

OCT 2 1897  
U. S. PATENT OFFICE.

# THE STREET RAILWAY JOURNAL

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12 Lakeside Building.

### A Model Car.

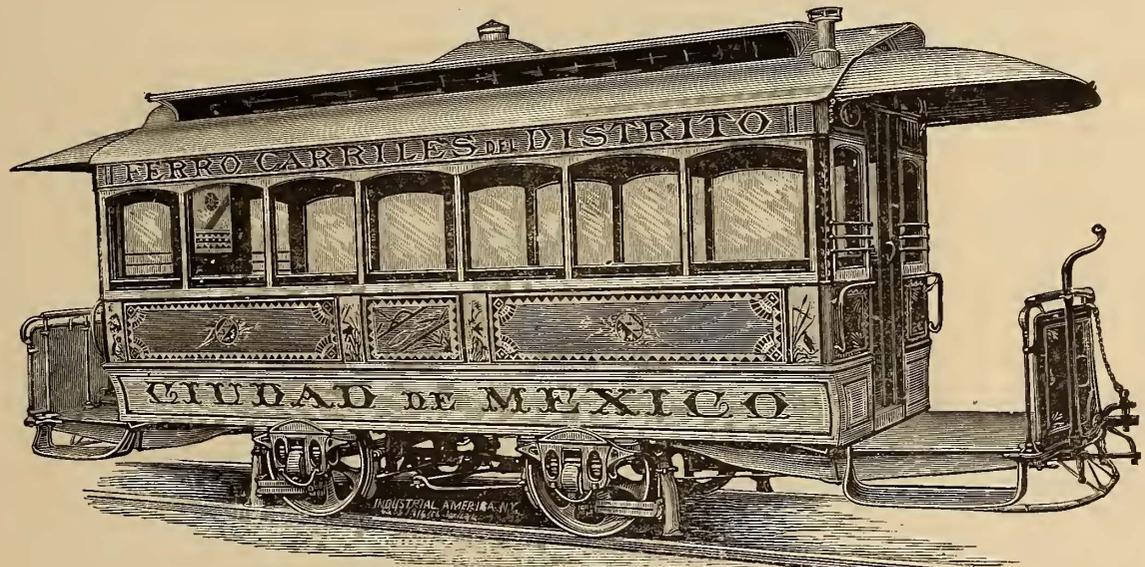
The car here illustrated\* is the one which took four first-class medals and an honorable mention at the New Orleans Exposition. The awards were for the following features :

(1.) For the CAR as a combination of ex-

Honorable mention was made of the brake, affording the driver special facility for stopping the car.

The Super spring system of running gear, which is an essential element in the make up of this car, received the first premium for street car running gear at the Chicago Exposition.

“light”? Where is the grip or traction to come from? That was the trouble with the early locomotives of Stephenson and others; they had not weight enough to get any “grip” on the rails. The tractive power of a steam or compressed air dummy depends upon the piston area and stroke, the average steam pressure in the cylinders, and the



A MODEL TRAM CAR.

cellencies with elegance of finish. First class medal.

(2.) On the system of ventilation. Every window in the car, including end corners and doors, has glass sashes letting down to the belt rail, affording free sweep of air in every direction; and the roof is ceiled with perforated panels having a moveable air space between the ceiling and roof, with exit at the verges for the warm or foul air, which passes off without objectionable currents. First class medal.

(3.) Sashes made with metal channel bar stiles, filled with a core of rubber having a slot or groove for holding the glass quiet. The stiles are of such small dimensions as to leave the field of vision nearly unobstructed. First class medal.

(4.) Passenger's telephone, by which seated passengers can signal the Conductor, at whatever part of the car he may be. First class medal.

### Is there a Satisfactory Light Motor for Street Railways?

The president of a Southern street railway company having several miles of country track, for which they purchased a dummy engine, writes us, in a letter on other matters, as follows:

“The dummy is not in use, not being of a satisfactory kind. We are looking anxiously for an economical light motor, and trust the many promises in this direction will be realized at an early day. We desire others to do the experimenting.”

[The Frankford & Southwark R. R. Co., Phila., has had for twenty years and more, that we can remember, a steam dummy line running about six miles to Frankford. Dummies using compressed air in connection with a hot water reservoir, are in successful operation in various parts of Europe. Merryweathers of London build a great many steam tramway dummies.

Why should a motor necessarily be

diameter of the drivers, and a pressure of about one-fifth of the weight on the drivers is enough to make them grip.—Eds.]

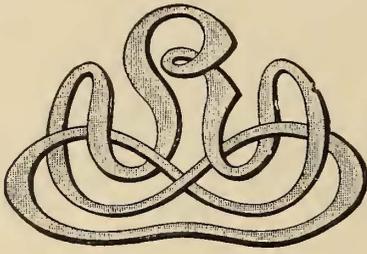
### The Paper for Street Railway Men.

The following from the President and Purchasing Agent of a prominent Southern street railway company speaks for itself :  
EDS. STREET RAILWAY JOURNAL;

Your May number of the STREET RAILWAY JOURNAL, which I have received and carefully read, is without doubt a capital paper, containing, as it does, so many interesting items and articles of value to all interested in street railway investments and the management of them. I take pleasure in giving you this unsolicited testimonial to your ably edited journal, and most cordially recommend it to all presidents, superintendents and other officials of street railway companies.

Jno. G. RIGGS,  
Pres. Charleston City Ry. Co.  
CHARLESTON, S. C.

\* The Stephenson Company, New York.



## American Street Railway Association.

OFFICERS, 1884-5.

*President.*—Calvin A. Richards, President Metropolitan Railroad Co., Boston, Mass.

*First Vice-president.*—Julius S. Walsh, President Citizens' Railway Co., St. Louis, Mo.

*Second Vice-president.*—Henry M. Watson, President of the Buffalo Street Railway Co., Buffalo, N. Y.

*Third Vice-president.*—Edward Lusher, Secretary and Treasurer the Montreal City Passenger Railway Co., Montreal, Canada.

*Secretary and Treasurer.*—William J. Richardson, Secretary the Atlantic Avenue Railway Co., Brooklyn, M. Y.

*Executive Committee.*—President, Vice-presidents and William H. Hazzard, President Brooklyn City Railroad Co., Brooklyn, N. Y.; James K. Lake, Superintendent Chicago West-Division Railway, Chicago, Ill.; Charles J. Harrah, President the Peoples' Passenger Railway Co., Philadelphia, Pa.; William White, President Dry Dock, East B. & B. R. R. Co., New York, N. Y.; B. Du Pont, President Central Passenger Railroad Co., Louisville, Ky.

## Electricity as a Motive Power.

[The following is the discussion on the report on Electricity as a Motive Power at the last convention. The full text of the report will be found on page 28 of our December issue.]

Mr. Wright said: I have believed for years that electricity was the coming motive power for street railways, and I have regarded everything connected with its development with a great deal of interest, and closely watched all attempts in various quarters of the globe to utilize this force. The Siemens and Halske process used one rail to carry the current, and another for the return. That was unsatisfactory, because passing horses in several instances got on both rails and the current passed through them. At the Paris Exposition they changed the construction, and carried the current by a wire overhead, on which ran a trolley completing the connection with the dynamo. A gentleman who was at the Paris Exposition told me there was one great difficulty with it, however, the trolley would get off the track. At the Portrush road, in Ireland they have, seventeen inches above the ground and twenty-two inches from the track, an iron "T" rail to carry the current and then it passes through the motor to the rails, which are insulated, and back to the generating machine. At each road crossing this "T" rail had to be left out, and the current carried across by buried insulated copper wires; of course, if the car happened to stop in one of these openings it could not start again. To obviate this trouble, they had a brush at each end of the car, with which to make connection and take up the electricity. At the Brighton railroad, England, they built a wooden box in the centre

of the track, and carried the electricity through copper bands. The contact there was made by chains that dropped from the motor and came in contact with these copper conductors. Thomas, of Cincinnati, had a very ingenious method. In his system, the electric current from the stationary dynamo is conveyed along the tracks by two copper wires placed in an iron tube between the tracks. The tube is open top and bottom; the former to allow contact with the wires from the motor, and the latter to allow water and dirt to drop through and keep the wires clean. The Siemens-Halske overhead wire would not be permitted in our crowded streets. The courts are compelling the telegraph companies to take down the wires they now have, and will be loth to permit other wires to be put up. Edward Bentley, of the Patent Office, said some time ago that "on a large scale, electricity as a motor, is only useful in transferring power to convenient localities, as when a machine which generates a current is driven by a distant waterfall; but the transmission of power into electricity and then its re-translation from electricity into power entails serious losses. The electric motor must remain subordinate to steam, water, or original force, until a new and cheaper source is discovered." It is, probably, known to the gentlemen of this Convention that the application of electricity for railroad purposes is not new, but in the earlier days, they used a battery. The following quotation will serve to illustrate: "Professor Page, of Salem, in 1845, revived and gave to the subject a new impetus by the invention of a new form of electric engine based upon the principle of the axial force of electro-magnetism, which proved to be the most perfect electric motor ever invented up to that time. A few years later Professor Page proposed electricity as a motive power for railroads, through the instrumentality of his own electric engine. The engine proved so successful and attracted so much attention, that the idea gained favor to such an extent, as to induce Congress to appropriate and place at Professor Page's disposal a sum of money—thirty thousand dollars—adequate to construct and operate an electric locomotive in accordance with his plans. Such a locomotive was built in 1851, and used to propel a train of cars between the cities of Washington and Bladensburg, a distance of five miles. As was natural, such an undertaking created great excitement and discussion in the scientific world, both at home and abroad, more especially because of the governmental sanction and assistance lent the enterprise. The great mathematician and scientist, Dr. Joule, and many others, very properly contended that the system would be too expensive, and that electricity, as then generated, could not be used as a motive power with sufficient economy to warrant its adoption on a commercial scale. In fact, it was this very discussion which led Dr. Joule to that long and laborious investigation of the mechanical equivalent of heat, which now forms the basis of all our works on thermo-dynamics, and without which we should be groping in

the dark. It was on the 29th day of April, 1851, that Dr. Page made the trial of his locomotive. It ran at the rate of nineteen miles per hour, making the trip of five miles in thirty-nine minutes. The locomotive itself weighed ten and one-half tons, including the batteries, and carried seven passengers. There were many stops and delays on account of the breaking of his battery cells, which were carried upon the locomotive, the jars fulfilling the office of a steam locomotive boiler and furnace, zinc and sulphuric acid in the former case constituting the fuel. The sulphuric acid and zinc were consumed or burned in the production of electricity. This is the principle upon which it was sought to operate all the electric engines thus far referred to. Electricity was here called upon to serve as a prime motor, utilizing the energy stored in sulphuric acid and zinc. The folly of such an effort is manifest, since one pound of zinc costs twenty-five times more, and is not capable of being transformed into as much dynamic force, as one pound of coal. Although Dr. Page's hopes were not realized, as far as refers to the commercial aspect of the enterprise, he, nevertheless, accomplished a great feat, and, to the day of his death, he contended that the time would surely come when electricity would be economically used as a motive power upon railroads." A French syndicate made an experiment in regard to manufacturing electricity; and tested the system of transmitting electricity in Paris. "In these experiments," to give another quotation, "it appeared that 6.21 horse power was put into one dynamo-machine, revolving at the rate of five hundred revolutions per minute, and connected by wires to another machine, making 365 revolutions per minute; the length of wire corresponded to 5.28 miles. The latter machine gave out 2.03 horse power upon the brake. This amounts to a useful duty of 32.7 per cent., the rest being lost." It is but fair to state that a much larger percentage of useful effect is claimed for electricity. Dr. Wellington Adams, of St. Louis, has experimented in electricity. I have an interesting paper, in which he states: "Considering this question of electric transmission of power from its two principal standpoints, first, as regards the electric current developed from the mechanical power, the steam engine, for instance; and second, as regards the amount of mechanical power reclaimed from this current at the distant point, through the instrumentality of an electro-dynamic motor, the efficiency of the system is seventy per cent., allowing seven per cent. for loss by leakage in, and resistance of, the connecting conductor. The amount of energy lost by the two conversions from mechanical motion into electrical energy, and from electrical energy back again into mechanical motion, is a fixed quantity, and practice has demonstrated this to be thirteen per cent. from the first, and ten per cent. from the second process, when the most efficient types of electric generator and motor are used. The other element of loss, that by leakage in and resistance of the connecting conductor

will naturally vary with the conditions in each individual case, and will depend entirely upon the size and insulation of the connecting conductor. In general, it will, in my opinion, be best to base a calculation upon a seven per cent. loss in the conductor, allowing five per cent. for resistance and two per cent. for leakage." I have heard that Mr. Edison has experimented at Menlo Park, in an effort to obtain electricity directly from the coal, without passing through the steam-engine process; and I think that whenever a cheaper method of manufacturing electricity is obtained, it will possess advantages which cannot be found in any other direction. Other experiments seem to demonstrate that the adhesion of the wheel upon the rail is increased by the electric current. In this lies the advantage of the cable system; their motive power is independent of adhesion of the wheel to the rail. We are dependent upon adhesion in any other system, except that of the cable and animal power. Without direct experiment, I question if the adhesion on a street rail is more than one-quarter of that upon a "T" rail, while the resistance to progression is greater. Experiments which I have made would indicate that this resistance is from three to five times greater; in other words, that the engine or motor would have to be from twelve to twenty times as heavy as a locomotive engine upon a clean "T" rail, when you depend upon adhesion to propel your car. That the electric current increases the adhesion has, it is claimed, been demonstrated by experiments, and that is a very great advantage. I think that the day is coming when electricity will be very generally used as a motive power.

Mr. Hasbrouck said: A number of gentlemen from New York and Brooklyn, including myself, went to Menlo Park to witness the performance of the electric railway. There is a track about two miles long, with some pretty short curves. My friend, Mr. Wharton, who was there, said he was frightened, and expected that the car would get off the track. I told him I did not feel frightened, and did not know anything about it to make me so. All I know of electricity is about as much as the boy's father did about steam, who said to his son, while looking at the engine on a steamboat: "You see that thing, and you see this; well, that connects with this over here, and this connects over there, and that makes the steamboat go."

Mr. Wharton said: There is no doubt that the advance made in electricity will call forth greater effort for improvement in the systems of propelling cars. On the particular occasion alluded to by Mr. Hasbrouck, when we took a ride at Menlo Park, it was upon a poorly constructed road, part of it around sharp curves and across trestle work, and we ran a portion of the time at forty miles an hour. We started off with the electric motor behind us, the car being pushed in front of it, which I did not like very well. As to going rapidly, that can be no doubt successfully done by electricity. It appeared to me then to be a question principally of economy. A large stationary

steam engine was used in the engine house, and nobody could tell us how much of its power was required to propel the electric motor and the car, which was a small one, similar to a one-horse car on a street-railway. We went rapidly, and often too rapidly, to be safe or pleasant. The gauge of the track I think was three feet six inches, and some of the curves were of very short radius. We were pushed one way, and pulled the other, by the electric motor. In Philadelphia lately an experimental railroad was put down, about 1,000 feet in length. It was worked during the three or four days previous to the close of the Electrical Exposition. This railway consists of an ordinary track of two "T" rails, with a third "T" rail in the centre, which conveys the electric current in one direction. This passes through the dynamo on the car and through one of the car wheels, and returns by one of the other rails. It worked successfully. It does appear to me that in some way or other electricity will be utilized for this purpose.

Mr. Wm. Richardson inquired: What system was that in Philadelphia?

Mr. Wharton: The Electric Dynamo Company's, of which Mr. W. W. Griscom is the President.

Mr. Hasbrouck remarked: Mr. Cyrus W. Field was in attendance. He prophesied that in two years he would have it in operation on one of the elevated roads of New York.

Mr. C. A. Richards said: I speak of this matter with no ordinary interest. I know nothing about the machinery necessary for the application of electricity as a power, but for a number of years, I have been an interested reader of all matters connected with the subject. I have followed, so far as I could, the investigations of science as published. I have asked myself the question, "What is it to be, and what is to come of it?" No man living can tell what electricity is. There is no one, there is no scientist in the world—no matter how deep his research—who can tell. It is something that pervades the atmosphere; it is around us; it is everywhere, and we know nothing about it. It seems to me, that when the Creator desires to confer a new blessing on the world, it is never done at once. Compare it, if you please, with our human lives. We come into the world helpless, poor and naked; but there are tender hands to lead us on. They care for us, and as life goes on, we are educated, until we arrive at perfect manhood; so the Creator presents this power of electricity to us. When we say as we frequently do, that this or that invention is in its infancy, go with me in my thoughts, as I have gone to the infancy of manhood. I believe, sir, we are but on the border line; we but stand within the shadow of this great power, and I think it presumptuous in any man to tell us what the future will be. Trace with me, for a moment, what we have seen since we were boys. I scarcely look upon a face in this room but that can go back with me to the birth of the telegraph; when Morse, in his crude way, even on shipboard, stretched a wire from one part of the ship to

the other, and then and there this great power was conceived and had its birth. Soon after that we found intelligence flashing around the world, and to-day it and it alone has changed the force of nations. Trade no longer seeks the same channels. Intelligence, which is the guiding star of our lives, flashes around us everywhere; from where the sun rises to where it sets! What follows? Another man, taking this child by the hand, leads it on; and what does he present? Why, sir, you may write me a letter from one distant clime to another; you may give me every means that shall tell me that it is you at one end and I at the other; but when I stand and listen and hear the audible tones of your voice, something tells me that the child is being led, is growing, and has taken a further step toward manhood. Who shall tell me, who dares to rise and assert that the next thing shall not be a motor? To ignorant minds like ours, you may use all the scientific terms that you please; you may take us to Philadelphia, or elsewhere, as I have been, and show us some engine, or a car, running on a track, and say that its motive power is electricity—it receives its power from here and is imparted there, and the car runs. I stand aghast! I know nothing, but I see one thing—that a step is being taken toward its manhood. I firmly believe that this idea, being born and given by the Creator to the world, that now all the scientific men and all the scientific intelligence and knowledge of the world is at work upon it. Not with the brain of Morse, who conceived it; not with the energy of Bell, who used it; but each and all lending their aid in its grand development. And now, sir, who shall dare tell me, when I walk at night under its light, which almost equals the sun at noonday; when I can speak to my friend so many miles away, and when I can stand here now, if need be, and hear the voices of dear ones at home, who shall dare tell me that we shall not have a motor impelled by that power? What is a motor to us? It is simply the power to drag our cars. To-day, for the most of us here, it is horses. A step has been taken with steam, and that is the cable; and the next step, gentlemen, as sure as God reigns, is going to be electricity! As I stood in England before the first steam engine that was made, and when, as I looked upon its uncouth and grotesque form, seemingly but the child in its very infancy of machinery; and then, when the first train passed by me, with its mighty rattle and roar, driven by its great throbbing locomotive, I felt that I had on the one hand the infant child, and on the other the full grown man. We come here and listen wisely and intelligently to my friend here, who has preceded me on this subject. I was an earnest listener to his remarks and to the study that he had given to the subject, and the earnestness that he evinced in the matter. But, my dear sir, you and I, and all of us, are in the shadow yet of this all-pervading and yet unseen power. I have been urged to use cables upon my road; to use engines; to put steam upon it; to find all sorts of substitutes for the horse, but I said no; I am settled in my

conviction, and while, perhaps, with a native shrewdness, I let others experiment and spend their money, I simply say, "Wait." Wait in silence and with enduring faith. There, gentlemen, is my text upon electricity. I trust you will pardon me for the time I have taken; but all I have to say on electricity as a motive power is—Wait! [Applause.]

Dr. Elijah Whitney said: Mr. President, I would like to say a word. While I approve most heartily of the remarks that have been made, and of the suggestions advanced, I wish to say, first, that we live in an age of progress. It is not wise to take great exceptions to the progress that is being made around us; and, I had almost said, within us. We know not what we may be. The conditions of our knowledge of the mode of the application of electricity for the purpose of a motive power is no more obscure than it was when we first learned the condition of the application of steam as a motive power. We might compare the question as presented here to-day with that which was presented early in the history of steam. That produced as much of a marvel in the community as does electricity to-day. We knew, perhaps, more about steam, how to produce it, but no more how to use it and apply it than we know to-day about electricity, and how to apply it. But we have learned something on both these points. One of the marvels of electricity is, that we do not know exactly what it is. The gentleman who has just taken his seat has asked whether any one could tell what it may be. I would say that electricity is that fluid which pervades all nature. It is not alone around us, but it is within us; and if we shall attempt to explain it, I should say that it has an analogy to that principle which we call life. It might be, for ought I know, the principle which underlies all the thought that we have of life itself. I cannot say when I raise this arm and attempt to give it that power which will cause it to fall heavily upon my neighbor, that it is not electricity. I think there is more probability that electricity has much more to do with all our movements and with all our actions than we are aware of. I do not think that it cannot be applied as a motive power for the movement of machinery. I have alluded to the production of steam, and the difficulty of its application to the steam engine. It was because I traversed the Sound in the first steamboat that ran from Providence to New York. We got on board of the boat at eleven o'clock, and we landed at ten o'clock in the evening of the next day, and thought we had done wonders. A more frightened multitude I never saw in my life, and never expect to see again, than I did when we approached Hell Gate. It seemed as though the captain and pilot were as much frightened at the approach to Hell Gate as the multitude aboard the boat, and the boat was very full. Yet we came into New York safely, and we rejoiced in the great exploit of coming from Providence to New York by steam. I stood also in Baltimore, watching the movement of this great power of electricity upon the wire that was stretched from Washington to

Baltimore—the first wire that ever conveyed an intelligent message from one point to another. I stood there when the message came, and heard it read, and heard the communication that went back in answer to it. In a few moments came back the second answering message intelligently. There people were talking with each other at a distance of some forty miles. When I recall these remembrances, these things that occurred in days that are past, I cannot help believing that electricity will ultimately be used as a motive power—used as we now use steam! Mr. President, you will excuse me for these remarks. I suppose they are not very well constructed, as I am suffering, like many others, from the infirmities of age, for, if I am permitted to live until the 26th day of November next, I shall see my eighty-seventh birthday!

