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THE STREET RAILWAY JOURNAL

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{ CHICAGO: { 8 Lakeside Building. } No. 5.

Hydraulic Turntable.

The accompanying illustration shows an hydraulic turntable specially designed to meet the requirements of Mr. F. E. Duckham, the engineer of the Millwall Dock Company, * for lifting grain trucks and turning them simultaneously on to lines at right angles to the lower level of rails. There are some cases (as in Cleveland) where the device might be applicable for lifting street cars from one level to another.

At the Millwall Docks, where the chief grain trade of London is conducted, Mr. Duckham has introduced a system of storage in traveling railway bins, or covered trucks of some 20 tons capacity, enabling rapid discharge from ship to be made, combined with prompt deliveries of cargoes in large or small lots into carts, barges, or railway trucks as may be desired, at any part of the dock premises. Certain portions of the dock quay could not, however, be utilized for delivery into barges, owing to their position and elevation as compared with contiguous lines of rails, until the turntables which we now illustrate were designed and erected.

The tables are twelve feet in diameter, and in addition to raising a full truck load of grain, weighing some twenty-two tons, are sufficiently strong to allow engines to run over them at full speed when fixed for the lower line of rails. It will be seen that a double worm or thread is cast on the lifting cylinder, having a pitch of fourteen feet. A drum forming part of the moving portion is turned to fit the cylinder, and is provided with internal steel rollers working in the grooves previously referred to on the cylinder. When the hydraulic pressure is

admitted to the cylinder, the upward motion of the ram is combined with the rotary motion required by the friction of the rollers against the grooves. Separate turning cylinders are therefore unnecessary.

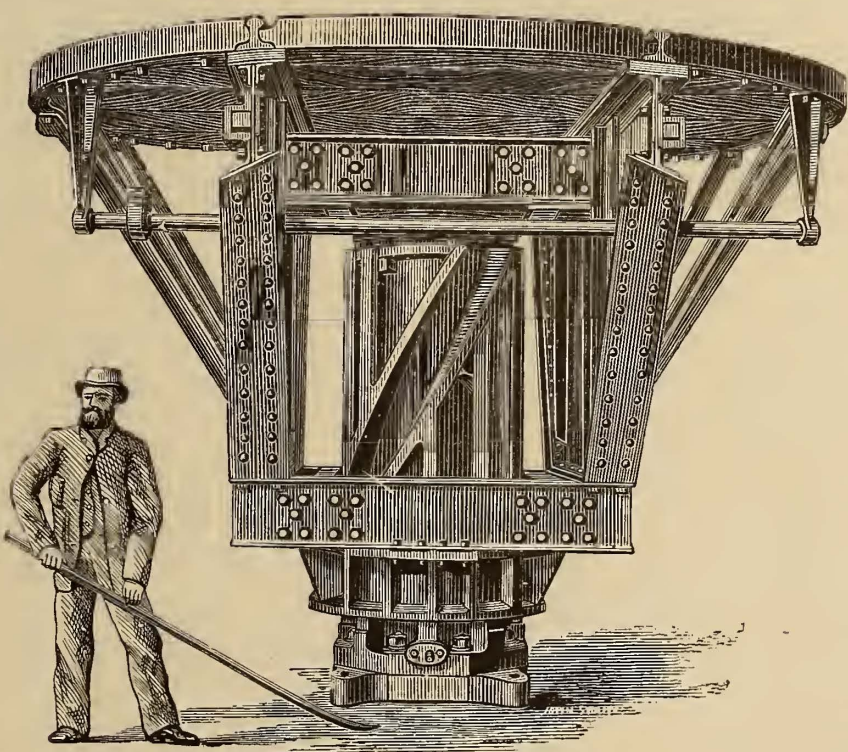
In conclusion, we may say that the Millwall Docks are well worth a visit, the company's whole system of discharge and delivery of cargoes, especially of grain, being among the most successful and efficient in the world. Wherever hydraulic power can be used and cost of labor reduced, there you may be sure to find machinery suited to the work.

to 23 of their cents * per kilometer † (7.4d. per mile), composed of the following items:

	Their Cents.	Our Cents.
Driving engines.....	4.7	1.88
Heating boilers.....	2.3	.92
Coals.....	14.0	5.60
Packing, lubricating, etc.....	2.0	0.80
Total.....	23.0	9.20

More recently the cost of haulage has been only 17 of their cents per kilo (5.24d. or 10.48 of our cents per mile), the price of coal being 2l. per ton. The consumption of fuel was at first 6 kilogrammes per kilometer (21.3 lb. per mile), but recently it has fallen to two-thirds of that amount. Repairs of boilers and engines have cost two cents per kilometer, and have consisted chiefly in returning the wheel tires and renewing the felt on the boilers.

* 5 of their cents equal two of ours.
† 3/8 mile.



Fireless Tramway Engines.

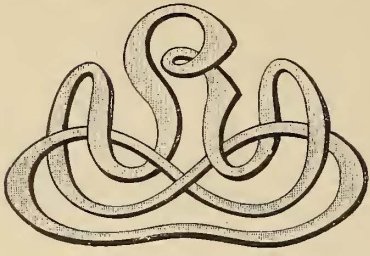
The Batavia Steam Tramway Co. has 21 of the Lamm-Francq fireless locomotives, and 5 stationary boilers (of which three are reserves). They work 12 hours per day, filling an engine every 1 1/2 minutes during these hours; every ten minutes during other times. Pressure, 180 lbs. per sq. in.; trains, two to three cars; track nearly level and nearly straight. The cost of haulage amounted last year

although the line is a single one, took no notice of the machines, a result which may fairly be ascribed to the absolute absence of steam, vapor, or noise from the engine. The first-class workmanship put into these engines—which are the outcome of some ten or twelve years' constant experience in this class of work—necessarily makes them somewhat high in cost, but £100 paid to the makers in this way is more than recouped by economy in maintenance and repairs alone every year they are running afterwards."

* East Ferry Road Engineering Works Company, Limited, East Ferry Road, Millwall, E., London, England.

The First Steam Tramways in London.

A foreign exchange says: "The commodious new workshops and running sheds of the North London Tramway Company are now nearing completion, and the handsome steam motors for working the line continue to arrive. An engine has been running recently with most satisfactory results. The horses passed on the road.



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 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, N. 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 People's 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.

Discussion on Stables and Care of Horses.

Continuing the report of the recent convention:—

Mr. Littell, of Louisville, moved that the report of the Committee on "Stables and Care of Horses" be accepted and spread on the minutes.

Mr. Longstreet, of Providence: I would like to make some inquiries in reference to stable floors, where horses are kept overhead. Until recently, we have kept our horses on the ground floor. When this was done there was no trouble; but we are now up in the air. What kind of a floor is best adapted for this purpose?

Mr. Sharp, of New York, did not know what is best, but has horses on the fourth floor, piled up three deep. He uses felt covered with asphaltum between the planks. First an ordinary tongued and grooved floor, planed on one side; then felt, and then the spruce plank on top. The felt is covered with asphaltum and is laid in while hot.

The President said: The best method that I know of, and I have had considerable experience as a builder, is to lay the lower floors on the slant that you wish for your horses; then lay the flooring and tar it over, covering it with tarred paper. Then take the next flooring, and, putting plenty of asphaltum on, shove it together while it is hot, so that the asphalt will come between the joints. Put the slat floor above that. So far as the felt is concerned, and laying it in asphaltum, it can be used under the gangways. I would put down the lower floor first, then lay the paper in pitch.

In reply to a question by Mr. Longstreet, the President said, the asphaltum used is precisely the same as they use for the best gravel roofing. The second flooring, or the middle flooring, where there are three, is the most important.

Mr. Longstreet: What is better for the second flooring under the stalls than spruce?

Mr. Sharp: We use slats for the horses to

stand upon; spruce on the floor under that.

The President said: Spruce will last a great many years where it is kept dry; if wet and dry alternately, it will rot in three years.

Mr. Longstreet remarked: This is, of course, a case where it will be wet and dry.

The President: Spruce is better to cut; it has not so many knots; but pine will last longer, wet and dry, than spruce.

Mr. Patrick said: I would, from my experience, except to several items contained in the report. In the first place, the size of the stall is given as four feet. A five foot stall is about the smallest that will accommodate a horse of 1,100 pounds comfortably. Secondly, an inch and a-half inclination to the floor puts the horse higher in front than behind; and, as a rule, he stands lower in front than behind when not working, and the weight of the horse is about two-thirds on his front and one-third on his hind limbs. When we would floor a horse comfortably, we have the clay under his front feet about an inch and a-half lower than the floor on which his hind feet stand, so that he invariably stands up to his manger. We rarely find a horse backing away from his manger. A floor on which their front feet are higher than their hind feet, necessarily creates a tendency to backing out and shaping themselves to ease their front parts, and if they cannot find an easy position by reason of the halter, they shove their shoulders forward. Another part of the report—that which relates to putting on of a hot shoe—does not meet my approval. It has been my observation that the application of heat to the horny substance of the hoof, immediately extracts the oil and makes it brittle. A hot shoe at the edge of the hoof will extend its influence for an inch, and until that grows down, the hoof is diseased and will crumble away. [Mr. Patrick illustrated by referring to the effect of heat on the human nail.] With reference to the feed; we have found it desirable to give a horse as much variety as we could, feeding corn mixed with bran and cut hay. With these exceptions I feel disposed to accept the conclusion of the report.

The President: What is meant by bran.

Mr. Patrick: Our mills, grinding flour under the new process, take the hull from the wheat, leaving a small portion of gluten attached, which is all there is in it.

The President said his company had come to the conclusion that there is not a pound of nutriment in a hundred bushels of new process bran or "shorts."

Mr. Thurston, of Jersey City, said: The Jersey City and Bergen Railroad Company has seven different stables and is now building a new stable for one hundred and fifty horses. The stalls are five feet at the widest and four feet at the narrowest part. In the new stable they are four feet three inches. They use simply partitions between the stalls, and consider yellow pine best for the purpose. Where horses have five feet space they can break the partition; whereas, with less space they cannot get a purchase. When a horse is lying down and pressing against the two sides, he cannot break the partition as he can with five foot

space. In Jersey City, land being cheaper than in New York, they stable horses on the ground floor. In the stable now building, and in two already built, there is a steep, slanting roof, with a skylight running through the centre, so all the windows desired may be opened. For the ground-work of the stable, wood flooring is entirely dispensed with. There is a system of wells with man-hole coverings at proper spaces, and the whole floor is graded, with a pitch of one and one-half inches towards the centre, which is twenty-seven feet wide, nine feet for stalls on one side, nine feet for passageway and nine feet for stalls on the other side. After the ground work is thoroughly prepared it is overlaid with six inches of sand. Over this bricks are laid with Portland cement. On that is a coating of two inches of a mixture of equal proportions of sharp sand and cement. Over that is the yellow pine flooring, with the strips of about half an inch space between, to provide for the urine of the horses, and so arranged that they can be taken out of each stall and the hose used to clean it thoroughly. This water all flows to the central wells. From the roof all the rain water flows into different pipings, so as to scour out all these wells. It commences with six-inch piping and runs to twelve-inch piping, to the sewer. For the mangers they use two-inch slate, laid perfectly smooth the whole width of the stall. In summer the horse likes to put his nose down on the slate and cool it. It is sweet and easily kept clean, and free from rats. Whitewash is applied semi-annually.

Mr. Holmes (Pittsburgh), wanted to know if they had any trouble with rheumatism among the horses in such stables. In such a stable Mr. Holmes had experienced this trouble.

Mr. Thurston: We have had no trouble from rheumatism at all in our stables. I think the fault is attributable to something else.

