

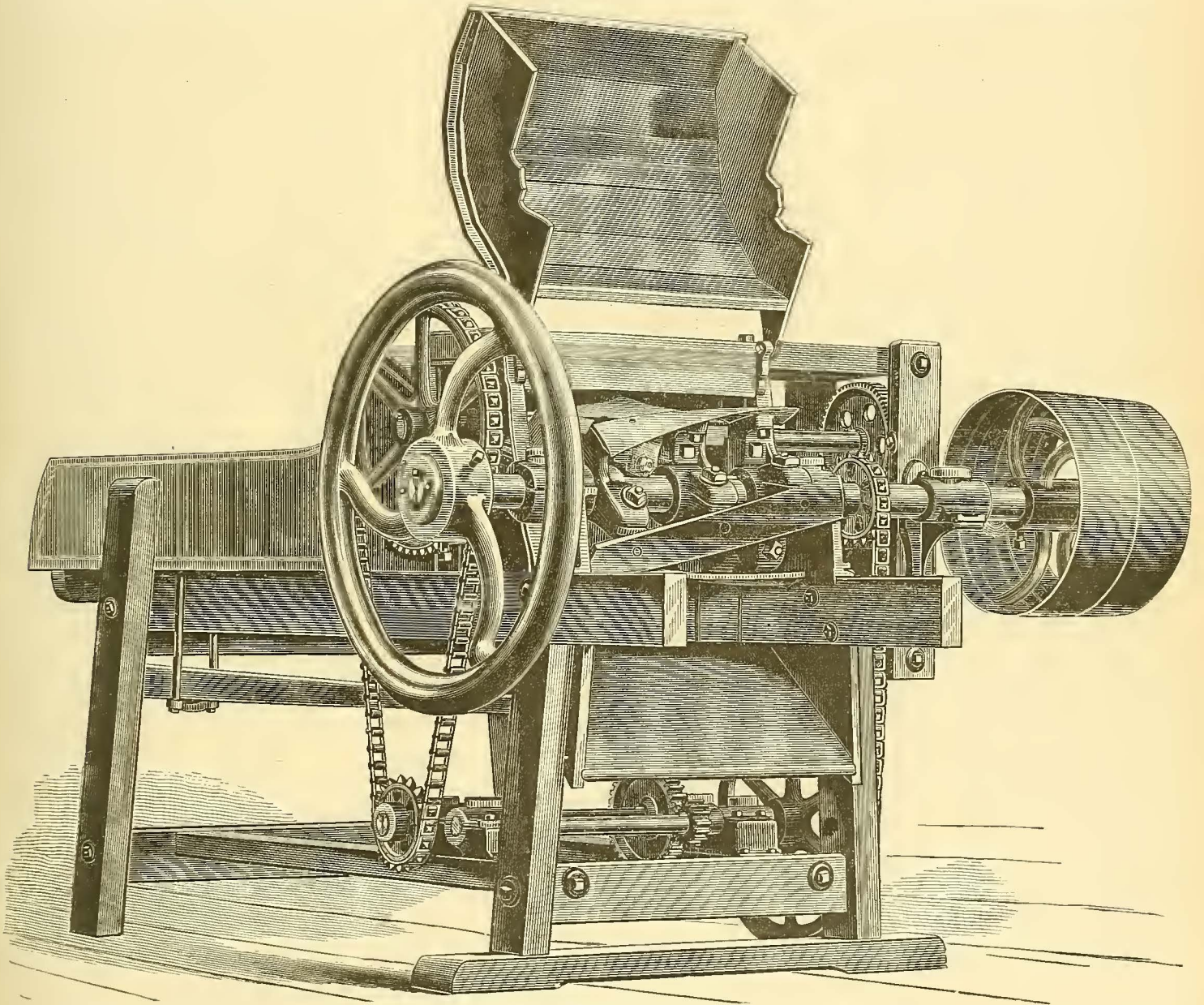
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THE ROSS "GIANT" FEED CUTTER.

The Ross "Giant" and "Little Giant" Cutters.

In street railway stables, where a large quantity of feed has to be prepared, the most perfect and satisfactory working appliances are a necessity. The Ross Giant and Little Giant Cutters* owing to their

*E. W. Ross & Co., Springfield, O.

great strength and immense capacities are claimed to be particularly suited to these requirements. One of the leading features of these machines is the upward cut, which has many advantages. It places the pressure and strain on the bottom instead of the top of the boxes, prevents jarring and pounding, and is a decided advantage in setting the knives and keeping them sharp.

The non-clogging, self-adjusting rollers, together with the extensible joint and round faced gears, give these machines, the manufacturers claim, great advantages over other machines. The rollers by the aid of this joint, &c., so adjust themselves that the hay will feed in large quantities on one end and small on the other end of rollers, which makes the machine feed continuously,

without clog or choking. The machines are simple in construction, and require very little power. They can be run to full capacity by small gas engines. They are arranged to cut $\frac{1}{2}$ " long to 4" long. The "Giant" machines will cut the layers of baled hay, as they come from the bale, saving the labor of shaking out, which is a large item. The main claims of the manufacturers for the machines are capacity, weight, strength, ease of running, and superiority of construction. The machines are built to stand crowding, without risks of breakage, all power machines having safety fly-wheels which can be adjusted so as to prevent breakage. Following are the sizes, weight, power required and capacity of the "Giants:"

Size.	Weight.	Power required.	Capacity per hour.
No. 11a	350 lbs.	1 horse.	1 ton hay, 1 in. long.
" 13a	400 "	2 "	1 1/2 " " 1 "
" 14a	575 "	2 "	2 to 3 t. hay, 1 in. l'g.
" 17	775 "	2 to 3 horses.	3 " 4 " 1 "
" 18a	2,000 "	4 " 5 " eng.	5 " " 1 "
" 26a	2,800 "	6 " 8 " "	6 " 8 " 1 "

These machines will cut from $\frac{1}{2}$ " to 3" and can be arranged to cut longer. The 1" length is given because most stables use this length. The capacities are under rated and the amount of power given is claimed to be ample. The No. 17 cutter is used very extensively by street railway

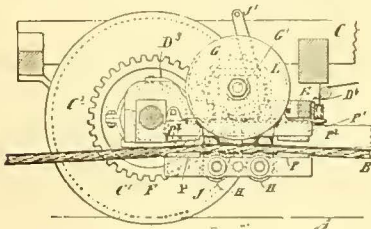


FIG. 1.

companies, and also the 14a. Mr. James A. Lake, Superintendent of the Chicago West Division Railway, has fourteen of the 14a cutters and one of the 18a in use.

A New Cable Grip.

We recently examined at the works of W. H. H. Sisum, Brooklyn, N. Y., a working model of a new cable grip for which letters patent were granted in February last. This grip has been thoroughly examined by some prominent engineers who speak favorably of it, and as it is likely to be adopted by some cable roads, we deem it of sufficient merit and importance for a description in our columns. In doing this we quote statements and explanations as made verbally to us by the inventor *in persona*.

The accompanying cuts will serve to elucidate the verbal description.

Fig. 1 is a longitudinal section of a portion of the car-truck, showing a side view of the mechanism of the grip.

Fig. 2 is a transverse partial section of the truck, showing the relative position of the grip mechanism with the wheels and axle.

Fig. 3 is a sectional view of a portion of the mechanism.

One of the peculiar features of the grip which seems to be entirely novel is that it transmits the power imparted by the moving cable direct to the axle of the car, rolling the axle, and not attempting to move the load by a direct pull. "This is done by two clutches keyed upon the axle of the car, between which is a gear with a long hub projecting out on each side; upon this hub are two corresponding clutches so attached to the gear that they revolve with it, but are free to move endwise in either direction, so as to engage with the fixed clutches upon the axle—one pair of clutches driving in one direction, and the other in an opposite direction; when the clutches are central the axle is free to revolve in either direction, and the gear remains at rest.

"These clutches are operated from the platforms of the cars by small treadles, placed one upon each platform. Pressure upon either treadle locks the clutch in such way as to cause the car when attached to the cable to move in the direction of the treadle pressed upon, and in the direction of the travel of the cable.

"The gear is driven by a pinion one-half the diameter of the gear; upon the side of this pinion are friction plates preferably of leather, clamped between iron discs; the discs are fastened to the shaft and revolve with it; the pinion is loose upon the shaft.

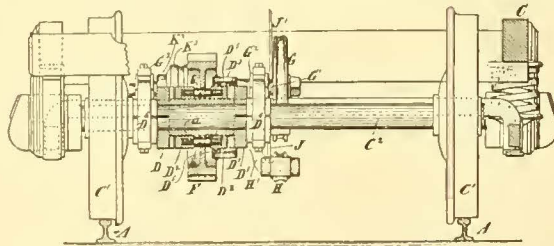


FIG. 2.

A lateral pressure upon the disc brings a friction upon the sides of the pinion, causing it to revolve. Upon the shaft is keyed a sheave wheel twice the diameter of the pinion. The revolution of this sheave wheel causes the shaft to revolve. This sheave wheel is driven by the cable, the cable is made to press upon this wheel by two rollers set in a frame which may be raised or lowered by means of a lever; this lever is operated from the platform of the car. When this lever is released the frame carrying the two rollers is drawn down by the weight of the cable, which then runs upon these rollers as upon idlers.

"On each side of the periphery of these rollers and upon each side of the periphery of the sheave wheel and attached to the frame which carries these idlers are solid steel dies with which to grasp the cable after the car has attained the speed of the cable.

"To start a car equipped with this grip, the brakeman presses his foot upon a small treadle upon the platform of the car. This locks the clutch, the lever actuating the frame carrying the idlers is lifted, bringing the cable in contact with the sheave wheel, the periphery of the sheave wheel immediately revolves at the speed of the cable; the

friction plates pressing upon the sides of the pinion cause it to revolve, at first slowly. As the car attains momentum the slip between the friction plates and the pinion grows less, and soon they are revolving together; this, however, but for one instant, for when the pinion is revolving with the shaft and friction plates, the car has reached the speed of the cable, the clutch is then automatically thrown out, and the gear ceases to act.

"The difference between the speed of the cable and the speed of the car, until the car has attained the speed of the cable, is taken up by the friction plates. The throwing out of the clutch is signaled to the brakeman upon the platform of the car by the striking of a small gong bell, and by the rising at his feet of the small treadle with which he locked the clutch. He then gives a slight turn to his brakestaff, locking the cable in the solid dies.

"The sheave pinion and gear are used to multiply the power taken from the cable and as the diameter of the sheave wheel is double the diameter of the pinion, and the gear wheel also double the diameter of the pinion, one pound of tractive force applied by the cable to the periphery of the sheave wheel yields four pounds upon the axle of the car, and this force is applied to roll the axle of the car.

"As a certain amount of tractive force is

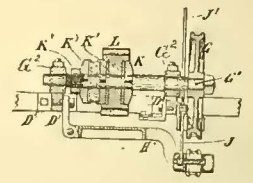


FIG. 3.

required to move any given load, by the use of my grip but one-fourth of the tractive force is required to be taken from the cable, thus prolonging the life of both cable and grip and saving largely in fuel.

"With this grip the cable can be taken at either end of the Bridge, no matter how great the speed of the cable or of the car when it runs on the cable; the car can be stopped at any point on the Bridge, no matter how heavy the grade, and start and go on again without injury to either the grip or the cable.

"Having taken the cable with the grip, if the car is stopped the cable continues to be carried upon the rollers or idlers of the grip, and a turn of the brake staff lifts the cable into contact with the sheave wheel and starts the car. Should it ever become necessary to stop the car suddenly it may be done by throwing in the reverse clutch, when all the power derived from the moving cable will be applied to stop the car, stopping it in less than fifty feet."

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A Horse-Shoe With Movable Calks.

This invention* has had a thorough trial on several of the Philadelphia street railway lines, where it is said to have given very satisfactory results, one pair of shoes having traveled on a horse's fore-feet over 1,100 miles, outwearing four pairs of the company's regular shoes with which the hind-feet of the horse were shod; and the same shoes, with fresh calks, are still perfectly serviceable.

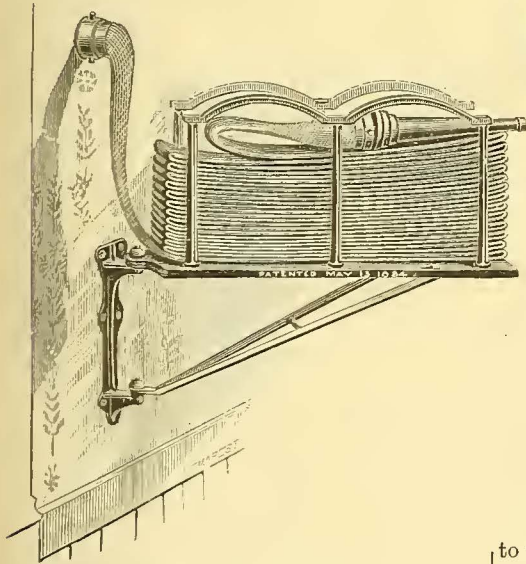
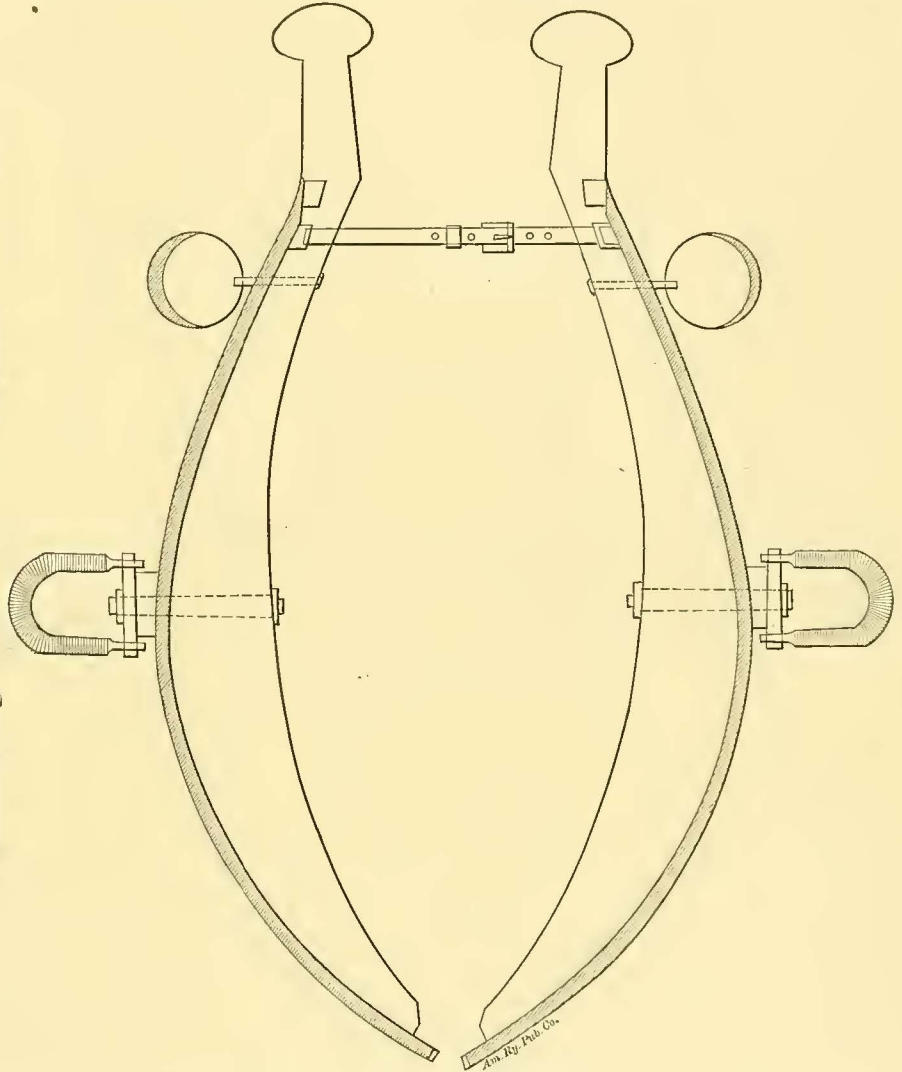
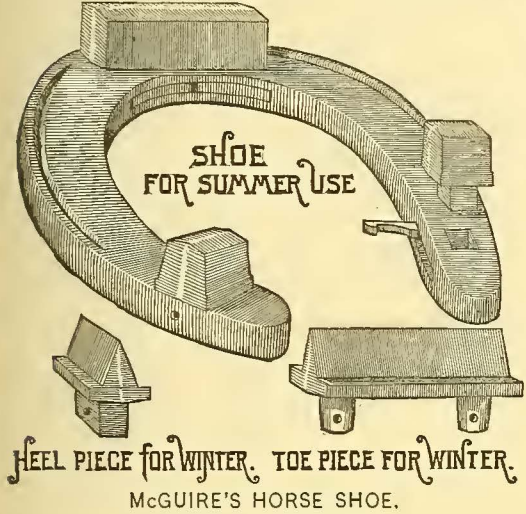
The bar portion of the shoe is forged independent of the calks, with mortises or slots to admit the tenon or shank of the calk. The projecting shanks of the latter are provided with holes running transverse-

then turned down against them, preventing the pins from coming out and holding the parts securely together. To remove the calks when worn out, the spring-tongues are thrown back and the pins withdrawn. The calks may then be pulled out of the openings in the shoe.

The principal advantages claimed by the inventor for his device are, first, the ease and quickness with which the calks on a horse's foot may be changed from smooth to "sharp" in cases of sudden cold "snaps." Second, the possibility of changing calks, or renewing them when worn down, without disturbing the shoe on the horse's foot; there is no doubt that the frequent nailing and drawing of nails, and the paring

Swinging Hose Rack.

The cut represents an article that may be found useful for service in the barns and depots of horse railroads in connection with hose which they may have for fire protection. The manufacturer* claims that with this rack in use, the hose may be kept in a neat, compact form, protected from wear, breaks and leakages, and by its use the hose may be attached to the stand pipe ready for instant service. In case of fire, the moment the nozzle is grasped it will swing to the necessary angle required, and the hose will run off rapidly and regular, without kinks or twists. About 1,000 are already in service in hotels, public build-



ly through them, and when placed in position these holes correspond with similar holes in the sides of the mortise in the shoe. Through the entire shoe and calk a pin is passed, and this is in turn secured by a pivoted tongue, held open or closed by a spring at its back.

To insert the calks, their shanks are first passed into the mortise-openings in the shoe, and the pins inserted through the openings therein. The spring-tongues are

to which the hoof is submitted at every shoeing by the ordinary method, is injurious to the foot. Third, economy; as the bar portion of the shoe in this device should last indefinitely, and the extra calks, made by drop forging, will be but a small item of expense; the dispensing with the services of the smith in cases where mere renewal of calks is required, will also figure as an item of saving, while the quickness of the operation, not requiring the loss of a trip, can also be figured on the same side of the expense account.

Testimonials are furnished by several Philadelphia stable superintendents and veterinary surgeons.

ings, factories, etc. The board of underwriters of New York, Boston and other cities recommend its adoption as being one of the best devices in use.

*Jno. C. N. Gubert, 13 Barclay street, New York.

Lewis' Reversible Hame.

The advantage of reversible hames over the ordinary right and left hame, all other points being equal, is obvious. One-half of the hames in use break, when they do break, on either the right or left hand hame, and usually it is the left hand one. We venture the assertion that in almost any street railway stable where a hundred horses

*John A. Maguire, 205 North 5th street, Philadelphia, Pa.

are used, from ten to thirty pair are disabled in one or the other hame. They are entirely useless, unless the broken hame is replaced by a new one, costing more than half the original price of the pair. The chances are that the new hame will outwear its old mate, necessitating the same expensive repair again. All this is needless were hames made, as they ought to be made, reversible. The two whole hames of two broken pairs would then make a pair, and the cost of the two single right or left hand hames would more than pay for the new pair. The cut herewith illustrates a reversible hame* which is claimed to effect an economy of fifty per cent. in the large stables using many horses. At a proper distance from the ends of the hames is a swivel trace or tug attachment, which consists of a staple provided with a swivel plate attached to a bolt and held thereon so as to turn freely. The outer edge of the hame is provided with a metallic band. It will be seen from the construction of the hames as shown that they may be interchangeably used upon either the right or left sides of the collar, and by means of the swivel trace or tug attachment the trace will always be

that water and sand are kept out from between the plate and the tie; and that after four or five years' wear on one side the plate can be turned over and used like a new one.

Plates of this description are in use on the N. Y. & Harlem Street Railroad, and on the Main Street R. R., Oneida, Madison Co., N. Y. The manufacturer* supplies them to any railroad company on trial, and so far has every reason to believe that they prove entirely satisfactory wherever they have been placed.

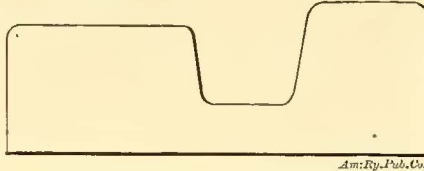


Fig. 2 shows a cross section of a steel grooved rail, 60 lbs. per yard for curves. It is made 5" wide so as to fit the channel plates. The increasing demand for these plates and rails proves that they answer admirably the purpose for which they were designed. They are suitable for all street rails.

*A. Ayres, 625 Tenth avenue, New York.

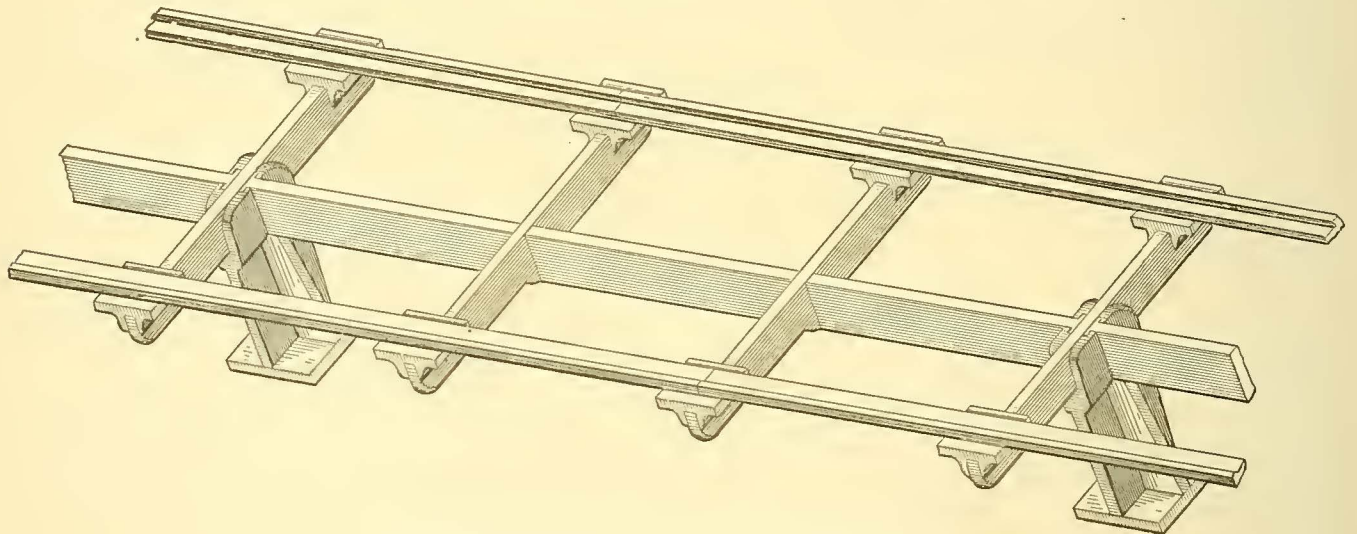
side of the box and project into it sufficiently to carry the cable. The box is made in vertical halves which can be separated at any time for the purpose of introducing another cable, &c.