Dr. Whitney's remarks were received with applause.

Fare Collecting.—II.

[In our May issue we published the method of fare collecting adopted on the Atlantic Ave. line, Brooklyn, and its dependencies. The following from the President and Purchasing Agent of the Knoxville (Tenn.) S. R. R. Co., is offered as the second of the series.—Eds.]

We do not employ conductors, having fare boxes in our cars. But we have a check on our drivers in the form of daily reports, more properly trip reports, which I designed for our own use three years ago, and which we have been using with much satisfaction ever since. It is unpatented and I give any one the liberty to use it. I send you the report

Personal.

J. F. COURTNEY, of Bradley & Courtney, is in San Francisco.

Mr. F. F. Low, President of the Sutter Street R. R. Co., of San Francisco, is in Europe.

CHAS. E. BERRY, of Cambridge, Mass. has been awarded a gold medal at New Orleans, for his patent hames.

J. D. OXNER, VICE PRESIDENT, of the Houston & West sts. & Pavonia Ferry Ry. Co. for many years, has resigned.

RICHARD VOSE, 13 Barclay st., New York, has lately invented several new styles of Graduated Springs—for which application for Patents has been made.

MR. JAS. G. HOLMES, President of the Citizens' Street Railway Co., Pittsburgh, was in New York on the 18th ult. Also Mr. Sharp of the Detroit City.

MR. EGERTON, Supt. of the Albany St. Ry. Co., stated recently in our office that he kept his track stiff and to gauge without knees, by putting granite paving blocks flatwise against the stringers each side as bearers for the paving blocks. Some of his track gets heavy loads from the stone-cars carrying material for the new State House, yet it keeps its place perfectly.

MR. LEWIS, of Lorimer Street, Brooklyn, has recently received large orders for his wood mattings from John Stevenson & Co., from the Second Avenue R. R., and from Western Street Railways. Mr. Lewis says he makes no more of the *folding-wood mats* unless they are specially ordered, as his experience shows them to be practically much inferior to his newer devices.

Knoxville Street Railway.									
PERFORATED LINE. Remarks.....	TRIP NO.	Saturday, April 25, 1885.							
	1	3	20	15	17	9	25	16	18
	2	13	18	20	7	15	12	8	
	3	10	12	5	9	26	24	7	
	TOTALS.	26	30	40	33	50	61	31	18
Car No. .... 5.		Total No. Passengers carried... 309.							
Car Started.... 10:07.		Car Stopped Running... 9:30.							
JNO. F. JOHNSON, Driver.									

of car No. 5 for April 25. Any person can see at a glance how it is to be used. It operates both as a check on the driver and receiver; it gives the number of passengers carried at any trip during the day. The blanks are torn off at the perforated line. Forty (40) minutes are required to run a trip, the line being two miles long. Although I do not claim it to be by any means a perfect check on the driver, yet it is a very efficient one. I have also some special books of my design for receiving tickets, sales tickets and cash fares, record of passengers and driver's record.

T. L. BEAMAN.

A New Street Railway Supply House.

THE firm of Pugh & Russell has just established itself for the purpose of dealing exclusively in street railway supplies for home and export trade, a business for which there has for some time been a need. Mr. Pugh has had the advantage of a practical experience in the manufacture of cars, having served an apprenticeship of some years in the Stephenson Car Works, and Mr. Russell has acquired a thorough knowledge of business, having filled an important position for several years past in the office of Maitland, Phelps & Co.

### The Broadway, N. Y., Surface Line.

The Supreme Court, General Term, has confirmed the report of the Commissioners in favor of Jacob Sharp's Broadway surface (horse car) railroad from Fourteenth Street to the Battery. Judges Daniels and Brady concurred. Judge Davis dissented. Judge Daniels says among other things:

"The fact that the company was not able to obtain the consent of the owners of one-half in value of property on Broadway is not a controlling circumstance. That a majority of the persons owning property were opposed does not appear to be the fact. A majority are favorable to the construction of a railroad, but differ as to the description of road.

"Railroad tracks will not interfere with the speedy transit of fire engines. In case of parades the cars might be excluded from the street for the time and the business of the road suspended.

"Five per cent of the gross earnings, besides \$40,000 a year, is a sufficient payment to the city.

"The company should be required to keep the street in repair between the tracks and and two feet on either side, to remove the snow from the same parts of the streets and avenues immediately after it falls, and not pile it up, but cart it away; and if it failed to do these things it should forfeit its franchise. It should be obligated in the same manner, without contingency or uncertainty, to carry its passengers for five cents over the entire distance from the Battery to Central Park.

Judge Brady balances the benefits and injuries and concludes that the benefits will be the greater. Judge Davis says:

"No scheme is devised by which these benefits and injuries can be equalized; and it is therefore a duty to see to it that at least the general benefits to the whole city are such as to justify the infliction of injury upon a portion of the public for the good of the whole. In this case I do not think that can be done. I am firmly convinced that in the throng of traffic below the City Hall the road will not only be detrimental to property, but a serious public nuisance. Broadway, between the points of the contemplated railroad, is the central street of a narrow island, and is rapidly being absorbed by that kind of business which most demands facility for transporting merchandise and property rather than persons. Its chief traffic must hereafter be with the country instead of the city, or, in other words, a wholesale and not a retail trade. It is now almost the sole longitudinal street in the lower part of the city of which surface roads are not in possession; and, being so, it ought, in my judgment, to be kept free for the use most largely beneficial to all classes of our people.

But if Broadway is to be given up to the use of a surface railway the public have a right to demand that a franchise so valuable shall not be granted except upon terms and conditions justly compensatory to the city. There should be an opportunity for competition. It is well known that all compensation was debarred by the action of the Board

of Aldermen, when it was manifest that other corporations were seeking to enter the field as competitors. I am not willing to sanction the success of any sale and purchase of a great public franchise, accomplished by the arbitrary exclusion of all other bidders. My brethren think it right, as I do, to impose additional conditions upon the confirmation of the report. The same principle justifies me in imposing the condition that the petitioner shall enjoy the franchise only by becoming the highest bidder upon a fair competition sale to be made under the direction of the Mayor of the city or its other authorities."

### The Prevention of Tramway Accidents in England.

From an English exchange we learn that Major-General Hutchinson, of the Board of Trade, attended an adjourned inquest held at Rochdale, England, respecting the death of a child killed by a tram-engine. Mr. Worth was present on behalf of the Rochdale and Bury Steam Tram Company. At a previous inquiry the coroner had suggested that a network be placed in front of each tram-engine, supported in any suitable manner, which would have the effect, he thought, of knocking the legs of any child or other person from under them who happened to be in the way. The persons so treated would then fall into the network and so escape injury. A model of the arrangement was shown by the engineer of the company as well as one constructed on the American cow-clearer plan, both of which were carefully inspected by the jury. Major-General Hutchinson said he had taken great interest in the suggestions of the coroner for the prevention of fatal accidents, but he was of the opinion that the plans exhibited were hardly practicable ones, as the width of the engines would be increased thereby, and the projection on each side would probably be more dangerous than the present engine sides. It must be remembered also that the Board of Trade restricted the width of the engines to between 5ft. 6in. and 6ft. Besides this there would be considerable loss of time in moving the nets from one end of the engines to the other at the completion of each journey, or if nets were provided at each end then access in and out would be barred as the doors could not be opened. He thought the most practicable plan was that on the cow-clearer principle. The jury ultimately agreed to a verdict of accidental death, and recommended the Tram Company to bring the suggestions, made by the coroner and Major-General Hutchinson, before the Tram Companies' Institute, in order, if possible, to adopt some arrangement for general use of tramways for the prevention of street accidents.

Mr. A. AYERS, of 625 Tenth avenue, New York, has patented a new automatic switch for one-horse cars, which appears to meet a want. It is so arranged that the car may be deflected either to the right or left, or continued on in a straight line, without getting the horse outside of the track. One of these switches may be seen in use on the corner of Court street and Atlantic avenue, Brooklyn. It is much liked by the road.

### A New Car-Starter.

MR. JOHN T. SCHAFFER of Rochester, N. Y., has invented a car-starter of novel principle, which is thus mentioned by a local paper:—"A test of the John T. Schaffer 'vacuum and air chamber' patent for relieving horses from sudden strain on starting cars and relieving draft timbers from severe shocks, was made on car 102 of the Rochester City and Brighton Street Car company's line running along the State street and Mt. Hope avenue route recently. The device comprises an air cylinder with contained piston, and valves at each end of the cylinder. When the piston rod is drawn forward through the chamber the valve in front opens and allows the air between that end of the chamber and the piston head to escape gradually, at the same time the valve at the rear end closes, forming a vacuum between that end of the chamber and the piston head. The cylinder has a five inch bore and the piston head travels eight inches from end to end. The cylinder is fastened to the draft timber under the forward part of the car. The forward end of the piston rod is hook shaped and to this the whiffletrees are attached, so that in starting a car the horse draws on the piston rod, the air chamber in front of the piston head forms a cushion. Attached to the cylinder are appliances permitting side and up and down movements." A company is to be formed to introduce the patent.

### Recent American Patents.

The following list of patents relating to the street railway interests, granted by the U. S. Patent Office during the past month, is specially reported by Franklin H. Hough, Solicitor of American and Foreign Patents, 925 F Street, N. W., Washington, D. C.:

- 314,995—Cables or ropes used to propel vehicles, coverings for—C. Bullock, N. Y.
- 315,258—Car-starter—C. F. Dodge, Pocatontas, Ill.
- 315,178—Ticket-clip—W. Souter, Leeds, Mass.
- 315,325—Cable railway grip—J. H. Parkinson, assignor to himself and J. D. Kerbaugh, Bodie, Cal.
- 315,355—Passenger recorder—A. Torrey, Detroit, Mich., & D. J. Casey, Cylon, Wis.
- 315,704—Car-starter—B. F. Bergh, N. Y.
- 315,620—Car-starter—A. L. Higley, Troy, N. Y.
- 315,988—Street-car—G. M. Brill, Philadelphia, Pa.
- 315,737—Fare-receiver—W. A. Connolly, Boston, Mass.
- 315,963—Fare register and recorder—J. H. Rose, Norwalk, Conn.
- 315,491—Moving street cars on curves—N. A. Fisher, Sacramento, Cal.
- 315,992—Cable railway—H. Root, San Francisco, Cal.
- 316,417—Car-starter—R. M. Thompson, East Rockport, Ohio.
- 316,831—Car safety attachment, cable—H. J. Rohrback, Chicago, Ill.
- 316,730—Car-starter—J. S. Briggs, Kankakee, Ill.

### A Proposed Street Railway Insurance Company.

[The following is the text of an important bill to incorporate a Street Railway Insurance Co. The bill has passed both Houses and is still (June 3) awaiting the Governor's signature.]

#### AN ACT TO INCORPORATE THE AMERICAN STREET RAILWAY MUTUAL INSURANCE COMPANY.

SECTION 1. The following persons named in this section and their successors, namely; William White, Charles J. Harrah, James W. Foshay, Calvin A. Richards, William H. Hazzard, D. F. Longstreet, William Richardson, Alexander H. Davis, Charles Clem-inshaw, Samuel Little, G. Hilton Scribner, Thomas Lowry, Henry M. Watson, John B. Parsons and William J. Richardson are hereby constituted a body corporate by the corporate name of the American Street Railway Mutual Insurance Company, and shall possess the usual powers and be subject to the usual duties of fire insurance corporations in the state of New York; and its principal place of business shall be at the city of New York, in the county and state of New York.

§ 2. The corporation hereby created shall have power to insure against loss and damage by fire, buildings, shops, depots, cars, machinery, fixtures, furniture, equipment, live stock and property of all kinds and description owned, leased or used by surface street railway companies in the United States and Canada, and the said corporation may issue its policies to such companies, and such companies are authorized to receive the same, agreeing to pay all loss or damage that may be sustained by fire upon any such property by the holders of such policies, not exceeding the sum named in the policy. The premiums upon all policies issued shall be paid in cash.

§ 3. The above-named persons shall be the first directors of said corporation. Their respective terms of office shall be determined by lot, so that five shall hold office for one year, five for two years, and five for three years, respectively, from the first Tuesday in June, eighteen hundred and eighty-five. After the expiration of such terms of office, respectively, the succeeding terms shall be for three years from such expiration. Directors to fill vacancies occurring by the expiration of the term of office shall be chosen at the general meeting of the corporation, which shall be held on the first Tuesday of June in each year, and continued by adjournment or otherwise until such vacancies are filled. Directors to fill vacancies occurring before the expiration of the term of office shall be chosen by the board of directors to hold office for the unexpired portion of the term, and directors shall continue to hold their respective offices after the expiration of their terms until their successors shall have been duly chosen and qualified. Directors shall be officers of surface street railway companies.

§ 4. The president, vice president, secretary and treasurer, and all other officers

shall be chosen by the board of directors, and shall hold office during the pleasure of the board. Their duties and compensation shall be such as shall be fixed by the board.

§ 5. Before the treasurer shall enter upon the duties of his office, he shall execute and deliver to the directors a bond, with sufficient sureties to be approved by such directors, conditioned for the faithful performance of his duties as such treasurer.

§ 6. This corporation may purchase or rent such real estate as may be requisite for the convenient transaction of its business, and may otherwise invest its funds in such manner and in such securities as fire insurance companies are authorized to invest in, by chapter four hundred and sixty-six of the laws of eighteen hundred and fifty-three, entitled "An act to provide for the incorporation of fire insurance companies," and the acts amendatory thereof and supplementary thereto. All investments of the funds of the corporation shall be in the corporate name, and only upon the approval of the board of directors.

§ 7. Every surface street railway company insured by this corporation shall be a member thereof. At each general meeting of this corporation, a full statement of its affairs shall be submitted, verified by the oaths of the president and secretary and treasurer.

§ 8. The board of directors of this corporation shall have power to make such by-laws, not inconsistent with this act and the constitution and laws of the state of New York, as may be deemed necessary for the holding of meetings of the corporation and its board of directors, the government of its officers and the conduct of its affairs, and the same, when necessary, to alter and amend, and to adopt a corporate seal, and to change and alter the same at their pleasure.

§ 9. Policies may be issued by this corporation when the superintendent of the insurance department shall have ascertained and certified that the capital hereinafter required of this corporation has been paid in, and is possessed by it in money or in such stocks and bonds and mortgages as are required by the said eighth section of chapter four hundred and sixty-six of the laws of eighteen hundred and fifty-three, and the acts amendatory thereof and supplementary thereto.

§ 10. When the just claims for losses and expenses unpaid against this company shall exceed the funds in the hands of the treasurer, over and above the cash capital hereinafter mentioned and the unearned premiums on outstanding policies, its directors may assess such sums as may be necessary to pay all claims and keep such capital intact, upon the members holding policies, in proportion to the premiums paid by each: such assessments not to exceed the amount of the note hereinafter mentioned and to be paid within thirty days after notice thereof shall have been received by any such member. To secure the prompt payment of such assessments, the directors shall receive from each member a note for not more than twice the amount of the current annual premium paid by such member. Such note

shall constitute all the liability of the member and may be enforced to the extent of the amount with interest from the date of any and every assessment made thereon, and remaining unpaid thirty days after notice thereof shall have been received by any such member.

§ 11. The directors may from time to time at a general or special meeting provide in what manner and to what extent members shall participate in the profits of the company.

§ 12. The corporation, as an additional security to its members, over and above their cash premiums, and the notes hereinbefore mentioned, shall unite a cash capital, which shall be at least five hundred thousand dollars, and may be increased from time to time to an amount not exceeding two million dollars to be divided into shares of one hundred dollars each to such members of this corporation as shall subscribe and pay for the same; and such members, being surface street railway companies, are hereby authorized to subscribe and pay for said shares to such amount as its directors may determine, which shares shall be transferable on the books of the company but to members only, subject to such regulations as the directors shall from time to time prescribe. Only holders of cash capital paid in shall be entitled to vote, and such holders shall be entitled at all meetings of said company to one vote for each share of said stock held by them, respectively, such votes to be given by an officer, or proxy duly authorized. The directors may allow such rate of interest on its capital and such participation in profits as they may from time to time determine, in accordance with the laws of the state regulating the payments of dividends by corporations, and such cash capital shall be liable as the capital stock of the corporation in payment of its debts; provided, however, that if said capital should become impaired to the extent of twenty per cent of the amount fully paid in, it shall be the duty of the superintendent of the insurance department to issue a requisition on the stockholders for the payment of the deficiency; and all proceedings thereunder shall be the same as are now fixed and determined by law for the payment of deficiencies by requisition of the said superintendent on joint-stock fire insurance companies of this state.

§ 13. Within ten days after notice of a loss has been received, a committee of not less than three directors shall determine the liability of the corporation on said loss, and if such determination shall not be satisfactory, or in case any difference of opinion shall arise as to the rights of parties under any policy, the subject thereof shall be referred to three disinterested men as referees, the directors and the insured each choosing one of the three referees, and the two so chosen selecting a third, and the decision of a majority of said referees shall be final and binding upon the parties, and any amount determined to be due by the corporation shall be paid within thirty days after such decision has been certified by the referees, or a majority of them, to the corporation.

§. 14. Any member of the corporation may withdraw therefrom by giving a written notice of such withdrawal to either of the officers at the office of the company, and upon such member paying all assessments theretofore or thereafter made upon it for losses and expenses which have been incurred before the receipt of such notice, any note or notes given by such member to secure the payment of assessments in the manner hereinbefore provided shall be relinquished and given up, and membership shall thereupon cease; and upon such cessation of membership, the member shall be entitled to the usual short rate return premium, and shall be exempt from all further liabilities and forfeit all further benefits from said corporation, except such liabilities and benefits as may arise from continued ownership of any of the capital stock thereof.

§ 15. Nothing in this act contained shall be construed to relieve or exempt said corporation from making statements and reports to the insurance department; or as releasing from the payment of such taxes and fees as are now or hereafter may be required from fire insurance companies organized under the general insurance laws of this state.

§ 16. All acts and parts of acts inconsistent with the passage of this act are hereby repealed.

§ 17. This act shall take effect immediately

**Information on Street Railway Construction and Management.**

Mr. T. M. Smedes, Superintendent for the Vicksburg (Miss.) Wharfboat and Elevator Co., sends us his subscription (for which he has our thanks) and says: "If convenient, please have circular sent me in which I can find the name of some good work on construction and operation of street railways."

Probably "*Tramways, their Construction and Working*," by J. Emerson Dowson and Alfred Dowson, A. A. S. C. E., will give Mr. Smedes the information he wants. We can furnish the book to any one who wishes it, at the regular publishers' price, \$1.50.

THE Winuipeg Street Railway Company run sleighs all winter heated with a small coal stove in the forward end. The sleighs are ventilated same as the box cars in summer and they have no complaints of gas or foul air. They say that American manufacturers cannot place the cost of sleighs low enough to enable them to place orders in this country.

WHEN you see a man  
In a car,  
Sprawling all his limbs,  
Near and far,  
Taking twice the room  
That he ought,  
And for other's rights  
Carling naught,  
You may judge his mind's  
In a fog—  
That he's drunk—or else,  
He's a hog.

—[Wilmington Star.

**Improvements in Jersey City.**

A correspondent sends us the following clipping from a local paper:—

In his recent annual message Mayor Collins alluded to the Lafayette extension of the J. C. & B. Railroad in rather sharp terms. He said:

"Additional horse car facilities were promised Lafayette, and your honorable body passed an ordinance permitting the use of certain streets for that purpose. I think that you should insist upon the immediate construction and operation of the new line, otherwise repeal the franchise."

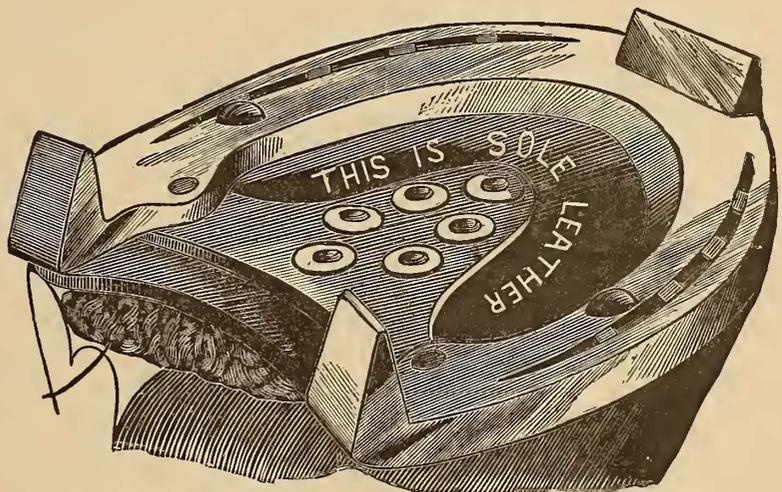
President Thurston, in a letter to the JOURNAL, reviewed this paragraph. Mr. Thurston called attention to the fact that since he has had charge of the road no expense or effort has been spared to make it effective, and said that if Mayor Collins had

**Improvements on N. Y. City Roads.**

In the best street cars as now built in New York, the brakes are all inside, that is between the wheels instead of outside. This disposition prevents in a great measure the pitching forward of passengers when the car is stopped. Another improvement is for a signal to the conductor; convenient hand-pulls at the back of the seats operate on a rope which connects with a piston moving in a small air chamber provided with a whistle at its free end. By a pull at the rope the whistle is blown and the conductor is advised of the fact that he is wanted.

