

T. H. GARLAND.  
CLOSING DEVICE FOR REFRIGERATOR CAR DOORS.  
APPLICATION FILED JULY 10, 1911.

1,037,891.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.

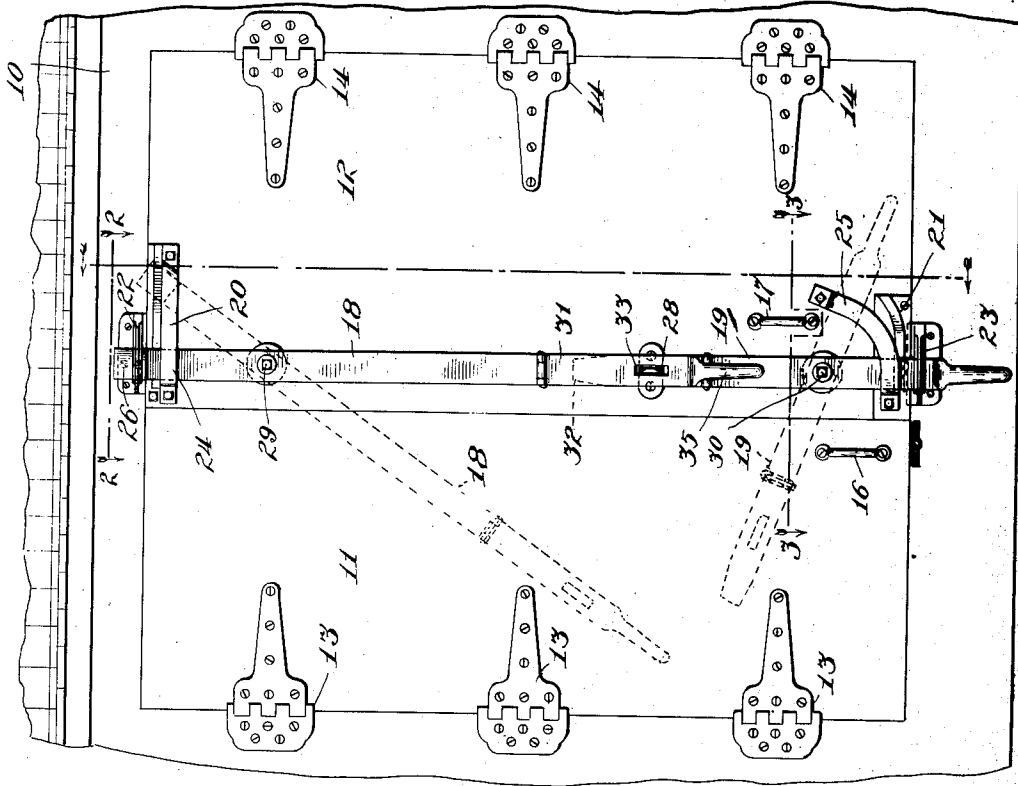
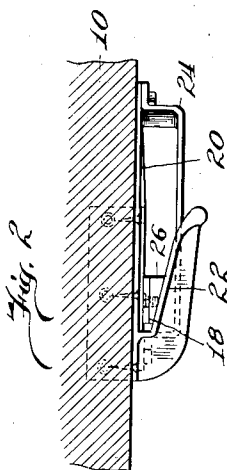
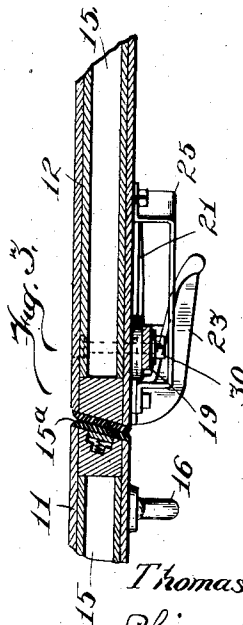


Fig. 1.



Witnesses  
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M. A. Mayo.



