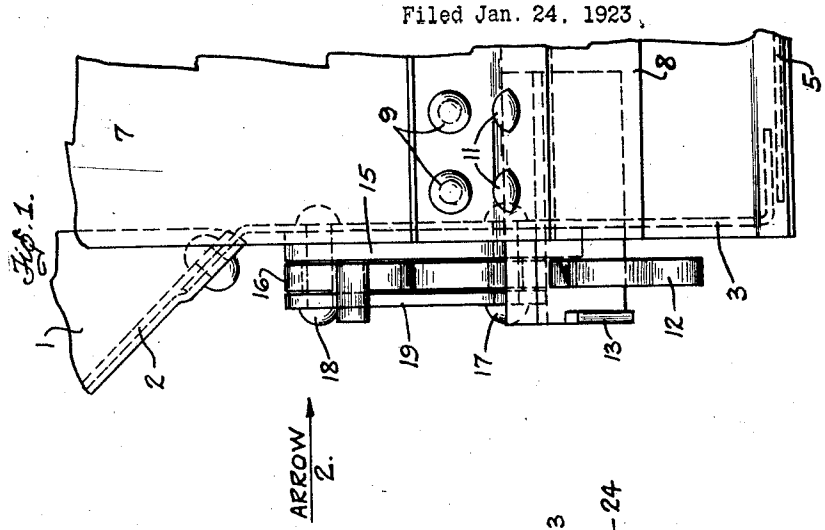
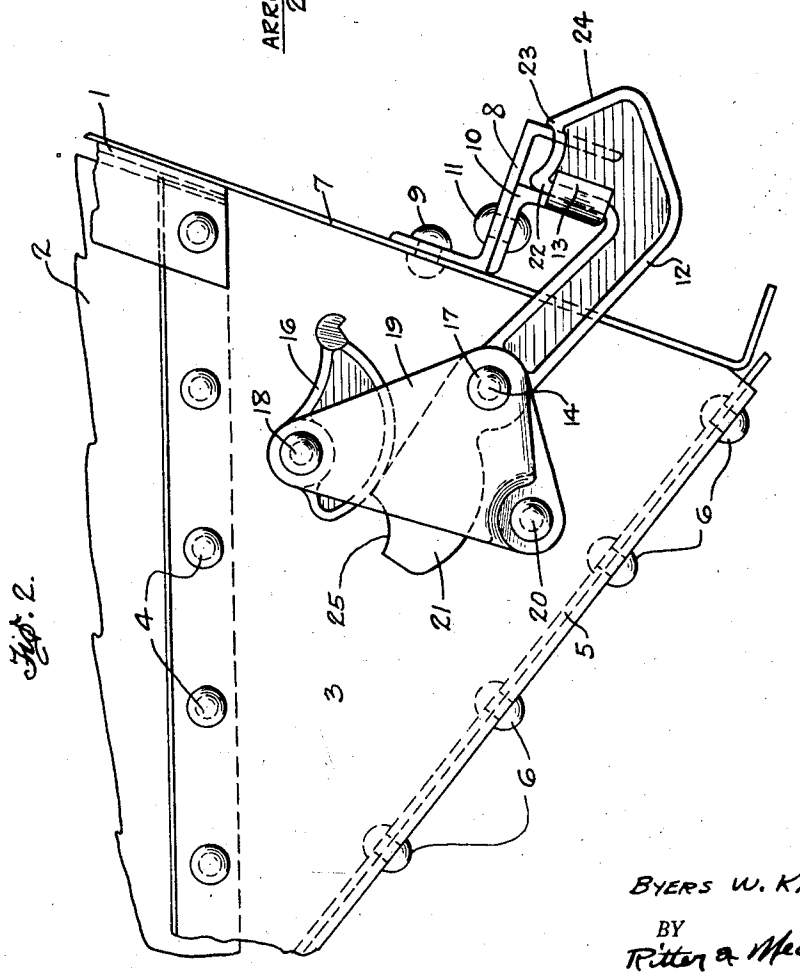
May 8, 1928. 1,669,133

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CAR DOOR ARRANGEMENT

Filed Jan. 24, 1923.





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UNITED STATES PATENT OFFICE.

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CAR-DOOR ARRANGEMENT.

Application filed January 24, 1923. Serial No. 614,661.