Both ties and stringers are so notched or fitted as to enable a strong joint to be made without the necessity for bolts. The chairs are preferably shaped in such a way that they lock upon the ties without the use of bolts. The track becomes practically continuous by this method of construction.

As shown in the cut the resistance in spreading is very great, the ties coming up almost to a line with the under side of the rails. While particulars are not at hand in regard to the cost per mile, it would seem that the cost cannot be excessive. The increased durability is considered, it is claimed, will overbalance any increase of expense.

The Brayton Girder Rail.

We take pleasure in referring to this rail, which was illustrated in our issue of February, 1885. The rail has now been in use some fifteen months in Providence, R. I., and Philadelphia, Pa. It has been found



SHOBE & EDGAR'S NEW METALLIC STREET RAILWAY.

in proper relation to the hames. The hames are made of wood, properly curved to conform to the configuration of a horse collar, and their front and rear sides are shaped alike, so that they may be applied interchangeably to the right or left sides of the collar.

*Lewis Lewis, Galveston, Texas.

Improvements in Channel Plates and Rails.

The accompanying cut represents on a reduced scale a form of channel plate especially adapted for street railways.

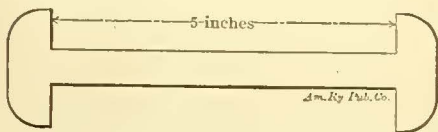


Fig. 1 shows a cross section of a wrought iron continuous double lip joint plate for a 5" base center bearing rail.

The advantages claimed for this form are,

New Form of Street Railway Track.

The accompanying isometric drawing* shows a new form of continuous railway track which has several peculiar and valuable features. The track is supported and held in position by cast iron posts set at intervals of 12' in the center of the road bed below the freezing point. These posts have a broad base, narrow top and are so webbed and flanged as to present great resisting power. The tops are so formed as to hold firmly both the central stringer and the cross tie. The posts are connected at the tops by a central stringer which carries the ties. The ties, which are locked upon the stringer, are spaced 3' centers. The material for both posts and stringer is cast iron, while the ties are of steel. When the system is used for a cable road, a box to hold the cable is carried along on top of the stringer and rests on the central supports. This box is secured to the ties by knee braces. The friction wheels are placed out-

*Shobe & Edgar, Jerseyville, Ills.

to be desirable to lay it on a rubble foundation, and pave close to the rail. In this manner a very durable, permanent way is secured, and there is not the slightest obstruction to the passage of the ordinary street vehicles, regardless of the angle at which they may strike the rail. The city authorities speak in terms of the highest praise of its durability and convenience, and regard the fact that no timber whatever is used in its construction, as being essentially in its favor.

Freese's Automatic Car Motor.

By a provoking error in our October issue, the article on the Freese Automatic Car Motor, combined with an Electric Lighting arrangement, was headed Freese Electric Motor; and the lettering in the engraving did not properly correspond with that in the description. The Freese Co.* has two devices—a steam car motor and a system of lighting the car by a small dynamo driven by the motor.

*Freese Automatic Car Motor and Electric Lighting Co., P. O. Box 449, Philadelphia, Pa.

Baker's Patent Car Link.

This link* is made in a machine which rolls a bar of iron into a band about $\frac{3}{16}$ " thick, then coils it on a split roll as a ribbon on a spool, the whole operation being done at a welding heat and with great velocity, insuring a continuous weld throughout the coil. It is then dropped off, and shaped to the link form, the outer surface being rounded and the inner remaining flat as shown in the accompanying cut. They



are made from refined iron having a tensile strength of about 55,000 lbs. per square inch.

The advantages claimed are:—By rolling the iron down thin, additional fibrous and tensile strength is secured. By the continuous welding all parts have equal strength and the chances for flaws and crystallization are reduced to a minimum. The flat inside surface gives increased life to both the link and the pin.

These links can be made of any size and weight that may be desired.

* Edward Corning, 15 Cortlandt street, New York city.

Wooden Street Pavements.

According to a paper read before the Engineers' Club of St. Louis by Messrs. T. J. Caldwell and T. D. Miller, the qualities of a perfect street pavement are about as follows: 1, cheapness of first cost; 2, durability; 3, firmness of foot-hold to horses; 4, smoothness; 5, noiselessness; 6, elasticity; 7, cleanliness; 8, imperviousness to water; 9, agreeableness of color.

We do not think cheapness by any means the first item in point of importance nor that the last named need have much practical influence, in choosing among a number of kinds of pavements. The authors of this paper say that a pavement of wooden blocks possesses every quality of the perfect pavement, with two exceptions. It absorbs moisture to a considerable degree, and after a few years deteriorates very rapidly from decay. During this process of decay it offers less and less resistance to the wear of traffic, and finally reaches a condition in which it is unfit for travel, and dangerous to the public health.

Messrs. Caldwell and Miller think that if this decay could be prevented the objection from moisture would not be serious and the wooden pavement would be preferable to almost any other pavement and for almost every kind of traffic.

There have been used for wood preserving, among other substances, compounds of zinc, lead, copper, iron, arsenic, lime and creosote oil.

"The action of the aqueous solution of the metal salts is to coagulate the albumen of the sap, besides its action as an antiseptic. The action of creosote oil is the same,

while it fills the pores of the wood with a bituminous asphaltic substance which gives a water proof coating to the fiber, preventing the absorption of moisture."

The paper details recent experiments on a practical scale in this line, and may be found in the *Journal of the Engineering Society*.

The Bessbrook Electrical Tramway.

The Bessbrook and Newry electrical tramway has been constructed to form a link between the mills and granite quarries of the Bessbrook Spinning Company and the railway at Newry, the distance between the two places being three miles, and the annual traffic, which has hitherto been carried in carts, being about 28,000 tons. The tramway differs from others in that the vehicles are equally well adapted to run on the rails and the ordinary roads, this facility being required by the difficulty which was found in connecting the line to the railway at one end, and to every department of the works at the other. They are carried on four wheels $2\frac{1}{2}$ " wide and without flanges; the first pair are on a bogie which can be fixed to form a rigid wheel base, or have shafts fitted to it, and allowed to swivel after the manner of the leading axle of a coach. These wagons carry two tons each, and can be drawn by a horse up moderate hills. On the outside of the ordinary tramway rail, second rails have been laid, to which the ordinary rails act as guards. The flangeless wheels run upon these outside rails. The maximum gross load of a train is twenty-six tons, consisting of six wagons which carry about two tons each, and the electrical locomotive weighing eight tons, which also forms the passenger carriage and is capable of accommodating thirty-four passengers. This load can be drawn up inclines averaging one in eighty-five at a speed of seven miles an hour, and up the steepest incline of one in fifty at a speed of six miles an hour. The train can be started at any point of the line without difficulty. The motive power is electricity furnished by dynamos situated about two miles from Newry, at Millvale, and driven by a turbine constructed by Messrs. MacAdam Brothers, of Belfast, capable of developing sixty-five horse power. The conductor consists of an inverted steel channel carried on insulators and fixed midway between the ordinary rails. Both the generators and motors are of the Edison-Hopkinson type, constructed by Messrs. Mather and Platt, of Salford, and are capable of developing twenty-five H. P. The engine is geared to run at a maximum speed of fifteen miles per hour, and this speed is easily attained when there are no trucks attached. The cars are 35' long over all, and are carried on bogies at each end, so that they pass readily round curves of 55' radius. At Millvale there is a country road, which the tramway crosses at an angle, making a level crossing of over fifty yards in length. The conductor could not here be laid between the rails, and is supported overhead. It consists of two copper wires carried at a height of 15',

and so situated that a collector on the top of the car runs under and in contact with the wire at the crossing. The wires hang quite freely and only rest on the collecting bar during its passage beneath them. The electrical work was carried out by Dr. Edward Hopkinson, of Manchester, and the permanent way by Mr. J. L. D. Meares, of Newry.—Engineer.

Corrugated Nails.

A patent has been issued to J. C. Kearns of Maitland, Pennsylvania, for an improvement in nails, applicable alike to cut and horse nails, and for which very considerable advantages are claimed. The chief of these are a saving in metal without diminution of strength, and largely increased holding surface. The improvement consists in forming the nail with longitudinal grooves. The number of these grooves may be made to vary, and they may extend partially from the head to the point at the will of the maker, each groove of course increasing the holding surface. The claim for increased strength in proportion to weight is based upon the asserted principle that a hollow piece of iron is stronger than the same amount of iron in a solid bar of the same length. The principal strain in horse-nails in the hoof is backward and forward. The hoof closes tightly into the corrugations, thus making the nail less liable to split the hoof, as well as increasing the holding surfaces as stated. The grooves in the head will, it is claimed, cause it to adjust readily with equal bearing on all parts of the nail-hole in the shoe.

Master Car Painters' Association in Toronto.

Mr. Charles E. Copp, Master Painter of the Boston & Maine R. R., recently read a paper before this association on the following question:—"Is a car body color composed of one durable pigment more durable than a color composed of two or more pigments?"

There are many of our readers who can furnish the STREET RAILWAY JOURNAL with some interesting information on this subject, and also in regard to another question, whether dark or light colors for car bodies have been found the best.

Cane Car Seats.

EDS. STREET RAILWAY JOURNAL:—If you will kindly favor us with the names of the principal manufacturers or plaited cane car seats we shall esteem it a great favor.

W. H. CROSSMAN & BRO.

New York.

[Hale & Kilburn, Philadelphia, Pa., are among the largest manufacturers in this line.

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An Ingenious Device.

A new cash-box for street railways, the invention, we believe, of a German, is thus described. It strikes us it does too much: "The box generally resembles in external appearance an ordinary railway fare-box, but differs from it materially in its workings. It not only serves as a depository for fares paid, but also makes change. There are two openings in the top—one for the fares and the other for making change. This money-changing apparatus is an interesting novelty. For instance, if the passenger should offer a silver dollar to be changed he would drop it into the box through an opening marked 'change.' The dollar would go into some inner recess, but, at the same moment, the exact change would appear in a small basin in reach of the passenger. If a quarter of a dollar were offered the change would come out in the form of two dimes and a nickel. A dime put in for change would bring forth two nickels. If, by mistake, a nickel should be dropped into the change-hopper it would not disturb the interior arrangements, but would pass through into the basin and be returned to the passenger.

"Of course, this automatic mechanism would not give change for bank notes, as the principles of its operations depend on the weight and sizes of the coins which, on entering the box, pass through holes proportioned to their respective sizes, and then press upon levers which open other orifices and set free the other coins which are to come out in change.

"There are also on the side of the box, under glass, four dial plates fitted with hands or indices, which mark the amounts of money in the change department. One dial-plate shows the number of half-dollar pieces, another gives the quarters, a third shows the dimes, and a fourth the nickels. When a car starts out the change-box must be furnished with a proportion of coins of the denominations mentioned, and as change is made, and as these are successively dropped out, others must be put in their places. These dial-plates show what is on hand, and obviate the necessity of examining the interior of the mechanism.

"The apparatus is exceedingly ingenious, and appears to operate with entire accuracy and satisfactory readiness."

Electric Engine for Tram Cars.

A new electric tram engine was shown Dec. 14 at the station of the North Metropolitan Tramway Company, Stratford, Eng. This is a center at which fair trials have always been readily accorded to any new motor, and it is understood that in the event of the new inventor and the tramway company agreeing upon terms a practical experiment of no small importance will be made in electric tramway working upon the new line to Ilford. The electrical engineers in this case are the Electric Locomotive and Power Company (Limited), who claim to have solved the problem of economical working by combining the electrical power with the mechanical aid of the

lever principle. The electro-motor is connected by pinions horizontally with a large stationary rack and vertically with the wheels. When the electrical engine is started the pinion of the horizontal armature gears into the stationary rack, and so causes the motor itself to revolve. The motor then becomes, by the action of its fixed vertical shaft, the driving axle and communicates its motion to the wheels of the car. By means of clutches a backward or forward motion can be secured without reversing the direction in which the electro-motor is revolving. The electricity is supplied by fifty cells of, say, a total of 280 ampères. It is claimed that the average discharge is from 40 to 45 ampères per hour, and that an engine consuming only two tons of coal per week will charge batteries sufficient to do the work of four cars requiring at present 44 horses per week. The engine appears to be controlled with perfect ease, and though at present it is fitted up separately from the car itself so as to take the place of horses and utilize existing cars, the company claim that it can in future easily be constructed as a part of the passenger car.

Width of Carriage Tracks.

The following information, as to width of carriage track and street car gauge in this country and Europe will be of interest to our readers.

New York State—Generally 4 feet 8 inches out to out; Albany, 4 feet 9 inches out to out; central New York State, 4 feet 10 inches out to out.

The street railway tracks in New York city are 4 feet 8½ inches, but pleasure carriages are built to suit best the construction, and specially so for front track.

Pennsylvania—In Philadelphia and Pittsburgh the carriages and wagons are generally built to suit the railway track, which is 5 feet 2½ inches between flanges, and the track for carriages and wagons is made 5 feet 1½ inches from out to out. The car tracks in these cities were originally built to suit the carriage tracks.

In some portions of central Pennsylvania the carriage track varies from 4 feet 6 inches to 4 feet 10 inches.

Ohio—Cincinnati is greatly governed by the street car tracks, and carriages and wagons are built 5 feet centers or 5 feet 1½ inches from out to out. Cleveland car tracks on East side, 4 feet 8½ inches; West side, 5 feet 2 inches; Dayton, 4 feet 9 inches. The State wagon track is 4 feet 10 inches, but in the northern part 4 feet 8 inches is in general use, and in some southern counties 5 feet center to center.

Coach track, Cleveland, 5 feet 2 inches center to center.

New Hampshire—Light work, 4 feet 8 inches center to center, and heavy work, 5 feet 4½ inches from center to center.

Vermont—4 feet 8 inches center to center to 5 feet out to out.

Indiana—4 feet 8 inches out to out. In some southern counties, 5 feet center to center.

Illinois—Chicago 4 feet 8 inches, to suit the railway tracks.

Connecticut—The State track for wagons is 4 feet 10 inches out to out, but in general through the State the carriages are made 4 feet 6 inches; northern part, 4 feet 4½ inches and 4 feet 6 inches; eastern part, 5 feet 5 inches, all out to out.

Massachusetts—Boston, no regular width of track. Carriages are built to suit the style of carriage—light carriages, 4 feet 6½ inches to 4 feet 8 inches; heavy work, 4 feet 10 inches to 5 feet. On the Cape and southern part of the State, New Bedford, etc., the track is 5 feet 4½ inches.

Rhode Island—5 feet 5 inches out to out.

Maine—No regular track. Made to suit the wagons and carriages, 4 feet 8 inches for light work, out to out. Heavy carriages and wagons to suit the width of the body.

New Jersey—The State track is 5 feet center to center, or 5 feet 2 inches out to out. Jersey City, 4 feet 11 inches; Newark, 5 feet 2 inches.

Michigan—4 feet 8 inches. Detroit railway track is 4 feet 8 inches between flanges.

Iowa—4 feet 8 inches out to out.

Minnesota—4 feet 8 inches out to out.

Wisconsin—4 feet 8 inches out to out.

Kansas—4 feet 8 inches out to out.

Colorado—The general track is 4 feet 8 inches to 5 feet center to center.

Oregon—No State track. East of the mountains, 5 feet center to center. West of the mountains, 4 feet 8 inches out to out.

Nevada—Northern part of the State, 4 feet 8 inches out to out. Southern part, 5 feet center to center.

California—Stage track, 5 feet 2 inches center to center, or 5 feet 4 inches out to out. Light work is generally built 4 feet 8 inches out to out. Street railway track in San Francisco is 4 feet 8½ inches and 5 feet between flanges. Sacramento—4 feet 11½ inches.

Maryland—Tracks made of all widths. Street railway track in Baltimore, 5 feet 4½ inches. Track, generally, 5 feet out to out.

Delaware—The track generally is 5 feet ½ inch center to center.

Missouri—5 feet center to center. Width of street railway track in St. Louis, 4 feet 10 inches between flanges.

District of Columbia—5 feet out to out, in general. The street railway tracks in Washington are 4 feet 8½ inches.

Kentucky—Tracks from 4 feet 6 inches to 5 feet 6 inches; street railway track, 5 feet.

Louisiana—Tracks from 4 feet to 5 feet 6 inches, but heavy carriages, which are mostly made in the Eastern or Western cities, have either 4 feet 8 inches, 5 feet, or 5 feet 2 inches, all from out to out. Street railway tracks, 5 feet 2½ inches.

Texas—Dallas, the track is 4 feet 8 inches, in general the tracks are made to suit the widths of the wagons.

Virginia, West Virginia, North Carolina, South Carolina, Mississippi, Florida, Georgia, Alabama, Tennessee—The track is generally 5 feet from center to center, but in some localities they measure 5 feet out to out, and 5 feet 1 inch out to out.

Washington Territory, Oregon—The track is 5 feet from center to center.

Montana Territory—The track is 5 feet from center to center.

England—No regular standard track. The width of track is regulated to suit the construction of the carriage, ranging from 3 feet to 5 feet. The standard street railway and steam railway tracks are 4 feet 8½ inches.

France—No standard track. Width of track is regulated as in England, to suit the construction of the carriage, excepting heavy omnibuses, for which the law prescribes 1 metre 65 centimetres for hind wheels, and 1 metre 55 centimetres for front wheels.

Austria—4 feet 4 inches center to center, Vienna measurement.

Germany, Prussia—4 feet 4 inches center to center.

Bavaria—3 feet 7 inches center to center.

Rhenish Bavaria—3 feet 11 inches out to out.

Saxony—3 feet 7½ inches in to in.

Wurtemberg—3 feet 8 inches in to in.

Hesse—4 feet 1 inch in to in.

Baden—3 feet 8 inches in to in.

Holstein—4 feet 4 inches out to out.

Brunswick—4 feet 7 inches out to out.

Hamburg—4 feet 6 inches out to out.

The German tracks are given by Rhenish measurements. The street railway tracks in England, France, Germany, Holland and other countries are 4 feet 8½ inches.

Australia—No standard track. Carriages and wagons, as in England, are made to suit their construction.

Mexico—From 4 feet 6 inches to 5 feet 6 inches out to out.

Chili—From 4 feet 6 inches to 5 feet.

Peru—From 4 feet 6 inches to 5 feet.

Brazil—From 4 feet to 5 feet.

Railway tracks and street car tracks in Australia, South America and Mexico have the same width as in England, 4 feet 8½ inches.

Technical Training.

Prof. R. H. Thurston recently delivered a thoughtful lecture on the above subject before the Board of Trade of Scranton, Pa., from which we make the following extracts:

It is intelligence, not brute force, that governs the universe and conquers fate. It is the humming spindles, the puffing engines, the rumbling iron-devouring mills, each directed by active brains, and guided by a few skillful hands, that do the work of the world; animal power, whether human or brute, accomplishes but a very insignificant part of the work of this busy world of ours. The 3,000,000,000 bushels of grain, annually grown in this country, is transported to the millions fed by it, over our 125,000 miles of railway, and over the 3,000 miles of ocean, not by man, but by the inanimate forces commanded by his intelligence; not by human, or even by brute muscle, but by Nature's power, directed by the mind of insignificant man, defying Nature's wildest untrained forces.

He thus summarizes the requirements in this direction:—

(1). A common school system of general education, which shall give all young children tuition in the three studies which are the foundation of all education, and which shall be administered under compulsory law, as now generally adopted by the best educated nations and States on both sides the Atlantic.

(2). A system of special adaptation of this primary instruction to the needs of children who are to become skilled artisans, or who are to become unskilled laborers, in departments which offer opportunities for their advancement, when their intelligence and skill prove their fitness for such promotion, to the position of skilled artisans. Such a system would lead to the adoption of reading, writing and spelling books, in which the terms peculiar to the trades, the methods of operation and the technics of the industrial arts should be given prominence, to the exclusion, if necessary, of words, phrases and reading matter of less essential importance to them.

(3). A system of trade schools, in which general and special instruction should be given to pupils preparing to enter the several leading industries, and in which the principles underlying each industry, as well as the actual and essential manipulations, should be illustrated and taught by practical exercises until the pupil is given a good knowledge of them and more skill in conducting them. This series should include schools of carpentry, stone-cutting, blacksmithing, etc., etc., weaving schools, schools of bleaching and dyeing, schools of agriculture, etc., etc.

(4). At least one polytechnic school, in which the sciences should be taught and their applications in the arts indicated and illustrated by laboratory work. In this school, the aim should be to give a certain number of students a thoroughly scientific education and training, preparing them to make use of all new discoveries and inventions in science and art, and thus to keep themselves in the front rank.

(5). A system of direct encouragement of existing established industries by every legal and proper means, as by the encouragement of improvement in our system of transportation, the relief of important undeveloped industries from State and municipal taxes, and even, in exceptional cases, by subsidy. It is evident that such methods of encouragement must be adopted very circumspectly and with exceedingly great caution, lest serious abuses arise.

Such a complete scheme has, as yet, never been fully carried out; and yet it is easy to see that we are gradually working out its elements, here and there, piecemeal, and that the future, the near future, we may hope, will certainly see the whole system in full.

Men are now placed at each anchorage of the bridge, and have the entire truss within their view, and are enabled to communicate by signals to train dispatchers when any train stops beyond the dispatcher's line of vision.

Subscribe for STREET RAILWAY JOURNAL.

Notes and Items.

[All our readers are particularly requested to send us, at the earliest possible moment, notes concerning actual or proposed improvements in street railways. It is by this means that the STREET RAILWAY JOURNAL will increase its usefulness to each one who receives it.]

We desire to thank unknown friends for sending us marked copies of local papers containing street railway items. This is of great value to us. It is impossible for us to have access to all the local papers of the country and information of this character is of value to us.

Albany, N. Y.

Contracts have been booked by Messrs. Humphreys & Sayce, contracting agents, and representatives of the Metallic Street Railway Supply Company, to construct five miles of the Albany & Greenbush R. R., and three miles of the Albany Street R. R. The metallic system has been described in this journal.

Binghamton, N. Y.

The new cable road running to the asylum possesses some new and interesting features, as it is a radical departure from the ordinary cable road.

The new features of the system are that it dispenses with "grips" altogether. Two cables are used, one driven in the ordinary manner by a stationary engine. The other a small cable resting upon the first and travelling with it over the same pulleys is made to complete its endless circuit free from connection with the prime motor or engine. It is, however, made to move in unison with the main cable and to receive a positive motion therefrom by passing around the same horizontal pulleys at the end of the road, and also by being led at suitable intervals between the sides of vertical conical rollers arranged in pairs. This secondary cable is led continuously over a loose drum or pulley fixed under the car. When this drum on the car is left free to rotate the cable will run freely over it and the car will remain stationary.