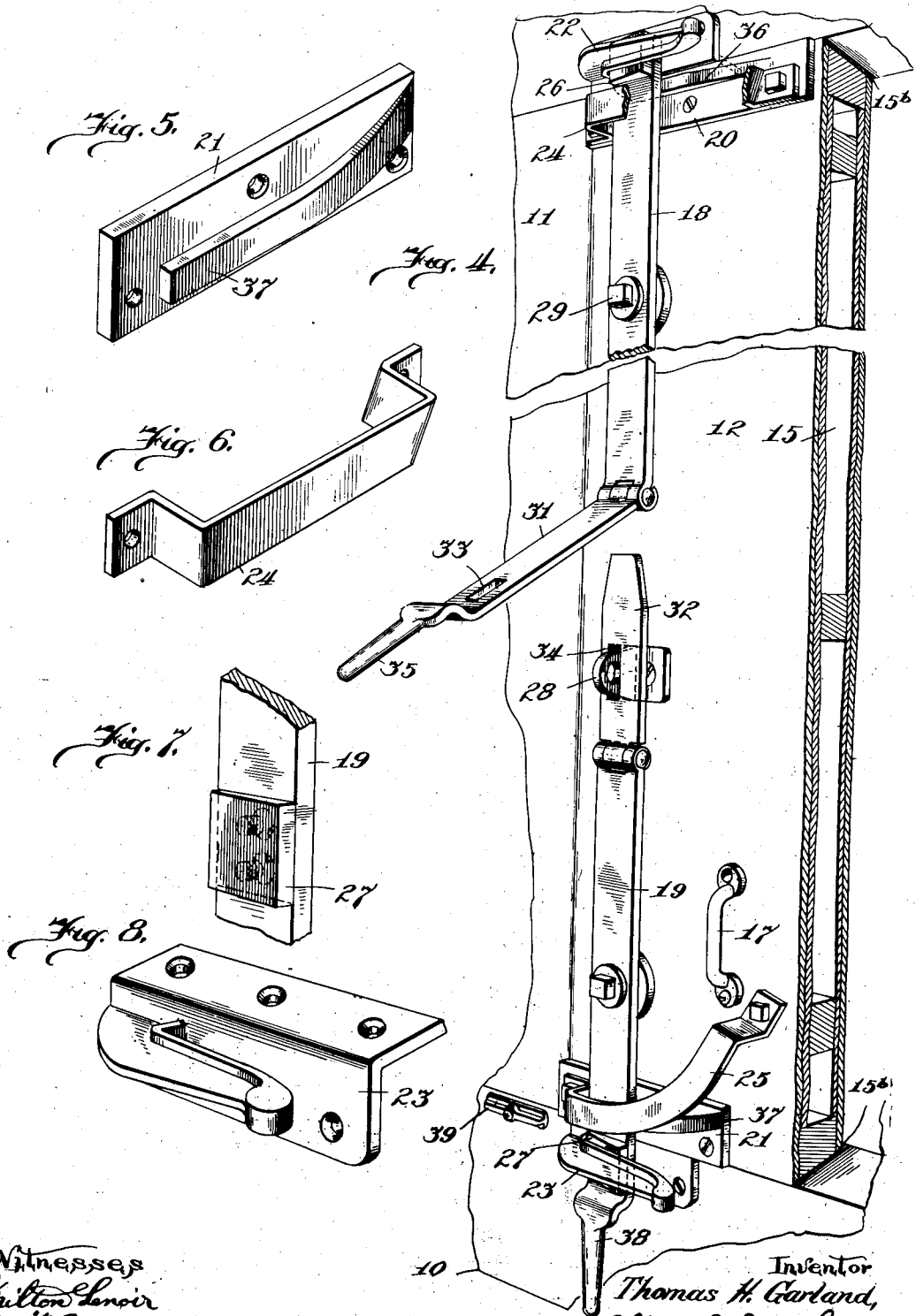
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# UNITED STATES PATENT OFFICE.

THOMAS H. GARLAND, OF CHICAGO, ILLINOIS.

CLOSING DEVICE FOR REFRIGERATOR-CAR DOORS.

1,037,891.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed July 10, 1911. Serial No. 637,814.

*To all whom it may concern:*

Be it known that I, THOMAS H. GARLAND, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Closing Devices for Refrigerator-Car Doors, of which the following is a specification.

The present invention relates to a closing device for doors, and more particularly refrigerator car doors.

It is the practice, in the construction of refrigerator cars, to carefully pad the edges of the doors, in order to prevent the escape of cold air and entry of warm and thus reduction in the efficiency of the car. It is thus highly important to have a close fit between the car door and its frame whenever the door is closed. But in practice, the padding becomes damp and often torn, so that it becomes necessary to use considerable force in order to effect a proper closure.

The principal object of the present invention is to provide a closing device which will produce an effective and tight closure, even though the doors may bind considerably on account of the condition of the padding on their edges, or for other reasons.

