C. A. Wingelter, Sec. Van B. Hall, Supt. Michael Loftus.
 Wheeling & Elm Grove R.R. 7 m, 4-8 g, 30 lb r, 12 c, 4 Baldwin Motors. Pres. J. D. DuBols, Sec. E. J. Rutter, Supt. E. Hirsch.
WICHITA, KAN.—Wichita City Ry. Co. 7 1/2 m, 11 c, 60 mu, 4 h. Pres. B. H. Campbell, V. Pres., Treas. & Gen. Man. E. R. Powell, Sec. G. W. Laramer, Atty. E. C. Ruggles.
WILKESBARRE, PA.—Wilkesbarre & Kingston Pass. R.R.
 Wilkesbarre & Ashley Passenger R.R. Co.
 Coarville Passenger R.R. 2 1/2 m, 4-8 g, 20-34 lb r, 4 c, 10 h. Pres. Chas. A. Miner, Sec. & Treas. George Loveland, Supt. Albert G. Orr.
WILLIAMSPORT, PA.—Williamsport St. R.R. Co.
WILMINGTON, DEL.—Front & Union St. Passenger Ry. Co. 1 1/2 m, 5-2 g, -lb r, 7 c, 20 h. Pres. Geo. W. Bush, Supt. Sam'l A. Price, Treas. E. T. Taylor.
 Wilmington City Ry. Co. 6 m, 5-2 g, 45 lb r, 19 c, 80 h. Pres. W. Canby, Sec. & Treas. John F. Miller, Supt. Wm. H. Burnett.
WINDSOR, CAN.—Sandwich & Windsor Passenger R.R. Co.
 Windsor & Walkerville Electric Ry. Co.
WINNIPEG, MANITOBA, CAN.—The Winnipeg St. Ry. Co. 5 m, 4-8 g, 35 lb r, 13 c, 75 h. Pres. Duncan MacArthur, Sec. & Mangr. Albert W. Austin, Supt. Geo. A. Young.
WINONA, MINN.—Winona City Ry. Co. 4 m, 3-6 g, 27 lb r, 10 c, 39 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec. & Treas. C. H. Porter.
WOBURN, MASS.—No. Woburn St. Ry. Co. 2 1/2 m, 4-8 g, 40 lb r, 5 c, 4 h. Pres. & Treas. J. R. Carter, Supt. Dexter Carter.
WORCESTER, MASS.—Worcester St. Ry. Co. 5 1/2 m, 4-8 g, 45 lb r, 19 c, 100 h. Pres. Geo. H. Seeley, N. Y. City, V. Pres. Nathan Seeley, N. Y. City, Treas. & Supt. Harry S. Searls, Worcester.
 Citizens' St. Ry. Co. Pres. Chas. B. Pratt, Sec. & Treas. F. W. Brigham.
YOUNGSTOWN, O.—Youngstown St. R.R. Co.
ZANESVILLE, O.—Bellair, Chillicothe & Canton Zanesville & McIntire St. Ry. Co. 3 m, 3-6 g, 38 lb r, 12 c, 54 m. Pres. J. Bergen, Sec. W. C. Townsend reas. T. B. Town-end.

2 LIBERTY SQUARE **JOHN BABCOCK & CO** BOSTON MASS
 MANUFACTURERS OF
RAILWAY CAR VARNISHES

Envelopes
 For : Street : Railway : Companies.
 The subscribers beg leave to inform all purchasers of
ENVELOPES FOR STREET RAILWAYS,
 that they are largely engaged in manufacturing
Envelopes of all Kinds,
 especially those used for
CHANGE,
 They have recently introduced a new style, making each denomination of DIFFERENT COLORED PAPER, thus more easily distinguished by the driver. All well made and gummed. Samples sent when requested.

SAMUEL RAYNOR & CO., 117 William St., N. Y.

The Only Exclusive
 Sponge and Chamois
 HOUSE IN IMPORTERS OF THE WEST.
SPONGES AND CHAMOIS
 No 115 S. 4th ST. SOUTHERN HOTEL ST. LOUIS
 We can save you money.
 Will send you Sample Pack-
 ages Sponges and Chamolis for ap-
 proval, Guaranteeing Price, selection and
 Quality in Every respect. Should goods not prove
 perfectly satisfactory, return at our expense, both ways.

J. B. Greensfelder & Co

SPECIAL NOTICES.

FOR SALE Half Interest in a Street Railway, paying 27 per cent on investment. Cost \$36,000. Located in a live town of 6000 inhabitants, which is also an important and growing summer resort. Reason for selling, owner has over-reached his capital in other investments. For full particulars, statements, etc., address PROFITABLE, care STREET RY. JOURNAL, 32 Liberty St., New York.

WANTED TO BUY, A HORSE RAILROAD. The advertiser desires to learn of a moderate sized street railroad, say 25 to 50 horses. Address, giving full particulars, INVESTMENT, care STREET RY. JOURNAL, 32 Liberty Street, New York.

WANTED—Position on the construction of street railways. Am thoroughly acquainted with all details, estimates made for same, measurements taken for curves, switches, frogs and crossings of all shapes and angles. Would engage with railway switch works. No objection to going out of the country for few months or year. Address "CONTRACTOR," care St. Ry. JOURNAL, 419 Walnut St., Philadelphia, Pa.

\$5000 IN 8 PER CENT. 10 YEAR BONDS FOR SALE. Paid up capital \$13,000. Entire issue of bonds \$10,000, no floating debt. Interest paid semi-annually. Investigation solicited; Address TREASURER, care STREET RY. JOURNAL, 32 Liberty St. New York.

OFFICE ROOM to let in New York and Chicago to parties in the street railway supply line, Address "OFFICE," care STREET RY. JOURNAL, 32 Liberty St., New York.

FOR SALE—Part or controlling interest in several new and old street railway properties. Parties desirous of investing in or selling this class of property, address H. & S., 1 Broadway, N. Y.

WANTED—Position as Superintendent or Foreman with some good street railroad, by a thoroughly practical and experienced street railroad man who has had 15 years' experience in the business; can refer to some of the most prominent street railroad men of the country. Address R. P. A., care STREET RY. JOURNAL, 32 Liberty St., New York.

WANTED—A man with small capital to invest in a Street Railway, situated in a live town of 15,000 inhabitants. Just struck off. Three miles of track, well stocked, good barn and everything in good condition. A rare chance if taken at once. For further particulars address, J. H. ROSE, P. O. Box 919, Lima, Ohio.

WANTED—A thoroughly reliable man experienced in Street railway practice, to organize and manage a company, for the introduction of a new system of propulsion. Patentee will furnish capital. An exceptional opportunity for a man of large street railway acquaintance and with the energy and judgment requisite to success. Address, IXION, STREET RAILWAY JOURNAL Office, 32 Liberty Street, New York City.

FOR SALE—Two open excursion cars, capacity 26 seats each, built by J. Stephenson Co., N. Y. Have been used only twenty days, and are in perfect condition. Cost \$600 each. Will be sold cheap for want of use. S. A. FILBERT, Williamsport, Pa.

FOR SALE.

Six Second-hand One-Horse Street Cars.
Ten Second-hand Two-Horse Street Cars.
Steel Rails, T and Street Patterns, all weights.
Spikes and Track Supplies.
Old Street Rails Purchased.
HUMPHREYS & SAYCE,
No. 1 Broadway, New York.

Cable Roads.

AMERICAN SYSTEM TRACTION ROPE RAILWAY,
OPERATED BY INDEPENDENT DUPLICATE CABLES.
FULLY PROTECTED BY PATENTS IN THE FOLLOWING

COUNTRIES.

ENGLAND,
GERMANY,
AUSTRIA,
SPAIN,
ITALY.

FRANCE,
BELGIUM,
VICTORIA, Australia,
NEW SOUTH WALES, Australia.

D. J. MILLER, ENGINEER,

234 BROADWAY, NEW YORK.

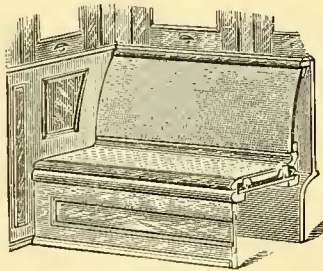
THE HALE & KILBURN MANFG. CO.,

Extensive makers of Patented

Street Car Seats

of every description.

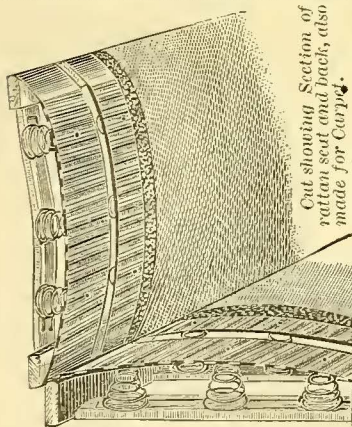
Our Patent Spring Seats covered with Rattan or Carpet are fast being adopted by the best railroads in the country. Seats for Steam Cars a Specialty. Owners and makers of all the Cobb patents



Cut showing car with rattan seat and back without springs.

REFERENCES:

Broadway line (Pullman cars) New York
Grand St. line, 3d and 4th ave lines, NY
Chicago City R.R. Chicago W. Div. line,
and New Adams street line, Chicago.
East Cleveland R. R. Co. and Woodland Ave. and West Side R. R. Co., Cleveland; Union Line, St. Louis; 2d & 3d St. R. R. Co., Frankford and Southwark R. R. Co., Union Line, Chestnut & Walnut R. R. Ridge Ave R. R., or any other road in Phila.; and 100 others elsewhere.



Cut showing Section of rattan seat and back, also made for Carpet.

Many R. R. Co's use our Rattan Pat. Canvas Lined Seats for Summer and cover the same with carpet for Winter. This method of seating we recommend as durable and economical, for the reason both a Summer and Winter seat is obtained in one.

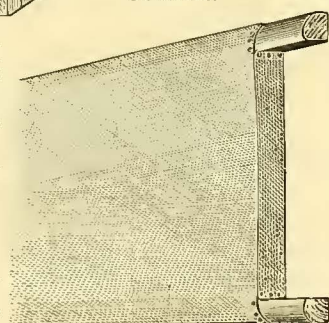
Estimates & Particulars cheerfully given, (mention this paper) satisfaction guaranteed.

A TRIAL SOLICITED.

OFFICES: 48 & 50 NO. SIXTH ST.,

FACTORIES: 615 to 621 Filbert St.,

PHILADELPHIA, PA.



Cut of section of cross for summer car.

WM. SOMERVILLE & SONS

CELEBRATED

Anti-Fever Medicine.

The Anti-Fever Medicine has now been in use for over 30 years as a specific in all Diseases of an Inflammatory Character in Horses and Cattle. Anti-Fever Medicine is a Certain Cure for Chills and Fever, Sore Throat, Inflammation of Lungs, Coughs, Staggers, Inflammation of the Bowels, Spasmodic Colic, and Pleuro-Pneumonia in Cattle.

This valuable Medicine is now used by the Principal Stables in the Country, by the U. S. and American Express Companies, and many of the Street Car Companies. Try one bottle and you will be convinced of its value in your stable. Sold by all Druggists. PRICE \$1 per bottle. Discount to the Trade. Address

WM. SOMERVILLE & SONS,

Buffalo Horse Infirmary, 127 Erie St., Buffalo, N. Y. Send for circular. Mention this paper.

FOR

WOOD
WAX
PHOTO

Engravings

FOR ALL KINDS OF

Machinery, &c.

ADDRESS,

American Railway Publishing Co.

32 LIBERTY ST., NEW YORK.

**OLIVER BRADEN,
STEAM POWER**

Book & Job Printer

Lithographer and Wood Engraver.

P. S. Estimates furnished for all kinds of Wood Engraving and Electrotyping Printing of Descriptive Circulars or Catalogues in the very best style. Having had twenty years experience in the business I feel competent to attend to your wants. Address,

OLIVER BRADEN,

113 South 4th Street, Philadelphia, Pa.

Directory of Manufacturers and Dealers in Street Railway Appliances, and Index to Advertisers.