Mr. Robillard, of Montreal, said: According to Mr. Patrick's ideas, the horse with his front feet a little lower than his hind feet is in a natural standing position, and in that way gets rest. There is no better judge of this than the horse. When not occupied, or feeding, or not lying down, he will back until he brings his hind feet three inches lower than the front. A horse will cut or rot the timber at the bottom of the stall to prepare this place. When it is necessary to have clay, or something else to soften the foot, it has to be done; it is a bad idea to accustom a horse to it. Ten or twelve years ago, this plan was adopted by our road. After we commenced it, it had to be continued. When it was stopped, the horses became restless; but gradually we got them reconciled to the change. They came in, and after cleaning and washing their feet, we then let them go on the clay. After some experience, it left no doubt that it was better to leave them alone; cleaning the feet properly. We use cold water in proper seasons; in frosty weather, we use straw or rags. The horses, as they come in, in the summer, are brought out to the wash-tub, the legs cleaned, the shoulders bathed, and, if possible, their heads. Not one of our horses suffers under that;

they have no sores about the neck. Out of four hundred and sixty, there is not a sore neck or sore foot. The remark of the Chairman of the Committee in his report, that no horse with flat feet should be bought, is perfectly correct. If you put such a horse on a hard road for some time, with a foot perfectly flat on the pavement, where frequent shoeing is necessary, every time a little of the foot becomes pared off, and he will soon be unfit for use. Horses should have their feet properly cleaned. In Montreal, we have the worst kind of roads—all Macadam—loose stones. Yet, the condition of our horse's feet is equal to those of any stable in the country. Our slope is too little—two inches in every nine feet, and the horse, finding he has not enough, will step back. I think this idea of putting the horse's forward feet in a lower place for the purpose of resting him, is a mistake. If you let a horse alone, he will extend his legs, not forward, but backward. This, undoubtedly, has been remarked in every stable.

Mr. Patrick inquired: Did you ever see a horse out in the field? For every one that stands with his hind legs lower, a thousand will stand with their forward legs lower than their hind. The horse moves back from his manger, when he is standing on the incline, simply because the stall floor is inclined.

Mr. Littell, of Louisville, said: I differ from both of the gentlemen in regard to the horse stepping back to get his hind feet lower. I think it is to be attributed to the fact that in all of your stables, you have built the line of the stall floor a little higher than the gutter behind. If you will notice, instead of getting his hind feet lower than the floor, he stands up in that position and elevates his toe to get his level, simply because you put high heels on his shoes. If you will lower his heels, the horse will not back. If a horse backs and stands in that position, he does not stand below the floor, but gets his foot on the floor. If he digs a hole there, he will get his heel in the lower part of it. Our company has one thousand two hundred and sixteen head of mules. We drain our mules out in the yard, and so it should be in all stables. A stable saturated with ammonia is a fault of the manager. This idea is from New Orleans. In that city, the cars that go to Canal Street, stand there; and if a mule attempts to urinate on the street, the driver prevents it by whipping him up, and won't allow him to do it until he gets to the barn. What is the use of having a stall in your barn? We are building a stable with virtually no stalls. There is a space between the animals' heads; nine feet apart, we have posts that support the upper floor, and it is twenty-two feet across from post to post. We stand two animals between these posts. Between the posts and the manger, two and one-half feet, there is a partition of wrought iron to keep one mule from getting in another one's way. If we can stand two together, why not stand twenty-six together, with partitions a suitable distance apart? We are investing seventeen thousand five hundred dollars in this barn, without any stalls. There is a partition between every other animal: there is a par-

tion just above the manger. The feed-box is two feet long and twelve inches deep. The bottom of the feed-box, where we put ground corn and oats, is eighteen inches wide. In a majority of the stables here, they are two feet and a half. We put the feed in dry—oats and corn, sometimes whole corn, generally shelled, and we usually crack or grind it. We know what each mule is getting, having a measure which holds just so many pounds. Our stable floors are level and flat, and we have no trough running along there for the horses to get back on.

Mr. Cleminshaw inquired: Do you have fresh drinking water running all the time?

Mr. Littell replied: Mr. Johnson is the man to tell all about that. I learned almost all I know about watering horses from him. I was in Indianapolis four years ago; Mr. Johnson took me into his barn; I found there running water. I adopted his system; changed it a little. In the barn we are building, we have a metal basin in the centre of the trough, so that two mules can drink from one basin; it is supplied by pipes from a tank in the corner of the building; the top is level with the top of these basins, and is supplied from the water works. When a horse drinks, a fresh supply flows in. A horse can have all he wants. We do not lead him by the water.

Mr. Wright, of Chicago, said: I expressed my views very fully in the report last year. There is, however, a question I would like to ask. Can any one state how much air a horse requires? I have consulted half a dozen veterinary surgeons, and seven or eight physicians; have examined every book in the libraries of Chicago, that bears on the question. I have assumed that the horse breathes as much air as a man; but that amount varies. One allowance is three to four cubic feet a minute; another allows but one. The Committee's recommendation of stables twelve feet high, is rather small. I make ours sixteen feet. We have fresh air inlets to let in air in addition to the doors. We are laying stable floors on four inches of asphalt, which prevents all moisture, vermin, and rats burrowing through. It keeps the floor all water-tight and comfortable. We put down two-inch pine flooring. The stalls have an inclination of two inches in nine feet. Our horses are shod without calks; bearing taken upon the frog. We have very little, if any, trouble from horses backing out. Ninety-five out of a hundred remain in their stalls without backing out.

Mr. Johnson, of Cleveland, said: Mr. Littell referred to the water-trough system. We adopted it five years ago. We discussed the matter at length. We reasoned this way, that our animals drank a great deal of water. It was really their most important item. There is three times the amount of water consumed as feed. It is certain that he will be watered when he goes out and comes back, but there is no reliable watering after that. Some hostlers are very careless. I had seen very frequently a horse go to the trough and look as if he would drink a barrel of water. We built a stable, furnishing water to each stall. We have troughs holding half a

gallon of water each. The animals will not take too much when hot. We have now nearly nine hundred head. It has since been adopted in Louisville and two or three other places, with no bad results. As a humane measure, they think it a good one. This Report corroborates our experience. One of the gentlemen appears to think they will take too much. Where they can get it at all times, they do not drink too much.

Mr. Edward Lusher, of Montreal, said: I must confess that I have heard one or two astonishing things here. I have never been aware that horses, coming in fresh from a journey and heated, might have without injury, any amount of water. Our experience has been, that after horses have been brought in heated, the best thing is to let them rest half an hour. If you can give them as much water as you choose without doing them harm; and that after a time they will not take more than is good for them, they are very different from all the other animals. It seems to me a dangerous experiment. They try it sometimes in spite of us, and the result is very bad. One gentleman says cut-feed is right. For years we have never given them anything but natural food. They do not swallow so rapidly when they have to chew. Some railways use cut-feed, and their horses look very well; and the tendency of the whole discussion seems to be as to their longevity. * * * There is one interesting question; the cost of veterinary surgeons and medical attendance to each company per horse. One company has cut-feed, and gives it to its horses whenever they want it. What the mortality of these horses is, compared with horses fed with whole feed at stated periods, would be interesting. Our company gives whole feed at stated times only. We only lose as many as twelve, sometimes but two to four a year. Ten horses a year it will average, perhaps, out of four hundred and fifty. We are away up in the northern clime, and they have to do a great deal more work than the average car-horse. We have to run sleighs in the winter in order to keep the horses. We would be very glad to rent all the horses and cars out in the winter, and buy them again in the spring. The horses are used up more in the winter than they are in the summer, with our hills and bad condition of track, and in consequence of Macadamized roads. Our horses are all very hard worked, but I have not seen any better than ours.

Mr. Humphrey, of Concord, said: I handled horses before I saw a horse railroad. If you give water to a horse when he is hot, you are pretty sure so founder him. As regards watering horses, when running the cars or when in the stable, I am very careful not to let mine drink too much. When the horse is warm, it founders him, and stiffens him up to give him water. About feed. I am feeding three-quarters oats and one-quarter whole corn. I fed our horses on oats altogether at one time; also on cracked corn and oats. We can get along pretty cheaply. I have not heard anything about how fast we can drive. I have been running a horse-railroad only three years, and keep my horses right up to the handle. They do splendidly, traveling

fourteen or fifteen miles a day. Last spring we extended our road three miles further, giving them seven miles to run. I tried to put them through in an hour—we were running against a steam railroad! The consequence was that I took the flesh off every horse I had. I got over that fancy, and have brought them down to five miles an hour, and they are picking up again nicely.

Mr. Cleminshaw, of Troy, said: The report of Superintendent Brown covers longevity. As to watering, it is a hobby up our way. If you will bear in mind what I shall say, you will go home and try our experiment, and never forget it. It is a humbug about a horse not drinking when he is warm. When I became connected with the Troy and Lansingburgh Road, I learned the habit of the Superintendent regarding watering. I had been taught that a horse must never drink and never eat when he was warm. I asked him why he did it and looked into his theories. Experience is worth more than all the theories ever generated. His report was written two years ago; therefore, the statistics, percentages, etc., should be dated back two years. Since Mr. Brown has been Superintendent, in winter or summer, it makes no difference which, as soon as the horse comes in from the car, his harness is taken off, and he is led to the trough and allowed to drink all he wants. When brought out from the stall, he is treated the same way. At stopping points, he is taken from car to watering-trough for all he wants. In the fourteen years that Mr. Brown has run the line—I will vouch for the last twelve years—we never have had a foundered horse, or one affected in any manner, shape or form in that way. His theory is that foundering comes from after giving a horse drink or food; allowing him to stand in a draught, and taking cold. The report states the average life of a horse as about seven and one-half or eight years. We take the value of our horses, and base the calculation on that value of the horse; because a horse worth one hundred dollars yesterday, may not be worth fifty dollars to-day. Our average for 1882, was, between seven and eight years. Last year it was less. Of course we are doing more business, and we put in more new horses. The new horses will wear out faster than the old ones.

Mr. Robillard said: We have had horses that were foundered, and invariably it has been traced to their getting water from the tub when coming in from work hot. Horses have been foundered on the street, and it has been traced to the same source. I drive a first-class spirited horse, and coming home one night with him, not hotter than usual, I stopped on the way at a spout, about half a mile before getting to the stables. I gave him a drink, and that was the first he had had after leaving the stables. I let him run for about a mile after I started; and in two or three minutes we were in the stables, and the horse was stiff in very limb. He did not get in any draught. He got over it, and I never tried the experiment again. In the country, around our place, when they get home they let the horse go to the bucket; from the

age of two or three years they do that all the time. If you buy seven or eight year old horses, and try this, it will kill them.

Mr. Cleminshaw replied: Every horse we get goes through the same process.

Mr. Humphrey said: Has anybody in driving horses when warm and sweating, ever had a shower come upon them and foundered them? I got caught in just this way, and did not know what was the matter. I put my horse up in the stall, and he showed it right off next day. He did not drink a drop of water that I know of. The veterinary asked me if I had been out in a shower? I replied that I had, when he said, that explains it. So I do not see why the horses on the horse-railroads do not get caught in the same way.

Mr. Littell said: I would like to ask Mr. Robillard how long it was since his horse had drank, previous to the time he was driving?

Mr. Robillard replied: About three hours. If a horse is foundered through water, it will be apparent in an hour.

Mr. Littell said: You can not keep a horse away from water, and then let him drink all he wants, without doing harm. Let him have all he wants right along.

(To be continued.)

Mr. Fuller on Cable Railways.

Mr. Lawson N. Fuller was up before the Cable Railway Commissioners (N. Y.), on Thursday morning (12th ult.), and is reported by the *Telegram* to have said:—"I represent nearly all the property owners on 155th Street. The elevated roads were built, notwithstanding the many and strenuous objections urged at the time. Now they carry in a year 500,000,000 passengers—so many, in fact, that people are huddled together like sheep in a cattle train, and often are obliged to stand during the entire trip. We were told that the value of property along the route would be destroyed, yet it has increased more than \$150,000,000. The first rides I took in public conveyances in this city were in the Knickerbocker stages. I had to hold on to a strap and stand up all the way down town, and I have been holding on to a strap ever since. The city is constantly and rapidly growing, and the facilities for travel are wholly inadequate. I have seen the working of the cable road in Chicago, and it is in every respect admirable. I have counted eighty passengers in one car going from the Astor House to 155th Street. The lawyers appearing here in opposition to the proposed cable road are nearly all employed by the horse railroads. The grant of a surface road in Broadway should compel the company to carry passengers from one end of the island to the other for five cents, and give transfers to all parts of the city. The Sharp people want the franchise for a road in Broadway, and only propose to carry passengers to Fifty-ninth Street.

