

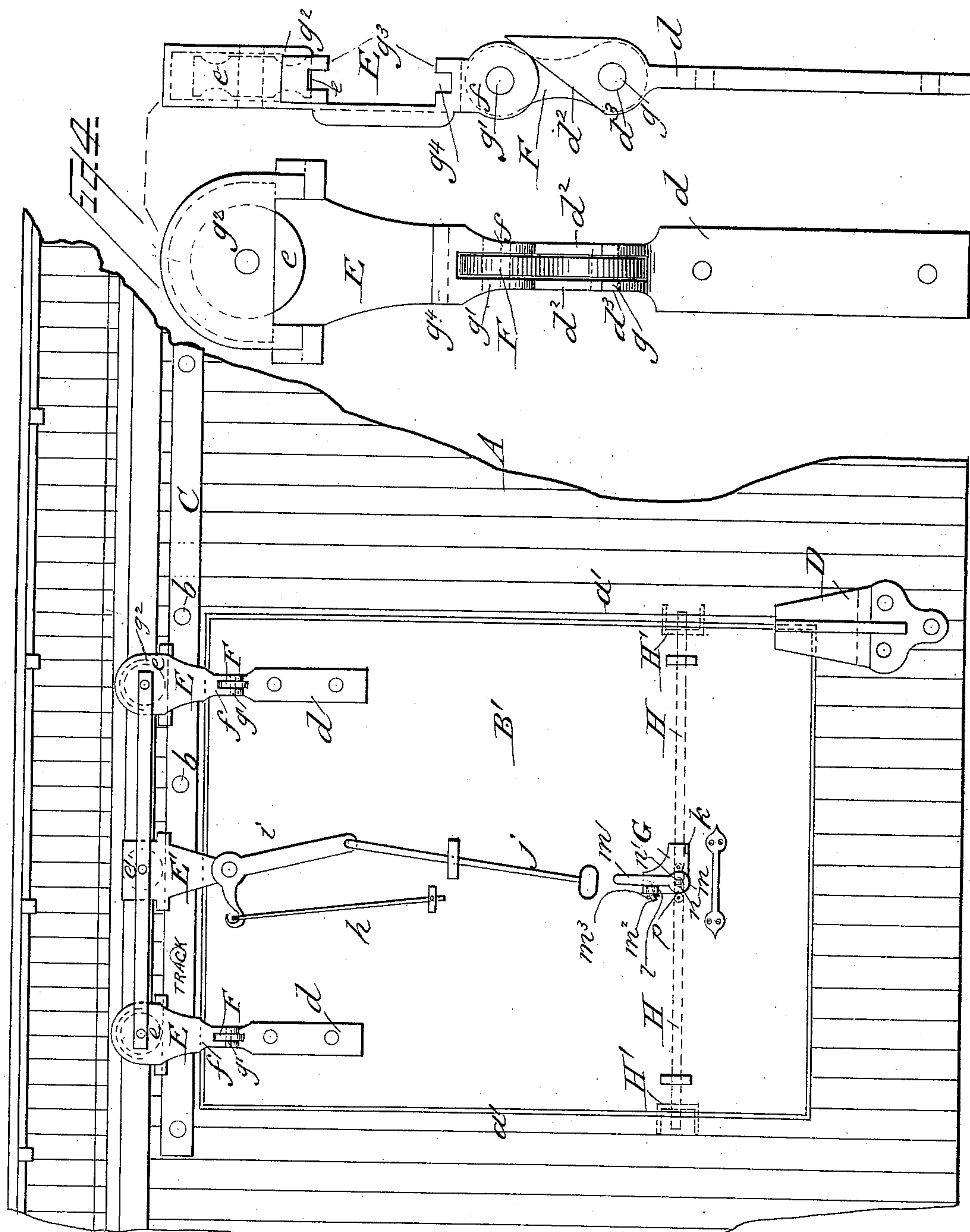
(No Model.)

3 Sheets—Sheet 1.

J. H. McINTYRE.
CAR DOOR.

No. 410,766.

Patented Sept. 10, 1889.



