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CAR DOOR OPERATING MECHANISM

Original Filed August 26, 1921

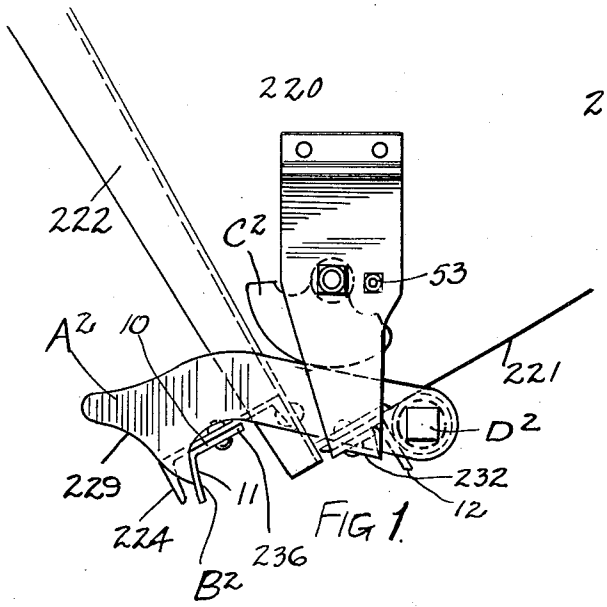


FIG 1.

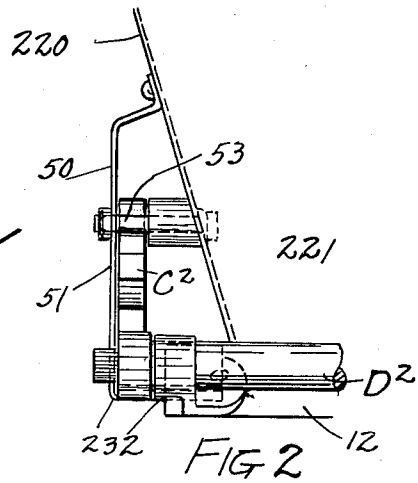


FIG 2

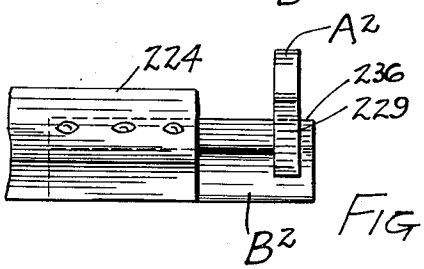


FIG 3

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CAR-DOOR-OPERATING MECHANISM.

Original application filed August 26, 1921, Serial No. 495,665. Divided and this application filed June 17, 1925. Serial No. 37,613.

This invention relates to improvements in car door locking means.

This invention is a divisional application of our pending application Serial No. 495,665, filed August 26, 1921.

One object of the invention is to provide a door lock or latch arrangement for a railway car which is of simple form relatively inexpensive to make, apply and maintain, and which will always insure the doors being fully closed when locked to thereby prevent leakage of the contents of the car while in transit.

Another object of the invention is to provide a door locking mechanism which eliminates the use of chains or equivalent flexible connections, and which is so arranged that as the doors are pushed or kicked to closed position, the mechanism will automatically lock or latch the doors in final closed position.

Another and more specific object of the invention is to provide a shoulder latch element carried by the car and adapted to co-operate with a flanged member on the door to lock the door in closed position.

Other and further objects of the invention will more fully and clearly appear from the description and claims hereinafter following.

In the drawings forming a part of this specification, Figure 1 is a side elevational view of a portion of a hopper car, showing our invention in connection therewith, the parts being in the condition assumed when the doors are in closed and locked position. Figure 2 is an elevational view of the structure as shown in Figure 1, looking from the right towards the left, and Figure 3 is a fragmentary elevational view of the structure showing the latch and associated parts on the door, as viewed in Figure 1 looking from the left towards the right.

