2 Sheets—Sheet 1.

C. B. LASHAR.

Car Brake.

No. { 2,996, / 34,000. }

Patented Dec. 24, 1861.

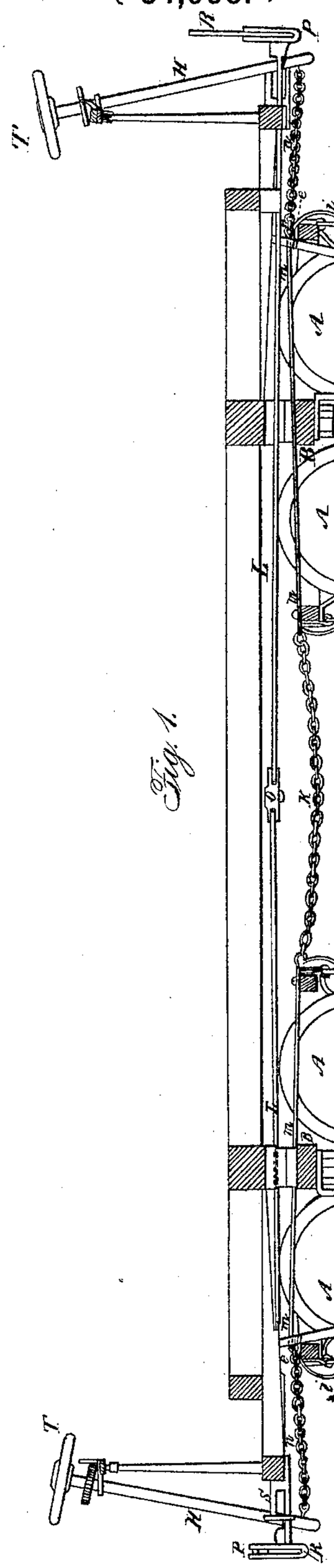

Fig. 1.

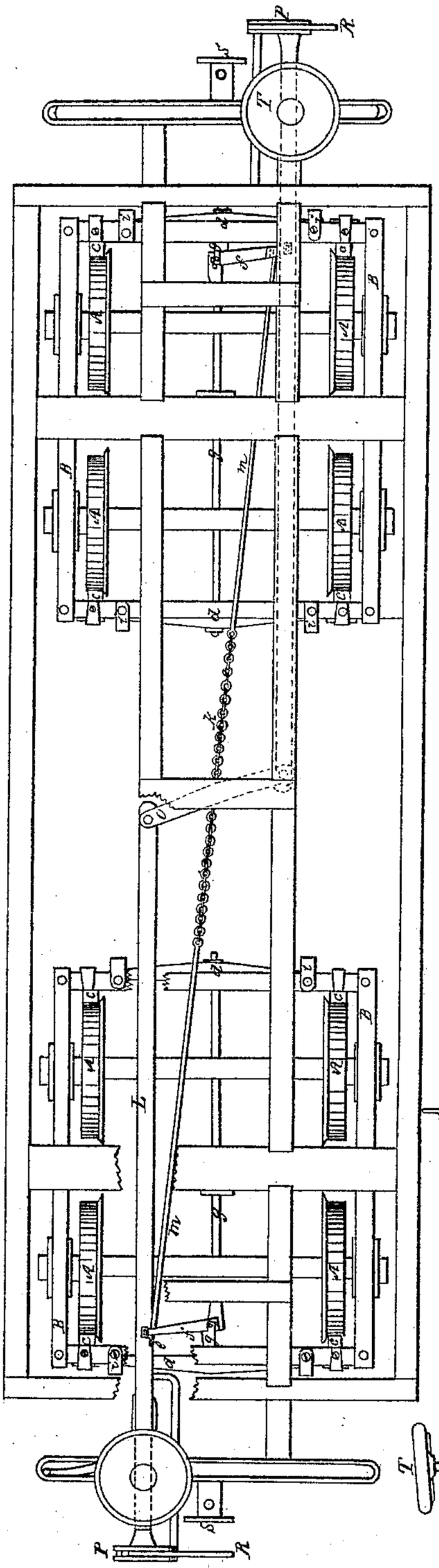

Fig. 2.