Attest:

A. H. Schott
E. T. Fenwick

Inventor:

John H. McIntyre
by his attys
Mason, Fenwick & Lawrence

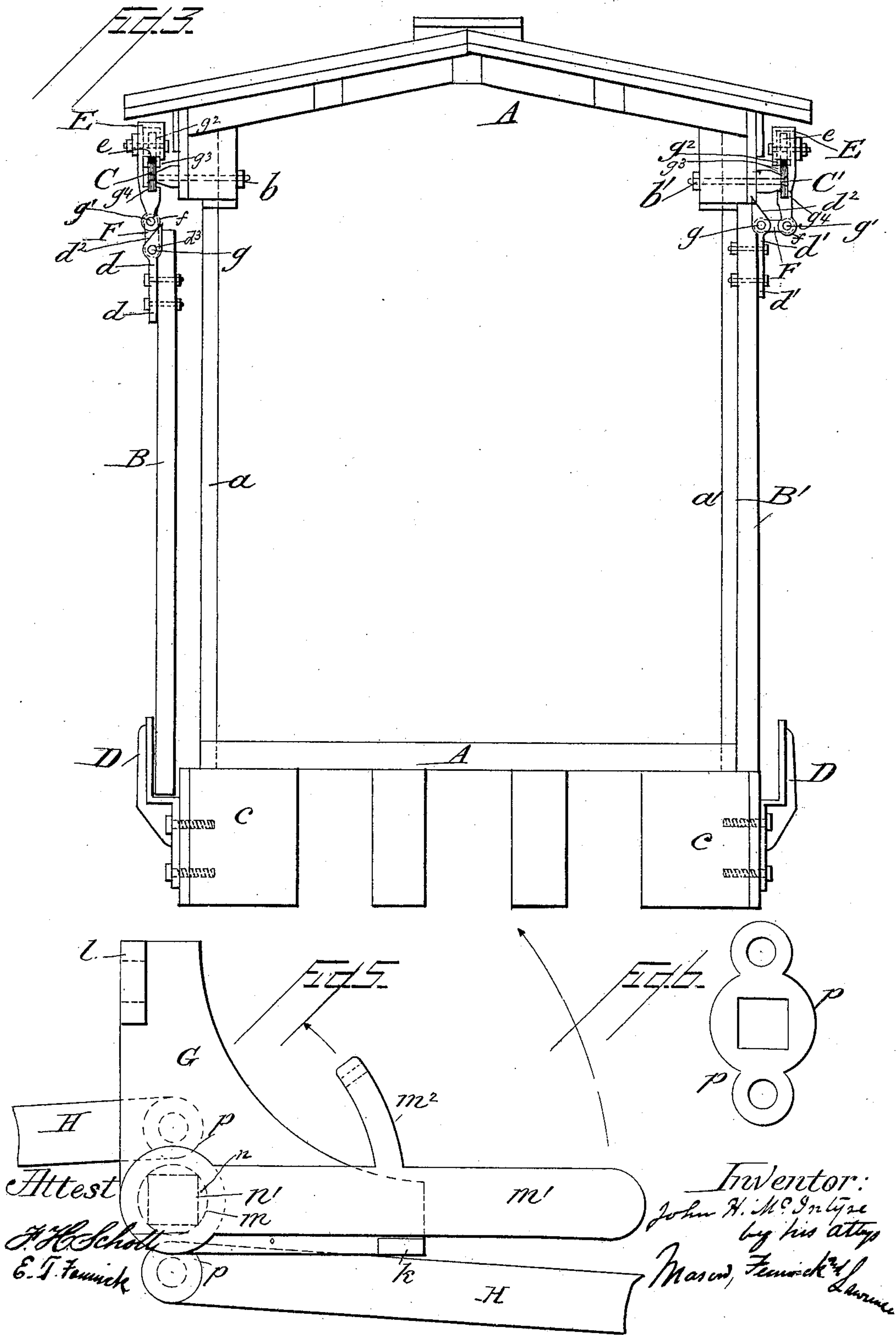
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3 Sheets—Sheet 2.