In carrying out my invention, I provide two levers, pivoted, respectively, upon the upper and lower portions of the door and adapted to overlap at their inner ends where they may be secured in locking position, and cooperating at their outer ends with cam-bearing surfaces upon the adjacent portions of the door and its frame, to bring about an effective closure whenever the levers are moved to locking position—and this even though the door be some distance from being closed at the time the levers are brought into play. I also provide for the ready operation of the levers from different points so as to meet different conditions of loading and unloading, and also arrange the lower lever which, when in locking position, extends below the lower limits of the door, so that it will lie above such lower limit when in open, or unlocking, position and thereby allow the door to be readily opened at loading and unloading platforms. These and other features of my invention, and their accompanying advantages, will be best understood upon consideration of the following detailed description taken in connection with the accompanying drawings, and the

scope of the invention will be particularly pointed out in the appended claims.

In the drawing, Figure 1 is a front elevation of a portion of a refrigerator car having a door provided with a closing device constructed in accordance with my invention; Fig. 2 illustrates the retaining means associated with the upper edge of the car door, the section being taken on a plane indicated by the line 2—2 of Fig. 1; Fig. 3 illustrates the retaining means associated with the lower edge of the car door, the section being taken on a plane indicated by the line 3—3 of Fig. 1; Fig. 4 is a perspective view of the door and its closing device; a portion of the door being shown in section; Fig. 5 is a perspective view of the bearing plate associated with the lower lever of the device; Fig. 6 is a perspective view of the guard associated with the upper lever; Fig. 7 is a perspective view illustrating a portion of the lower lever and its associated wedge block; and Fig. 8 is a perspective view of the cam lug associated with the lower lever.

Throughout these views, like characters refer to like parts.

Referring to the drawing in detail, 10 designates the body of the car provided with the usual doors 11 and 12, mounted upon the hinges 13 and 14, respectively. The construction of the body of the car and the doors is the usual construction and forms no part of my invention. As illustrated, the doors are formed with dead air spaces 15 and, for convenience, I have termed the portion of the car wall, into which the doors fit, the door frame, although I have not illustrated any special frame construction. As illustrated, the engaging portions of the doors 11 and 12 are also beveled and provided with the usual padding 15<sup>a</sup> upon their engaging edges and the padding 15<sup>b</sup> upon their upper and lower edges, the latter being illustrated particularly in Fig. 4 and the former in Fig. 3.

In applying my invention to the car structure illustrated, I provide the left-hand door 11 with a handle 16, by which it may be opened or closed. The right-hand door 12 is also provided with a similar handle 17. The closing device, constituting the invention, is mounted upon, and in association with, this latter door, and it includes the upper lever or bar 18, the lower lever

or bar 19, the upper bearing plate 20, the lower bearing plate 21, the upper lug 22, the lower lug 23, the upper guide 24, the lower guide 25, the upper wedge block 26, the lower wedge block 27, and the staple or eye-bolt 28. The lever 18 is pivoted near its upper end upon the upper portion of the door 12 by a pivot bolt 29. The lower lever is similarly pivoted by bolt 30 to the lower portion of the door. The inner ends of the levers have jointed ends 31, 32, which are provided with slotted openings 33, 34, so that when the levers are in locking position, the eye-bolt 28 may pass through them and the levers be either locked or sealed. For convenience, in manipulating the upper lever, a hand-hold 35 is provided upon the lower extremity of the jointed end 31. The upper end of the lever 18 co-acts with the ridged bearing plate 20 and the cam lug 22 to force the upper end of the door into closed position upon the operation of the lever. This is brought about by constructing the plate 20 with a cam ridge 36, and the lug 22 with an overhanging cam-bearing face. As the lever 18 is moved toward its locking position, the wedge block 26 engages the cam face on the lug 22 and the upper end of the lever 18 is thereby moved toward the body of the car. At the same time, the cam ridge 36 is engaged by the opposite side of the lever 18 and consequently the upper end of the door is forced to its final closed position. The action at the lower end of the lower lever 19 is similar. Here the lug 23 is provided with a similar overhanging face which coöperates with the wedge block 27, and the bearing plate 21 is provided with a cam ridge 37 which coöperates with the opposite side of the lever. Thus the movement of the lever 19 to its locking position similarly forces the lower portion of the door to its final closed position. The lower leaf of lug 22 is countersunk or set into the frame so as not to interfere with the closing of the door. The same is true of the upper leaf of lug 23. The wedge blocks 26 and 27 are given an inclination with reference to that of the cam faces upon the overhanging portion of the lugs 22 and 23, such that a good bearing is maintained between the levers and the retaining lugs when the door is being closed. The guide 24 is secured at its ends to the plate 20 and incloses the upper end of the lever 18. Its function is to limit the opening movement of the lever and to prevent its being bent out of shape in case an attempt should be made to close the door without holding the lever in open position. In such case, the end of the lever would strike the outside of the cam lug 22, but the strain upon it would be taken up by the guide 24. The guide 25, associated with the lever 19, performs a similar function. It is