AUTOMATIC SWITCHES Page
M. M. White & Co., 531 W. 33d St. N. Y. 261
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
Wm. P. Craig, 95 Liberty st., N. Y. 261
AXLES.
F. W. Jesup & Co., 67 Liberty St., N. Y. 257
A. Whitney & Sons, Philadelphia, Pa. 269
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
BEARINGS.
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Ajax Metal Co., Philadelphia, Pa. 257
Pugh & Russell, Stewart Building, New York. 265
Edward White, 531 W. 33d. Street, New York. 215
Ceapl'n M'fg. Co., Bridgeport. 264
BOXES, JOURNAL.
A. Whitney & Sons, Philadelphia, Pa. 269
Lewis & Fowler, Brooklyn, N. Y. 274-275
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Chaplin M'fg. Co., Bridgeport. 264
BRAKE RODS.
Lewis & Fowler, Brooklyn, N. Y. 274-275
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 263
BRAKE SHOES.
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 263
BRAKE CHAINS.
Covert Mfg. Co., West Troy, N. Y. 263
CARS, NEW.
John Stephenson Co., New York. 280
J. G. Brill & Co., Phila., Pa. 278-279
Brownell & Wight Car Co., St. Louis, Mo. 266
J. M. Jones' Sons, West Troy, N. Y. 266
CARS, SECOND HAND.
Humphreys & Sayce, 1 Broadway, N. Y. 259
Frankford & Southwark R.R. Co., 2501 Kensington Ave., Philadelphia, Pa. 263
CAR STARTERS.
C. B. Broadwell, 169 Laurel st., New Orleans, La. 261
CAR LAMPS.
Josephine D. Smith, 350 & 352 Pearl St., N. Y. 262
Geo. M. Clute, West Troy, N. Y. 261
Pugh & Russell, Stewart Building, New York. 265
CAR WHEELS.
A. Whitney & Sons, Philadelphia, Pa. 269
Lewis & Fowler, Brooklyn, N. Y. 274-275
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Pugh & Russell, Stewart Building, New York. 265
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
CAR WHEEL PRESSES.
Watson & Stillman, 471 S. Grand St., N. Y. 261
CAR SPRINGS.
Lewis & Fowler, Brooklyn, N. Y. 274-275
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Richard Vose, 13 Barclay St., N. Y. 270
Pugh & Russell, Stewart Building, New York. 265
CAR SEATS.
Hale & Kilburn Mfg. Co., 48 & 50 N. 6th Str., Philadelphia, Pa. 259
Gardner & Co., 643 to 657 W. 45th st., N. Y. 267
CAR SASH.
Lewis & Fowler Mfg. Co., Brooklyn, N. Y. 274-275
CAR CEILINGS.
Gardner & Co., 643 to 657 W. 45th st., N. Y. 267
COUPLING PINS.
Lewis & Fowler Mfg. Co., Brooklyn, N. Y. 274-275
CAPS, UNIFORM.
P. Goldmann, 133 Grand & 19 & 20 Crosby, N. Y. 262
CASTINGS.
Bowler & Co., Cleveland, O. 261
F. W. Jesup & Co., 67 Liberty St., N. Y. 261
A. Whitney & Sons, Philadelphia, Pa. 269
Wm. P. Craig, 95 Liberty St., N. Y. 263
A. Ayres, 625 Tenth Ave., N. Y. 263
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268

CURRY COMBS. Page
Muncie Novelty Co., Muncie, Ind. 262
Lewis & Fowler Mfg. Co., Brooklyn, N. Y. 274-275
CURVED RAILS.
A. Ayres, 625 Tenth Ave., N. Y. 263
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Pugh & Russell, Stewart Building, New York. 265
Wm. P. Craig, 95 Liberty st., N. Y. 263
CROSSINGS.
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
CHANNEL PLATES.
A. Ayres, 625 Tenth Ave., N. Y. 263
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Wm. P. Craig, 95 Liberty st., N. Y. 263
CABLE ROADS.
D. J. Miller, 234 Broadway, N. Y. 259
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Poole & Hunt, Baltimore. 269
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
ELECTRIC RAILWAYS.
Van Depoele Electric Manufg. Co. 273
FROGS.
Humphreys & Sayce, 1 Broadway, N. Y. 259
A. Ayres, 625 Tenth Ave., N. Y. 263
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Pugh & Russell, Stewart Building, New York. 265
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
FARE BOXE.
Wales Manuf. Co., 76 and 78 East Water St., Syracuse, N. Y. 265
Tom L. Johnson, Indianapolis, Ind. 265
Lewis & Fowler Mfg. Co., Brooklyn, N. Y. 274-275
J. B. Slawson, 16 W. 46th. Street, New York. 268
John Stephenson Co., New York. 268
FARE REGISTERS, STATIONARY.
Lewis & Fowler Mfg. Co., Brooklyn, N. Y. 274-275
Standard Index and Register Co, 138 Fulton St. New York. 271
FARE COLLECTORS.
Lewis & Fowler Mfg. Co., Brooklyn, N. Y. 274-275
FEED CUTTERS.
E. W. Ross & Co., Springfield, O. 267
GUTTERS.
Bowler & Co., Cleveland, O. 261
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
GROOVED CURVES.
Humphreys & Sayce, 1 Broadway, N. Y. 259
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
Pugh & Russell, Stewart Building, New York. 265
Wm. P. Craig, 95 Liberty st., N. Y. 263
O. W. Meysenburg & Co., 185 Dearborn st., Chic 261
HAMERS.
Charles E. Berry, Cambridge, Mass. 264
U. S. Harness Co., Chicago, Ill. 262
HARNESSES.
U. S. Harness Co., Chicago, Ill. 262
Charles E. Berry, Cambridge, Mass. 264
Pratt & Letchworth, Buffalo, N. Y. 265
HYDRAULIC JACKS.
Watson & Stillman, 471 S. Grand st., N. Y. 261
HORSE SHOES.
The Goodenough Company, 156 and 158 E. 25th st., N. Y. 272
P. F. Burke, 863 Dorchester Ave., South Boston. 261
Wm. P. Craig, 95 Liberty st., N. Y. 263
KNEES.
Andrews & Clooney, 545 West 33d st., N. Y. 276-277
Wm. P. Craig, 95 Liberty Street, New York. 263
Pugh & Russell, Stewart Building, New York. 265
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
LUBRICANTS.
The Lieb Lubricating Co., 196 Chicago Street, Buffalo. 263
METALLIC RAILWAY.
Wm. Wharton & Co., Phila., Pa. 268
Metallic Street Railway Supply Co., Albany N. Y. 269
Humphreys & Sayce, 1 Broadway, N. Y. 259
D. F. Longstreet, Providence, R. I. 262
MA TTING.
Warneck & Toffler, 211 E. 2nd st., N. Y. 261
Lynn & Pettit, 707 Market Street, Phila. 261
MOTORS—Steam.
H. K. Porter & Co., Pittsburg, Pa. 262

MOTORS—Electric. Page
Van Depoele Electric Manufg. Co., 203 Van Buren St., Chicago, Ill. 273
PEDESTALS.
Andrews & Clooney, 545 West 33d St., N. Y. 274-275
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
PANELS.
Gardner & Co., 183 Canal St., N. Y. 267
RAILS.
Humphreys & Sayce, 1 Broadway, N. Y. 259
Pugh & Russell, Stewart Building, N. Y. 265
F. W. Jesup & Co., 67 Liberty St., N. Y. 261
O. W. Meysenburg & Co., 185 Dearborn st., Chic 261
Pennsylvania Steel Co., 160 Broadway, N. Y. 266
Pittsburgh Bessemer Steel Co., 48 Fifth Ave., Pittsburgh, Pa. 259
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
STEEL RAILS.
Pittsburgh Bessemer Steel Co., 48 Fifth Ave., Pittsburgh, Pa. 262
Humphreys & Sayce, 1 Broadway, N. Y. 259
F. W. Jesup & Co., 67 Liberty st., N. Y. 261
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
O. W. Meysenburg & Co., 185 Dearborn st., Chic 261
SEATS & SEAT SPRINGS.
Hale & Kilburn Manufg Co. 259
SWITCHES.
Wm. Wharton, Jr., & Co., 25th St. & Washington Ave., Philadelphia, Pa. 268
Humphreys & Sayce, 1 Broadway, N. Y. 259
M. M. White, 531 West 33rd st, N. Y. 263
Andrews & Clooney, 545 West 33rd st., N. Y. 274-275
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
O. W. Meysenburg & Co., 204 No.3d. st., St. Louis 261
STREET RAILWAY BUILDERS.
Metallic St. Railway Supply Co., Albany, N. Y. 262
Wm. Wharton, Jr., & Co., Phila., Pa. 268
Wm. P. Craig, 95 Liberty st., N. Y. 263
Andrews & Clooney, 545 West 33rd st., N. Y. 276-277
A. J. Hutchinson, 95 Liberty St., N. Y. 261
STREET RAILWAY SUPPLIES.
Humphreys & Sayce, 1 Broadway, N. Y. 259
Metallic Railway Supply Co., Albany, N. Y. 262
Pugh & Russell, Stewart Bldg., N. Y. 265
F. W. Jesup & Co., 67 Liberty st., N. Y. 261
Wm. P. Craig, 95 Liberty st., N. Y. 263
Lewis & Fowler, Brooklyn, N. Y. 274-275
Andrews & Clooney, 545 West 33rd st., N. Y. 276-277
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
O. W. Meysenburg & Co., 204 No.3d. st, St. Louis. 261
SNOW PLOWS.
Andrews & Clooney, 545 West 33rd st., N. Y. 276-277
Augustus Day, Detroit. 264
SPONGES AND CHAMOIS.
J. E. Greenfelder & Co., 115 So. 4th St., St. Louis. 258
TURNOUTS.
Wm. Wharton, Jr. & Co., 25 St. & Washington Ave., Philadelphia, Pa. 268
Andrews & Clooney, 545 West 33rd st., N. Y. 276-277
TURN TABLES.
W. P. Craig, 95 Liberty st., N. Y. 263
Andrews & Clooney, 545 West 33rd st., N. Y. 276-277
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
O. W. Meysenburg & Co., 204 No.3d. st., St. Louis. 261
TRACK CASTINGS.
Humphreys & Sayce, 1 Broadway, N. Y. 259
Andrews & Clooney, 545 West 33rd st., N. Y. 276-277
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
Augustus Day, Detroit. 264
TRACK SCRAPERS.
Andrews & Clooney, 545 W. 33d St., N. Y. 276-277
VARNISHES.
John Babcock & Co., 2 Liberty sq., Boston Mass. 258
Parrott Varnish Co., Bridgeport, Conn. 262
WHEEL PRESSES.
Watson & Stillman, 471 S. Grand st., N. Y. 261
Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268
WHEELS.
Andrews & Clooney, 545 West 33rd st., N. Y. 276-277
Lewis & Fowler, Brooklyn, N. Y. 274-275
A. Whitney & Sons, Philadelphia Pa. 269

F. W. JESUP & COMPY.,
67 LIBERTY ST., NEW YORK,
Street Railway Supplies,
OF EVERY DESCRIPTION.

Steel Rails, all patterns; Cars; Automatic Switches; Turntables; Curved Rails; Channel Plates; Frogs; Crossings and other Track Castings, Knees, &c. Countersunk Spikes, specially adapted for Center-bearing Rails.

STREET RAILWAY WHEELS AND TURNOUTS.
Graded Stable Gutter with Straight or Curved Cover.



Descent 1/8 in. per foot. Pieces 5 feet lengths. Short pieces furnished to suit any length. Spouts to connect with Sewer, &c.

BOWLER & CO., Cleveland, Ohio.

The "BROADWELL CAR STARTER," having been subjected to practical tests, is now placed on the market at a very low price.

C. B. BROADWELL,

169 Laurel Street, - New Orleans, La



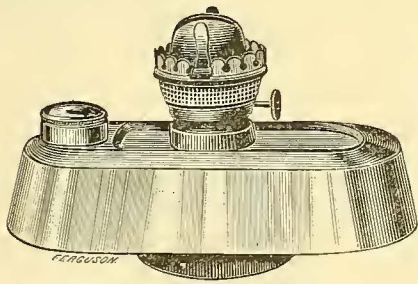
PRACTICAL, ECONOMICAL, ANTI-FRICTIONAL & EXCEPTIONAL.

Parties using our AJAX WHITE METAL ALLOY in place of block tin, with copper, can produce a composition for brasses which we will guarantee to give greater mileage, less friction and of greater tensile and crushing strength than any known composition. The first cost is no greater than copper and tin. We make castings of every description, as per patterns received, and at lowest figures.

J. G. HENDRICKSON, THE AJAX METAL CO.,
F. J. CAMER, Co-partners. PHILADELPHIA, PA.

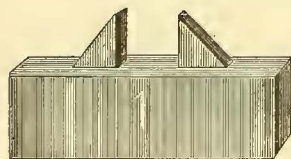
Trade Mark.

CLUTE PATENT
DOUBLE-BOTTOM
STREET CAR LAMP.



Is one that assures Safety, Durability, and is perfect in regard to Leakage.

GEO. M. CLUTE, Sole Manufacturer.
 Also Dealer in Car Reflectors, Chimneys, Burners, &c.,
WEST TROY, N. Y.



P. F. Burke

Successor to **C. F. Dewick & Co.** Manufacturer of

Patent Steel Toe-Calks.

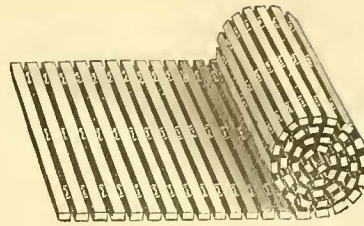
Cold Iron Punching, Chain Links, Washers, etc.



360 DORCHESTER AVENUE,
SO. BOSTON, MASS.



Send for Circulars.



WARNECK & TOFFLER,
 211 East 22d St., New York,
 Sole Manufacturers and Patentees of the only
"ROLLING WOOD MAT"
 in the market. This matting, either in round, square or flat slats, is the most convenient one for horse cars, as it is a self cleaner and can easily be repaired.
 Price, a running foot, 3 feet wide only 70c. Orders respectfully solicited

A. J. HUTCHINSON,
CONTRACTOR

And **PRACTICAL BUILDER** of **STREET RAILWAYS.**

Roads Relaid, Switches, Turnouts, Warehouse Tracks. Materials Furnished.

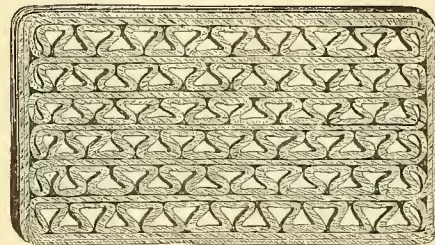
ROOM 11, - 95 LIBERTY STREET, N. Y.

LYNN & PETTIT,

MANUFACTURERS OF

Machine Braided Cocoa Car Mats,

707 Market Street, Philadelphia.



A Sample

Order

Solicited.

O. W. MEYSENBERG & CO.,

WESTERN AGENTS

JOHNSON STEEL STREET RAIL CO.

JOHNSON STEEL GIRDER RAIL

AND STEEL ROLLED CURVES,

SWITCHES and **FROGS,** also **METALLIC TIES.**

CHICAGO--185 Dearborn Street, Adams Express Building.

ST. LOUIS--204 North 3d Street, Gay Building

Removal Notice.

We Remove May 1st to
 Our

New and Larger Shops,

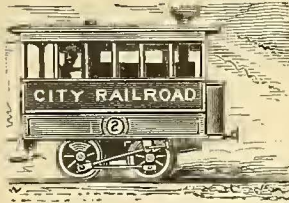
204 to 210 East 43d St., N. Y.

Watson & Stillman.

H. K. PORTER & CO.,

BUILDERS OF

**LIGHT LOCOMOTIVES
PITTSBURG, PA.**



Enclosed Noiseless Motors for Street Railways.