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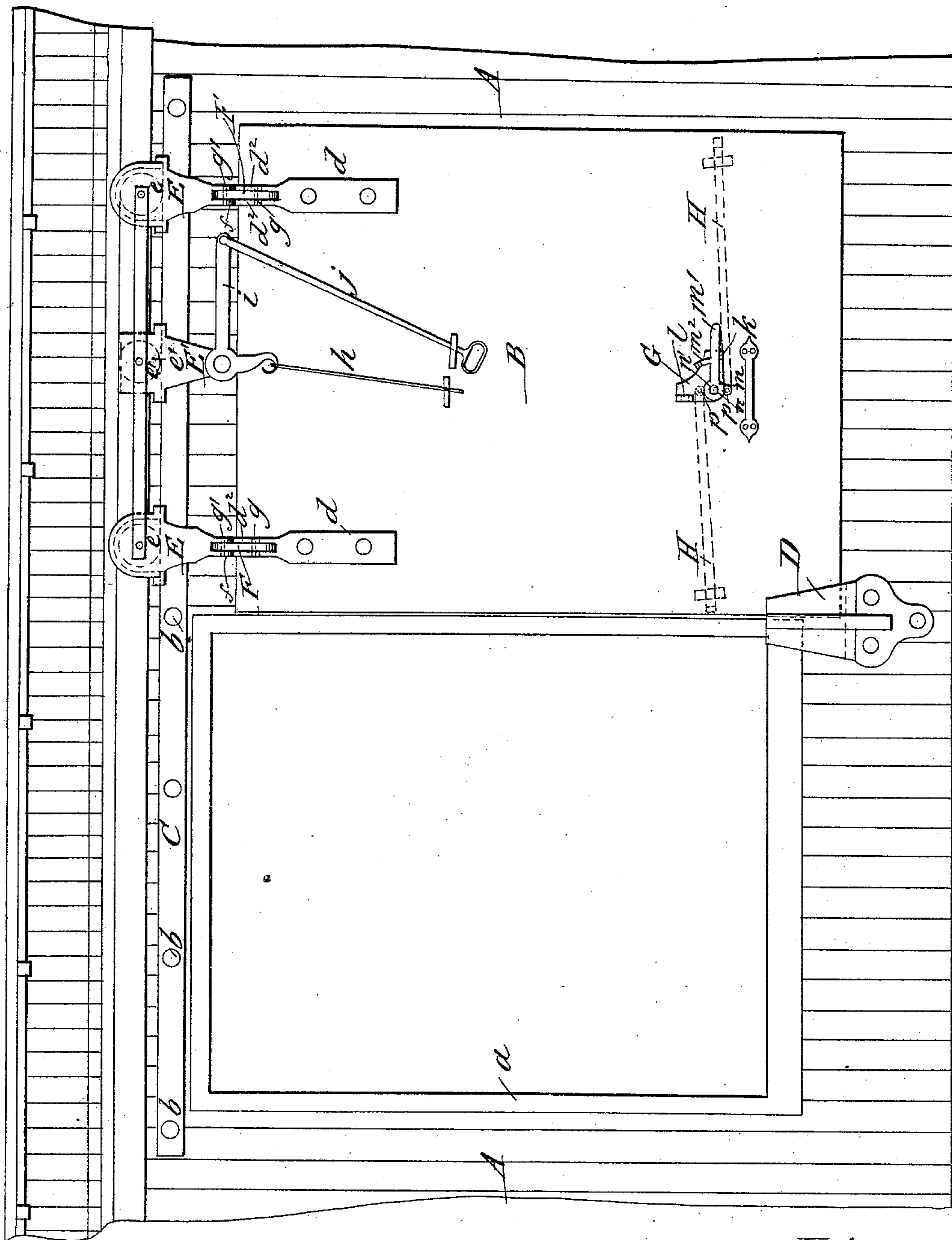
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J. H. McINTYRE.
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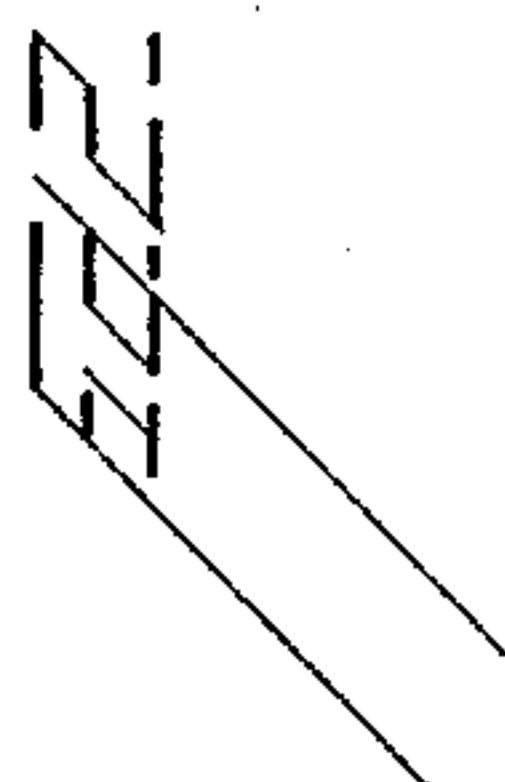
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UNITED STATES PATENT OFFICE.