secured at one end to one end of the plate 21 and at its other end directly to the door. Its shape is somewhat different than that of the guide 24 by reason of the fact that it is desirable to be able to shift the lever 19 to a position in which the hand-hold 38 at its lower end will lie wholly above the lower limit of the door. This latter position is illustrated in dotted lines in Fig. 1. When in this position, the guide 25 engages the lever 19 and thus prevents its further opening movement. This provision enables the door to be opened at loading and unloading platforms in freight and other stations, which are usually positioned so as to lie about on a level with the floor of the car and consequently but slightly below the lower edge of the car door. By reason of this extended movement of the lower lever 19, the cam ridge 37 upon the bearing plate 21 is also given a slight upward curvature, as clearly illustrated in Figs. 1, 4 and 5. In order to cause the lever 19 to readily assume the dotted line position when idle, I preferably arrange the parts so that when the lever 19 is moved out of engagement with the staple 28, its center of gravity will be to the left of the pivot 30 so that the lever will assume the dotted line position of Fig. 1 under the force of gravity. This condition of unstable equilibrium, when the lever is moved out of engagement with the staple, may preferably be brought about by making the portion of the lever above the pivot greater in weight than that below, as, for example, by having it somewhat longer, as illustrated. A button 39, pivoted to the frame or sill of the car, constitutes an additional means for holding the left-hand door 11 closed. This may be used, or not, as desired, but, by its use, one door may be kept closed while the other is open, or being opened.

In operation, assuming that the doors are open and it is desired to close them, the left-hand door 11 is first closed, or approximately closed, and the right-hand door 12 is then closed upon it, the edges being beveled, as clearly illustrated in Fig. 3. When in this position, although the right-hand door may be three or four inches from being closed, the movement of the levers from their dotted line positions of Fig. 1 to their full line positions will cause the doors to be forced shut so as to provide a tight closure, the right-hand door, by its overlapping edge, forcing the left-hand door into its final closed position. The overlapping jointed ends of the levers may then be slipped over the staple 28 and the doors sealed. In opening the doors, the reverse operation is performed. The levers are moved to their dotted line positions and then the right-hand door is pulled open, followed by the opening of the left-hand door.

It will, of course, be understood that in carrying out my invention, certain alterations and modifications may be made without departing from its spirit and scope. It will also be apparent that the invention is applicable to a single door as well as to two doors, as illustrated. Likewise, cam-bearing faces on the door cooperating with flat-bearing faces on the frame, or cam-bearing faces on the frame cooperating with flat-bearing faces on the door, would accomplish the same results as cam faces on both door and frame, as illustrated, except that the latter construction has the advantage of increasing the inward movement by the same sweep of the lever. I have, however, sought to cover all such alterations and modifications by the terms of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. The combination with a door frame and a door hinged thereon, of vertically disposed locking levers pivoted to the upper and lower portions of the door respectively so as to move in planes substantially parallel to the plane of said door, means for holding the inner ends of the levers in locking position, and means cooperating with the outer ends of said levers and the adjacent portions of said door and frame to close the door tightly against said frame upon the movement of said levers to locking position.

2. The combination with a door frame and a door hinged thereon, of vertically disposed locking levers pivoted to the upper and lower portions of the door respectively so as to move in planes substantially parallel to the plane of said door, means for holding the inner ends of the levers in locking position, cam-bearing faces at the upper and lower edges of the door for engaging the inner sides of said levers as they are moved into locking position, and similar overhanging cam-bearing faces on the adjacent portions of said frame for engaging the outer sides of said levers as they are moved into locking position.