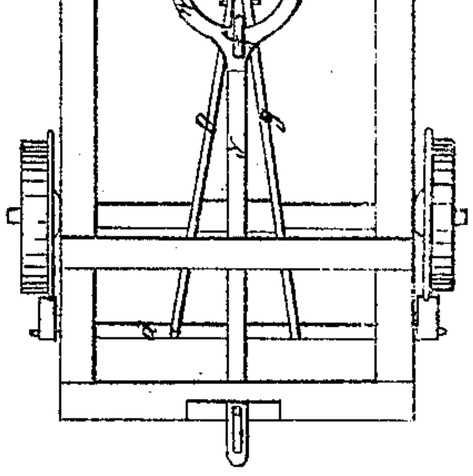

Fig. 5.

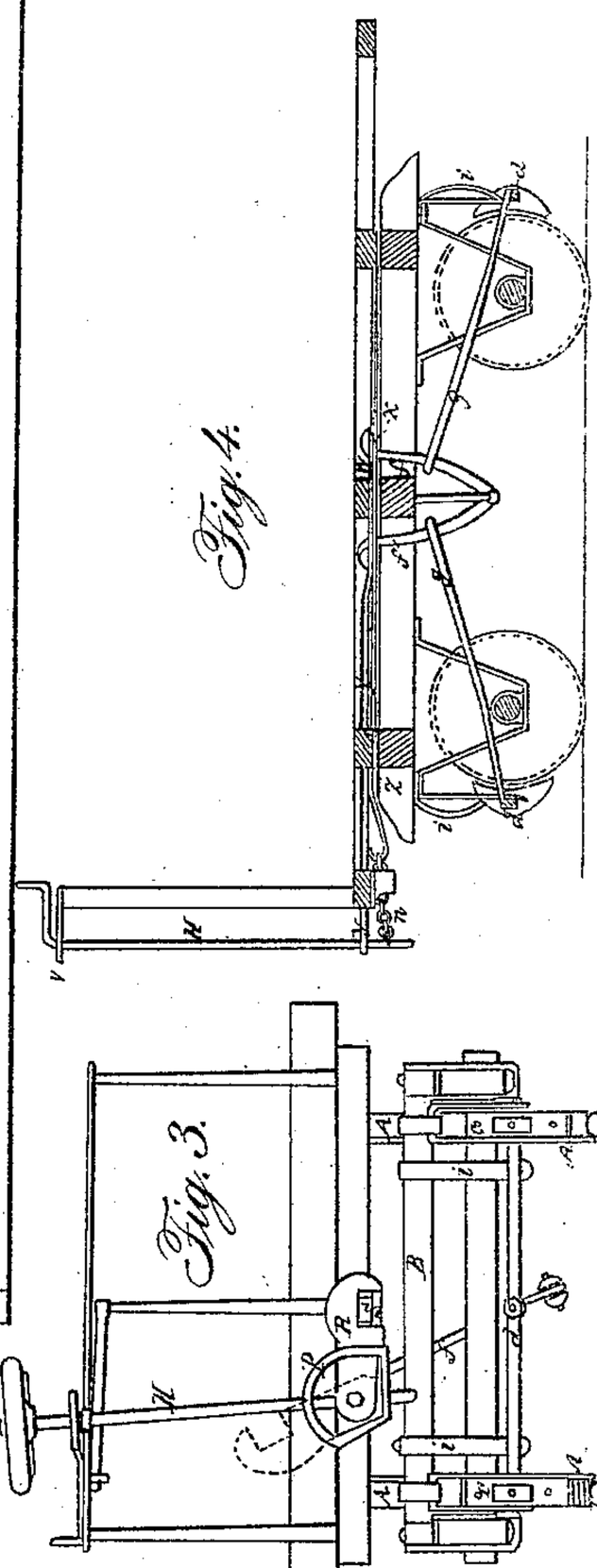

Fig. 4.

