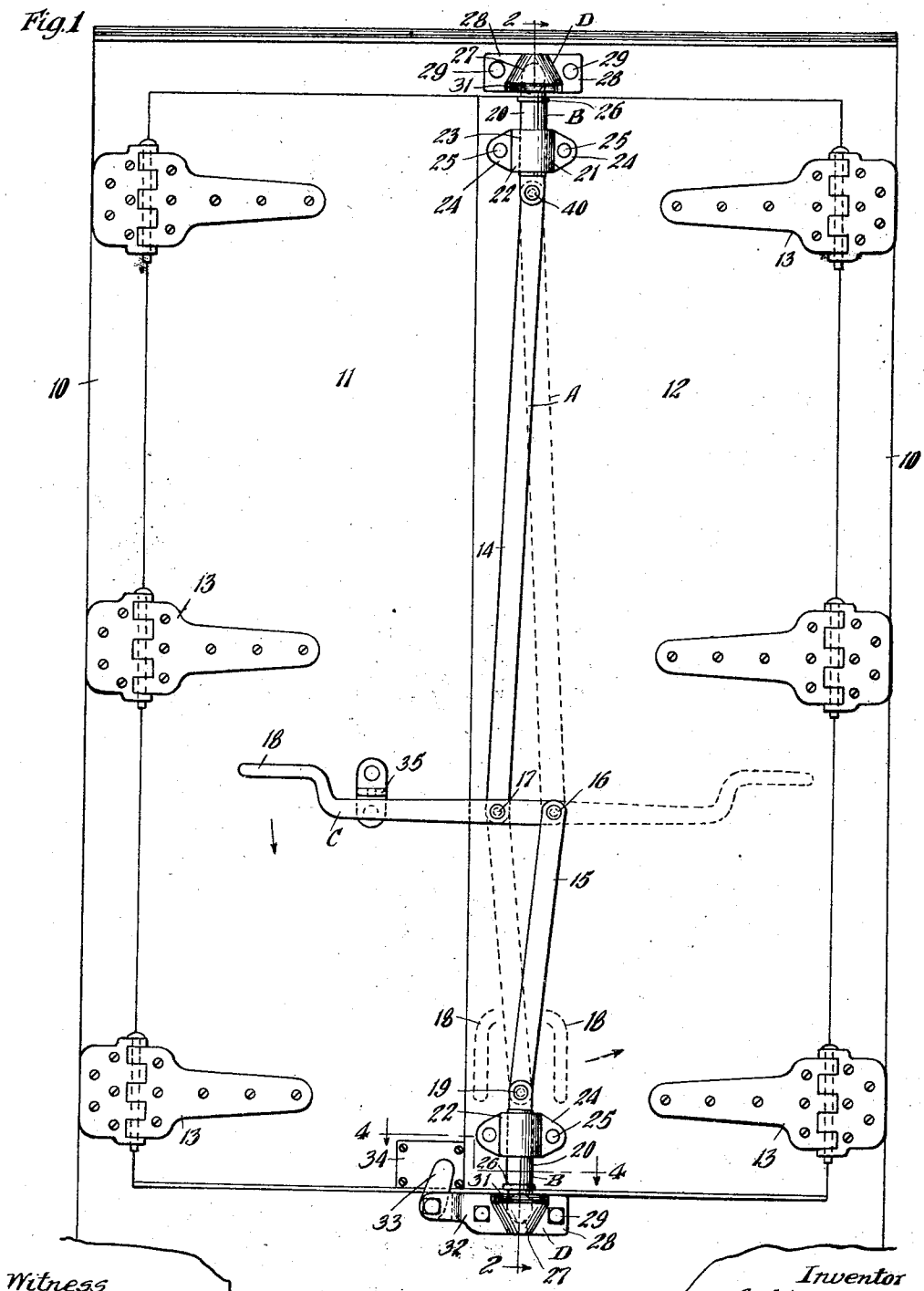
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REFRIGERATOR CAR DOOR FASTENER