Mr. Rehm on Car Heating.

A local reporter recently interviewed Mr. Jacob Rehm, of the North Chicago Railway Co., with the following result:

"When asked whether the north side

railway cars were likely ever to be heated, Mr. Crawford said that was a question he did not wish to discuss. Jacob Rehm, who owns a controlling share of the stock of the corporation, was present, and he was asked to solve the problem. Mr. Rehm shook his head and did not want to talk. 'Why don't folks insist on the omnibuses and other vehicles being heated?' he evasively asked.

"There are fewer people who ride in omnibuses, and then for shorter distances," answered the interviewed reporter.

"Well, the majority of the people don't want the cars heated—wouldn't have them heated—and would be mad if they were heated," insisted Mr. Rehm, waxing eloquent. 'I've talked with them' (meaning the people) 'and I know what they think about it. Nine out of ten people don't want them heated. They don't get cold riding the little distance to business in a street car, with heavy overcoats and warm rubbers.'

"But," timidly interposed the reporter, 'when people are not able to clothe so warmly, or when they are well clad and have a long ride of three or four miles, they do get cold. Isn't there some way of making it more comfortable to your passengers in severely cold weather? You had stoves on your cars at one time.'

"Yes; but they were not practicable and we took them off. I haven't seen any way of heating street cars yet that is practicable. They are trying something on the south side somewhere now, but it is no good. I've been watching these things.'

"Do you know anything about the system used in heating the cars in Brooklyn?"

"Oh, yes; but it don't amount to anything. They pretend to heat them but don't have any fire in them once in ten days. It's only a certain unreasonable set that want to keep bothering us that ask to have the cars warmed. The next thing we know they will want us to put down a carpet for them to walk on from the doors of their houses to the car,' and having thus delivered himself, Mr. Rehm fell into a state of abstract reflection."

[Mr. Rehm's reported statement, that the Brooklyn cars do not have any fire in them once in ten days, is erroneous. We ride in one or another of the Brooklyn lines twice every day, and have not yet struck a car in which there was no fire.]

Regarding a Spring Car Motor.

EDS. STREET RAILWAY JOURNAL:—

Inclosed you will find an article cut from the *American R.R. Journal* of February and March 1884, in regard to Automatic Spring Motor. Will you please let me know through the columns of your JOURNAL, what has become of it? I was in hopes at one time, that it would be a success.

Yours truly,

JAS. O'HERN, Sec'y.

Hannibal (Mo.) Street Railway Co.

[In pursuance of our inquiries upon the subject, we saw Mr. J. Francis Bacon, of 131 S. Fourth St., Philadelphia, formerly Secretary and still an active director of the

Philadelphia company referred to: *i. e.*, the "Automatic Spring Motor Car & Carriage Co."]

Mr. Bacon's reply is embodied in the following communication from him:—

PHILADELPHIA, Feb. 19th, 1885.

EDS. STREET RAILWAY JOURNAL:—

In answer to your inquiry concerning the Automatic Spring Motor, I will say, that the company is at present pushing the matter as fast as possible. As with every new thing, difficulties have occurred which were not expected in the beginning, and obstacles arisen which required time and patience to overcome. At the present time nearly all the perplexities have been removed; the springs have been made and tested; the large car (except the top or wood part) completed, and a final test will be made in a short time, just as soon as the machinery can be properly adjusted and the durability of the springs ascertained. The company has every reason to believe that it will be the success claimed; but past experience has taught us that a great deal of patience is requisite. The descriptions of the motor given in the articles handed me are in the main correct, and need no comment or enlargement on my part upon them.

Hoping the above may be satisfactory to you,

I remain

Very respectfully yours,

FRANCIS BACON.

The description referred to is in substance as follows:—

" * * * * * A car is being constructed in Philadelphia which will contain eighty springs, eight seats of ten springs each. Each set will be inclosed in separate cylinders, and each will have its own gearing. The power of eighty springs is sufficient for a run of eight miles. The entire force will not be used at any time. That of one set of springs will be exhausted before that of another set is used, and each set will carry the car one mile. No difficulty is anticipated with regard to grades, the calculation being that a grade of six hundred feet to the mile can be covered without trouble. The grade question is met in this way; progress will be made on the level with one set of springs. Reaching a grade, should it become necessary, force will be augmented by working another lever, thus bringing into play another set of springs, and so on, to the use of as many as may be found necessary. The new car will have a front swing truck, lessening friction and enabling it to take short turns. It is likewise anticipated that, by means of such truck, the car will be easily removable from the track in case of obstruction, and may be run around it. To stop the car, there will be provided a treadle to act upon a double-action band brake, locking both axles, and stopping the car within the space of six feet.

"Some minor features of the invention are a governor which may be set to determine the maximum speed of the car, and an indicator that will show the amount of reserve force left in each set of springs. It will be seen that the breakage of one spring would reduce the power of an eighty-

springed car, only one-eightieth part, with the corresponding proportionate loss of speed. At the end of the route the broken spring would be repairable at a cost of five dollars, in two hours.

" * * * * * Not more than two good stationary steam engines of fifteen to twenty horse-power will be necessary to any ordinary city railroad to wind the springs. The steam engines can be placed at both ends of the route, and when not in use for winding, can run the company's repair shops. No new tracks, new switches or turn-tables, will be necessary, as the car can run backwards or forwards."

There are (or were) two other spring car motor companies in Philadelphia, working in different ways, upon the same problem. EDS.]

Rapid Transit in Level Cities.

EDS. STREET RAILWAY JOURNAL:—

A prominent Street Railway official of the city of Chicago claims to have solved this problem, and in the course of an interview with a representative of the JOURNAL, disclosed his solution of the matter. The following is a condensed report of his plan:

"The track will be underground and in the centre of the street, using a double arch for a double track. This plan is considered by practical engineers beyond question or doubt, to be feasible, practical, and unobjectionable, particularly as regards the Streets of Chicago. It is preferable to the elevated systems for many reasons. It does not interfere in any way with the property holder; it not being calculated to deteriorate the value of property in any way. It is more accessible than the elevated system, requiring only about 18 inches more depression than the grade of the basements of buildings as they are now constructed, so that eleven ordinary steps would take the passenger from the present sidewalk to the train. The elevated system requires two to three times that number, is unsightly, and in no small measure deteriorates the value of property adjoining. With electricity as now perfected, the surroundings would be as comfortable and pleasant as a parlor by gaslight, and the temperature would not be subject to the sudden and radical changes experienced on roads above ground.

"For propelling power compressed air or electricity might be used, neither of these producing smoke or gas, and either of them making attainable a speed of 25 or 30 miles per hour.

"Trains could be moved without danger of collision, and the cost is within easy reach of those who may desire to become interested, and not necessarily greater than the elevated system."

The gentleman from whom the above was gleaned, is a man of great experience in his line, and has devoted considerable time and money to the solving of the problem of rapid transit in large cities. Plans of his underground system have been prepared, and it is now only a question of time when the underground system will drive the cable system to the wall, it not being subject to the many objections and difficulties that operate to the detriment of the latter system. W. O.

Another Remarkable Horse.

EDS. STREET RAILWAY JOURNAL:—

Your issue for this month contains the "history of a remarkable horse," owned by one of the Chicago Street Railway Companies.

I would give you the history of a horse owned by our company, which may prove interesting to some street railway men.

In February, 1882, we purchased a horse aged 12 years, weight about 1,100 lbs., which had been trained for pacing on the track. He could pace fast, but was an incurable bolter. This bad habit also spoiled him for road work, and after passing through the hands of several horsemen, who failed to break him of his bolting propensities, he came to the street railway stables.

After trying to control him with severe bits, the superintendent ordered him to be worked against two horses as the only possible way of keeping him so he would do his work without alarming the passengers, or breaking his harness.

Accordingly, from March 1st, 1882, he was worked 26 miles a day; if he was let off with 15 miles a day for a few days, he would get so the drivers could not handle him.

About once a month, some one would take a fancy to him and come to buy him for road work; but one trial drive after him single, and he would invariably be brought back to the barn.

When he died from a severe attack of colic, in September, 1884, he had a credit of 19,764 miles (nineteen thousand seven hundred and sixty-four.)

Every driver in the employ of the company rejoiced at his death, as even with the most severe bits, and constant work, he kept a driver very busy holding him on the track.

Allow me to say that the STREET RAILWAY JOURNAL is appreciated here, and that we look forward with impatience for each issue. It treats on matters that we understand and take an interest in.

Yours respectfully,
WM BOND,
Stable Foreman,
St. C. M. & Thorold St. Ry. Co.
St. Catharine's, Ont., Canada, Feb. 16th.

The Chaplin Frictionless Bearing.

EDS. STREET RAILWAY JOURNAL:—

J. E. Rugg, Esq., Superintendent of Highland Street Railway, Boston, has given us permission to say that our bearings have run on the "Gov. Rice" car of his road, since spring of 1881, with perfect satisfaction. There was not one cent of repairs put on box or axle until August of 1884, when the car was overhauled and painted, and our bearings repaired and put at work again and are now running. The "Gov. Rice" is a close car, and is run seven months in the year; open car replacing it in the summer months. There is a very noticeable saving of draft, and the car takes curves with great ease. At the shop we were told it was the exception to have a box run as long without repairs. The boxes were put on by us as an experiment, and no attempt has ever been made to put them on the market. This road uses the Higley box, and we have been treated very courteously in the testing of ours, and thank you for your valued notice.

Respectfully yours,
E. P. CURRISS, Treas. and Mgr.

— THE —
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Special Notice.

Street Railway officials and others interested, who have not yet subscribed for the STREET RAILWAY JOURNAL, should do so at once, so as to receive the back numbers. An index will be printed at the end of the year, embracing the first twelve numbers—constituting a most valuable fund of information. The price (ONLY ONE DOLLAR) should place it in the hands of every practical street railway man in the country.

Car Wheels.

Roundness of car wheels means ease of traction and economy of track, wheels and motive power. We know of but one city on this continent where really round wheels are used, and that is Chicago, where the wheels are ground.

It is not enough that a wheel be round in the ordinary sense of car wheel roundness, which generally means that the tire or tread approximates a circle which is approximately concentric with an axle which is approximately straight. The tire or tread must be absolutely circular in any plane at right angles with the axle; the rim or felloe must be of equal thickness in all parts of any circumference; the wheel must be truly centred and the axle must be perfectly straight, and its journals and wheel seats absolutely parallel and "in line." The material of the wheel must be free from local fissures, blow-holes (either opened or flattened) and *strained places*; must be of equal density, hardness and toughness in all parts having similar shape, place and duty.

Gradually, master car builders have taken up the questions of roundness and size of wheels, and incidentally have tried to produce wheels which were bored concentrically with their tires.

We believe that these lines are the first to point out another probable cause of rough

running and short life of wheels, namely: non-parallelism in and non-alignment of axle journals and wheel seats.

If the journals and wheel seats are round and straight, but those on one end of the axle not parallel with those on the other end, naturally, the two wheels on that axle will not lie in parallel planes, but will be inclined to one another, and thus will result a wabbling, which must of necessity cause rough riding and encourage sharp flanges.

If the journals and wheel seats are round, straight and parallel, but not axially concentric, that is, "in line," there must ensue rough riding and flat spots on the treads.

Having pointed out the desiderata and essential features of a proper car wheel and axle, and wherein the average product does not fulfil the requirements, it may be worth a few words, to point out how these *desiderata* are to be attained.