**The Lockie Horse Shoe Pad.**

This pad\* is of stout sole leather, covering the entire bottom of the foot, and inserted between hoof and shoe. It has a stiffening



THE LOCKIE HORSE PAD.

investigated he would not have so harshly reflected upon the management. Mr. Thurston showed that the ordinance permitting the Lafayette extension was passed so late last fall that no work could be done until this spring. The rails are procured, the cars are being built, the track is being laid, etc. It is hoped, Mr. Thurston said, that the extension will be open by July 1. If the Mayor had read his JOURNAL with his usual care, he would have seen that Mr. Thurston was pushing things, and would have been spared the necessity of taking back his hasty criticism of the railroad management. With his usual manly frankness he has written thus to Mr. Thurston:

MAYOR'S OFFICE. }  
JERSEY CITY, MAY 7, 1885 }

C. B. Thurston, Esq.:

DEAR SIR—The censure of your letter in to-night's JOURNAL is just. In my resume of the year, I thought of the Lafayette extension and wondered why it was not built, especially as I saw so much being done along the car tracks generally, and I jotted down the passage referred to mainly as a memorandum, fully intending to see you about it before sending in the message. I not only forgot to do that but forgot the passage itself. Please excuse something to a very busy man. Your explanation is satisfactory. I will leave out the paragraph from the message, as it will be published in pamphlet form. Yours truly,  
GILBERT COLLINS.

piece riveted on at the back, as may be seen by the cut. It is fastened to the shoe by rivets at the heel. Between the leather and the frog is a sponge to keep out the dirt, and act as a cushion, besides giving the frog a certain portion of the weight to bear. The pad also acts as a prevention of injuries from picking up nails or stepping on broken glass.

\* Lockie Horse Shoe Pad Co., 181 Kinzle Street, Chicago, Ills.

**The Origin of the Word Tramway.**

Mr. Augustine W. Wright, of the North Chicago Street Railway Co., appears to be an accomplished philologist as well as a progressive engineer. In a paper before the Western Society of Engineers he follows up the discussion of the origin of the word tramway, which was started in the Street Railway Department of our JOURNAL OF RAILWAY APPLIANCES. Mr. Wright does not at all believe in the Outram derivation, and he apparently proves that "tram" being the northern word for "a small carriage, on four wheels, distinguished from a sledge," that is the proper derivation.

THE restrictions of the city council of Harrisburg, Pa., will deprive the citizens of that city of additional accommodations and improvements which the City Passenger Co. had intended making.



MONTHLY, \$1.00 PER YEAR.

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P. G. MONROE.....General Western Manager.  
ROBERT GRIMSHAW, M. E.....Editor-in-Chief.  
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St. Louis, Mo.

### The Luminous Car Again.

No radiant pearl, which crested Fortune wears,  
No gem, that twinkling hangs from Beauty's ears,  
Not the bright stars, which night's blue arch adorn,  
Nor rising suns that gild the vernal morn,  
Shine with such lustre as the car that goes  
Down Fulton's muddy street, and ever glows.  
[Darwin's Loves of the Plants, (amended).]

It seems that our V. & E. C., at once the Methuselah and the Thomas Alva Edison of railroadism, has not produced (or at least published) anything new during the past month. The luminous burners and the luminous car have doubtless absorbed the attention of its giant intellect, in perfecting the mechanical, chemical and optical details, and working up to public appreciation and to par the stocks of the Great American Refulgent Car Co., and the Helvetio-Pearl Street Fluorescent Harness Association, Limited.

So in default of novelties from the oft fire-swept district where the clang of the Franklin Press rivals the rattle and the roar of the Elevated Railway—we shall have to take up anew the consideration of the luminous harness and the luminous car; its Beauties and its Benefits, and the Bulging Brains of its Binocular, Benign, and Beneficent, but not yet Besainted Business Boomer.

First, as the apt quotation which heads these appreciative lines most clearly indicates—the luminous car, (especially in combination with the luminous harness) is “a thing of beauty,” if not “a joy forever.” If it is true that the luminous car is a good thing, it is at once an example of “the true, the good, and the beautiful,” and as such deserves commendation and encouragement.

Second, it affords the poet and the journalist several new similes and metaphors, or at least, a new simile or a new metaphor for several time-worn though heart-loved and excellently rhyming subjects.

A girl, filled with the glamour of the skating rink, elopes with a caoutchouc-legged “professor” of the skatorial art. The *Eagle* can then thus head its announcement of the fact:—

And like a passing [car] she fled  
In light array.

A politician or a faction “gets left,” at a ward primary. The opposition part says of him—

'Tis the last car of summer  
Left blooming alone.

Of Miss Honora de Flaherty the poetic novelist may say—

Her blue eyes sought the west afar  
For lovers love the latest car.

The express train comes in bearing the President, or Mrs. Langtry; a thousand people await its arrival; and the *Chicago Times* may aptly cite—

But when the [car] in all [its] state  
Illumed the eastern skies, &c., &c.

The Rev. Mr. Ballmatch, in alluding to the depravity of the theater, the heroism of the six hundred, the refined influence of the Louisville mule, the devotion of Florence Nightingale, and the not-apt-to-get-left-itude of some street railway men of whom we wot, as all combining to make a variety in the this-ness, and an uncertainty in the then-ness, of existence, may impressively voice these lines:—

Life like a [car] of many colored glass  
Stains the white radiance of eternity.

Oh, the luminous car ought to be a bonanza for professionals, short of ideas.

Third, there's millions in it. Col. Eschol Sellers would have had it, as one of the principal features of his celebrated railroad, that the line he advocated had none but luminous cars, of a special and copyrighted color, calculated to inspire the timid with confidence, deter the train-wrecker from wrong, sooth the ever wakeful babe in arms, thrill the hymeneal neophytes with soft extatism,\* and convert the evil drummer from schemes of scalped tickets and borrowed mileage books.

Our very pleasant social relations with our genial and accomplished *confrère* over in Pearl Street, as well as the necessity for observing the proper *convenances* † prevent us from giving details the publication of which might appear as a violation of confidence whispered through the incense-like clouds of a burnt offering of Latakia; but this we can say, without any breach of trust, or unwarrantable prematurity of expression, or particularity of personal designation,—that there is yet to come the announcement of still another refinement in cars—the return of evenings with the *maestri* and mornings with the *virtuosi*—the culmination of critical culture in car construction.

This, dear readers,—this *acme* and *ne plus ultra* ‡ of Art in Transit, as distinguished from Transitory Art, is the Musical Car!

Think of it!!

Wait for it!!!

We hope to have full particulars in our next.

\* All rights reserved.

† The compositor omitted the first of these words from an article of ours in our last issue (subject forgotten) and the second was one intended for our leader on the Refinement of the Louisville Mule; but we lost the slip on which it was written, and have had no previous chance to work it in. This seems a good place for it.

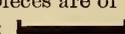
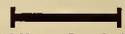
‡ This is Latin; a language much used by Lawyers to conceal their ignorance and by Congressmen to show off how much they know.

### Track Laying.

We have just been watching the laying of steel center bearing rails on a track over which we ride almost daily; and we have to say that we consider that there is yet a good deal to learn in that branch of street railway work.

First, as regards the stringers themselves. The knees are far too light and permit the stringers to rock laterally. Fewer knee braces of longer reach would do the work much better, and keep the track in gauge. A well-gauged track saves wear and tear of rails and of wheel flanges. Setting the stringers on tarred seats on the cross beams would probably considerably lengthen the life of both stringers and cross-pieces by doing away with soaking places into which water both enters and remains by capillary attraction.

The timbers would last much longer if *properly* treated with some *insoluble* anti-septic solution, put in at one end under pressure until it showed at the other end. If the plant for such treatment were rightly designed and constructed, and a suitable material chosen, this antiseptic treatment would pay, in the increased life of timber.

The joint pieces are of the old “channel” sections, thus: ; and hence have very little natural stiffness. We think that the new double channel or  sections would considerably stiffen the joints; and they certainly need it.

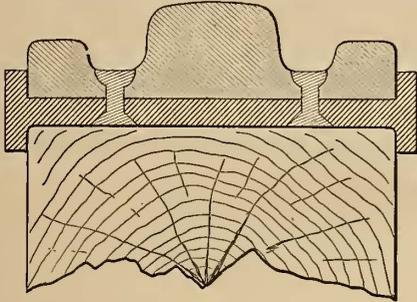
The spikes are of a character to mash their way through the fibres, breaking and crippling them and crowding them out of the way in such a way as to give them little hold on the spikes. If the holes were cleanly bored, or if spikes were made with clean cutting chisel parts, or were got up in the same way as wire nails, the spikes would do more to hold the nails down to the stringer, against the prying-up action which takes place at the back end of a rail every time that the load bears down the “far end” (the term “back end” and “far end” being named from the direction in which the car or other load is going).

We think that if the holes in the rail flanges were punched somewhat obliquely; that is, pointing towards each other and the center of the rail, so that the spikes would have somewhat of a clinching effect, there would be more holding-down power. As the spikes are now laid, they only keep the rail from being crowded sidewise off the top of the stringer.

There is too much rail-end-wearing and spike loosening done by the prying up of the rails at one end, owing to the depression due to load at the other end. If we give the spikes a better grip, and the joint pieces more vertical stiffness, and then unite the chairs and the rails by rivets permitting endwise motion due to expansion and contraction and preventing the rail ends from lifting away from the chairs, we ought to have improved the joint. The rivets can be put through the holes in the chair, before the latter is laid on the stringer; and the second heading could easily be accomplished when the rails were in place over the chairs.



The riveting up would of course have to be done before either rail was spiked to the stringer, and the surface of the latter would be too soft to rivet against. The holes in the chair to be round; those in the rail-flange oblong, with proper countersink; or the chair could have oblong holes with oblong countersink, so that the "first head"



of the rivet could readily travel therein as the rail end moved with expansion and contraction.

While for many reasons the "cobblestone" is an excellent pavement for the space between the rails, yet, as ordinarily laid, the best laid of that ordinary cobble foot-way soon looks like a relief map of the moon. The stones being of unequal size, the small ones sink deeper into the bed than the large ones; hence, those which offer most resistance to foothold and traction and give the roughest riding to ordinary vehicles.

It is necessary to bed the largest stones next the stringers to give the stringer and rail lateral stiffness; but the rest of the cobbles are generally put in higgledy-piggledy, without reference to their size and shape.

If, now, the cobbles were sorted more, laying the very largest in a row next the stringers, and the next largest in a lengthwise row next that, and so on, with the smallest in the center, the road being made with excessive crown, the small stones in the center line would sink more than those in the side rows, but they would sink with greater uniformity, so as to bring the road to a lower curve than at first, but a more nearly smooth surface than is now found. A better foot-way would decrease the amount of lameness, give the horses better foothold in starting, give cleaner tracks, and cost less in maintenance. Incidentally, public opinion would be favorably affected.

**Snow Plows For Street Railroads.**

Mr. G. G. Gibson, Superintendent of the Cass Avenue and Fair Ground Railway, St. Louis, Mo., says: "I wish you would ask through the columns of your JOURNAL if any horse railroad company had a snow plow that did its work well and satisfactorily last winter. If there is one, I want to see it. Some people think it is bad taste to talk of such things now, but I believe 'in times of peace, prepare for war.'"

We have received from the Fulton Foundry, 202 Merwin St., Cleveland, O., a neat leather bound catalogue of the street railway specialties manufactured there. It is dated March, 1885.

**One-Horse Street Cars.**

The greatest strains which a street car has to meet, seem to be those incident to rounding sharp curves at street corners.

My best wagon, unloaded, weighs three-fourths of a ton, without a box. With one-fourth ton of stone rack and four tons of stone it weighs five tons. This is a heavy load but it is not the limit on good level road. It takes less power to move the load on a circle of twenty-five feet radius than it does to move it on a straight line. Some of my horses, dumb brutes as they are, know enough to swing from side to side of the road on a steep climb, to permit a serpentine wheel track, where it can stand as evidence that their driver was drunk. Said wagon has loose wheels and radial axles. A "bob-tail" should be as well fixed for rounding curves; it can be provided with means for rounding a sharp curve, with less traction resistance than needed for the straight line. When this happens there will be no need of letting the empty car weigh half what it will when full loaded.

One horse should trot along, with a full load of passengers, on a level track, with resistance, for one ton of car, twelve and one-half pounds, and for one and one-half ton of passengers, at five pounds per ton, or twenty pounds in all. If the car weighs two tons with the same live load the resistance will be  $(2 \times 12\frac{1}{2}) + (1\frac{1}{2} \times 5) = 32\frac{1}{2}$  lbs. With an "easy" street grade of one in twenty to mount, gravity gets hold of the "bob's tail" and makes the horse put out effort enough to overcome  $20 + (\frac{264}{3280} \times 2,000) = 120$  lbs. in the light car and  $32\frac{1}{2} + (\frac{264}{3280} \times 2,000) = 132\frac{1}{2}$  lbs. in the heavy one. The twelve and one-half pounds may not seem much of a difference, but they are at the right end of the calculation, "the last feather." Such climbs do not admit of rapid motion. The resistances cited are for the slowest conceivable speed.

Gravity is well known as being everywhere all the time, and yet many good sinners act as though they do not understand its unremitting, undeviating influence. It always knows what its about; any one disbelieving can test it, by working up the grade described at different speeds. If he does not find it takes twice as much effort per unit of distance to ascend forty feet of the grade as it does to ascend twenty feet, in a given time, we would be very glad to get his data. Of course axle friction does not necessarily increase with the speed.

There is no use trying to make a light street car of wood; it will take hard and tough eye beam sections for the skeleton; paper board cover; the best lucked glass windows and Lincrusta Walton inside finish, on Acme steel wheels, to bring the dead weight and traction resistance down to half what it is now.

ED. B. MEATYARD.

SUBTERRANEAN CABLE RAILWAY AT BRUSSELS.—The plan proposed by Prof. Aug. Gillon, of the University of Liege, is to unite by a double track cable railway the Putterie quarter and the Place Royale; and later to be extended to the Porte Namur; the conditions are the same as at Constantinople.

**Olive's Tables and Diagrams.**

Tables and Notices for Curving Tramway Rails and for Making and Laying-in Railway Crossings. Published by W. T. Olive, C.E., 90 Landsdown Road, Didsbury, England.

These tables are intended for the use of Tramway and Railway Engineers, Crossing Makers and Platelayers.

Table No. 1 gives in condensed form results of calculations required for the curving of tramway rails to any radius by template or otherwise. The advantage of this table becomes more apparent when it is considered that the tendency is to have very heavy section rails, suitable for steam traffic, and that all the bending for street corners, etc., should be done by template on the rails before they are sent out on to the ground.

Tables Nos. 2 & 3 enable railway crossings to be made and laid in at the correct distances from switches, without the labor of calculation—typical cuts being furnished to which the various crossings and leads required in ordinary practice are referred. The gauge dealt with is 4' 8 $\frac{1}{2}$ ," but the different formulæ are so detailed as to make them apply to any required gauge by a single calculation.

They have been carefully compiled with a view to ready reference, are tastefully got up and should prove useful to railway and tramway men.

They will be sent post-paid at one dollar each, by the American Railway Pub. Co., (proprietors of this journal) 32 Liberty St., N.Y. City.

**Melting Steel in an Ordinary Cupola.**

It will interest all who have been considering the relative merits of steel and of iron rails, to know that one great obstacle to the utilization of old steel rails has been successfully removed. This should raise the price of old steel rails.

Mr. R. E. Masters, of the Columbus (Ga.) Iron Works, cuts the rails into one foot lengths and melts with one pound of fuel for five pounds of steel, making fine castings.

Heretofore, the Sweet cementation process has used up some old steel rail scrap; some has been worked up into wire, and some (not nearly enough, into nail, and a trifle has found its way into cast car wheels; but now, frogs, crossings, chairs, draw-heads, buffer plates, sockets, corner pieces, and a hundred other kinds of pieces can be cast from old steel rail scrap.

**Lighter Cars Wanted.**

EDS. STREET RAILWAY JOURNAL:

I wish to get some one-horse cars for a line with heavy grades and light uniform travel. Our present cars weigh about 3,500 pounds and are too heavy. Cannot they be made to weigh from 1,500 to 2,000 pounds?  
SUPT.

[We think that Mr. E. B. Meatyard's communication headed "One-Horse Street Cars," in this issue, covers the ground fairly well.]

## Notes and Items.

CANTON (O.) has a new street railway.

THERE is a new street railway in Madison, Miss.

THERE is a new street railroad in Kalamazoo, Mich.

NEVADA (Mo.) is talking of having a new street railway.

THE JOHNSTOWN (Pa.) STREET RAILWAY is to be extended.

A new street railway is contemplated in Hutchinson, Kan.

ST. LOUIS (Mo.) is to have a new street railway—the Northern Central.

MOLINE (Ills.) has a new street railroad—the Fifteenth Street River R.R.

THE DALLAS STREET RAILROAD Co. (Tex.) are building a two mile extension.

THE DULUTH STREET RAILWAY Co. (Minn.) will add four new cars this spring.

THE SANDUSKY (O.) STREET RAILWAY is building a new line, two miles long.

THE SEDALIA (Mo.) STREET RAILWAY Co. will extend their track this summer.

A street railway is to be built between South Bend and Mishawaka, Indiana.

THE DES MOINES STREET RAILROAD Co. will build a one-mile extension this year.

THE BIRMINGHAM STREET RAILWAY Co. (Ala.) will buy some new cars this spring.

THE MINNEAPOLIS (Minn.) STREET RY. Co. will build a four-mile extension this season.

THE STONEHAM STREET RAILROAD Co. will water their track this season with water cars.

THE BURLINGTON (Ia.) STREET RAILROAD Co. are laying one and one half miles of new track.

THE BELT STREET CAR LINE is a new company running cars on the streets of Dallas, Texas.

BEAVER FALLS, PA., is to have a street railway. Track is building and orders given for five cars:

THE STREET RAILWAY Co. of Grand Rapids, (Mich.) will expend \$3,000 in improvements this season.

THE NEWPORT AND DAYTON (O.) Street Railway Co. have just completed a \$5,000 brick stable.

THE EMPORIA CITY RAILWAY Co. (Kan.) put on an extra car and build a mile extension this season.

THE LEXINGTON (Ky.) CITY RAILWAY Co. expects to build one and one-half miles of track, this year.

THE SAN ANTONIO STREET RAILWAY Co. will extend their track and add several new cars this summer.

FORT WORTH, Texas, has a new street railway. It is operated by the Rosedale Street Railway Co.

THE CENTRAL CITY HORSE RAILWAY Co., Peoria, (Ills.) will make an extension of one mile this summer.

THE JACKSON STREET RAILWAY (Tenn.) is chartered but not built. Work will be commenced on it this fall.

THE LAWRENCE TRANSPORTATION Co. (Kan.) will build three-quarters mile extension line this season.

BURLINGTON (Ia.) has two new lines of street railway, the Union Street Railway Co. and the Belt Line.

THE CHATTANOOGA STREET RAILROAD Co. (Tenn.) will extend their road one and one-half miles this year.

THE CHESTER (Pa.) STREET RAILWAY Co. talks of building two miles of additional track during the season.

THE CALVARY, GREENPOINT AND BROOKLYN line will, if all goes well, begin operations on Decoration Day.

THE TRANSVERSE PASSENGER RAILWAY Co., of Pittsburg, (Pa.) are changing their cars from single to double ends.

THE HAMILTON STREET RAILWAY Co. (O.) will extend their track one-half mile this season and add two new cars.

THE PINE STREET, Jacksonville, (Fla.) street railway put on five new cars and built an extension of three miles.

THE MARKET SQUARE AND ASYLUM ST. RY. is the name of a new company operating on the streets of Knoxville Tenn.

THE SIOUX CITY (Ia.) STREET RAILWAY Co. will add three new cars to their equipment and lay one mile of new track.

ANDREWS & CLOONEY are making the iron work and W. P. Craig is laying the new Lorimer Street (Brooklyn) road.

THE HANNIBAL STREET RAILWAY Co. (Mo.) are replacing sixteen pound T rails with thirty-six pound center bearing.

THE BOONE AND BOONSBORO STREET RAILWAY Co. (Ia.) will put in two more switches and add another car this spring.

A new street railway has just begun operations in Tokio, Japan. The "Japs" are delighted and patronize it liberally.

THE SPRINGFIELD STREET RY. Co., St. Louis, (Mo.) contemplate building one-half mile double track and one mile of single track.

THE BROADWAY (N. Y.) SURFACE RAILROAD Co., it is understood on good authority, has placed the contract for building its track.

THE DUBUQUE (Ia.) STREET RAILROAD Co. has bought the material to add two miles to its tracks. The work will be done this season.

AT LOS ANGELES, CAL., the three street railways have adopted the Horman register, also the Corrigan Consolidated roads of Kansas City.

THE QUEBEC STREET RAILWAY Co. (Can.) have ordered a new car and will extend their tracks this season if they obtain the right of way.

THE THIRD AVENUE RAILWAY Co. (N. Y. city) have just finished twenty new open cars and propose to thoroughly overhaul all their Harlem cars.

MR. JOHN E. BROWN, for fifteen years superintendent of the Troy and Lansingburgh (N. Y.) Street Railway, died, April 27th, of heart disease.

THE LEWIS AND FOWLER MFG. Co., Brooklyn, has secured the sole right to manufacture and sell the Van Tassell brake handle.

THE OSWEGO (N. Y.) STREET RAILWAY Co. (new) will build two miles of track and about four cars for officers—see our Directory.

THE LOUISVILLE PASSENGER RAILWAY Co., H. H. Littell, Gen. Supt., has placed an order with the Brownell & Wigler Car Co. for sixteen cars.

THE COURTLAND AND HOMER HORSE RAILROAD Co., Troy, (N. Y.) will complete their track by building about two and one-half miles this summer.

THE IOWA CITY AND DES MOINES RIVER Motor Street Railway Company is a new corporation operating on the streets of Boonsboro, Iowa.

THE HOUSTON (Tex.) STREET R. R. Co. are building a new stable and will increase their motive power (mules). They will also build a one-half mile extension.

THE HARLEM BRIDGE, MORRISANIA AND FORDHAM RY. new cars are equipped with the Wales Fare Box. This company is starting a new line to Port Morris.

THE FT. WORTH STREET RAILWAY Co. (Texas) will build a large brick stable and car sheds during the present summer, and expects to extend its tracks one mile.

The street railway for a city in China, referred to in a former number of the STREET RAILWAY JOURNAL, has not yet materialized, but the plan is by no means abandoned.