P. GOLDMAN,

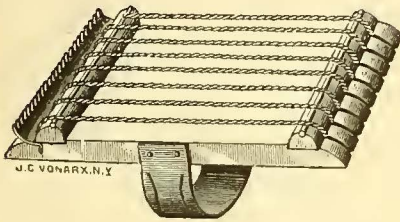
Manufacturer of the Patent Celebrated

SPRING TOP UNIFORM CAP,

Of Every Variety and Color. Not affected by wet, will keep their shape under all ordinary conditions. Manufactured in large quantities and shipped to a parts of the world.

P. GOLDMANN, 133 Grand Street and 19 and 20 Crosby Street, NEW YORK.

JAY-EYE SEE Patent Curry Comb.



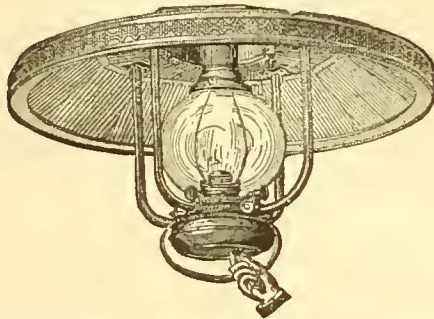
Best in the World. Can't Scratch or Hurt the horse. Cleans off mud and sweat with ease and rapidity. Most Durable and Lightest Comb made. Give it a trial. Needed in all Car Stables.

MUNCIE NOVELTY CO., Muncie, Ind.

MALTBY, CURTISS & CO., O. S. CHAMBERLAIN,
No. 20 WARREN ST., New York, 55 DEARBORN ST., Chicago,
Eastern, Southern & Export Agents. Gen. Western Agent

JOSEPHINE D. SMITH,

Successor to the late WILLARD H. SMITH,



Manufacturer of Railroad Centre Lamps and Reflectors
AND ALL KINDS OF SHIP AND MARINE LAMPS.
350 & 352 Pearl St., New York.

UNITED STATES HARNESS CO.,

CHICAGO, ILL.,

MANUFACTURERS OF

**Brady's Patent Coupling
and Iron Hame.**

Most convenient and economical devices known for street railway harness. It will be sent subject to inspection before paying for them, on application to

**U. S. HARNESS CO., P. BRADY, MANAGER,
CHICAGO, ILL.**

STEEL STREET RAILS.

The Pittsburgh Bessemer Steel Co., Limited.
48 Fifth Ave., Pittsburgh, PA.

Section No. 17
46 lbs. per Yard

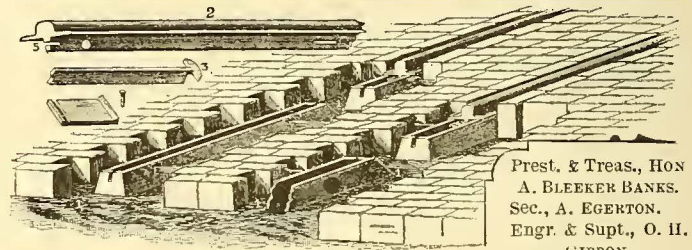


THEREFOR VARNISH
USE PARROTT

Parrott Varnish Co.

FINE COACH AND CAR VARNISHES.

Bridgeport, Conn., U.S.A.



Prest. & Treas., HON
A. BLEEKER BANKS.
Sec., A. EGERTON.
Engr. & Supt., O. H.
GIBBON.

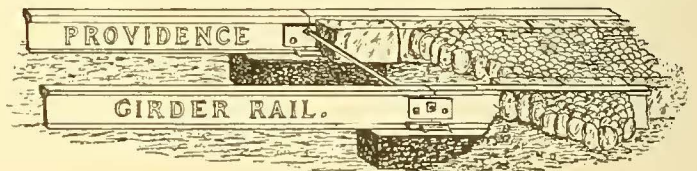
The Metallic Street Railway Supply Co.

GIBBON'S PATENT.

ALBANY, NEW YORK.

Cheapest, quickest laid and most durable track known. Dispenses with all timbers, butts, spikes, knees, &c. Estimates for building and relaying street railway tracks and full particulars sent on application.

N.Y. Office, 1 Broadway, Humphreys & Sayce, Contracting Agents.

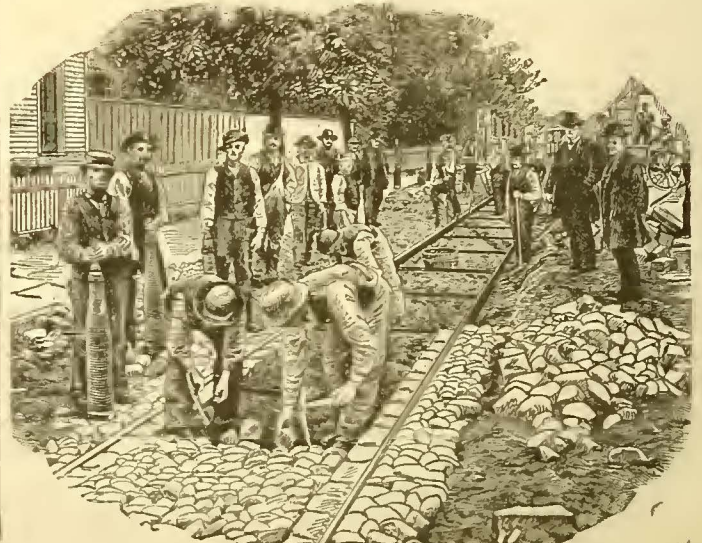


ALL IRON AND STEEL.

The most permanent and very best form of railroad construction for public streets. Fully endorsed by city and town authorities. Send for circular.

Prices furnished on application to

Wm. Wharton, Jr. & Co., Lim., Phila., Pa., General Agents.
Or D. F. Longstreet, Providence, R. I.



WM. P. CRAIG, Street Railway Builder,

And Dealer in Supplies.
Office, 95 Liberty St., N. Y.

GROOVE RAIL FOR CURVES constantly on hand, Straight or Curved to any radius or length, at short notice.

CURVING MACHINES of Best Style and Make.

SPECIAL RATES given on AUTOMATIC SWITCHES, TURNTABLES, TRACK CASTINGS, KNEES, JOINT PLATES, SPIKES and all other material for Railway Construction.

Having had over 25 years' practical experience in Street Railway Construction feel confident in saying to parties who contemplate building will find it to their interest to correspond with me before making contracts or ordering material.

A. AYRES, Manufacturer and Patentee.

Send me full size section of rails to be used at points A, B, C, D, E, G.
No. 625 TENTH AVENUE, NEW YORK.



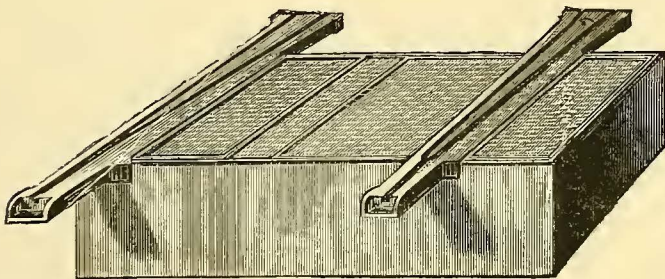
Licensed under U. S. Letters Patent to manufacture and sell curved steel groove rails for the States of New York and New Jersey.

Steel Groove Curves bent to suit any radius; Channel Plates, all kinds; Knees all sizes; Pedestals and Boxes, all kinds; Brake Shoes; Ayres' Patent Automatic Switches, Plain Switches, Frogs and Cast Rails for curves, and all kinds of castings.

M. M. White & Co.,

531 WEST 33d STREET,

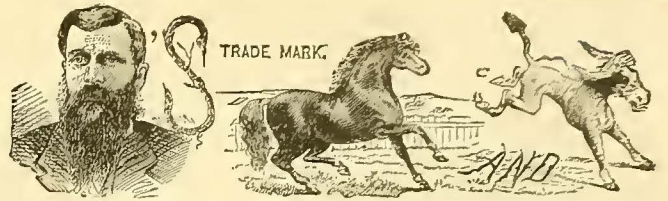
NEW YORK.



OWNERS AND BUILDERS OF
H. DOUGLASS'

Patent Automatic Switch

FOR STREET RAILROADS.



(This Trade Mark on all Genuine Covert Goods.)

We call particular attention of all horse railroad companies to our celebrated

Covert Bristle Card.

The Best Mane or Tail Brush Manufactured.

The Most Serviceable and Best Quality Brush Ever Made for All Purposes of the Horse Toilet.

Being Drawn Penetrating it Works Right Down to the Hide.

EVERY BRUSH GUARANTEED BEST RUSSIA LEATHER.

CHEAPEST BRUSH EVER OFFERED THE TRADE.

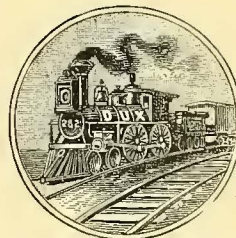
ALSO, HARNESS SNAPS, SWIVEL SNAPS, OPEN EYE BIT SNAPS, CHAIN AND TRACE SNAPS, ROPE AND WEB HALTERS. HALTER LEADS, BREAST CHAINS, HALTER CHAINS, REIN CHAINS, BREAK CHAINS, AND A SPECIAL GRADE OF TRACE CHAINS, AND HEEL CHAINS.

Send for illustrated catalogue and price list.

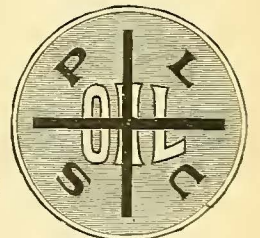
COVERT MANUFACTURING CO.,

SOLE MANUFACTURERS,

WEST TROY, N. Y.



Trade Mark Pat. Mar. 13, 1883.



Trade Mark Pat. Mar. 13, 1883.

Dux
Lubricant,

The Leading

New Grease for Street Railways.

The Best Lubricant for Street Railways known. Will run for one year on one packing. Cars will run easier packed with Dux, than with oil and waste. Why? Because we give you a better Lubricant. No drip from car boxes when packed with Dux. and therefore, keeps the car boxes and trucks clean.

Try It, and You Will Use No Other Lubricant.

OFFICE OF CAMDEN HORSE RAILROAD CO.,
Camden, N. J., May 25, 1885.

Lieb Lubricating Co., 196 and 198 Chicago St., Buffalo.
GENTLEMEN—Please send this Company to the above address one barrel of "Wool Compound Dux Lubricant."

Your agent sent us sufficient to pack one car in September last, and that car has been running steadily six days in the week since Sept. 15, '84, making from 43 to 50 miles per day. The car referred to looks as if it would not require re-packing for a year.

Yours respectfully,
JOHN HOOD, Supt., etc.

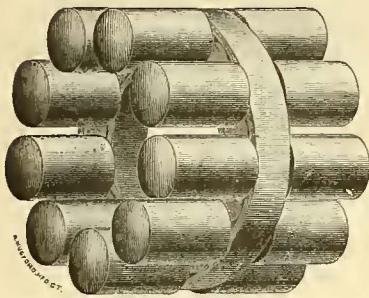
Manufactured by

The Lieb Lubricating Co.,

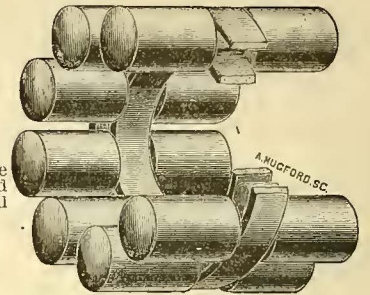
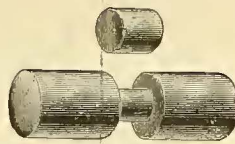
196 & 198 CHICAGO STREET.

BUFFALO, N. Y.

The Chaplin Roller Bearing Tramway



Car Box.



These cuts show the style of Bearing used in our Car Boxes. Rolls are made of 1 1/16 hardened steel and are 7 in. long. They run with great ease and are durable. Are so housed as to protect them from dust, and the Box will hold sufficient oil for one year.

Have Been Used Four Years to Test their Durability.

THE CHAPLIN MANF CO., Bridgeport, Conn.

Berry's Patent Hames and Regan Snap.

CHARLES E. BERRY
CAMBRIDGE, MASS.
MANUFACTURER OF
PATENT HAMES for FIRE DEPARTMENTS, HORSE RAILROADS
EXPRESS COMPANIES, CARRIAGES &c
FOR SWINGING HARNESSSES
Send for my
New Catalogue No. 5.

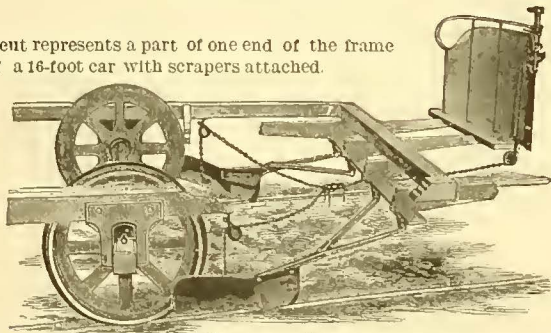
They have the advantage of easy adjustment. No buckles or straps are used. They can be applied in an instant, being fastened to the collar. The collar is divided and there is no strain upon the collar or the eyes of the horses.
In case of accident the whole harness can be removed at once. They are adopted to the use of Fire Departments, Horse Railroads, Express Wagons, Teams and Light Carriages, and are in use in over one hundred cities and towns in the United States and Canada.

REGAN PATENT SNAP.

They are made of the best gun metal and malleable iron, with a brass spring which is inclosed in a water-tight socket and made rust and dust proof. It is an impossibility for it to become detached. Write for illustrated catalogue and price.
CHARLES E. BERRY, Cambridge, Mass.

DAY'S IMPROVED STREET RAILWAY TRACK CLEANERS.

The cut represents a part of one end of the frame work of a 16-foot car with scrapers attached.



These Track Cleaners need no extended statement of their great superiority over all others invented. The fact of over two thousand pairs being now in use is sufficient evidence of their necessity and utility. Are adaptable to all kinds of rails and styles of cars. To secure the largest benefit they should be attached to every car in use.

