April 19, 1938. A. WASBERG 2,114,755

CAR DOOR OPERATING MECHANISM

Filed Aug. 1, 1934

Fig. 1.

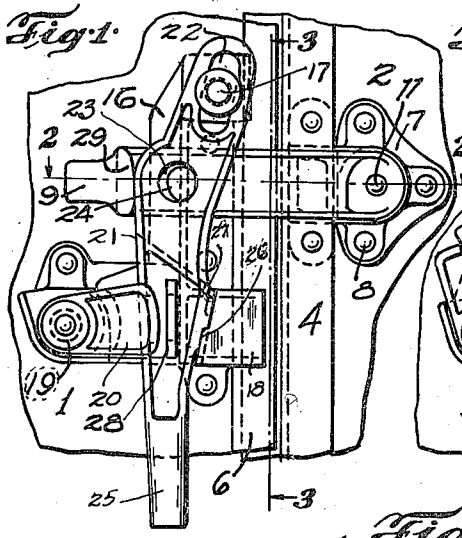


Fig. 4.

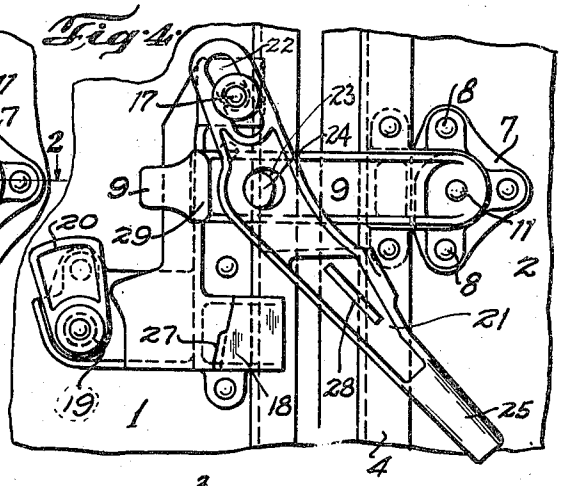


Fig. 2.

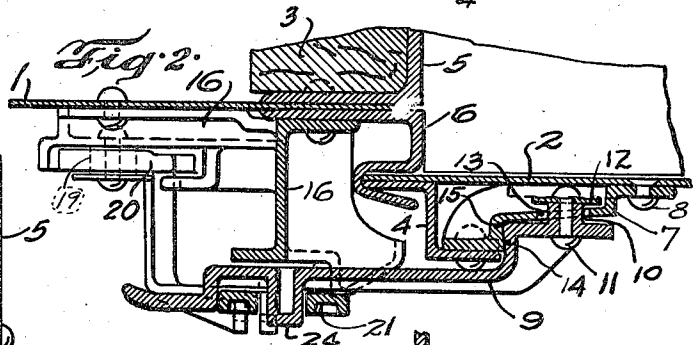
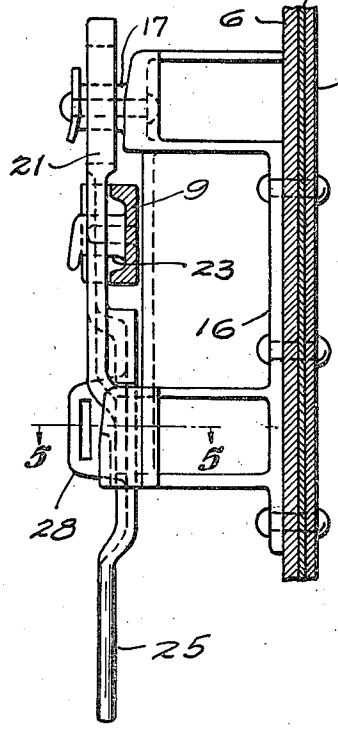


Fig. 3.



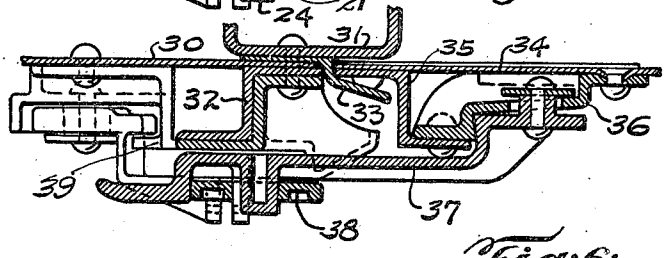
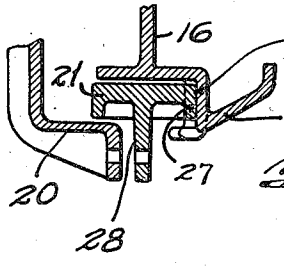


Fig. 6.

Fig. 5.



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Patented Apr. 19, 1938 2,114,755

UNITED STATES PATENT OFFICE

2,114,755

CAR DOOR OPERATING MECHANISM

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Application August 1, 1934, Serial No. 737,919

9 Claims. (Cl. 268—44)

The invention relates to railway rolling stock and more particularly to mechanism used in connection with opening and closing the doors on house cars.