THE WICHITA (Kan.) CITY RAILWAY Co. are building three and one-half miles of new track; it will be completed the 15th inst., and will make the total length of their line six miles.

THE RANDALL GEAR will be placed on new cars of the Baltimore City and Central City (Baltimore) Railroad Companies'; also on thirty new cars of the Rooper Passenger Ry. Co., Philadelphia.

MANCHESTER, ENG., is the centre of some one hundred and fifty miles of the best laid tram roads in that country, over forty miles of which have been laid by Mr. William T. Olive, C. E., of that city.

THE LEWIS AND FOWLER REGISTER is used on the Dry Dock, East Broadway (N. Y.) and Battery; Forty-second street Manhattanville and St. Nicholas avenue; and the Jersey City and Bergen railroads.

THE FOURTH AVENUE line has just ordered fifteen new cars of the John Stephenson Co. They are intended to be run through to Harlem and are to be of his best A1, three-ply, double-and-twist-warranted-to-wash kind.

THE BEMIS CAR BOX Co. and BALTIMORE CAR WHEEL Co., which have been for some time in litigation over plans, it is understood have adjusted their difficulties by some sort of consolidation of the interests involved.

MR. WELLINGTON ADAMS of St. Louis has recently been in New York in behalf of a new electric motor for street cars, which involves novel principles and which he avers has been tested with the utmost satisfaction.

THE CHICAGO CITY RY. are just finishing seventy new cars for their line.

THE NEW ROAD in So. Chicago (Ills.) is the Chicago Horse & Dummy R. R.

THE LONDON (Can.) STREET RAILWAY have recently added two new cars to their equipment.

AURORA, Ills. is to have one mile of new track—an extension of the Aurora City Railway Co.

THE LEXINGTON (Ky.) CITY R.R. Co. will build one and one half miles of new track this season.

THE SAVANNAH (Ga.) COAST LINE will build about one-third of a mile of new track this summer.

THE ELIZABETH & NEWARK (N.J.) will add several new cars this summer, and are putting in new switches.

THE CONSOLIDATED ST. R.R. Co. of Columbus, O., will build and add some new cars to their rolling stock.

THE NORFOLK (Va.) CITY R.R. Co. have just completed a half mile extension, and added two cars to their rolling stock.

THE CHARLES RIVER ROAD, Boston, are building a new line to Somerville, which will shorten the distance about a mile,

THE BOON AND BOONSBORO (Ia.) STREET RAILWAY Co. will build 2½ miles new track, and add two new switches and two cars.

WOODSOCKET, R.I., a town of about twenty thousand inhabitants, has no street railways, and it would seem to be a good point for one.

THE GLOBE STREET RAILWAY Co., Fall River, (Mass.) have added two cars, and contemplate building a two mile extension this season.

THE NEW BROADWAY SURFACE ROAD, now building, are putting in the Douglass Patent Automatic Switch manufactured by H. M. White & Co. of this city.

THE PEOPLES' RY. Co. of Baltimore, Md. have just finished a two story brick and stone car house 100 x 110 feet; and building a new stable for 225 horses.

THE CITY RAILROAD Co. Mobile, (Ala.) will add one mile to their country track and connect their street tracks with the river front. They will add three freight cars to their equipment.

THE WICHITA CITY RAILWAY Co. is building 3½ miles of new track, which is to be finished by June 15th prox. This will make six miles of track, and the equipment will be increased to eight cars.

LAWRENCE (Kan.) TRANSPORTATION Co. claim to have the best track in the country. It is laid with 38 pound Johnson rails. The President says they run their horses twenty miles a day and they do well.

KANSAS CITY, (Mo.) has three new street railway companies: The Kansas City and Westport; The Kansas City and Rosedale, and a cable road, double track, about one and three-fourths of a mile long.

THE MT. ADAMS & EDEN PARK INCLINED R.R. Co. of Cincinnati, O., are building and will have in operation July 15th one

and one half miles of cable road. It is built under patents of H. M. Lane, M.E.

THE MILWAUKEE (Wis.) CITY RY. Co. will extend their track four blocks, to the Base Ball Park. They are relaying most of their fifteen miles double track with 45 pound steel rails and cobble stone paving.

THE BROWNELL & WRIGHT CAR COMPANY, St. Louis, have just closed with the Louisville City Railway, Louisville, Ky., for the equipment of their new line, the contract calling for cars finer in finish than any now in use.

LOS ANGELES, (Cal.) has three new street railways, viz:—The Main Street Agricultural Park Railway; the Central Railroad, and the Boyle Heights Railroad. The City Railroad Co., of that city intend to extend their line three miles.

THE HARLEM BRIDGE, MORRISAINA AND FORDHAM Railway Co. of this city, have just completed a double track on east 138th street, from No. 3rd ave. to Long Island Sound, and are now purchasing the equipment to operate the new line.

THE BROWNELL & WRIGHT CAR COMPANY, St. Louis, have now in course of completion cars for Canton, Ohio; Little Rock, Ark.; Galesburg, Ill.; Oshkosh, Wis., and Louisville, Ky., besides those for four different companies in St. Louis.

WORK was commenced May 1, on the Aushnet Street Railway; also on the Lorimer street and Greenpoint Ferry Railroad. Mr. William P. Craig, the contractor, writes us he expects to have both roads completed and running by June fifteenth.

THE NASHVILLE AND EDGEFIELD STREET RAILWAY Co. are thinking of replacing their sixteen pound iron rails with sixteen or twenty pound steel rails. They own a suburban park, base ball ground, etc., which they make attractive to the public.

THE SOUTH BROOKLYN CENTRAL CITY RAILROAD Co. will change their line from Hamilton to South Ferry via Atlantic Avenue, and by transfer, take passengers for one fare to Hamilton, Wall Street, Fulton and Catherine Ferries, or to the bridge.

THE WALES MFG. Co., SYRACUSE, N. Y. has recently filled orders for their new fare boxes, for Metropolitan R. R. Co., Washington, D. C., Lombard & South Street R. R. Co., Phila., and the Harlem Bridge, Morrisania & Fordham St. Railway Co., of New York.

THE BOURBON COUNTY STREET RAILROAD Co., Fort Scott, (Kan.) is for sale, on account of the poor health of the owner. He will build an extension of two miles this season if he does not find a purchaser at once. It is a good opening for a live horse railroad man.

THE STREET RAILWAY from Waterford to Cohoes (N. Y.) has been leased to and is operated by the Troy and Lansingburgh R.R. Co. The latter company has completed a new stable and will replace their old iron with steel rails on about two miles of their road.

M. M. WHITE & COMPANY, New York, among recent orders have made White Automatic Switches for the Atlantic Ave-

nue, Brooklyn, Brooklyn City, Second Avenue, New York and Union, of Providence. The firm has some interesting work in progress in New York.

THE BROOKLYN CITY RAILROAD Co. has contracted with Mr. Joseph Campbell for new stables and other conveniences, to be erected at the corner of Halsey street and Broadway. They are to be completed by Sept. 1st, and will be among the most complete and comfortable buildings of that class in the country.

THE WINNIPEG STREET RAILWAY Co., Manitoba (Can.) is the only street railway in Manitoba or the North Western Territories. They are building a double track on Main street, also block paving it. The street is 132 feet wide and the tracks are twenty feet apart, with the sewer between the tracks.

THE CENTRAL RAILROAD Co., of San Francisco (Cal.) contemplate making a cable road of their two-horse line, three miles. They are running parallel with and in opposition to four cable roads. The cable roads all pay. While the company using horses make as good time they are losing money.

THE CITIZENS' ST. RY. Co. recently organized in Rochester, New York, have elected the following officers: Pres. Wm. H. Jones; Sec. and Treas. J. E. Pierpont. S. A. Green, for two years past superintendent of the Rochester City & Brighton road, was the originator of the scheme and will probably be the superintendent.

THE BROWNELL & WRIGHT CAR COMPANY, St. Louis, have recently shipped to the Minneapolis Street Railway of Minneapolis, Minn., some of the most elegantly finished street cars now in service. The interior finish of these cars was mahogany and other choice woods, relieved by beveled plate glass mirrors. The effect was rich and elegant.

THE BEAVER VALLEY STREET RAILWAY Co. is a new company, chartered Sept. 22d, 1884. They broke ground May 5th and will complete their road, three and one-tenth miles in length, and equipment this season. M. L. Knight is superintendent of construction of buildings, and J. C. Whittle, superintendent of construction of the road.

THE BROWNELL & WRIGHT CAR COMPANY, St. Louis, have just completed an equipment of summer cars for the Olive Street line, St. Louis, one of the most important in the city. They are also building the cars or the new line to Forest Park, as well as those for the new cable line now in process of construction; also some summer cars for the Bellefontaine Road.

THE WOODLAND AVE. & WEST SIDE ST. R.R. Co. of Cleveland, O. have recently completed a slated roofed frame barn for one hundred horses; and added three open cars to their rolling stock. The cars are twenty-four foot length, manufactured by J. M. Jones' sons, West Troy, N.Y. Among other improvements, the company will build a one mile track extension and relay two miles of track in June.

THE JERSEY CITY AND BERGEN (N. J.) R. R. Co. will during this summer lay about 450 tons of steel rail, which they have on hand. About one third of this quantity will be used in new construction, and the rest in repairs. It is expected to erect new stable, car house, etc., at Greenville, N. J., with stalls for 200 horses, during the summer. The company's equipment will then be increased.

THE MONTGOMERY (ALA.) STREET RAILWAY COMPANY is in receipt of eight new cars, four coaches and four open cars, which will be put to work at once. The fare will be five cents to any part of the city. The track is laid and ready for business, from the Union Depot to the Cemetery gate—a distance of one mile. The route is up Commerce street on Dexter Avenue, thence to Madison street, and thence east to the cemetery.

"THE JOHN STEPHENSON COMPANY, Limited," have at the New Orleans Exposition a tram car (close) excelling, it is claimed, all former street cars, for which the jury have made the following awards: tram car (close), medal of first class; tram car conductor's telephone, medal of first class; tram car, with ventilating ceiling, medal of first class; tram car window sash with metal and rubber stiles, medal of first class; tram car adjustable brake handle, honorable mention.

THE 42D STREET, ST. NICHOLAS AND MANHATTANVILLE line has displaced its one-horse cars from the Grand Central Depot to 72d Street, and put on two-horse cars of the best make. They are patronized beyond the expectations of the directors. They expect to run through to Manhattan (the "ville" is no longer "good form") in about two weeks. Immediately after this event the company will extend the line from 129th Street, Manhattan, via St. Nicholas Avenue and 11th Street to the Astoria Ferry, and the recently discarded one-horse cars will be put on that section of the line.

THE SIXTH AVE. R. R., of New York City, is pronounced by people who are qualified to judge, to be a model of excellent management. Its car service is frequent and regular, its cars are filled with all the new devices which enhance the comfort and convenience of passengers, and its conductors and drivers are obliging and well disciplined. The President, Mr. Curtis, is a vigorous and trenchant business man, but he is also courteous, approachable, and popular. Mr. E. E. Moore, late of the Belt Line, brings to his new position, as Superintendent, (succeeding Mr. Bidgood) the railway experience and training of a life time. "Wait," he says, "'till the 'Star Eyed Goddess of Reform' has a chance to get a good hold of her new broom and the Sixth ave. shall be the best street railway in the world."

THE CHICAGO (ILL.) HORSE & DUMMY R. R. Co., incorporated in 1883, have commenced track laying and have the track down on Adams Street from Fifth Avenue to the river on the east side and from Clinton to Des plains Street on the west side. On Des plains Street the track is laid from Adams to Harrison Street and they began track

laying on Harrison Street, May 25. The line of road is on Adams Street from Clark to Des plains south, on Des plaines to Harrison west, on Harrison to Western Avenue south, on Western Avenue to Twelfth Street west, on Twelfth Street to Crawford Avenue, (City limits). The road is equipped with the Johnston Rail, standard gauge. The officers so far elected are: D. L. Huff, Pres., E. R. Bliss, Sec., A. C. Calkins, Tres. Total length of track is about five miles. It is said that the stockholders are among Chicago's most prominent capitalists and that there is no stock for sale. The equipments, aside from ties and rails, have not yet been contracted for though bids are being received at this writing. The cars are to be of the latest style and the whole road equipped according to the latest improvements in street railway building.

BROADWAY SURFACE RAILWAY, N. Y. C.—After years and years of fighting, Mr. Jacob Sharp is at last getting his surface road on Broadway. Quoting from the *Morning Journal* of May 25: "Only the down track is being laid, and it is expected that it will be down before the end of two weeks. Then the up track will be laid and a connection established from the Battery to Central Park. The Broadway track will join that of the present Broadway road at Fourteenth Street, and through cars will be run to the terminus at Fifty-ninth Street.

"As soon as the new road is running, probably by August 1, the Broadway stages will become a thing of the past. They will all be sold and with them will vanish one of the relics of old New York. Summer travellers will probably encounter the old 'bus with its time honored pictures of Dexter and Mississippi steamboat races at mountain retreats and sea beaches hundreds of miles from the pavements which they made hideous for so many long years.

"The stage-drivers, too—that peculiar class of Jehus, some of whom have rolled up and down Broadway for a generation or more and can point out every celebrated or notorious promenade—will have to descend from their lofty perches and handle the brake, where their proverbial skill with the ribbons will be of little use to them.

"Some twelve hundred stage-horses will also be adopted by the railroad company, and perhaps half of the number will be retained. When the cars jingle up and down, Broadway will be a strange thoroughfare for a day or so to the crowds and then things will resume their normal condition."

Wm. Wharton, Jr., of Philadelphia, has the tract contract.

#### Electric Motors in New York.

SOME DELAYS, BUT NOW NEARLY READY.

"We had hoped to have the Manhattan car at the Edison works, No 104 Goerck street, ready for exhibition before this," said Mr. Johnson, of the Electric Railway Company, of the United States. "Its completion is only a question of a few days. The Eames Vacuum Brake Company caused us a little delay by new requirements for their apparatus. The rails for the third rail from Chatham square to the Harlem river and back are now being delivered, but the strike at Scranton delayed them somewhat. Our generating station near Second avenue, in Twenty-fifth street, will be ready for use before we need it. The boilers and engines I accepted as satisfactory yesterday.

I will not name the precise date for starting an electric motor on the Second avenue 'L,' but June is the month for the event, I am confident."

#### Reminiscence of Street Railway Beginnings in New York City.

A GENTLEMAN of this city, a veteran in experience and connection with Street Railway affairs, recently gave a representative of the STREET RAILWAY JOURNAL some of his early reminiscences:

"I remember," said he, "when I could buy stock in the Third ave., Sixth ave., Second ave., or Belt Line for 15 cents. on a dollar." "Those were times," he continued, "when the President of the Belt Line had to come over to my office on Saturday's to borrow \$1,500 or \$2,000 for a few days to pay off with—and they were then in doubt as to whether it would not be best to relinquish the undertaking and close things up. The Second ave. line was a long time in a moribund condition. The brothers Wm. and J. O'Brien, Bankers, of Wall St., were then largely interested in the road. One of the brothers proposed to withdraw from it and pass their investment over to profit and loss, but the other said, no, let us hold on and help it out, and we shall live to see the day that the stock will bring par. They advanced the road \$600,000 and the result showed their financial sagacity and foresight."

#### The Allen Elevated Railroad.

At Rockaway Beach there is now on exhibition a working model of the Allen Elevated Railroad, invented by Norman Allen. He has invented a car propelled by a spring for a short distance route, and for long distances he uses a bicycle engine for motive power. The trains are run on an elevated double track, with only a single rail to each train. Between the two tracks is an upright frame surmounted by a double-grooved rail, on either side of which runs a wheel attached to the upper side of the car. The car wheels are mounted on swivels which enables them to round almost any curve. The propelling springs are placed in the centre of the car and are calculated with one winding to drive it from one station to the next. Each station will have a small stationary engine, which by cable attachment, will start the train and propel it for about 20 feet, during which time the springs will be rewound by a pinion attachment, working in the teeth of a beam arm at the side of the track. The superstructure for the road is to be erected on a single line of posts made of 4-inch tubing. Among the benefits claimed for the invention are light running expenses, lack of noise and jar, ability to surmount heavy grades without additional weight on the tracks, and to round curves at a high rate of speed without increase of friction. The tracks for long distance roads are to be constructed the same as for the city roads. The bicycle engine will weigh less than ten tons, and is to be constructed with a 15-foot driving wheel running between the two boilers. The driving shaft works over the boilers. With a bicycle engine on an Allen track the inventor expects to cover the ground at the rate of two miles a minute. The uprights for the structure are supplied with a device which enables them to be easily raised or lowered in case their foundations settle.—*New York Times*.

An interesting interview with George Francis Train, on his efforts to introduce tramways in Europe, and kindred topics is unavoidably crowded out. It will appear in our next.

# 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. We hope to receive returns from all those roads unreported, in season for our next issue and prefer to publish the list as it stands to completing it from the present inaccurate lists and directories. Will those roads unrepresented kindly fill out the blanks sent them and mail to us without delay so that they may be properly represented in the July STREET RAILWAY JOURNAL.]

ABBREVIATIONS—m, miles; g, gauge; lb r, pounds rail to the yard; c, cars; h, horses; mu, mules.

Officer's address are the same as the road 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. Way, Supt. M. C. Foster.

The Albany Ry. 9.3-5 m, 4-8 g, 33-47 lb r, 42 c, 191 h. Pres. and Treas. John W. McNamara, Sec. Jas. H. Manning, Supt. Alfred Egerton.

**ALLENTOWN, PA.**—Allentown Pass. R.R. Co. 3½ m, 6 c, 22 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Ballett, 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, 38 h. Pres. John P. Levan, Sec. & Treas. L. B. Reifsnieder, 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.

**ANNISTON, ALA.**

**ASHTABULA, O.**—Ashtabula City Ry. Co. 4 m, 4-8½ g, 49 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.

**ATLANTA, GA.**—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. & Purch. Agt. Jno. S. Brumhead.

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. DeGlive, Sec. & Treas. John Stephens, Solicitor, A. Remharat.

Atlanta St. R.R. Co.

Metropolitan St. R.R. Co.

**ATLANTIC, N. J.**—Atlantic City Ry. Co.

**AUBURN, N. Y.**—Auburn & Owaseo Lake R.R. Co. 1½ m, 4-8½ g, 23-30 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. Ketricck.

Baltimore City Pass. Ry. Co. 40 m, 5-4½ g, 46 lb r, 15 c, 1000 h. Pres. Oden Bowie, Treas. John Bolgian, Sec. S. L. Bridge.

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

Baltimore & Catonsville Ry. Co.

Baltimore & Halls Spring R.R. Co.

Baltimore & Pimlico & Pikesville R.R. Co.

Baltimore Union Pass. Ry. Co.

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. Houze, 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, 8c, 18 h, 3 mu. Pres. & Owner, A. J. White, V. Pres. H. H. Brown, Sec. Chas. Thomas, Supt. John A. White.

**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. 3½ m, (now building). Pres. M. L. Knight, Sec. & Treas. J. F. Merriman, Supt. of Construction, J. C. Whittle.

**BELLAIRE, O.**—Bellaire St. R.R. Co.

**BELLEVILLE, ILL.**—Citizen's Horse Ry. 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.

**BINGHAMPTON, 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.

Binghampton & 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).

Main, Court & Chenango St. R.R. 5 m, 4-8g, 40 lb r, 10 c, 25 h. Supt. & Lessee, N. L. Osborn.

Binghampton Central R.R. Co. 3½ m (2½ lald), 3 g, 28 lb r, 6 c (not in operation). Pres. Geo. L. Crandall, V. Pres. Nelson Stow, Sec. & Supt. Chas. O. Root, Treas. H. J. Kneeland.

**BIRMINGHAM, ALA.**—Birmingham St. Ry. Co. 3½ m, 4-8 g, 16 lb r, 4 c, 12 m. Pres. B. F. Roden, Sec. & Treas. J. H. Williams.

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

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

**BOONE, IOWA**—Boone & Boonsboro St. Ry. Co. 1½ m, 3 g, 20 lb r, 3 c, 10 h. Pres. L. W. Reynolds, Treas. T. B. Hodges, Sec. & Supt. A. B. Hodges.

**BOONSBORO, IOWA.**—Twin City & Des Moines River Motor St. Ry. Co.

**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.

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.

Lynn & Boston. 25½ m, 114 c, 514 h. Pres. A. F. Breed, Treas. & Sec. E. F. Oliver, Supt. E. C. Foster.

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 Brodey, 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, 14 c, 56 h. Pres. W. W. Cross, Treas. & Sec. Z. C. Keith, Supt. H. B. Rogers.

**BROOKLYN, N. Y.**—The Atlantic Avenue R. Co. of Brooklyn. 24½ m, 4-8 g, 60 lb r, 244 c, 882 h. Pres. William Richardson, Sec. W. J. Richardson, Treas. Newburg H. Frost.

Broadway R.R. Co. 10-1-10 m, 4-8½ g, 45-50-60 lb r, 166 c, 657 h. Pres. Edwin Beers, Sec. & Treas. Robert Sealey, Supt. Joshua Crandall.

Brooklyn Cross Town R.R. Co. 8 m, 4-8½ 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.

Rushwick R.R. Co. 20 m, 4-8½ 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.

The Brooklyn Brushwick & Queens County R.R. 6 m, 4-8½ 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, 4-8½ 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.

Coney Island and Brooklyn R.R. Co. 11.2-5 m, 45 lb r, 4-8½ g, 103 c, 316 h. Pres. James Jourdan, Sec. Ed. F. Drayton, Supt. William Farrell.

Brooklyn City & Newtown R.R. Co. 11 m, 4-8½ g, 45-60 lb r, 128 c, 419 h. Pres. Louis Fitzgerald, N. Y. City, Sec. & Treas. H. A. Schuz, Supt. H. W. Bush.

Coney Island, Sheepshead Bay & Ocean Avenue R.R. Co. Pres. A. A. McClemer, V. Pres. Daniel Mone, Sec. John McMahon, Sheepshead Bay, Treas. Horace Valkuliyh.