As to roundness, we think that in these days no one will dispute the assertion that nothing was ever cast truly round. The lathe or special wheel turning mill has had to supplement the molder's work, and has produced results which passed for round until their non-circularity was exposed. No four jawed chuck was ever known to turn out truly round work, and we believe that no chuck having an even number of jaws can be made to turn anything round or anywhere near round, as modern machinists understand the word. We will go further and say, that no lathe ever turned anything which would pass for round in Pratt & Whitney's, or Brown & Sharpe's machine shops, and that there never was anything which was round, that was not *ground* so.

The lathe gives but an approximation. But whether lathe or abrading disk is employed to produce a car wheel from a casting, the process is one which is doubly wasteful; for the turning process is paying money out for the purpose of removing the best part of the wheel, the "precious metal". The conclusion which should naturally result from this reflection is, that we should try some method of producing wheels which are commercially, practically round and true in the tread. This may perhaps best be accomplished by preparing dies which have, by lathe and emery wheel, been rendered absolutely round, true, and to size, and then producing die-forgings therefrom, by the action of press or hammer on homogeneous metal "cheeses," either cast or forged.

As to freedom from blow-holes (either distended or flattened, but in either case harmful), that may in certain measure be secured by improvements in melting and pouring; but the probability is that absolute certainty in this respect will be difficult and costly to arrive at. Here again the pressing and hammering processes suggest themselves as valuable auxiliaries, for they are even more effective in improving the internal character of the mass than in battering the outline and surface. In the matter of equal thickness of rim or tread, pressing or hammering here again has the advantage over pouring.

True concentricity of bore and tire may be got by the use of a proper boring mill,

using a chuck having a *prime number* of jaws.

The axle should have its wheel seats and journals turned on both ends at once; and then the journal should be *ground*, without re-chucking the piece, the grinding being effected by a pair of wheels for each journal, hung in a swing frame so as to constitute a pair of calipers, as in grinding paper rolls.

This latter proposition will be very promptly laughed at. If it were as laughable as the results by present methods, it would be very ridiculous. The saving in traction alone would pay for doubling the expense of fitting, in order to secure such good results; but properly managed, the system would come as cheaply as under the present method.

We have a friend who *curries his cows*. He gets laughed at, too; but the *extra milk* more than pays for curry-combs and labor.

Heating the Chicago Cars.

A correspondent of the *Chicago Tribune* writes to that paper as follows:

"Noticing various articles in your paper treating upon the heating of street cars, I have become sufficiently interested to procure some information on the subject from the Secretary of the Cream City Railway Company at Milwaukee, which company has its cars at a very comfortable temperature at all times during the winter—never overheated and never cold.

"The heater it uses is a small coal stove on the driver's platform, incased in sheet iron, the heat passing into the car through a radiator at the side of the door—hence no danger of scorching clothing, or of the hay or straw in the bottom of the car igniting.

"The heaters complete and in place in the car cost about \$95 each. The quantity of coal required will average a cost of from 30 cents to 60 cents per car per day.

"My apology in troubling you with this is the common interest I have with you in suffering street car patrons, who from necessity contribute liberally to the treasury, and certainly deserve better from the corporations.
 J. A. BROWN."

Borrowing.

"For such kind of borrowing as this, if it be not bettered by the borrower, among good authors is accounted Plagiaré."—*Iconic clastes*.

It has been a constant and justifiable source of pride to the publishers and editors of this journal, that its contents have been almost without an exception, however trifling, original; and that whenever special circumstances have called for the reproduction of matter from other publications, the source has been scrupulously indicated.

It has been an equal source of pride that most of those contemporaries which are not jealous of our well-earned influence and financial success have done us the honor to reproduce many of our articles, with due credit.

Occasionally, however, we find an exchange (or a contemporary, not an exchange) using our ideas and information, clothed in other words; and some even go to the length of copying our paragraphs and articles without giving us proper credit;

sometimes without even "beating the devil round the bush" by vaguely adding "*Exchange*," which means so much and yet so little.

Messieurs et chers confrères, you are, until further notice, welcome to our articles so long as you credit them. Otherwise, please keep the scissors away from them.

Stable Ventilation Pays.

Did it ever occur to those in power, that by permitting their stables to be pest-houses and funk-magazines, they are losing money in several ways?

We have in mind now a set of stables, in a large city, and in a quarter thereof which would naturally be desirable for residences, on account of its high ground, and central location, its dry, firm soil, and the character of the property and improvements all around it. But within a radius of two blocks of these stable, each lightest wind conveys to the residents of the neighborhood, *not*

"Sabean odours from the spicy shore
Of Arabia the blest,"

but whiffs and wafts of ammonia and sulphuretted hydrogen, and unmentionable and unanalyzable gases, varying only in their pungency and offensiveness, and in their relative unhealthful effect.

As a consequence, "rents are down" in that neighborhood; and the population is of a class which rides but little. In other words, the unventilated stables are the centre of a town of five blocks in length and the same in width, which contribute but very slightly to the revenue of the road.

Further, the health and eyesight of the horses is not improved by the lack of ventilation. In fact, it can be shown that the strength and durability of the horses are lessened and the medicine bill increased by the lack of ventilation.

In addition to this, the harness rots sooner in an unventilated stable than in one in which both man and beast can find "the two noblest things, which are sweetness and light."

Steam on Street Railways.

The Hon. R. C. Parsons recently read before the British institution of civil engineers a paper concerning the progress of steam locomotion on street railways. He asserted that very little success had attended efforts to introduce steam motors on the common highway, while special legislation in behalf of the street railway companies has led to comparative success in that direction.

The British "Board of Trade" regulations have been amended so as to protect the public, without hampering the use of steam. A special type of engine, with vertical cylinders, carried well up above the axles and fitted with long connecting rods, coupled directly to the leading axles, has been applied to the street cars. "All four wheels are connected by coupling rods, as in the locomotive, and the exhaust steam is concealed by various expedients. The surface condenser was considered more economical than super-heating, to produce efficiency, and air condensers were thought practicable. Engine and passenger car were often combined—a method used in

various American systems—in one of which (Rowan's) the engine can be removed and another substituted in a few minutes. Depreciation was allowed for at 10%. Depreciation on the line alone was taken as 3%. The cost of operation was stated at 2.28 pence per mile, while the total of all expenses was given at 9.33 pence per mile, and every penny per mile above this figure should give 2.2% in dividends. The line intended for such steam traffic should be very substantially built, and large cars and moderate fares were advised."

Mr. Shellshear described the street railways of Sydney, New South Wales, all of which are worked by the ordinary railway system. The number of passengers carried in 1882, on twenty-two miles of road was 15,269,100, or about 200,000 per mile; and the earnings were over \$40,000 per mile, or about 2% per mile. The gauge is 4 feet 8½ inches and the number of engines employed 57, including several American (Baldwin) tank engines, which work more smoothly than English or home-made engines. The government is having other steam cars, on the American system, built at the Baldwin Locomotive Works. The result is believed to have demonstrated that horse-power must yield to mechanical traction.

Keyed and Bolted Car Wheels.

A rather novel method of fastening car wheels to the axles has been recently patented* and satisfactorily tested on the D. L. & W. R'y.

The method consists essentially of recessing the wheel bearing of the axle and providing the inside of the wheel hub (or hole) with lugs corresponding in number and position to the grooves in the axle. Or simple keys may be substituted for the lugs. The wheel is secured to a collar or abutment on the axle, by means of bolts passing the abutment and the wheel hub, and secured by suitable nuts.

It is claimed that this method of fastening wheels decreases their liability to fracture, as the wheel is secured without the immense pressure (25 to 40 tons) required to force home the ordinary wheel; a pressure that is claimed to frequently cause crystallization of the axle, which combined with the internal strain on the wheel hub, ultimately leads to fracture of the axle or wheel.

On the authority of a letter from Mr. Walter Dawson, M. M., countersigned by Mr. W. A. Halstead, Gen'l Supt., D. L. & W. R'y, we can say that wheels thus fastened gave a mileage of 15,000 miles without repair or apparent strain on the fastenings.

The method appears to us eminently applicable to street railway service. G. B. H.

*Michael Jordan, Scranton, Pa.

Growth of Travel in New York.

The wonderful growth of the passenger traffic of New York City in the last thirty odd years is an interesting study, and the following figures are deduced from a table published by the New York Arcade Railway Co.:

In 1850 there were only two railway lines

in the city, and the total number of passengers carried was less than 7,000,000; in 1884, the total of passenger traffic for all railways and omnibus lines were 302,183,362. This is an average increase of over 9,000,000 per year. In 1850 the population of the city was 515,547; while in 1880 it was 1,206,299. Taken by decades, the increase of travel has reached 141 per cent., and the growth in population only 46 per cent.

The elevated railways carry nearly one-third of the moving mass, or in 1884, 96,702,620; but as the natural growth of passenger travel between 1877 and 1884 was over 120,000,000, or more than 23,000,000 above the presented capacity of the elevated lines, it would seem that the rapid transit problem is yet to be solved. The more railways there are the more they seem to be used, and the statistics prove that increased facilities invariably bring about an increased ratio of travel. In 1855, four railways carried, each, over 4,500,000 passengers; in 1865, twelve roads carried nearly 7,000,000 each; in 1875, nineteen roads nearly 9,000,000 each, and in 1884, twenty-three lines transported over 12,350,000 passengers each.

The publication referred to, basing its figures upon the semi-decade of 1875-80, showing the lowest percentage of increase in travel, viz.: 15 of population and 27 of traffic, estimates that in 1890, an increase in passenger traffic of 138,000,000 will have to be provided for; and in 1900, or fifteen years from now, the increased demand will reach the enormous figures of 561,000,000.

If these deductions are even approximately correct, it is very evident that the facilities for travel in the city of New York must be vastly extended to meet the possible demand of the next few years. There appears to be room for nearly, if not quite all, of the various transit projects afloat, both elevated and underground cable roads and ordinary tramways.—*Unknown Exchange*.

To Street Railway Officials.

We should be very much obliged to officials, or others, if they will let us have by "closing day" of our next number, any memoranda of interest in street railway circles.

Copy should reach us on the 25th of each month, for the issue dated the first of the subsequent month.

Cost of Keeping London Omnibus Horses.

The principal food of the horses of the London General Omnibus Company, is maize; and maize has not been so cheap since 1879. It cost only £1 5s. 2d. per 480 lbs., against £1 13s. 8d. in 1882. We quote from a recent English note on this subject: "No other food is so suitable for horses. It is heat giving, well adapted for flesh forming, and where speed is not particularly required, is altogether an admirable fodder. Beans make up a staying power, and these, too, have been cheap—fully 3s. a quarter less than in 1883. Oats have been a shade dearer, but very little is required. The same applies to hay. Maize is the great thing, as it means 95 per cent. of the whole fodder, and there is always a fair chance of its being obtained at a fair price." This company paid 12½% in 1884, as against 10% in 1883.

A Changeable Horseshoe.

We illustrate herewith a novel pattern of combination horseshoe, for which the inventor* claims several points of special convenience.

The shoe, made of malleable iron, comprises two parts, one of which is provided with heel and toe calks, and the other with side rows of holes, in the usual manner. The upper portion is nailed to the hoof in the same manner as the common shoe. The method of uniting the two parts will be understood from the cut. The lower portion, constituting the shoe proper, is slipped into the flanged recess in the upper permanent part, constituting the shoe carrier, and the two lugs at the heel enter openings provided, and are firmly held by split keys. In icy weather the smooth shoe can be replaced by one formed with calks, in a very short time; the operation is simple and easy and can be performed by any one. The carrying plate, being subjected to very little wear, is calculated to outwear many ordinary shoes, and while that portion lasts, shoeing does not require the aid of a blacksmith. When the hoofs require trimming, the same shoe is replaced after the operation. Should the horse interfere, when shod with calks, or should he become uneasy in the stable, the under part can be taken off. If it is considered necessary, an elastic layer can be placed between the two parts. It is claimed that by the use of these shoes the services of the blacksmith are in less frequent demand, and the cost of shoeing will be proportionately reduced.

* David J. Pryor, Roxbury, Mass.

On Horse Shoeing.

EDS. STREET RAILWAY JOURNAL:—

I have been reading the STREET RAILWAY JOURNAL, find it very interesting, and would not be without it.

