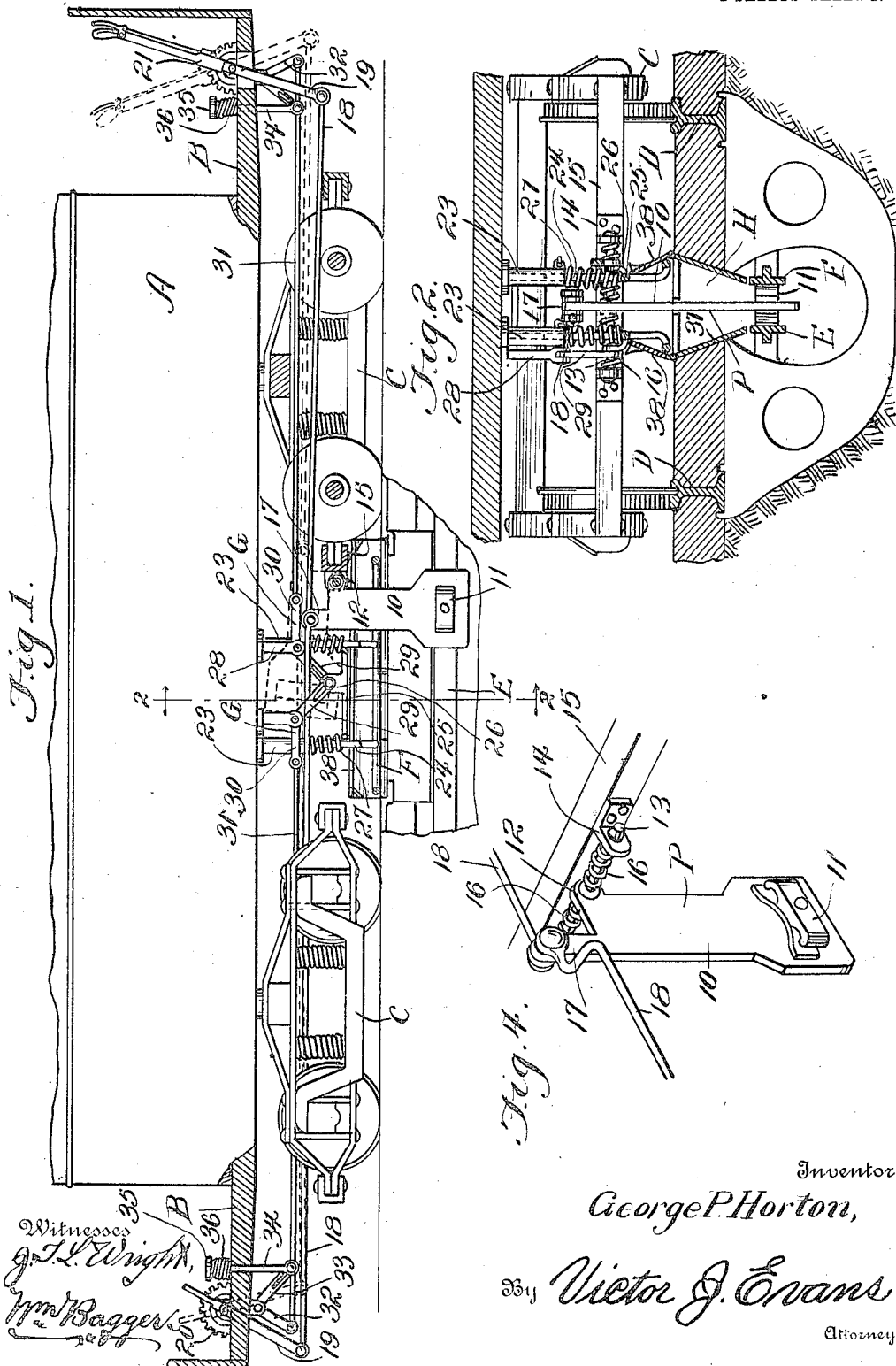


G. P. HORTON.
ELECTRIC RAILROAD.
APPLICATION FILED SEPT. 30, 1909.

971,006.

Patented Sept. 20, 1910.

2 SHEETS—SHEET 1.



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2 SHEETS-SHEET 2.

Fig. 3.