Grand St. & Newtown R.R. Co. 8½ m, 4-8½ g, 45-50 lb r, 67 c, 238 h. Pres. Martin Joost, Sec. & Treas. Wm. E. Horwill, Supt. Walter G. Howey.

Grand Str et, Prospect Park & Flatbush R.R. Co. 4½ m, 4-8½ g, 50 lb r, 75 c, 244 h. Pres. Louis Fitzgerald, 120 Broadway, N. Y. Sec. & Treas. Duncan B. Cannon, Supt. Jno. L. Heins.

The New Williamsburgh & Flatbush R. R. Co. 6½ m, 4-8½ g, 47-50 lb r, 74 c, 255 h. Pres. Geo. W. Van Allen, 54 Ann St. New York, Sec. W. B. Waitt, 34th St. & 9th Ave. New York, Treas. C. B. Cottrell, 8 Spruce St., N. Y. City, Supt. Chas. E. Harris, Nost- rum Ave. & Canal St. Brooklyn.

Prospect Park & Flatbush R.R. 1½ m, 4-8½ g, 34 lb r, 70 c, 260 h. Pres. Loftis Wood, Sec. & Treas. Sam'l Parkhill, Supt. Loftis Wood.

Calvary Cemetery, Greenpoint & Brooklyn Ry. Co. Crosstown Line, Hamilton Ferry to Bridge.

Prospect Park & Coney Island R.R. Co. 4.7-10 m, 45-50 lb r, 4-8½ g, 69 c, 214 h. Pres. A. R. Culver, Treas. A. C. Washington, Sec. George H. Smith, Eng. Supt. R. Schermerhorn, Supt. Robert Attlesley.

Van Brunt St. & Erie Basin R.R. Co. 1½ m, 4-8½ g, 45 lb r, 7 c, 24 h. Pres. John Cunningham, Sec. & Treas. Edmund Terry.

Greenpoint & Lorimer St.

South Brooklyn Central R.R. Co. 7 m (4½ m lald), 4-8½ g, 60 lb r, 42 c, 192 h. Pres. Wm. Richardson, Sec. Wm. J. Richardson, Treas. N. H. Frost, Supt. James Luddy.

The Union Railway Co. of the City of Brooklyn (not in operation).

**BRUNSWICK, GA.**—Brunswick St. R.R. Co.

**BUFFALO, ILL.**—See Mechanicsburg, Ill.

**BUFFALO, N. Y.**—Buffalo St. R.R. Co. 17½ m, 4-8½ 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: 4-8½ 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.

**BURLINGTON, IA.**—Burlington City R.R. Co.

Union St. Ry. Co.

**CAIRO, ILL.**—Cairo St. R.R. Co.

**CAMBRIDGE, MASS.**—Cambridge R.R. Co. 43 m, 4-8½ 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, 2-8½ 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 & Marion St. Pass. Ry. Co.

**CHAMPAIGN, ILL.**—Champaign R.R. Co.

Urbana & Champaign St. R.R. Co. (See Urbana.)

**CHARLESTOWN, S. C.**—Charlestown City Ry. Co. 8½ m, 4-8½ 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.

**CHATTANOOGA, TENN.**—Chattanooga St. R. R. Co. 2½ m, 4-8½ 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. 5½ m, 5-2½ g, 12 c, 70 h. Pres. Richard Peters, Jr., Solicitor, Geo. B. Lindsay, Treas. Sam'l A. Dyer, Sec. E. M. Cornell.

**CHICAGO, ILL.**—Chicago City Ry. Co. 87 m, 4-8½ 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, 4-8½ g, 40 lb r, 620 c, 3,425 h. Pres. J. R. Jones, Sec. George L. Webb, Supt. Jas. K. Lake.

North Chicago City Ry. Co. 35 m, 4-8½ g, 45 lb r, 316 c, 1,700 h. Pres. & Gen. Supt. V. C. Turner, V. Pres. Jacob Rehn, Sec. & Treas. Hiram Crawford, Supt. of Track & Construction, Augustine W. Wright, Asst. Supt. Fred L. Thredy, Supt. Horse Dept. Robt. Atkins, Purch. Agt. John W. Koach, Master Mechanic, J. Miller.

**CHILLICOTHE, O.**—Chillicothe St. R.R. Co. 1½ m, 3 g, 16 lb r, 7 c, 10 h. Pres. E. P. Safford, Sec. A. E. Wenis, Treas. William Poianel, Supt. Ewel McMartin.

**CINCINNATI, O.**—Cincinnati Inclined Plane Ry. Co. 3 m, 5-2½ g, 43 lb r, 24 c, 150 h. Pres. Geo. A. Smith, Sec. & Supt. James M. Doherty, Treas. Jos. S. Hill.

Columbia & Cincinnati St. R.R. Co. 3½ m, 3 g, 35 lb r, 3 c, 6 dummy v. Pres. C. H. Kilgour, V. Pres. John Kilgour, Treas. B. F. Branman, Sec. A. H. Meler, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O.

Cincinnati St. Ry. Co. 98 m, 5-2½ g, 43 lb r, 254 c, 1,815 h. Pres. John Kilgour, Sec. & Aud. James A. Collins, Treas. R. A. Dunlap, Con. Eng. F. R. Wenzenecker, Supt. John Harris.

Cincinnati & Mount Auburn R.R. Co.

Mt. Adams & Eden Park Inclined R.R. Co. 3½ m, 5-2½ g, 42 lb r, 40 c, 320 h. Pres. & Treas. J. P. Kerper, Sec. J. R. Murdoch, Supt. Chas. Whitlin.

So. Covington & Cincinnati. (See Covington, Ky.) South side St. Ry. Co.

St. Clair Street Ry. Co.

West Side R.R. Co.

**CLEVELAND, O.**—The Brooklyn St. R.R. Co. 8½ m, 4-8½ g, 52 lb r, 66 c, 375 h. Pres. Tom. L. Johnson, V. Pres. A. J. Moxham, Sec. J. B. Hoegen, Treas. John McConnell, Supt. A. L. Johnson.

Broadway & Newburg St. R.R. Co. 6 m, 4-8½ g, 10 c, 160 h. Pres. & Supt. Joseph Stanley, V. Pres. Sam'l Andrews, Sec. & Treas. E. Fowler.

The East Cleveland R.R. Co. 20 m, 4-8½ 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.

Superior St. R.R. Co. 15 m, 4-8 1/2 g, 45 lb r, 46 c, 225 h. Pres. Frank De H. Robison, V. Pres. John Koch, Sec. Treas. & Supt. M. S. Robison, Jr.

Woodland Avenue & West Side St. R.R. Co. 17 m, 4-8 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.

CLINTON, IOWA—Lyons & Clinton Horse R.R. Co. (See Lyons).

COLUMBUS, GA.—Columbus St. R.R. Co. 3 m, 4-8 1/2 g, 16 lb r, 6 c, 25 h. Pres. Cliff B. Grimes, Sec. L. G. Schnessler, Treas. N. N. Curtis, Supt. J. A. Gaborgh.

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.

Greenwood & Greenlawn St. R.R. Co. 4 1/2 m, 3-6 g, 24 lb r, 9 c, 25 c. Pres. A. D. Rodgers, V. Pres. B. S. Brown, Sec. R. S. Rokey, Treas. S. S. Rickley, Supt. Jonas Wilcox.

CONCORD, N. H.—Concord Horse R.R. Co.

CORTLAND, N. Y.—Cortland & Homer Horse Ry. Co. 4 m (2 1/2 laid), 4-8 1/2 g, 25-30 lb r. Pres. Chas. H. Garrison, Troy, N. Y. Sec. J. M. Milne, Treas. S. E. Welch, Supt. S. E. Welch. (Leased to D. N. Miller).

COUNCIL BLUFFS, IA.—Council Bluffs St. R.R.

COVINGTON, KY.—So. Covington & Cincinnati St. Ry. Co. 17 1/2 m, 5-2 1/2 g, 43 lb r, 46 c, 296 h. Pres. E. F. Abbott, Sec. S. C. Buntun, Treas. G. M. Abbott.

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

Commerce & 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 1/2 m, 4-8 1/2 g, 20 lb r, 10 c, 30 h. Pres. James Grant, Supt. R. A. McGughin.

Davenport City Ry. Co. Brady St. Ry. Co.

DAYTON, KY.—Newport & Dayton St. Ry. Co. 2 m, 5-2 1/2 g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.

DAYTON, O.—Dayton St. R.R. Co. 3 1/2 m, 4-8 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 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 1/2 m, 4-8 1/2 g, 34-38 lb r, 5 c, 30 h. Pres. Geo. M. Shaw, Sec. & Treas. Eugene Winchet, Supt. N. Routzahn.

DECATUR, ILL.—Decatur Horse Ry. Co. Citizens' Street R.R. Co.

DEERING, ME.—See Portland.

DENNISON, TEX.—Dennison St. Ry. Co.

DENVER, COL.—Denver City Ry. Co. 16 m, 3-6 g, 16 lb r, 50 c, 250 h. Pres. Geo. H. Holt, 10 Wall St. New York City, Sec. G. D. Lhuillier, 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 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.

Grand River St. Ry. Co. 2 1/2 m, 4-8 1/2 g, 43 lb r, 13 c, 110 h. Pres. & Treas. Jos. Dailey, Sec. J. W. Dailey, Supt. C. M. Dailey.

Detroit City Ry. Co.

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. Wiggins, Harrison Haley, Frank Williams, Cyrus Littlefield, Treas. Cyrus Littlefield.

DUBUQUE, IA.—Dubuque St. R.R. 5 m, 4-8 1/2 g, 21 c, 45 h. Pres. J. A. Rhonberg, Sec. & Treas. B. E. Linehan, Supt. J. J. Linehan.

DULUTH, MINN.—Duluth St. Ry. Co. 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, 4-8 1/2 g, 30 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 1/2 m, 5-2 1/2 g, 45 lb r, 4 c, 20 h. Pres. H. A. Gage, Sec. & Treas. H. W. Cooley, Supt. Ellsha Burwell, So. Easton.

The West End Passenger Ry. Co.

EAU CLAIRE, WIS.—Eau Claire City Ry. Co.

ELGIN, ILL.—Elgin City Ry. Co.

ELIZABETH, N. J.—Elizabeth & Newark Horse R.R. Co. 14 m, 5-2 1/2 g, 4-10 1/2 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. 9-2-5 m, 4-8 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. Kershner, Supt. Henry C. Silsbee.

EL PASO, TEX.—El Paso St. Ry. Co.

EMPORIA, KAN.—Emporia City Ry. Co. 3 1/2 m, 5 g, 20 lb r, 6 c, 23 m. Pres. Van. R. Holmes, Treas. A. F. Crowe, Sec. & Man. J. D. Holden.

ENTERPRISE, MISS.—Enterprise St. Ry. Co. 1 1/2 m, 3-6 g, 24 lb r, 2 c, 6 h. Pres. John Kampe, V. Pres. E. B. Gaston, Sec. & Treas. Jno. Gaston.

ERIE, PA.—Erie City Passenger Ry. Co. 4 m, 13 c, 46 h. Pres. Wm. W. Reid, Treas. J. C. Spencer, Sec. Titus Berst, Supt. Jacob Berst.

EUREKA SPRINGS, ARK.—Eureka Springs City Ry. Co.

EVANSVILLE, IND.—Evansville St. Ry. Co. 12 m, 4-8 g, 28 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 1/2 g, 40-46-47 lb r, 40 c, 160 h. Pres. Wm. H. Jennings, 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 Stradden, V. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph.

FORT SMITH, ARK.—Fort Smith St. Ry. Co. 2 m, 3-6 g, 16-28 lb r, 5 c, 16 h. Pres. Sam'l M. Loud, Sec. & Treas. Geo. T. Sparks.

FORT WAYNE, IND.—Citizens' St. R.R. Co.

FORT WORTH, TEX.—Fort Worth St. Ry. Co. 7 1/2 m, 4 g, 25-38 lb r, 16 c, 73 m. Pres. K. M. Vanzandt, Treas. W. A. Hoffman, Acting Sec. & Gen. Man. S. Mims.

FRANKFORT, N. Y.—Frankfort & Ilion Street Ry. Co. 2 1/2 m, 5 g, 4 c. Pres. A. C. McGowan, Frankfort, Sec. D. Lewis, Ilion, Treas. P. Remington, Ilion, Supt. Fredk. Gates, Frankfort.

FREDONIA, N. Y.—Dunkirk & Fredonia R.R. Co. 3 1/2 m, 4-10 g, 25 lb r, 5 c, 8 h. Pres. Wm. M. McKInstry, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.

GAINESVILLE, FLA.—Gainesville St. Ry.

GAINESVILLE, TEX.—Gainesville St. Ry. Co.

GALESBURG, ILL.—Galesburg Horse R.R. Co.

GALVESTON, TEX.—Galveston City R.R. Co.

GLOUCESTER, MASS.—Gloucester City R.R.

GRAND RAPIDS, MICH.—Street Ry. Co. of Grand Rapids, Mich. 13 m, 4-8 1/2 g, 30-35 lb r, 21 c, 175 h. Pres. C. A. Otis, Cleveland, O. V. Pres. L. H. Withey, Grand Rapids, Treas. M. S. Crosby, Grand Rapids, Sec. J. M. Weston, Grand Rapids, Asst. Sec. Jas. Pickands, Cleveland, O.

GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8 1/2 g, 23 lb r, 3 c, 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas. Budolph 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, 28 lb r, 11 c, 12 h. Pres. James F. Griffin, Sec. O. V. Parrish, Treas. H. L. Morey, Supt. J. C. Bigelow.

HANNIBAL, MO.—Hannibal St. Ry. Co. 2 m, 4-8 1/2 g, 16-36 lb r, 6 c, 22 h. Pres. & Supt. M. Doyle, Sec. & Treas. James O. Hearn.

HARRISBURGH, PA.—Harrisburgh City Passenger Ry. Co. 2 1/2 m, 5 g, 2 1/2 g, 42-47 lb r, 15 c, 36 h. Pres. H. A. Kelker, V. Pres. Daniel Eply, Sec. John T. Ensminger, Treas. R. F. Kelker, Supt. S. B. Reed.

HARTFORD, CONN.—Hartford & Wethersfield Horse R.R. Co.

HAVERHILL, MASS.—Haverhill & Groveland St. Ry. Co. 4 1/2 m, 4-8 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. Ansmen, Sec. Joab Small, Treas. H. D. Alexander.

HOBOKEN, N. J.—North Hudson County Ry. Co. 16 1/2 m, 4-7 g, 50-60 lb r, 116 c, 630 h. Pres. John H. Bonn, Sec. F. J. Mallory, Treas. Fredk. Mickel, Union, Supt. Nicholas Goetz, Union.

HOLYOKE, MASS.—Holyoke St. Ry. Co. 2 m, 4-8 1/2 g, 35 lb r, 8 c, 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.

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. 35 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. Woodridge, Louisville, Ky.

IRVINGTON, N. J.—Newark & Irvington R.R. Co.

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. Backlstaet, Sec. & Treas. F. W. Backlstaet.

JACKSONVILLE, ILL.—Jacksonville Ry. Co.

JAMAICA, N. Y.—Jamaica & Brooklyn R.R. Co. 9 m, 4-8 1/2 g, 45-57 lb r, 24 c, 31 h. Pres. Aaron A. Degrauw, Sec. Martin J. Durea, Treas. Morris Fosl-dick, 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. Fancher, Sec. & Treas. I. M. Law.

JOHNSTOWN, PA.—Johnstown Pass. R.R. Co. 6 1/2 m, 5-3 g, 41-43 lb r, 13 c, 56 h. Pres. James McMillen, Sec. B. L. Yeagley, Treas. W. H. Rosensleet, Jr.

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. P. 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.

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

Jackson County Horse R. R. Co.

Kansas City & Rosedale St. Ry. Co.

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

KEOKUK, IA.—Keokuk St. Ry. Co. 4 m, 4-8 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. 3 1/2 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 Tourtelotte, Treas. Fred Tillman, Gen. Supt. Joseph Tuteur, Supt. Geo. F. Smith.

La Crosse St. Ry. Co.

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 St. Ry. Co.

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. 3 1/2 m, 4-1 g, 38 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, 48 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.

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. K. Diver.

Hot Springs St. Ry. Co.

LOGANSPOUT, IND.—2 m, 4 g, 28 lb r, 6 c, 29 mu. Pres. Frank H. Joselyn, Sec. M. Jacques, Supt. Wm. P. Jacques. 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. Flock, Supt. Henry Thos. Smith.

LONG ISLAND CITY, N. Y.—Steinway & Hunter's Point R.R. Co. 26 1/2 m, 4-8 1/2 g, 47 lb r, 60 c, 150 h. Pres. Wm. Steinway, Steinway Hall, N. Y. City. V. Pres. Henry A. Cassebeer, Jr., Steinway, P. O., Long Island City, N. Y. Sec. & Treas. Chas. F. Traubar, Steinway Hall, N. Y. City.

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.

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

LONGVIEW, TEX.—Longview & Junction St. Ry. 1/2 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. Los Angeles & Aliso Ave. St. R.R. Co. 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. Main St. & Agricultural Park R.R. Central R.R. Co. Sixth & San Fernando St. R.R. Co.

**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. Louisville City Ry. Co. Crescent Hill Ry. Co.

**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.**—

**MADISON, IND.**—Madison St. Ry. Co. 2 1/2 m, 4 g, 15 lb r, 7 c, 8 h, 10 m. Pres. Jacob Wendle, V. Pres. Peter F. Robenifus, 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, Sec. Jas. R. Zearing, Treas. Lucius Clark.

**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.

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

**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.

**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 Pressner, Treas. Ferdinand Knehn, Sec. Wm. Damkoehler, Supt. Henry 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.

**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, 36-70 lb r, 68 c, 240 h. Pres. John Maguire, Sec. I. Strauss, 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.

**MOHAWK, N. Y.**—Mohawk & Hifton 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. J. Alexander, Treas. R. M. Devendorff, Supt. O. W. Bronson.

**MOLINE, ILL.**—Fifteenth Street River R.R. Co. Moline & Rock Island St. Ry. Co. — m, — g, — lb r, — c, — h. Pres. J. Hamilton, Sec. I. M. Butord, Treas. C. Lyons, Supt. Wm. Gambie. Moline Centre St. Ry. Co. — m, — g, — lb r, — c, — h. Pres. S. W. Wheelock, Sec. Chas. Hemlingway.

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

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

**MUSKOGON, MICH.**—Muskegon Ry. Co. 4 1/2 m, 3-6 g, 20 lb r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V. Pres. Chas. Merriam, Boston, Mass. Sec. Thos. Munroe, Treas. G. R. Sherman, Supt. C. H. Newell.

**NASHUA, N.H.**—Nashua St. Ry. Co.

**NASHVILLE, TENN.**—Nashville & Edgefield R.R. Co. Fotherland 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. John C. Bramford, Sec. Percy Kennard, Supt. Jno. T. Voss. South Nashville St. R.R. Co. 4 1/2 m, 5 g, 16-20 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec. Treas. & Supt. C. L. Fuller. McGavock & Mt. Vernon Horse R.R. Co. Nashville D. & N. St. R.R. Co.

**NEVADA, MO.**—Nevada Street Ry. Co.

**NEW ALBANY, IND.**—New Albany St. Ry. Co. 6 m, 4 1/2 g, 25 lb r, 15 c, 50 h. Pres. Geo. T. Vance, Sec. G. Vance, Treas. Letitia V. Vredenburgh, 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., (not in operation.) Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith.

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

**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. 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. Watsons, Sec. George D. Watson, Treas. Eli Whitney, Jr. 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.

**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. DeGrange. St. Charles St. R.R. Co. 15 m, 5-2 1/2 g, 35 lb r, 60 c, 366 m. Pres. & Supt. Alden McLellan, Sec. Vincent Riviere. Crescent City R.R. Co. 26 m, 5-2 1/2 g, 35-45 lb r, 90 c, 400 h. 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. Benthuysen, Sec. Walter F. Crouch, Supt. C. V. Halle. New Orleans City & Lake R.R. Co. 64 m, 5-2 1/2 g, 46-40 lb r, 180 c, 39 coaches, dummy engine, 1050 mu. Pres. J. A. Walker, Sec. W. E. Leverich, Supt. F. Wintz. New Orleans St. R.R. Co.

**NEWPORT, KY.**—Newport St. R.R. Co.

**NEW YORK, N.Y.**—Ninth 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 Affleck, Supt. Herman B. Wilson. 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. Sixth Ave. R.R. Co. 4 m, 4-8 1/2 g, 60 lb r, 127 c, 1296 h. South Ferry Ry. Co. 1/2 m, 4-8 g, 60 lb r, 13 c, 41 h. Pres. Henry Hart, Sec. Wm. N. Cohen, Treas. Albert J. Elias, Supt. Chas. H. Weeks. 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. New York City St. Ry. Co. 10 m, (not in operation) Pres. Loomis L. White, Sec. W. L. McCorkle, Treas. Wm. L. Skidmore. Christopher & Tenth St. R.R. Co. 5 m, 4-8 g, 45 lb r, 47 c, 290 h. Pres. Jacob Sharp, Treas. W. T. Hatch, Sec. & Supt. George W. Lynch. 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 Affleck, Supt. H. B. Wilson. Harlem Bridge, Morrisania & Fordham Ry. 4 1/2 m, 4-8 1/2 g, 45-60 lb r, 65 c, 233 h. Pres. Henry Sprafey, V. Pres. Richard M. Hoe, Sec. & Treas. Wm. Caldwell. 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. 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 B. Hasbrook. 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. New York & Harlem R.R. Co. 7 m, 4-8 1/2 g, 56-75 lb r, 122 c, 1,321 h. Pres. W. H. Vanderblit, V. Pres. & Sec. Cornelius Vanderblit, Treas. Ed. V. W. Rosstter, Supt. Alfred Skitt. Broadway & Seventh Ave. R.R. Co. 6 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. 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. Forty-Second Street & Grand Street Ferry R.R. Co. 5 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. Dry Dock, East Broadway & Battery R.R. Co. 11 1/2 m, 4-8 1/2 g, 60 lb r, 187 c, 1,132 h. Pres. William White, Auditor E. T. Landon, Sec. & Treas. Richard Kelly, Supt. Fred F. White. Offices 605, Grand st.