If, however, the pulley or drum be retarded in its revolution by a brake so that it may no longer turn, the car will be carried forward with the cable. To stop the car the brake is lifted. There is no jar or unpleasant motion in starting or stopping the car, and any number of cars can be run on the same line wholly independent of each other.

There is no switching at the ends of the road, as the track is laid in a circle and the cars can make the curve and continue on the return trip without stopping.

The slack of the secondary cable is taken up and its tension adjusted by means of tension rollers under the car. This system will require only a shallow sump-way below the surface of the track as the secondary cable—the small one that imparts the motion to the car—comes up through the slot as the car passes and drops back below the surface. With this system the cars can be run on single or double track and can make the curves and switches as readily as a horse car.

Boston, Mass.

H. H. Hutchins has filed a petition to the Legislature for a certificate of incorporation of the Boston and Somerville Elevated Railroad Company, with power to build and run elevated railroads operated by electricity from Scollay Square, Boston, through Charlestown and Somerville to Medford Square in Medford.

Brooklyn, N. Y.

Deacon William Richardson, as President of the Atlantic Avenue Railroad Company, has leased the Vanderbilt avenue horse car line, which extends from the station of the Prospect Park & Coney Island Railroad to the Fulton Ferry, Brooklyn. The rental is \$21,000 a year, with the privilege of taking absolute possession on Jan. 1, 1895, on payment of \$420,000 cash. Dec. 21 the Common Council granted this road permission to extend its tracks from Broadway and Park avenue through Locust, Beaver and Belvidere streets, Bushwick avenue, Jefferson street and Central avenue to the city line.

Work has commenced upon the Kings County Elevated Railroad, and will be vigorously pushed for early completion. The fare on all the Brooklyn elevated railroads within the city limits will be five cents at all hours. The Broadway extension gives an elevated road to the whole of that thoroughfare between East New York and the river.

The gross earnings of the Atlantic Avenue Company were \$448,681.50; net earnings, \$70,053.60; gross income, \$120,909.10; net income, \$62,329.84. These figures are for the year ending Sept. 30, 1885.

The new Williamsburg and Flatbush Railroad Company: Gross earnings, \$174,-864.88; net earnings, \$42,829.89; gross income, \$42,647.89; net income \$14,273.18.

The horse cars that formerly ran through Hoyt and Sackett streets to Hamilton ferry now run through Bergen street, Boerum place and Atlantic avenue to South ferry. The new cross-town cars of the Atlantic Avenue Company have also commenced to run between Hamilton ferry and the bridge, and by transfer to Catharine and Fulton ferries.

The sixteen new cars on the new cross-town line are from the John Stephenson Company's shops, and are equipped with the latest improvements, including the Josephine D. Smith center lamp.

The Prospect Park & Coney Island Railroad Co. have been granted permission to extend their horse car tracks from Park avenue and Broadway to Central avenue, and along Central avenue to the city line.

Every day it is made manifest how much Brooklyn and its suburbs need rapid transit. The sooner the elevated railroads are built, the better for the vast throng of business men in both New York and Brooklyn. But it is remarkable with what obstinacy some parties oppose rapid transit schemes. Mr. M. H. Hagerty, one of the Rapid Transit Commissioners appointed to lay out a trunk

line between the City Hall and the Bridge and Fulton Ferry, has been one of the most strenuous opponents of the occupation of lower Fulton Street by a trunk line.

The City Railroad will place open cars on its Flushing avenue line the coming season. No open cars have ever been run over this line, because the old depot lacked room for their storage in the Winter season, and its condition during the rainy period did not warrant any increased expenditure for improvements. Now that the shed has been drained and raised and a new depot begun, with ample accommodations for rolling stock the cars have been ordered, ten to be built by the John Stephenson Company of this city and ten by J. M. Jones' Sons of West Troy, N. Y.

Brooklyn Bridge Railroad.

There are now several models of cable grips at the superintendent's and engineer's offices. These are to receive a thorough examination by two experienced engineers, who are said to be experts in matters of this kind. If any contrivance presented seems worthy of trial, no objections will be raised to such trial. On the contrary, every facility will be afforded for a thorough test.

The Brooklyn Bridge Company have ordered six cars for the bridge railroad. They will have the Eames vacuum brake and the usual equipment of bridge cars. These will have two side doors in addition to the end ones. The object is to afford better facilities for entering and leaving the cars.

The bridge receipts for the week ending Dec. 19 were the largest in the history of the structure, being an average of \$2,057 per day.

Charleston, S. C.

The Middle Street Sullivan Island Railway Co. is on an island four miles from Charleston, a summer resort. Its officers are: President, B. Callaghan; Secretary and Treasurer, Frank F. Whidden; Superintendent, B. Buckley. They have two miles of track, six cars and twelve mules.

Chicago.

The Adams and Harrison Street Railway Company is trying the Honigman Fireless motor. The advocates claim for it a saving of one-half the expense of horse-power. It is the invention of Moritz Honigman, of Rhenish Prussia, and is in use in Europe on several tramways. It is a soda engine.

Cleveland, Ohio.

An exchange says, that Dec. 20, Tom L. Johnson was lying at the point of death in Louisville. He went hunting on Lake Washington, Mississippi, and was accidentally shot in the left hand by the premature discharge of a gun in the hands of his niece, who was hunting with him. Mr. Johnson is a millionaire and owes his wealth to his fighting qualities. Cleveland owes its present excellent street railway system to him.

About five years ago Cleveland had the poorest street railways in America. Mr. Johnson, who is a son-in-law of ex-Gov.

English of Indiana, came to Cleveland and purchased a wretched line known as the Brooklyn road, running to a suburb of Cleveland. He applied to the city for the right to run his cars into the heart of the city over the rich but poorly managed West Side Street Railway. A bitter fight, often resulting in personal encounters, resulted in a victory for Johnson. Then the West Side road, spurred on by opposition, put on splendid cars and ran them fast enough to compete with Johnson. He paved whole streets in order to get the right to extend his line, and built it from the easterly limits of the city to Brooklyn. He carried passengers ten miles for one fare, and the Woodland Avenue and West Side railways were forced to consolidate to meet his opposition.

In the fierce rivalry that ensued Johnson resorted to many means to build up business. He constructed a mammoth snow plough and drew it over his lines with ten spans of prancing white steeds whenever snow obstructed the road. The public fell in love with him, and his cars were crowded. He purchased a base ball park on his line and had elubs play there to make street car travel. Sullivan, the prize fighter, was hired to pitch one game in Johnson's park. He has acquired two street railways in Cleveland, and is about to purchase another. He also owns a line in Indianapolis. He is only 35 years of age. We trust that the serious aspect of his case has changed since the 20th, but have seen no advices since. Mr. Johnson is a man the street railway interests can ill afford to lose.

Denver, Col.

The first successful attempt at trial trips of the new cable car was made Dec. 19th, 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 an hour. A dynamo of twenty horse power furnishes the motive power for the car. Quite a large number of prominent citizens took rides on the car. Prof. S. H. Short, of the Denver University, has worked very hard to make his invention a success, and his efforts seem to be already reaping their reward. The company have hoped 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. It was made by Woerber Brothers, of West Denver. The dynamo and other machinery, which is located in a building near the corner of Fifteenth and Tremont streets, and which is used to propel the car, was made by F. M. Davis, of Denver, and all the plant and material used by the company will be of Denver manufacture. Ex-Governor John Evans, W. N. Byers, Rodney Curtis and other well known Denver gentlemen are among the officers and directors of the new company.

Elgin, Ill.

A company has been formed for the purpose of constructing a series of street railways in the city, to be operated by electricity. The report has been made that the road can be built and equipped for \$5,000 per mile. The length of track projected is five miles. No estimate is given of what the cost of operating by electricity will be.

Geneva, N. Y.

The petition of one Sweet, representing New York parties who ask for the right to construct a street railroad here, was considered by the Board of Trustees, December 1, and the desired permission was refused. Trustees Willard, Moore and President Chase voted against it, Webster for it, and Nicholas, Alcock and Nester were absent. It is understood that more than two-thirds of the property-owners along the proposed route were in favor of the project.

Kansas City.

The Cable Railway are having twelve grip cars built by the Brownell & Wight Company, of St. Louis, Mo., so constructed that the grip is not raised or lowered with the varying load on the car. The grip gear has no springs under it but supports the springs on which the body of the car rests. This also obviates the swaying of the car from side to side, and renders the body easily removable in case either it or the grip portion gets out of repair, it only being necessary to remove half a dozen nuts from the bolts passing through the springs.

Mount Vernon, N. Y.

Work was commenced Dec. 21 on the new surface railroad to connect Mount Vernon with East Chester. A gang of sixty Italians, under Col. C. A. Bonton, is employed.

New York City, N. Y.

The Tenth Avenue Cable Railroad has remodeled its grip cars, making the grip independent of the body of the car, so as to be unaffected by the load.

The injunction which the Cable Railway Company secured recently, restraining the Chambers Street and Grand Street Ferry Railroad Company from constructing its railroad in Chambers and other streets, was dissolved Dec. 17, by Judge Donohue, who gave an opinion that the motion to continue the injunction should be denied.

In a suit against the Belt line for \$5,000 damages, the accident being the death of a boy, run over in September, the jury brought in a verdict for \$1,200 for the boy's father. The boy was stealing a ride on a truck and was jolted off under the car.

The Railroad Committee of the Board of Aldermen presented reports Dec. 2 in favor of granting franchises to the following street railroad companies:—St. Nicholas Avenue and Crosstown Railway Company; Houston, West Street and Pavonia Ferry Railway Company; Madison Avenue and Eighty-sixth Street Railroad Company. The franchises were granted.

The Board of Aldermen are talking of obliging car drivers to obtain licenses; fee \$1.00.

Work on the cross-town road of the Chambers and Grand Street Ferry Railroad Company has been rapidly pushed since the injunction obtained by the New York Cable Road restraining the company from laying its tracks was dissolved by Judge Donohue last Thursday. The tracks are now laid in Chambers street, James slip, and West street, with the exceptions of the crossings, and Dec. 21 a large force of workmen was engaged in completing the work in Duane street.

The Aldermen's Committee on Railroads listened to arguments for and against the granting of a franchise to the People's Surface Railroad to run through South, Cliff, Cherry, Madison and other streets. W. A. Fowler spoke for the company. A. B. Miller, representing property in Pearl street, opposed building the road. William E. Dodge objected to carrying the route through Cliff street, on the ground that the street was too narrow and it would interfere materially with business, as well as depreciate greatly the value of property.

The Railroad Committee of the Board of Aldermen report adversely on the Fifth Avenue scheme.

Fifty cars are now being run by the Broadway and Seventh Avenue Railroad over the old University place route between 7 A. M. and 7 P. M. The secretary of the company said yesterday: "It was always our intention to continue this route, but up till now we have had neither enough cars nor sufficient stabling accommodations. The heavy traffic and over crowding on the Broadway cars will now be greatly relieved, as men having business down town west of Broadway will find the University place cars more convenient. We should run these cars during longer hours, but the traffic does not yet warrant it."

Work was begun Dec. 8 in James slip on the Chambers Street and Grand Street Cross-Town Road, which is to run through Chambers, Duane, and New Chambers streets, with branches through Madison, Grand, Jackson, and Cherry streets. The men are employed by Contractor Wharton, of Philadelphia, under whose supervision the Broadway Railroad was constructed. The franchise for this road was granted on Dec. 30 of last year, the resolutions being passed over the Mayor's veto by the same vote by which the grant was made to the Broadway Railway Company.

Articles of incorporation were filed Dec. 2 at Albany by the Liberty Street and Wall Street Ferry Railroad Company, which is to build from the junction of Liberty and West streets in New York, through Liberty to Washington street to Rector to Broadway, across Broadway to the Wall Street Ferry. The capital of the company is \$500,000, and the directors named are Thomas Rigney, William D. Hatch, James A. Ostrom and E. D. Murphy, Jr., of New York, and William B. Kendall, of New

Rochelle, and L. C. Mightman, of Brooklyn.

The Aldermen, December 22, refused to pass over the Mayor's veto the resolutions granting a franchise to the Houston, West street and Pavonia Ferry Railroad Company. Similar action was taken regarding the franchises asked for by the Madison Avenue and Eighty-sixth Street Railroad Company and the St. Nicholas Avenue Cross-town Railroad Company.

The Ayres Patent Switch, four of which are in use on the Fourth Avenue Street Railway in front of the Grand Central R.R. depot, are highly spoken of, and deservedly so, being very strong, durable and easily operated.

New Bedford, Mass.

This new road, which commenced running last June, has six miles of track, twenty-nine cars and 103 horses.

Philadelphia, Pa.

The electric railway on Ridge Avenue, Philadelphia, was tried Saturday, Dec. 5, and is said to be a success. The car was run over the entire road several times, at a rate of speed equal to seven miles an hour, and from beginning to end of the public test, all worked well and smoothly.

Pittsburg, Pa.

Benjamin Lanth, the inventor of the process of making nail plate out of old steel rails, has sold the right of his patent to a syndicate of five Eastern firms.

St. Louis, Mo.

Forty-four cars are building by the Brownell & Wight Company for the St. Louis Cable Railway.

Springfield, O.

E. W. Ross & Co., Springfield, Ohio, have recently sold one of their large feed-cutting machines to J. H. Hall, president of the Fort Clark Street Railroad Line, Peoria, Ill.; also one of the large 26 A cutters to the Cass Avenue Line, St. Louis. These machines seem to be giving excellent satisfaction in street railway barns. President H. M. Watson, of the Buffalo City Road, recently said of them to a representative of the STREET RAILWAY JOURNAL, "We have one in each of our stables, and I consider them the best machines ever made for this purpose."

A street car stops to allow two ladies to alight. They leave in the car three lady friends, and this was the conversation after the car stops:—"Goodby: let me hear from you as soon as you get home." "Yes; goodby." "Goodby." "Goodby." "Goodby." "Goodby." "Don't forget, the four o'clock train; goodby." "No; goodby." "Goodby." "Goodby." "Goodby." "Oh, Martha, don't forget what I told you; he, he; goodby." "Oh, no; he, he; goodby." "Goodby." "Goodby." "Goodby." Here the conductor jerked the bell rather savagely and the car moved on, leaving the two departing ladies in the midst of their goodbys.

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Cable Grips.

The recent accident to the cars upon the cable road of the New York and Brooklyn Bridge has incited a great many inventors to ask for an examination of their devices for cable grips. The business office of the Brooklyn Bridge now contains numerous models for which much is claimed by their respective inventors. The question is constantly put whether among the numerous patented grips there is not one which could be positive in action, economical in durability and wear, and perfectly safe and reliable in operation?

At first sight, it would appear not a very difficult matter for engineers to devise a contrivance to fully answer the purpose. But what are the circumstances and difficulties to be met in the case of the Bridge cable road? There the cable travels at the rate of ten miles per hour; there is a grade at one end of 176 feet to the mile; to meet the requirements of travel, the cars have to be dispatched at short intervals; the cars arrive every minute and a half at either end when travel is greatest, and have to be switched by locomotives from one track to the other; a delay of even three or four minutes will cause a crowd of business men, for the most part, always in a hurry to get to and return from their business; the demand for accommodation is urgent and at certain hours of the day, incessant. Moderate speed, reliability, punctuality and safety have to be provided for.

The mechanical contrivance for moving the cars must be, therefore, one which can take the cable at either end of the Bridge automatically, at any speed, pick it up anywhere upon the bridge, or that having once taken the cable, can disengage it at any part of the bridge, and re-engage it by a simple turn of a brake or movement of a lever on the car. If not disengaged at the end of the rope it must be able to move past the pulleys and drop the rope without doing itself or the pulleys any injury. It must be able to start the car if stopped at any point on the bridge, there must be no running backward, and all this must be done without injury to either the cable or the grip.

Again, it will not do to use a grip that

will wear out a cable so quickly as to require frequent renewals. The cost of a new cable for the bridge would be about \$7,000, and the delay of travel while laying and splicing would be at least twenty-four hours, possibly, might be much more. The present cable is getting worn, and as wear increases the present arrangement becomes less effective. Neither will a complicated grip answer—one with numerous levers, arms, pulleys, rods, etc., however ingenious in arrangement; for the reason that in every mechanical device, the more parts, the more liability to breakage, disarrangement and friction. The coming grip must be strong, simple, positive in action, easily operated and durable. Wear will take place on the cable as it runs over the supporting pulleys, but that wear must be compensated by the mechanism of the grip.

Right or Left Hand Tracks.

It is a curious commentary on the fact that Americans "keep to the right as the law directs," to trace out how this national custom happened to differ so radically from the English practice. In England, the rule of the road is, keep to the left and turn out to the right when passing in the same direction; in this country we keep to the right and turn to the left, if we wish to pass in the same direction, and our railroad managers, without looking into the why or the wherefore, have very generally adopted the plan of running on the right hand side, making the iron horse follow the national rule of the road.

The practice of turning to the right is derived from old colonial times. The ox-team was the almost universal vehicle, and the driver, of necessity, stood on the left-hand side of his team, which he guided with a goad in the right hand. This method of driving gave rise to the expressions, the "near" and "off" side of a team. Being on the left-hand side, it became necessary, in passing, for the drivers to be next each other, consequently the teams had to go to the right in order that they might see that the wagons cleared each other. In narrow roads this would be impossible with the drivers on the outside. The rule of the road for the ox-team being of necessity a turn-out to the right, the general rule of the road followed this precedent.

The English system of turning to the left is logically derived from the fact that the driver must sit in such a position as to leave his whip hand free and is, in consequence, on the left hand side of his vehicle. Thus situated, he must turn out to the left in order to have a clear view of the wheels and teams as they pass.

A man and woman entered a Third ave. car the other day with a boy who looked as if he were six or seven years old, but the father said was not yet four. Soon afterward a seat became vacant, the mother motioned for the child to take it. "No," he said with a grieved expression, "if you won't pay for me, I've no right to sit down."

A New Departure in Laying of Tracks.

A recent issue of a Boston daily paper contained the following, relative to President Richards' new T rail, and the improvements proposed by him in street railway "permanent way."—During the last ten or twelve years, the various street railway companies of this city have seemed to vie with each other in providing comfortable and elegant cars for the use of their patrons, and to-day no city in the country begins to compare with Boston in the way of luxurious street cars. But in another direction none of the street railways seem to have made any advance. The method of track construction remains as it was in the beginning. If the various street railway officials were asked what they regard as the most important point to be sought in the construction of their tracks, they would unhesitatingly declare "permanency." But the present manner of laying a street railway is far from meeting that requirement. The expense of keeping the tracks in repair is something enormous, and this expense is forced upon the companies, not by wearing out of the rails, but by the rotting of the stringers and other timber work which supports the rail. As now used, the rail is a flat one, wide, but of comparatively no depth, and the lack of vertical stiffness and strength renders imperative the use of wooden stringers upon which the rail is spiked. These wooden stringers necessitate the use of crossties or sleepers under them at comparatively short intervals, and thus is built up a perishable superstructure of wood where, of all places, permanency is most needed. As is well known, the first part of the road to give way is the stringer. Placed as it is, exposed to a constant succession of wet and dry conditions, its life would of necessity be brief. But there are other influences at work to hasten its decay. The form of the rail itself tends to this result. The weakest part of a rail is always at the ends, or where two rails meet and form a joint. At this point a flat plate is laid under the joint; this decreases, but does not remove the evil. The small space between the ends of the rails, the spike holes, always close to the ends, and the very presence of the joint plate let into the timber, all contribute to hold the moisture and destroy the stringer. There is always a tendency to more or less motion at the joints, and they quickly become loosened. The result is that the ends of every rail are exposed to heavy blows from the wheels of the passing cars. These blows react upon the joint plate, and the wearing away of both the stringer and the rail is inevitable. As above indicated, the common form of rail necessitates the use of wooden stringers, but by altering the shape of the rail, the necessity of using the stringers is done away with.

Some months ago President Richards of the Metropolitan railroad patented a new rail and during the past few weeks it has been laid in Devonshire, State, Congress, and Franklin streets. This new rail is a great advance on the old style, but in lay-

ing it the use of wooden stringers has been continued, though they have been laid much deeper, the T form of the new rail necessitating it. During his recent trip to the West to the St. Louis Convention, President Richards was met by parties interested in the Johnson Steel Rail Company, and the result was that he and his rail were absorbed by the company, and hereafter the "girder" style of laying rails will be adopted by the Metropolitan Company. Briefly stated, the "girder" system may be described as an adaptation to street railways of the method of laying tracks on steam railroads. The stringers, upon which the rails are now laid, are entirely done away with, and the rails are laid upon the ties. Of course, the ties are not placed upon the top of the ground as in a steam railroad, but are sunk beneath it until the top of the T rail is even with the street.

Where the street is paved, it is necessary to secure still greater depth for the ties, and, in order to accomplish that object, chairs are used. Being spiked firmly to the ties, the rails rest upon them solidly, and, as the rails are fastened together with fish plates, a continuous track of the most permanent character is secured. The rails to be used on the Metropolitan tracks are those patented by President Richards, having a broad tread for the wheels and a narrow flange just wide enough to admit the flange of the car wheels, but too narrow for the wheels of heavy wagons or even the light carriages to run in. Thus the danger of injury to common vehicles in turning out of the track is done away with entirely.

The ties are placed beneath the paving of the street, and hence are not subject to that change of atmosphere which is so destructive in stringers. The paving material is laid close to the rail and the ballast or gravel is well tamped into the pockets of the rail, thus aiding to make the track solid and immovable.

Although the "girder" system of track laying is new in this city, it is in use in nearly every city outside of New England where street cars are run, and President Richards declares that there will be no more laying of tracks on stringers. One would naturally think that the first cost of laying a track by the new system would be heavier than by the old, but the company controlling the various patents is prepared to prove that it is much less, and that the tracks when laid will last five times as long. In the matter of repairing or relaying the tracks, there will also be a great saving, as there will be no necessity of tearing up the entire roadbed, as at present, but only the transverse portion over each tie, and of course, a large amount of time will be saved, and the traffic of the street will be much less interrupted. In the above description the use of wooden ties is contemplated, but experiments are making in the use of iron or steel ties, and many advantages are claimed for them, not the least of which is durability, though the first cost is greater than for wood.

Reckenzaun's Electric Tramcar.

Mr. A. Reckenzaun, of No. 50, Queen Victoria street, London, has for a long time been engaged in the application of electricity, derived from secondary batteries, to the propulsion of boats and carriages. The car is a double bogie, carried on four wheels at each end. Each wheel carriage is provided with an electric motor, which is geared to the axle by worm gearing, the worm and wheel being of very steep pitch in order that the armature may readily rotate when the car is moved by gravity or by some external force. The wheel runs in an oil bath, and thus perfect lubrication is secured.