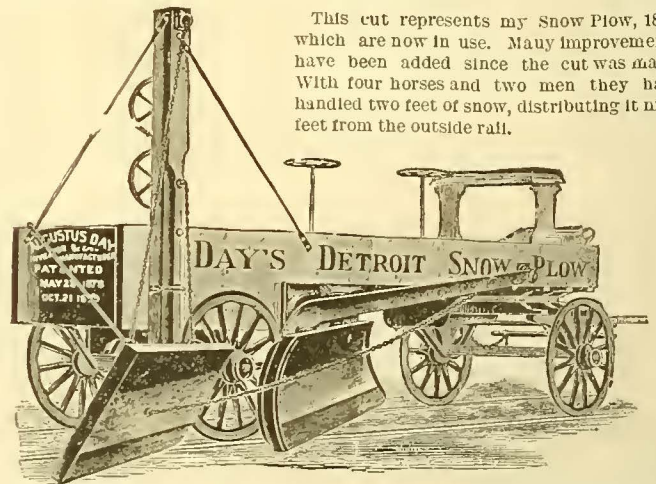
No estimate can be made of their advantage in saving of horseflesh hand labor, salt, and the making of time in stormy weather. Since their introduction new and valuable improvements have been made in their construction, mode of attachment, and convenience of handling. They are finished in a thorough, workmanlike manner of the best material obtainable, the design being to manufacture the most efficient article in preference to other considerations. Method of sale and price materially changed.

Reference is made to a few of the many roads using these Cleaners, with respective numbers of each, viz:

Fort Wayne & Elmwood Ry., Detroit, Mich.	30	Pairs
Detroit City Ry., Detroit, Mich.	125	"
Chicago City Ry., Chicago, Ill.	400	"
Rochester City & Brighton R. R. Rochester, N. Y.	74	"
Albany Ry., Albany, N. Y.	50	"
Waterville Turnpike & R. R. Co., Albany, N. Y.	28	"
Elmira & Horseheads R. R., Elmira, N. Y.	11	"
Lynn & Boston R. R., Boston, Mass.	68	"
Boston Highland Ry., Boston, Mass.	46	"
Lowell Horse Ry., Lowell, Mass.	27	"
Grand Rapids Street Ry.	48	"
Naumkeag Street Ry., Salem, Mass.	57	"
Merrimack Valley Ry., Lawrence, Mass.	21	"
Taunton Street Ry., Taunton, Mass.	10	"
New Haven & West Haven Ry., New Haven, Conn.	16	"
Bridgeport Horse Ry., Bridgeport, Conn.	34	"
Adams Street Ry., Toledo, Ohio.	16	"

Toledo Street Ry., Toledo, Ohio.	16	Pairs
Louisville City Ry., Louisville, Ky.	60	"
Cream City Ry., Milwaukee, Wis.	40	"
Milwaukee City Ry., Milwaukee, Wis.	50	"
Buffalo Street Ry.	32	"

This cut represents my Snow Plow, 18 of which are now in use. Many improvements have been added since the cut was made. With four horses and two men they have handled two feet of snow, distributing it nine feet from the outside rail.



It is adapted to single or double track roads, adjustable when necessary; built in the most thorough and substantial manner of the best material. The Plow is not intended to supply the place of the small Track Cleaners, but be auxiliary to team. For execution in deep snow, ease, and convenience in handling, it surpasses all others in use. Orders should be given three months in advance. Price, with gas-pipe rails, \$425, delivered on cars.

Reference is made to the following roads that have purchased and used them:—
Detroit City Railway, Detroit, Mich. (Two plows.) Rochester City & Brighton Railroad, Rochester, N. Y. (Two plows.) Cream City Railway, Milwaukee, Wis. West Side Street Railway, Milwaukee, Wis. Chicago City Railway, Chicago, Ill. (Two plows.) Grand Rapids Street Railway, Grand Rapids, Mich. Highland Street Railway, Boston, Mass. Buffalo Street Railway, Buffalo, N. Y. (Two plows.) Johnstown Pass. Railway, Johnstown, Pa. Minneapolis Street Railway, Minneapolis, Minn. (Two plows.) St. Paul Street Railway, St. Pauls Minn. (Two plows.) Kalamazoo Street Railway, Kalamazoo, Mich.

For Further Information and Price, Address:

AUGUSTUS DAY, 76 State Street, cor. Park Place, - - - - - Detroit, Michigan, U. S. A.

PUGH & RUSSELL,

Stewart Building, P. O. Box 3,524, New York.

MANUFACTURERS OF AND DEALERS IN

St. Railway Supplies

OF EVERY DESCRIPTION.

CARS

Rails and Spikes, Switches and Turntables, Wheels and Axles, Running Gear and Brake Shoes, Pedestals and Boxes, Bearings, all patterns, Lubricants, Castings, all patterns and metals, Car Hardware and Trimmings, Gongs and Bells, Rubber in all shapes, Mats and Step Treads, Wood Work and Iron Work for Open or Closed Cars, Complete or in Parts.

Fare Boxes and Change Slides, Car Heaters, &c.

Send for List.

ESTIMATES FURNISHED PROMPTLY FOR

TRACK MATERIAL, BUILDING & EQUIPMENT.

GENERAL AGENTS FOR THE UNITED STATES FOR

THE A. FRENCH SPRING COMPANY'S

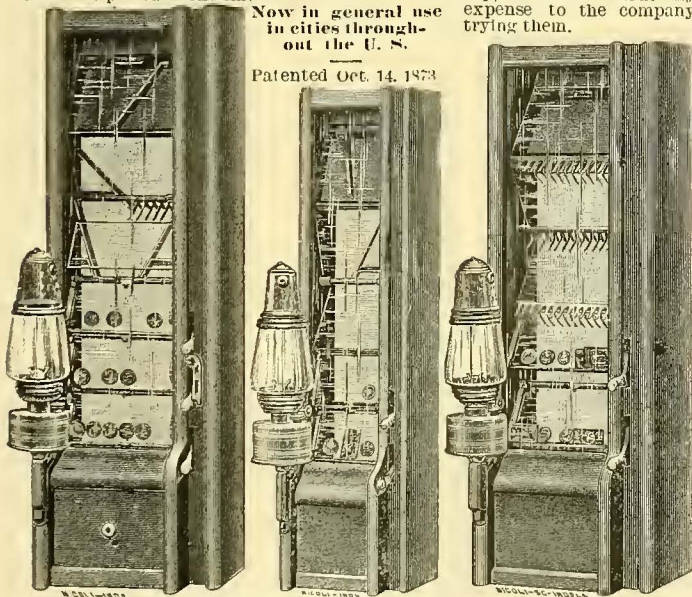
KEG-SHAPED SPRINGS FOR STREET CARS.

CORRESPONDENCE INVITED.

ornamental to any car. Reduction in price where 2 boxes are placed in one car. **TOM L. JOHNSON'S IMPROVED FARE BOX.** Roads equipped with boxes on trial, and if not satisfactory, returned without any expense to the company trying them.

Now in general use in cities throughout the U. S.

Patented Oct. 14, 1873



One of the principal merits of these Fare Boxes over all others, consists in the fact that the fares are not turned out of sight at once by the drivers, leaving nothing but the bare word and memory of the parties as evidence of the payment, thereby making it easy for deception to be practised, even though an officer is on the car, and is endeavoring to see that the driver is faithfully performing his duties. They are so constructed that the fares are kept in sight from one end of the road to the other, and at any point on the line an officer of the company, or indeed any other person, can tally passengers with the fares. The drops can easily carry from 75 to 80 fares, and can be counted without mistake, and counterfeit money can be easily detected. These boxes are very simple in construction, being cleared, when required, in five minutes, while as any other box takes a much longer time. The glass fronts and drops render them so transparent that a person sitting in the further end of car can readily count the fares and make the tally, without making himself conspicuous in the matter, if desirable. They are lighted from an outside lantern, (which is only on the car at night, and should be taken off during the day,) giving an excellent light, for the fares can be seen almost as plain as by day. When the box is put in a car it can not be taken out or tampered with, unless the keys are obtained from the office, and can not be robbed without violence. Special attention given to correspondence on the subject of street railway construction, equipment and operation. Address all correspondence to A. A. ANDERSON, with Tom L. Johnson, Indianapolis, Indiana.

STREET RAILROAD Wooden Hames.

500

Different styles of

HAMES.

And a full line of

Saddlery Hardware,

Manufactured by

Pratt & Letchworth,

BUFFALO, N. Y.,

U. S. A.

SEND FOR CATALOGUE.

Mention STREET RAILWAY JOURNAL.

"PAY HERE."

Fare Boxes and Change Receptacles for Street Cars.

OUR NEW FARE BOX NO. 3.

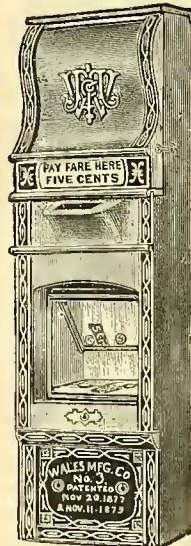
The following are some points of superiority in this box over others:

SIMPLICITY OF CONSTRUCTION, QUICKNESS AND CONVENIENCE OF CLEANING, SECURITY OF MONEY DRAWER, BEAUTY OF FINISH, and MUCH CHEAPER IN PRICE.

We have just added to this box a very valuable improvement, viz., a small mirror placed back of first slide or rest, which presents to driver's view the back side of fare as well as front, when resting on first rest. He can by this quickly detect any spurious or mutilated coin or ticket that may be split and put in box.

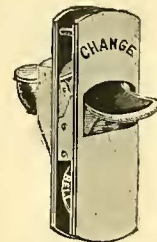
It often happens in all Fare Boxes, to the annoyance of driver and passenger, when several fares are resting on first slide one or more coins are liable to be

behind a ticket, and the driver cannot see them, and quite often a passenger is "rang up," when his fare is concealed behind the ticket, from the driver. This arrangement gives driver view of both sides of fare.



Box No. 3.

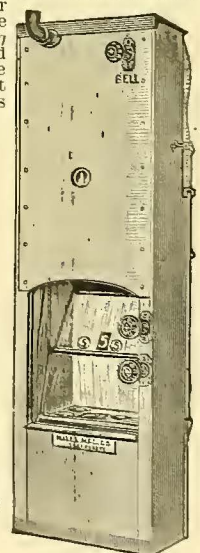
Front or Passengers' View.



CHANGE RECEPTACLE.

The only satisfactory arrangement in use for making change with the driver.

Descriptive and Illustrated Circular on application. Get our prices before buying.



Box No. 3.

Back or Driver's View.

WALES MFG. CO., 76 & 78 E. Water St., Syracuse, N. Y.

ESTABLISHED 1857.

INCORPORATED 1875.

BROWNELL & WIGHT

CAR COMPANY,

ST. LOUIS, MO.

BUILDERS OF

Street Cars

OF EVERY STYLE AND SIZE,

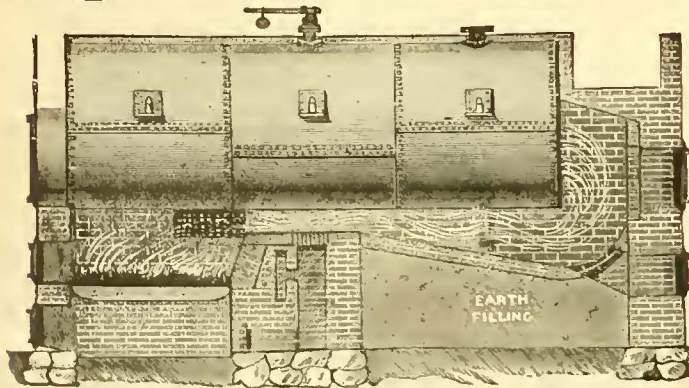
For Horse, Cable or Other Motive Power.

EXCLUSIVE MANUFACTURERS OF

BROWNELL'S PATENT COMBINATION CARS

FOR SUMMER AND WINTER SERVICE.

JARVIS ENGINEERING CO., Engineers & Contractors



FOR ERECTING STATIONS
FOR
ELECTRIC POWER AND CABLE RAILWAYS,
USING

Jarvis Patent Furnace

For Setting Steam Boilers to Burn Cheap Fuel, such as Wet Saw-
dust, Coal Screenings or Slack Coal.

ALSO

ARMINGTON AND SIMS ENGINES,

Belting direct to Power Dynamos without using Shafting

NO. 61 OLIVER STREET, BOSTON, MASS.

SEND FOR CIRCULAR.

J. M. JONES' SONS,

AGENTS,

Street Railway Car Builders

WEST TROY,

NEW YORK.

PENNSYLVANIA STEEL COMPANY,

MANUFACTURERS OF

STEEL RAILS

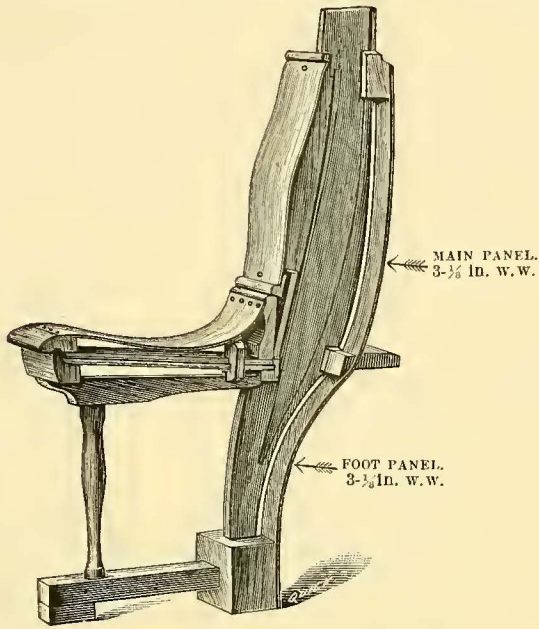
Of T patterns, weighing from 16 to 76 lbs. per yard.
CENTRE BEARING Street Patterns, 42 to 60 lbs. per
yard, TRAM Street Patterns 45 to 47 lbs. per yard,
and Street Patterns for STEAM ROADS.

WORKS AT

STEELTON, DAUPHIN CO., PENN.

