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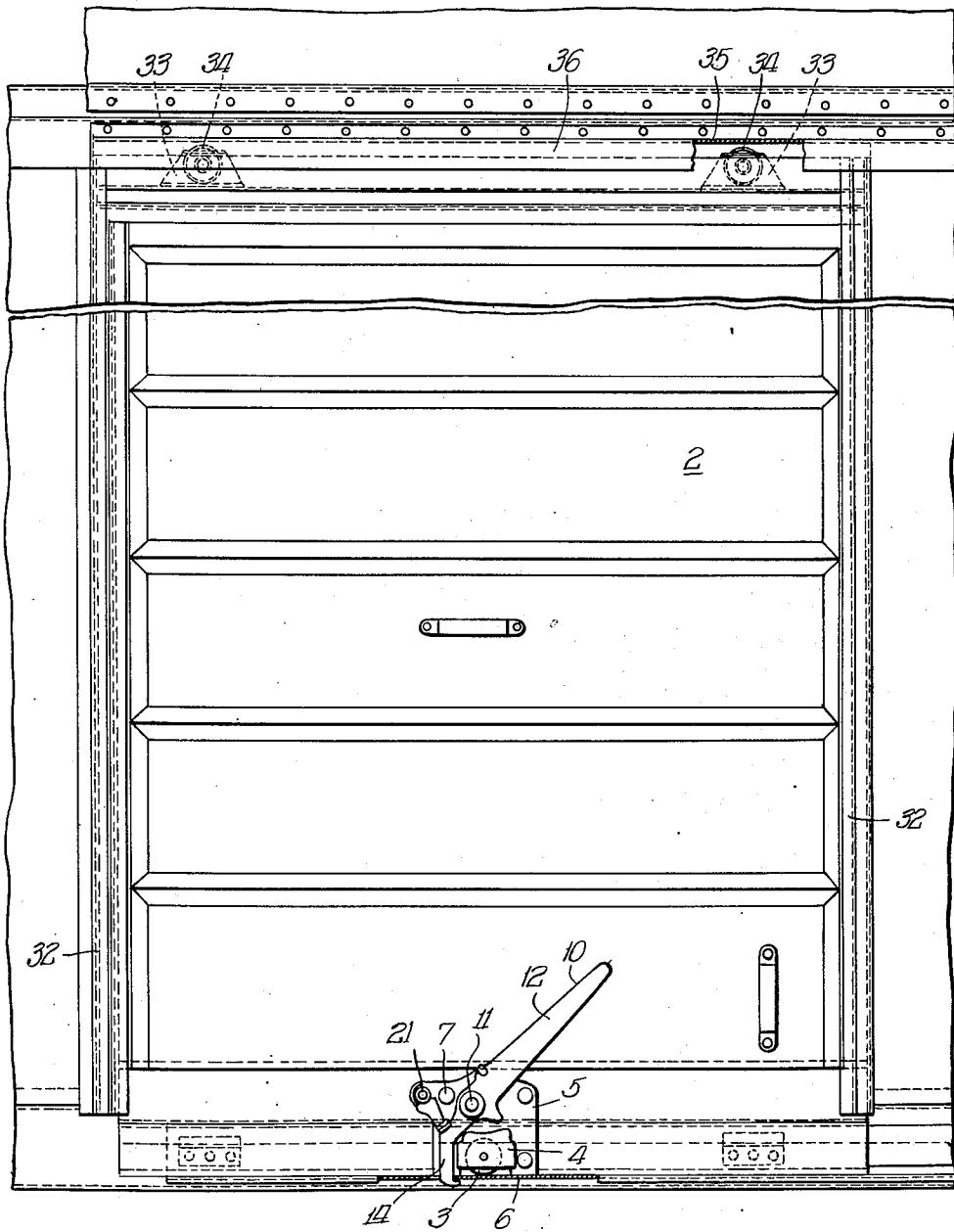
2,540,281