Within the body of the car, and stowed under the seats, are sixty cells of the Electric Power Storage Company's accumulators, weighing in all in the actual car, 2400 lb. The conductors from the cells and from the dynamos are led to a switch on the driver's platform, by which the two motors can be arranged parallel or in series. In the former case the resistance in the external circuit is, for a given speed, only one quarter of what it is in the latter case, and consequently the belting gives off its power far more rapidly, the amount being 30 and 100 ampères in the two cases respectively. At starting, the full power is developed, and also upon inclines, while during a steady run the motors are arranged in series. The weight of the actual car and machinery is $4\frac{1}{2}$ tons, made up as follows: Car, $2\frac{3}{4}$ tons; accumulators, $1\frac{1}{4}$ tons; motors and gear, $\frac{1}{2}$ ton. The working expenses for traction, including interest and depreciation, are estimated at $3\frac{1}{2}$ d. per mile. Reversing is effected by the device of using two sets of brushes, pivotted in such a way that one set can be turned back, and the second set brought into contact with the armature simultaneously.

The motor invented by Mr. Reckenzaun has for its special features lightness, and strength of the magnetic field. The armature is of the Gramme type, the coils being wound upon a core that is built up of links like a pitch chain. These links are held together by long pins, which pass through end discs of non-magnetic material keyed on the central axis. Each set of links can have its bobbin wound separately, and can be removed without disturbing the rest of the armature. The principal novelty is in the use of an internal field magnet hung upon the central shaft, and kept from rotating by a heavy weight at the lower side. This magnet consists of two end pieces, two cores, and pole-pieces. Its weight is carried on antifriction rollers. The current is led to the internal coils through brushes and collector rings.

These machines are very light for their power, and at the same time they are strong, durable, and efficient. A number of them of various sizes have been working for a considerable time, it is claimed, without giving the least trouble, and whatever speed they run at, there is no appreciable sparking, without adjusting the commutator brushes. Engineering.

The Brooklyn Bridge Management.

One of the New York morning papers recently stated rather emphatically, "that the present management of the Bridge (Brooklyn) are incapable of taking care of the structure, because they do not put side doors in the cars and adopt a new grip at once."

Now be it known unto all, especially those who keep croaking about matters of which they have little information and knowledge, that the Bridge Trustees have ordered six new cars, with side as well as end doors. And further be it known, that two expert mechanical engineers are now giving their attention to grip matters. And if any grip is presented having all the requirements for a reliable cable grip on the Bridge railroad, and possessing features superior to those in the Paine grip now in use, it will be thoroughly tested and if fully up to requirements will be adopted. There is not a dollar in the Paine grip for any one connected with the Bridge. Public demands and pressure of travel will be met with the application of the best appliances and ample accommodations as soon as practicable.

A ROPE RAILWAY IN AUSTRIA to connect the upper and lower parts of the town of Biella, Austria, has received the sanction of the Minister of Public Works. The line, which will consist of a double track, will be 180 metres (590') in length, with a difference of level between the two extremes of 60 metres (196' 8"), corresponding to a gradient of 1 in $33\frac{1}{3}$. The gauge proposed is one metre and the rails, which are to be of steel and of the Vignoles pattern, will weigh 36 kilogrammes per metre (72 lb. per yard); they will be fixed on strong oak longitudinal sleepers, connected at distances of four metres apart (13') by iron tie rods, and the whole permanent way will be supported by brick pillars. The carriages (one for each line) will be capable of holding twelve passengers, and will be attached to the ends of a wire rope, passing over a horizontal pulley at the top of the line, so that one car descends whilst the other ascends. Below the floor of the carriage will be a tank, divided into three compartments, two of them being of the capacity of one cubic metre whilst the other will hold $1\frac{1}{2}$ cubic metres of water, or in all $3\frac{1}{2}$ tons in weight. The tanks of the car being filled with water at the top of the line it descends by gravity, hauling up the other, the tank of which is empty. The speed will be regulated by a friction brake connected with the horizontal pulley passes, but the carriages will also be provided with powerful brakes, sufficient to bring them to a standstill on the incline in case the rope should break. The rope will be of steel, consisting of six strands of eight wires each, its diameter twenty-three millimetres ($\frac{7}{8}$ ").—Industrial World.

This is the only paper in the country devoted entirely to the interests of street railways. Only \$1.00 a year.

Cubic Space of Air in Stables.

Authorities on ventilation observe that a man makes twenty inspirations of air every minute, each inspiration being of a volume equal to forty cubic inches, so that he requires 800 cubic inches per minute of fresh air to supply him with the necessary health-giving pabulum for his lungs. Each expiration unfits for breathing twice the bulk of fresh air, that is the 800 cubic inches expired per minute contaminates 1,600 cubic inches of fresh air, or nearly a cubic foot. Hence, in round numbers, a man requires a cubic foot of fresh air per minute or sixty cubic feet per hour. Thus, to give this amount of air space in an apartment it requires a room of 600 cubic feet per individual.

A horse or cow is said to have six times the breathing capacity of a man, so that it will require 360 cubic feet per hour, or 3,600 cubical feet of space. If every animal requires 1,000 cubic feet per hour, it follows that the dimensions of a stable with stalls 6' 6" wide, 9' long, with a passage behind of 6', and having a height of 10', will afford this amount of space to each horse.

The mode of ventilating a stable has long been a vexed question, though there is a very simple means at the disposal of the builder. The open roof is acknowledged on all hands as the most desirable; it admits of a ridge louvre or ventilator extending the whole length of roof. The ridge ventilator system was strongly recommended by the Commissioners on barrack and hospital improvements, who specially reported on cavalry stables.

They also recommended air bricks, 9" by 9", introduced in the walls along the eaves with their apertures arranged that the currents of air will flow in the direction of the ridge. A window to each stall on the swing principle, and with a series of inlets below, about 6" above the floor, one to each stall, give all that is required to produce a healthful stable.

Street Railways in Chili.

In Chili young women figure as car conductors. The experiment was first tried during the recent war with Peru, when all the able bodied men were sent to the army, and proved so successful that the practice of their employment has become permanent, to the advantage, it is said, of the companies, the women and the public. It is very odd to see a woman with a bell pouch taking up fares, and the first impression is not favorable; but a stranger becomes accustomed to this, as to all other novelties, and concludes that it is not such a bad idea after all.

The conductors, or conductresses, are usually young and sometimes very pretty, and commonly of the mixed race—of Indian and Spanish blood. They wear a neat uniform of blue flannel, with a jaunty Panama hat, and a many pocketed white pinafore reaching from the breast to the ankles, and trimmed with dainty frills. In these pockets they carry small change and tickets,

while hanging to a strap over their shoulders is a little portmanteau or shopping bag, in which is a lunch, a pocket handkerchief and surplus money and tickets.

On paying his fare each passenger receives a yellow paper ticket, numbered, which he is expected to destroy. The girls are charged with so many tickets, and when they return to headquarters are expected to return money for all that are missing, any deficit being deducted from their wages, which are \$25 a month. As an additional check upon dishonesty, spotters are stationed along the line, who hop on the car as it passes, count the passengers, write the number down in a memorandum book and jump off. A few blocks further on another spotter repeats the job, and these books are compared by the chief inspectors to see that the returns of the conductress correspond.

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.

[The following is a complete list of the Street Railways of the United States and Canada, so far as we have received the official returns from the various roads. Will those roads not reported kindly fill out the blanks sent them and mail to us without delay, so that they may be properly represented in the STREET RAILWAY JOURNAL?]

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. 2½ 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. 7½ m, 26-45 lb r, 27 c, 143 h. Pres. Chas. Newman, Sec. & Treas. P. A. Way, Supt. M. C. Foster. The Albany Ry. 10 m, 4-8½ g, 33-47 lb r, 51 c, 194 h. Pres. Supt. and Treas. John W. McNamara, Sec. Jas. H. Manning. Offices 3 & 5 N. Pearl St.

ALLEN TOWN, PA.—Allentown Pass. R.R. Co. 3½ m, 6 c, 22 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Balliet, Supt. Russel A. Thayer.

ALTON, ILL.—Alton & Up. Alton Horse Ry. Co. **ALTOONA, PA.**—City Pass. Ry. Co. of Altoona. 3½ m, 5-3 g, 43 lb r, 17 c, 33 h. Pres. John P. Levan, Sec. & Treas. L. B. Reinsneider, Supt. John J. Buch.

AMSTERDAM, N. Y.—Amsterdam St. Ry. Co. 1½ 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.

ANNISTON, ALA.—**ASHTABULA, O.**—Ashtabula City Ry. Co. 4 m, 4-8½ g, 40 lb r, 6 c, 60 h. Owner & Prop. Jno. N. Stewart.

ATCHISON, KAN.—Atchison St. Ry. Co. 5½ m, 4-8½ 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. 2½ m, 4-8½ g, 16 lb r, 7 c, 26 h. Pres. L. B. Nelson, V. Pres. L. DeGlove, Sec. & Treas. John Stephens, Solicitor, A. Remharat. Metropolitan St. R.R. Co. West End & Atlantic R.R. Co. 2m, 4-8½ 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, 4-8½ 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. Culpepper, 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. 1½ m, 4-8½ 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. 1½ m, 4-8½ 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, 4-8½ g, 28 lb r, 7 c, 10 h, 30 mu. Pres. H. H. Evans, V. Pres. S. W. Thatcher, Sec. A. J. Hopkins, Treas. E. W. Truth, Supt. J. B. Chattee.

BABYLON, N. Y.—Babylon Horse R.R. Co. 1½ m, —g, —lb r, 2 c, 3 h. Pres. W. F. Norton.

BALTIMORE, MD.—Baltimore & Powhatan Ry. Co. 6 m, 5-4½ g, 4 c, 17 h. Pres. & Treas. E. D. Freeman, Sec. R. B. Clark, Supt. I. M. Ketrick.

Baltimore City Pass. Ry. Co. 40 m, 5-4½ g, 46 lb r, 154 c, 1000 h. Pres. Oden Bowle, Treas. John Bolgrian, Sec. S. L. Bridge.

Baltimore Union Pass. Ry. Co. Supt. T. C. Robbins.

Baltimore & Catonsville Ry. Co.

Baltimore & Halls Spring R.R. Co.

Baltimore & Pimlico & Pikesville R.R. Co.

Central Ry. Co. 5½ m, 5-6 g, 40 lb r, 22 c, 180 h. Pres. Peter Thompson, Sec. & Treas. Walter Blakstone.

Citizen's Ry. Co. 20 m, 5-4½ 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.

People's Pass. Ry. Co. 6½ m, 5-4½ 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. DeJ. 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. 7½ m, 4-8½ 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 c, 21 h. Pres. M. L. Knight, Sec. & Treas. J. F. Merriman, Supt. of Construction, J. C. Whitla.

BELLAIRE, O.—Bellaire St. R.R. Co.

BELLEVILLE, ONT., CAN.—Belleville St. R.R. Co.

BEREA, O.—Berea St. Ry. Co. 1½ m, 3-6 g, 28 lb r, 2 c, 2 h. Pres. C. W. D. Miller, V. Pres. T. Chinchward, Sec. & Treas. A. H. Pomeroy, Supt. A. W. Bishop.

BINGHAMTON, N. Y.—Washington Street & State Asylum R.R. Co. 4½ m, 4 g, 16-25 lb r, 13 c, 23 h. Pres. B. H. Meagley, V. Pres. Geo. Whitney, Sec. C. O. Root, Treas. F. E. Ross.

Binghamton Central R.R. Co. 3½ m (2½ laid), 3 g, 23 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, 4-8½ 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. 5½ m, 4-8 g, 16 lb r, 13 c, 40 m. Pres. Geo. L. Morris, Supt., Sec. & Treas. W. H. Morris.

BLOOMFIELD, N. J.—Newark & Bloomfield R. R.

BLOOMINGTON, ILL.—Bloomington & Normal Horse Ry. Co.

BOONE, IA.—Boone & Boonsboro St. Ry. Co. 1½ m, 3 g, 20 lb r, 3 c, 10 h. Pres. L. W. Reynolds, Treas. J. B. Hodges, 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, 4-8½ g, 50 lb r, 187 c, 925 h. Pres. Moody Merrill, Clerk R. B. Fairbairn, Treas. Samuel Little, Supt. J. E. Rugg.

Lynn & Boston. 34½ m, 4-8½ 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, 4-8½ g, 50 lb r, 150 c, 700 h. Pres. Chas. E. Powers, Treas. & Supt. John H. Studley. Address, 27 Tremont Row, Boston.

So. Boston Ry. Co. 13 m, 4-8½ g, 42-50 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. 1½ m, 4-8½ g, 38 lb r, 3 c, 4 h. Pres. James Brody, Sec. N. B. Parsons, Gen. Man. & Supt. Enos Parsons.

BRIDGEPORT, CONN.—The Bridgeport Horse R.R. Co. 5 m, 4-8½ g, 42 lb r, 14 c, 70 h. Pres. Albert Eamer, Sec. & Treas. F. Hurd, Supt. B. F. Lashar.

BROCKTON, MASS.—Brockton St. Ry. Co. 3½ m, 24 c, 97 h. Pres. W. W. Cross, Treas. & Sec. Z. C. Kelth, Supt. H. B. Rogers.

BROOKLYN, N. Y.—The Atlantic Avenue R.R. Co. of Brooklyn. 24½ m, 4-8 g, 60 lb r, 244 c, 82 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 $\frac{1}{2}$ 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 $\frac{1}{2}$ 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 535 Manhattan Ave.

Bushwick R.R. Co. 20 m, 4-8 $\frac{1}{2}$ g, 45-50-60 lb r, 172 c, 600 h. Pres. Frank Cromwell, V. Pres. Wm. H. Husted, Treas. & Sec. S. D. Hallowell, Supt. Wm. M. Morrison. Office 23 Broadway, N. Y.

The Brooklyn Bushwick & Queens County R.R. Co. 6 m, 4-8 $\frac{1}{2}$ 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 $\frac{1}{2}$ g, 60 lb r, 761 c, 3,045 h. Pres. William H. Hazzard, V. Pres. William M. Thomas, Sec. & Treas. Daniel F. Lewis, Asst. Sec. Francis E. Wrigley. Offices 8 & 10 Fulton St.

Brooklyn City & Newtown R.R. Co. 11 m, 4-8 $\frac{1}{2}$ g, 45-60 lb r, 133 c, 419 b. 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 $\frac{1}{2}$ g, 103 c, 316 h. Pres. James Jourdan, Sec. Ed. F. Drayton, Supt. William Farrell. Office cor. Smith & Huntington Sts.

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

Crosstown Line, Hamilton Ferry to Bridge. Grand St. & Newtown R.R. Co. 8 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ 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 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 50 lb r, 75 c, 244 b. Pres. Louis Fitzgerald, 120 Broadway, N. Y., Sec. & Treas. Duncan B. Cannon, Supt. Jno. L. Helms. 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 $\frac{1}{2}$ g, 69 c, 214 h. Pres. A. R. Culver, Treas. A. C. Washington, Sec. George H. Smith, Eng. Supt. R. Schermerhorn, Supt. Robert Attlesey. Offices Ninth Ave., 19th & 20th Sts.

Prospect Park & Flatbush R.R. 1 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 34 lb r, 70 c, 360 h. Pres. Loftis Wood, Sec. & Treas. Saml Parkhill, Supt. Loftis Wood.

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

The New Williamsburgh & Flatbush R. R. Co. 6 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 47-50 lb r, 74 c, 255 h. Pres. Geo. W. Van Allen, 54 Ann St., New York, Sec. W. B. Waltt, 34th St. & 9th Ave., New York, Treas. C. B. Cottrell, 8 Spruce St., N. Y. City, Supt. Chas. E. Harris, Nstrand 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 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ 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 Mechanicsburg, Ill. BUFFALO, N. Y.—Buffalo St. R. R. Co. 17 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 50 lb r, 96 c, 510 h. Pres. Henry M. Watson, V. Pres. P. 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 $\frac{1}{2}$ 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 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 22 lb r, 9 c, 30 h. Pres. John Patterson, Sec. & Man. C. T. Patterson.

Union St. Ry. Co. CAIRO, ILL.—Cairo St. R. R. Co. CAMBRIDGE, MASS.—Cambridge R.R. Co. 43 m, 4-8 $\frac{1}{2}$ g, 50 lb r, 245 c, 1,410 h. Pres. Prentiss Cummings, Treas. & Clerk F. T. Stevens, Exec. Com. I. M. Simpson, P. Cummings, O. S. Brown, Clerk of Directors, O. S. Brown, Supt. Wm. A. Bancroft.

Charles River St. Ry. Co. 10 4-5 m, 2-8 $\frac{1}{2}$ g, 50 lb r, 50 c, 330 h. Pres. Chas. E. Raymond, Corp. Clerk C. E. Harden, Treas. Daniel U. Chamberlain, Supt. John N. Akarman.

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 & Marlon 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 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ 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. Passalalgere.

Middle Street Sullivan Island Ry. Co. 2 m, 6 c, 12 mu. Pres. B. Callaghan, Sec. & Treas. Frank F. Whilden, Supt. B. Buckley.

CHATANOOGA, TENN.—Chatanooga St. R. R. Co. 2 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 16-25 lb r, 8 c, 50 h. Pres. J. H. Warner, Sec. C. R. Gaskill, Supt. A. B. Wingfield.

CHESTER, PA.—Chester St. Ry. Co. 5 $\frac{1}{2}$ m, 5-2 $\frac{1}{2}$ g, 12 c, 70 h. Pres. Richard Peters, Jr., Solicitor, Geo. B. Lindsay, Treas. Saml A. Dyer, Sec. E. M. Cornell.

CHICAGO, ILL.—Chicago City Ry. Co. 87 m, 4-8 $\frac{1}{2}$ g, 45 lb r, 567 c, 1,416 h, cable doing work of 2,500 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 $\frac{1}{2}$ g, 40 lb r, 820 c, 3,425 h. Pres. J. R. Jones, Sec. George L. Webb, Supt. Jas. K. Lake.

Chicago & Hyde Park St. —m,—g,—lb r,—c,—h. Pres. Douglas S. Clarke. North Chicago City Ry. Co. 35 m, 4-8 $\frac{1}{2}$ g, 45 lb r, 316 c, 1,700 h. Pres. & Gen. Supt. V. O. Turner, V. Pres. Jacob Rehn, Sec. & Treas. Hiram Crawford, Supt. of Track & Construction, Augustine W. Wright, Asst. Supt. Fred L. Tbreedy, Supt. Horse Dept. Robt. Atkins, Purcb. Agt. John W. Roach, Master Mechanic J. Miller.

CHILlicothe, O.—Chillicothe St. R. R. Co. 1 $\frac{1}{2}$ m, 3 g, 16 lb r, 7 c, 10 h. Pres. E. P. Safford, Sec. A. E. Wenis, Treas. William Polanel, Supt. Ewel McMartin.

CINCINNATI, O.—Cincinnati Inclined Plane Ry. Co. 3 m, 5-2 $\frac{1}{2}$ 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.

Cincinnati & Mount Auburn R.R. Co. Columbia & Cincinnati St. R.R. Co. 3 $\frac{1}{2}$ m, 3 g, 35 lb r, 3 c, 6 dummy c. Pres. C. H. Kilgour, V. Pres. John Kilgour, Treas. B. F. Branman, Sec. A. H. Meier, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O.

Mt. Adams & Eden Park Inclined R.R. Co. 3 $\frac{1}{2}$ m, 5-2 $\frac{1}{2}$ g, 42 lb r, 40 c, 320 h. Pres. & Treas. J. P. Kerper, Sec. J. R. Murdock, Supt. Chas. Whitten.

So. Covington & Cincinnati. (See Covington, Ky.) CLEVELAND, O.—The Brooklyn St. R.R. Co. 8 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 52 lb r, 66 c, 375 h. Pres. Tom. L. Johnson, V. Pres. A. J. Moxham, Sec. J. B. Hoeffgen, Treas. John McConnell, Supt. A. L. Johnson.

Broadway & Newburg St. R.R. Co. 6 m, 4-8 $\frac{1}{2}$ g, 10 c, 160 h. Pres. & Supt. Joseph Stanley, V. Pres. Saml Andrews, Sec. & Treas. E. Fowler.

Superior St. R.R. Co. 15 m, 4-8 $\frac{1}{2}$ g, 45 lb r, 46 c, 225 h. Pres. Frank D. Robinson, V. Pres. John Koch, Sec. Treas. & Supt. M. S. Robison, Jr.

The East Cleveland R.R. Co. 20 m, 4-8 $\frac{1}{2}$ g, 35-40 lb r, 92 c, 450 h, 1 electric motor. Pres. A. Everett, V. Pres. Chas. Wason, Sec. & Treas. H. A. Everett, Supt. E. Duty. Offices, 1154 & 1158 Euclid Ave.

Woodland Avenue & West Side St. R.R. Co. 17 m, 4-8 $\frac{1}{2}$ g, 43 lb r, 100 c, 550 h. Pres. M. A. Hanna, V. Pres. C. F. Emery, Sec. J. B. Hanna, Gen. Supt. George G. Mulhen.

South Side St. Ry. Co. St. Clair Street Ry. Co.—m,—g,—lb r,—c,—Pres. Chas Hatbaway.

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 $\frac{1}{2}$ g, 16 lb r, 6 c, 25 b. Pres. Cliff B. Grimes, Sec. L. G. Schnessler, Treas. N. N. Curtis, Supt. J. A. Gabbourgh.

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 $\frac{1}{2}$ m, 3-6 g, 24 lb r, 9 c, 25 c. Pres. A. D. Rodgers, V. Pres. B. S. Brown, Sec. R. S. Rockley, Treas. S. S. Rickley, 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 $\frac{1}{2}$ laid), 4-8 $\frac{1}{2}$ 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 $\frac{1}{2}$ m, 5-2 $\frac{1}{2}$ g, 43 lb r, 46 c, 296 h. Pres. E. F. Abbott, Sec. S. C. Bunton, Treas. G. M. Abbott.

DALLAS, TEX.—Dallas St. Ry. Co. 4 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 20-38 lb r, 12 c, 4 h, 72 mu. Pres. Wm. J. Keller, Sec. Harry Keller, Supt. C. E. Keller.

Commerce & Way St. R.R. DANVILLE, ILL.—Citizens' St. Ry. Co. 4 m, 4 g, 20 lb r, 7 c, 35 mu. Pres. Wm. I. Cannon, V. Pres. & Gen. Man. Wm. Stewart, Sec. & Treas. Adam P. Samuel.

DAVENPORT, IA.—Davenport Central St. R.R. 2 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ 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 $\frac{1}{2}$ g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.

DAYTON, O.—Dayton St. R.R. Co. 3 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 44 lb r, 23 c, 66 h. Pres. J. W. Stoddard, V. Pres. H. S. Williams, Sec. C. B. Clegg, Supt. A. W. Anderson.

Oakwood St. Ry. Co. 3-1-3 m, 4-8 $\frac{1}{2}$ g, 38 lb r, 13 c, 60 h. Pres. Charles B. Clegg, Sec. M. P. Moore, Supt. Wm. Davis.

The Wayne & Fifth St. R.R. Co. 3 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 34-38 lb r, 5 c, 30 h. Pres. Geo. M. Shaw, Sec. & Treas. Eugene Winchet, Supt. N. Routhanz.