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Fig. 1



Witness
Wm. Geiger

Inventor
Arild M. Brenne

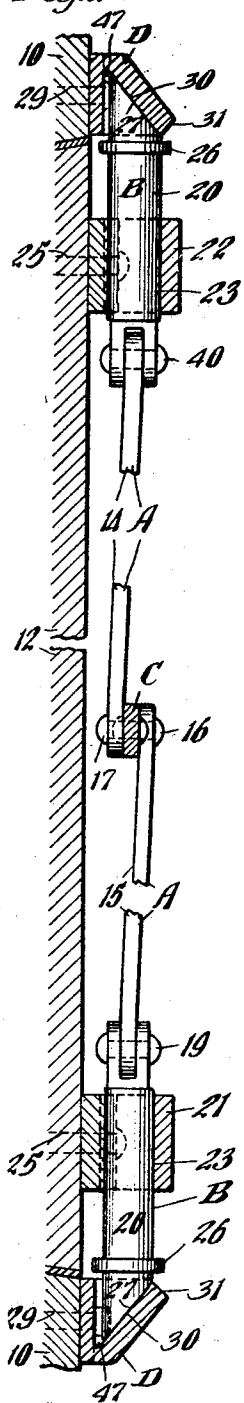
By George I Haight His Atty

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REFRIGERATOR CAR DOOR FASTENER

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Fig. 2



Witness
Wm. Geiger

Fig. 3

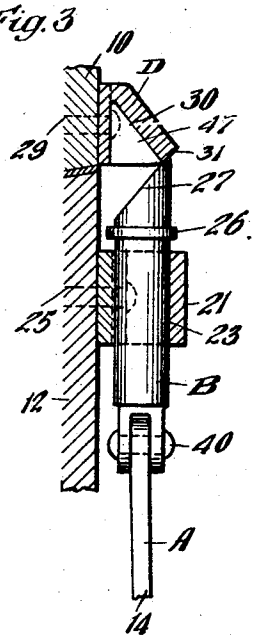
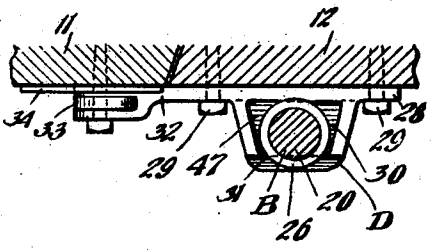


Fig. 4



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UNITED STATES PATENT OFFICE

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REFRIGERATOR-CAR-DOOR FASTENER

Application filed February 5, 1926. Serial No. 86,141.

This invention relates to door operating mechanism.

An object of the invention is to provide a door operating mechanism including a pair of reciprocable operating elements arranged to be reciprocated in opposite directions, and being mounted for rotation as well as reciprocable movement, said operating members being adapted to cooperate with keeper means affixed to the door frame, whereby reciprocation of said operating elements in opposite directions in one position of the mechanism, effects closing movement of the door, and reciprocation of said members in opposite directions in another position of the mechanism after rotation of said operating elements with respect to said keepers, effects opening movement of said door.

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

In the drawings forming a part of this specification Fig. 1 is a side elevation of a portion of a refrigerator car, showing my improvements in connection therewith. Fig. 2 is a vertical sectional view, on an enlarged scale and partly broken away, corresponding substantially to the line 2—2, Fig. 1, showing the operating elements in the position which they occupy when the door is closed. Fig. 3 is a vertical sectional, fragmentary view on an enlarged scale, showing the upper portion of the actuating element and keeper means, when the actuating element has been rotated to its position at the inception of the door opening operation; and Fig. 4 is a horizontal fragmentary sectional view of the lower end of the actuating element, substantially on the line 4—4 of Fig. 1, and showing the keeper means in top plan.

In said drawings, the side of the car is shown as provided with a door frame 10 and two pivoted doors 11 and 12 having meeting beveled edges in the usual manner. The customary insulation or packing is employed between the meeting edges of the doors and door frame, and also between the meeting edges of the doors themselves. The doors 11 and 12 are mounted for swinging movement about vertical axes, being supported by suitable hinges 13—13.

As shown, the improved door operating mechanism comprises broadly, a two part operating mechanism A, provided with end actuating members B—B; an operating handle C; and upper and lower keepers D—D.