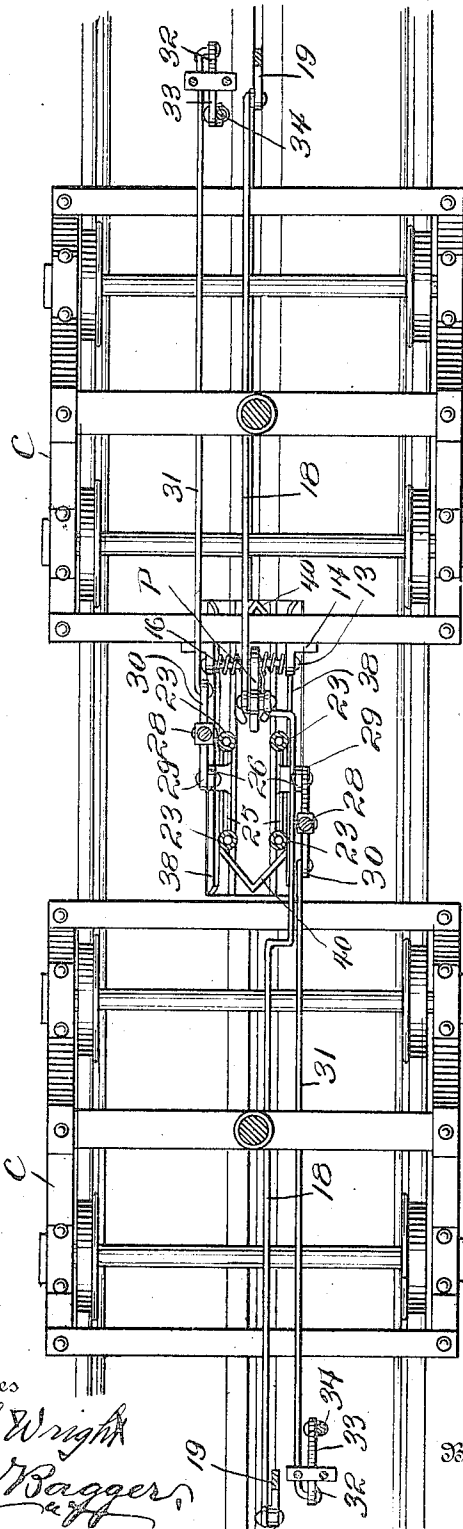


Fig. 5.

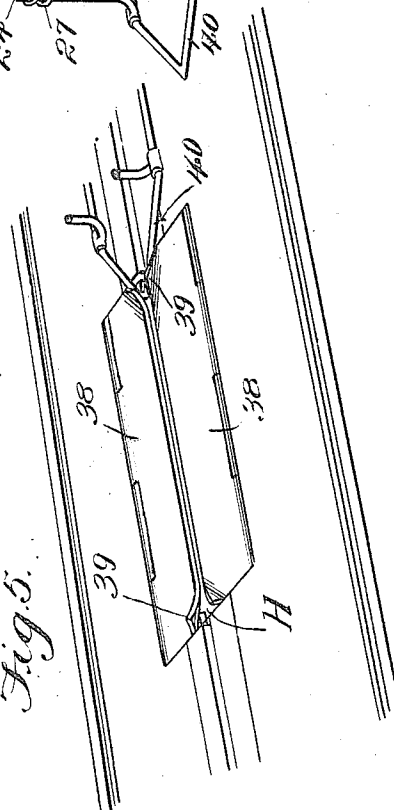
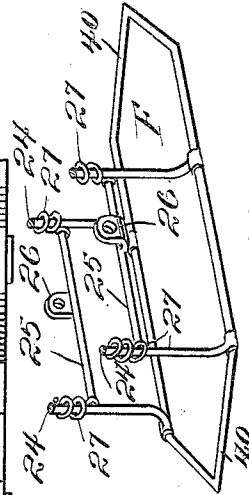


Fig. 6.



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UNITED STATES PATENT OFFICE

GEORGE P. HORTON, OF WASHINGTON, DISTRICT OF COLUMBIA.

ELECTRIC RAILROAD.

971,006.

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Application filed September 30, 1909. Serial No. 520,244.

To all whom it may concern:

Be it known that I, GEORGE P. HORTON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Electric Railroads, of which the following is a specification.

This invention relates to electric railways of that class in which electrical conductors in the shape of rails disposed underground are engaged by a so-called plow operating through a slot in the pavement and carried by the car for the purpose of conducting the electrical current to the motor.

It frequently happens that cars require to be transferred from the underground line to suburban or other overhead trolley lines, and it then becomes necessary to remove the plow from its pendent position. This is usually accomplished by bodily removing the plow, such removal being effected manually by an operator stationed for the purpose in a plow pit.

The principal object of the present invention is to provide a simple and improved construction whereby the plow may be hingedly connected with the car frame in such a manner that when not required for use it may be readily swung or moved to an inoperative position.

A further object of the invention is to construct a simple and efficient plow pit where the change may be effected, said pit being normally covered and protected by hingedly supported lids arranged to normally gravitate to a closed position.

A still further object of the invention is to provide simple and improved mechanism whereby the pit protecting doors may be swung open at the proper time.

A still further object of the invention is to provide simple and improved means for supporting and actuating the plow to swing the latter toward and from its operative position.