DECATUR, ILL.—Decatur Horse Ry. Co. Citizens' Street R.R. Co. 2 m, 4-8 $\frac{1}{2}$ g, 30 lb r, 7 c, 47 h & mu. Pres. D. S. Shellabarger, Sec. & Treas. & Supt. A. E. Kinney.

DEERING, ME.—See Portland. DENISON, TEX.—Denison St. Ry. Co. 3 m 3-6 g, 16 lb r, 5 c, 22 mu. Pres. C. A. Waterhouse, Supt. S. A. Roblson.

DENVER, COLO.—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. L'huillier, 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 & Sebastopol St. Ry. Co. DETROIT, MICH.—Fort Wayne & Elmwood Ry. Co. 6 m, 4-8 $\frac{1}{2}$ 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 $\frac{1}{2}$ g, 40-43 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 Hough, Gen. Supt. Robert Bell, Mast. Mech. John Willis.

Grand River St. Ry. Co. 2 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 43 lb r, 13 c, 110 h. Pres. & Treas. Jos. Dalley, Sec. J. W. Dalley, Supt. C. M. Dalley.

DOVER, N. H.—Dover Horse R.R. Co. 2-2-5 m, 3 g, 30 lb r, 4 c, 14 h. Directors, Z. S. Wallingford, Chas. H. Sawyer, Jas. E. Lothrop, C. W. Wiggin, Harrison Haley, Frank Williams, Cyrus Littlefield, Treas. Harrison Haley.

DUBUQUE, IA.—Dubuque St. R.R. 5 m, 4-8 $\frac{1}{2}$ g, 21 c, 45 h. Pres. J. A. Ronberg, Sec. & Treas. B. E. Linehan, Supt. J. J. Linehan.

DULUTH, MINN.—Duluth St. Ry. Co. 3 m, 3-6 g, 30 lb r, 6 c, 7 h, 31 mu. Pres. A. S. Chase, V. Pres. O. P. Stearns, Sec. & Treas. L. Mendenhall, Supt. & Pur. Agt. W. T. Hoopes.

EAST OAKLAND, CAL.—Oakland, Brooklyn & Fruitvale R.R. Co. EAST SAGINAW, MICH.—Street R. R. Co. of East Saginaw. —m,—g,—lb r, 14 c, 35 h. Pres. & Supt. 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 $\frac{1}{2}$ m, 5-2 $\frac{1}{2}$ g, 45 lb r, 45 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Elisha Burwell, So. Easton.

The West End Passenger Ry. Co. 1 $\frac{1}{2}$ m, 5-2 $\frac{1}{2}$ 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 $\frac{1}{2}$ g, 4-10 g, 30 lb r, 24 c, 74 h. Pres. & Treas. Jacob Davis, Sec. & Supt. John F. Pritchard.

ELKHART, IND.—Elkhart City R.R. Co. ELMIRA, N. Y.—The Elmira & Horseheads Ry. Co. 9-2-3 m, 4-8 $\frac{1}{2}$ g, 25-30-40 lb r, 18 c, 34 h. Pres. & Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wm. S. Kersner, Supt. Henry C. Silsbee. Officers, 212 E. Water St.

EL PASO, TEX.—El Paso St. Ry. Co. 2 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 20 lb r, 8 c, 25 h. Pres. G. B. Zimpelman, V. Pres. A. Krockauer, Treas. F. Magoffice, Sec. & Supt. I. A. Tays.

EMPORIA, KAN.—Emporia City Ry. Co. 3 $\frac{1}{2}$ 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 $\frac{1}{2}$ m, 3-6 g, 24 lb r, 2 c, 6 h. Pres. John Kampe, V. Pres. E. B. Gaston, Sec. & Treas. Jno. Gaston.

ERIE, PA.—Erie City Passenger Ry. Co. 5 m, 4-8 $\frac{1}{2}$ g, 30-40 lb r, 17 c, 70 h. Pres. Wm. W. Reid, Treas. J. C. Spencer, Sec. A. L. Lettall, Supt. Jacob Berst.

EUREKA SPRINGS, ARK.—Eureka Springs City Ry. Co. EVANSVILLE, IND.—Evansville St. Ry. Co. 12 m, 4-6 g, 23 lb r, 31 c, 190 mu. Pres. John Gilbert, Sec. P. W. Raleigh, Treas. John Gilbert, Supt. W. Bahr.

FALL RIVER, MASS.—Globe St. Ry. Co. 12 m, 4-8 $\frac{1}{2}$ g, 40-47 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.—Bourbon County St. Ry. Co. 1 m, 4 g, 22 lb r, 2 c, 4 m. Pres. Isaac Stadden, V. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph.

FORT SMITH, ARK.—Fort Smith St. Ry. Co. 2 m, 3-6 g, 16-38 lb r, 5 c, 16 h. Pres. Saml M. Loud, Sec. & Treas. Geo. T. Sparks.

FORT WAYNE, IND.—Citizens' St. R.R. Co. FORT WORTH, TEX.—Fort Worth St. Ry. Co. 7 $\frac{1}{2}$ m, 4 g, 25-38 lb r, 16 c, 73 m. Pres. K. M. Vanzandt, Treas. W. A. Hoffman, Acting Sec. & Gen. Man. S. Mims.

FRANKFORD, N. Y.—Frankford & Ilion Street Ry. Co. 2 $\frac{1}{2}$ 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 $\frac{1}{2}$ m, 4-10 g, 25 lb r, 5 c, 8 h. Pres. Wm. M. McClintock, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.

GAINESVILLE, FLA.—Gainesville St. Ry. Co. 2 $\frac{1}{2}$ m, 3-6 g, 17 lb r, 4 c, 12 h. Pres. C. N. Stevens, V. Pres. J. T. Harris, Sec. & Treas. F. R. Sherman.

GALESBURG, ILL.—Galesburg Horse R.R. Co. GALESTON, TEX.—Galveston City R.R. Co. 18 m, 4-8 $\frac{1}{2}$ g, 30 lb r, 68 c, 169 mu. Pres. Wm. H. Sinclair, Sec. & Treas. F. D. Merrit, Supt. M. J. Keenan. Gulf City St. Ry. & Real Estate Co.

GLOUCESTER, MASS.—Gloucester City R.R. Co. GRAND RAPIDS, MICH.—Street Ry. Co. of Grand Rapids, Mich. 13 m, 4-8 $\frac{1}{2}$ g, 30-35 lb r, 21 c, 175 h. Pres. C. A. Oris, Cleveland, O., V. Pres. L. H. Withey, Grand Rapids, Treas. M. S. Crosby, Grand Rapids, Sec. J. M. Weston, Grand Rapids, Asst. Sec. Jas. Flickands, Cleveland, O.

GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8 $\frac{1}{2}$ 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. 1 m, 5 g, — lb r, 5 c, 20 h. Proprietors, Gilreath & Harris.

HAMILTON, O.—The Hamilton St. Ry. Co. 4 m, 3 g, 23 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 $\frac{1}{2}$ g, 16-1 cllb r, 6 c, 22 h. Pres. & Supt. M. Doyle, Sec. & Treas. James O. Heam.

HARRISBURGH, PA.—Harrisburgh City Passenger Ry. Co. 3 $\frac{1}{2}$ m, 5-2 $\frac{1}{2}$ g, 42-47 lb r, 15 c, 36 h. Pres. H. A. Kelker, V. Pres. Daniel Epply, Sec. John T. Ensminger, Treas. R. F. Kelker, Supt. S. B. Reob.

HARTFORD, CONN.—Hartford & Wethersfield Horse R.R. Co. 12 m, 4-8 $\frac{1}{2}$ g, 45 lb r, 49 c, 250 h. Pres. & Treas. E. S. Goodrich, Sec. Geo. Sexton.

HAVERHILL, MASS.—Haverhill & Groveland St. Ry. Co. 4 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 30 lb r, 10 c, 19 h. Pres.

Jas. D. White, Treas. John A. Colby, Supt. L. R. Mitchell.

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. Anshen, Sec. Joab Small, Treas. H. D. Alexander.

HOBOKEN, N. J.—North Hudson County Ry. Co. 1 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, 24 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. 13 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. McGregor, Houston, Supt. Henry Friend, Houston, Sec. & Treas. F. J. DeMeritt, Galveston.

HUTCHINSON, KAN.—Hutchinson St. Ry. Co. **HYDE PARK, ILL.**—Ewing Avenue Horse Ry. Co. 4-8 1/2 g. Pres. Andrew Rehm, Sec. A. Krimbill.

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. F. Remington, Supt. Frederick Gates.

INDIANAPOLIS, IND.—Citizens' St. Ry. Co. 6 m, 4-8 1/2 g, 20-33-40-52 lb r, 70 c, 530 h. Pres. A. W. Johnson, Indianapolis, Treas. Tom. L. Johnson, Cleveland, O. Sec. A. A. Anderson, Indianapolis, Man. W. T. Steele, Indianapolis, Auditor P. Woodrige, Louisville, Ky.

IRVINGTON, N. J.—Newark & Irvington R.R. **JACKSON, MICH.**—Jackson City Ry. Co. — m, — g, — lb 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. Backinstae, Sec. & Treas. F. W. Backinstae.

JACKSONVILLE, ILL.—Jacksonville Ry. Co. **JAMAICA, N. Y.**—Jamaica & Brooklyn R.R. Co. 10 m, 4-8 1/2 g, 56-60 lb r, 7 c, 9 h. Pres. Aaron A. Degrauw, Sec. Martin J. Durea, Treas. Morris Fosdick, Supt. Wm. M. Scott.

JAMESTOWN, N. Y.—Jamestown St. Ry. Co. 2 m, 4-8 1/2 g, 30-42 lb r, 7 c, 9 h. Pres. John T. Wilson, Sec. C. R. Lockwood, Treas. John Langford, Supt. John F. Wilson.

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. Pavonia Ferry Ry. Co.

JOHNSTOWN, N. Y.—The Johnstown, Gloversville & Kingsboro Horse R.R. Co. 5 1/2 m, 4-8 1/2 g, 26 lb r, 6 c, 16 h. Pres. James Younglove, V. Pres. R. Fancker, Sec. & Treas. I. M. Law.

JOHNSTOWN, PA.—Johnstown Pass. R.R. Co. 6 1/2 m, 5-8 g, 41-43 lb r, 13 c, 56 h. Pres. James McMillen, Sec. B. L. Yeagley, Treas. W. H. Rosensleet, Jr.

JOLIET, ILL.—Joliet City R.R. Co. 3 1/2 m, 4-8 1/2 g, 40 lb r, 16 c, 30 h, 40 m. Owner, J. A. Henry, A. Bishman, Cash. J. E. Henry.

JOPLIN, MO.

KALAMAZOO, MICH.—Kalamazoo St. Ry. Co. 10 m, 4-8 1/2 g, 35 lb r, 28 c, 80 h. Pres. Fred Bush, Sec. J. W. Boynton, Treas. F. H. Brown.

KANSAS CITY, MO.—Kansas City Cable Ry. Co. 2 1/2 m, 4-8 1/2 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. Corriean Consolidated St. Ry. Co. 20 m, 4-1 g, 30 lb r, 80 c, 350 h. Pres. Bernard Corriean, Gen. Man. Thos. Corriean, Sec. Jas. T. Kelley. Jackson County Horse R. R. Co.

KANSAS CITY & Rosedale St. Ry. Co. **KANSAS CITY & Westport St. Ry. Co.**

KEOKUK, IA.—Keokuk St. Ry. Co. 4 m, 4-8 1/2 g, 27 lb r, 10 c, 42 h. Pres. Jas. H. Anderson, V. Pres. Jos. G. Anderson, Sec. R. James Anderson, Treas. & Supt. W. Z. Anderson.

KINGSTON, ONT., CAN.—Kingston St. R.R. Co. 2 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. Ry. Co. 2 m, 4-8 1/2 g, 22 lb r, 5 c, 2 hacks, 30 h. Pres. W. W. Woodruff, Sec., Treas. & Supt. T. L. Beaman.

LACONIA, N. H.—Laconia & Lake Village Horse R.R. 2 1/2 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. 2 1/2 m, 4-9 g, 24 lb r, 5 c, 16 h, 3 mu. Pres. Geo. F. Gund, V. Pres. B. E. Edwards, Sec. Mills Toucellette, Treas. Fred Tillman, Supt. Geo. F. Smith. La Crosse St. Ry. Co. Pres. B. E. Edwards, Treas. G. Van Steenk, Sec. Mills Toucellette, Supt. Peter Valter.

LA FAYETTE, IND.—LaFayette St. Ry. 2 1/2 m, 4-8 1/2 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. 3 1/2 m, 4-8 1/2 g, 22 lb r, 6 c, 15 h. [Owned by Mrs. L. R. Snodgrass.] Gen. Man. Geo. M. Snodgrass.

LANCASTER, PA.—Lancaster & Millerville St. Ry. Co. 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, 38 East Fourteenth St., N. Y. City.

LAWRENCE, KAN.—Lawrence Transportation Co. 4 1/2 m, 4-1 g, 35 lb r, 7 c, 30 h. Pres. H. Tisdale, Sec. W. H. Bangs.

LAWRENCE, MASS.—Merrimack Valley Horse R.R. Co. 5 4-5 m, 4-8 1/2 g, 45 lb r, 20 c, 70 h. Pres. Wm. A. Russell, V. Pres. James Walton, Methuen, Clerk & Treas. James C. Eaton, Supt. A. N. Kimball, Lawrence.

LEWISTON, ME.—Lewiston & Auburn Horse R.R. Co. 7 1/2 m, 4-8 1/2 g, 32 lb r, 16 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. **LIMA, O.**—Lima St. Ry. Co.

LINCOLN, NEB.—Capital City Ry. Co. 3 m, — g, — lb r, 5 c, — h. Pres. E. B. Durfee, Sec. & Supt. H. B. Durfee.

LITTLE ROCK, ARK.—Little Rock St. Ry. Co. Citizens' St. Ry. Co. 4 1/2 m, 4-10 g, 20 lb r, 22 c, 80 h. Pres. John Cross, Sec. and Treas. F. C. Reed, Supt. C. R. Diver. Hot Springs St. Ry. Co.

LOGANSPOURT, 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, 4-8 1/2 g, 30 lb r, 12 c, 30 h. Pres. V. Cronga, Sec. Jas. H. Plock, Supt. Henry Thos. Smith.

LONG ISLAND CITY, N. Y.—Stelway & Hunter's Point R.R. Co. 2 1/2 m, 4-8 1/2 g, 47 lb r, 60 c, 150 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. Traub, Stelway Hall, N. Y. City. Supt. Chas. J. Campbell, Officers 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, 4-8 1/2 g, 45-55 lb r, 25 c, 60 h. Pres. Isaac Buchanan, 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. Co. 3 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. Spencer, Sec. F. S. Palmer, Supt. J. A. Fairchild. City R.R. of Los Angeles. 4 1/2 m, 4-8 1/2 g, 36 lb r, 9 c, 75 h. Pres. I. M. Hellman, V. Pres. W. J. Broditch, Sec. John O. Wheeler, Supt. W. H. Hawks. Los Angeles & Aliso 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. Minary, Sec. & Treas. Thos. Donigan. Central Pass. R.R. Co. — m, — g, — lb r, — c, — h, Pres. —, V. Pres. Thos. J. Minery, Crescent Hill Ry. Co.

LOUISVILLE CITY, KY. 63 m, 5 g, — lb r, 199 c, 1300 h. 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, 4-8 1/2 g, 28-47 lb r, 28 c, 100 h. Pres. Wm. E. Livingston, Gen. Man. J. A. Chase.

LYNCHBURG, 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. 4 1/2 m, 3-8 g, 19-30 lb r, 15 c, 40 h. Pres. D. Joyce, V. Pres. & Man. R. N. Rand.

MACON, GA.—Macon & Suburban St. R.R. Co. 5 m, 4-8 1/2 g, 20 lb r, 12 c, 60 h & mu. Pres. Jno. S. Bradford, Sec. & Supt. Jno. T. Voss. Office, 151 Second St.

MADISON, IND.—Madison St. Ry. Co. 2 1/2 m, 4 g, 15 lb r, 7 c, 8 h, 10 mu. Pres. Jacob Wendle, V. Pres. Peter F. Robenslin, Supt. & Treas. Chas. F. Tuttle.

MADISON, WIS.—Madison St. Ry. Co. 2 1/2 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. 4 1/2 m, 3 1/2 g, 27-34 lb r, 12 c, 41 h. Pres. S. N. Bell, Treas. Frederick Smyth, Clerk J. A. Weston, Supt. A. Q. Guage.

MARSHALLTOWN, IA.—3 m, 4 g, 25 lb r, 7 c, 20 h. Pres. B. T. Frederick, Treas. T. E. Foley, Sec. C. C. Gilman, 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, 4-8 1/2 g, 6 c, 32 mu. Pres. L. W. Robertson, Sec. & Treas. W. S. Frank.

MECHANICSBURG, ILL.—Mechanicsburg & Buffalo Ry. Co. 3 1/2 m, 3-10 g, 16 lb r, 3 c, 4 mu. Pres. J. N. Fullenweider, Treas. A. T. Thompson, Sec. J. T. Fullenweider.

MEMPHIS, TENN.—Memphis City R.R. Co. — m, — g, — lb r, — c, — h. Pres. R. Dudley Frayser.

MERIDIAN, MISS.—Meridian St. Ry. Co. 1 1/2 m, 4-8 g, 16 lb r, 3 c, 12 h. Pres. J. J. Shannon, V. Pres. J. L. Handley, Sec. R. M. Houston.

MIDDLETOWN, O.—Middletown & Madison St. Ry. Co. **MILLERSVILLE, PA.**—Lancaster & Millersville St. R.R. Co.

MILWAUKEE, WIS.—Cream City R.R. Co. 8 1-6 m, 4-8 1/2 g, 27-38 lb r, 74 c, 307 m, 2 h. Pres. Winfield Smith, V. Pres. Christian Preusser, Treas. Ferdinand Kuhn, Sec. Wm. Damkoehler, Supt. H. J. C. Berg. Milwaukee City Ry. Co. 15 m, 4-8 1/2 g, 27 lb r, 75 c, 430 h. Pres. Peter McGeoch, Sec. & Treas. Geo. O. Wheatcroft. West Side St. Ry. Co. Owner & Manager, Washington Becker, Supt. — McNaughton.

MINNEAPOLIS, MINN.—Minneapolis St. Ry. Co. 45 m, 3-6 g, 27-35-45 lb r, 146 c, 725 h and mu. Pres. Thos. Lowry, V. Pres. C. Morrissey, Treas. W. W. Herrick, Sec. & Supt. C. G. Goodrich.

MOBILE, ALA.—City R.R. Co. 17 1/2 m, 5-2 g, 35 lb r, 68 c, 240 h. Pres. Jno. Maguire, Sec. I. Strause, Treas. Myer I. Goldsmith, Supt. A. Moog. Dauphin & Lafayette St. Ry. Co. 2 m, 5-2 1/2 g, 40 lb r, 9 c, 22 h. Pres. D. P. Bestor, V. Pres. G. Y. Overall, Sec. & Treas. James W. Gray, Pur. Agt. & Man. J. G. Robertson. Mobile & Spring Hill R.R. Co. 8 m, 5-2 1/2 g, 35 lb r, 15 c, 35 h, 1 dummy. Pres. Daniel M. Nicoll, Sec. & Treas. C. F. Sheldon, Man. F. Ingato.

MOHAWK, N. Y.—Mohawk & Ilion R.R. Co. 1 1/2 m, 4-8 1/2 g, 30 lb r, 4 c (contract for motive power). Pres. O. W. Bronson, V. Pres. John Brown, Sec. H. D. Alexander, Treas. R. M. Devendorf, Supt. O. W. Bronson.

MOLINE, ILL.—Moline Central St. Ry. Co. 1 1/2 m, — g, — lb r, 3 c, 11 h. Pres. S. W. Wheelock, V. Pres. M. Y. Cady, Sec. W. R. Moore, Treas. C. F. Hemenway. Moline & Rock Island St. Ry. Co. 5 m, 4-8 1/2 g, 20 lb r, 13 c, 41 h. Pres. J. Huntoon, Sec. I. M. Buford, Treas. C. Lyons, Supt. Wm. Gamble.

MONTREAL, CAN.—Montreal City Pass. R.R. Co. 21 m, 4-8 1/2 g, — lb r, 76 c, 465 h. Pres. Jesse Joseph, V. Pres. Wm. Smith, Sec. & Man. Ed. Lusher, Supt. T. H. Robillard.

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

MUSCATINE, IA.—Muscatine City Ry. Co. Pres. Peter Musser, V. Pres. Geo. W. Dillaway, Sec. T. R. Fitzgerald, Supt. & Treas. O. J. Chapman.

MUSKEGON, MICH.—Muskegon Ry. Co. 4 1/2 m, 3-6 g, 20 lb r, 8 c, 26 h, 8 mu. Pres. F. A. Nlms, 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 lb r, 21 c, 100 h. Pres. Jno. F. White, Sec. & Treas. H. B. Stubblefield, Supt. Daingerfield Deaderick. McGavock & Mt. Vernon Horse R.R. Co. Nashville D. & N. St. R.R. Co. 7 1/2 m, 5 g, 16-32 lb r, 25 c, 140 mu. Pres. Jno. P. White, V. Pres. B. F. Wilson, Sec. & Treas. H. B. Stubblefield, Supt. D. Deaderick. South Nashville St. R.R. Co. 4 1/2 m, 6 g, 16-20 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt. C. L. Fuller.

NEVADA, MO.—Nevada Street Ry. Co. **NEW ALBANY, IND.**—New Albany St. Ry. Co. 6 m, 4-11 g, 25 lb r, 15 c, 50 h. Pres. Geo. T. Vance, Sec. G. Vance, Treas. Letitia V. Vredenburg, Supt. Wm. L. Timberlake.

NEWARK, N. J.—The Newark & Bloomfield St. R.R. Co. 7 m, 5-2 1/2 g, 47 lb r, 22 c, 140 h. Pres. S. S. Battin, Sec. W. L. Mulford, Supt. H. F. Totten. Broad St. R.R.

NEW BEDFORD, MASS.—New Bedford & Fairhaven St. Ry. Co. 7 1/2 m, 4-8 1/2 g, 35-40 lb r, 38 c, 138 h. Pres. Warren Ladd, Treas. Andrew G. Pierce, Clerk Edward T. Pierce. Acushnet St. R.R. Co. 6 m, 4-8 1/2 g, 33 lb r, 29 c, 103 h. Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith.

NEWBURYPORT, MASS.—Newburyport & Amesbury Horse R.R. Co. 6 1-3 m, 12 c, 64 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, 4 1/2 g, 42 lb r, 23 c, 151 h. Pres. H. B. Ives, Sec. & Treas. G. Cander, Supt. Walter A. Graham. New Haven & Centreville Horse R.R. Co. 2 1/2 m, 4-8 1/2 g, 42 lb r, 4 c, 30 h. Trustee Cornelius Pierpont. State Street Horse R.R. Co. 2 1/2 m, 4-8 g, 43 lb r, 4 c, 40 h. Pres. C. A. Warren, Sec. & Treas. C. C. Blatchen. The Whitney Ave. Horse Ry. 2 1/2 m, 4-8 1/2 g, 25 lb r, 3 c, 25 h. Pres. Geo. H. Watson, Sec. George D. Watson, Treas. Eli Whitney, Jr.

