(No Model.) 2 Sheets—Sheet 1.

J. H. HEIZER.

CAR STARTER.

No. 414,312. Patented Nov. 5, 1889.

Fig. 1.

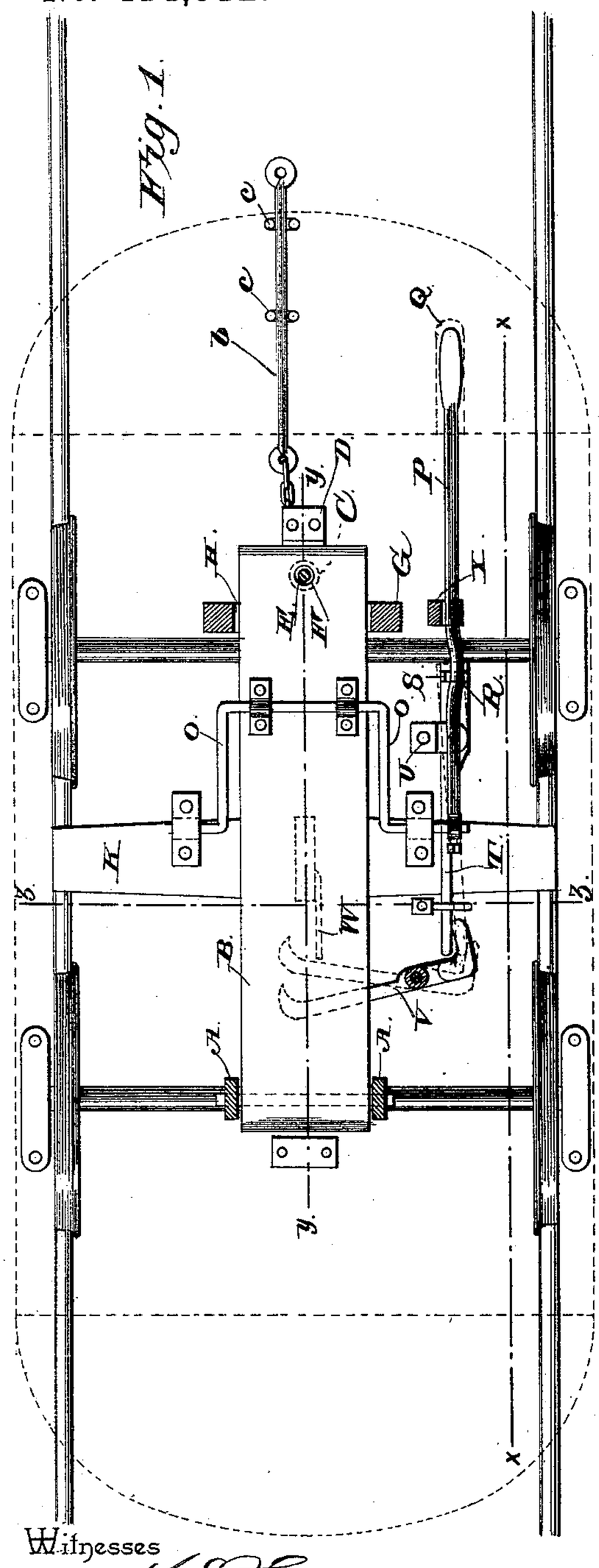
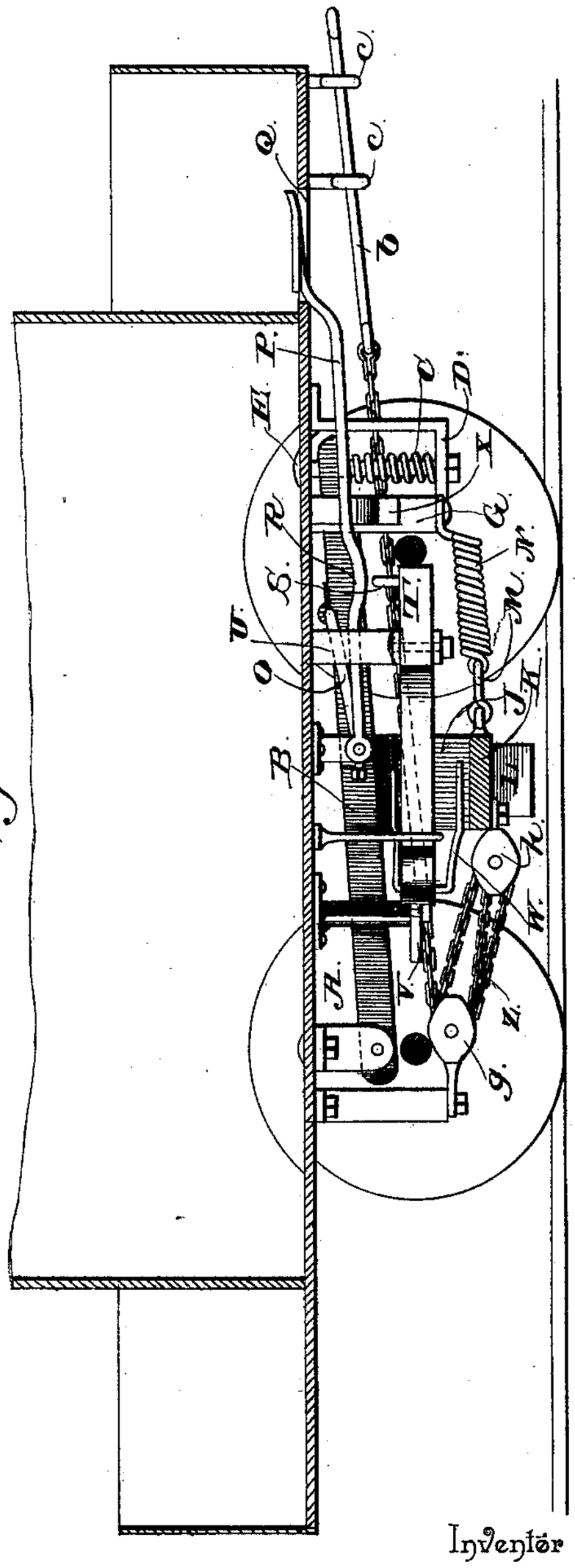