It is highly desirable that such cars, when loaded, have their doors closed tightly and that they remain tightly closed until the doors are intentionally opened. Due to inaccuracies in manufacture and the heavy service to which said cars and doors are subjected, there is a tendency towards loose play in the door holding mechanism which permits the joint between the door and door post to open up, permitting moisture and dirt to enter and, in some instances, permitting bulk lading to escape.

The main object of the present invention is to provide simple means for effecting a tight joint initially when the door is closed and for automatically maintaining a tight joint during the trip and throughout the life of the car irrespective of rough handling, wear, etc.

Other detail objects incidental to the main object stated are indicated in the following description and all of these objects are attained by the structure illustrated in the accompanying drawing in which—

Figure 1 is a side elevation of a portion of a house car wall and door and the door operating mechanism.

Figure 2 is a horizontal section taken on the line 2—2 of Figure 1 and drawn on an enlarged scale.

Figure 3 is a substantially vertical section taken on the line 3—3 of Figure 1 and drawn on an enlarged scale.

Figure 4 is a detail side elevation of parts illustrated in Figure 1 but showing the same in a different position.

Figure 5 is a detail section on line 5—5 of Figure 3.

Figure 6 corresponds to Figure 2 but illustrates a modified structure.

The car includes a side wall 1, a door 2, and a door post of any ordinary construction. The door includes a Z-bar front edging 4 and the door post comprises a Z-bar section 5 and a spark strip 6. The above enumerated parts do not in themselves constitute the present invention.

A hasp mounting plate 7 is secured to the door and door edging by rivets 8 and a hasp 9 is pivotally mounted on plate 7 through the boss 10, rivet 11 and retaining washer 12. The opening 13 in plate 7 for receiving boss 10 is substantially larger than the boss, and the plate and hasp are provided with opposing shoulders 14 and 15, respectively, whereby thrusts are transmitted from the hasp to the plate, and vice versa, independently of the pivoting structure. By undercutting shoulders 14 and 15 as shown, their interengagement tends to move the hasp closer to the door body.

A mounting plate 16 is applied to the door post and includes a pivot element 17, a catch element 18, and a boss 19 mounting a locking dog 20.

An operating lever 21 has a slot 22 in one end receiving pivot 17, an enlarged opening 23 for receiving a stud 24 on the hasp 9, and a tapered handle 25 whereby the lever may be manipulated manually to complete the closing movement of the door or to start the opening movement of the door.

When the door is closed, lever 21 will be in the substantially vertical position shown in Figure 1 with its tapered edge 26 engaging the inclined face 27 of catch 18. The weight of lever 21, plus the weight of the outer end of the hasp carried thereby, tends to move lever 21 downwardly, thereby moving the lever and hasp to the left and tightening the joint between the door and the door post. Any wear on the jointed parts will be compensated for by this wedge-like feature of the lever and catch and the same structure will act as an automatic take up to compensate for any inequalities in manufacture or assembly of the parts when new.

Preferably a lug 29 projects outwardly on hasp 9 and may be engaged by the left hand edge of lever 21 to share the thrust exerted against the stud 24 by the lever. There may be clearance between lever 21 and lug 29 when the parts are first assembled but this will be taken up as the stud 24 and the side of opening 23 wear down.

The dog 20 is rotated from the position shown in Figure 4 to the position shown in Figure 1 to hold the handle lever 21 against movement away from the car wall, but dog 20 does not take any of the thrust due to the operation of the device. Preferably dog 20 and a lug 28 on the lever are provided with openings which will be alined when the lever is in the position shown in Figure 1 and through which an ordinary car door seal may be inserted.

Figure 6 illustrates the application of the invention to the main door and auxiliary door of an "automobile" type car in which the auxiliary door 30 mounts a post-like structure 31 at its outer edge in addition to its forward Z-bar edging 32 and a spark strip 33. The main door 34 has a

front edging Z-bar 35 and this element cooperates with the body of the door in mounting the hasp plate 36, similarly to the structure previously described. The door hasp 37 is pivoted on the hasp plate and is secured in closed position by the lever 38 functioning similarly to the lever 21 previously described. The lever mounting 39 corresponds to that previously described but is applied to the auxiliary door elements 30 and 32 and not to a door post constituting a part of the car framing. Aside from the parts mentioned, the structure will correspond to that previously described and will function in the same manner.

It will be understood that the term "door post" as used in the appended claims includes a post, or like structure, on the car framing or on an auxiliary door irrespective of its resemblance to the elements illustrated in the accompanying drawing.

The hasp could well be mounted upon the relatively stationary member and the operating handle upon the movable door member.

These and other modifications of the structure may be made without departing from the spirit of applicant's invention.

The applicant is aware that wedge devices for taking up play between car door and post have been suggested heretofore and E. G. Busse Patent No. 1,945,019 illustrates an operating lever cooperating with a tapered catch element whereby a workman may force the door in the closed position, but applicant believes he is the first to provide a device of the type involved with an operating handle which functions as an automatic takeup to compensate for wear and irregularities in the cooperating parts.