**NIAGARA FALLS.**—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 Chich, Sec. W. J. Mackay, Treas. A. Schoellkopf.

**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, Supt. James W. Hyatt.

**NORWICH, CONN.**—Norwich Horse R.R. Co.

**OAKLAND, CAL.**—Alameda, Oakland & Piedmont R.R. Berkley Villa R.R. Broadway & Piedmont St. R.R. Co.

Fourteenth St. R.R. Co. 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. Shurtleff, Ogden City, V. P. & Supt. O. P. Arnold, Salt Lake City, Sect. & Treas. H. S. Young, Ogden city.

**OLCAN, N.Y.**—Olcant 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.

**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. P. L. Thompson.

**OSWEGO, N.Y.**—Oswego St. Ry. Co. 2 m, 4-8 1/2 g, — lb r, 3 c, — h. Pres. Jas. T. Johnson, V. Pres. R. J. Oilphant, Sec. Harris L. Hart, Treas. Robt. G. Post. (Not in operation yet.)

**OTTAWA, ONT.**—Ottawa City Passenger Ry. Co. 3 m, 4-8 1/2 g, 31 lb r, 1 c, 40 h. Pres. Thomas C. Kecker, V. Pres. R. Blackburn, Sec. James D. Tracer.

**OTTUMUA, IA.**—Ottumua St. R.R. Co.

**PADUCAH, KY.**—Park R.R. Co.

**PARIS, TEXAS.**—Paris St. Ry. Co.

**PATERSON, N.J.**—Paterson & Passaic R.R. Co. Paterson City R.R. Co.

**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, 13 h. Pres. H. R. Woodward, Sec. M. Pfeiffer, Treas. H. N. Wheeler, Supt. John Strong. Fort Clark Horse Ry. Co. 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 Beadle, 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 Mantau & Fairmont Pass. R.R. Co. 20 m, 5-2 g, 43 lb r, 50 c, 480 h. Pres. Charles F. Laferity, Sec. & Treas. W. C. Foster. Lombard & South St. Pass. Ry. Co. — m, 5-2 g, 43 lb r, 51 c, 278 h. Pres. John B. Parsons, Sec. & Treas. Francis Heltzerst, Supt. Jno. M. Gaughen. Peoples' Pass. Ry. Co. 41 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. Dessoat, 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 & Gray's Ferry Pass. R.R. Co. 10 1-3 m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C. Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lovett. Seventeenth & Nineteenth St. Pass. Ry. Co. 7 1/2 m. Pres. Matthew S. Quay, Sec. & Treas. John B. Peddle. (Leased to Philada. Traction Co.) 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. B. Widener & W. L. Elkins, Sec. & Treas. D. W. Dickinson. 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. Thirteenth & Fifteenth St. 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. Peddle, 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.) Lehigh Ave. Pass. Co. Pres. John Lamon, Sec. Chas. A. Porter, Treas. John L. Hill. (Track not laid.)

**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. Cluley, Sec. F. L. Stephenson, Treas. E. R. Jones, Supt. R. G. He ron. 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. Pittsburg, Allegheny & Manchester Pass. Ry. Co. 5 m, 5-2 1/2 g, 46 lb r, 40 c, 275 h. Pres. Chas. A. Well, Sec. & Treas. Chas. Seibert, Supt. James C. Cotton. Pittsburg & Birmingham Pass. R.R. Co. 3 1/2 m, 5-2 1/2 g, 48 lb r, 20 c, 170 h. Pres. W. W. Patrick, Sec. D. F. Agnew, Treas. John G. Holmes. Pittsburg, 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. Pittsburg & West End Pass. Ry. Co. 2 1/2 m, 13 c, 68 h. Pres. John Reilly, Sec. & Treas. Thomas S. Biegelow, Supt. William J. Burns. Second Avenue Pass. Ry. Co.

Transverse Pass. Ry. Co.  $6\frac{1}{2}$  m, 5-2 g, 52 lb r, 39 c, 243 h. Pres. C. L. Magee, V. Pres. C. F. Klopfer, Sec. & Treas. Wm. R. Ford, Supt. Miller Elliot.

South Side Pass. R.R. Co.  $2\frac{1}{2}$  m, 13 c, 82 h. Pres. D. Z. Brickell, Sec. & Treas. W. T. Wallace, Supt. W. M. Rosborough.

Pittsburg Union Pass. R.R. Co. 5 m, 5-2 $\frac{1}{2}$  g, 45 lb r, 29 c, 170 h. Pres. James H. Sewell, Treas. J. J. McDonnell, Sec. Chas. Seibert, Pittsburg, Cash. Charles W. Goodnow, Supt. Joe S. Murray.

Pittsburg & Wilkinsburg St. Ry. Co.

Peoples' Park Pass. Ry. Co. 2 m, 5-2 $\frac{1}{2}$  g, — lb r, 10 c, 75 h. Pres. Wm. McCreery, Treas. James Boyle, Supt. Wm. J. Crozier, Allegheny City.

Beaver Falls & New Brighton Ry. Co.

**PITTSBURGH, PA.**—Pittston St. R.R. Co.  $1\frac{1}{2}$  m, 3 c, 5 h. Pres. Thomas Griffith, Treas. M. W. Morris, Sec. William Allen.

**PLATTSMOUTH, NEB.**—Plattsmouth St. R.R. Co.

**PORT HURON, MICH.**—Port Huron St. Ry. Co.

**PORTLAND, ME.**—Ocean St. R.R. Co.

Portland R.R. Co.  $7\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  g, 30-35-45 lb r, 34 c, 154 h. Pres. H. J. Libby, Treas. & Gen. Man. E. A. Newman, Supt. Geo. W. Soule.

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

**POTTSVILLE, PA.**—Peoples' Ry. Co.  $9\frac{1}{2}$  m, 16 c, 56 h.

**POUGHKEEPSIE, N. Y.**—City R.R. of Poughkeepsie. 3 m, 4-8 $\frac{1}{2}$  g, 35 lb r, 11 c, 38 h. Pres. Aaron Innis, V. Pres. G. B. Adrance, Sec. A. B. Smith, Treas. Hudson Taylor, Supt. C. M. Davis.

**PROVIDENCE, R. I.**—Union R.R. Co. 50 m, 4-8 $\frac{1}{2}$  g, 24-54 lb r, 240 c, 1,200 h. Pres. Jessie Metcalf, V. Pres. & Gen. Man. D. F. Longstreet, Sec. and Treas. C. A. Babcock, Aud. B. A. Jackson.

**QUEBEC, CAN.**—Quebec St. Ry. Co. 3 m: 4-8 $\frac{1}{2}$  g, 45 lb r, 9 c, 40 h. Pres. Chas. St. Michel, Quebec, V. Pres. G. Kenfrew, 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.**—Belie City St. Ry. Co.

**READING, PA.**—Reading City Pass. Ry. Co. 2-1-5 m, 5-2 $\frac{1}{2}$  g, 45 lb r: 19 c, 44 h. Pres. B. F. Owen, V. Pres. Jas. E. Douglass, Sec. & Treas. H. A. Muhlenberg, Supt. J. A. Riggs.

Perkiomen Ave. Pass. Co. 2-1-5 m, 5-2 $\frac{1}{2}$  g, 45 lb r, 14 c, 36 h. Pres. Chas. Brenner, Sec. & Treas. Isaac Hester, Supt. John B. Houpp.

**RED OAK, IA.**—Red Oak St. R.R. Co.  $1\frac{1}{2}$  m, 4-2 $\frac{1}{2}$  g, flat r, 2 c, 2 h, 2 mu. Pres. J. W. Judkins, V. Pres. Geo. West, Sec. F. M. Byricket, Treas. & Supt. F. O. Judkins.

**RICHMOND, IND.**—Richmond City Ry. Co.

**RICHMOND, ILL.**—Richmond St. R.R. Co.

**RICHMOND, VA.**—Richmond City Ry. Co. 7 m, 4-8 $\frac{1}{2}$  g, 60-40 lb r, 40 c, 180 h. Pres. J. H. Schooler, Sec. & Treas. F. D. Melen, Man. C. M. Bacton, Supt. Charles Sleders.

**ROCHESTER, N. Y.**—Rochester City & Brighton R.R. Co. 22 m, 4-8 $\frac{1}{2}$  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 $\frac{1}{2}$  g, 30 lb r, 13 c, 52 h, 16 mu. Pres. Anthony Haines, Sec. H. H. Robison, Treas. N. E. Lymon.

**ROCK ISLAND, ILL.**—Rock Island & Milan St. Ry. Co. 7 m, 4-8 $\frac{1}{2}$  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 $\frac{1}{2}$  g, 40 lb r, 10 c, 40 h. Pres. James G. Lindley, V. Pres. S. D. Coykendoll, Sec. & Treas. John C. Romeye, Supt. Wm. H. DeGarmo.

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

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

**SALEM, MASS.**—Salem & Danvers St. Ry. Co. 6 m, 4-8 $\frac{1}{2}$  g, 35-47 lb r, 15 c, 45 h. Pres. Benj. W. Russell, Sec. G. A. Vickery, Treas. Geo. W. Williams, Supt. W. B. Ferguson, Asst. Supt. David N. Cook.

Naumkeag St. Ry. Co. — m, 4-8 $\frac{1}{2}$  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 $\frac{1}{2}$  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. Chas. Road.

**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. Roseberg, 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, 12 dummy cars. Pres. Joseph Britton, V. Pres. James Moffit, Treas. Henry L. Davis, Sec. Chas. P. Campbell, Supt. Joseph Britton.

The City R.R. Co.  $5\frac{1}{2}$  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 Woodward.

Ceary St. Park & Ocean R.R. Co.

Market St. Cable Ry. Co. 10-9-10 m, 4-8 $\frac{1}{2}$  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.  $8\frac{1}{2}$  m, 5 g, 35-45 lb r, 50 c, 364 h. Pres. Gustav Sutro, V. Pres. D. Callaghan, Sec. G. Rugg, Supt. M. M. Martin.

Portrero & Bay View R.R. Co.  $1\frac{1}{2}$  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.  $5\frac{1}{2}$  m, 4-11 g, 35-45 lb r, 30 c, 125 h. Pres. R. 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.

**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.

Peoples' R.R. Co.

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

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

**SAVANNAH, GA.**—City & Suburban Ry. Co. 18 $\frac{1}{2}$  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.**—Peoples' St. Ry. Co.  $9\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  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.

**SEDALLA, MO.**—Sedalla St. Ry. Co.  $2\frac{1}{2}$  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.  $2\frac{1}{2}$  m, 18 lb r, 5 c, 8 h. Pres. E. Gillman, Sec. & Treas. J. H. Hollis, Supt. W. Bohila.

**SHERMAN, TEX.**—Sherman City R.R. Co.

**SHREVEPORT, LA.**—Shreveport City R.R. Co.  $1\frac{1}{2}$  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.

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

**SPRINGFIELD, ILL.**—Citizens' St. R.R. Co.  $9\frac{1}{2}$  m, 3-6 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. 4-8 $\frac{1}{2}$  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 Peoples' Ry. Co. of Springfield, Mo.  $3\frac{1}{2}$  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 St. R.R. Co.

**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. CATHARINES, ONT.**—St. Catharines, Merlinton & Thorold St. Ry. Co.  $5\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  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; 4-8 $\frac{1}{2}$  g, 28 lb r, 14 c, 52 mu. Pres. Richard E. Turner, Sec. & Treas. Arthur Kirkpatrick, Supt. John F. Merlam.

Frederick Ave. Ry. Co.

St. Joseph & Lake St. R.R. Co.

Union Ry. Co.

**ST. LOUIS, MO.**—Baden & St. Louis R.R. Co.  $3\frac{1}{2}$  m, 4-10 g, — lb r, 7 c, 21 h. Pres. George S. Case, V. Pres. William Z. Colman, Supt. J. H. Archer.

Benton & Bellefontaine Ry. Co.  $7\frac{1}{2}$  m, 4, 10, 45 lb r, 29 c, 200 h. Pres. J. G. Chapman, Sec. Robert McCulloch.

Cass Avenue & Fair Grounds Ry. Co. 8 m, 4-10 g, 38 lb r, 37 c, 293 h. Pres. W. R. Allen, V. Pres. Geo. W. Allen, Sec. Treas. & Supt. G. G. Gibson, Cashier, O. H. Williams.

Springfield Ry. Co. 2 m, 4-8 $\frac{1}{2}$  g, 25-40 lb r, 7 c, 40 h. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hobart, Springfield, Supt. J. A. Stoughton, No. Springfield, Asst. Supt. Frank B. Smith, No. Springfield.

Northern Central,

Southern Ry. Co. 7-4-5 m, 4-10 g, 35-52 lb r, 47 c, 250 h. Pres. E. R. Coleman, Man. W. L. Johnson.

Union R.R. Co.

Union Depot R.R. Co.

Tower Grove & Lafette R.R.

St. Louis R.R. Co.

South Market St. R.R.

Peoples' R.R.

Mound City R.R. Co.

Missouri R.R. Co.

Lindell Ry. Co.  $13\frac{1}{2}$  m, — g, — r, 65 c, 475 h. Pres. John H. Maqon, V. Pres. John H. Lightner, Sec. & Treas. Geo. W. Baumhoff, Supt. Jos. C. Llewellyn.

Jefferson Ave. Ry. Co.

Citizen's Ry. Co.

**ST. PAUL, MINN.**—Wabash St. Ry. Co.

St. Paul City Ry. Co. 25 m, 4-8 $\frac{1}{2}$  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.

**STERLING, ILL.**—Sterling St. Ry. Co.

**STILLWATER, N. Y.**—Stillwater & Mechanicsville St. Ry. Co.  $4\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  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.

**STROUDSBURGH, PA.**—Stroudsburg Passenger R.R. Co. 1-4-5 m, 4-8 $\frac{1}{2}$  g, 28-30 lb r, 3 c, 9 h. Pres. & Treas. J. Lantz, Sec. Jacob Houser.

**SYRACUSE, N. Y.**—Syracuse & Onondagua R.R. Co. 2-3-5 m, 4-8 g, 28-47 lb r, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas. Lyman C. Smith, Supt. Henry Thompson.

Syracuse & Geddes Ry. Co. 2 m, 4-8 $\frac{1}{2}$  g, 35-45 lb r, 10 c, 32 h. Pres. R. Nelson Gere, Sec. & Treas. Rasselias A. Bonta, Supt. Wm. J. Hart.

New Brighton & Onondagua Valley R.R. Co.  $1\frac{1}{2}$  m, 4-8 g, 16-35 lb r, 2 c, 4 h, 1 dummy. Pres. Matthias Britton, Sec. T. W. Meacham, Treas. J. H. Anderson, Supt. J. H. Anderson.

Genesee & Water St. R.R. Co. 4 m, 4-8 $\frac{1}{2}$  g, 18-30 lb r, 10 c, 35 h. Pres. Robt. G. Wynkoop, Sec. & Treas. Geo. J. Gardner, Supt. W. J. Hart.

Fourth Ward R.R. Co.

Fifth Ward R.R. Co.  $2\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  g, 35-56 lb r, 8 c, 30 h. Pres. P. B. Brayton, Sec. & Treas. O. C. Potter, Supt. Hugh Furnell.

Central City Ry. Co.  $2\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  g, 40 lb r, 12 c, 37 h. Pres. George N. Kennedy, V. Pres. Daniel Pratt, Sec. & Treas. James Barnes, Supt. George Crampton.

**TAUNTON, MASS.**—Taunton St. Ry. Co.  $4\frac{1}{2}$  m, 4-8 g, 14 c, 44 h.

**TERRE HAUTE, IND.**—Terre Haute St. Ry. Co.  $4\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  g, 28 lb r, 16 c, 48 h. Pres. T. C. Buntin, V. Pres. Joseph 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, 183 h. Pres. John E. Bailey, Sec. A. E. Lang.

Toledo Street R.R. Co.

Monroe Street R.R.

Metropolitan St. Ry. Co.

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 Pazneer, Sec. Chas. F. Parks, Supt. A. R. Seagrave.

Adams Street Ry. 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, 4-10 $\frac{1}{2}$  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.  $1\frac{1}{2}$  m, 5-2 g, 43-47 lb r, 10 c, 31 h. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, Jr. Supt. Thomas Sillorri.

City Ry. Co. 3 m, 5-2 g, 45 lb r, 15 c, 69 h. Pres. Adam Exlor, 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, 4-8 $\frac{1}{2}$  g, 25-30 lb r, 2 c, — h. Pres. C. H. Garrison, Troy, V. Pres. E. A. Fish, Cortland, N.Y., Treas. Jas. M. Allen, Cortland, Sec. S. E. Welch, Cortland.

Troy & Albia Street Ry. Co.  $3\frac{1}{2}$  m, 4 g, 35-45 lb r, 9 c, 41 h. Pres. Thos. A. Knickerbocker, Sec. & Treas. Theo. E. Haslehurst, Supt. W. R. Bean.

Troy & Lansingburgh R.R. Co.  $2\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  g, 47 lb r, 91 c, 466 h. Pres. William Kemp, V. Pres. Charles Clemishaw, Sec. & Treas. Joseph J. Hagen, Supt. Leander C. Brown.

**URBANA, ILL.**—Urbana R.R.

Urbana & Champaign St. Ry. Co. 2 m, 4-8 $\frac{1}{2}$  g, 33 lb r, 4 c, 20 h. Pres. Wm. Parks, Sec. & Treas. Frank G. Jacques, Supt. W. Parks.

**UTICA, N.Y.**—Utica, Clinton & Binghamton St. R.R.  $7\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  g, 43-56 lb r, 17 c, 82 h. Pres. Isaac Maynard, Sec. & Treas. Robt. S. Williams, Supt. Roger Rock.

The Utica & Mohawk R.R. Co.  $2\frac{1}{2}$  m, 4-8 $\frac{1}{2}$  g, 25-40 lb r, 9 c, 5 h. Pres. Chas. W. Hutchinsou, V. Pres. Nathan S. Haynes, Sec. Geo. M. Weaver, Treas. Joshua W. Church.

**VAITSBURGH, N.J.**—Newark, So. Orange, Ferry St. & Hamburg Place R.R. Co.

**VALEJO, CAL.**—Valejo St. Ry. Co.

**VICKSBURG, MISS.**—Vicksburg St. Ry. Co.



**WALTHAM, MASS.**—Waltham & Newton St. Ry. 3½ m, 4-8 g, 6 c, 14 h.

Anicostia & Patomac River Ry. Co. 3 m, 4-8 g, 37 lb r, 9 c, 24 h. Pres. H. A. Griswold, Anicostia, D. C. Treas. Edw. Temple, Sec. T. E. Smithson.

**WALTHAM, MASS.**—Waltham & Newton St. Ry. Co. 3½ m, 4-8½ g, 30 lb r, 6 c, 14 h. Pres. R. E. Robbins, Sec. & Treas. Henry Bond.

**WASHINGTON, D.C.**—Capital, No. O. St. & So. Washington R.R.

Washington & Georgetown R.R. Co. 10 m, 4 8½ g, 42 lb r, 161 c, 750 h. Pres. H. Hurt, Sec. & Treas. C. M. Koonen, Gen. Supt. C. C. Sailes.

Metropolitan R.R. Co. 21½ m, 4 8 g, 38 lb r, 90 c, 400 h. Pres. George W. Pearson, V. Pres. A. A. Wilson, Sec. & Treas. William M. Morse, Supt. L. W. Emmart.

Columbia R.R. Co. of the District of Columbia. 2½ m, —g, —lb r, 19 c, 56 h. Pres. H. A. Willard, Sec. & Treas. Wm. H. Clayette, Supt. Thos. E. Benson.

**WATERFORD, N. Y.**—Waterford & Cohoes R.R. Co. 2 m, 4-8½ g, 45 lb r. Pres. Thos. Breslin, Sec. & Treas. C. B. Ormsby. (Leased by the Troy & Lansingburgh R. R. Co.)

**WEST HURON, CONN.**—New Haven & West Haven R.R. Co.

**WESTPORT, CONN.**—Westport & Saugatuck Horse R.R.

**WICHITA, KAN.**—Wichita City Ry. Co. 6 m, 8 c- Pres. J. W. Ground, Sec. & Mangr. E. R. Powell.

**WHEELING, W. VA.**—Citizens Ry. Co.

Wheeling & Elm Grove R.R. 7 m, 4-8½ g, 30 lb r, 12 c, 4 Baldwin Motors. Pres. J. D. DuBois, Sec. E. J. Rutter.

**WILKESBARRE, PA.**—Wilkesbarre & Kingston Pass. R.R.

Wilkesbarre & Ashley Passenger R.R. Co.

Coalville Passenger R.R. 2½ m, 4-8½ g, 20-31 lb r, 4 c, 10 h. Pres. Chas. A. Miner, Sec. & Treas. George Loveland, Supt. Albert G. Orr.

**WILLIAMSPORT, PA.**—Williamsport St. R.R. Co.

**WILMINGTON, DEL.**—Front & Union St. Passenger Ry. Co.

Wilmington City Ry. Co. 4½ m, 5-2½ g, 45 lb r, 20 c, 82 h. Pres. W. Canby, Sec. & Treas. John F. Miller, Supt. Wm. H. Burnett.

**WINDSOR, CAN.**—Sandwich & Windsor Passenger R.R. Co.

**WINNIPEG, MANITOBA, CAN.**—The Winnipeg St. Ry. Co., 5 m, 4-8½ g, 35 lb r, 13 c, 75 h. Pres. Duncan MacArthur, Sec. & Mangr. Albert W. Austin, Supt. Geo. A. Young.

**WINONA, MINN.**—Winona City Ry. Co. 4 m, 3 6 g, 27 lb r, 10 c, 39 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec & Treas. C. H. Porter.