NEW YORK OFFICE, - 160 Broadway.
Philadelphia Office 208 South Fourth St.

STREET CAR SEATS & BACKS.



THREE-PLY CAR SIDES.

Having given our three ply white wood car sides a thorough trial for a number of years in our city street and railway lines, which test has left them as firm and good as the day they were put in, we unhesitatingly place these sides in the market as a superior article. They are composed of three white wood (or poplar) veneers, each 1/2 inch thick, the grain of the center layer running at right angles with the two outside layers. Hence they derive all the special and well-known advantages of glued up wood over single ply, namely:

- 1st. They are fully 75 per cent stronger, for they brace and stiffen the car.
- 2nd. They are lighter, being only 3-8 inch thick, and so do not add so much dead weight to the car.
- 3rd. They will not check or split by change of atmosphere.
- 4th. They will not split or crack when nailing into place, even though the nail be placed near the edge.
- 5th. Being laid over a form to suit the shape of the car frame or post they cannot buckle or twist, a feature which also adds strength to the car.

For repairing cars these sides have no equal.

Our Three Ply Car Seats and Backs, so well known all over the world are now the most popular seat and back in the market, and recommend themselves especially for their *Lightness, Cleanliness, Healthfulness and Beauty*, as also their *Cheapness and Durability*. For they are indestructible by moths (the great enemy of upholstery), and will not harbor vermin or insects, or carry or communicate contagion or disease. Our trade in this line has grown in thirteen years to vast proportions, which in itself is a sufficient guarantee of their merits. They are made either perforated or plain to suit customer. Birch is the wood most generally used. Today fully one-half the railroads in the country are using these seats and backs. We would also call attention to our *Veneer Ceiling* for cars. They are made either plain, perforated or decorated, and greatly add to the beauty of the car. For repairing cars they have no equal; for they are placed over the carlines and cover all the old paint and wood work. The woods generally used are *Birch, Birdseye Maple, Oak and Mahogany*.

GARDNER & CO.

Manufacturers of Car Seats and Ceilings and Depot Seating,

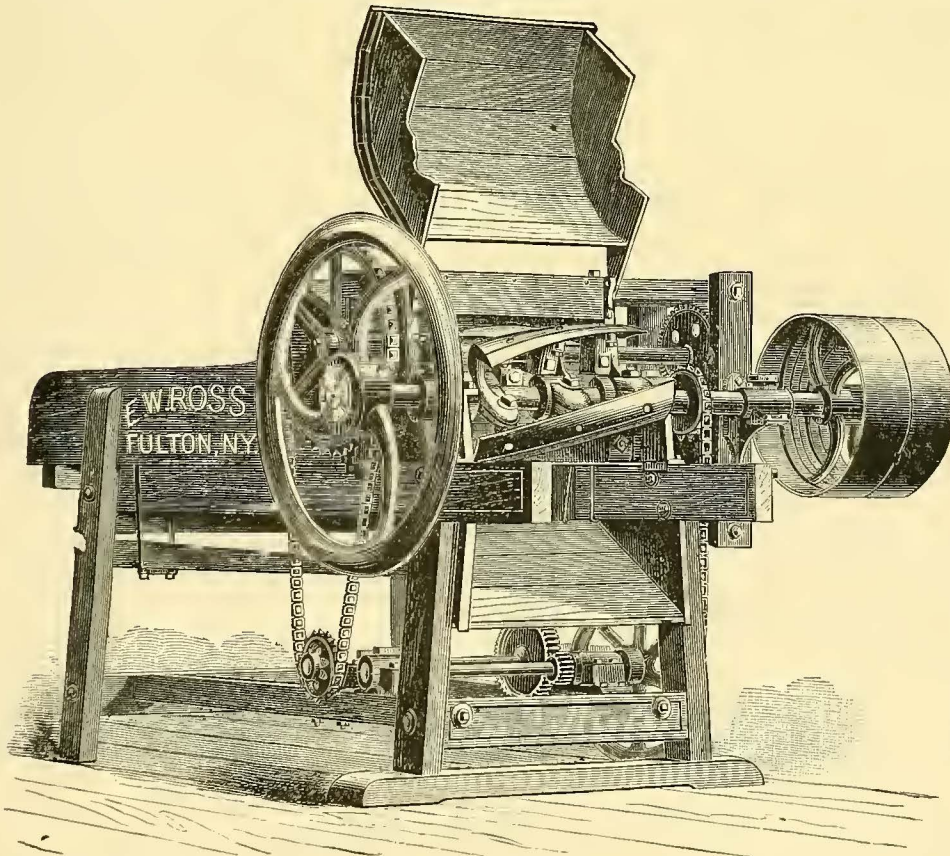
OFFICE AND FACTORY: 643, 645, 647, 649, 651, 653, 655 and 657 West 48th St., New York

Sample and Salesroom: 206 Canal St., cor. Mulberry.

Send for Catalogue.

Address all Communications to Office.

THE ROSS HAY CUTTERS.



A FULL LINE OF CUTTERS BUILT EXPRESSLY FOR STREET RAILWAY BARNs.

THEY HAVE COMBINED STRENGTH, DURABILITY AND GREAT CAPACITY.

ARE EASILY OPERATED AND CAN BE RUN TO FULL CAPACITY BY SMALL GAS ENGINE.

MACHINES SENT TO ANY PART OF THE U. S. ON APPROVAL IF DESIRED.

GUARANTEED TO BE THE BEST.

ILLUSTRATED CATALOGUE AND FULL PARTICULARS FURNISHED WHEN REQUESTED.

E. W. ROSS & CO., SPRINGFIELD, OHIO.

SLAWSON'S PATENT FARE BOXES

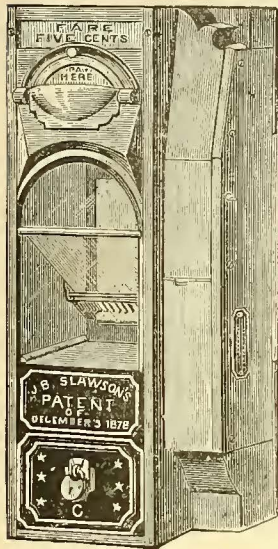
These Boxes are of the latest and most approved pattern, and contain a front door, by opening which all of the glass inside can be conveniently cleaned. This is a late patent, and is a very valuable improvement over the old method of taking the boxes apart for that purpose. They are well made and not liable to get out of order, cannot possibly be picked, and even if all the glass is broken no fare can be extracted from the drawer.

The late J. B. Slawson originated the "FARE BOX SYS-

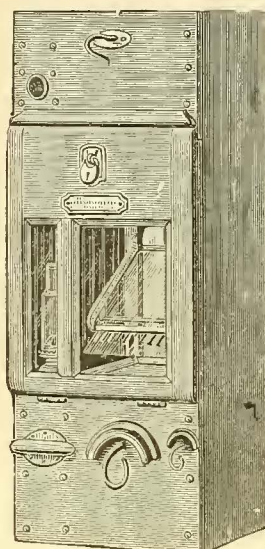


TEM," and all of his Boxes, Change Gates and Drivers' Change Box are protected by several patents, and parties using them are not liable to claims for infringements, as may be the case with some boxes which are now being offered for sale.

These Boxes, etc., are now in use not only in the United States and Canada, but in Mexico, South America, Europe, Asia, Africa and Australia—in fact, nearly all places where street cars are used.

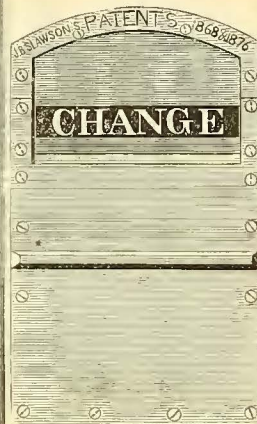


C. Front View.



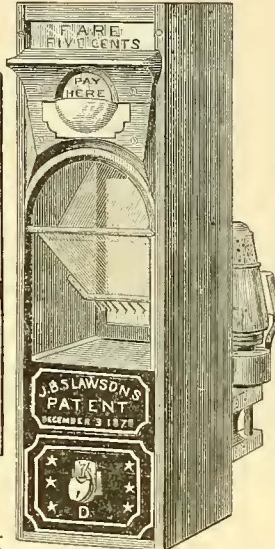
C. Back View.

Change Slide. Outside View.

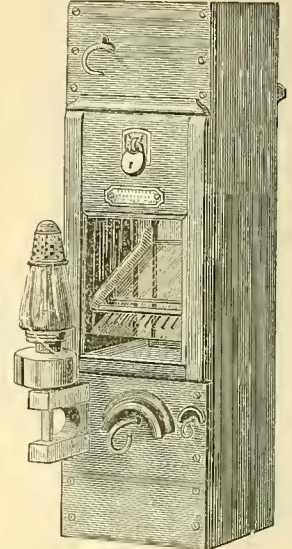


Change Gate. Outside View.

The prices have been greatly reduced, and are made to fit the times. Orders will be promptly filled by addressing,



D Front View.



D Rear View.

MILTON I. MASSON, Agent, 365 AVENUE A, NEW YORK.

or the JOHN STEPHENSON COMPANY, Limited 47 EAST TWENTY-SEVENTH STREET, New York.

Wm. WHARTON Jr. & CO., Limited,

Engineers, Manufacturers & Contractors,

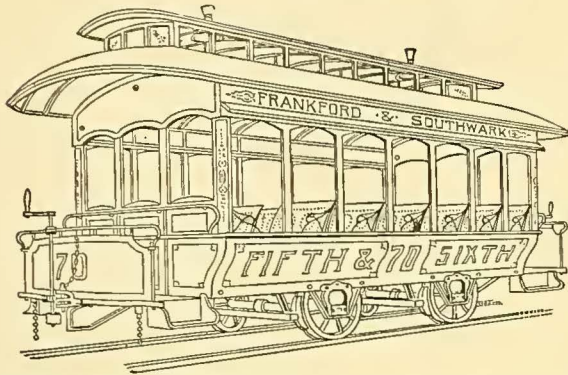
Twenty-Fifth Street and Washington Avenue,

PHILADELPHIA, PA.

Cable Railways, Grips,
And All Appurtenances.

The Oldest and Largest Manufacturers of Street Railway Track Appliances in the World. Responsible parties contemplating Building, Renewals or Extensions will find it to their interest to correspond with us.

FOR SALE.



Four Summer Cars, good as new, built in very best manner, perforated seats bronze trimmings, etc., centre aisle, seating room for 30. The company having discontinued the use of summer cars offer the same for sale on very reasonable terms. For description and price apply to FRANKFORD & SOUTHWARK R.R. CO., 2501 Kensington Ave., Philadelphia.

ESTABLISHED 1847.

A. WHITNEY & SONS,
CAR WHEEL WORKS,
PHILADELPHIA, PENN.

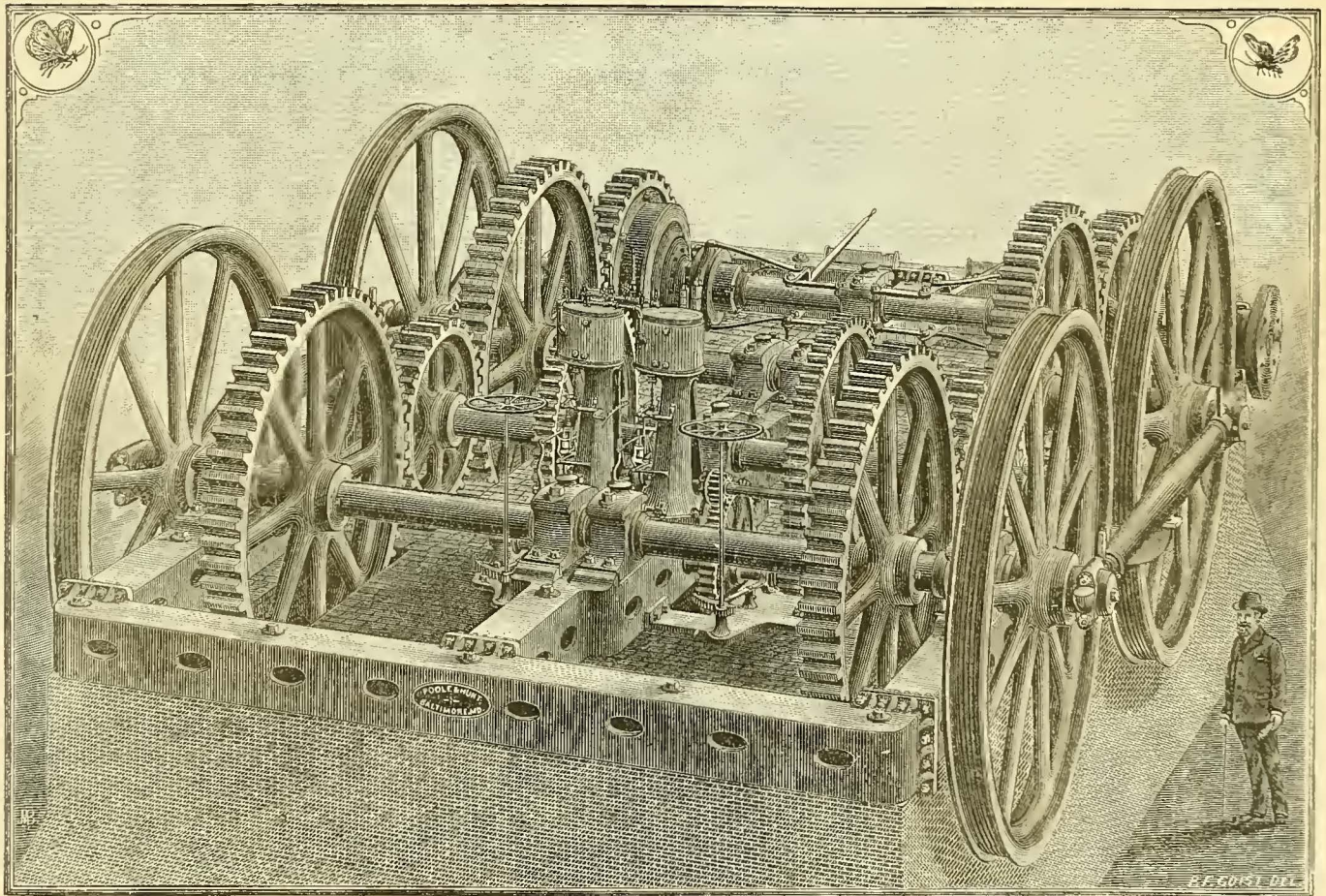
CAST CHILLED WHEELS,
AXLES AND BOXES
FOR EVERY KIND OF SERVICE.
Street Railway Wheels of all Sizes.

