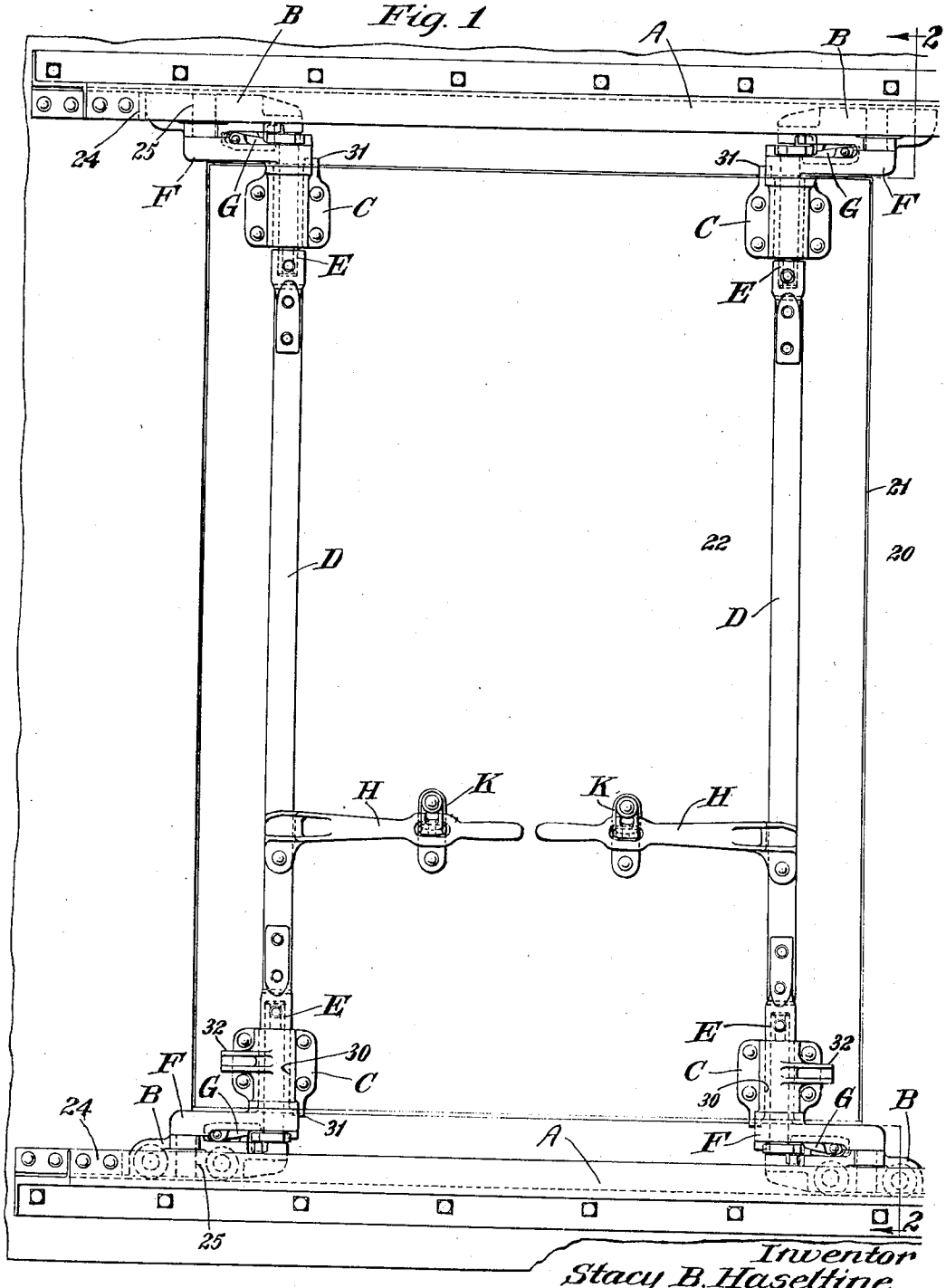
Dec. 14, 1937. S. B. HASELTINE 2,101,942