Still further objects of the invention are to simplify and improve the general construction and operation of a device of the character outlined above.

With these and other ends in view which will readily appear as the nature of the invention is better understood the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention; it being however understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawings: Figure 1 is a sectional elevation of a device constructed in accordance with the invention, the plow being shown in position for operation. Fig. 2 is a vertical transverse sectional view taken in the plane indicated by the line 2—2 in Fig. 1. Fig. 3 is a top plan view showing the trucks of a car with the car body removed, the same being in position adjacent to the plow pit for changing the position of the plow, and the pit doors being shown open. Fig. 4 is a perspective view of the plow and its supporting means. Fig. 5 is a perspective view of a portion of a car track including the plow pit, the pit doors being shown closed and ready to be swung open by the opening device a portion of which appears. Fig. 6 is a perspective view showing the door opening device detached.

Corresponding parts in the several figures are denoted by like characters of reference.

A car body A having platforms B—B is mounted in the customary manner upon trucks C—C.

The railway includes the track rails D—D and the suitably supported underground rails E—E which constitute electrical conductors, said conductors being adapted to be engaged by the plow P which is supported by the car frame in a manner to be presently described. The plow, it may be stated in passing, comprises the body plate 10 equipped with the customary spring supported contact slides 11. The electrical circuit has not been indicated inasmuch as it forms no part of the present invention.

The plow body 10 is provided adjacent to its upper edge with a laterally extending apertured lug 12 whereby it is pivotally supported upon a rod 13 mounted in lugs or brackets 14 upon a beam 15 which constitutes a portion of the car structure; springs 16 are coiled upon the rod 13 between the lugs or brackets 14 and the sides of the plow for the purpose of centering the latter upon its supporting rod as will be readily understood. The plow body is also provided adjacent to its upper edge with an upwardly

extending arm 17 with which operating rods 18 extending in opposite directions toward the ends of the car are pivotally connected, said operating rods terminating beneath the platforms B. The rods 18 are terminally
 5 connected with the lower ends of operating levers 19, fulcrumed upon quadrants or segment racks 20 supported upon the platforms; the upper ends of the levers 19 are suitably shaped to receive an operating handle 21 which is supported detachably so that it may be conveniently moved or transferred from one lever to another, and which is provided with a stop member 22 adapted
 10 to engage the quadrant or segment rack for the purpose of retaining the lever upon which the handle is placed in adjusted position. It will be readily seen that by the mechanism thus provided the plow may be swung or moved from the pendent position
 15 illustrated in full lines in Fig. 1 of the drawings to the raised or elevated position indicated in dotted lines in said figure, or vice versa; and also that the plow may be securely retained in any position to which it may be adjusted by the rack engaging stop upon the lever handle. The latter may be readily shifted from one lever to another so as to form the least practicable obstruction.
 20 Secured upon and extending downwardly from the underside of the car are a plurality of sockets 23 wherein arms 24 extending upwardly from a frame F are guided from vertical movement. The arms 24 are connected in pairs by longitudinally disposed
 25 braces 25 having upwardly extending lugs 26. The frame F is suspended for vertical movement by means of traction springs 27 terminally connected with the braces 25 and with the sockets 23, thereby serving normally to move the frame F in an upward direction to a position where it will not interfere with the progress of the car or be liable to engage possible obstructions upon
 30 the pavement. Brackets 28 are provided upon the underside of the car for the purpose of supporting bell cranks G each having a slotted arm 29 pivotally connected with one of the lugs 26, and each having an additional arm 30 that is pivotally connected with one end of a link or operating rod 31, said operating rods extending in opposite directions beneath the car platforms where each of said links is pivotally
 35 connected with one arm 32 of a suitably supported bell crank lever the other arm of which 33 has a slot which is connected with the lower end of a spring actuated treadle 34 extending for vertical movement through the car platform and provided at its upper end with a foot piece 35; the actuating springs 36 serving to force said treadles in an upward direction.

At the place in the track where the change
 40 of position of the plow is to be effected is

formed a pit H the side walls of which have been shown as being composed of inclined plates 37 adjacent to the upper edges of which lids or covers 38 are hingedly supported; the inner edges of said lids adjacent
 70 to the ends thereof are upturned to form inclined lugs 39 lying in the path of the frame F when the latter is in a lowered position; the ends of said frame being formed with triangular extensions 40. It will be readily
 75 seen that when the upturned inclined lugs 39 at either end of the doors are engaged by the apex of one of the triangular frame extensions 40 and said frame is moved forwardly in a horizontal plane, the doors 38
 80 will be gradually swung or moved to an open position from which they will gravitate to a closed position when disengaged from contact with the frame. It will be observed that there is to be a space or opening between the inner edges of the doors when
 85 closed equal to the width of the slot in which the plow operates; the doors, when closed, will be supported upon the end walls of the plow pit.