NEW ORLEANS, LA.—Canal & Claiborne St. R.R. Co. 13 m, 5-2 1/2 g, 37 lb r, 40 c, 200 h. Pres. E. J. Hart, Sec. & Supt. John H. D. Grange. Crescent City R.R. Co. 26 m, 5-2 1/2 g, 35-45 lb r, 90 c, 400 lb. Pres. Frank Roder, Sec. & Treas. Jno. J. Juden, Supt. A. V. Smith.

NEW ORLEANS & Carrollton R.R. Co. 8 m, 4-8 1/2 g, 30-45 lb r, 65 c, 200 h, 19 engines. Pres. Wm. Benthuyssen, Sec. Walter F. Croch, Supt. C. V. Haile. New Orleans City & Lake R.R. Co. 64 m, 6-2 1/2 g, 46-40 lb r, 180 c, 39 coaches, dummy engines, 1050 mu. Pres. J. A. Walker, Sec. W. E. Leverich, Supt. F. Wintz.

NEW ORLEANS ST. R.R. Co. Orleans R.R. Co. — m, — g, — lb r, 32 c, 140 h, & mu. Pres. & Supt. H. Larque, Sec. & Treas. F. Cought. Office, cor. White & LaHarpe Sts. St. Charles St. R.R. Co. 15 m, 6-2 1/2 g, 32 lb r, 60 c, 366 m. Pres. & Supt. Alden McLellan, Sec. Vincent Riviere.

NEWPORT, KY.—Newport St. R.R. Co. **NEW YORK, N. Y.**—North Ave. R.R. Co. 8 m, 4-8 1/2 g, 60 lb r, 45 c, 380 h. Pres. W. H. Hays, Sec. & Treas. James Aftleck, Supt. Herman B. Wilson. Office, North Ave., cor. 59th St.

NEW YORK, N. Y.—Broadway & Seventh Ave. R.R. Co. 7 m, 4-8 1/2 g, 47-60 lb r, 150 c, 1,350 h. Pres. James W. Foshay, Sec. & Treas. Thos. B. Kerr, Supt. Henry A. Newell, Office 761, Seventh Ave.

NEW YORK, N. Y.—Central Crosstown R.R. Co. 2 1/2 m, 4-8 1/2 g, 52 lb r, 42 c, 231 h. Pres. John B. Slawson, V. Pres. A. Cammack, Sec. M. J. Masson, Treas. John L. Macaulay, Office 365 Ave. A. Central Park North & East River R.R. Co. 14 m, 4-8 1/2 g, 60 lb r, 162 c, 1,225 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.

NEW YORK, N. Y.—Christopher & Tenth St. R.R. Co. 6 m, 4-8 g, 45 lb r, 47 c, 290 h. Pres. Jacob Sharp, Treas. W. T. Hatch, Sec. & Supt. George W. Lynch. Office, 168 Christopher St. Dry Dock, East Broadway & Battery R.R. Co. 11 1/2 m, 4-8 1/2 g, 60 lb r, 137 c, 1,132 h. Pres. William White, Auditor E. T. Landon, Sec. & Treas. Richard Kelly, Supt. Fred F. White, Offices, 605 Grand St. Eighth Ave. R.R. Co. 10 m, 4-8 1/2 g, 60 lb r, 112 c, 1155 h. Pres. W. H. Hays, Sec. & Treas. James Aftleck, Supt. H. B. Wilson, Office, Eight Ave., & 60th St.

NEW YORK, N. Y.—Forty-Second Street & Grand Street Ferry R.R. Co. 6 1/2 m, 8-4 g, 64 lb r, 50 c, 500 h. Pres. Chas. Curtis, Sec. & Treas. E. S. Allen, Supt. John M. Calhoun, Office, 653 W. 23d St.

NEW YORK, N. Y.—Harlem Bridge, Morrisania & Fordham Ry. 4 1/2 m, 4-8 1/2 g, 45-60 lb r, 65 c, 233 h. Pres. Henry Spratley, V. Pres. Richard M. Hooe, Sec. & Treas. Wm. Caldwell. Office, North Third Ave., near 170 St.

Houston, West Street & Pavonia Ferry R.R. Co. 5 m, 4-8 1/2 g, 60 lb r, 50 c, 400 h. Pres. Richard Kelly, Sec. & Treas. Daniel E. Hasbrook. Office, 415 E. 10 St.

Jerome Park R.R. 1 m, 4-8 1/2 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. 5 1/2 m, 4-8 1/2 g, 56-75 lb r, 144 c, 1,408 h. Pres. W. H. Vanderbilt, V. Pres. & Sec. Cornelius Vanderbilt, Treas. Ed. V. W. Rosstetter, Supt. Alfred Skiff, Pur. Agt. Chas. Reed.

Sixth Ave. R.R. Co. 4 m, 4-8 1/2 g, 60 lb r, 127 c, 126 h. Office, 756 Sixth Ave.

South Ferry Ry. Co. 3/4 m, 4-8 1/2 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, 4-8 1/2 g, 60 lb r, 316 cars, 1750 h. Pres. W. Thorn, V. Pres. J. Wadsworth, Sec. & Treas. J. B. Underhill. Office Second Ave. cor. 36th St.

The Third Ave. R.R. Co. 13 1/2 m, 4-8 1/2 g, 60 & 74 lb r, 318 c, 2150 h. (3/4 m of cable road on 10th Ave.) 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, 4-8 1/2 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 Bridge Ry. Co. 2 1/2 m, 4-8 1/2 g, 38-42 lb r, 8 c, 36 h. Pres. Benj. Flagler, V. Pres. Alva Child, Sec. W. J. Mackay, Treas. A. Schoelkopf.

NORFOLK, VA.—Norfolk & City R.R. Co. 3 1/2 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. 3 1/2 m, 4-8 1/2 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. Berkeley 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 Loben. 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. Shurtliff, Ogden City, V. P. & Supt. O. P. Arnold, Salt Lake 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 St. Ry. — m, — g, — lb r, — c, — h. Pres. Jerome Heacock.

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

OSWEGO, N.Y.—Oswego St. Ry. Co. 2 m, 4-8 1/2 g, 45 lb r, 3 c, — h. Pres. Jas. F. Johnson, V. Pres. R. J. Olliphant, Sec. Haynes L. Hart, Treas. Robt. G. Post, Gen. Man. James O'Connor. [Not in operation yet.]

OTTAWA, ONT.—Ottawa City Passenger Ry. Co. 3 m, 4-8 1/2 g, 34 lb r, 1 c, 40 h. Pres. Thomas C. Keefe, V. Pres. R. Blackburn, Sec. James D. Traser.

OTTUMWA, IA.—Ottumwa 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. Co. 1 m, 1 c.

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, 33 lb r, 16 c, 24 h. Pres. John N. Terhune, Treas. John L. 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 Plantan, Treas. Helmas Romaine, 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, 135 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. H. N. Wheeler, Supt. John Strong.

PETERSBURGH, VA.—Petersburgh St. Ry. Co. 3 1/2 m, 4-8 1/2 g, 42 lb r, 9 c, 44 h. George Beadie, Proprietor.

PHILADELPHIA, PA.—Citizens Pass. Ry. Co. 10 1/2 m, 5-2 g, 45-47 lb r, 92 c, 420 h. Pres. John McCarthy, Sec. & Treas. John J. Adams, Supt. Sam'l Cline. Frankford & Southwark Phila. City Pass. R.R. Co. 18-1-10 m, 5-2 g, 47 lb r, 91 c, 8 dummy c, 580 h. Pres. Henry Geiger, Sec. & Treas. Geo. L. Gaudy, 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. Lafferty, Sec. & Treas. W. C. Foster. Lehigh Ave. Pass. Ry. Co. Pres. John Lamson, 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. Gaughan. People's Pass. Ry. Co. 4 1/2 m, 5-2 g, 47 lb r, 125 c, 1,080 h. Pres. C. J. Harrah, V. Pres. C. J. Harrah, Jr., Sec. & Treas. Jno. C. Dessalet, Supt. Wm. Hagenswiler. Philadelphia City Pass. Ry. Co. 7 m, 5-2 1/2 g, 47 lb

r,—c,—h. Pres. Wm. W. Colket, Sec. & Treas. T. W. Pennypacker. Philadelphia Traction Co. 109 m, 5-2 1/2 g, 45-78 lb r, 595 c, 3,160 h. Pres. W. H. Kemble, V. Pres. P. A. E. Widener & W. L. Elkins, Sec. & Treas. D. W. Dickinson. Philadelphia & Gray's Ferry Pass. R.R. Co. 101-2 m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C. Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lovett. Ridge Avenue Pass. Ry. Co. 14 m, 5-2 g, 47 lb r, 55 c, 352 h. Pres. E. B. Edwards, V. Pres. John Lambert, Sec. & Treas. Wm. S. Blight, Supt. William Ingles. Second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669h. Pres. Alexander M. Fox, Treas. William F. 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 E. Peddie. [Leased to Philada. Traction Co.] Thirtieth & 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. 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 Runkle, Sec. & Treas. James W. Long. PITTSBURGH, PA.—Central Pass. R.R. Co. 3 m, 16 c, 95 h. Pres. J. F. Chuley, Sec. F. L. Stephenson, Treas. E. R. Jones, Supt. R. G. Heiron. 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. Gormly, 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, Treas. James Boyle, Supt. Wm. J. Crozier, Allegheny City. People's Park Pass. Ry. Co. 2 m, 5-2 1/2 g, — lb r, 10 c, 75 h. Pres. Wm. McCreery, 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. Seibert, Supt. James C. Cotton. Manager J. P. Speer. 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. Jordan, Sec. John G. Traggardth, Treas. D. W. C. Bidwell, 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. Seibert, Cash. Saml. C. Hunter. Pittsburgh & Birmingham Pass. R.R. Co. 3 1/2 m, 5-2 1/2 g, 48 lb r, 30 c, 170 h. Pres. W. W. Patrick, Sec. D. F. Agnew, Treas. John G. Holmes. Pittsburgh & West End Pass. Ry. Co. 3 1/2 m, 5-2 g, 35 lb r, 13 c, 75 h. Pres. John C. Kelly, Sec. & Treas. Thomas S. Bigelow, Supt. William J. Burns. Pittsburgh & Wilkingsburg St. Ry. Co. Second Avenue Pass. Ry. Co. 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. Wallace, 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 Eldiot. PITTSFORD, PA.—Pittsford 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. Wastell. 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. 1 1/2 m, 3-6 g, 42 lb r, 9 c, 35 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. R. Co. 3 m, double, 3-6 g, 15 c, 63 h. D. W. Wakefield Sec., Tyler Woodward, Supt. PORTSMOUTH, O.—Portsmouth St. 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, 16 c, 56 h. POUGHKEEPSIE, N. Y.—City R.R. of Poughkeepsie. 3 m, 4-8 1/2 g, 35 lb r, 11 c, 38 h. Pres. Aaron Innis, V. Pres. G. B. Adriaene, Sec. A. B. Smith, Treas. Hudson Taylor, Supt. C. M. Davis. Office 491 Main St. PROVIDENCE, R. I.—Union R.R. Co. 50 m, 4-8 1/2 g, 24-54 lb r, 240 c, 1,200 h. Pres. Jesse Metcalf, V. Pres. & Gen. Man. D. F. Longstreet, Sec. and Treas. C. A. Bahcock, Aud. B. A. Jackson. QUEBEC, CAN.—Quebec St. Ry. Co. 3 m, 4-8 1/2 g, 45 lb r, 9 c, 40 h. Pres. Chas. St. Michel, Quebec, V. Pres. G. Renfrew, Quebec, Sec. & Treas. & Supt. Samuel Moore, Book-keeper, Francis Boomer. Quebec R.R. Co. St. John St. R.R. 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.—m—g—lb r,—c—h. Pres. — Sec. — Treas. Chas. Hathaway. 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. Muhlenberg, Supt. J. A. Riggs. Perkiomen Ave. Pass. Co. 2-1-5 m, 5-2 1/2 g, 45 lb r, 14 c, 36 h. Pres. Chas. Breneliser, Sec. & Treas. Isaac Hlester, Supt. John B. Houp. RED OAK, IA.—Red Oak St. R.R. Co. 1 1/2 m, 4-2 1/2 g, flat r, 2 c, 2 h, 2 mu. Pres. J. W. Judkins, V. Pres. Geo. West, Sec. F. M. Byriker, Treas. & Supt. F. O. Judkins. RICHMOND, IND.—Richmond City Ry. Co. 3 m,

3 g, 25 lb r, 9 c, 30 h. Pres. J. Y. Miller, V. Pres. Joseph Rathiff, Treas. H. L. Miller, Supt. F. M. Francisco. RICHMOND, ILL.—Richmond St. R.R. Co. RICHMOND, VA.—Richmond City Ry. Co. 7 m, 4-8 1/2 g, 60-40 lb r, 40 c, 180 h. Pres. J. H. Schoolcraft, Sec. & Treas. F. D. Melien, Man. C. M. Baeton, Supt. Charles Sieders. ROCHESTER, N. Y.—Rochester City & Brighton R.R. Co. 22 m, 4-8 1/2 g, 45 lb r, 120 c, 500 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, 16 m. 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. Bally Davenport, Sec. E. H. Gayer, Treas. John Peety. 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. Lindsley, V. Pres. S. D. Coykendall, Sec. & Treas. John C. Romeyee, Supt. Wm. H. DeGarmo. SACRAMENTO, CAL.—Sacramento City St. R.R. Co. SAGINAW, MICH.—Saginaw St. R.R. Co. 2 1/2 m, 4-8 1/2 g, 42 lb r, 10 c, 40 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. Russell, Sec. G. A. Vickery, 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. 6 m, 4-8 g, 45 lb r, 31 c, 290 h. Pres. Chas. Main, V. Pres. Jos. Rosenberg, Treas. A. J. Gunnison, Sec. C. G. LeBreton, Supt. J. F. Clark. Clay St. Hill R.R. Co. 1 m, 3-6 g, 30 lb r, 11 c, 1 dummy cars. Pres. Joseph Britton, V. Pres. James Moffitt, Treas. Henry L. Davis, Sec. Chas. P. Campbell, 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. North Beach & Mission R.R. Co. 8 m, 5 g, 46 c, 400 h. Pres. Jos. Rosenberg, Sec. H. W. Hathorne, Treas. Carl Ahfel, Supt. M. Skelly. Omnibus R.R. & Cable Co. 8 1/2 m, 5 g, 35-45 lb r, 50 c, 364 h. Pres. Gustav Sutro, V. Pres. D. Callaghan, Sec. G. Ruegg, Supt. M. M. Martin. Portrero & Bay View R.R. Co. 1 1/2 m, 5 g, 35 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, 35-45 lb r, 30 c, 125 h. Pres. F. Morrow, Sec. A. K. Stevens, Treas. M. Schmitt, Supt. James McCord. Telegraph Hill St. Ry. Co. 1,707 ft, 4-11 g, 36 lb r, 3 c, — h. Pres. Gustav Sutro, V. Pres. E. O. Demick, Sec. & Treas. C. J. Werner. The City R.R. Co. 5 1/2 m, 5 g, 48 lb r, 73 c, 285 h. Pres. R. B. Woodward, V. Pres. Geo. E. Raum, Sec. M. E. Willis, Treas. J. H. Goodman, Supt. William Woodard. 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. 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. Lightie, 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. SEDALIA, MO.—Sedalia St. Ry. Co. 2 1/2 m, 4-10 g, 54 lb r, 6 c, 31 h. Pres. Joseph D. Sicher, V. Pres. Louis Deutsch, Treas. F. H. Guenther, Sec. & Supt. 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 St. Ry. Co. SHERMAN, TEX.—Sherman City R.R. Co. SHREVEPORT, LA.—Shreveport City R.R. Co. 1 1/2 m, 4-4 g, 46 lb r, 6 c, 14 h. Pres. Peter Youree. SILVER CLIFF, COL.—Silver Cliff St. R.R. Co. SIOUX CITY, IA.—Sioux City St. Ry. Co. 5 m, — g, — r, 6 c, 8 h, 4 mu. Pres. Fred T. Evans, V. Pres. D. A. Magee, Sec. & Treas. F. T. Evans.

SOUTH CHICAGO, ILL.—Chicago Horse & Dummy R.R. 5 m, 4-8½ g, — lb r, — c, — h. Pres. D. L. Huff, Treas. A. C. Calkins, Sec. E. H. Bilss. [Not in operation.]

SOUTH PUEBLO, COL.—Pueblo St. R.R. Co. **SPRINGFIELD, ILL.**—Citizens' St. R.R. Co. 9½ m, 8-6 g, 20-36 lb r, 23 c, 100 h. Pres. J. H. Schrick, Treas. Frank Reisch, Sec. Chas. F. Harman. Springfield City Ry. Co.

SPRINGFIELD, MASS.—Springfield St. Ry. Co. 4-8½ g, 33-40 lb r, 28 c, 115 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. 3½ m, 4-10 g, 33 lb r, 5 c, 30 h. Pres. J. C. Cravens, Sec. Benj. N. Massey, Treas. Chas. Sheppard, Supt. H. F. Denton.

SPRINGFIELD, MO. 2 m, 30-40 lb r, 4-8½ g, 7 c, 19 h, 19 mu. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hohart, Supt. J. A. Stoughton, No. Springfield.

SPRINGFIELD, O.—Citizens' St. R.R. Co. 10 m, 4 g, 29 c, 135 h. Pres. D. W. Stroud, 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, Merlinton & Thorold St. Ry. Co. 5½ m, 4-8½ g, 30 lb r, 7 c, 30 h. Pres. E. A. Smythe, Sec. S. R. Smythe, Supt. E. A. Smythe.

ST. JOSEPH, MO.—Citizens' St. R.R. Co. 3 m, 4-8½ g, 25 lb r, 14 c, 52 mu. Pres. Richard E. Turner, Sec. & Treas. Arthur Kirkpatrick, Supt. John F. Merriam. Frederick Ave. Ry. Co. 1½ m, 3 g, 16 lb r, 6 c, 16 h. Pres. Thomas E. Tootle, V. Pres. Winslow Judson, Sec. W. D. B. Motter, Treas. Thomas W. Evans, Supt. S. Rowen.

St. Joseph & Lake St. R.R. Co. Union Ry. Co.

ST. LOUIS, MO.—Baden & St. Louis R.R. Co. 3½ m, 4-10 g, — lb r, 7 c, 21 h. Pres. George S. Case, V. Pres. William Z. Coleman, Supt. J. H. Archer. Benron & Bellefontaine Ry. Co. 7½ m, 4-10 g, 45 lb r, 29 c, 200 h. Pres. J. G. Chapman, V. Pres. Chas. Parsons, Sec. Robert McCulloch. Cass Avenue & Fair Grounds Ry. Co. 8 m, 4-10 g, 38 lb r, 37 c, 290 h. Pres. W. R. Allen, V. Pres. Geo. W. Allen, Sec. Treas. & Supt. G. G. Gibson, Cashier O. H. Williams.

Citizen's Ry. Co. —m, —g, —lb r, —c, —h. Pres. Julius S. Walsh. Jefferson Ave. Ry. Co. Lindell Ry. Co. 1½ 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. Missouri R.R. Co. —m, —g, —lb r, —c, —h. Pres. P. G. Maffit.

Mound City R.R. Co. Northern Central. Springfield Ry. Co. 2 m, 4-8½ g, 25-40 lb r, 7 c, 40 h. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hohart, Springfield, Supt. J. A. Stoughton, No. Springfield, Asst. Supt. Frank B. Smith, No. Springfield.

Southern Ry. Co. 7-4-5 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. and the People's R.R. One management. 11 m, 4-10 g, 38-44 lb r, 58 c, 375 h. Pres. Chas. Green, Sec. & Treas. John Mahoney, Supt. Patrick Shea.

Tower Grove & Lafette R.R. Union Depot R.R. Co. —m, —g, —lb r, —c, —h. Pres. John Scullin. Union R.R. Co.

STONEHAM, MASS.—Stoneham St. R.R. Co. 2½ m, 4-8½ 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. 25 m, 4-8½ g, 80 c, 150 h, 294 mu. Pres. Thos. Lowry, V. Pres. C. G. Goodrich, Sec. J. H. Randall, Treas. Clinton Morrison, Supt. A. L. Scott.

STILLWATER, N. Y.—Stillwater & Mechanicsville St. Ry. Co. 4½ m, 4-8½ g, 25-30 lb r, 3 c, 6 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. H. O. Bailey, Mechanicsville, Treas. E. N. Smith.

STROUDSBURG, PA.—Stroudsburgh Passenger R.R. Co. 1-4-5 m, 4-8½ g, 28-30 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, 33-47 lb r, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas. Lyman C. Smith, Supt. Henry Thompson.

Central City Ry. Co. 2½ m, 4-8½ g, 40 lb r, 12 c, 37 h. Pres. George N. Kennedy, V. Pres. Daniel Pratt, Sec. & Treas. James Barnes, Supt. George Crampton. 4 Syracuse Savings Bank Building.

Fifth Ward R.R. Co. 2½ m, 4-8½ g, 35-56 lb r, 8 c, 30 h. Pres. P. R. Brayton, Sec. & Treas. O. C. Potter, Supt. Hugh Purnell. Office W. Washington St. Genesee & Water St. R.R. Co. and Fourth Ward R.R. Co. 4 m, 4-8½ g, 18-30 lb r, 10 c, 35 h. Pres. Robt. G. Wynkoop, Sec. & Treas. Geo. J. Gardner, Supt. W. J. Hart. Onondaga Savings Bank Building.

New Brighton & Onondaga Valley R.R. Co. 1½ m, 4-8 g, 16-35 lb r, 2 c, 4 h. 1 dummy. Pres. Matthias Britton, Sec. T. W. Neacham, Treas. J. H. Anderson, Supt. J. H. Anderson.

Syracuse & Geddes Ry. Co. 2 m, 4-8½ g, 35-45 lb r, 10 c, 82 h. Pres. R. Nelson Gere, Sec. & Treas. Rasselas A. Bonta, Supt. Wm. J. Hart.

TAUNTON, MASS.—Taunton St. Ry. Co. 4½ m, 4-8 g, 14 c, 44 h.

TERRE HAUTE, IND.—Terre Haute St. Ry. Co. 4½ m, 4-8½ g, 28 lb r, 16 c, 48 h. Pres. T. C. Buntin, V. Pres. Josephus Collett, Sec. John R. Hagen, Supt. John T. Shriver.

TEXARKANA, ARK.—Texarkana St. Ry. Co.

TOLEDO, OHIO.—Toledo Consolidated St. Ry. Co. 17 m, 4-8 g, 42 lb r, 37 c, 180 h. Pres. John E. Bailey, Sec. A. E. Lang. Adams Street Ry. Co. Metropolitan St. Ry. Co. 8½ m, 3 g, 29 c, 88 h.