**WOBURN, MASS.**—No. Woburn Horse R.R. 2½ m, 4 8 g, 4 c, 4 h. Pres. & Treas. John Carter, Sec. J. G. Maguire, Supt. Dexter Carter.

**WORCESTER, MASS.**—Worcester St. Ry. Co. 5½ m, 4-8½ g, 45 lb r, 19 c, 100 h. Pres. Geo. H. Seeley, N. Y. city, V. Pres. Nathan Seeley, N. Y. city, Treas. & Supt. Harry S. Searls, Worcester.

**YOUNGSTOWN, O.**—Youngstown St. R.R. Co.

**ZANESVILLE, O.**—Bellare, Chillicothe & Canton. Zanesville & McIntire St. Ry. Co. 3 m, 3 6 g, 33 lb r, 12 c, 54 m. Pres. J. Bergen, Sec. W. C. Townsend, Treas. T. B. Townsend.

**Kinds of Knowledge.**

“Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it.”

We don't remember who wrote the foregoing, and have no time to look it up. Furthermore, as we do not sneeze simply because some great man takes snuff, we can endorse the sentiment without knowing its author.

What of it?

Much of it.

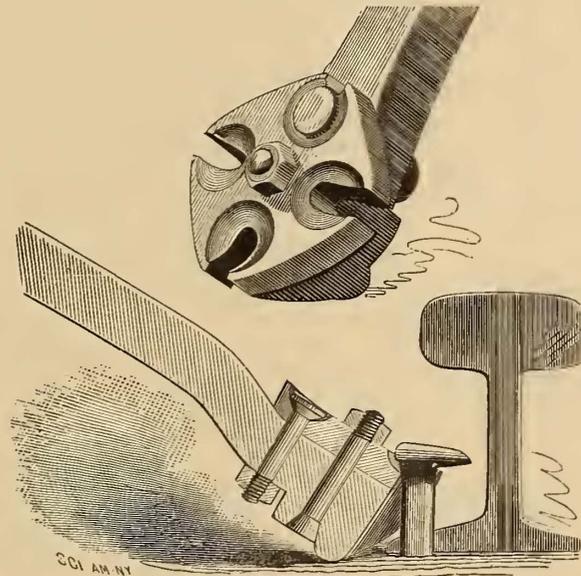
There are a few men in every ten thousand or so, who have memories, fully stored, carefully pigeon-holed, and easily accessible; so that they need not refer, in most of their work or actions to any written or printed sources of information. But, perhaps, neither you nor the writer could be called, as was Lord Macauley, “a book in breeches.” Perhaps if we have to extract cube root, or multiply by logarithms, or lay out a quarter-twist belt, or specially harden a drill, or unscale a boiler, or calculate the proper gears for cutting a fractional screw, or any one of nine hundred and eighty things that we have to do, some time or other, and have to do rightly when it is done, perhaps we can't depend on memory. Perhaps, in fact, we never knew. Then, in such cases, the next best thing to

knowing right a way, is to have a note book, or a scrap book to refer to. And the next best thing, to having a well-filled scrap book, or note book, is having an index book, with memoranda as to where to apply in case we want to know anything.

If we know where or to whom to apply for each kind of data, or information, or advice, that is the next best thing to knowing off-hand or having the notes, and such knowledge is of the second class alluded to in the quotation at the head of this article, perhaps, in fact, the cheaper and more easily obtained of the two.—*Power.*

**Hardwick's Claw Bar.\***

The square face-plate of hardened steel has its corners bent upwards, rounded, and recessed to form claws for receiving the body and head of a spike; the under side is slightly convexed to fit snugly upon the curved upper side of the bar, to which it is united by means of a pivot bolt and nut.



The bar is formed substantially the same as an ordinary claw bar for drawing railroad spikes, with a recess in the end for the body of the spike. Through the bar, directly in the rear of the pivot bolt, is a hole, through which is passed a bolt whose head rests in one of the claw recesses of the face-plate; the under side of the bar is rabbeted to form a bearing for the nut. If the claws which are in use should break, by removing the rear bolt another pair of jaws may be brought over the recess in the bar. The recesses in the face-plate may be of different widths to adapt the bar to spikes of different sizes.

It is claimed that this claw bar will wear four times as long as the ordinary bar, and that by renewing the worn-out plate, can be quickly refitted for use; also that as the plate can be more nicely finished and better tempered than the end of the common bar, still greater durability is insured.

\* James L. Hardwick, Lock Box 569, Cedar Rapids, Iowa.

**Drop Us A Line.**

“Reading maketh a full man, conference a ready man, and writing, an exact man.”—*Bacon.*

There is wisdom and common sense in every word of the foregoing quotation.

Reader, if you wish to advance in your calling, you must post yourself as to what your neighbors are doing; what those at a distance are doing; as to what your friends are doing, and what your rivals are doing. By reading, you can best do this; and your mind will be filled, in many a crack and cranny now somewhat empty.

Next, confer with your friends as to what you have read and what you have done, or are going to do, or are thinking of doing.

If you have been in a hole and have got out, tell them about it and see if you got out of it the best way, and how not to get in another one like it. If you are not yet out of the hole, conference will make you all the more “ready” in getting out of it this time and the next time, if there should be a next time.

Nor is this all. Write to the editors of the best paper that you take (we assume that you take more than one, no matter how poor you are, or how busy you are), and tell what you have learned by reading and conference, and what you have not learned by either.

The technical paper affords its subscriber and correspondent all three methods of benefiting himself, laid down by Francis of

Verulam, in the lines heading these friendly paragraphs.

He may read and fill the storehouses of his mind. He may confer and become ready with expedient when emergency bursts upon him. And he may write and crystallize in his own mind the ideas which reading and conference and experience have given.

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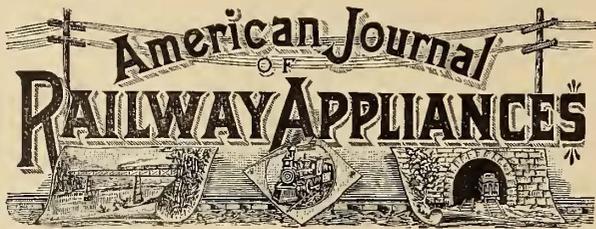
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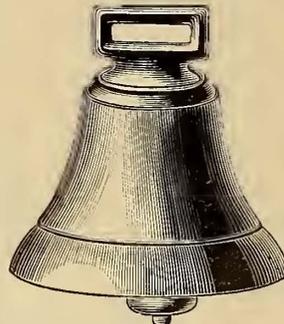
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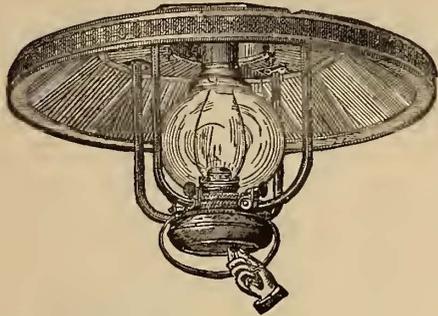
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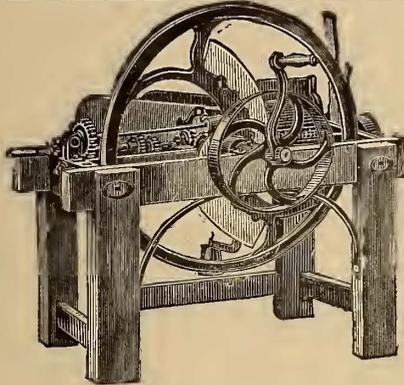


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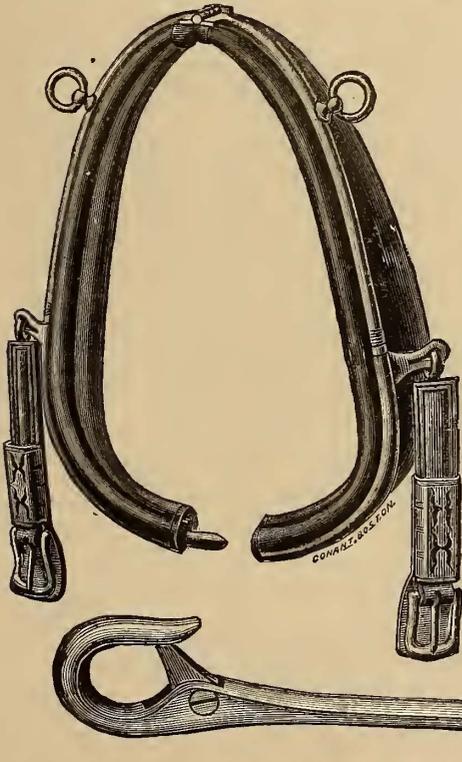
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- Jersey City and Bergen Railroad Co., Jersey City, N. J.
- Ridge Avenue Passenger Railway Co., Philadelphia, Pa.
- Citizens' Passenger Railway Co., Philadelphia, Pa.
- Buffalo Street Railway Co., Buffalo, N. Y.
- New Orleans City and Lake Railroad.
- Philadelphia Traction Company, Philadelphia.
- Second and Third streets Railroad Company, Philadelphia.
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Also fully prepared to furnish any kind, weight or shape of shoe desired. Estimates on cost of producing such special patterns will be furnished on receipt of model, with estimate of the probable number of kegs required.

The Rates of Freight are as Low from their Factory West and East AS THE LOWEST.

A Mild Tough Steel Shoe supplied at a small advance over Iron Shoes.

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### RUBBER CAR SPRINGS

OF EVERY STYLE AND SHAPE,

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I have used your Colic Cure for my horses and mules on my street car lines and found it the best and surest medicine I have ever used. I have not lost a horse since I commenced its use. It gives relief in a short time after it is taken. I can cheerfully recommend it as a sure relief if given in time. I keep it constantly on hand.

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MESSRS. JONES & ROACH:

Gentlemen: I cheerfully recommend your European Colic Cure for horses as being the best that I have ever used. When once introduced no horse owner can well afford to be with-

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Truly yours,

VALENTINE BLATZ,  
Per H. Lieb, Manager.

OFFICE OF NORTH HUDSON COUNTY  
RAILWAY CO.  
HOBOKEN, N. J., Oct. 4, 1884.

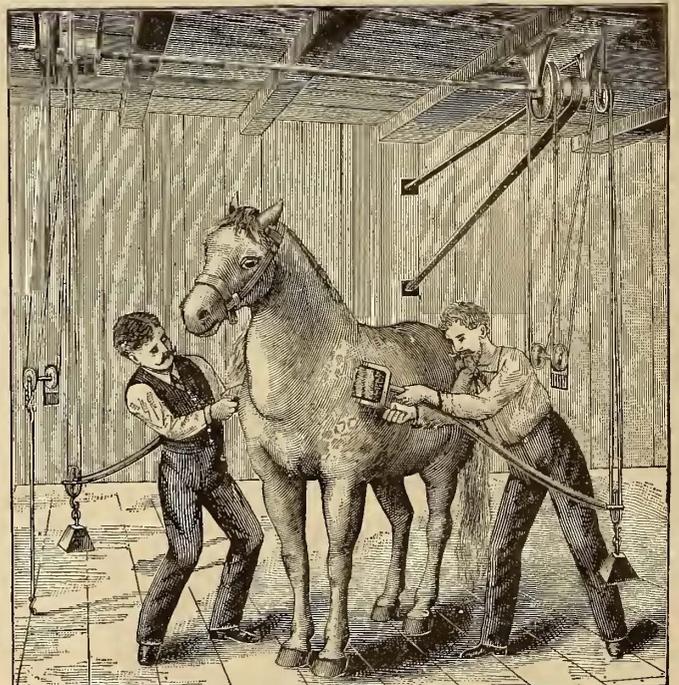
Gentlemen: It gives me pleasure to say that I can heartily recommend your European Colic Cure to all horse owners, from a personal knowledge of its curative qualities. I have used it in our stables, containing about six hundred horses, and have always found it to be beneficial. Yours very truly,  
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Foreman and Veterinary Surgeon  
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The brush is caused to revolve by gear wheels actuated by a flexible shaft. Both hands free to handle brush. Swings and turns in any direction. Direction of motion quickly changed. The cheapest and best Grooming Machine yet invented. Motion supplied by hand, steam or animal power. Rights to use or manufacture. For full particulars and rates apply to

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INCORPORATED 1875.

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BUILDERS OF

## Street Cars

OF EVERY STYLE AND SIZE,

For Horse, Cable or Other Motive Power.

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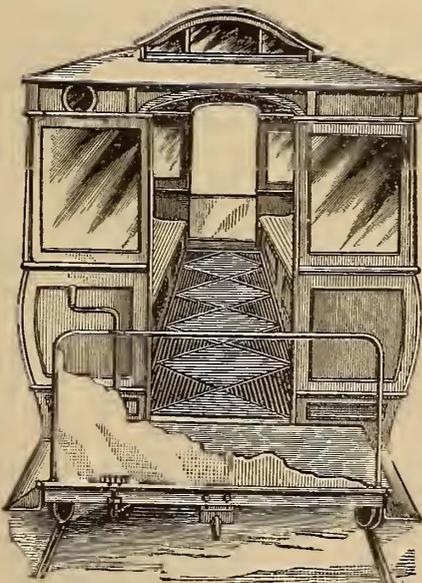
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# LEWIS'

## Improved Sectional Diamond and Plain CAR MAT

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LIGHTEST,  
STRONGEST,  
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EASIEST  
CLEANED AND  
MOST DURABLE  
MAT FOR RAIL-  
WAY CARS  
EVER DESIGNED



Used extensively  
all over the World.

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AGENTS,

## Street Railway Car Builders

# WEST TROY,

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"PAY HERE."

## Fare Boxes and Change Receptacles for Street Cars,

WALES MANUFACTURING CO.,

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Our Boxes are constructed with great care and of the best material. The case or wood, is of cherry, neat in design, and the front of Money Drawer and front edges of box are of metal, nickel plated in the best manner. The front of Box is very easily detached in one piece, and the inside or glass chute is quickly removed for cleaning. In addition to the glass chute through which the money passes, there are *two additional glass plates*, 1/4 of an inch thick, one in front and one in back of box, so that in case the outer plate should be broken, the *money is still protected*. The Money Drawer is metal, and securely fastened by two safe drawer locks, the keys of which can only be removed when the drawer is locked, thus proving a safeguard to the collector.

This Fare Box, in many respects is superior to any other.

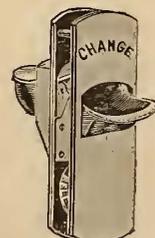
No Street Car is complete without our Change Receptacle for the convenience of its patrons for passing money to the driver for change. No wind or cold enters the car by it when making change, as is the case with all other Change Gates or Slides.

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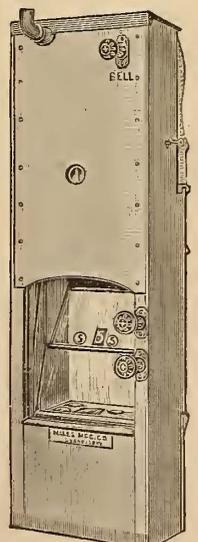
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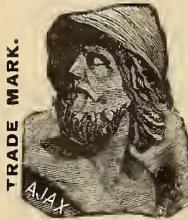
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Graded Stable Gutter with Straigh for Curved Cover.**



Descent 1/2 in. per foot. Pieces 5 feet lengths. Short pieces furnished to suit any length. Spouts to connect with Sewer, &c.

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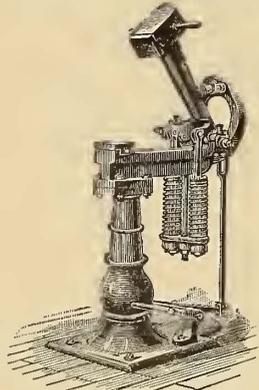
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**WE CLAIM FOR AJAX METAL.**  
25 to 50 per cent. more mileage.  
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Costs no more than copper, and tin or gun metal.  
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**THE STANDISH FOOT-POWER HAMMER**



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I Manufacture all sorts of Appliances for  
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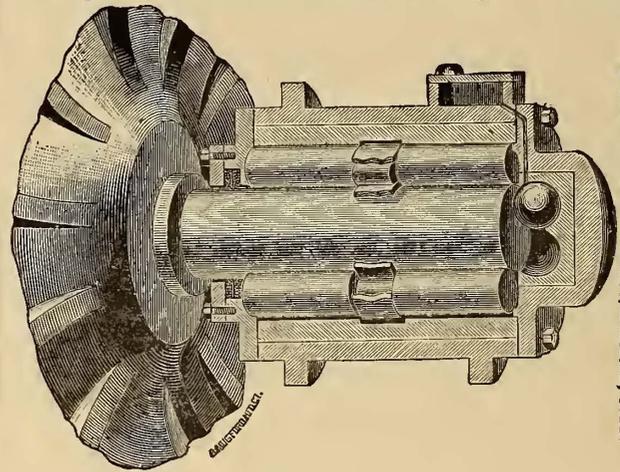
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Have been in use for four years, proving durable and showing great saving in draft. By use of ball take curves easily; will start and draw with one-half the power of plain journals. Steel Rolls 1 1/2 in. diameter, 8 in. long, run on brass. Manufactured by THE CHAPLIN MANUFACTURING CO., Hartford, Conn.

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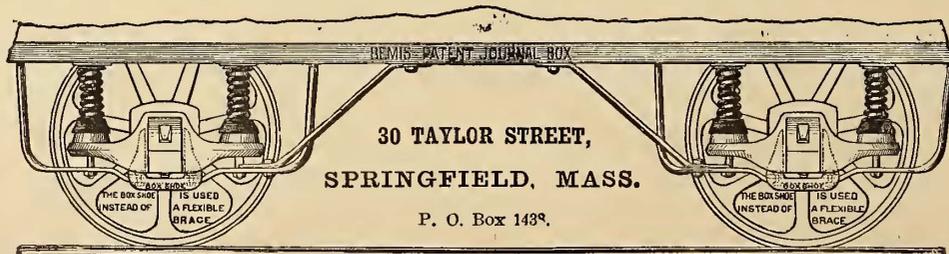
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CAR WHEEL WORKS,**  
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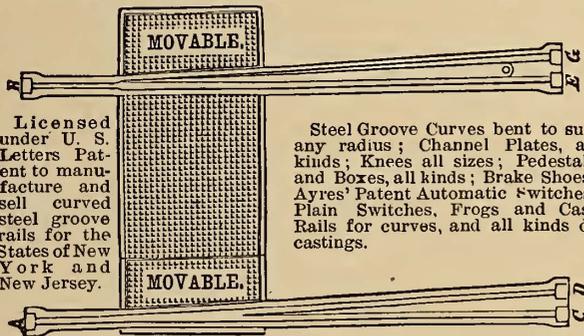
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Section No. 17  
46 lbs. per Yard

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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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and Street Patterns for STEAM ROADS.

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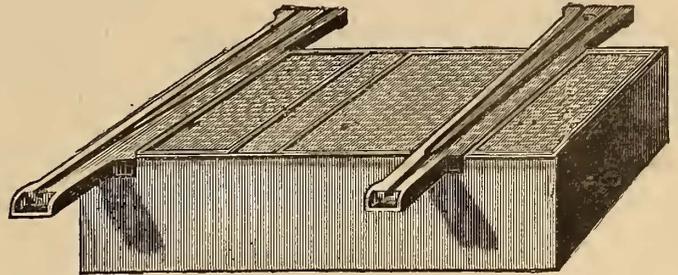
STEELTON, DAUPHIN CO., PENN.

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

**M. M. White & Co.,**

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NEW YORK.



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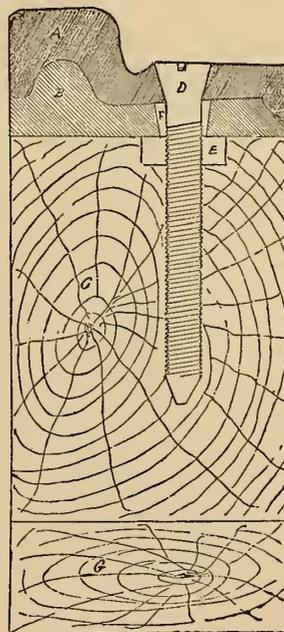
**H. DOUGLASS'**

**Patent Automatic Switch**

FOR STREET RAILROADS.

WRIGHT'S

**PATENT JOINT FASTENING.**



The accompanying cut shows a cross section through joint. A is the rail, B the joint chair, C the stringer, D the patent screw fastening, E the nut, F a slot in chair allowing rails to contract and expand. The chair cannot settle and the rail ends are held level with each other, preventing the many evils of ordinary construction.

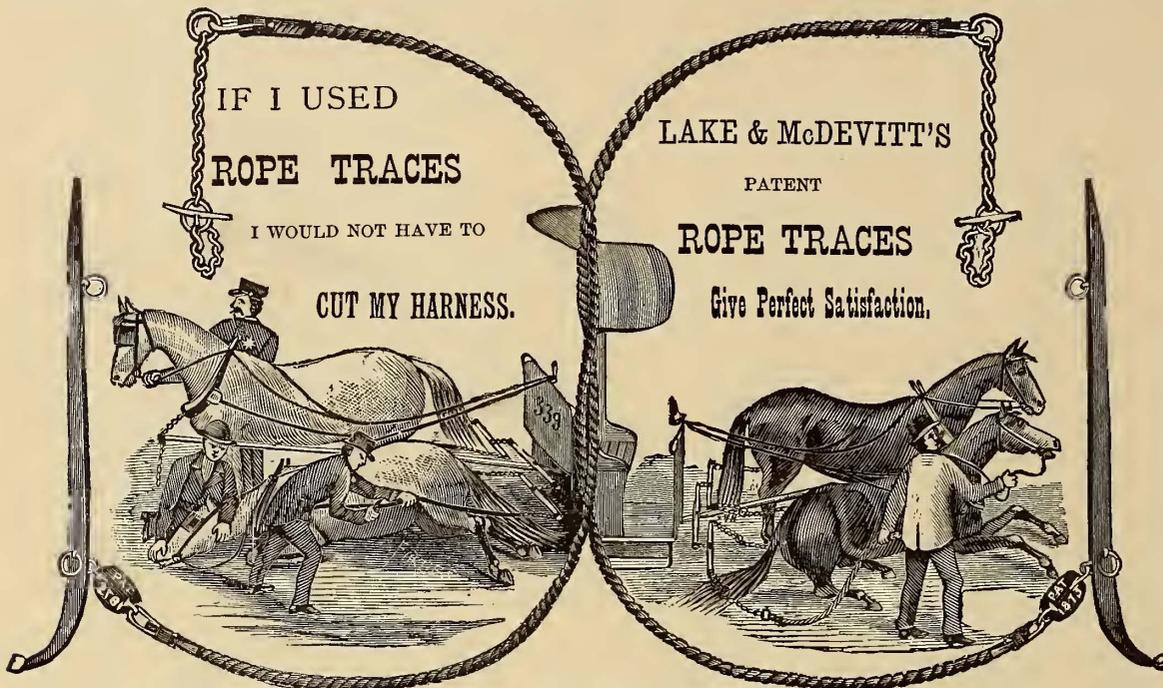
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NORTH CHICAGO CITY RAILROAD.