Fig. 3.

Witnesses:

Geo Goodale

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2 Sheets—Sheet 2

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Fig. 6.

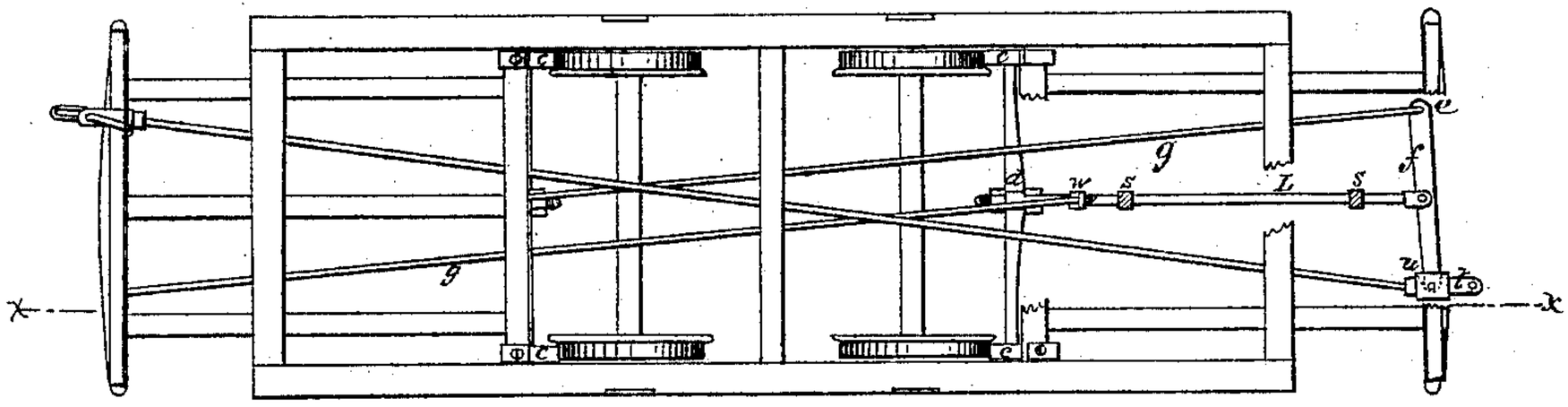
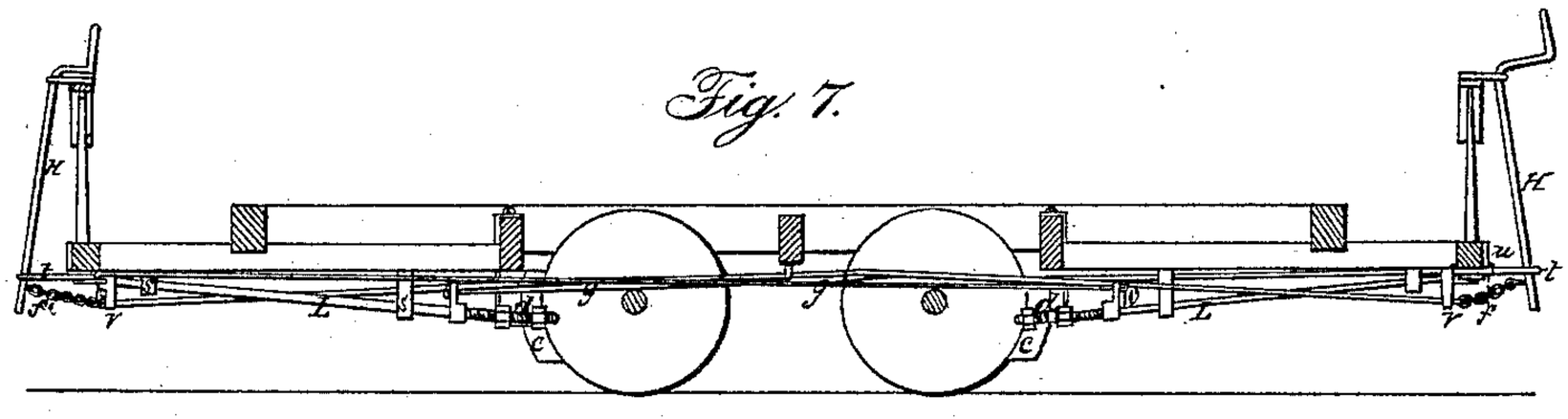