RAILWAY CAR DOOR OPERATING MECHANISM

Filed Nov. 29, 1946

2 Sheets-Sheet 1

FIG. 1



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2 Sheets-Sheet 2

Fig. 2

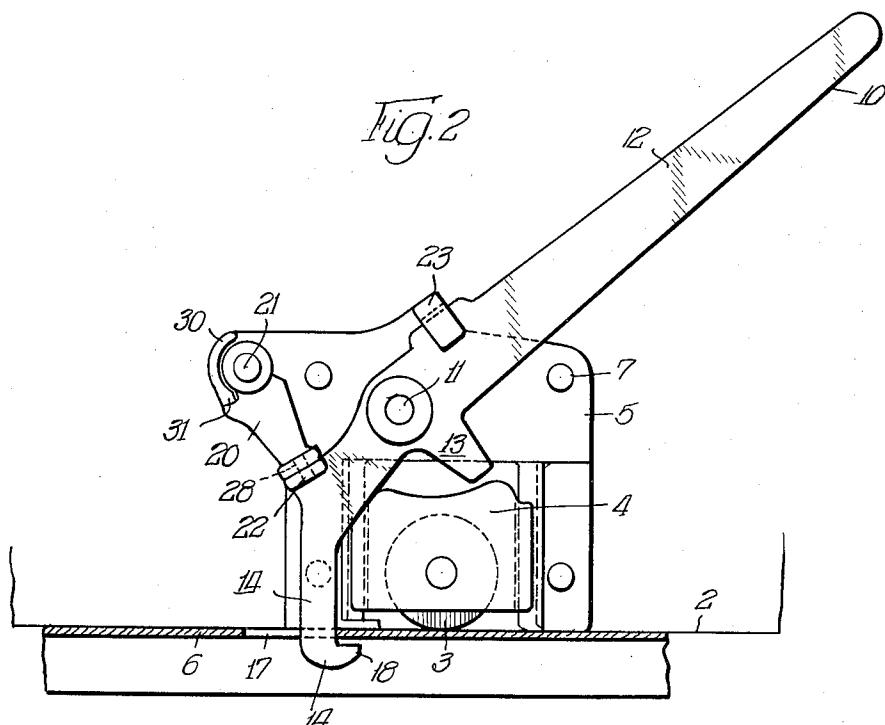
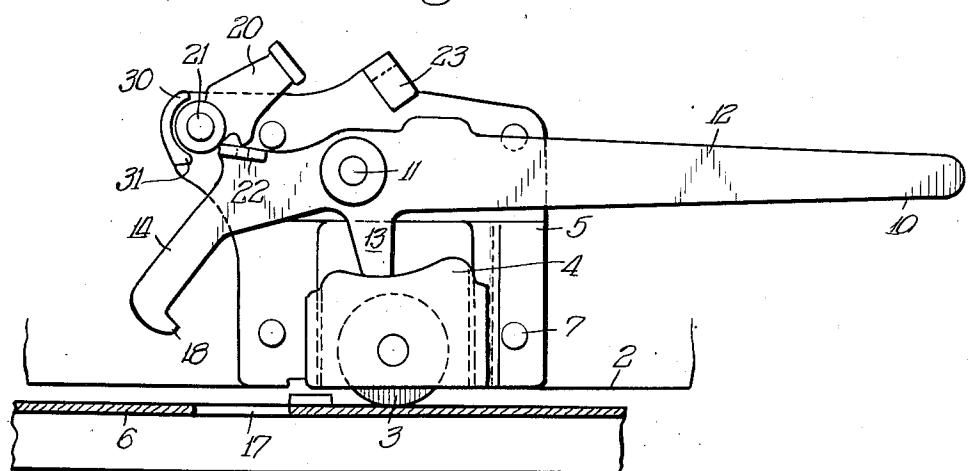


Fig. 3



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## UNITED STATES PATENT OFFICE

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## RAILWAY CAR DOOR OPERATING MECHANISM

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6 Claims. (Cl. 16—99)

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The invention relates to side doors for railway house cars of the type which move horizontally along a track fixed to the car body to open or close a door opening in the side wall of the car.

The object of the invention is to provide a mechanism to forcefully raise such a railway car door which normally rests upon the door track so that when raised the door will be supported solely by a roller or rollers mounted upon the door and can then be rolled along the track.

A further object is to associate and arrange the component parts of the mechanism so that when the door is in raised position said parts will hold the door in raised position even when the handle is released by the operator, but upon a slight movement of the car the door will lower by gravity to engagement with the track.

A further object is to provide a door supported by a single roller at the bottom of the door and substantially midway between the opposite sides thereof and also to provide the door with upper rollers adjacent each upper corner of the door which upper rollers engage a guide fixed to the car and thereby prevent excessive tipping of the door in the vertical plane of the door.

In the drawings:

Figure 1 is a side elevation of a railway car door and associated parts of the car with my improved door operating mechanism applied thereon.

Figure 2 shows my operating mechanism in normal position, i. e., with the door resting upon the track.

Figure 3 is similar to Figure 2 and shows the door in raised position.

In the drawings the door 2 is provided with roller 3 mounted in a housing 4, which housing is mounted in the housing guide 5 fixed to the door by the rivets 7 for vertical sliding movement so that when the door is in normal position, that is, either in closed position or fully open position, the housing guide 5 (and preferably also the door) rests upon the track 6 which is fixed to the car to provide friction between the door and track to prevent accidental horizontal movement of the door.

The operating lever 10 is pivotally mounted upon the housing guide 5, preferably above the roller housing 4, as at 11, and to one side of the vertical plane of the axis of the roller. This operating lever 10 has a handle arm 12, a cam arm 13 and preferably also a locking arm 14.

When the door 2 is in normal position, as shown in Figure 2, with the roller housing resting upon the track, the locking arm 14 of the operating lever 10 passes through the aperture 17

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in the track 6 and the projection 18 thereof engages the lower side of the track 6 and prevents the door from jumping upwardly. The pawl 20 is pivotally mounted at 21 upon the housing guide 5 in a position to swing into engagement with the part 22 of the operating lever 10 and hold the locking arm 14 in engagement with the track, that is, in locked position (see Figure 2). The lug 23 prevents the operating handle 10 from tipping outwardly and interfering with passing cars.