Fig. 2.



Witnesses

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Inventor

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

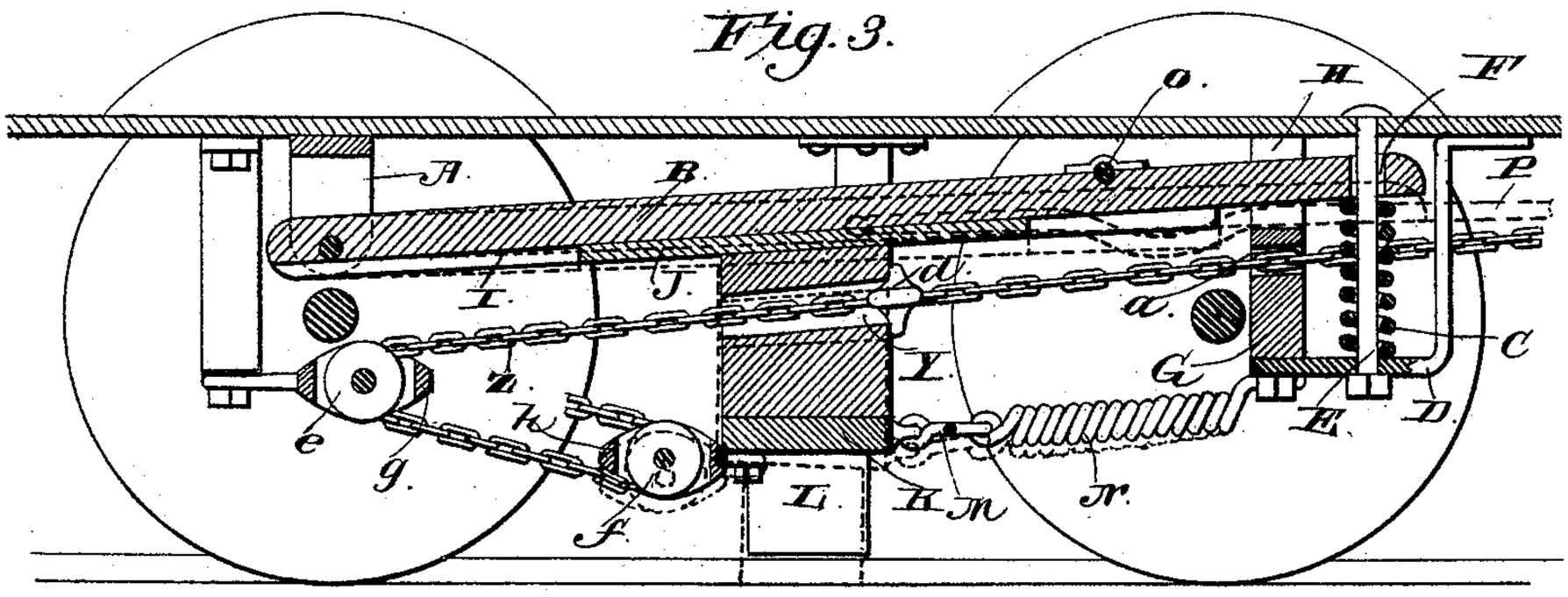


Fig. 4.