As I have seen nothing in it about horse shoeing, I thought I would give what I found to be the best system for horses in the use of the street railways. In the ten years that I have been in the employ of the Chicago West Div. R.R. Company I have tried many different kinds of shoes to keep the horses from going lame, but none of them proved satisfactory until I tried the tip system of shoeing. In nine cases out of ten, lameness in the foot comes from contraction; when anything is the matter with the foot the shoes are taken off, and as a result the horse gets better. Now, then, if we can shoe a horse so that he gets the same effect as if he was barefooted, we have made our point. The only place that needs to be protected is around the toes back to the quarters of the foot, so as to give the frog and heels full pressure on the ground. A horse shod on the tip system is more sure-footed on slippery pavements than a horse shod with heels and toe-calks. The great trouble with the farrier is, in place of assisting nature, he destroys what nature put on the foot to

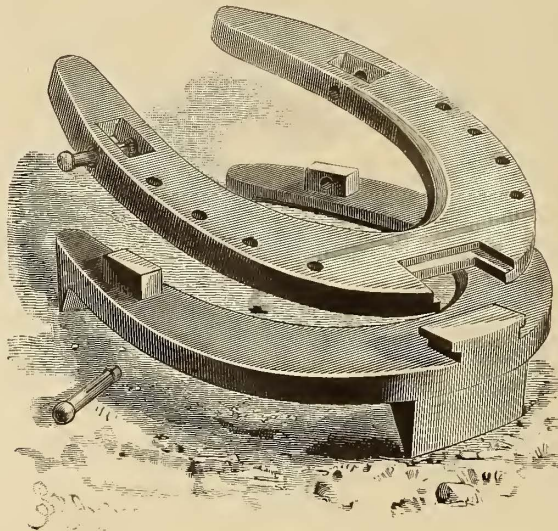
protect it. The frog should never be cut away, and the sole of the foot should be let alone; it will shed itself; keep the toe short as possible with safety; rasp the heels and wall down to the proper state; only take off what is surplus growth from the protection of the shoe; there is no such thing as a horse's frog wearing away or becoming bruised or the heels getting sore from coming in contact with the pavement.

The shoe that I use only weighs ten ounces, and they will wear as long as shoes put on the full length of the foot, that would weigh from two to two and a half lbs., heeled and toed.

As I have no shoe to sell or axe to grind in the matter, but only the interest I feel in the horse, therefore I don't recommend any firm's shoe in particular. At present I am using the Goodenough shoe.

By taking the No. 1 army pattern and cutting one inch off the heels, makes a shoe that can be manipulated very easily to any foot.

I can prove to any one that may be skeptic on this system of shoeing that there is no need of having bad feet or lame horses, as I can convince them by showing the horses' feet that I am now shoeing on



the tip system: they are as sound as horses that never had a shoe on.

I also wish to say that railroad companies can shoe their horses with half the expense by adopting this system of shoeing, besides the saving of horseflesh. I have already taken up more space in your paper than I intended to, but the old system of shoeing is so wrong that it seems as if there should be a law that would compel men to make a change, and I know if the horses had a voice in the matter they would certainly demand it.

Yours respectfully,

THOS. LEGGETT,

Foreman W. Div. (Chicago) Shoeing Dept.

Nursing Babies in Street Cars.

The query in your "Kicker's Column," as to the right of a woman to nurse her baby in a street car could have emanated only from the brain of a crusty old bachelor, a personage who has no rights that any well ordered baby is bound to respect.

I insist that a baby can best judge of the necessity and expediency of taking its usual refreshment, and when it has signified its imperial wishes to its mother, she has a divine right to turn any conveyance into a dining car if she pleases, and there is no indelicacy in the act.

Respectfully yours,

Mrs. M.

Pans for the Elevated Roads.

A bill was recently introduced in the N. Y. Assembly requiring elevated railroads to place iron pans under the structures, so as to protect pedestrians from dropping coals, water and grease. An officer of the Manhattan Railway Company said about it: "It is the same bill that was presented last winter. It was sent to the Board of Railroad Commissioners for an opinion as to its practicability, with naturally an unfavorable result. Any sensible man would see at once that such a plan could not be carried into effect. In the first place the pans would seriously obstruct light, but in addition to that they would be practically be useless, for they would be filled with snow and ice in the winter months, and in the summer every rain storm would overflow them. The bill is an old stand-by."

Street Railway for China.

Whether John Chinaman buys his boots as large as he can for the money, is an open question, but it is certain that he is fond of riding in street cars and goes in for getting his money's worth, even if he has to walk back part way. This being the case, it seems strange that in all the countless large cities of the Flowery Land there is no street railway. India, Japan, the East and West Indies, Mexico, Brazil, the states of South America, etc., are all endowed with these conveniences of modern civilization, but the tinkle of the bell-punch has never yet been heard in populous, ride-loving China. We can state, however, upon good authority, that parties are here arranging for such plant and appliances as are necessary and that Yankee street cars will soon be rolling through the streets of at least one city in the Celestial Empire.

F. B. G.

Surface Drainage and Blindness.

Does or does not surface drainage of stables cause or promote blindness in horses? This will be a good text for a few short sermons, which would lead to the betterment of the condition of car horses and the dividends of the companies.

THE KANSAS CITY RAILWAY CO. has adopted the bell punch as a check on conductors. Edward J. Lawlers, Superintendent, had five years experience with the punch on the Sutton Street road in San Francisco.

Car End Framing.

EDS. STREET RAILWAY JOURNAL:—

I send you a cut representing a skeleton frame of street car end, all framed together before being put into place. Several years ago, while connected with the South Side City Railway Co., of Chicago, by permission of the Master-Mechanic of that company, I proposed to him to build the whole end of street car in one frame; which to my knowledge had not been done before. The foreman was somewhat in doubt whether it could be made practical, and as cheap as the old way, yet it proved so in a very short time to their entire satisfaction, and the same method is now constantly resorted to wherever new cars are built.

That this system of construction is cheaper, I think can be easily demonstrated by any one willing to make the experiment. Not only is it practical for street cars, omnibusses, etc., but may also be employed on the regular railway coaches. There is no necessity of building a car as one would a frame house, fastening first one stud, then another, and so forth. The putting together of frames of this kind is much easier—some large iron clamps and trusses may be built for the purpose, so that the workmen can get all around their work and do it much quicker and better in every respect than by the old way of climbing up and down on scaffoldings, that sometimes occupy as much space as the structure itself.

First, of course, it is necessary to have all parts that enter into the frame mortised, tenoned, bored, grooved, and smoothed up in good shape. When that is done, then frame door post and head together; the same with end or head plate, and ventilator carling. Then frame together strainers with top and bottom rails, left and right hand side; and when everything is ready to clamp together take a perfectly laid out end sill and slip in all tenons of posts and strainers, then glue the same, having all measurements correct.

This completes the end, ready to be set up.

W. M. GABRIELSON.
New York, 1-26.

Future Management of the Brooklyn Bridge.

The bill providing for the future management of the Bridge, prepared by the Trustees' Committee on Legislation, has been read by Oswald Ottendorfer. According to Mr. Ottendorfer the principal features are as follows: The Bridge is made a State work. The new Board of Trustees will consist of the Mayors and Comptrollers of New York and Brooklyn. To provide for repairs, accidents, etc., income bonds may be issued. The Brooklyn terminus of the Bridge is placed at the City Hall Park, while the New York terminus "has been and is still at or near the City Hall Square,"

and "any structure to be erected on the New York side shall be subject to the approval of the Mayor."

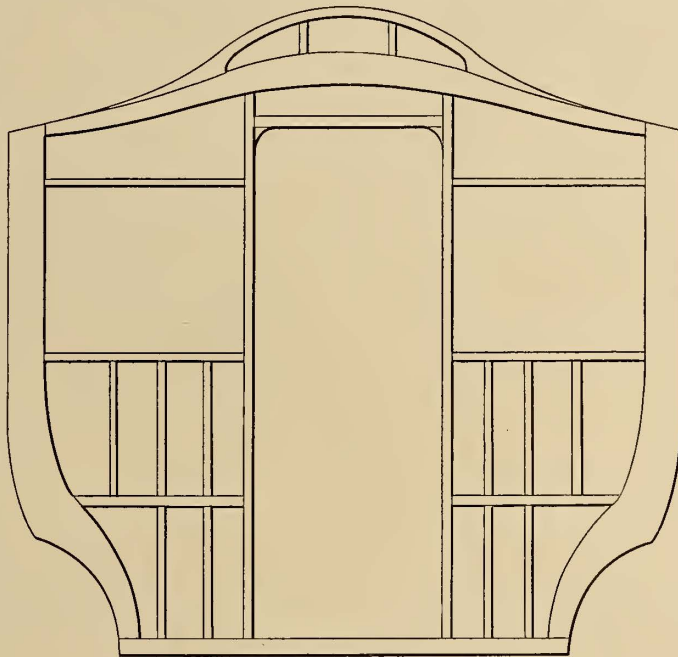
Personal.

JNO. F. COURTNEY, of the Railway Register M'fg. Co., will soon make a trip West.

S. A. GREEN, Superintendent of the Rochester City & Brighton R.R., has resigned, to take effect April 1st.

Comments.

— A street car conductor was punished in Baltimore, the other day, for starting his car too soon, and dragging a gentleman through the mud. My opinion is that a good many conductors ought to have some sort of a lesson on this point; but it is not often you find a person aggrieved who will so far forget his personal dignity as to be



willing to act as both jury and sheriff in such case.

— What is the matter with the riding of new car No. 33 of the Fulton Ave. Line, B. C. R.R. Co., Brooklyn? Passengers with false teeth keep their mouths firmly closed to prevent their being shaken out. Would suggest that Conductors be provided with ear trumpets to better understand the questions put to them by the passengers.

— Two portly, middle-aged ladies were compelled to stand, as I did, on a Sixth Avenue car the other day. As they stepped off at 42d Street, I heard one observe to the other, — "Faith, Mrs. Murphy, I find it a good deal aasier to get a seat in a shreet car, whin I put on me good clothes!"

— I don't object to Philadelphia street car conductors wearing ear muffs in cold weather, but I do object when they shut their eyes as well at their ears. I lost a train the other day through failure of a 20th Street Line conductor to look about

him at a street crossing. He had his ears muffled, and couldn't hear; and naturally the weather was pretty warm in my vicinity at that moment.

— There is a fool of a driver on the Race and Vine Street, Line, Phila., who insists on making all passengers, old and young, male and female, mount his car while it is in motion. Sometime he'll meet an artillery captain, or break some one's leg; and then the company will look into his record and discharge him.

N. B.—After paying damages to the "breakee." J. C.

Notes and Items.

CHICAGO CABLE ROADS.—For the first time, we believe, since the South Side (Chicago) Cable lines started up, there are reports of failure, on account of snow and ice during the recent cold snap. We can't see, however, that this is any argument against the cable, as horse car lines were stopped at the same time all over the United States.

CHICAGO.—A grip was broken on the Madison Street switch the other evening, and all switching from one track to the other, on both the State and Cottage Grove lines, was done with the assistance of horses.

IN BALTIMORE, the other day, Captain Ramsay, of the 2d U. S. Artillery, assaulted a Blue Line (Calvert Street) conductor for starting the car too soon, and dragging his official dignity through the mud. Undoubtedly the conductor deserved punishment for his carelessness, but we can't see how a slugging matinee of the kind described by the papers is going to restore the dignity of a U. S. Artillery captain, tarnished with civilian mud.

THE WINNIPEG, MANITOBA, Commercial says:—"It is reported that Stone-wall is about to have a street railway."

THE PLATE PORTRAIT of Mr. Wm. H. Hazzard, Prest. Brooklyn City Pass. Ry., and Prest. of the Nat. Assoc., published in the report of the late convention, is a good likeness, very appropriate, and well worthy of a frame for office adornment.

A STREET RAILWAY CAR CHAIR has been patented—No. 312,259—by B. F. Curtis, of Atlanta, Ga.