Referring to the drawings, the invention is shown as applied to a type of hopper having hoppers transversely aligned, one on each side of the center sill construction of the car. As customary, such hoppers are formed with substantially triangular outer side sheets 220, which slope slightly inwardly and downwardly toward the center of the car. Each of such hoppers is also provided with a downwardly sloping hopper bottom sheet, as indicated at 221, and the opening of each hopper on each side of the car is adapted to be closed by a hopper door or member 222, pivotally mounted to swing about its upper edge on an axis extending transversely of the car. As customary in this type of car, the two transversely aligned doors are adapted to be simultaneously operated by means of a suitable cross-brace extending along the free edges of the doors, such a brace being shown at 224, the same being of channel formation. Ordinarily there will be a brace for the lower edge of each hopper bottom sheet 221 as indicated at 12.

In carrying out our invention we preferably employ similar latching mechanisms at each side of the car and since said mechanisms are similar only one of the same is shown in the drawings, each mechanism including a latching element indicated at A^2, which is fixedly attached to a transversely extending shaft D^2, the latter being rotatably mounted in suitable bearing brackets secured to the hopper bottom sheet 221. The shaft D^2 has squared sections at both ends so that it may be operated from either side of the car. Each latching element A^2 is adapted to co-operate with a corresponding latching element B^2, which in this instance is secured to the door and movable therewith, the same being directly mounted upon the channel brace 224. Each latching element A^2 is formed with a cam edge 229 adapted to co-operate with the edge 236 of the corresponding element B^2 in guiding the parts into operative engagement as the doors are swung into closed position. As will be noted by reference to the drawings the latch element B^2 consists of a flanged member having one flange 10 thereof lying against the web of the channel member 224 being therefore arranged substantially normal to the plane of the door, the other flange 11 being arranged substantially in the plane of the door but preferably curved to correspond with a similarly curved shoulder formed on the latch element A^2. The relation between the latch members A^2 and B^2 is such that when the pivotally mounted element A^2 is in locking engagement with the door, the shoulder thereof will be directly beneath the flange 10 of the member B^2, and furthermore the parts are so arranged that said flange 10 is arranged to lie within the

shoulder of the latching element A^2, closely adjacent the shank thereof, thereby providing against bending of the flanges 10 and 11 especially during the initial stage of the door closing operation, when it is frequently necessary to hammer on the latch to bring the latter to fully locked position beneath the door. As the doors move to closed position the latch A^2 rides on the face of the flange 10 before it drops into engagement with its corrsponding flange 11 on the bracket member B^2.

In said arrangement a supporting plate bracket 50 is applied to the outer side of each hopper, said bracket having a depending vertical web 51 and inturned web 232. The latter, as evident from an inspection of Figure 1, is adapted to co-operate with the shank of the latching element A^2 in limiting the downward movement of the latter under the influence of gravity so that the cam edge 229 will always be in the path of travel of the edge 236. Pivotally mounted on a suitable bolt extending between bracket 50 and the hopper sheet 220 is a locking cam C^2 of sector form, the same being adapted to cam against the upper side of the latching element A^2 and hold the latter in locked position, as shown in Figure 1. A stud bolt 53 is extended from the bracket 50 to the hopper side sheet 220, said bolt 53 acting as a limiting stop to sustain the camming element C^2 when it is thrown to inoperative position, as will be understood. The hub of the camming element C^2 will obviously serve as a limiting stop for the upwardly swinging movements of the latch A^2, thereby preventing the latter from being thrown in a clockwise direction to an inoperative position. The arrangement when operable from both sides may employ only one camming element C^2 since if one latching element A^2 is positively locked, the other will also be locked, inasmuch as both latching elements A^2 are rigidly secured to the shaft D^2.

While we have shown our invention as applied to a hopper car, it is evident that the same is applicable to other types of car and we contemplate all constructions and modifications which come within the scope of the claims appended hereto.

What we claim is:

1. In a dump car, the combination with a fixed body portion and a door; of a shouldered latch pivotally mounted on the fixed body portion, the shouldered portion of the latch being of arcuate form; and a floor beam fixedly mounted on the door, said floor beam having an extension beyond the door engageable with the shouldered latch, said engaging portion of the extension substantially corresponding in contour to the engaging portion of the latch.