The operating mechanism A includes upper and lower power transmitting members 14 and 15, the lower transmitting member 15 having its inner end pivotally connected to the end portion of the operating handle C, as indicated at 16, and the inner end of the power transmitting member 14 is pivotally connected to the handle C at a point spaced inwardly from the end of the handle and from the pivotal connection 16 as indicated at 17, the handle C having an offset portion 18 providing a hand grip. The transmitting member 15 is pivotally connected at its lower end to the actuating member B as indicated at 19, and the transmitting member 14 is pivotally connected at its upper end to the upper actuating member B as indicated at 40.

The actuating members B—B, connected to the upper and lower extremities of the transmitting links 14 and 15 are of similar construction. Each of the same includes a cylindrical section 20, which is slidably and rotatably mounted in a supporting guide bracket 21 affixed adjacent the edge of the door, the bracket 21 being provided with a central portion 22 having a cylindrical bore 23 therein to accommodate the actuating member B, the bracket 21 being provided with flanges 24 through which extend suitable securing bolts 25. The actuating member B is adapted for slidable and rotative movement with respect to said guide member, the inward sliding movement of the member B being limited by the shoulder or collar 26 formed on said member. The outer end portion of the actuating member B is provided with a wedge or cam face 27, adapted to cooperate with wedge surfaces of the keepers D—D as hereinafter more fully described. Both of the actuating members B—B, and both of the guide brackets 21—21 are similar

in construction, and similar reference characters will be utilized to designate similar parts of both.

The keepers D—D are two in number, and of similar construction, one of the same being arranged adjacent the outer end of each of the actuating portions B—B. The upper keeper D comprises a central socket portion 47, and flange portions 28 at each side of the socket portion, through which securing bolts 29 extend. The socket portion is formed so as to provide an inner wedge or cam surface 30 adapted to be engaged by the wedge surface 27 of the associated actuating member B when closing the door, the end portion 31 of the outer wall of the socket portion providing an inclined wedging or cam surface adapted to be engaged by the cam surface 27 of the actuating member B when the door is being forced to open position. The lower keeper D is similar in all respects to that just described and similar reference characters will be used to designate like parts. In addition the lower keeper D is provided with a portion 32 extending toward the left hand door, upon which is pivotally mounted a latch 33, which is adapted to be turned into engagement with a wear plate 34 secured to the lower right hand corner of the door 11, when said door is closed.

Suitable locking and sealing mechanism 35 of a common form may be associated with the handle C and operated to secure the handle to the door 11 when the doors are in closed position.

In the operation of my improved device, assuming the doors to be closed, when it is desired to open the same, the handle C is first released from the sealing and locking mechanism 35, after which the handle C is moved downwardly in the direction of the arrow as shown in Fig. 1, which due to toggle action of the connections of the links 14 and 15 with the handle C will operate to cause inward movement of the actuating members B—B to release the same from the keepers D, after which the transmitting members 14 and 15 will be rotated to effect rotation of the actuating members B to such an extent as to bring the same to the position shown in Fig. 3, after which the handle C will be elevated to the position shown in dotted lines in Fig. 1, resulting in outward projection of the transmitting links 14 and 15, and consequently of the actuating members B—B associated therewith, the wedge surfaces 27—27 of the actuating members B—B bearing upon the outer cam surfaces 31 of the keepers D—D, forcing the door in an opening direction a sufficient distance to clear the insulation between the edges thereof, after which the door 12 may be swung to fully open position, and the door 11 may be opened by turning the latch 33 to inoperative position. It will be noted that during this action, should one or the other of the actuating members B become stuck in its related keeper, when the free actuating element B has travelled to a sufficient extent to bring the collar 26 into engagement with the guide bracket, the entire power exerted will be brought to bear against the keeper which is stuck, so that the actuating elements may be always properly disengaged.

When it is desired to close the doors, the door 11 is first swung nearly closed by hand, after which the pivoted latch 33 may be turned into engaging position to hold the door 11 closed. The door 12 is then swung partially closed, and the handle C may be depressed from the dotted line position, and rotated in a clockwise direction until the wedge surfaces 27–27 of the actuating members B–B may be brought in engagement with the inner wedge surfaces 30 of the keeper means, after which elevation of the handle C will project the actuating elements B–B and the cooperating wedge surfaces of the same and of the keepers D–D, pull the door to fully closed position, and the handle C may be then reengaged with the sealing and locking means 35.