Fig. 7.



Witnesses:

Geo Gordale

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UNITED STATES PATENT OFFICE.

CONRAD B. LASHAR, OF NEW YORK, N. Y.

IMPROVED CAR-BRAKE.

Specification forming part of Letters Patent No. **34,000**, dated December 24, 1861.

To all whom it may concern:

Be it known that I, CONRAD B. LASHAR, of the city, county, and State of New York, have invented certain new and useful Improvements in Brakes for Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical longitudinal section of the running-gear of an eight-wheeled railroad-car with brakes embodying my improvements. Fig. 2 represents a plan of the same with certain parts of the framing removed. Fig. 3 represents an end elevation of the same, and Figs. 4 and 5 represent a vertical longitudinal section and plan of the running-gear of a city-railroad car with a reversible body embodying a substantial part of my invention.

The object of my invention is to render the pressure of the brake-standard, which is now sustained by the frame-work of the car, available for the purpose of forcing the brake-shoes against the running wheels; also, to render the brakes of the cars automatic in their operation when the speed of the engine is slacked.

In cars constructed previous to my invention the brake-standard at the platform at either end of the car is generally sustained by fixed bracket-bearings, in which it turns, and which are made fast to the frame-work of the car. The pressure upon the lowermost of these bracket-bearings is equal to the sum of the force exerted in turning the brake-wheel added to the strain upon the brake-chain upon the lower end of the brake-standard, and as this pressure is sustained by the car-frame it is unavailable for any useful purpose. The object of the first part of my invention is to render this hitherto useless pressure available for a useful purpose, and it consists in combining the bearing of the brake-standard with the brake-shoes by mechanism in such manner that the pressure exerted upon the bearing of the brake-standard is propagated to the brake-shoes and made available in holding them in contact with the running wheels.

The object of the second part of my invention is to enable the brake mechanism of any car of a train to operate automatically and apply the brakes whenever the speed of the next preceding car or carriage of the train is slacked. To this end this part of my invention consists in combining the brake mechanism of the car with a thrust-plate, which projects in advance of the bumper of the car, intervenes between the bumpers of the two adjacent cars when the cars are coupled together, and is made available in applying the brake-shoes of the car to which it appertains whenever that car surges toward the preceding car. By means of this part of my invention the brake mechanism of the car is operated automatically by the bumper of the preceding car without the necessity of modifying the bumpers or draft or of connecting the brake mechanism with them. The mode of operation of this part of my invention differs from preceding attempts to operate the brakes by the bumpers in this, that whereas in them the application of the brakes does not commence until the bumpers are in contact unless a connecting-bar that does not admit of play between the bumpers be employed it commences with my mechanism before the bumpers come in contact, even when a connecting-link permitting play is used. My mechanism also permits the brakes to be operated by hand independently of the bumpers without any previous disconnection of the mechanism from the bumpers and without interfering with the automatic operation by the bumpers when the hand is not used.

The object of the third part of my invention is to enable a thrust-plate of the preceding description to be applied to each end of a car and to permit but one only to act at a time, so that the brakes of a car may be operated automatically by the bumper of the preceding car whichever end of the car be run foremost, and that the succeeding car may not interfere with this operation. This part of my invention consists in combining the brake mechanism of the car with two reversible thrust-plates—one at each end thereof—and capable of being placed either in the line of motion of the bumpers or out of that line of motion, so that the position of each thrust-plate can be reversed when the car is run in the opposite direction, the forward one being put in position to be operated by the bumper

of the adjacent car and the hinder one being thrown out of such position.