2. In a railway car, the combination with a dumping door; of a shouldered latch member pivotally mounted on the car; a flanged beam member secured to the door, said member having a web substantially normal to the plane of the door, and a flange, angularly related with respect to the said web, said flange being adapted to seat against the shoulder on the latch when the door is in closed position, the parts being so arranged that when the door is in closed position, the shoulder will directly engage beneath the flange within the plane of said web.

3. In a railway car, the combination with the body thereof; of a dumping door; a flanged bracket member carried by said door, said bracket member having one flange lying normal to the plane of the door and having an angularly related flange at the end thereof; and a pivotally mounted shouldered latch carried by the car body and adapted to seat beneath the last named flange, said latch when in engaging position beneath the bracket being adapted to embrace both of the said flanges.

4. In a dump car, the combination with a pivoted door member having a flanged door member extending beyond an edge of the door, said flanged member having angularly related flanges; a pivoted hook adapted to engage said member, said hook having a shank extending across the plane of the door, and a shoulder formed outwardly of said shank, and disposed below the plane of the door when closed, said hook when in engaged relation with the flanged member of the door having the shank immediately adjacent one flange of the said flanged member, and having the said shoulder thereof beneath the other flange.

5. In a dump car, the combination with a fixed body portion and a dumping door; of a shouldered latch pivotally mounted on the fixed body portion; a beam extending along the free edges of the door; a flanged extension secured by one of the flanges to the beam, said extension extending beyond a side edge of the door, the flanged extension having another flange adapted to engage with the shoulder on the latch to maintain the door in closed position, said extension being secured to the beam in line with the shoulder on the latch and the pivotal point of said latch.

6. In a dump car having a dumping door, the combination with a flanged member carried by the door adjacent the free edge thereof, said member having one flange lying substantially normal to the plane of the door and having the other flange lying substantially normal to said first named flange; and a supporting hook on the car body adapted to engage the said flanged member, said supporting hook on the car body having a shoulder spaced away from its pivot, and a shank extending from the

pivot towards said shoulder, said flanged member when in engaged relationship with the supporting hook having one flange lying adjacent the shank of the hook and having the other flange in engagement with the shoulder.

7. In a railway car provided with a hopper having side and bottom walls meeting and forming a corner adjacent the discharge opening, and a pivoted door for closing said opening, the combination with a projection from the door; of a stiffening member secured to the said bottom wall, and projecting outwardly beyond the side wall; a bracket carried by the said stiffening member; a latch having a pivotal connection with the said bracket, said latch being adapted to co-operate with the projecting member on the door; and a wall overlying said latch, said wall being secured to both the side wall of the car and the said stiffening member.

8. In a dump car, the combination with the body thereof; of a dumping door; a beam carried by the door and projecting beyond an edge thereof, said beam having a web substantially normal to the plane of the beam, and a flange outstanding from said web; and a hook pivotally mounted on the car body, said hook having a shank extending adjacent the said beam for its full depth when the door is in closed and locked position, said hook being also formed with a shoulder to seat beneath the outstanding flange of the said beam to lock the door in closed position.

9. In a dump car, the combination with a dumping door; of a reinforcing beam secured thereto; a flanged extension secured to said beam by one of its flanges and adapted to project beyond an edge of the door; a shouldered door locking member pivotally mounted on a fixed part of the car and co-operable with the other of the flanges of the flanged extension to maintain the door in closed position, said flanged extension when the door is in closed position having the securing flange lying within the shoulder of the latch.

10. In a dump car, the combination with the body thereof; of a dumping door; a flanged member carried by said door, said member having one flange lying normal to the plane of the door, and having another flange outstanding from said first flange; and a shouldered member carried by the car body and adapted to seat beneath the last named flange, said shouldered member when the door is moved towards closed position being adapted to ride on the said first flange before locking engagement between said shouldered member and the bracket is effected.

11. In a dump car, the combination with a dumping door member and the fixed body member of the car, one of said members being provided with an angular element, and the other of said members with a shouldered latch adapted to co-operate with said angular element to hold the door closed, the parts being arranged whereby the various angular portions of said angular member are juxtaposed with reference to the shank and shoulder of said latch when said door is closed.

In witness that we claim the foregoing we have hereunto subscribed our names this 12th day of June, 1925.

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ALBERT E. ZIMMER.