3. The combination with a door frame and a door hinged thereon, of vertically disposed locking levers pivoted to the upper and lower portions of the door respectively so as to move in planes substantially parallel to the plane of said door, means for holding the inner ends of the levers in locking position, cam-bearing faces at the upper and lower edges of the door for engaging the inner sides of said levers as they are moved into locking position, similar overhanging cam-bearing faces on the adjacent portions of said frame for engaging the outer sides of said levers as they are moved into locking position, and guides upon said door for engaging the outer ends of said levers.

4. The combination with a door frame

and a door hinged thereon, of vertically disposed locking levers pivoted to the upper and lower portions of the door respectively so as to move in planes substantially parallel to the plane of said door and having jointed inner ends adapted to overlap when said levers are in locking position, means cooperating with the outer ends of said levers and the adjacent portions of said door and frame to close the door tightly against said frame upon the movement of said levers to locking position, and a staple secured to said door and adapted to extend through openings in the overlapping jointed ends of said levers whereby the latter may be locked or sealed.

5. The combination with a door frame and a door hinged thereon, of vertically disposed locking levers pivoted to the upper and lower portions of the door respectively so as to move in planes substantially parallel to the plane of said door, means for holding the inner ends of the levers in locking position, means cooperating with the outer ends of said levers and the adjacent portions of said door and frame to close the door tightly against said frame upon the movement of said levers to locking position, a hand-hold at the lower end of said lower lever extending below the door when said lever is in locking position, and means for stopping the opening movement of said lower lever when said hand-hold has moved above the lowermost edge of said door.

6. The combination with a door frame and a door hinged thereon, of vertically disposed locking levers pivoted to the upper and lower portions of the door respectively so as to move in planes substantially parallel to the plane of said door, means for holding the inner ends of the levers in locking position, cam-bearing faces on the adjacent portions of said door and frame for engaging the outer ends of said levers to force the door tightly against its frame upon the movement of said levers to locking position, a hand-hold at the lower end of said lower lever extending below the door when said lever is in locking position, and means for stopping the opening movement of said lever when said hand-hold has moved above the lowermost edge of said door.

7. The combination with a door frame and a door hinged thereon, of a locking lever pivoted at an intermediate point in its length near one edge of the door and movable to a locking position in which one end extends over the adjacent portion of said frame, a lug member secured to said adjacent portion of the frame and having an open-ended slot for the reception of said end of said lever, said slot having a bearing face for engagement with the outer side of said lever, said bearing face being in-

clined inward toward the door frame from the open end of the slot, such face cooperating with the lever to force the door shut as the lever is being moved from open to closed position, a bearing member secured to the edge of the door opposite said lug member and having a cam face inclined oppositely to the cam face on said lug member and operating to engage the opposite side of the lever and means for securing the other end of the lever to the door to hold the lever in locking position.

8. The combination with a door frame and a door hinged thereon, of a locking lever pivoted at an intermediate point in its length near one edge of the door and movable to a locking position in which one end extends over the adjacent portion of said frame, a wedge member upon the outer end of said lever, a lug member secured to said adjacent portion of the frame and having an open-ended slot for the reception of said wedge member and the end of the lever to which it is attached, said slot having a bearing face for engagement with said wedge block, said face being inclined inward toward the door frame from the open end of the slot, such face cooperating with said wedge block and lever to force the door shut as the lever is being moved from open to closed position, a bearing member secured to the edge of the door opposite said lug member and having a cam face inclined oppositely to the cam face on said lug member and operating to engage the opposite side of the lever and means for securing the

inner end of the lever to the door to hold the lever in locking position.

9. The combination with a door frame and a door hinged thereon, of a locking lever pivoted at an intermediate point in its length near one edge of the door and movable to a locking position in which one end extends over the adjacent portion of said frame, a lug member secured to said adjacent portion of the frame and having an open-ended slot for the reception of said end of said lever, said slot having a bearing face for engagement with the outer side of said lever, said bearing face being inclined inward toward the door frame from the open end of the slot, such face cooperating with the lever to force the door shut as the lever is being moved from open to closed position, a bearing member secured to the edge of the door opposite said lug member and having a cam face inclined oppositely to the cam face on said lug member and operating to engage the opposite side of the lever, a guide secured to said door and extending over said lever at a point adjacent to the said bearing member on said door and means for securing the other end of the lever to the door to hold the lever in locking position.

In witness whereof, I hereunto subscribe my name this 5th day of July, 1911.

THOMAS H. GARLAND.

Witnesses:

L. M. ANDREW,  
D. J. NORMOYLE.