THE BROWNELL & WIGHT CAR Co., St. Louis, Mo. have in course of construction, equipment for two new street railroads to be built in St. Louis in the spring, one of them to be operated by cable. They have in addition a large amount of work for other cities; among these orders being one from Mexico. Their car for the New Orleans Exposition is ready for shipment, they having held it until the rush of freight was over, so as to avoid long exposure in freight yards. This car is intended for use in summer or winter and comprises

many novel points. It must certainly attract the attention of all street railroad men who see it, and receive the favorable opinion of those who are anxious to have comfortable cars in summer without being compelled to have a double equipment.

E. V. C.

M. A. CUTTER, of Galveston, Texas, has patented a street car—No. 312,556.

L. DAFT'S (Greenville, N. J.), latest patent on electric railways is numbered 213,557.

J. H. POLHEMUS, of Brooklyn, N. Y., is the inventor of a cable grip—No. 312,507.

MR. RANDALL, Master Mechanic of the Metropolitan R.R. of Boston, and inventor of the Randall gear, is building 20 open cars with all the latest improvements for that road.

C. L. VAN WORMER, President and General Manager of the Oriental Metal Manufacturing Co., 48 Congress Street, Boston, Mass., has lately received orders for over 200,000 lbs. of their metal, including one order of 5 tons in ingots for export. The wearing qualities of their Journal bearings are said to be remarkable. Mr. Richards, President of the Metropolitan R.R. after thoroughly testing it, uses nothing else for bearings, as may be said also of the Lynn & Boston, R.R. and others. E. O.

ST. LOUIS CABLE ROAD.—An exchange has the following: "The contracts for St. Louis Cable road have all been let, except that for the steel rails. The power station at Franklin & Channing Avenues is nearly completed. The New Albany Rail Mill Company, of New Albany, Ind., has the contract for the conduits. Each will be made of $\frac{1}{4}$ inch sheet iron, riveted every every $4\frac{1}{2}$ feet to ribs or yokes made of 40 pound steel railroad iron. It will be made in sections of eighteen feet in length and placed in position, when it will be riveted together in one continuous piece. There will be two conduits, one for each track, making the entire distance covered six and two-fifths miles. These conduits will be surrounded with a layer of concrete not less than six inches thick. The twenty-four passenger and fifteen grip cars will be of the most approved pattern, and are to seat forty passengers each. The boilers will be three in number, 60 inches in diameter and 20 feet long, to furnish power for 250 horsepower engine. The Fulton Iron Works have the contract for the winding machinery, pulleys, drums, etc.; Philip F. Stifel for the granite and the paving between the rails, and John A. Roebling's Sons Company, of Trenton, N.J., the contract to furnish the 34,500 foot $1\frac{1}{4}$ inch cable.

STATEN ISLAND RAPID TRANSIT—Erastus Wiman, of the Staten Island Rapid Transit Company, has published the confession of a lobbyist who got through the New Jersey Legislature, in the closing hours of the last session, a resolution opposing the bill he has in Congress to authorize the bridging of Staten Island Sound at Elizabeth and Perth Amboy. The story is one of the most ridiculous descriptions of a ridiculous scene which I have ever read. The

only "influence" which the lobbyists says he employed was the embodying in the preamble to the resolution the one fact that Mr. Wiman is a British subject and the falsehoods that the Staten Island Rapid Transit Company is domiciled in London and composed of English capitalists. The Irish members put the resolution through with a yell.—*Daily Paper*.

THE CREAM CITY (Milwaukee) Railway Company's cars are all heated during the winter.

"DEMOCRAT CATCHER."—Mr. McDevitt, Master Car Builder of the North Chicago Railway Co., has invented a device which he facetiously terms a "Democrat Catcher," and which has been applied to all cars belonging to that company. It consists of a piece of strong pipe some two inches in diameter, and stretches from step to step on each end of the car in semi-circular form, and covering the lower end of the brake-staff. The object is to prevent the cutting of the horse's flanks either by step or brake-staff, should the horse fall and the car run up on it. Since it has been adopted on this line not one horse has been cut by the car in cases where a fall occurred.

ELEVATED RAILWAY SCHEMES in Chicago and Philadelphia seem fated not to be. The Philadelphia councils have invariably refused to sanction the various propositions looking to quicker transit by this means; while the Chicago papers are inclined to think the State Street projects will fall through on account of an Illinois law (Rev. Statutes, Chap. 47, Sec. 1), which provides that "Private property shall not be taken or damaged for public use without just compensation, and that in all cases in which compensation is not made by the State in its corporate capacity such compensation shall be ascertained by a jury." This will give enterprising property owners a chance to find sudden bonanzas in their holdings, which will, it is thought, be beyond the reach of the available capital.

MESSRS. M. C. MOSEMAN & BROS. catalogue cost them over \$5,000. There's enterprise, and "there's wisdom for you," too, as Capt. Cuttle would rise to remark, for it has *paid*. They carry a full line of horse furniture, and number among their numerous street railway customers Sharp's crosstown roads, the 42d and Boulevard road, Broadway and 7th Avenue, Fourth Avenue, Broadway road of Brooklyn, and others out of town. G.

THE SAGINAW STREET RAILWAY LINE is thus complimented by the Saginaw (Mich.) *Daily Times*: * * * * Our citizens have no complaints to make. There has hardly been a single hour's delay during the whole winter from the great snow fall. The tracks are kept in perfect readiness and repair. The system of heating adopted by our street cars is all that can be desired and calls forth the admiration of every patron. No smoke, dust, gas, or anything unpleasant, and the car is as cosy, warm and comfortable as a parlor. If some of the managers of street railway lines in other cities would visit this city they could learn how to equip a road that would give entire

satisfaction to the public. If there is a better equipped or managed street railroad line in America than can be found in this city we would be pleased to know of it."

JOSEPHINE D. SMITH, 352 Pearl Street, New York, has got out a new extension chimney for street car centre lamps, so arranged as to fit different sizes of globes.

ANDREWS & CLOONEY, New York, report an increasing business, especially in their wheel department. Their spring business is also good. They have just completed a job of turntable work for export.

THE NEW KANSAS CITY RAILWAY will not be ready to start on the first of March as expected.

IN THE SUIT of the Railway Register M'fg. Co. against the Belt Line and the Broadway and Seventh Avenue roads, for using the "Standard" register, Judge Wheeler's decision in favor of the Railway Register M'fg. Co. covered all the points claimed by them. An appeal has been argued for a rehearing. Decision will soon be given.

ANDREWS & CLOONEY have just made for the Kansas City Cable road, and are now making for the 10th Avenue (N. Y.), Cable road, a number of springs to be so applied as to relieve the cable of sudden strain. They are graduated in such a manner as to indicate at any time the amount of resistance of the car. Why would it not be a good plan to attach to such a graduated spring a pencil to mark on a ribbon of paper to move by clockwork in such a way as to indicate the exact amount of load at any part of the trip, and the average amount of power required to haul the car or train?

THE WESTCHESTER COUNTY RAILROAD Co.—W. C. Hurd, President, Yonkers, N. Y., having obtained the consent in writing of a majority of the property owners along the proposed line, to build a road, has formally asked the Common Council for its decision.

A CAR DRIVERS' STRIKE is talked of in New York for April 1st. It's well that the would-be strikers have given themselves plenty of time to think about such a strike, for the more it is thought about the less likely it is to occur.

A BILL HAS BEEN INTRODUCED into the New York Legislature to reduce the fare to three cents on all street railroads in the State which pay 20 per cent. on their cost. Certainly; but, by the by, will the legislature also make the fare seven cents on roads paying little or no dividends?

ASSEMBLYMAN EARLE, of New York State, has a bill to limit a day's work for conductors and drivers to twelve hours. Isn't it a little hard on an industrious man to say how many hours of his own time out of the twenty-four he may sell to his employer?

A CABLE ROAD has been patented by Mr. Francis de Vooght, of Antwerp, Belgium. The invention covers means for retaining the cars on the rails on curves, and for holding them down to prevent overturning on steep; means for conducting a cable

through a shield over or under ground, and for obviating friction; hooks of peculiar form for attaching and detaching cars; means for obviating opening and closing the shield to permit the car attachment to communicate with and be carried by the cable; means for crossing transverse cables and for adapting the same car to run either way on the same track, with provision for automatically disconnecting the hook from the cable and notifying the car driver thereof, at crossings, and other novel features in cable motive practice.

RECENT PATENTS.—The following list of patents relating to the street railway interests, granted by the U. S. Patent Office during the month of February, 1885, is specially reported for these columns by Franklin H. Hough, Solicitor of American and Foreign Patents, 925 F Street, N.W., Washington, D.C.:

311,537—Cable and Car, traction—J. H. Smith, Newark, Ohio.

311,627—Car-starter — A. R. Whitmer, Safe Harbor, Pa.

312,273—Cable Tramway—C. M. Huson, South Pueblo, Colo.

312,507—Cable Grip—J. H. Polhemus, Brooklyn, N. Y.

312,556—Car, street—M. A. Cutter, Galveston, Tex.

312,258—Railway Chair, street—B. F. Curtis, Atlanta, Ga.

312,711—Cars, Grip Attachment for Cable—J. J. Endres, Hoboken, N. J.

THE PRODUCTION OF BESSEMER steel rails in the United Kingdom in 1884 was 784,968 tons, against 1,097,174 in 1882. There has therefore been a diminished make of 312,206 tons in 1884.

NEW TRAMWAY FOR TOURS (France).—The President of the French Republic has signed a decree, permitting the building of an extension of the Tours street railways from the barriers of Vouvray to the *depôt* of Saint-Symphorien. The necessary arrangements for the execution of the work must be completed within a year from date (Jan. 25th, 1885).

THE FRENCH TRAMWAYS COMPANY of the Department of the North, has rented

of the city corporation, under certain limitations, all the street railways of Lille; lease to terminate in 1918.

THE CONTRACT for the girder rails for the Melbourne tramcars has been placed, we understand, in the hands of Messrs. Dick, Kerr and Co., of London, this being the second contract that has been placed in connection with these tramways, the present one amounting to about 9,000 tons. The same firm have also just shipped the whole of the ironwork for the Brisbane tramways.

ELECTRIC TRAMWAY.—The Blackpool (England) Town Council General Committee has resolved to employ electric power for the new tramways to be there laid.

EVERY TRAVELER IN FRANCE will welcome a long expected railway reform effected by the Minister of Public Works. A circular has been sent to the boards of all the railway companies, requesting them to arrange by the 1st of April that free access shall be given to the platform and trains to all passengers provided with tickets. The misery of prolonged incarceration in *salles d'attente* will, therefore, soon become a thing of the past.

THE COVERT MFG. Co., of West Troy, N. Y., has added to its business the manufacture of chains of all sizes and styles.

Twice a Month.

\$3.00 per Year.