Pres. Jno. J. Shipherd of Cleveland, Treas. H. E. Wells of Cleveland, Gen. Man. T. F. Shipherd, 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, V. Pres. & Treas. James Pazner, Sec. Chas. F. Parks, Supt. A. R. Seagrave. Toledo Street R.R. Co.

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. 18 m, 4-10½ g, 30 lb r, 136 c, 670 h. Pres. Frank Smith, Sec. James Green, Supt. John J. Franklin.

TRENTON, N. J.—Trenton Horse R.R. Co. 1½ m, 5-2 g, 43-47 lb r, 10 c, 31 h. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, Jr., Supt. Thomas Sillorris. City Ry. Co. 3 m, 5-2 g, 45 lb r, 15 c, 69 h. Pres. Adam Extolr, V. Pres. W. H. Skinn, Sec. H. B. Howell, Treas. & Mang. Director Chas. J. Bramford.

TROY, N. Y.—Cortland & Homer Horse R.R. Co. 4 m, 4-8½ g, 25-30 lb r, 2 c, — h. Pres. C. H. Garrison, Troy, V. Pres. E. A. Fish, Cortland, N. Y., Treas. Jas. M. Milen, Cortland, Sec. S. E. Welch, Cortland. Troy & Albia Street Ry. Co. 3½ m, 4 g, 35-45 lb r, 9 c, 41 h. Pres. Thos. A. Knickerbocker, Sec. & Treas. Theo. E. Hasteherst, Supt. W. R. Bean. Troy & Lansingburgh R.R. Co. 20½ m, 4-8½ g, 47 lb r, 91 c, 466 h. Pres. William Kemp, V. Pres. Charles Clemishaw, Sec. & Treas. Joseph J. Hagen, Supt. Leander C. Brown. 295 River St.

URBANA, ILL.—Urbana R.R. Urbana & Champaign St. Ry. Co. 2 m, 4-8½ g, 33 lb r, 4 c, 20 h. Pres. Wm. Park, Sec. & Treas. Frank G. Jaques, Supt. W. Park.

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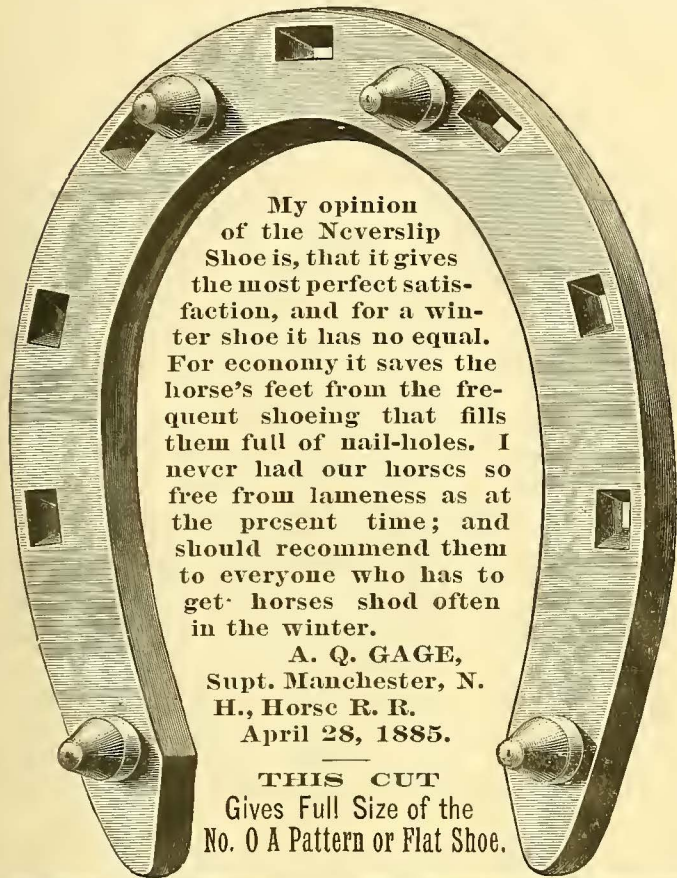
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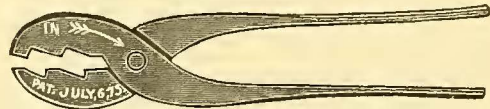
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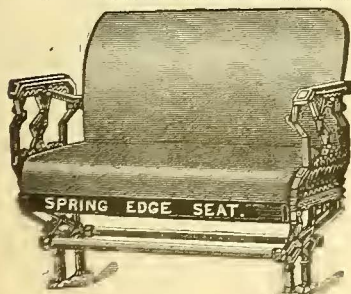
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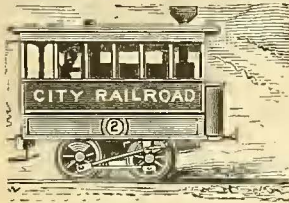
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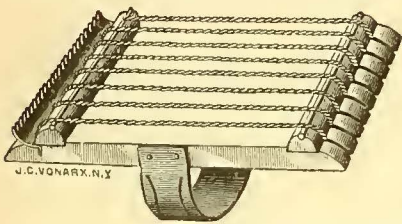
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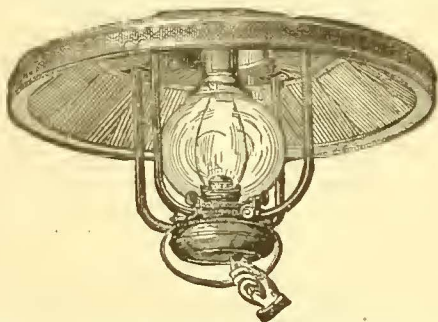
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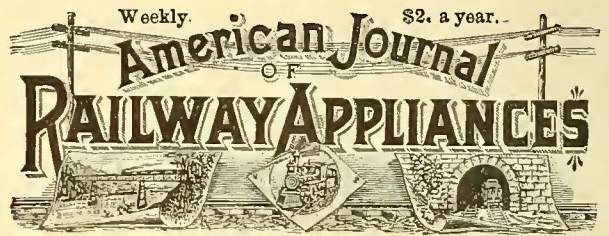
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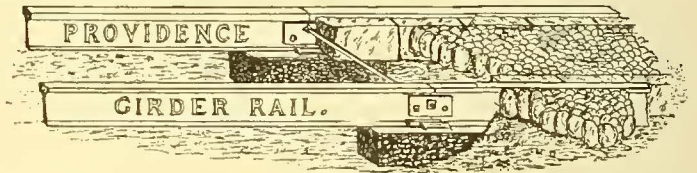
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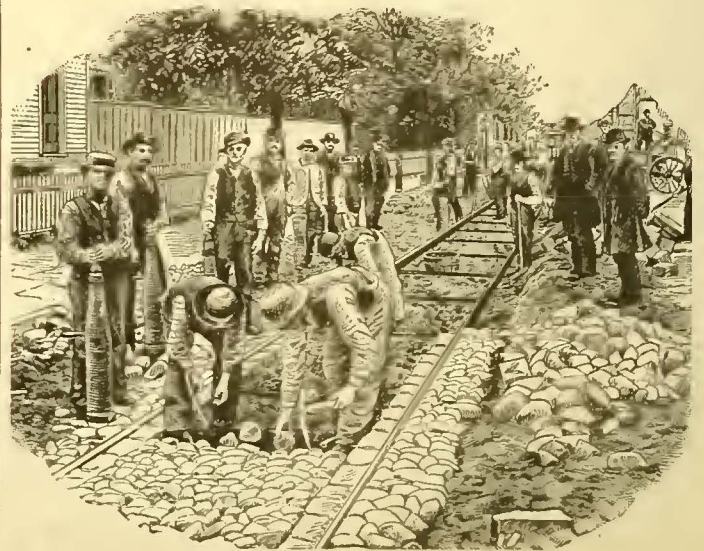


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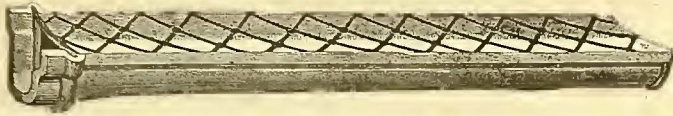
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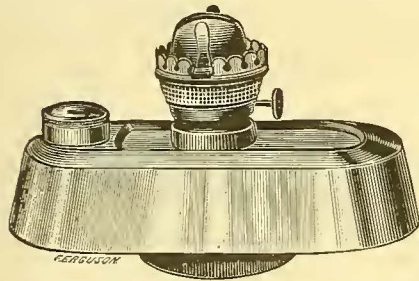


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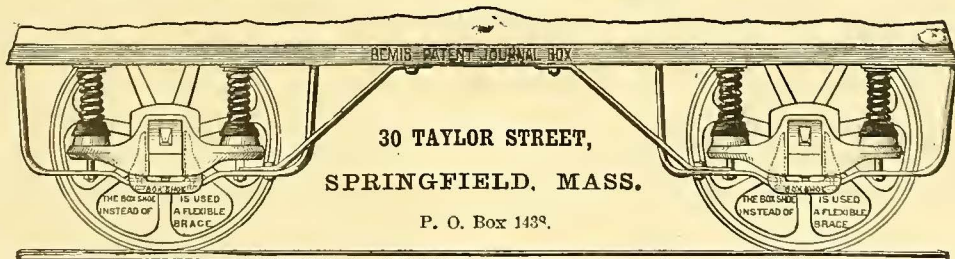
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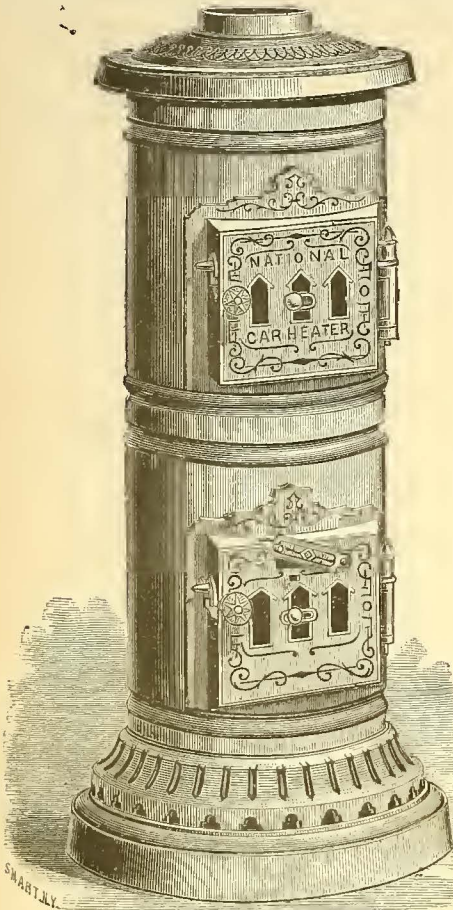
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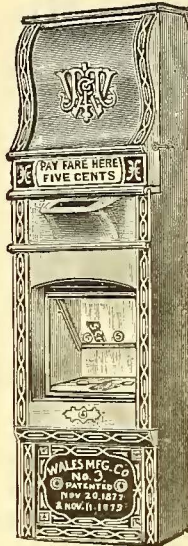
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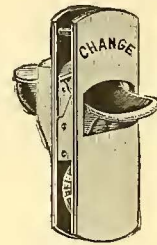
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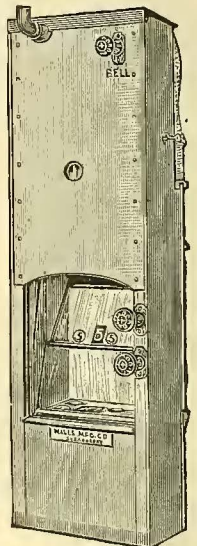
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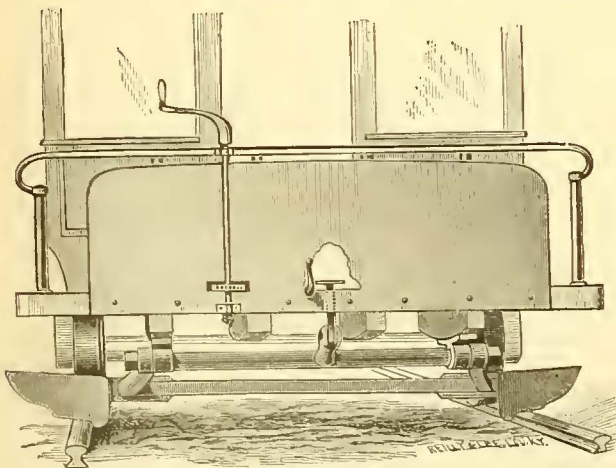
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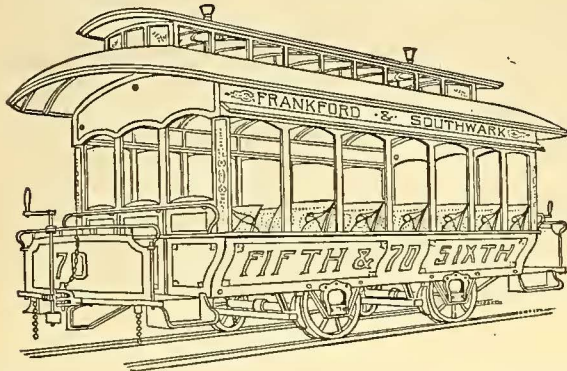
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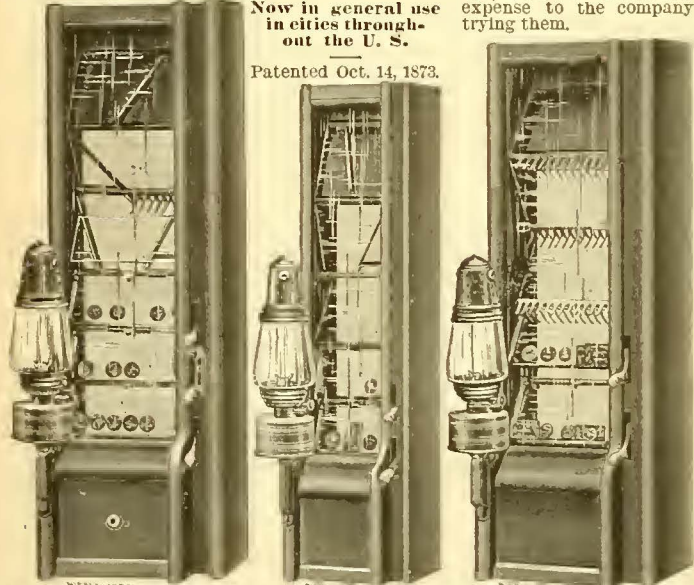
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Now in general use in cities throughout the U. S. Patented Oct. 14, 1873. One of the principal merits of these Fare Boxes over all others, consists in the fact that the fares are not turned out of sight at once by the drivers, leaving nothing but the 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 fare is 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, what 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 all most 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, Indian.

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Street Railway Builder and dealer in Railway Supplies.

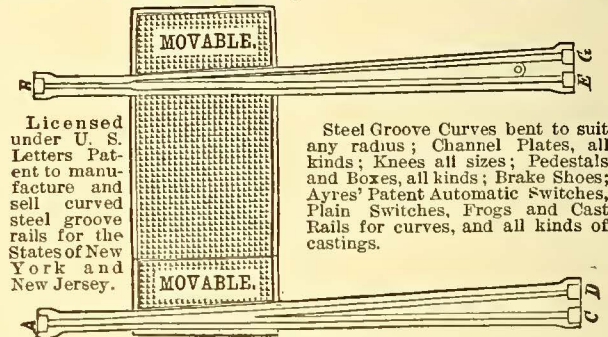
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46 lbs. per Yard

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Send me full size section of rails to be used at points A, B, C, D, E, G.
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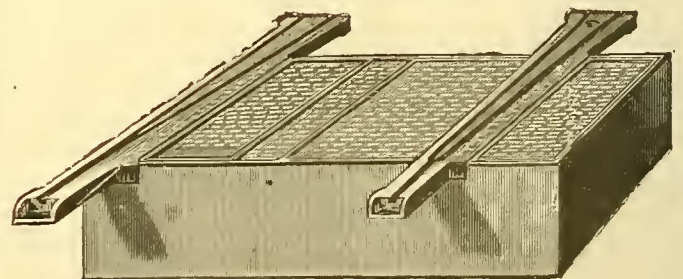


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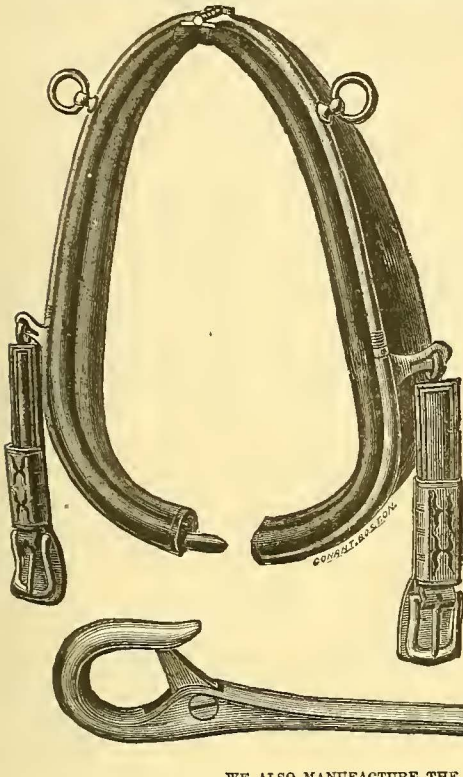
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OWNERS AND BUILDERS OF
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Lightness, Strength,
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They have the advantage of easy adjustment. No buckles or straps are used. They can be applied in 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.

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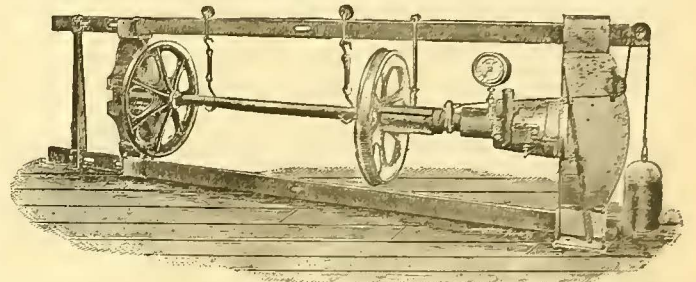
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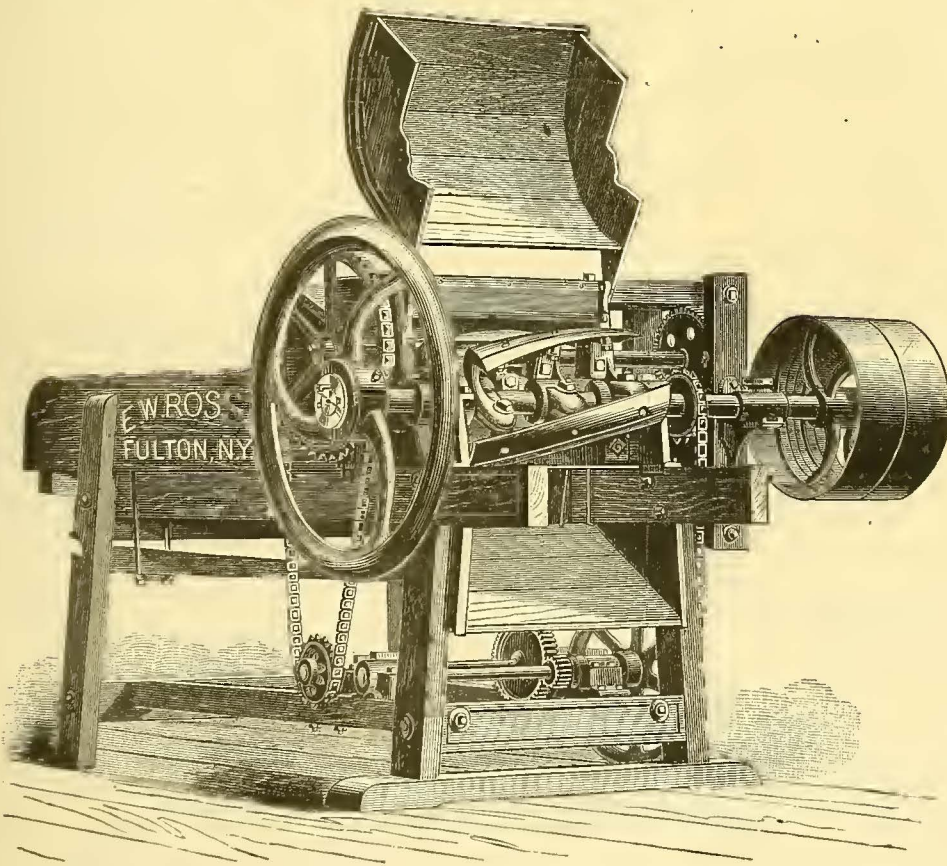
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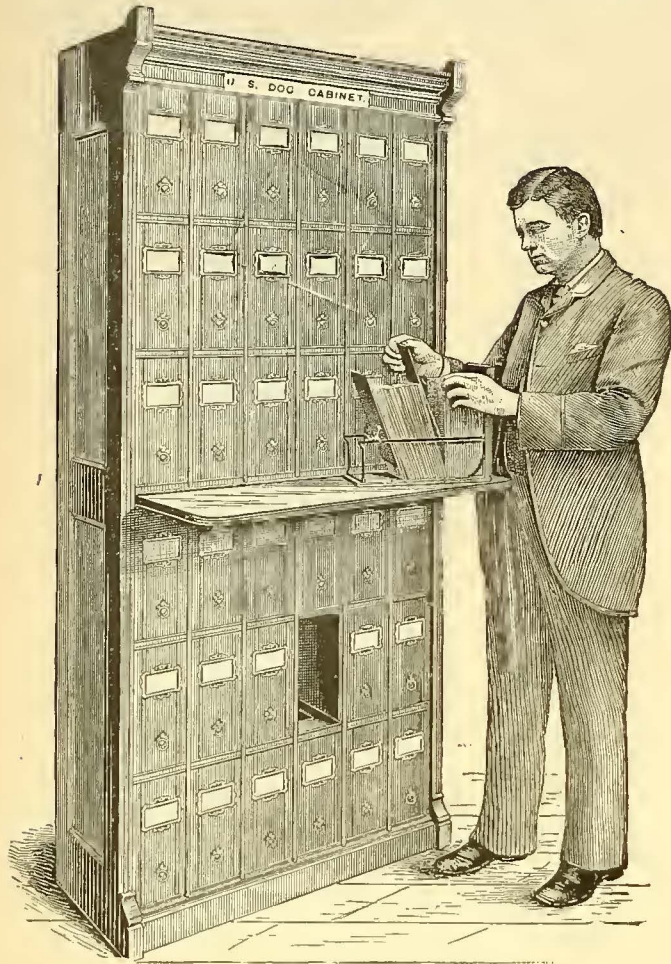
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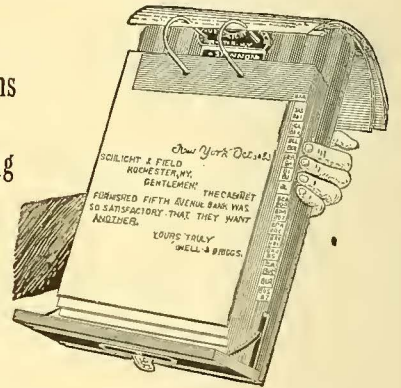
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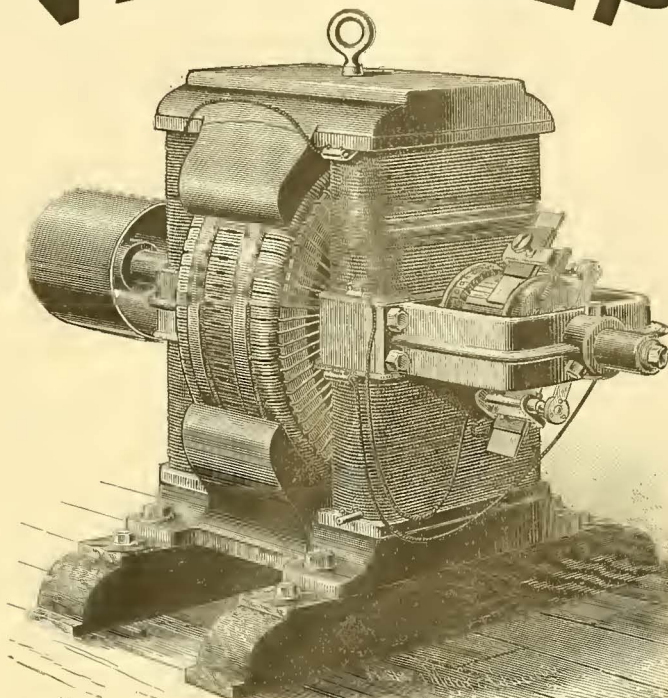
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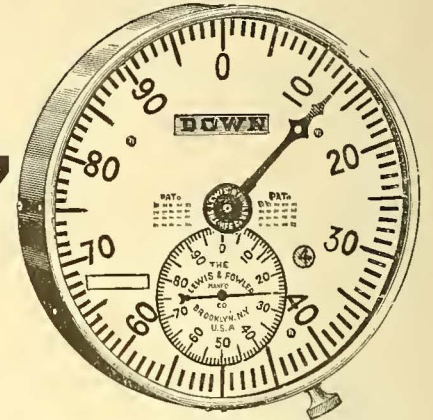
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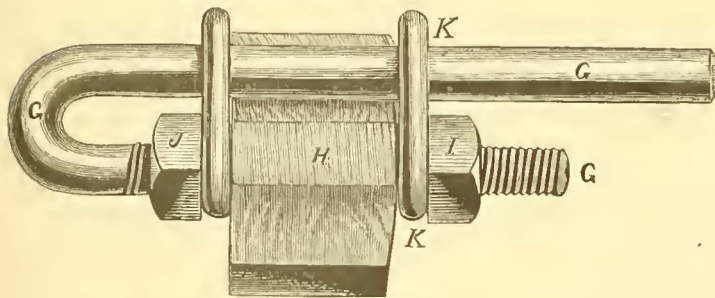


SILVER MEDAL, CHICAGO, 1883.