JOHN H. MCINTYRE, OF RUTLAND, VERMONT.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 410,766, dated September 10, 1889.

Application filed May 6, 1889. Serial No. 309,744. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. MCINTYRE, a citizen of the United States, residing at Rutland, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements in the Mode of Hanging and Operating Freight-Car and other Doors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings and letters of reference thereon.

My invention consists, first, in certain novel constructions, combinations, and arrangements of parts for use in connection with freight-cars or other structures having doors which close from the outside, whereby such doors can be shut into their casings flush with the outside surface or boarding of the car or other structure, thus making a perfectly even continuous surface, and securing such a snug fit that fire, rain, snow, and dirt will be prevented from having access to the interior of the car; also, rendering the doors not liable to be injured by coming in contact with other cars or obstructions, and whereby, also, the doors can be swung out bodily (while remaining suspended) and lowered upon foot-guides outside the boarding of the car, and then slid on their suspending-rails and along said guides until the doorways are opened fully or to the desired extent.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a freight-car, showing my invention, in this view the door being raised, closed, and bolted or locked. Fig. 2 is a similar view to Fig. 1, the door being unbolted or unlocked, swung out, lowered, and opened. Fig. 3 is an end view of a freight or other car, one door being open and the other closed. Fig. 4 represents in detail a suspending-sheave housing and a hinge of the door in front and in edge view as the same appear when the door is swung bodily outward and lowered, so as to move in foot-guides on the car-body. Fig. 5 is a side elevation of the lock-plate with its two bolts partly broken away. Fig. 6 is a detail view of a double crank or rocking bar for supporting the bolt-operating lever and bolts and moving the bolts in opposite directions.

In the accompanying drawings, A represents a freight-car having doorways $a a'$ in its sides, and B B' represent doors for fitting into said doorways in such manner that the outer surfaces of the doors and sides of the car shall be substantially flush with one another when the doors are closed, as indicated at B' in Figs. 1 and 3, and shall stand out beyond said surfaces of the car when the doors are opened, as indicated at B, Figs. 2 and 3.

C C' represent rails above the doorways $a a'$ and firmly secured to the car at $b b'$, thus forming suspension-tracks for the doors to ride and move upon in opening and closing; and D are L-shaped foot-guides set at proper distances apart and firmly attached to the lower frame-timbers c of the car. The rails and guides stand outside the boarding of the car in nearly the same vertical planes, as shown.

At the upper edge of each of the doors B B' one, two, or more slotted hinge-plates $d d'$ are applied, and said plates are respectively formed with a bevel bearing-surface d^2 and a pintle-eye d^3 , as shown. To these slotted plates suspension-sheave housings E, carrying, respectively, a sheave or roller e , are jointed by means of links F, fitted in the slots of the plates $d d'$ and housings E, and connected to the hinged plates $d d'$ and the lower curved or other suitably-shaped ends f of the housings E by means of pivot-pintles $g g'$, as shown. The bevel portions d^2 of the hinged plates extend up far enough to form abutments and stops for the circular abutting ends of the housings, and thereby make the joints practically stiff in one direction when the parts are in the position shown in Fig. 4, and the door B is in the position shown in Figs. 2 and 3. The housings E are constructed, respectively, with a sheave or roller chamber g^2 , are open at one side, as indicated at g^3 , and grooved below the chambers g^2 , as indicated at g^4 , so as to accommodate the sheaves or rollers e , receive the rails C C', and permit said rails to extend up into them and come in contact with the said sheaves or rollers, and also extend down into them, and thereby form guides which positively keep the housings on their suspension-tracks.