This invention relates to railway cars and has among its objects to provide improvements in door securing and supporting mechanisms. Another object is to provide a door securing mechanism which may be applied to a relatively small hopper sheet. A still further object is to provide a counter-weighted door-supporting member arranged to engage the door upon upward movement of the ledge portion of the member.

With such general and other more specific objects in view the invention consists of the formation, combination and arrangement of parts as will be herein described and claimed.

In the accompanying drawings Figure 1 is a fragmentary side elevational view of a portion of a car and its door, with a door-supporting mechanism constructed in accordance with the principles of the present invention. Figure 2 is a fragmentary end elevational view of the hopper of the car showing the door mechanism attached thereto, this figure being seen in the direction of arrow 2 in Figure 1.

The car shown in the drawings is of the general type shown in Pilcher Patent 1,437,441, and embodies a side 1 and an inclined floor sheet 2 extending upwardly to near the end of the car. Near the foot of the inclined floor sheet is an end hopper sheet 3 secured to the floor sheet 2 by means of rivets 4. Extending transversely of the car is a chute plate 5 which is attached to the end hopper sheet 3 by means of rivets 6. The outer edge of the sheet 5 and the outer edge of the sheet 3 form, together with suitable edges of plate 1, a hopper discharge opening. This opening is normally closed by means of the outwardly swinging door 7. This door may be hinged to the car body in any convenient manner, and as the construction is well known in the art, the hinges are not indicated in the present drawings. The door may be provided with a Z-bar stiffening member 8 secured in place by means of rivets such as 9, said stiffening member being located near the foot of the sheet 2. This stiffening member is shown in the drawings as extending only to the end of the door and there is secured to it by means of rivets 11 an angle iron arm or extension 10. This arm 10 extends beyond the end of the door and somewhat beyond the plane of the end hopper sheet 3 to form means for cooperation with a door supporting hook 12. The outer end of one leg of the angle 10 is bent outwardly at 13 to form an end wall for preventing the hook 12 from creeping off the angle 10.

The door-supporting hook 12 lies substantially horizontal when in engagement with the door and is pivotally attached to the end hopper sheet at the pivot point 14. For this purpose a bracket 15 is secured to the end hopper sheet. This bracket lies against the outer face of the hopper sheet 3 and may have a suitable trunnion formed upon it to comprise a pivot for the hook 12. A second trunnion may be carried by the bracket 15, upon which may be pivotally arranged the eccentric locking cam 16 which is adapted to hold the hook 12 in engagement with the angle iron 10. An outer plate 19 may overlie the bracket 15 and portions of the hook and cam, and securing rivets 17 and 18 may pass through this plate and through the hook and cam trunnions respectively, and also through the end hopper sheet 3 to secure these parts together.

An additional securing rivet 20 may pass directly through an offset portion of the plate 19 and the bracket 15, as well as through end hopper sheet 3.

It frequently happens that hopper sheets such as 3 are of limited extent so that it is with difficulty that suitable door-supporting mechanisms can be applied thereto. In the present invention the ledge portion of the hook is arranged to swing upwardly into engagement with the angle iron 10. This form and arrangement of hook can be applied to cars where the sheet 3 is of limited extent.

It is the practice in such cars to swing the doors shut by hand and accordingly it is desirable that the supporting hook may at all times be ready for engagement with the door. To this end the hook 12 is extended beyond the pivot point 14 thereof so as to form an extension 21 constituting a counterweight which will at all times tend to swing the outer end of the hook upwardly. The inner end of the hook 12 lies beneath the plate 2 and the outer end is provided with the customary main supporting ledge 22 and may also have the preliminary supporting ledge 23, which ledges may engage the downstanding leg of the angle 10 to hold the door in completely closed, or partially closed position. The outer end of the hook is provided with an approach portion 24 which will coact with the angle iron 10 to cause the hook to

swing downwardly as the door is closed. The hook will then swing upwardly by gravity into engagement with the angle. The counter-weight portion 21 of the hook is cut away at 25 to provide clearance for the swinging of the hook at the hub of the cam 16. The cam 16 co-operates with the counterweight portion of the hook, so that it also is located beneath the sheet 2.

I have thus described an embodiment of my invention. Other embodiments are contemplated, within the scope of the appended claims, without departing from the spirit thereof.