When it is desired to move the door horizontally the pawl 20 is swung upwardly to out-of-the-way position (see Figure 3) and the handle arm 12 of the operating lever 10 is swung downwardly 15 which does two things: first, it disengages the locking arm 14 from the track 6 and upon further downward movement of the handle arm 12 causes the cam arm 13 to first engage the top of the roller housing 4 and then forces the roller 3 against the track (if it isn't already in engagement therewith) and then raises the housing guide 5 (and the door 2) out of engagement with the track so that the door can be rolled along the track on roller 3. The pawl 20 assumes the position shown in Figure 3. The handle arm 12 is preferably held down while the door is being moved.

The place of engagement of the cam arm 13 with the housing 4 is substantially on a line between the pivot 11 of the lever 10 and the axle of the roller 3 so as to lock them in this position. (See Figure 3.)

When the handle arm 12 is raised the cam arm 13 is disengaged from the housing 4 so that the door 2 falls into engagement with the track 6 by gravity, and the locking arm 14 moves into engagement with the track 6 through the aperture 17 and the pawl 20 falls into holding position by gravity, and the seal 28 is applied if desired.

When it is desired to unlock the locking arm 14 the pawl 20 is slightly disengaged from the part 22 of the operating lever 10, and as the lower portion of the operating lever swings upwardly, the pawl 20 rides upon the part 22 and finally assumes the position shown in Figure 3. The stop 30 limits the upward swing of the pawl 20 and the stop 31 limits the downward movement thereof.

The roller 3 and its associated elements are preferably mounted upon the door substantially midway between the vertical sides 32 thereof and other rollers 34 are mounted upon the door 2 by means of the brackets 33 adjacent the upper corners thereof with rollers 34 extending above the door and engageable with the door guide 35, 50 which is fixed to the car, whereby the tendency

of the door to tip or rock in the plane of the door upon the single lower roller 3 is prevented by the engagement of one of the upper rollers with the door guide 35. The hood 36 prevents the door from falling outwardly.

The accompanying drawings illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof, within the scope of the claims, will occur to persons skilled in the art.

I claim:

1. In a vertically movable railway car door, horizontally slidable upon a track below said door, a housing guide adapted to be mounted upon said door, a housing mounted in said guide for vertical movement only, a roller mounted in said housing and extending below said housing, and an operating lever having a handle arm, a cam arm engageable with said housing, and a locking arm projecting laterally therefrom and engageable with said track, said lever being pivotally mountable upon said guide so that when the door is in normal position engaging said track a pivotal movement of said handle arm substantially in the plane of the door disengages the locking arm from said track, and causes the cam arm to engage the housing, forcing the roller against the track and raising the door, whereupon the door is free to roll upon the track.

2. In a vertically movable railway car door, horizontally slidable upon a track below said door, said track having an opening therein, a housing guide adapted to be mounted upon said door, a housing mounted in said guide for vertical movement only, a roller mounted in said housing and extending below said housing, and an operating lever having a handle arm, a cam arm engageable with the housing and a locking arm engageable with said track opening, said lever being pivotally mounted upon said housing guide, whereby a pivotal movement of said handle arm disengages said locking arm from said track opening and causes the cam arm to engage said housing; forces the roller therein against said track and raises the door out of engagement with said track, whereupon the door is free to roll along said track.

3. A mechanism as defined in claim 2 including a pawl pivotally mounted upon said housing guide and swingable in the path of said lever so as to engage a part of said lever when the door is in normal position and hold said locking arm in engagement with said track, said pawl being

swingable to out-of-the-way position so that said movement of the handle will disengage said locking arm from said track.

4. A mechanism as defined in claim 2 including a pawl pivotally mounted upon said housing guide and swingable in the path of said lever so as to engage a part of said lever when the door is in normal position and hold said locking arm in engagement with said track, said pawl being swingable to out-of-the-way position so that said movement of the handle will disengage said locking arm from said track and still remain in contact with said part so that when the locking arm returns to engagement with said track the pawl returns to holding position by gravity.

5. A mechanism substantially as defined in claim 1, including a pawl pivotally mounted upon said housing guide and swingable in the path of said lever so as to hold said locking arm thereof in engagement with the track when the door is in normal position and swingable to out-of-the-way position so that said handle arm may be moved to disengage the locking arm from said track.

6. In a vertically movable railway car door horizontally slidable upon a track below the door, a housing guide adapted to be mounted on the door, a housing reciprocably mounted in said guide, a roller in said housing and extending below said housing, an operating lever pivotally mounted on said guide and having a handle arm, a cam arm engageable with said housing, and a locking arm engageable with said track, and a pawl pivotally mountable on said guide and swingable in the path of rotation of said operating lever to optionally hold said locking arm in engagement with said track.

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