The running-gear of an eight-wheeled car (represented in the accompanying drawings) embodies all parts of my invention. In it the eight wheels A A A are arranged in the usual manner in two sets, each set appertaining to a truck, and the two trucks B B are connected with the main frame of the car by means of king-bolts and turning plates in the usual manner. Each wheel is fitted with a brake-shoe *c*, which is suspended from the frame of the truck, and the two shoes of each pair of wheels are connected by a transverse brake-beam *d d*. The two brake-beams of each truck are connected with the brake-lever *f* of the truck by means of rods *g g*, so that when the upper extremity of this brake-lever is moved toward the middle of the car the four brake-shoes of each truck are brought into contact with their respective wheels. Each of these brake-levers is perforated at its upper extremity to permit a rod *m* to pass through it. Each rod terminates at its outer end in an eye *e*, which is of too large a size to traverse the perforation of the truck-lever, and is connected by a chain *n* with the lower end of the adjacent brake-standard H. The inner ends of the two rods *m m* are connected by a chain *k*. The upper extremity of each truck-lever is passed through a slot in a sliding bar L, which is supported in bearings that permit it to slide endwise parallel, or thereabout, with the line of draft of the car drawn from the center of one bumper to the center of the other. One of these bars is located at one side of the line of the draft and the other at the other side thereof, and the inner ends of the two are connected with the opposite ends of the lever O, that is pivoted to the under side of the car-frame. The outer end of each of these sliding bars projects beyond the frame of the car and its projecting extremity is perforated to receive and form a bearing for the lower extremity of the brake-standard H appertaining to that end of the car. The outer end of each sliding bar projects beyond this bearing, and is fitted with a head P, to which a reversible thrust-plate R is pivoted. This head is constructed with a transverse slot, through which the reversible thrust-plate protrudes, so that the latter may either be turned down on its pivot into the horizontal position, in which it is shown in continuous lines at Fig. 3, or be turned up into the position in which it is drawn in dotted lines in said figure. In the former position its projecting end crosses the head of the bumper S of the car, so as to intervene between it and the bumper of the adjacent car when two are coupled together. In the latter position the end of the thrust-plate is out of the line of motion of the bumpers. The upper end of the brake-standard passes through a bearing secured to the railing of the platform, and is fitted with a brake-wheel T and ratchet-wheel. A pawl is also secured to the railing to prevent the brake-standard from turning to unwind the brake-chain when the brake-shoes are to be held in contact with their respective wheels. Springs *i* are provided to hold the brake-shoes out of contact with the wheels when the brakes are not put in operation.

From the arrangement and combination above described it follows that when either brake-wheel of the car is turned to apply the brakes, the winding up of the brake-chain upon the lower end of the brake-standard draws the nearer rod *m* through the perforation of the nearer truck-lever, and by causing the eye at the outer extremity of the farther rod *m* to bear against the farther truck-lever, moves that lever to apply the brake-shoes of the farther truck to their respective wheels. As, however, the lower end of the brake-standard thus operated is sustained by the sliding bar L, which forms the lower bearing thereof, the pressure at the lower end of the brake-standard caused by pulling the rod *m* is propagated by the sliding bar to the upper end of the nearer truck-lever *f*, and this lever is correspondingly moved to apply the brake-shoes of the nearer truck to their respective wheels. Thus it happens that while the brake-shoes of one truck are operated by the direct pull of the brake-chain the pressure at the bearing of the brake-standard is made available to operate the brake-shoes of the other truck, in place of being expended for no useful purpose against the car-frame, as it is when the lower bearing of the brake-standard is fixed in the usual manner.