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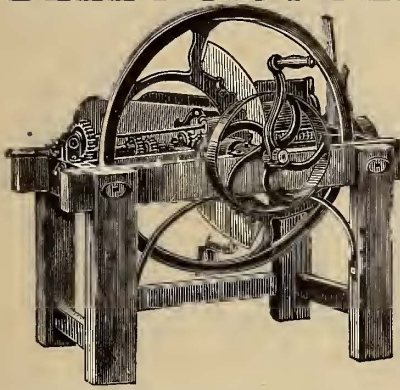
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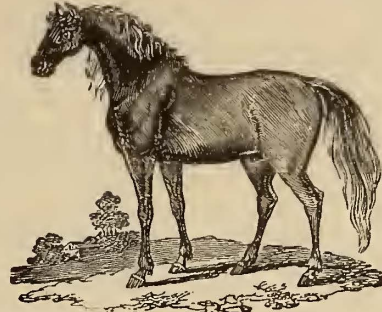
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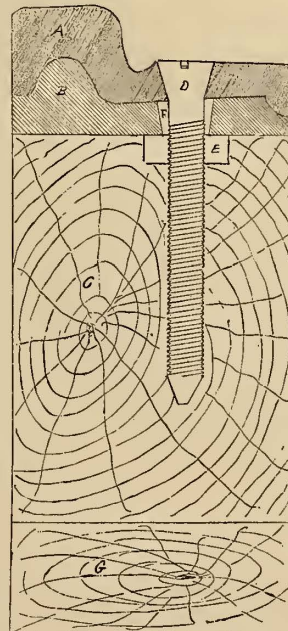
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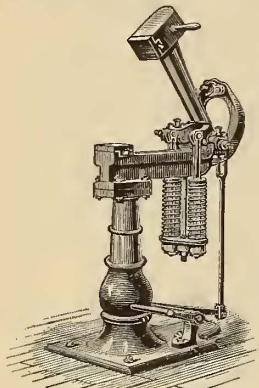
The accompanying cut shows a cross section through joint. A is the rail, B the joint chair, C the stringer, D the patent screw fastening, E the nut, F a slot in chair allowing rails to contract and expand. The chair cannot settle and the rail ends are held level with each other, preventing the many evils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

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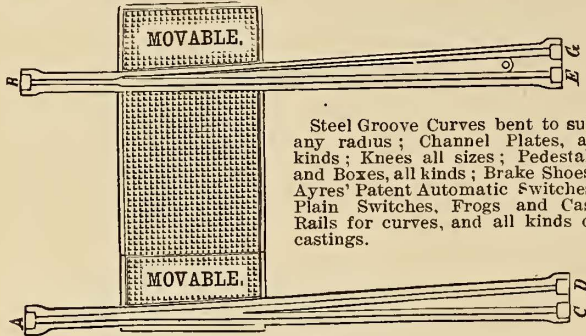
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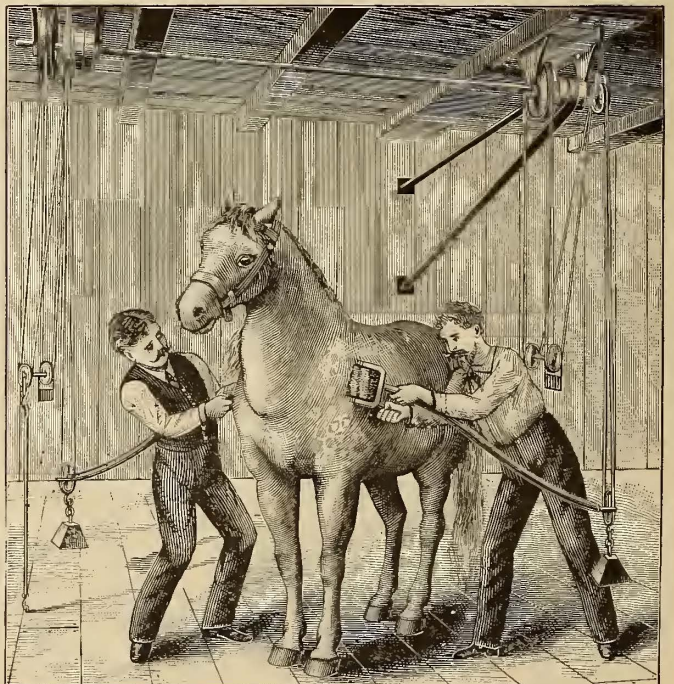
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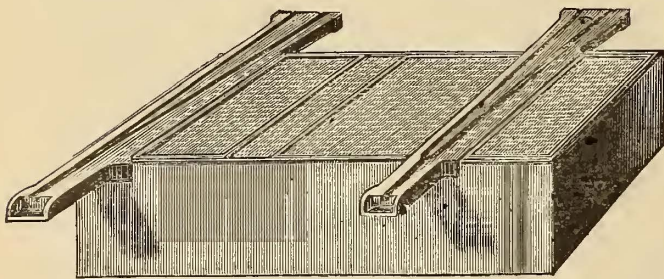
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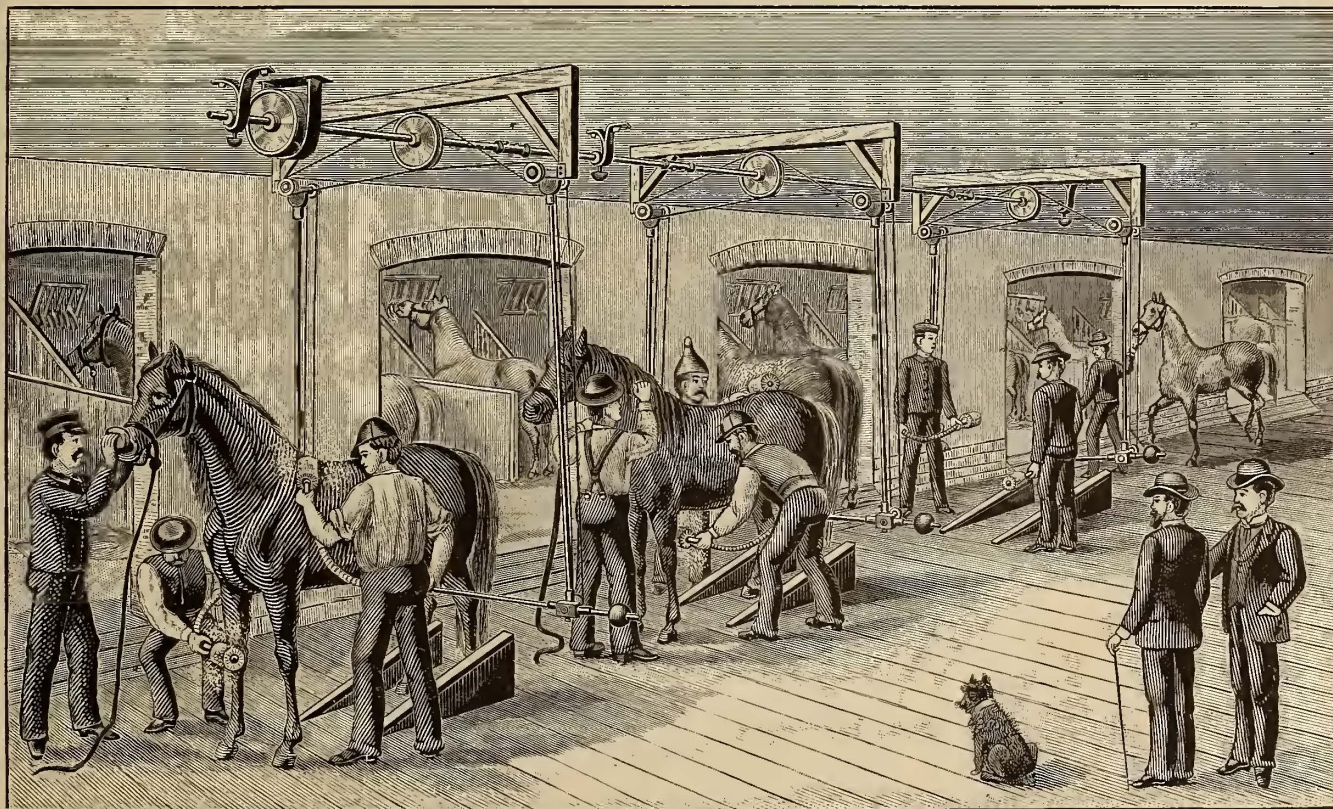


Patent No. 171,282, December 21, 1875.

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

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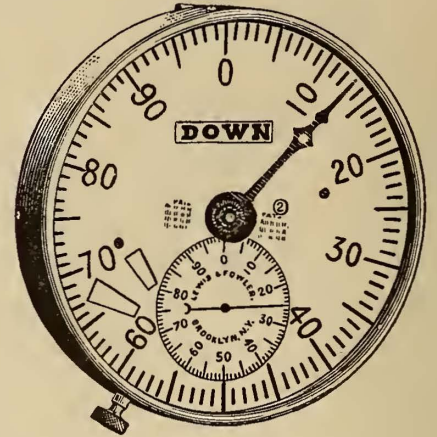
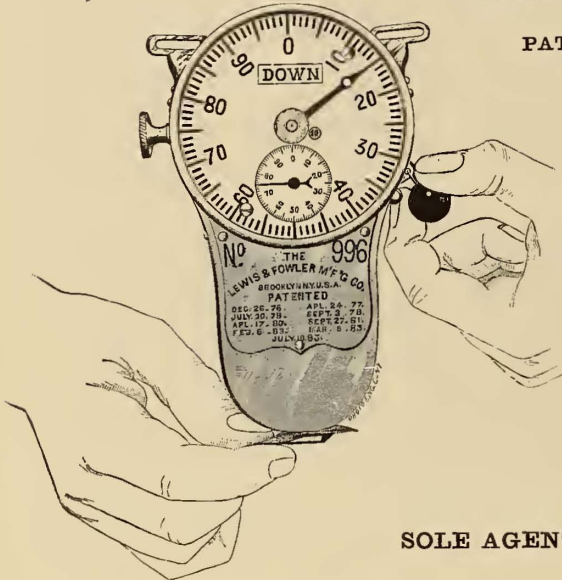
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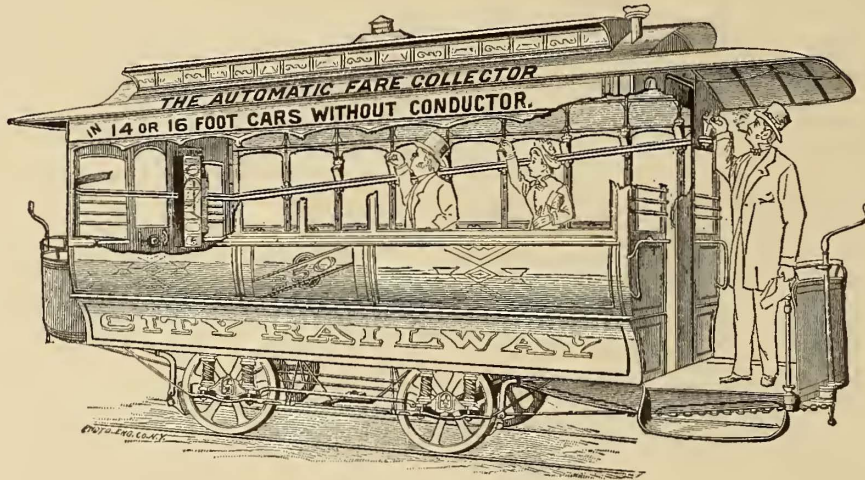
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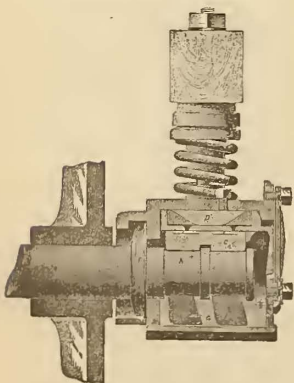
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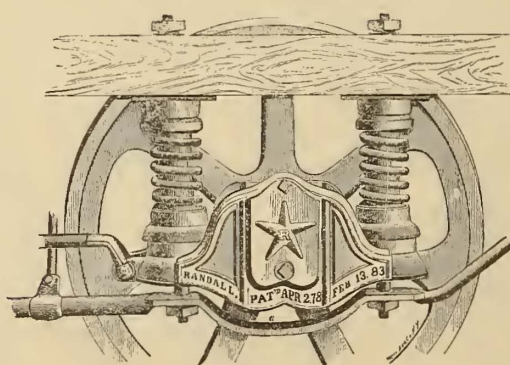
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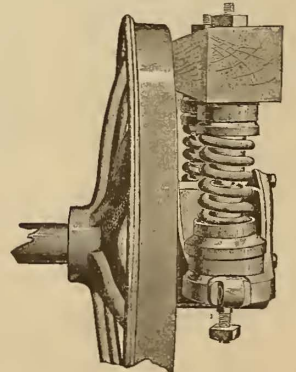
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Front View.



ANTI-FRICTION.

End View.