What is claimed is:

1. A railway car having a hopper with an end wall, a door hinged to the hopper and adapted to lie, when in closed position, with one edge thereof along the said end wall of the hopper, means carried by the door adapted to form a hook seat, a door-supporting hook pivotally mounted on the hopper so that its hinged axis is disposed at an angle to the end wall of the hopper, the hook being arranged to swing upwardly to engage the hook seat and downwardly for disengagement therefrom, a counterweight carried by the hook adapted normally to hold the hook in door-supporting relation to the hook seat, and means adapted to move into engagement with said counterweight to thereby lock said hook in said door-supporting relation.

2. A railway car having a side-discharging hopper with a vertical end wall and with an inclined floor sheet extending upwardly from the top of the hopper end wall toward the end of the car, an outwardly swinging door adapted to close the discharge opening of said hopper, the end of said door lying along the outer edge of the hopper end wall, an arm secured to the outer face of the door, said arm extending beyond the said end of the door and arranged to form a door securing member, and a co-operating door-supporting hook pivoted upon the end wall of the hopper, the said arm being located below the foot of the inclined floor sheet and the hook being disposed beneath the floor sheet and having a portion extending below the said door arm and arranged for engagement with the latter upon upward movement of the hook.

3. A railway car having a side-discharging hopper with a vertical end wall and with an inclined floor sheet extending upwardly from the top of the hopper end wall toward the end of the car, an outwardly swinging door adapted to close the discharge opening of said hopper and having an end lying along the outer edge of the hopper end wall, an arm secured to the outer face of the door and extending beyond the said end of the door and forming a door securing member, and a door-supporting hook pivoted upon the end wall of the hopper and adapted to cooperate with said arm, the said arm being located below the foot of the inclined floor sheet and the hook being disposed beneath the floor sheet and having a portion extending below the said door arm and arranged for engagement with the latter upon upward movement of the hook, and a counterweight attached to the hook at the opposite side of the pivot point thereof and adapted to normally hold the hook in engaged relationship with the door arm.

4. A railway car having a side-discharging hopper with a vertical end wall and with an inclined floor sheet extending upwardly from the top of the hopper end wall toward the end of the car, an outwardly swinging door adapted to close the discharge opening of said hopper and having an end lying along the outer edge of the hopper end wall, an arm secured to the outer face of the door and extending beyond the said end of the door and forming a door securing member, and a co-operating door-supporting hook pivoted upon the end wall of the hopper and having a counterweight portion, the said arm being located below the foot of the inclined floor sheet and the hook being disposed beneath the floor sheet and having a portion extending below the said door arm and arranged for engagement with the latter upon upward movement of the hook, and means coacting with the counterweight portion of the hook for locking the hook in supporting engagement with the door arm.

5. A railway car having a hopper with an end wall, a door hinged to the hopper and provided with an edge adapted to lie along the said end wall of the hopper when the door is in closed position, means carried by said door forming a hook seat, a door supporting hook pivotally associated with the end hopper wall and arranged to swing upwardly to engage the said hook seat, the plane of operation of the hook being substantially parallel to the side edge of the door adjacent the hook, gravity actuated means adapted to move said hook to engaged relationship with the hook seat, and means movable with respect to said hook and said gravity actuated means for locking said hook in door-supporting relation to said seat.

6. A railway car having a hopper, a door hinged to the hopper and provided with a door arm, a door-supporting hook pivotally mounted on the hopper and arranged to swing toward the hinge axis of the door to engage the door arm for supporting the door in closed position, a bracket secured to the hopper in overlapping relation to the outer face of the hook, means interposed between the bracket and hopper and engageable with the hook for normally maintaining the latter in door-supporting position, and an approach plane on the hook arranged to coact with the door arm so that when the

door is swung to closed position the hook will swing away from the hinge axis of the door.

7. A railway car having a hopper, a door hinged to the hopper and provided with an arm, a door-supporting member pivoted to the hopper and adapted to extend under the door arm, said member having a ledge extending upwardly therefrom for engagement with the door arm, a bracket secured to the hopper in overlapping relation to the outer face of the door-supporting member and means associated with the door-supporting member for normally maintaining it in door supporting position, said means being interposed between the bracket and the hopper.

In testimony whereof I affix my signature.

BYERS W. KADEL.