THE DAVIS METAL

for CAR JOURNAL BEARINGS
EDWARD C. WHITE, SOLE MANUFACTURER

531 WEST 33D STREET, NEW YORK.

POOLE AND HUNT,
Baltimore, Md.



Manufacturers of Cable Railway Plant.

Machine Moulded Gearing for Mills and Factories.

CORRESPONDENCE SOLICITED.

RICHARD VOSE,

13 Barclay Street, . . . New York,

PATENTEE AND MANUFACTURER OF

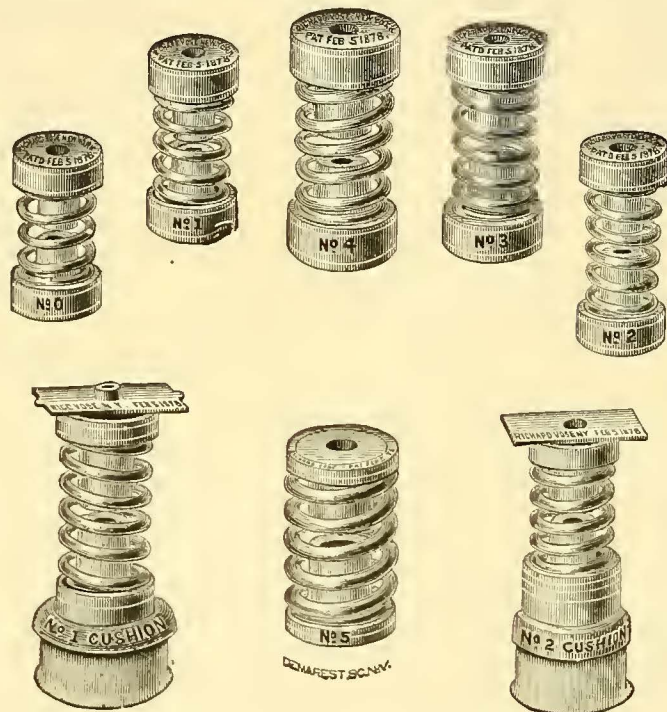
Graduated Street Car Springs.

RUBBER CONE.

Patented, April 15th, 1879.

ADAPTED TO THE

STEPHENSON,
 BEMIS,
 RANDALL,
 HIGLEY,
 BRILL,
 JONES,
 BALTIMORE,
 VOLK
 And all other Boxes.



No. 0, for 10-ft. Light Cars.
 No. 1, for 10-ft. Cars.
 No. 2, for 12-ft. Cars.
 No. 3, for 14-ft. Cars.
 No. 4, for 16-ft. Cars.
 No. 5, for 16-ft. Cars.
 (Single Pedestal.)
 No. 1, Cushion, for 16-ft. Cars.
 No. 2, Cushion, for 12 and 14-ft. Cars.

TESTIMONIAL.

MIDDLESEX RAILROAD CO., BOSTON, MASS.

RICHARD VOSE, Esq. Dear Sir,—We have had in constant use upon this road for several years the “Vose Graduated Spring,” and they have given very general satisfaction. So much so that we shall continue to order them. Very truly,
 CHAS. E. POWERS, Prest.

NO. CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARD VOSE, Esq. Dear Sir,—This company has had in use for the past seven or eight years your Patent Graduated Car Spring, and our experience leads us to the conclusion that they are all in every respect which you represent them to be. And certainly all that we desire. Yours Respectfully,
 V. C. TURNER, Prest.

B'DWAY & 7TH AVE. R.R. CO., NEW YORK CITY.

MR. RICHARD VOSE, Esq. Dear Sir,—We have 125 cars equipped with your Graduated Springs. They have given entire satisfaction. They are undoubtedly the best in the market. Very Respydly,
 J. W. FOSNAY, Prest.

BROOKLYN CITY R.R. CO., BROOKLYN, N. Y.

RICHARD VOSE, Esq. Dear Sir,—Yours of May 27 to Mr. Hazzard, Prest., has been referred to me for reply. And would say that we have now in use about 600 sets of your Patent Graduated Car Springs. And up to date have given perfect satisfaction. Yours truly,
 A. N. DICKIE, Supt.

CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARD VOSE, Esq. Dear Sir,—Replying to your favor of a recent date I beg to say that we have been

using your Graduated Car Springs since 1881 and have increased the number, until at the present time we are using 369 sets, and the same have invariably proved satisfactory. Yours truly,
 C. B. HOLMES, Supt.

CAMBRIDGE R.R. CO., CAMBRIDGE, MASS.

COL. RICHARD VOSE. Dear Sir,—We have used your Graduated Street Car Springs for several years and I need only say with such success that we continue to use them. Very Respydly,
 W. A. BANCROFT, Supt.

CINCINNATI I. P. R.R. CO., CINCINNATI, O.

RICHARD VOSE. Dear Sir,—Send us 6 more sets of your new pattern Car Spring, same as the lot we ordered of you last Sept. In every way. This is the best answer we can make to your question of “How we like them.” Yours truly,
 J. M. DOUERTY, Supt.

LYNN & BOSTON R.R. CO., CHELSEA, MASS.

RICHARD VOSE, Esq. Dear Sir,—All I can say in favor of the Vose Spring is that we continue to apply them to most of our new cars. Have about 60 cars equipped and think very well of them. If they could be produced for less money should think better of them. Very Respectfully Yours,
 E. C. FOSTER, Supt.

CREAM CITY R.R. CO., MILWAUKEE, WIS.

Gentlemen,—Yours of May 28 at hand, with regard to your Car Springs. We find they are the best in use. They come a little higher than the Barrel Spring, but they are much the better springs. Yours truly,
 H. J. C. BERG, Supt.

LOWELL HORSE R.R. CO., LOWELL, MASS.

TO WHOM IT MAY CONCERN: We have used the Richard Vose Graduated Car Springs for several years, and are well pleased with them. Should be unwilling to change them for any other. All of our cars use these springs. Yours Respectfully,
 J. A. CHASE, Treas.

DAYTON STREET R.R., DAYTON, O.

MR. RICHARD VOSE. Sir,—We have eighteen cars equipped with your Patent Graduated Spring, and will use your springs to replace all other kinds as fast as repairs are needed. Your springs give the best satisfaction to our company and patrons of any that we have ever tried. Yours Respectfully,
 A. W. ANNERSON, Supt.

FT. WAYNE & ELMWOOD RY. CO., DETROIT, MICH.

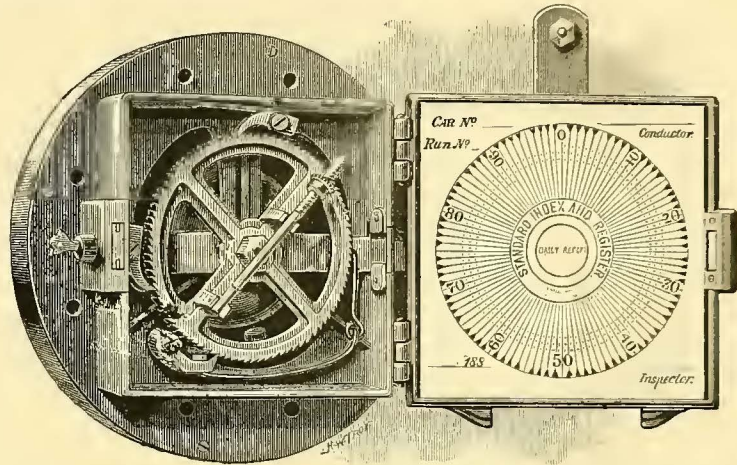
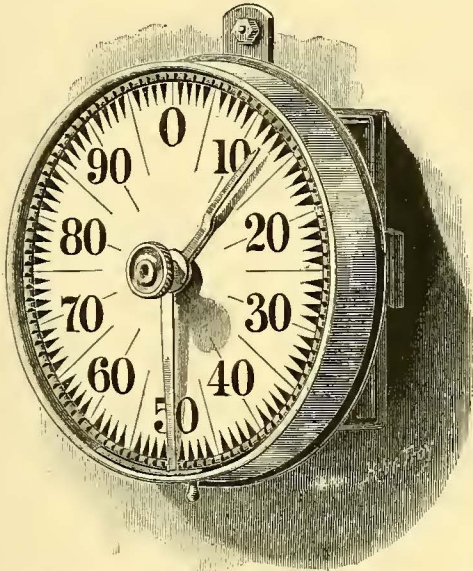
RICHARD VOSE, Esq. Dear Sir,—For the past four years we have been using your Graduated Springs on all of our cars (30). Our Superintendent says that none of them have ever had to be repaired and that they are the best springs we ever used. Yours truly,
 N. W. GOODWIN, Secy.

DETROIT CITY RY., DETROIT, MICH.

RICHARD VOSE, Esq. Dear Sir,—I have your favor of the 29th ultimo. We have about 70 cars equipped with your springs. Our experience is that they wear well and give general satisfaction. Yours truly,
 GEO. HENDRIE, Treas.

THE STANDARD INDEX & REGISTER CO., NEW YORK, SOLE LICENSEES AND MANUFACTURERS OF THE STANDARD INDEX AND REGISTER, ADOPTED BY THE LEADING RAILROADS IN THE UNITED STATES,

For Indelibly Recording upon paper the number of trips made, and passengers carried for each trip as well as for any number of trips for any period of time, and sounding an alarm simultaneously with each registration made.



The recent decision of the U. S. Circuit Court in our favor after three years of litigation in which the Standard was involved, justifies us in accepting orders from railway companies generally for our Registers, which are celebrated for simplicity, efficiency and infallibility as an indicating and recording register.

It will appear obvious upon inspection that the Standard Register is the only device that should be adopted by railway companies anxious to secure a correct report and record of trips made and fares collected, for the reason that, in addition to the visual dial and indicator, a permanent registration of each trip made, and the exact number of fares collected or passengers carried, is automatically made by mechanical means upon paper, by which the latter is punctured in a manner that prevents obliteration, and can be preserved in the office of the company for reference and comparison with fares turned in by the conductor, and for filing for future purposes.

TESTIMONIALS.

METROPOLITAN RAILROAD COMPANY.
PRESIDENT'S OFFICE. C. A. RICHARDS. 16 KILBY STREET,

BOSTON, March 9, 1883.

ELI BALDWIN, Esq., Prest. Standard Index & Register Co.,
New York, N. Y.,

Dear Sir,—In answer to your inquiry of March 8 I would most respectfully state, that after a trial of some months of the two hundred odd registers that you have placed in our cars, I feel that I do no more than exact justice to your company in giving you in the strongest and most unqualified manner my entire approval of them. They are in every way all that you claimed, and all that you promised me they would prove to be. In short, I like them. They answer my purpose completely, and I would not exchange or part with them for any other device of the kind I have yet seen.

Very respectfully yours, &c.,
C. A. RICHARDS,
President Metropolitan Railroad Co.

C. A. RICHARDS, President. CHAS. BOARDMAN, Treas. W. P. HARVEY, Secy.
OFFICE OF

THE METROPOLITAN RAILROAD COMPANY,
No. 16 KILBY STREET,

BOSTON, March 23, 1886.

E. BALDWIN, Esq., Prest. Standard Index and Register Co.
Dear Sir,—We have now in daily use four hundred and twenty-five of your registers. They have by repeated purchases come to this number. We like the registers very much, and have no fault to find with them. With an experience of four years we feel that we are justified in recommending them.

Very respectfully yours, &c.,
C. A. RICHARDS, President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY.

G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine,
Secy. and Treas. W. N. A. Harris, Supt.
OFFICE, 10TH AVENUE, 53D AND 54TH STREETS,

NEW YORK, August 31, 1882.

The Standard Index Register Instruments purchased from you about a year and a half ago have since that time been in constant use upon the cars of this line, and I am very free to acknowledge their superiority over any device hitherto tried by us. We believe from our experience that in their construction

and result they attain the object sought with accuracy and at the same time with a minimum liability to external tampering or dishonest manipulation.

Very respectfully,
C. DENSMORE WYMAN, Vice President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY

G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine,
Treas. Howard Scribner, Secy. W. N. A. Harris, Supt.

TENTH AVENUE, 53D AND 54TH STREETS,

NEW YORK, March 24, 1886.

ELI BALDWIN, Esq., Prest. Standard Index & Register Co.,
138 Fulton Street, New York:

My Dear Sir,—We have used about 150 of your "Standard Index Registers" for the past five years and such use has demonstrated their entire utility and adaptation for the purposes intended in their construction. We are more than satisfied with them, finding that by reason of the simplicity of their construction they require hardly any repairs, while they are accurate and reliable and at the same time by virtue of the inside paper dial are free from the danger of being tampered with. In a word we are thoroughly satisfied with the Standard and it is but just to you that I should express this opinion to you.

Very sincerely yours,
C. DENSMORE WYMAN, Vice President.

OFFICE OF

THE BROADWAY AND SEVENTH AVENUE RAILROAD COMPANY,
COR. 7TH AVE. AND 50TH STREET,

NEW YORK, March 25, 1886.

ELI BALDWIN, Esq., Prest. Standard Index & Register Co.:

Dear Sir,—Concerning your inquiry as to the result of our experience in the use of the Standard Register furnished by your company and the satisfaction given I will state that after five years' test during which they have been in use on the cars of our roads, we have found them the embodiment of all that you have claimed, and I cheerfully endorse them as the best registers that we have ever seen, and have found them reliable and not easily put out of order. In short we would not be without them. The paper register or tablet upon which registrations are recorded of the number of passengers carried and trips made is an invaluable feature, producing as it does an infallible and indelible record of fares collected, serving as a check where a division of trust is questioned. We have upwards of two hundred of your Registers on the cars of our roads at the present time.