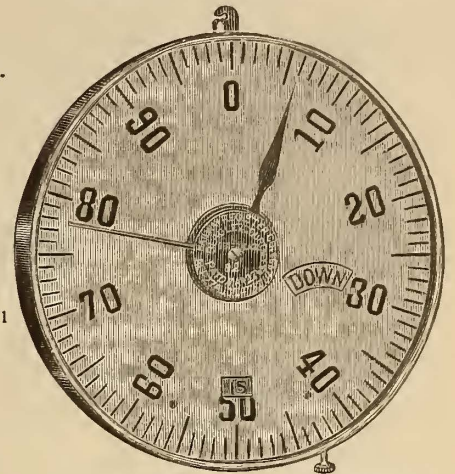
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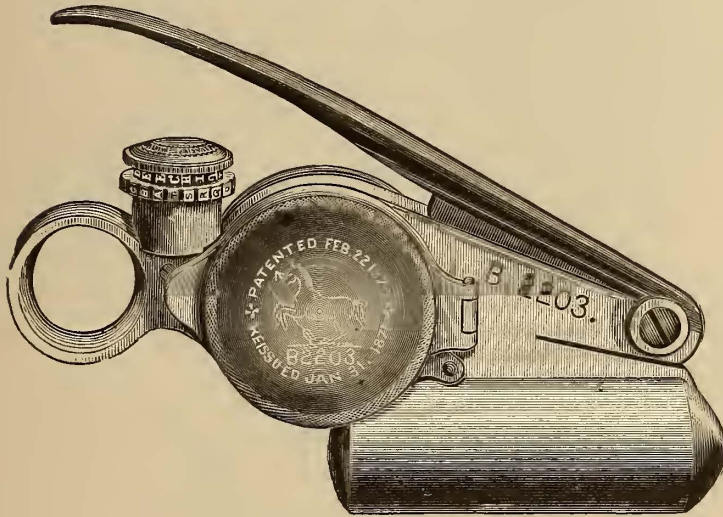
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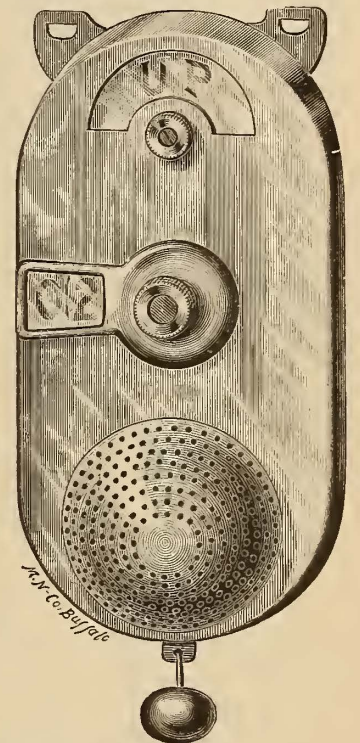
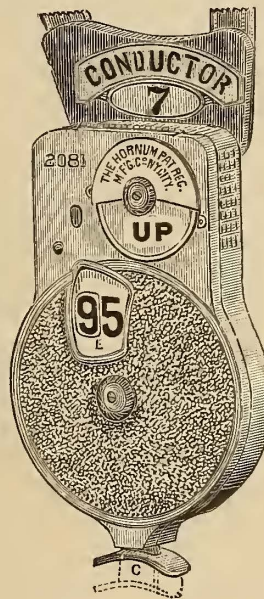


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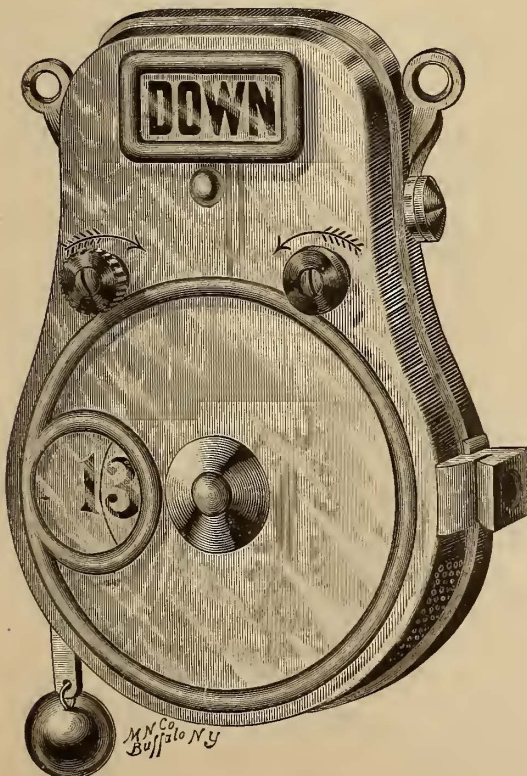
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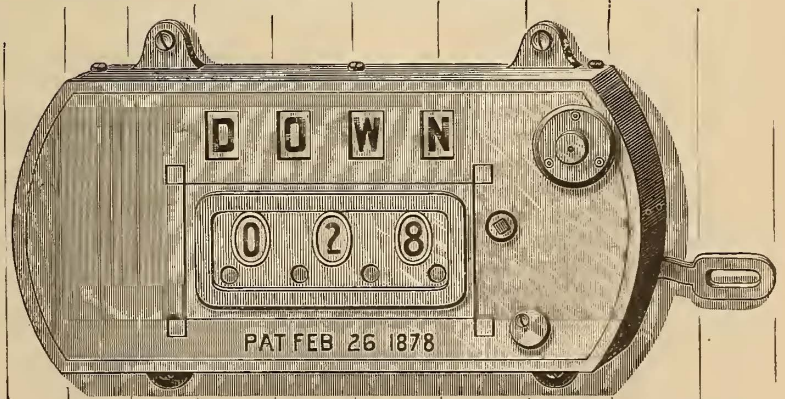
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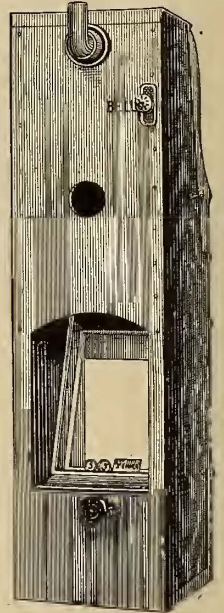
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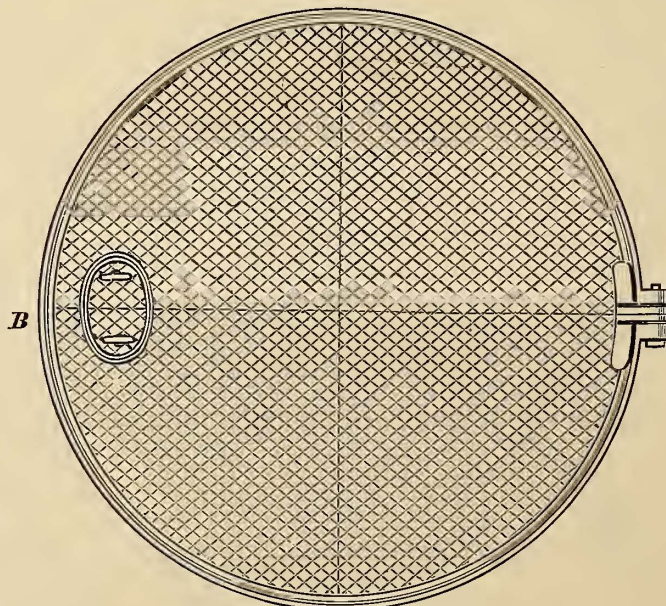
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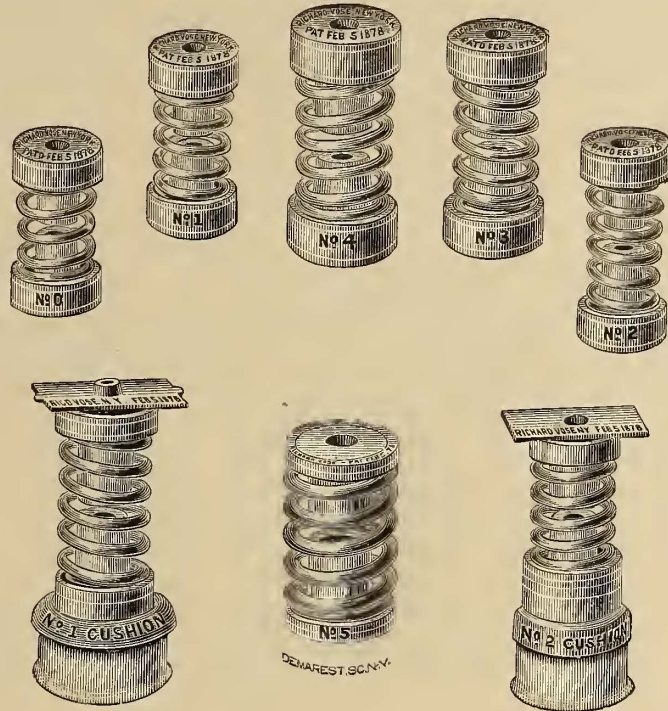
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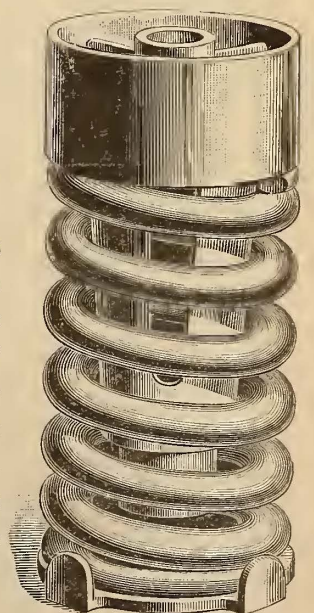
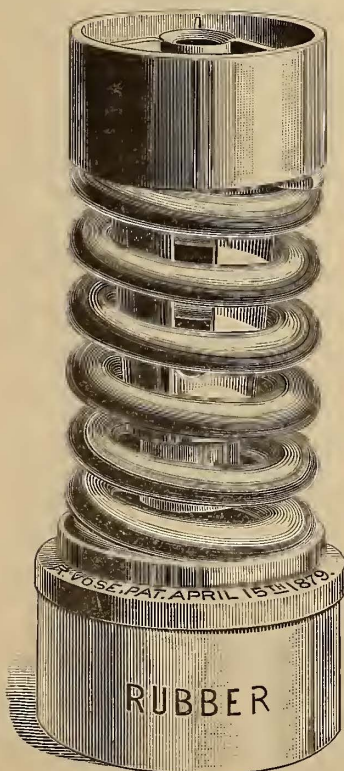
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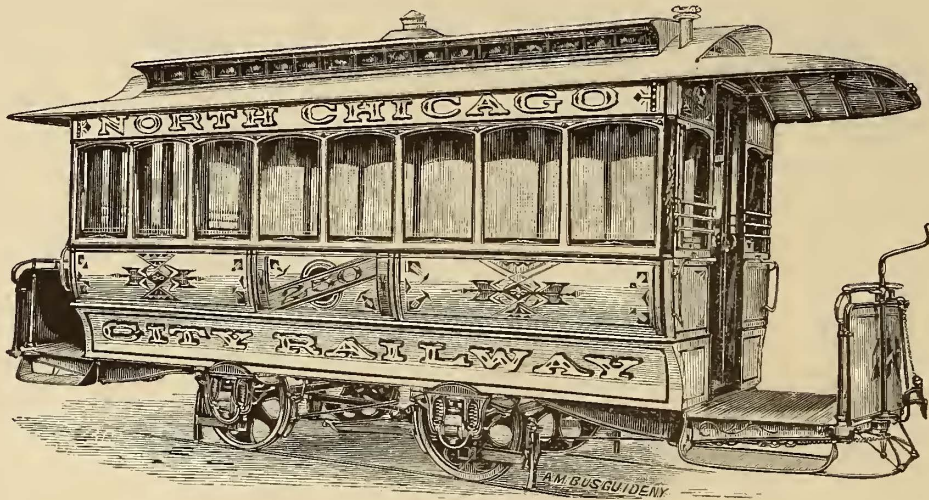


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