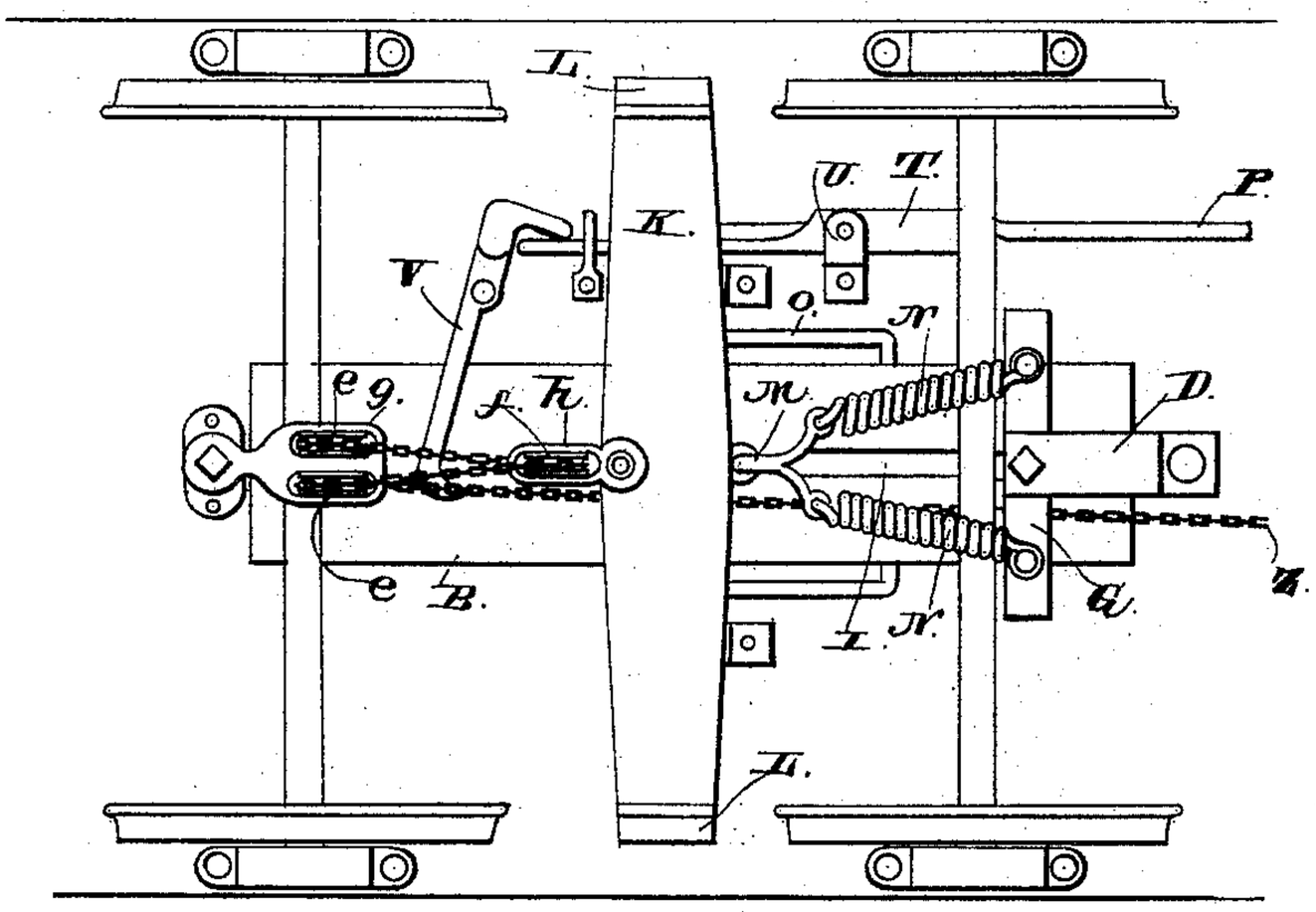
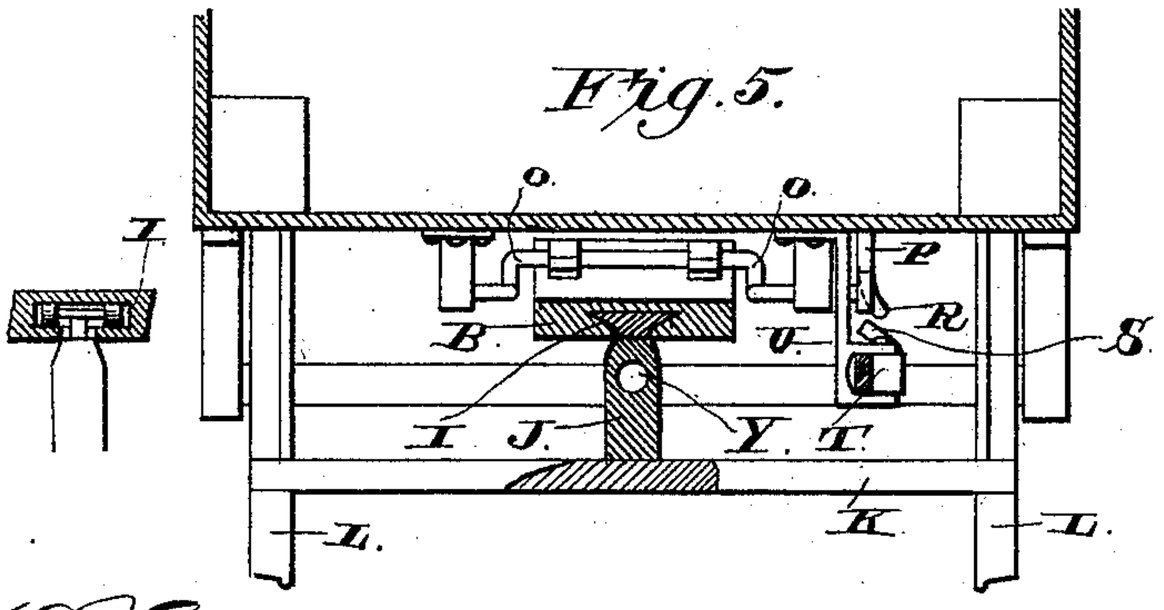


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN H. HEIZER, OF WASHINGTON, DISTRICT OF COLUMBIA.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 414,312, dated November 5, 1889.

Application filed July 30, 1889. Serial No. 319,144. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. HEIZER, a citizen of the United States, residing at Washington, District of Columbia, have invented a new and useful Car-Starter, of which the following is a specification.

My invention relates to improvements in car-starters; and it consists in certain novel features hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of my improved car-starter. Fig. 2 is a longitudinal section of the same, taken on the line *x x* of Fig. 1. Fig. 3 is a longitudinal section taken on the line *y y* of Fig. 1. Fig. 4 is a bottom plan view, and Fig. 5 is a detail transverse section on the line *z z* of Fig. 1.