Very Truly Yours,
J. W. FOSHAY, President.

STANDARD INDEX & REGISTER COMPANY, 138 Fulton St., N. Y.

The Goodenough System

OF

HORSE-SHOEING.

The Goodenough System of Horse-Shoeing, of which the GOODENOUGH HORSE-SHOE is the exponent, is an endeavor to take from the hand of unthinking and barbarous method, the important art of farriery.

In the correct use of the system and proper application of the shoe, the sole bars and frog of the horse's foot are never cut, the rasp and knife being applied only to the wall of the foot, and no fire is used in the fitting.

The shoe is very light and narrow (Army pattern), easily worked cold and allowing frog bearing, without which there can be no good horse-shoeing.

FROG PRESSURE

is as important a factor to the health of the horse's foot as air is to the lungs or food to the stomach. It is the

KEY-STONE OF THE ARCH.

The advantages of the Goodenough System are, first and foremost, **SOUND HORSES**; Secondly, **CHEAP HORSE-SHOEING**.

Horse railroads using the system in its entirety not only buy much less iron and pay for much less labor, but have also much more serviceable stock.

Said a horse railroad superintendent of now the largest road in the United States:

"We don't wear iron nowadays, we wear frogs and cobble stones; nature provides frogs and Boston finds cobble stones."

To those who desire to read further upon the subject we will send upon application free of cost our pamphlets entitled,

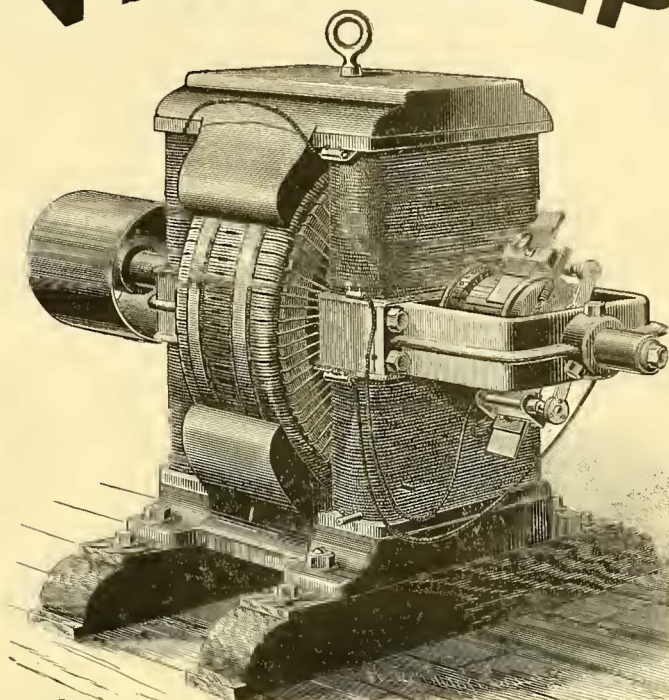
"HORSE-SHOEING," and "FACTS FOR HORSE-OWNERS."

THE GOODENOUGH COMPANY,

156 and 158 East Twenty-Fifth Street,

NEW YORK.

THE VAN DEPOELE



RAILWAY ELECTRIC SYSTEM.

The Van Depoele Electric Manufacturing Company,

21 NORTH CLINTON STREET, CHICAGO, ILL.,

Owning the Van Depoele Patents for Electric Railways and for Van Depoele Motors, are prepared to equip railways with their Electric System.

We claim to have the best and most economical Electric Motor in the World.

We are not Selling Stock, but Doing Business.

Would be pleased to furnish estimates to new companies or those desiring to extend lines or wanting more rapid transit.

Van Depoele Electric Manufg. Co.

J. W. FOWLER, President.

THE

DAN'L F. LEWIS, Treasurer

LEWIS & FOWLER M'F'G CO.,

P. O. BOX 102.

BROOKLYN, N. Y.

Brooklyn, N. Y., April 1st, 1886.

To the Managers of Street Railway Companies :

GENTLEMEN : We take pleasure in announcing to our friends, patrons, and the trade generally, that we have this day taken possession of, and will hereafter occupy, the extensive works (at the above address) formerly occupied by the late James Binns, of this city.

The establishment has been prominently and favorably known for the past forty years as one of the largest furnishers of Railway Castings in the country, the good will of which we have secured, and will continue the business on an enlarged scale.

The machine shops are large and complete, and in connection therewith are iron, brass, and wheel foundries, all of which we shall operate, and we trust in a manner that we shall be prepared to place before the trade the only full line of Street Railway Supplies ever offered by any one establishment, and which will embrace everything pertaining to the construction, equipment and maintenance of a street railroad.

The only complete Catalogue of Street Railway Supplies ever published will shortly follow this, which we feel will be a very material aid to railway companies in making purchases of supplies.

A cordial invitation is hereby extended to all to visit our new works. An inspection of the same will be convincing that the facilities at our command will enable us to not only produce the goods referred to, but at first hands, and to sell the same at bottom figures.

We sincerely thank the trade for the earnest support given us in our business in the past, and will deeply appreciate any encouragement we may receive in the future in our extended and new undertaking.

Yours very truly,

The Lewis & Fowler Manfg. Co.

The Lewis & Fowler Manufg. Co.,

BROOKLYN, NEW YORK.

Notice of Removal.

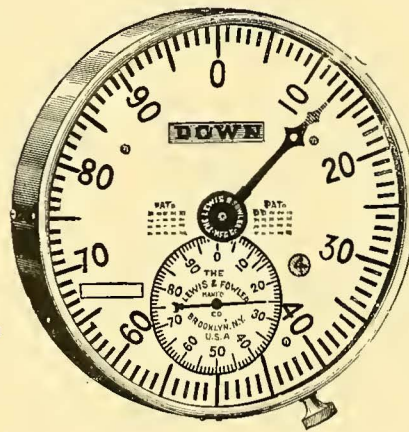
— THE —

Lewis and Fowler Man'f'g Co.,

Office and Works :

27 to 35

Walworth Street.

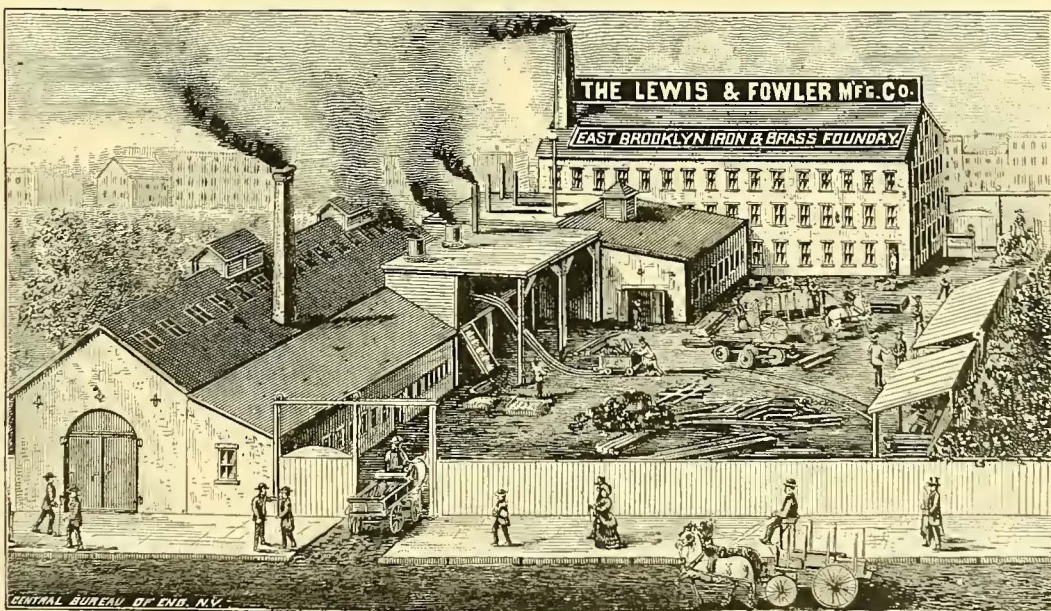


31 to 37 & 32 to 40

Sandford Street.

Fifteen Minutes from Brooklyn Bridge via Flushing avenue cars.

Railroad Castings.



Railroad Supplies.

BROOKLYN, N. Y.

F. H. ANDREWS.

F. T. LERNED, Gen'l Agent.

B. A. CLOONEY.

R. G. MATTERN, Western Agent, Lakeside Building, Chicago.

ANDREWS & CLOONEY,

Manufacturers and Contractors for Constructing Street Railways.

THE BUILDING OF

CABLE ROADS,

AND FURNISHING MATERIALS FOR SAME, A SPECIALTY.

All kinds of Steel and Steel Grooved Rails,

Straight or Bent to any Radius.

Knees, Fishplates, Spikes, Bolts, &c., &c.

MACHINERY:

Wheel Presses, Wheel Borers, Axle Lathes, Drills, &c.,

EITHER FOR STEAM OR HAND POWER.

Promptness and Reasonable Prices.

Send for Illustrated Catalogue.

F. H. ANDREWS.

F. T. LERNED, GEN'L AGT.

B. A. CLOONEY

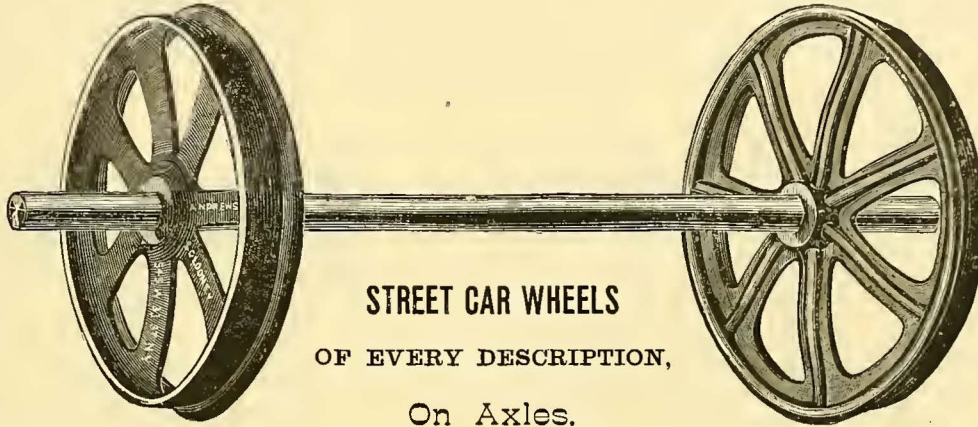
ANDREWS & CLOONEY,

OFFICE :

545

W. 33d St.,

NEW YORK.



STREET CAR WHEELS
OF EVERY DESCRIPTION,
On Axles.

WORKS :

535 to 551

West 33d St.,

AND

538 to 552

West 34th St.,

NEW YORK.

Manufacturers of

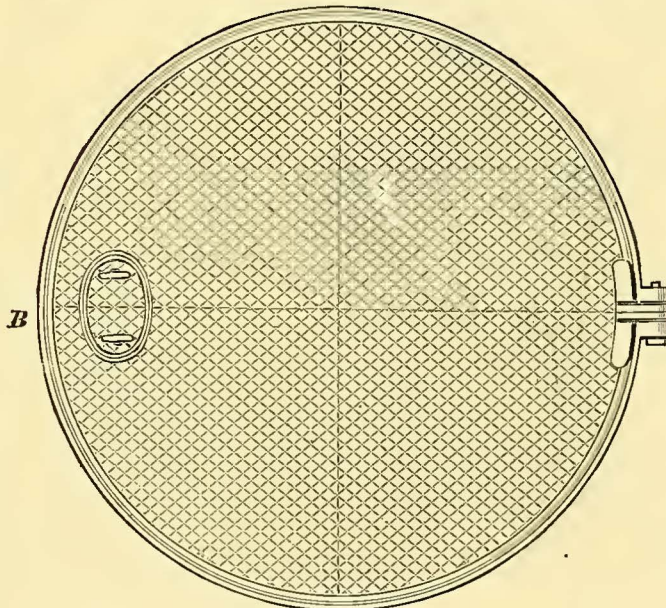
Elliptic, Spiral,

Volute, Car and

Engine

SPRINGS

Of Every Description.



Street Railway Turn-table.

Car Wheels,
Axles,
Brake Shoes,
Pedestals,
Boxes,
Brass Bearings
AND
Castings

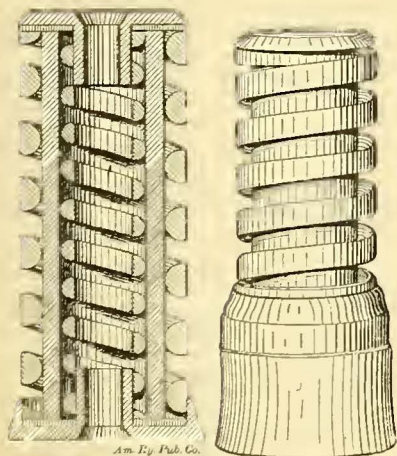
of all Descriptions where great
Strength is Required.

ALSO

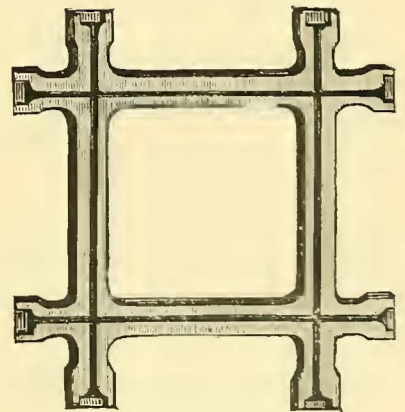
Sweepers, Snow Plows,
Turn-Tables.

Track Work, Automatic
Switches, Etc.

R. G. MATTERN, Western Agent,
Lakeside Building, Chicago.



Improved Springs.