I claim:

1. In a device of the class described, an operating lever arranged to be slidably pivoted on a car member, means for connecting said lever to another car member movable relative to said first-mentioned member, the pivotal movement of said lever acting through said means to effect substantial relative movement of said members, and an element arranged for mounting on said first-mentioned car member to engage said lever when the two car members are in a predetermined position, said lever and means normally holding said members in a given position and said lever and element constituting a wedge structure operating by gravity to take up slack in the device between said lever and means between said car members.

2. In combination, spaced railway car members one of which is a door movable relative to the other member, a lever pivoted on one of said members and a link connecting said lever with the other of said members to move said members relative to each other by pivotal movement of said lever, an element for holding said lever in door closing position, said lever being slidable by gravity on its pivot when in door closing position at the end of its pivotal movement, and means acting through said link and lever as the latter slides on said pivot for tightening the joint between said members.

3. In combination, spaced railway car members one of which is a door movable relative to the other member, a lever pivotally mounted on one of said members, means for connecting said lever to the other of said members to effect closing movement of said door, an element on the lever mounting member for holding said lever and means in door closing position, said lever being movable downwardly relative to its pivot when in door closing position, said lever and element having opposed faces inclined to the vertical whereby said lever operates by gravity to take up play between it and said element to maintain a tight joint between said members.

4. In combination, a railway car door member, a door post member, a hasp pivoted on one of said members, an operating lever pivoted on the other of said members and arranged to support the free end of said hasp and to be swung on its pivot from a horizontal position to a vertical position, or vice versa, to actuate said hasp to move said members relative to each other, an element on said lever mounting member for retaining said lever when it is in substantially vertical position so that it holds said hasp in door closing position, said lever being movable downwardly relative to its pivot when it is in vertical position, said lever and element having cooperating interengaging surfaces inclined to the vertical whereby the weight of said lever and the portion of the hasp carried thereby operates by gravity to lower said lever and automatically take up play between said part to maintain a tight joint between said members.

5. In a railway car, a door member, a door post member, a pivot on one of said members, a catch element on the same member below said pivot, a lever having a slotted end receiving said pivot and having at least one side tapered towards the opposite end, the inclined side of said lever being arranged to engage said catch when the lever is disposed downwardly, and a connection between the other of said members and the intermediate part of said lever whereby the lever may move said door member relative to said post member and may hold said members against relative movement.

6. In combination, a railway car door post member, a door member, cooperating weather-strip elements on said members, a hasp mounted on one of said members, a device mounted on the other of said members and operable manually for moving said hasp and the member on which it is mounted, said hasp and device including a relatively heavy lever with an elongated handle slidably mounted for providing relative movement of said members and also including elements inclined to the vertical and operating automatically by the gravity pull on said lever to move the same downwardly and laterally to maintain said members in position and said weather-strip elements in contact irrespective of wear or play in said hasp and device or their mountings.

7. In a railway car, a body post, a sliding door adjacent thereto, a pivot on said post, a lug spaced substantially below said pivot, a rigid handle-lever having a slot in one end slidably receiving said pivot, said handle having a bearing spaced from said end and disposed to engage said lug when the axis of said handle is substantially vertical, said slot and said bearing being similarly inclined from the vertical whereby downward movement of said handle will shift said handle horizontally away from said door, a link having one end secured to said door and arranged to be engaged by said handle-lever between said slot and bearing when said door is closed when said handle axis is vertical whereby downward and shifting movement of said handle-lever as described will tend to rotate said handle lever about said pivot as a fulcrum to actuate said link to pull said door more tightly against said post.

8. In a railway house car having a relatively stationary member and a relatively movable door member, a device for moving said door away from said stationary member into open position and towards said stationary member to closed position, said device comprising a fulcrum pin on one of said members, a handle lever with an elongated slot receiving said fulcrum pin, and a link pivotally secured to the other of said members and having a part for engaging said handle lever at a point spaced from said slot, said handle lever and link being co-related so that the axis of said handle lever is vertical when said handle lever has moved said link to close said door member, there being interengaging elements on said handle and the member mounting the same inclined downwardly and away from the member mounting said link whereby gravity induced downward movement of said handle and link will urge the handle lever at a point spaced farther from said fulcrum pin than said link to door tightening position.

9. In a railway house car having a relatively stationary member and a relatively movable door member, a fulcrum pin fixed on said stationary member, a cam element fixed on said stationary member at a point spaced substantially below said fulcrum pin, said cam element having a face inclined downwardly and away from said door member, a handle lever having an elongated slot at one end receiving said fulcrum pin and having an inclined face constructed and arranged to oppose said cam face whereby downward movement of said handle lever along said cam face is accommodated by said slot and results in lateral movement of said handle lever away from said door member, and a link pivotally secured at one end to said door member and at its opposite end having detachable engagement with a portion of said handle lever between said fulcrum pin and cam element whereby movement of said handle lever by said cam as described will rotate said handle lever about said fulcrum pin to actuate said link to tighten said door in its closed position.

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