In carrying out my invention I secure to the under side of the car-body the brackets A A, between the lower ends of which I pivot a vibratory guide-plate B, which extends forward, as clearly shown, and has its front end normally pressed upward by a spring C, arranged thereunder and bearing against a suitable bracket or supporting-frame D, secured to the under side of the car. The spring C is maintained in its proper position by a pin or bolt E, which passes through the said spring and an opening F in the front end of the guide-plate B, thereby serving to prevent lateral movement of the said plate and to give it a true vertical motion. The front end of the guide-plate is further prevented from lateral movement by passing through a notch H in a stop or cross-bar G, secured to the under side of the car-body, in rear of the pin E.

The guide-plate B is provided in its under side with a central longitudinal groove I, which may be dovetailed, as shown most clearly in Fig. 5, and in the said groove I mount the slide or carrier J, to the lower ends of which the shoe K is secured. The said shoe K consists of a cross-bar provided with depending arms L at its ends, and the said depending arms have their lower extremities properly shaped to bind on the track-rails, and thereby prevent movement of the shoe in the operation of the device. To the front side of the cross-bar I secure a coupling-link M, and from the said coupling-link springs N extend forward and are secured to the cross-bar or stop G, as clearly shown. These springs serve to draw the shoe forward after it has been removed from the rails, so that it will be in proper position to be again operated when the car is stopped.

The guide-plate B is depressed by means of a crank-shaft O, having its ends journaled in suitable bearings on the under side of the body of the car, and having its cranked portion journaled on the upper side of the guide-plate, and an operating-lever P, which is secured at its rear end to one end of the crank-shaft and extends forward therefrom, its front end being carried upward and playing in a slot or opening Q in the car-platform, so that it may be readily depressed by the foot of the driver. The operating-lever P is provided at an intermediate portion of its length with a slightly-bent portion R, which is adapted to engage a pin S, projecting upward from the front end of a vibrating lever T, which is fulcrumed between its ends on a bracket U, secured to the under side of the car-body, and has its rear free end engaged by a vibrating dog V, which is fulcrumed on the under side of the body of the car and has its outer end substantially L-shaped, so as to pass around the rear end of the vibrating lever and impinge against the outer side of the same, and has its inner end projected inward slightly beyond the central line of the guide-plate and arranged in the path of a trigger W, secured to the carrier J and projecting rearward therefrom. When the operating-lever is depressed, the curved portion R thereof engages the pin S, and thereby vibrates the lever P and causes it and the dog V to assume the positions shown in dotted lines in Fig. 1. When the operating-lever is depressed, it is engaged under a shoulder or lug X on the under side of the car, so that it may be held down and the lever T and dog V maintained in the positions just referred to, as will be hereinafter more fully described.

The carrier J is provided, at a proper point above the shoe, with a longitudinal slot or opening Y, and the draft-chain Z passes through the said opening and a suitable opening *a* in the cross-bar G, and has its front end secured to a rod *b*, playing in eyes or staples *c* on the under side of the car-platform, and having its front end adapted to be attached

to the whiffletree. The rear end of the draft-rod *b* is somewhat enlarged, so that after the car has been started the strain or draft may be applied to the car-body by reason of the said enlarged end coming into contact with the rear bearing *c*, as will be readily understood. Instead of this arrangement, however, I may employ a block or knob *d*, secured to the draft-chain between the carrier J and the cross-bar G, and adapted to impinge against the rear side of said cross-bar, as shown in Fig. 3. The draft-chain extends rearward from the carrier and passes around a pulley *e*, and thence forward to a pulley *f*, which is secured on a block attached to the shoe, and thence backward to and around a pulley *g*, which is journaled in the same block as the pulley *e*, and then passes back to the block *h*, carrying the pulley *f* and secured to the said block *h*.

The construction and arrangement of the several parts of my device being thus made known, the operation of the same will, it is thought, be readily understood.