From the foregoing description taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains.
 90 When the car approaches a plow pit where the position of the plow is to be changed, the frame F is lowered by the pressure of the foot of the motorman upon one of the treadles 34 to a position slightly above the
 95 pavement, it being obvious that this movement may be effected from either end of the car. As the car progresses, the inclined lugs adjacent to one end of the doors will be engaged by the apex of one of the triangular
 100 extensions, and the doors will be gradually moved to an open position. The car may now be stopped while one of the levers 19 is actuated to change the position of the plow, either to lift the latter from engagement
 105 with the conductors or to restore it to such engagement as the case may be. The car is now again set in motion and the pit covers will gravitate to a closed position immediately upon being released from engagement
 110 with the frame F after which the latter will be restored to its normal elevated position by the action of the springs 27 as soon as pressure upon the treadle 34 is released.

It will be seen that by providing the plow
 120 with the laterally extending lug 12 adjacent to the upper edge thereof and by extending the supporting shaft through said lug, the entire body of the plow may by swinging out through an arc of 90 degrees be moved to a
 125 position which is above the axis of the supporting shaft. This is an important feature of the invention, for the reason that the plow body when in a raised position may be accommodated in a position which is but
 130

slightly raised above the ground, thereby making it unnecessary to raise the car body to an excessive height. The upwardly extending arm 17 affords a convenient connecting means for the operating rods whereby the plow is moved or adjusted.

It will be seen that by this invention, the unpleasant and dangerous work of the operator employed in the usual plow pit may be dispensed with.

The invention is simple in construction and certain in operation and the device may be installed at no great expense.

Having thus described the invention, what is claimed is—

1. In a device of the character described, a car frame, a plow having adjacent to its upper edge a laterally extending lug and an upwardly extending lug, said lugs being disposed adjacent to opposite side edges, supporting means engaging the laterally extending lug, and adjusting means connected with the upwardly extending lug.

2. In a device of the character described, a car frame, a plow provided adjacent to its upper edge with a laterally extending lug and an upwardly extending lug, said lugs being disposed adjacent to opposite side edges, pivotal supporting means engaging the laterally extending lug, oppositely extending rods connected with the upwardly extending lug, actuating levers connected with the rods, detachable handles for said actuating levers, and means for retaining the parts in adjusted position.

3. In a device of the character described, the combination with a car having a hingedly supported plow, and means for moving the plow to various positions and for supporting it at various adjustments, of a plow pit, a hingedly supported cover for the same, and means carried by the car frame for engaging the cover to move the same to an open position.

4. In a device of the character described, a car frame, a hingedly supported plow, means for adjusting the plow to various positions, a plow pit, a hingedly supported cover for the same having upturned lugs, and a vertically adjustable frame carried by the car frame and adapted to engage the lugs to move the cover to an open position.

5. In a device of the character described, a car frame, a plow, a shaft carried by the car frame and engaging the plow adjacent to an upper corner thereof to pivotally support the same, a plow pit having hingedly supported covers, and a frame carried by

the car frame and adapted to be vertically adjusted to engage the pit covers and to move the same to an open position.

6. In a device of the character described, a car frame, a plow pivotally supported adjacent to an upper corner thereof, centering springs bearing against opposite sides of the plow, a plow pit having hingedly supported covers, and a cover-engaging frame carried by and vertically adjustable with reference to the car frame and adapted to engage the pit covers to move the same to an open position.

7. In a device of the character described, a car frame, a pivotally supported plow, means for adjusting the plow and supporting it at various adjustments, a plow pit having hingedly supported covers, the inner edges of which are spaced apart and provided with upturned lugs, and a cover-engaging frame supported upon and vertically adjustable with reference to the car frame and having triangular end extensions adapted to engage the upturned lugs of the pit covers.

8. In a device of the character described, a car frame, a plow hingedly supported adjacent to an upper corner of said plow, plow supporting means carried by the car frame, means for adjusting the plow and for supporting it at various adjustments, sockets upon the bottom of the car, a vertically movable spring-actuated frame having upwardly extending arms guided in the sockets, a plow pit having hingedly supported covers provided with upturned lugs, and means for moving the spring-actuated frame against the tension of the springs to a position where it may engage the upturned lugs of the covers.

9. In a device of the character described, a plow pit having hingedly supported covers, a car, a plow hingedly supported upon the car, means for moving the plow to various positions and for supporting it at various adjustments, a vertically movable spring supported frame connected with the car and adapted by engagement with the pit covers to move said covers to an open position, and means for moving said frame downwardly to a plane where it will engage the covers.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE P. HORTON.

Witnesses:

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REXFORD M. SMITH.