REFRIGERATOR CAR DOOR

Filed June 1, 1936 4 Sheets-Sheet 1

Fig. 1



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REFRIGERATOR CAR DOOR

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Fig. 2

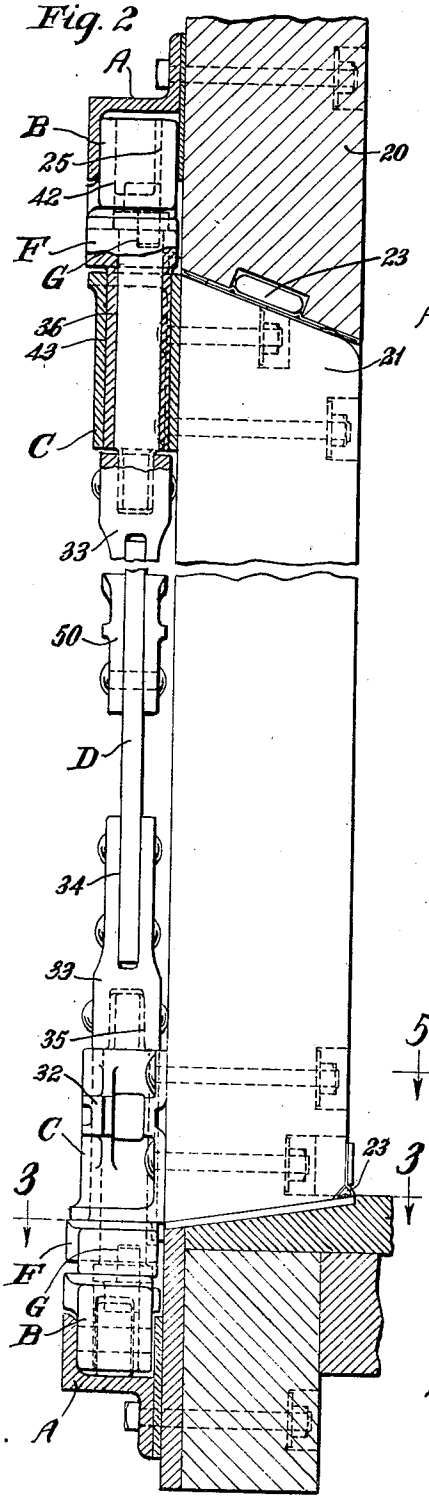


Fig. 3

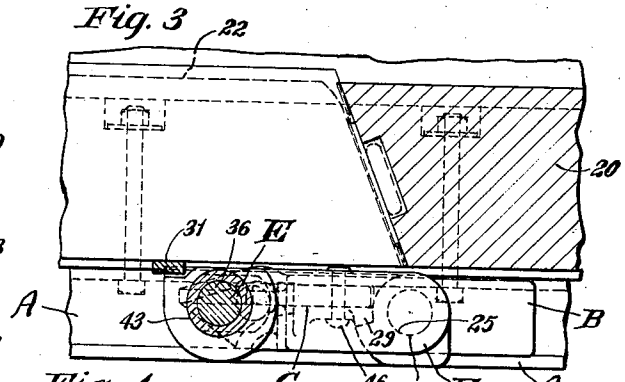
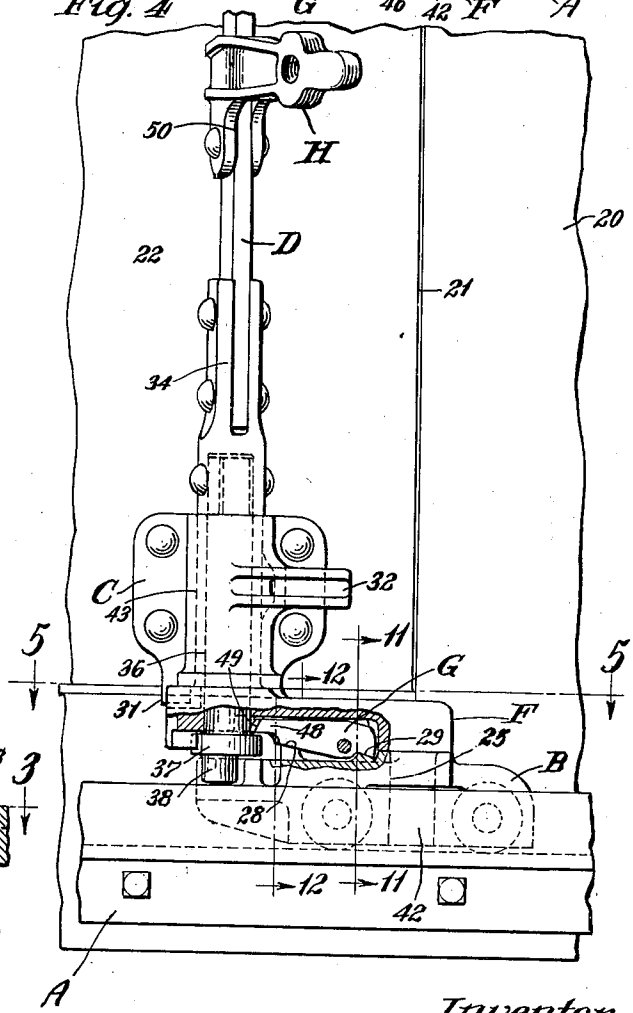