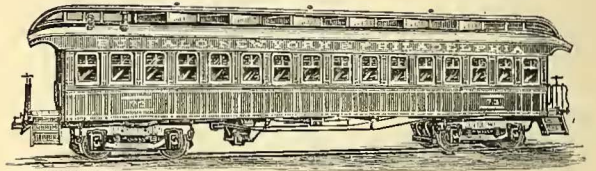
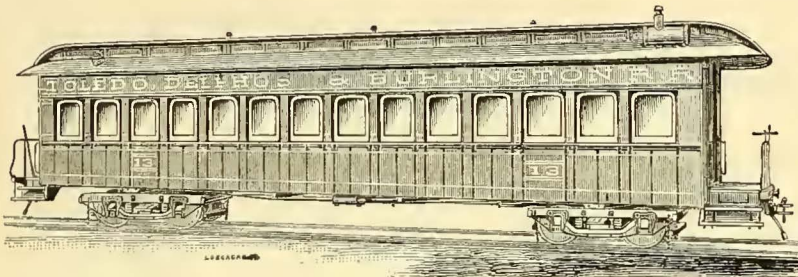
Street Railway Crossings.

J. G. BRILL & CO.,

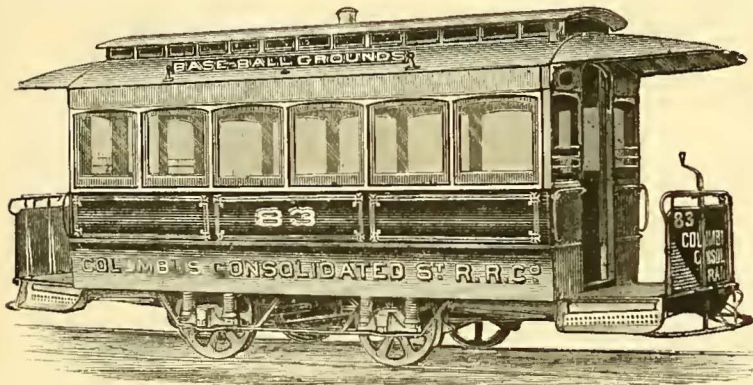
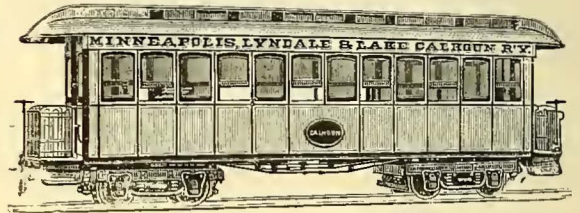
PHILADELPHIA,

BUILDERS OF

RAILWAY & TRAMWAY CARS

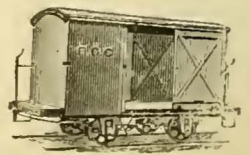
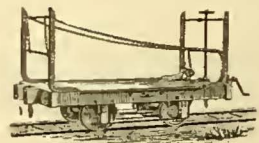
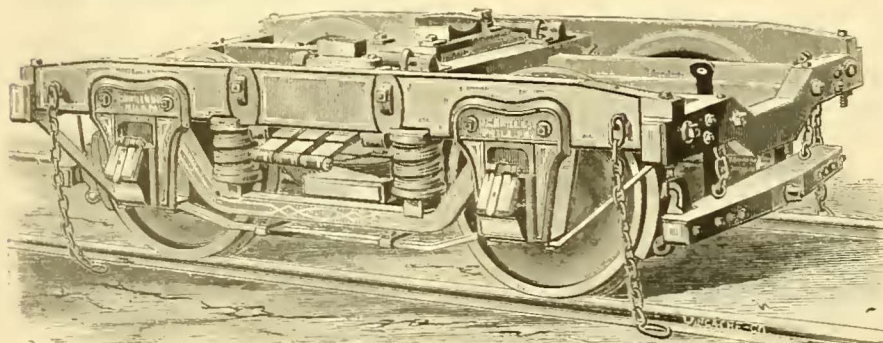
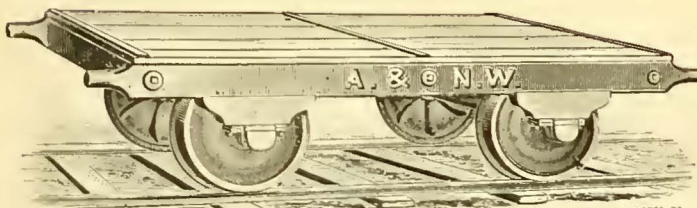
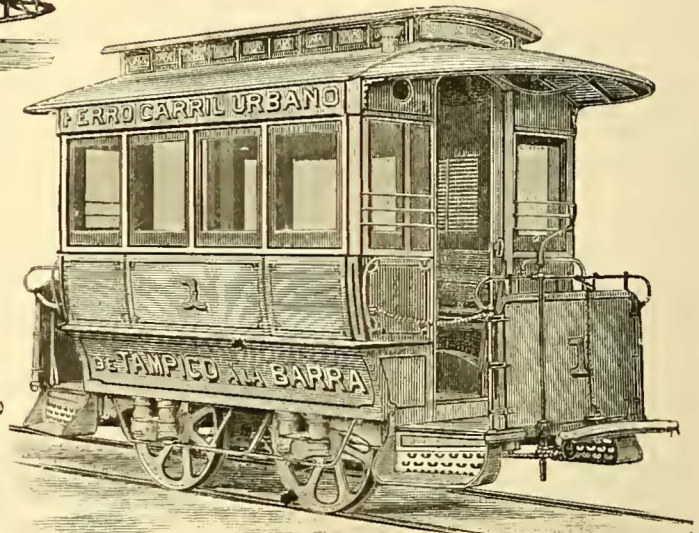


Passenger Cars of all kinds.



Light Cars for
Suburban Roads,

Construction Cars, Power Hand
Cars, Small Merchandise
Cars, Cane Cars.

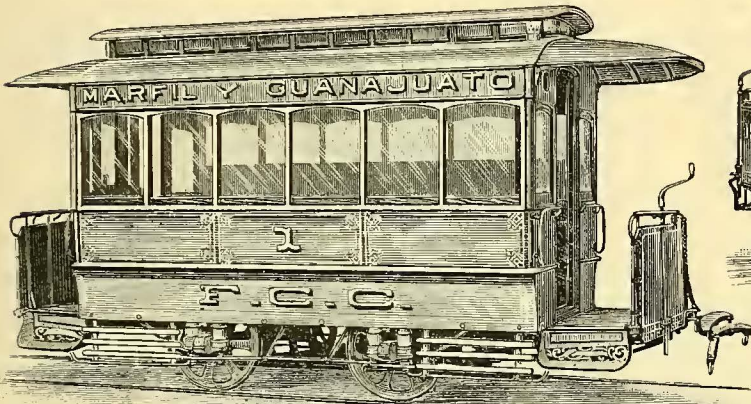


J. G. BRILL & CO.,

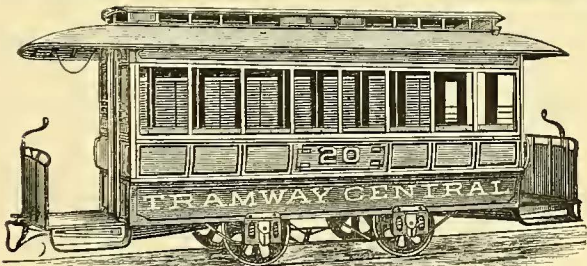
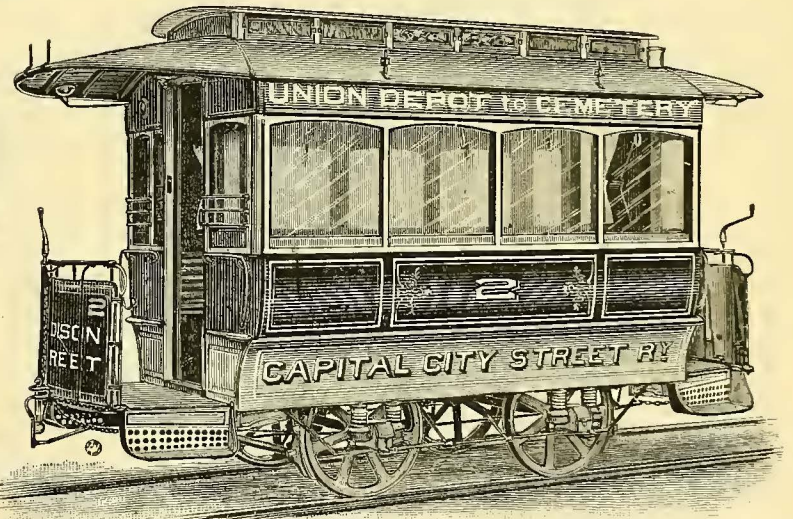
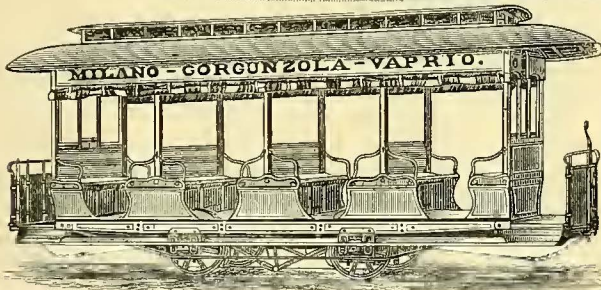
PHILADELPHIA,

BUILDERS OF

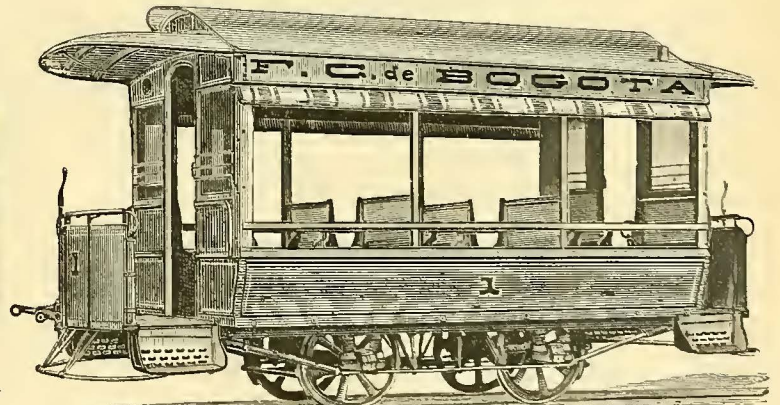
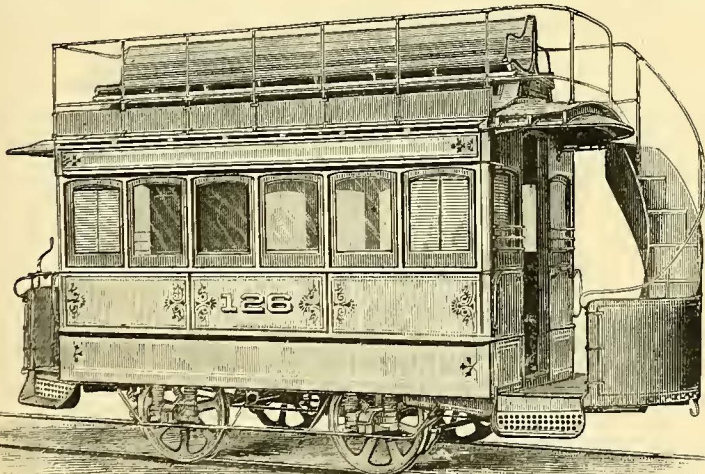
Railway and Tramway Cars



Gold Medal at Chicago Exhibition
OF
1883.



Gold Medal at New Orleans Exhibition of 1885, for Best Open Cars.



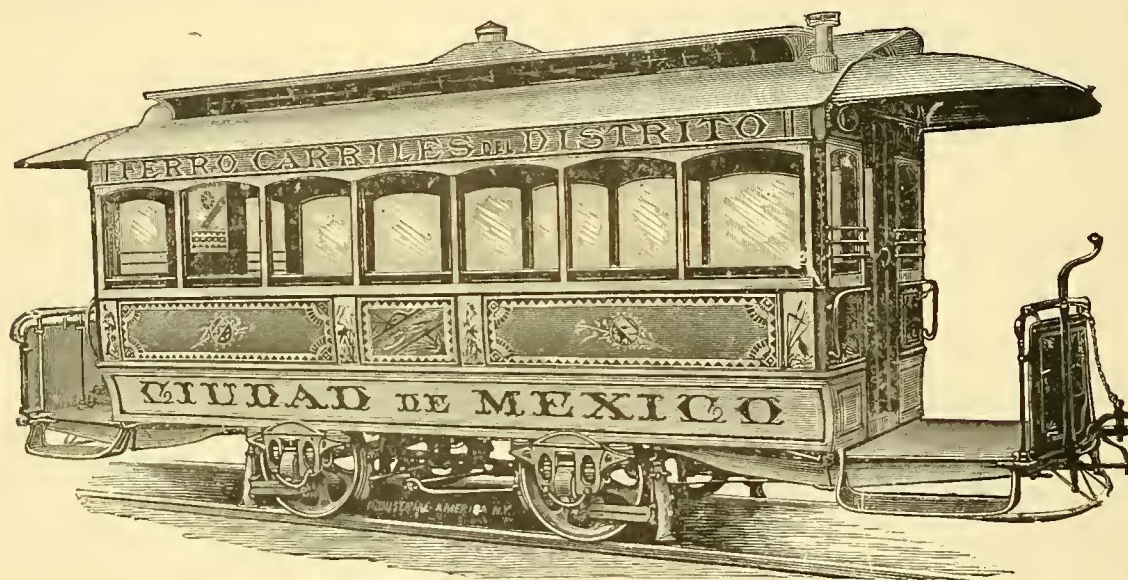
JOHN STEPHENSON COMPANY

(LIMITED),

New York.

TRAMWAY CARS

MEDAL OF FIRST CLASS, WORLD'S INDUSTRIAL COTTON EXPOSITION, NEW ORLEANS, 1885.



LIGHT ELEGANT, DURABLE.

Every Description.

Best Materials.

Minimum Prices.

ORDERS QUICKLY FILLED. CAREFUL ATTENTION TO SHIPMENTS.

All Climates Suited.