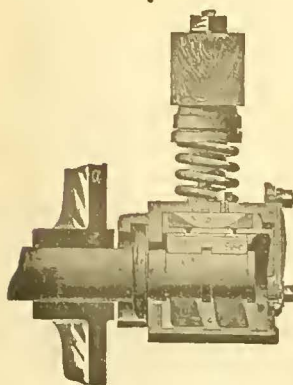
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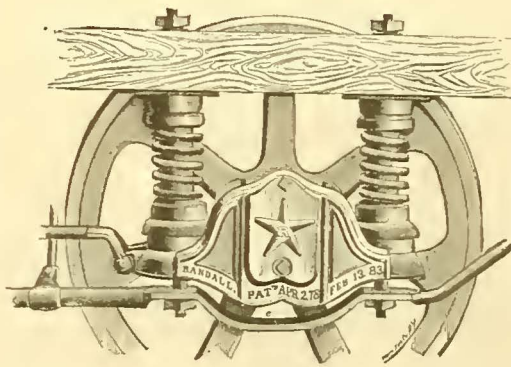


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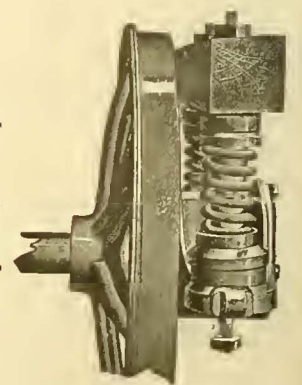
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The shoe is very light and narrow (Army pattern), easily worked cold and allowing frog bearing, without which there can be no good horse-shoeing.

FROG PRESSURE

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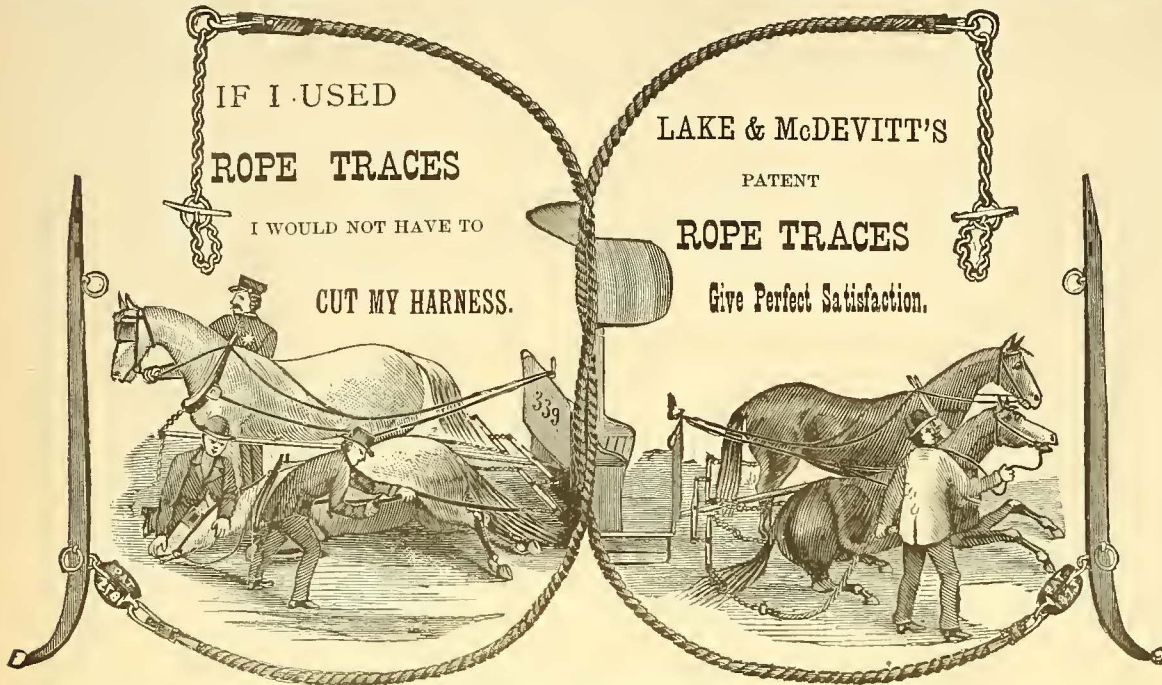
THE GOODENOUGH COMPANY,

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For Horse Railways, Omnibus Lines, Etc.



The Advantages OF THE ROPE TRACE

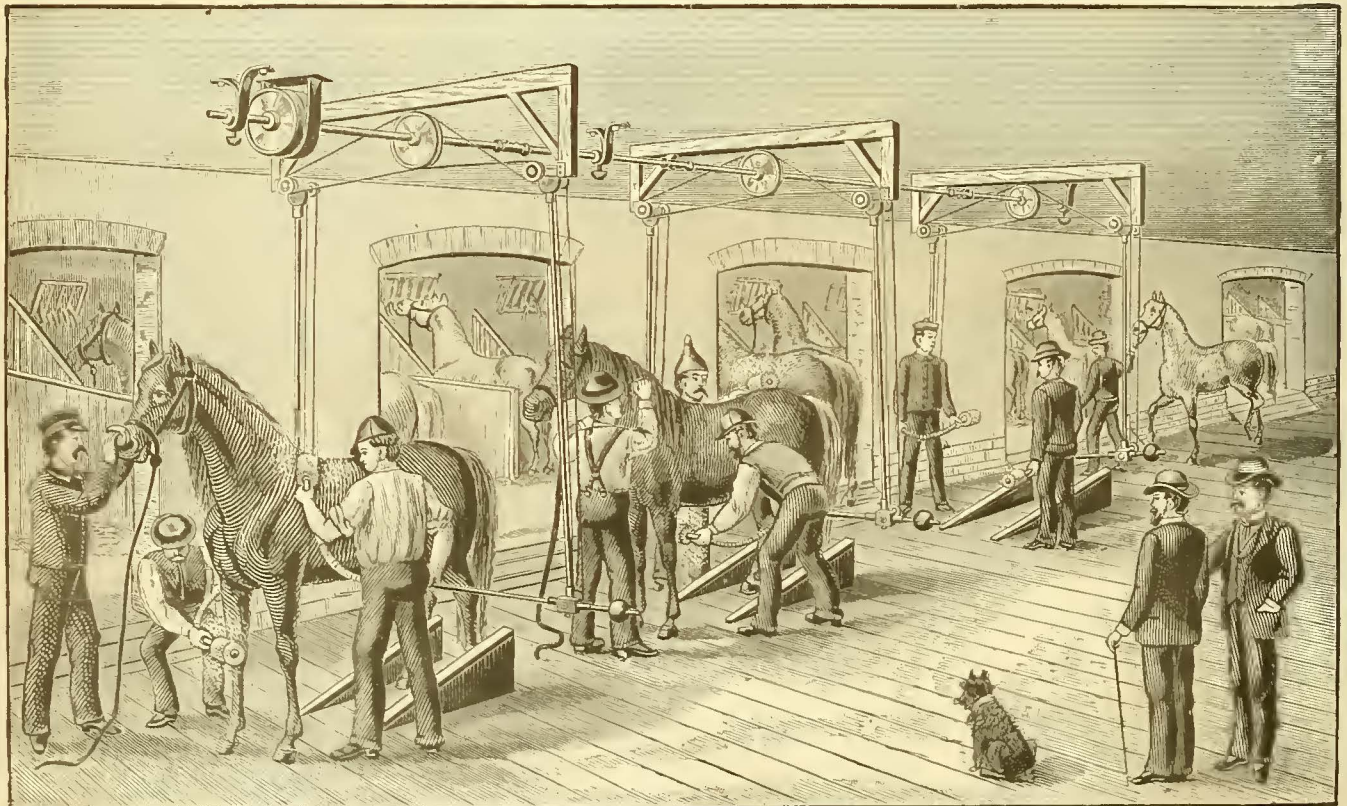
are its ready application to Horse-Car service, or to any other purpose where cheap harness is required. It only costs about half as much as leather traces, while at the same time one set of Rope Trugs will (when used on horse cars) take the place of three or more sets of leather traces, as the Trugs remain attached to the car all day, no matter how many changes of stock are made. The relief horses having hoo's attached to their hames, all that is necessary is to unhook the trugs from the working team back in the fresh horses, hook on the trugs, and the change is made. Railroad men will at once perceive their adaptability and economy from the above facts. They will also last longer than leather traces, and require but very little care. From their durability and cheapness they are also especially adapted for all kinds of farm use and heavy teaming, as farmers, etc., can easily repair them.

Patent No. 171,232, December 21, 1875.

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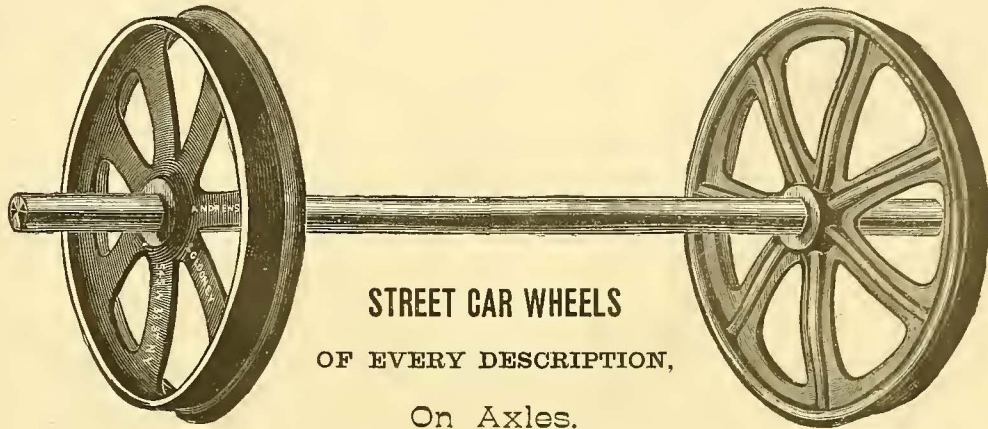
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STREET CAR WHEELS
OF EVERY DESCRIPTION,
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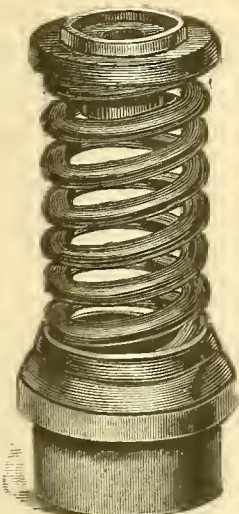
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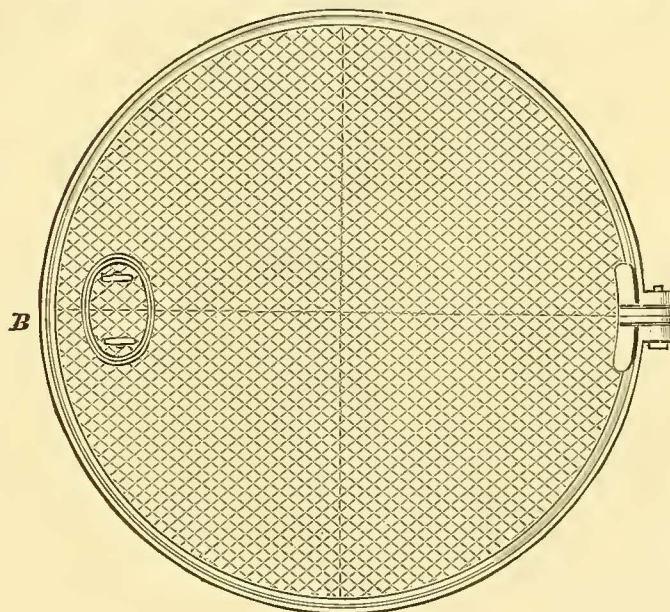
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Of Every Description.



Street Car Springs.



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Car Wheels,
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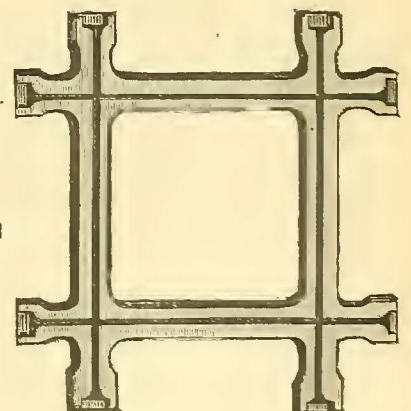
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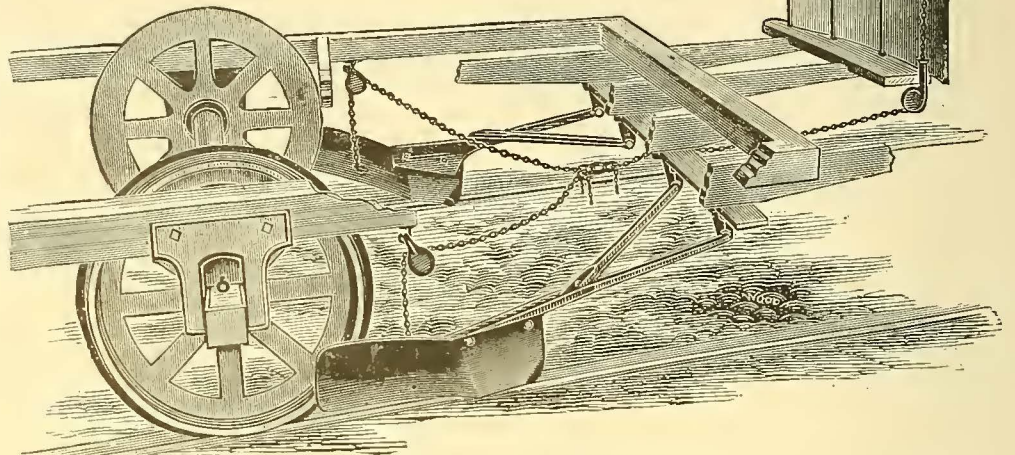
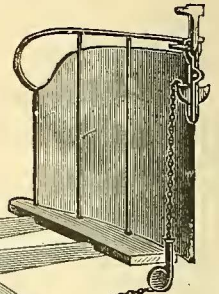
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DAY'S IMPROVED STREET RAILWAY TRACK CLEANERS.

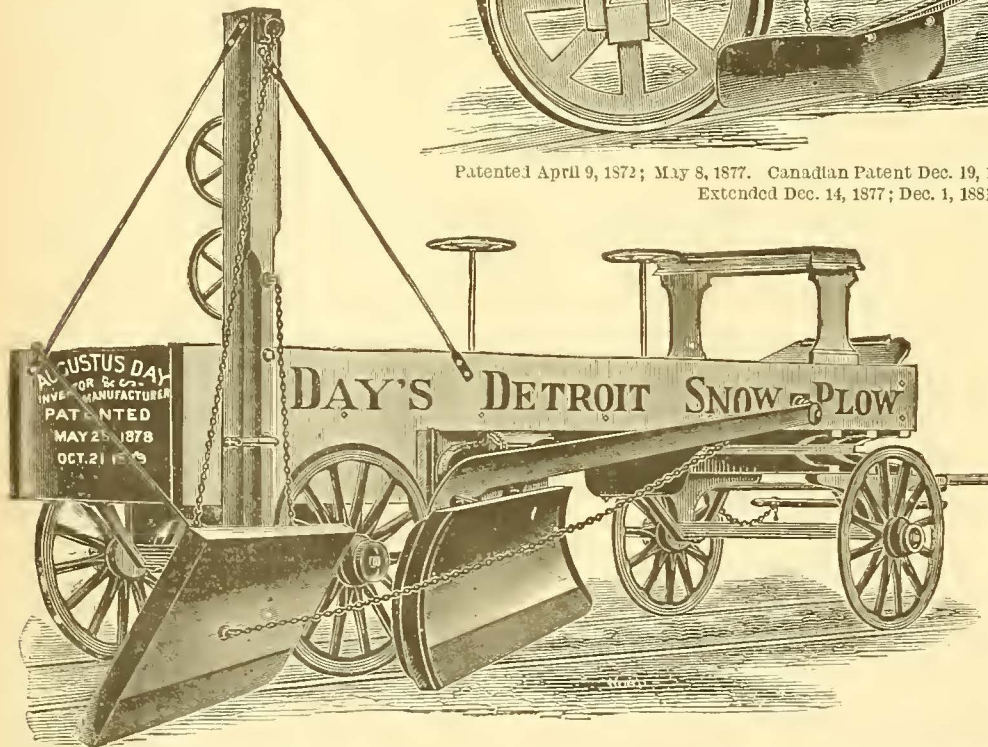
These Track Cleaners need no extended statement of their great superiority over all others invented. The fact of over three thousand pairs being now in use is sufficient evidence of their necessity and utility. Are adaptable to all kinds of rails and styles of cars. To secure the largest benefit they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

No estimate can be made of their advantage in saving of horse flesh, hand labor, salt, 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 best and most efficient article in preference to other considerations. Method of sale and price considerably changed.

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



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Fort Wayne & Elmwood Ry., Detroit, Mich.....	30 pair.
Detroit City Ry., Detroit, Mich.....	135 "
Chicago City Ry., Chicago, Ill.....	350 "
Rochester City & Brighton R. R., Rochester, N. Y..	75 "
Albany Ry., Albany, N. Y.	40 "
Waterville Turnpike & R. Co., Albany, N. Y....	24 "
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....	50 "
Naumkeag Street Ry., Salem, Mass.....	40 "
Merrimack Valley Ry., Lawrence, Mass.....	21 "
Louisville City Ry., Louisville, Ky.....	55 "
Cream City Ry., Milwaukee, Wis.....	37 "
Milwaukee City Ry., Milwaukee, Wis.....	40 "
Buffalo Street Ry.....	40 "
And many others.	

Taunton Street Ry., Taunton, Mass.....	10 pair.
New Haven & West Haven Ry., New Haven, Conn.....	16 "
Bridgeport Horse Ry., Bridgeport, Conn.....	32 "
Adams Street Ry., Toledo, Ohio.....	14 "
Toledo Street Ry., Toledo, Ohio.....	13 "

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76 State Street.

RICHARD VOSE,

13 Barclay Street, . New York,

PATENTEE AND MANUFACTURER OF

Graduated Street Car Springs.

RUBBER CONE.

Patented, April 15th, 1879.

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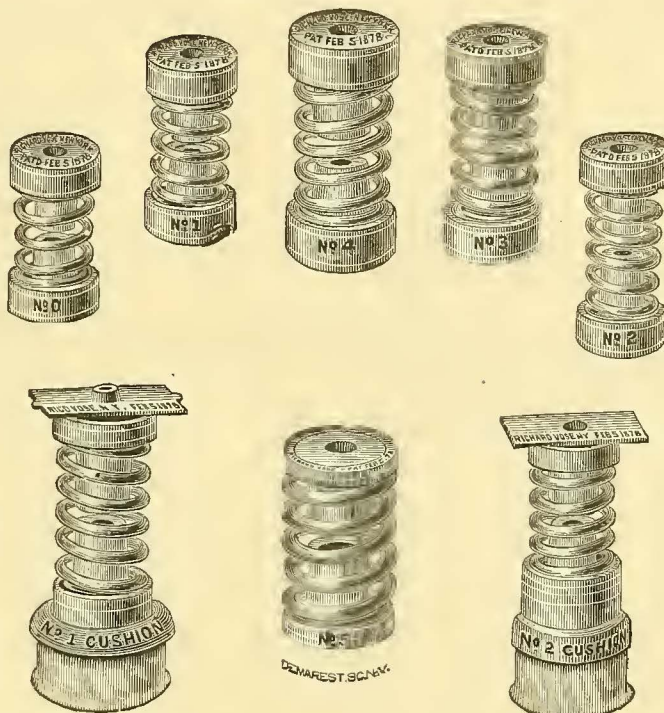
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No. 4, for 16-ft. Cars.

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(Single Pedestal.)

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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.

EDWAY & 7TH AVE. R.R. CO., NEW YORK CITY.

MR. RICHARD VOSE. 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 Respectfully,
J. W. FOSHAY, 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 Resptly,
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.

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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 Rich and 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,
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A. W. ANDERSON, Supt.

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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.

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RICHARD VOSE, Esq. Dear Sir,—I have your favor of the 20th 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.

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.

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