Fig. 4

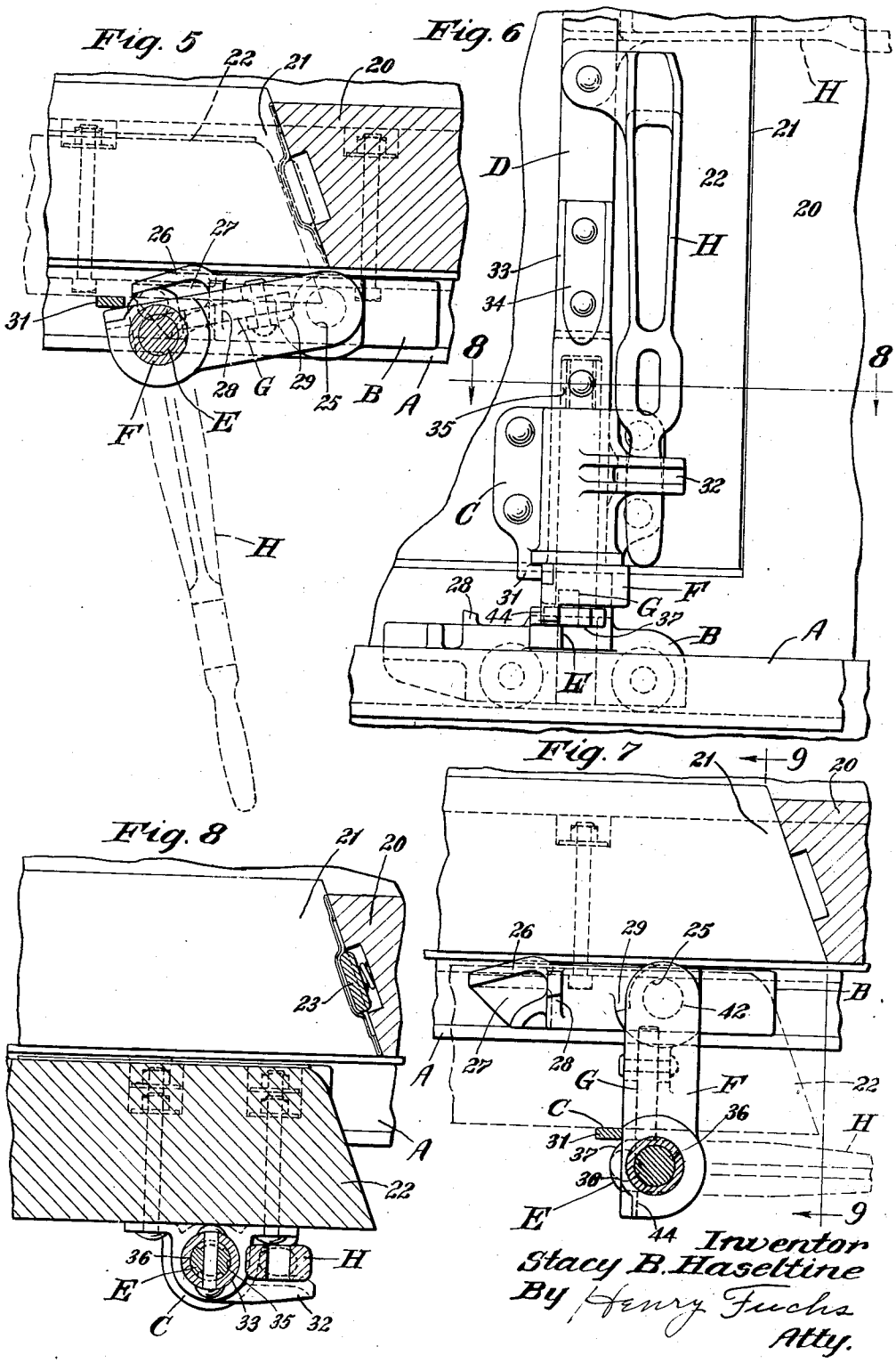


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REFRIGERATOR CAR DOOR

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Fig. 9

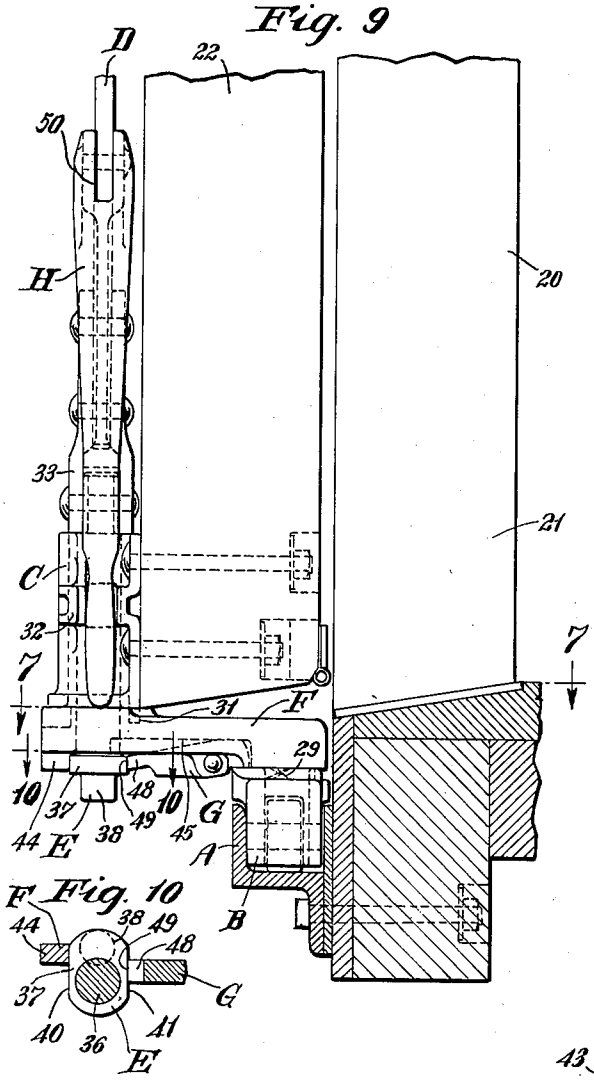