When the brakes are to be operated automatically, the forward thrust-plate of each car is turned down, as represented at the left-hand ends of Figs. 1 and 2, when the cars are coupled together, the hinder thrust-plate being turned up, as represented at right-hand ends of Figs. 1 and 2. The forward thrust-plate then intervenes between the bumpers of the two adjacent cars, so that whenever the speed of a forward car is slacked and a hinder car surges forward by its momentum toward the preceding car the forward thrust-plate of such hinder car, bearing against the bumper of the preceding car, is prevented from being carried forward by the surging of its car, and is caused to move the forward slide-bar, to which it is secured, and by it to operate the nearer truck-lever that is engaged in the mortise of that slide-bar. The pressure upon the forward slide-bar is propagated through the lever O to the hinder slide-bar, which is thus caused to move and operate the other truck-lever, so that the brake-shoes of both trucks are applied automatically. This capacity of the mechanism for the automatic operation of the brakes does not prevent their operation by hand, because the brake mechanism is not connected with the bumpers or draft-bars, and because there is sufficient space intervening between the thrust-plate and the bumper of the car to which it appertains to

permit that thrust-plate to be moved sufficiently by the brake-standard to apply the brakes before it comes in contact with the bumper. If the train is to be backed, the thrust-plates must first be turned up, so as to prevent the application of the brakes by the pressure of the bumpers.

In the brake mechanism thus described the arrangement is such that the truck-lever of the farther truck is operated by the chain and that of the nearer truck by the sliding bar; but by changing the arrangement of the parts the truck-lever of the nearer truck may be operated by the chain and that of the farther by the sliding bar, if such an arrangement be desired.

An example of an application of the first part of my invention to a horse-car, with a reversible body for city railroads, is represented at Figs. 4 and 5. In such cars the brake-standard is usually a lever whose upper end extends upward sufficiently to be within the control of the driver, and whose lower end is pressed against the forward brake-beam of the running-gear, and as the lever is carried by the body its lower end is transferred from one brake-beam to the other, when the body is reversed end for end by turning it half-round on its pivot on the running-gear. In such cars the fulcrum-pivot of the brake-standard is usually carried by a bracket-bearing fixed to the car-body, and the pressure upon that bearing is not made available for any useful purpose. Although a lever-brake standard may be used with advantage in applying my invention to such a car, I prefer to use a turning brake-standard, as represented at Figs. 4 and 5. In this example the brake-beams *d d* are connected by rods *g g* with a pair of upright levers *f f'*, that are supported beneath the central beam of the truck. The upper ends of these truck-levers *f f'* project upward on each side of the pivot of the car-body and enter a pair of concentric ring-plates *w x*, which surround that pivot. These ring-plates are connected with bars *y z*, that slide endwise in guides secured to the frame of the car-body and turn with it when it is reversed upon the truck. The front end of one of these sliding bars *y* forms the lower bearing of the brake-standard H. The other *z* is connected with the brake-standard by a chain *n*. The upper end of the brake-standard is supported within convenient reach of the driver's hand by a bracket-bearing *v*, secured to the car-body. The brake-beams are fitted with springs *i i*, which press the brake-shoes from the wheels and hold them out of contact until force is applied to the brake-standard. From this combination of parts it results that so long as the brake-standard is not turned the two ring-plates remain concentric, and the brake-shoes do not bear against the wheels. When, however, the brake-standard is turned and the chain is wound upon its lower end, the strain upon the chain draws the lower ring-plate *x* toward the front end of the car, and it, acting upon the hinder truck-lever *f*, draws the hinder brake-shoes against their respective wheels, while at the same time the pressure of brake-standard in its lower bearing pushes the upper ring-plate *w* backward, and it, acting upon the forward truck-lever *f*, pushes the forward brake-shoes against their respective wheels. Hence in this combination the pressure at the bearing of the brake-standard is propagated to the brakes and made available in holding them in contact with the running wheels. When the brake-standard is permitted to unwind the chain *n*, the force of the springs at the brake-beams moves the brake-shoes back from their wheels and restores the ring-plates to their concentric positions. The car-body can then be turned end for end on its pivot, carrying the brake-standard and ring-plates, without affecting the truck-levers *f f'*; but in this new position of the car-body the truck-lever *f'* becomes the forward truck-lever, and is operated by the lower turning plate, while the other truck-lever *f* becomes the hinder truck-lever, and is operated by the upper turning plate, and the brakes are applied as before by turning the brake-standard, and thereby moving the two ring-plates over each other—the lower one toward the end of the car at which the brake-standard is located and the upper from that end of the car.