While I have herein shown and described what I now consider the preferred manner of carrying out my invention, the same is merely illustrative, and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. A door operating mechanism of the character described, the combination with means providing a door opening and a pivoted door; of a keeper affixed to the means providing the door opening, said keeper having two inclined bearing surfaces, one of said bearing surfaces being inclined at an angle to the other bearing surface; and operating means on said door adapted to be selectively operated to project the same into engagement with one of said bearing surfaces to effect movement of said door in an opening direction, and into engagement with the other bearing surface to effect movement of said door in a closing direction.

2. A door operating mechanism of the character described, the combination with means providing a door opening and a pivoted door; of keeper means affixed secured adjacent opposite edges of the means providing the door opening, each of said keeper means having independent bearing surfaces disposed in different directions; and operating means on said door adapted to be selectively operated to project the same into engagement with either of said independent bearing surfaces to effect opening and closing movement of said door, said operating means being mounted for reciprocatory and rotative movement to permit selective en-

gagement with the independent bearing surfaces of said keeper means.

3. In a mechanism of the character described, the combination with means providing a door opening and a pivoted door; of operating means on said door, and keeper means upon the means providing the door opening, said operating means including members reciprocable in opposite directions to enable the same to be projected into engagement with said keeper means to effect closing movement of said door, said reciprocable elements being rotatable and adapted to be projected into engagement with said keeper means to effect opening movement of said door.

4. In a door operating mechanism of the character described, the combination with a member having a door opening and provided with a pivoted door, of a keeper fixed to the door frame adjacent the door opening; a rotatable operating member slidably mounted on said door and adapted to be projected into engagement with said keeper to effect closing movement of said door and arranged to be moved to a new position and projected into engagement with said keeper to effect opening movement of said door; and means for projecting and rotating said member.

5. In a device of the kind described, the combination with a refrigerator car door; of operating means reciprocably and rotatably mounted upon said door, said operating means having wedge faces adapted to be projected beyond the edges of said door when in one position, and arranged to be projected in a similar manner when rotated to another position, said operating means being adapted to engage means on the car structure to effect opening and closing movements of said door dependent upon the position of the operating means when the same is projected.

6. In a door operating mechanism, the combination with a pivoted door; of an operating element mounted on said door, adapted to be projected beyond the edge of the door and retracted inwardly of said edge, said operating element being rotatable to two different operating positions and having means thereon adapted to cooperate with means on the door frame to effect opening movement in one position and closing movement in the other position thereof, when said element is projected outwardly of the edge of the door; and actuating means including a link and a pivoted operating lever, said link having one end pivotally connected to the operating element and the other end pivotally connected to said lever, said lever being swingable on said pivot and said pivot support being rotatable on an axis at right angles to the pivotal axis thereof, to effect positioning of said operating element by rotation of said lever.

7. In a door operating mechanism for railway cars, the combination with a pivoted door; of operating elements mounted on said door adjacent opposite edges thereof, said operating elements being adapted to be projected beyond said opposite edges of the door and retracted inwardly of said edges, said elements being rotatable to two different operating positions; abutment means on the door frame engaged by said elements when projected to effect opening movement of said door when said elements are in one of the operating positions and effect closing movement of said door when the elements are in the other operating position; and means for reciprocating and rotating said elements, including a pair of links and an operating lever, said links being pivotally connected at the outer ends to the operating elements respectively, the inner ends of said links being pivotally connected to the lever at spaced points.

8. In a door operating mechanism of the character described, the combination with a member having a door opening and provided with a pivoted door; of keeper means fixed to said member; keeper engaging means, one of said means having different actuating portions cooperating with the other means to effect respectively opening and closing movements of the door; operating means for actuating said keeper engaging means, said operating means and keeper engaging means being relatively displaceable to bring the keeper engaging means and keeper means into operative relation to effect either opening or closing movement of the door; and means for moving said actuating means in one and the same direction to effect operation of the keeper engaging means when said keeper engaging means and keeper means are in cooperating relation to effect opening movement of the door and when said keeper engaging means and keeper means are in cooperating relation to effect closing movement of the door.

In witness that I claim the foregoing I have hereunto subscribed my name this 27th day of Jan., 1926.

ARILD M. BRENNE.