CHICAGO, ILL.

# LAKE & McDEVITT'S Patent ROPE TRACE

For Horse Railways, Omnibus Lines, Etc.



The Advantages

OF THE

ROPE TRACE

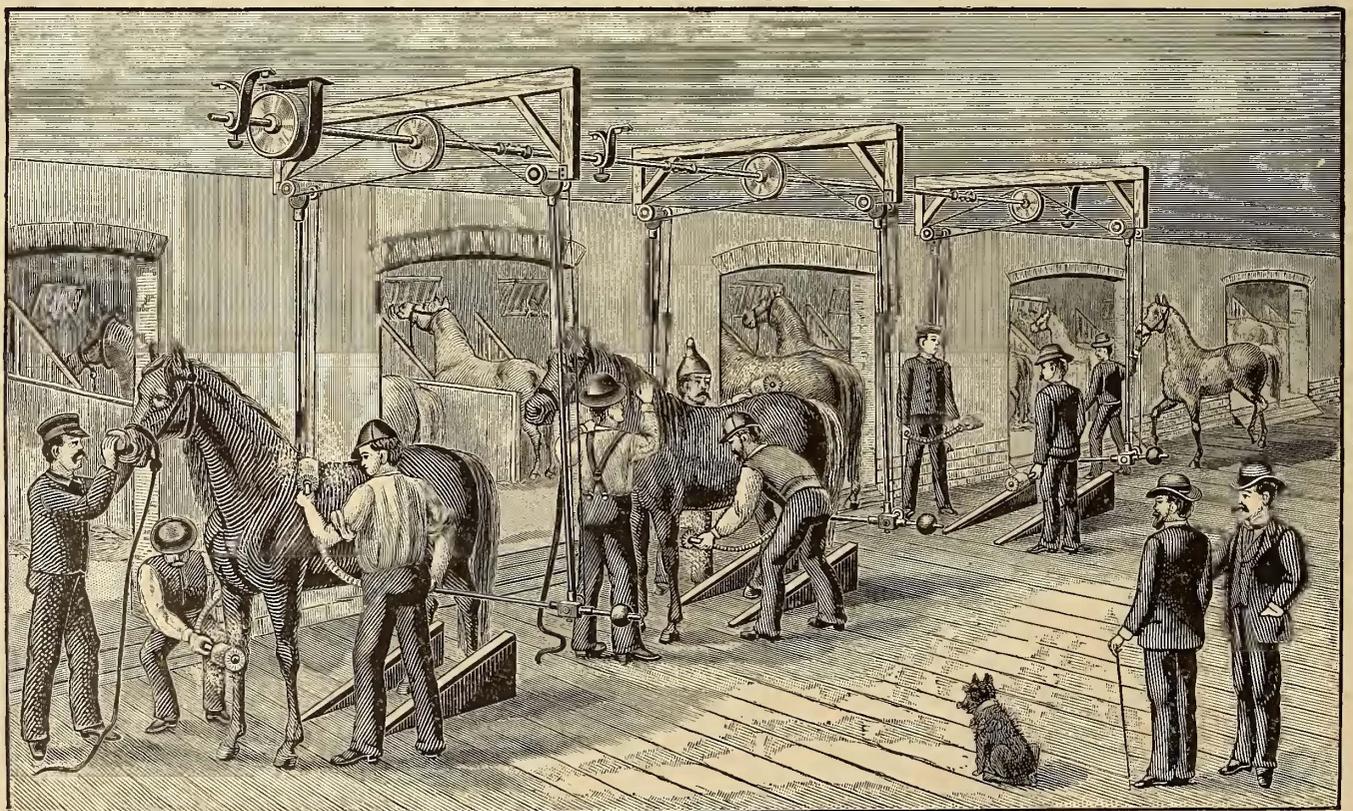
are its ready application to Horse-Car service, or to any other purpose where cheap harness is required. It only costs about half as much as leather traces, while at the same time one set of Rope Tugs will (when used on horse cars) take the place of three or more sets of leather traces, as the Tugs remain attached to the car all day, no matter how many changes of stock are made. The relief horses having hooks attached to their hames, all that is necessary is to unhook the tugs from the working team back in the fresh horses, hook on the tugs, 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. 171,282, December 21, 1875.

In use on the Chicago West. Div. R'y.; Louisville City R'y Co.; Milwaukee City R'y; Transverse R'y Co., Pittsburg, Pa.; Citizens Street R'y Co., Pittsburg, Pa.; Pittsburg and Birmingham, Pittsburg, Pa.; Central City R'y, Peoria, Ill.; Grand Rapids R'y; Minneapolis St. R'y Co.; St. Paul City R'y; Houston City R'y, Texas; Superior Street R'y, Cleveland, O.; Cincinnati City R'y Co.; Fifth Ward Street R'y, Syracuse; Detroit City R'y.; Ft. Wayne and Elmwood St. R'y, Detroit, Mich.; Galveston City R'y; Springfield City R'y, Springfield, Ill.; Toledo St. R'y, Toledo, O.; Adams St. R'y, Toledo, O.; Atlanta Street R'y, and others, in all on about 100 Street R'ys in United States and Canada, and a large number of other prominent Street R'y Companies throughout the Country. Send for descriptive Circular containing testimonials, prices, etc., to

LAKE & McDEVITT, 161 South Robey Street, Chicago, Ill.

## CLARK'S PATENT POWER GROOMING MACHINE, SINGLE OR DOUBLE.



Patented December 15th, 1874.

Patented January 9th, 1883.

TO STREET RAILWAY COMPANIES AND OTHER STOCK OWNERS.

This machine for grooming may be driven by any known power, and can readily be placed for use in any stable or out-building. It can be operated by an ordinary groomer; its work is perfect; its action simple and effective. Stock owners will readily realize the importance of the machine. The perfection and rapidity of its work, and the benefits derived by its use, commend it to those interested in the care and use of all classes of thoroughbred and work stock. The most vicious animal readily submits to its use. Machine Grooming is found to be less expensive than hand grooming, saving in food and medicines, and materially increasing the value of the animal.

The Curry Comb and Hand Process Superseded! Economy of Labor! Perfection of Work!

Three Hundred Head of Stock Thoroughly Groomed with Each Machine every Ten Hours.

This Grooming Machine is in daily use in some of the largest Street Railway Companies' stables, and has always given perfect satisfaction. Among those using it are the City R'y Co., Chicago, Ill.; Detroit City R'y Co., Detroit, Mich.; Central City R'y, Peoria, Ill.; M. W. Dunham, Wayne, Ill.; West Division Street R'y Co., Chicago, Ill.; Lindell Street R'y Co., St. Louis, Mo.; Pleasant Valley R'y Co., Allegheny City, Pa.; Marshall, Field & Co., Chicago, Ill.; Leroy Payn, Chicago, Ill.; Saginaw City R'y, Saginaw, Mich.; Pittsburg and Birmingham R'y Co., Pittsburg, Pa.; and a number of others who have given testimonials as to the perfect working of the machine. For prices, circular and other information apply to

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# LEWIS & FOWLER M'F'G CO.

P. O. BOX 102.

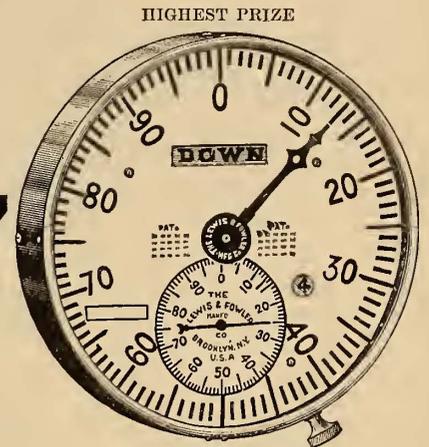
BROOKLYN, N. Y.

Patentees and Manufacturers of

IMPROVED

## "ALARM"

PASSENGER REGISTER.



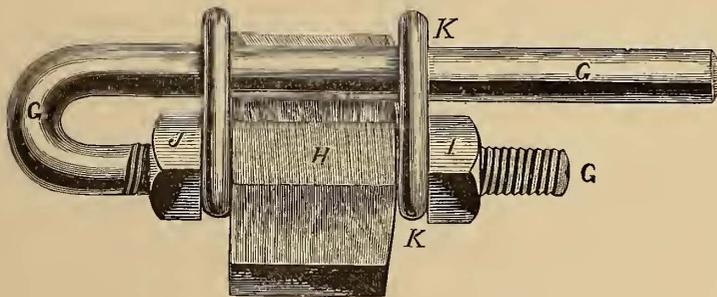
HIGHEST PRIZE

SILVER MEDAL, CHICAGO, 1883.

—SOLE AGENTS AND MANUFACTURERS—

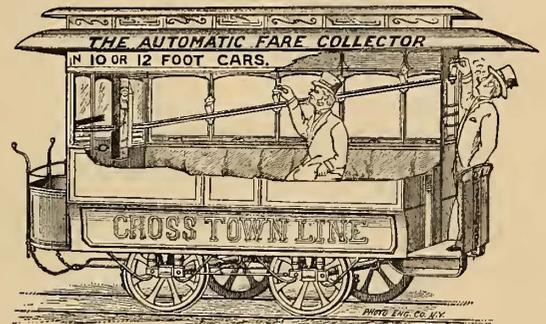
### VAN TASSEL'S Patent Brake Rod

FOR STREET CARS.

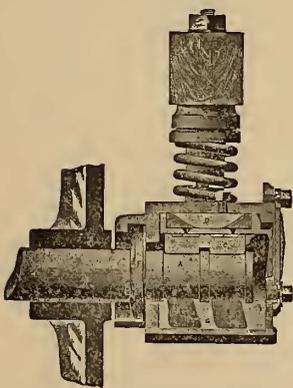


### SMALL'S Automatic Fare Collector.

FOR FARE BOX CARS.

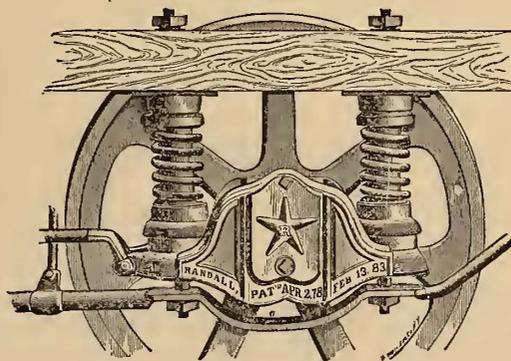


## "RANDALL'S" PATENT CAR AXLE AND BOX.



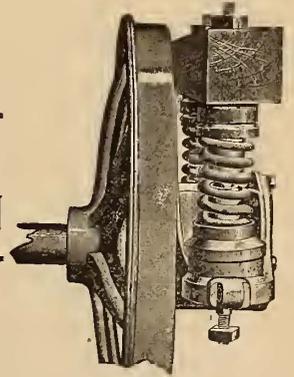
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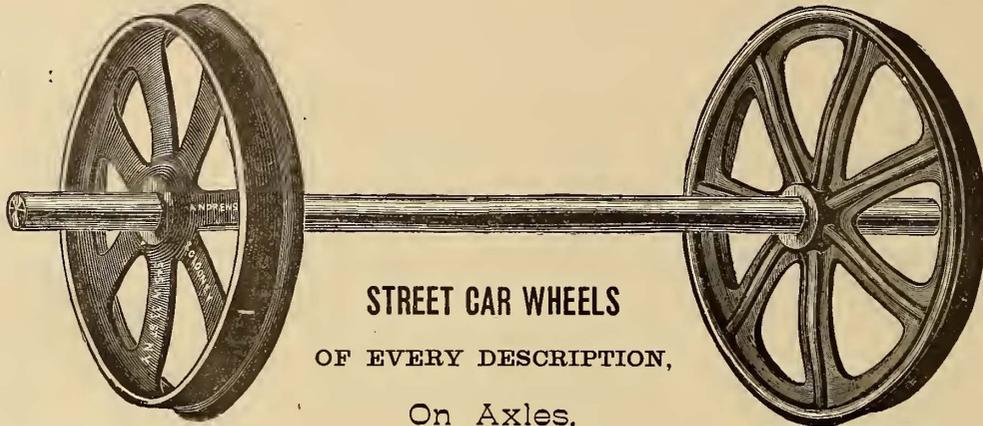
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STREET CAR WHEELS  
OF EVERY DESCRIPTION,  
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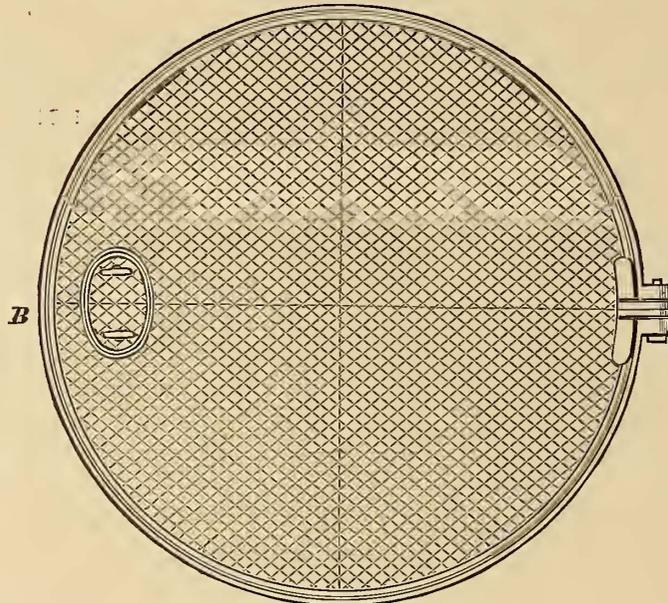
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Of Every Description.



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Car Wheels,  
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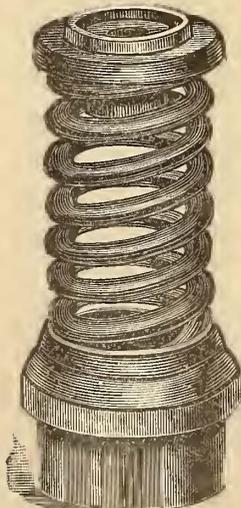
SWEEPERS, SNOW PLOWS,

TURN-TABLES,

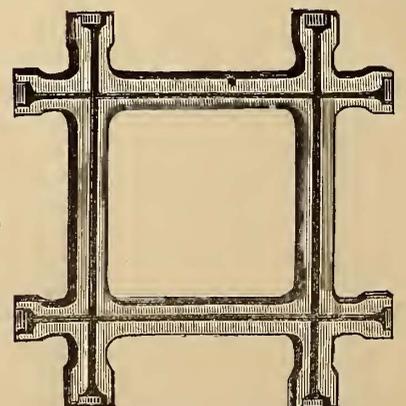
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Street Car Springs.



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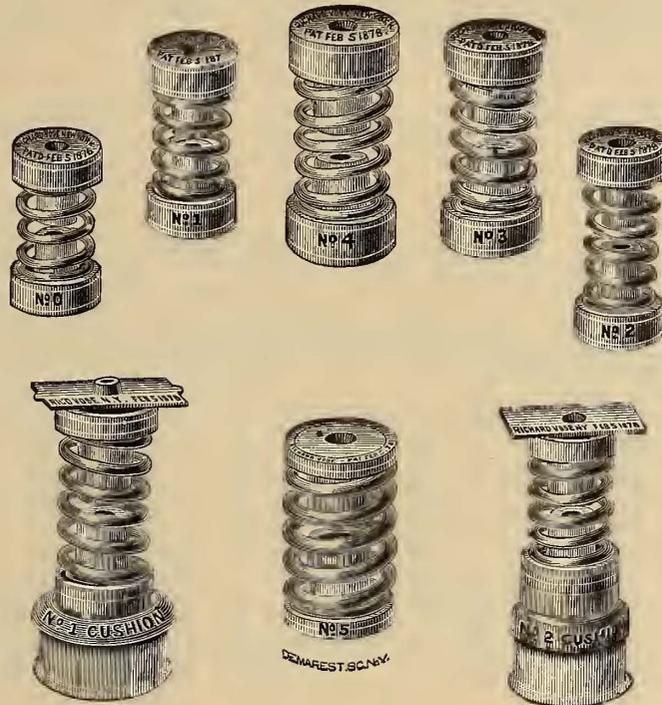
PATENTEE AND MANUFACTURER OF

## Graduated Street Car Springs.

### RUBBER CONE.

Patented, April 15th, 1879.

ADAPTED TO THE  
 STEPHENSON,  
 BEMIS,  
 RANDALL,  
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 No. 1, for 10-ft. Cars.  
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 No. 5, for 16-ft. Cars.  
 (Single Pedestal.)  
 No. 1, Cushion, for 16-ft. Cars.  
 No. 2, Cushion, for 12 and 14-ft. Cars.

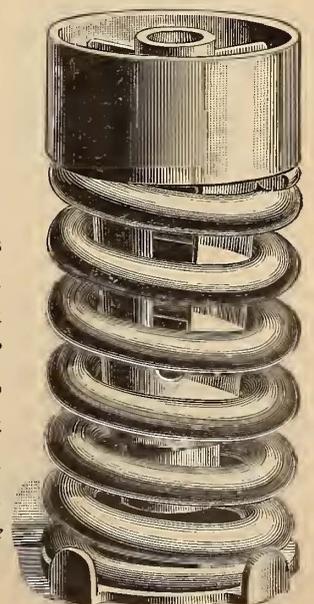
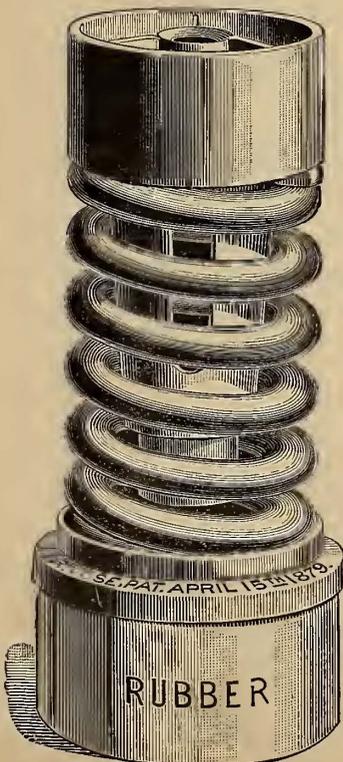
## STEEL CONE CITY CAR SPRING.

Patented April 15, 1879—August 5, 1884.

The unprecedented popularity of the

### “VOSE GRADUATED RUBBER CONE SPRING”

for HORSE CARS has induced the inventor to bring this class of Springs as near perfection as possible, and after a series of experiments and tests now presents for favor what he claims to be the *MOST PERFECT SPRING FOR HORSE CARS* ever offered. It is exceptionally *SOFT AND EASY* with the *EMPTY CAR* or with the *GREATEST LOAD*. It is believed to be the *MOST DURABLE*, being constructed upon a principle that seems to insure that the Spring must *ACTUALLY WEAR OUT*. The very *Finest Quality of Crucible Cast Steel* will always be used in these Springs.



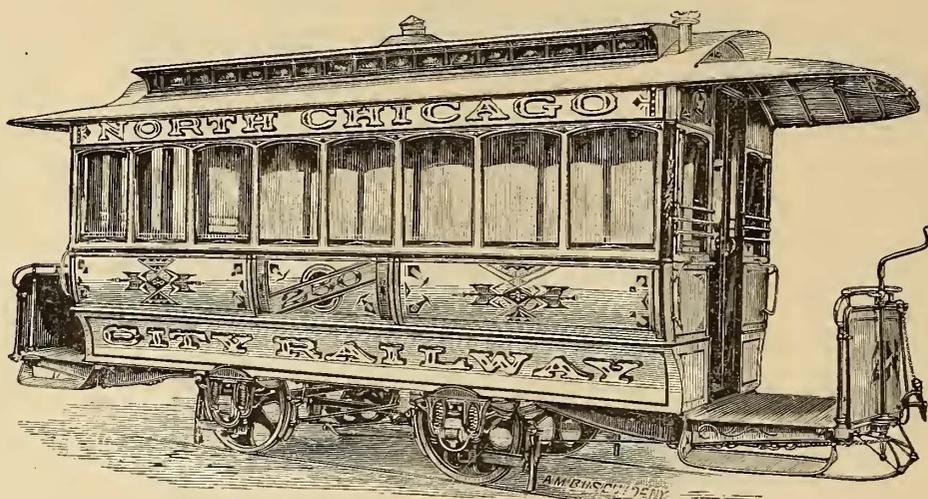
# JOHN STEPHENSON COMPANY

(LIMITED),

**New York.**

## TRAMWAY CARS

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



**LIGHT ELEGANT, DURABLE.**

*Every Description.*

*Best Materials.*

*Minimum Prices.*

ORDERS QUICKLY FILLED. CAREFUL ATTENTION TO SHIPMENTS.

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