Another example of an application of the first part of my invention is represented at Figs. 6 and 7, which represent a plan and longitudinal section of the running-gear of a four-wheeled car for two horses, such as is used on city railroads. Certain parts of the frame-work in Fig. 6 are removed to show the mechanism more clearly, and the sectional view, Fig. 7, is made at the line *x x* of Fig. 6. In this example each pair of brake-shoes *c c c c* is connected by a brake-beam *d*, and two brake-levers *f f* are used, one of them being located at each extremity of the car-frame. Each of these brake-levers is pivoted at its center to a sliding bar L, which is suspended in bearings *s s* beneath the car-frame, and is connected at its inner end with the adjacent brake-beam *d*. One of the extremities of each brake-lever is pivoted to a slide *t*, which slides in a box *u*, secured to the car-frame, and is perforated at its outer end to form a bearing for the lower extremity of a turning brake-standard H. The slide *t* has a lug *v* at its inner end, which is perforated to receive one end of a brake-rod *m*, which extends to the opposite end of the car through the perforation of the lug of the slide thereat. Each extremity of this brake-rod which passes through the lug of the slide *t* is formed into an eye and connected with a chain *n*, which is secured to the lower end of the adjacent brake-standard H. The end of each brake-lever which is farthest from the slide *t* is connected by a rod *g* with a lug *w*, secured to the sliding bar L, that appertains to the opposite lever. The end of the rod passes through the

lug and is formed into an eye, so that it cannot pull out.

When either one of the brake-standards of this car is turned, the chain is wound upon it and the standard end of the opposite brake-lever is drawn toward the brake-standard, which is turned. As the brake-lever is pivoted at its center to one slide-bar L and is connected at its end *e* with the other slide-bar, the drawing of it toward the farther brake-standard by the chain and rod forces the one slide-bar toward its adjacent pair of wheels and draws the other slide-bar toward the pair of wheels adjacent thereto, thereby moving the two brake-beams and bringing all the brake-shoes into operation; but while the brakes are thus borne against the wheels by the action of the brake-lever farthest from the brake-standard that is turned the brake-lever appertaining to that standard is operated by the strain of the brake-standard against its bearing in the slide *t*, and the strain thus applied is propagated through the adjacent slide-bar directly to the adjacent brake-beam and indirectly through the rod *g* and farther slide-bar to the farther brake-beam, so that the strain at the lower bearing of the brake-standard is made available in forcing the brake-shoes against their wheels.

The above-described examples are sufficient to show that my invention is not confined to any peculiar construction of the brake mechanism, and that its mode of application may be varied to suit particular cases.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the bearing of the brake-standard with the brake-shoes by mechanism in such manner that the pressure exerted upon the said bearing is propagated to the brake-shoes, substantially as described.

2. The combination of the brake mechanism of a car with a thrust-plate that projects in advance of the bumper of the car and intervenes between it and the bumper of the adjacent car when the cars are coupled together, substantially as set forth.

3. The combination of the brake mechanism of a car with two reversible thrust-plates, each capable of being placed either in the line of motion of the bumper or out of that line of motion, substantially as set forth.

In testimony whereof I have hereunto subscribed my name on this 18th day of May, 1861.

CONRAD B. LASHAR.

Witnesses:

GEO. S. GOODALE,

W. L. BENNEND.