Fig. 11

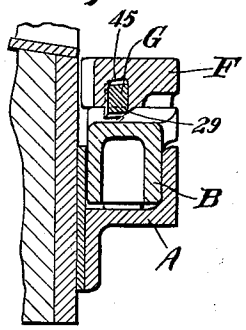


Fig. 12

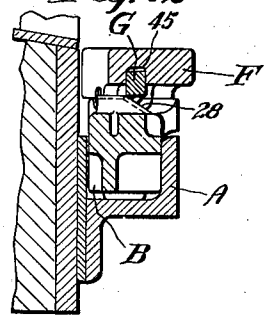


Fig. 10

Fig. 13

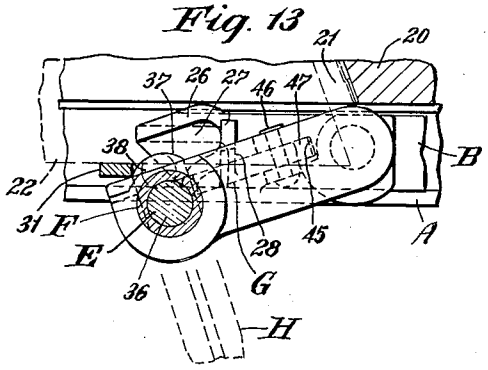
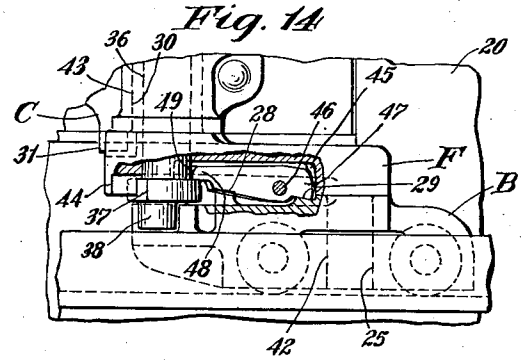