When the car is stopped, the driver depresses the operating-lever P, thereby rotating the crank-shaft O, so as to lower the guide-plate B and throw the shoe K onto the track. When the team is started, the draft-chain will be drawn forward, and as it is secured to the block *h*, and the said block is stationary, being secured to the shoe, the power applied to the draft-chain will serve to draw forward on the pulleys *e* and *g*, and thereby start the car. The car, being thus set in motion, will carry the dog V forward, so that its inner end will be forced backward by its contact with the trigger W, and the outer end of the said dog thereby thrown forward and inward, consequently vibrating the lever P, so that the pin R acts on the operating-lever to release the said lever from the lug or shoulder X, after which the spring C at once automatically raises the guide-plate B, thereby lifting the carrier and the shoe from the rails. The springs M then draw the shoe forward, so that it is in position to readily operate in the desired manner the next time the car stops. The car will then be drawn forward in the usual manner, as will be readily understood, the knob or block bearing against the rear side of the cross-bar G or the draft-rod *b*, engaging the rear bearing *c*, according as either may be used.

From the foregoing description, taken in connection with the accompanying drawings, it will be seen that I have produced a car-starter which is simple in its construction, compact in the arrangement of its parts, and efficient in its operation.

It will be observed that in my device the car is started with very slight exertion on the part of the team, as I employ a system of pulleys over which the draft-chain passes, and by which the power applied to the said chain is multiplied and transmitted to the car with increased force. The shoe K, by binding on the track-rail, is held steady and stationary, so that this increase of the power is effectually accomplished and the car is enabled to move forward, by reason of the carrier fitting in the groove in the guide-plate B, so that the said guide-plate can move along the slide or carrier without affecting the stability of the shoe.

The device is automatic in its operation, the only attention required being that necessary to depress the operating-lever when the car is stopped, the arrangement of springs, the vibrating lever, and the dog serving to positively release the operating-lever when the car has been started.

It is obvious that many minor changes may be made in the details of construction without departing from the principle of my invention, and it will be understood that I do not limit myself to the exact form shown in the accompanying drawings. For instance, instead of the dovetail construction of the groove I and the slide J, the groove may have inwardly-projecting ledges and the carrier may be provided with rollers running on the said ledges. This form I have shown at the bottom of Fig. 5. The operating-lever, also, might be made integral with the crank-shaft O instead of separate therefrom, as shown in Fig. 1.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a car-starter, the combination of a vertically-vibrating plate mounted on the car-body, a shoe carried by the said plate and movable along the same and adapted to be held stationary on the track-rails, mechanism for depressing the plate, mechanism for raising the same, a series of pulleys carried by the shoe and the car-body, and the draft-chain passing around the said pulleys, as set forth.

2. The combination of the vertically-vibrating plate, the shoe carried thereby, the operating-lever connected with the said plate to depress the same, the vibrating lever adapted to engage the operating-lever, and the dog mounted on the car-body and adapted to be actuated by the shoe to operate the vibrating lever, as set forth.

3. The combination of the vertically-vibrating plate, the operating-lever connected therewith to depress the same and provided with a lateral curved portion, the shoe carried by the said plate, the vibrating lever provided with a pin adapted to engage the curved portion of the operating-lever, the dog mounted on the car-body and engaging the vibrating lever, and the trigger projecting from the shoe and adapted to engage the dog, as set forth.

4. The combination of the vertically-vibrating plate having a longitudinal groove in its under side, the slide fitted in said groove, the shoe carried by said slide, mechanism for depressing the plate, mechanism for raising

the plate, and the spring secured to the shoe and adapted to draw the shoe forward when the plate is raised, as set forth.

5. The combination of the vibratory plate B, the spring arranged under the front end of the same, the operating-lever connected with the said plate and adapted to depress the same and hold it lowered, mechanism for releasing the operating-lever, and the shoe carried by the said plate, as set forth.

6. A car-starter consisting, essentially, of a shoe, mechanism for holding the said shoe stationary on the track-rail while the car is being started, and mechanism for automatically raising the shoe from the track after the car has been started, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN H. HEIZER.

Witnesses:
J. H. SIGGERS,
R. J. MARSHALL.