The manner in which the sheave-housings are constructed and applied to the rails is

clearly shown in Figs. 1, 2, 3, and 4, and by reference to Fig. 3 it will be seen that the links F, by assuming a horizontal position, cause the door B', for instance, to rise and swing inward from its open position (shown at B in Fig. 3) to its closed position, (shown at B' in Figs. 1 and 3,) and that thus the door B' is caused to enter the doorway a' with its outer surface standing substantially even or flush with the outer surface of the boarding of the car. Again, that the links F, by being able to reassume a vertical position, allow the door by its gravity to swing outward and downward from its closed raised position (shown at B' in Fig. 3) to its open and lowered position (shown at B in the same figure,) and that when it is in this position its lower edge abuts against or stands within the foot-guides D, along which and upon the rail C it can be slid longitudinally until the doorway is fully opened or to the extent desired.

The doors hung as described can be directly manipulated; but I prefer to operate them by mechanism comprising housings E', having sheaves or rollers e', and mounted on rails C C' and connected to the car-doors by means of rods h, jointed at one of their ends to the car-doors and hooked by their other ends to elbow-levers i, pivoted to the said housings and having their long arms furnished with sliding operating-handles j, which are pivoted and guided, as shown. With this arrangement, by pulling up a handle j a door can be caused to swing outward and downward, and by pulling down said handle said door can be raised and caused to swing inward, the rail serving as a purchase while the above-described movements are being made.

About midway of the height and central of the width of each of the doors B B' an angular lock-plate G is provided, the same being securely fastened to the door and comprising a bottom stop k and perforated keeper-lug l. At the angle of the lock-plate a round aperture is bored, and in the same is fitted a cylindrical portion m of a rocking arbor n, carrying a double-crank or rocking bar p, as shown. To an extended square end n' of the arbor n an operating-lever m' is fastened, said lever having a curved perforated lug m² on its upper edge for entering the keeper-lug l and receiving through its perforation a fastening-pin m³, as shown.

II II are long bolts connected, respectively, to the double-crank or rocking bar p and by said bar caused to move in opposite directions and enter keepers H' H' in the jambs of the door-casing, as shown by dotted lines in the drawings. With this arrangement, by turning up the lever m' and passing its lug m² through the keeper-lug l and inserting a pin m³ the bolts will be moved to and held in their locking positions, and by taking out the pin and turning the lever m' down against the stop k the bolts will be withdrawn and the

door unlocked ready to be swung outward and downward and then slid open.

What I claim is—

1. The combination, with a car or other structure, the sliding door thereof, and a suspension-track, of the sliding suspension device comprising hinge-plate d, provided with an abutting and stop-extension portion for insuring a vertical position of the link, the housing E, and connecting-link F, pivoted directly to the hinge-plate and to the said housing, whereby the door when closed can be made to occupy a vertical position within the doorway while suspended on the track with its outer surface flush with the outer surface of the car or structure, and when it is to be opened can be bodily swung out and down beyond said outer surface, so as to stand vertically and then be slid longitudinally, substantially as described.

2. A door closing from the outside provided with a hinge-plate d, having a bevel-surface d², in combination with a suspension-housing provided with an abutting end f and with the link F, substantially as described.

3. The combination of the jointed suspension means, consisting of the housing E, hinge-plate d, provided with an abutting and stop-extension portion for insuring a vertical position of the link, and connecting-link pivoted directly to the hinge-plate and to the housing, door, car-suspending track, and foot-guide, the two latter being in about the same vertical plane, substantially as described.

4. The combination, with the door having jointed suspension means, as described, of the housing E', an elbow-lever pivoted to said housing, a connecting-rod attached to the door and lever, and an operating-handle, substantially as described.

5. The sheave-housings constructed with a chamber for a sheave or roller grooved and open at one side to admit the rail and provided with a hinging end, in combination with the hinge-plate provided with an abutting and stop-extension portion for insuring a vertical position of the link, and the link F, pivoted to said housing and hinge-plate, substantially as described.

6. The combination, with the car provided with a suspension-track and a lower guide, both in about the same vertical plane, of a door provided with a hinging-plate, a link which is adapted to lie horizontally and stand vertically, and a housing which is pivoted to the link and moves on the suspension-track, substantially as and for the purpose described.

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

JOHN H. MCINTYRE.

Witnesses:

C. W. MUSSEY,
C. H. WEST.