Fig. 14



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Patented Dec. 14, 1937 2,101,942

UNITED STATES PATENT OFFICE

2,101,942

REFRIGERATOR CAR DOOR

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Application June 1, 1936, Serial No. 82,806

17 Claims. (Cl. 20—23)

This invention relates to improvements in refrigerator car doors.

One object of the invention is to provide a door construction for refrigerator cars comprising a sliding door member for closing the door opening of the car and movable means for supporting the door and guiding the same for movement toward and away from the side of the car, wherein simple and efficient manually actuated means of rugged design is employed for moving the door laterally into and withdrawing the same from the door opening, the actuating means forming a part of the supporting and guiding means and being so designed that great force is exerted during the final closing and initial opening movements of the door without subjecting the supporting and guiding means to excessive strains.

A further object of the invention is to provide means of the character described in the preceding paragraph, wherein the actuating means includes a rotary shaft mounted on the door having means thereon engageable with rugged and substantial keepers for either forcing the door tightly closed after it has been moved to partly closed position, or prying the same partly open, and wherein said rotary shaft also forms part of the movable supporting and guiding means for the door and is ruggedly connected to the other parts of the latter to form strong and substantial supporting means for properly holding and bracing the door in all positions thereof.

A more specific object of the invention is to provide a door construction for refrigerator cars comprising a door member mounted on swinging crank arms pivotally supported on carriers slidable lengthwise of the car, wherein the crank arms include rotary operating shafts journaled on the door and having keeper engaging means thereon cooperating with rugged keeper means for forcing the door tightly closed and prying the same partly open, the operating shafts being freely rotatable with respect to said crank arms to effect the final closing and initial opening movements of the door and being further automatically rigidly locked to said arms to either move the door into the door opening to partially close the same or to withdraw the door from the door opening after the door has been pried partly open by said keeper engaging means.

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

In the drawings forming a part of this specification, Figure 1 is an elevational view, partly broken away, of the side wall of a refrigerator car, illustrating my improvements in connection therewith, said view showing the door closed. Figure 2 is a vertical sectional view, partly broken away, on an enlarged scale, corresponding substantially to the line 2—2 of Figure 1, showing the end of the door and the operating mechanism in elevation and partly in section. Figure 3 is a horizontal sectional view, corresponding substantially to the line 3—3 of Figure 2. Figure 4 is a broken view similar to Figure 1, on an enlarged scale, of the mechanism at the lower right hand side of Figure 1 and showing the door partly open and illustrating certain parts broken away and in section. Figure 5 is a horizontal sectional view, corresponding substantially to the line 5—5 of Figure 4. Figure 6 is a broken view similar to Figure 1, on an enlarged scale, showing the mechanism at the right hand lower side of said figure, but illustrating the parts in the position assumed when the door is fully withdrawn from the door opening. Figure 7 is a horizontal sectional view, corresponding substantially to the lines 7—7 of Figure 9, showing the parts in the position illustrated in Figure 6, the position of the door being indicated in dotted lines. Figure 8 is a horizontal sectional view, corresponding substantially to the line 8—8 of Figure 6. Figure 9 is a vertical sectional view, corresponding substantially to the line 9—9 of Figure 7. Figure 10 is a broken horizontal sectional view, corresponding substantially to the line 10—10 of Figure 9. Figures 11 and 12 are vertical sectional views, corresponding respectively to the lines 11—11 and 12—12 of Figure 4. Figure 13 is a view similar to Figure 5 but showing the parts in a different position. Figure 14 is a view similar to Figure 4, but showing only the mechanism at the bottom portion of said figure, and illustrating the parts in the position shown in Figure 13.

In said drawings, 20 indicates the side wall of the car, which side wall is provided with the usual door opening 21 closed by a single door 22. The door 22 is slidable lengthwise of the car and is displaceable laterally to either move the door into or withdraw the same from the door opening 21. As shown, the cooperating engaging faces of the door and walls of the door opening are beveled and the usual insulating packing material, indicated by 23, is employed to seal the joint between the door and the walls of the door opening.

My improvements comprise broadly top and

bottom tracks A—A; carriers B—B and B—B, cooperating with the top and bottom tracks; pairs of top and bottom supporting journal brackets C—C and C—C; a pair of vertically disposed operating shafts D—D; keeper engaging end members E—E and E—E secured to the shafts; sets of top and bottom supporting crank arms F—F and F—F; top and bottom pairs of latch members G—G and G—G for locking the crank arms to the end members of the shafts; operating handle lever members H—H; and a pair of locking or latching members K—K.

The tracks A—A are of similar design but are reversely arranged, the top track facing downwardly and the bottom track facing upwardly. As will be understood, the tracks A—A are of such a length that the door 22 may be slid entirely clear of the door opening 21. Each track is in the form of a trough or channel-shaped member. Stop means of any well-known type, preferably in the form of a block 24 is provided at the left hand end of each track A, as indicated in Figure 1, to limit the sliding movement of the left hand carriers B—B.

The carriers B—B, which cooperate with the top and bottom tracks, are of similar design, with the exception that the carriers B—B which cooperate with the lower track are provided with anti-friction rollers, while the carriers which cooperate with the upper track are not. Each carrier B is in the form of a blocklike casting guided between the side walls of the corresponding track. Each carrier B has a vertically disposed journal opening 25 adjacent to one end thereof, said opening being for a purpose hereinafter described. At the other end the carrier B is provided with a keeper portion 26 having a cam opening or slot 27 therein. A raised cam projection 28 is provided on the carrier B at the inner end portion of the keeper 26. A second raised cam member 29 is provided adjacent the opening 25. The last named cam member is of arc-shaped form and concentric with the opening 25.

The journal brackets C—C and C—C are secured to the outer side of the door 22 and serve to support the crank members F—F and F—F and the operating shafts D—D. The journal brackets C—C and C—C are of like design, except as hereinafter pointed out. Each bracket C is provided with a vertically disposed bearing opening 30. Each bracket is also provided with a projecting stop lug 31 at its outer end, adapted to limit swinging movement of the crank arms F—F with respect to the door 22, as hereinafter described. The brackets C—C and C—C are arranged in pairs at opposite sides of the door with the members of each pair disposed respectively at the top and bottom of the door and having their bearing openings in vertical alignment. The members of each pair are reversely arranged end for end, that is, the upper bracket C has the lug 31 at the upper end thereof and the lower bracket C has the lug 31 at its lower end. The lower bracket C of each pair is further provided with a laterally extending lug 32, substantially parallel to the outer face of the door and spaced from the securing flange of the bracket. This lug 32 serves as a locking means for preventing rotation of the shaft D when the door is in position to be slid along the tracks A—A.

The shafts D—D, which are in the form of flat bars, are arranged in vertical position at opposite ends of the door, as clearly shown in Figure 1. Each shaft D has socket members 33—33 secured to the top and bottom ends thereof. Each socket member 33 has an inner forked portion 34 embracing the corresponding end of the shaft D and riveted thereto. At the outer end, each socket member 33 is provided with an opening or socket 35 adapted to accommodate the inner end portion of the corresponding keeper engaging end member E.

The keeper engaging end members E—E and E—E are arranged in pairs at opposite ends of the door, the members of each pair being respectively connected to the top and bottom socket members 33—33 of the corresponding shaft D and rotatably mounted in the top and bottom bearing brackets C—C at the corresponding end of the door. Each keeper engaging end member E comprises a cylindrical shaft portion 36 having a relatively short crank arm 37 at the outer end thereof, provided with a keeper engaging lug or pin 38 at its outer end. The shaft portion 36 extends through the corresponding bracket C and projects beyond the inner end of said bracket. The projecting end of said shaft is of the cross section shown in Figure 8 and extends into the socket 35 of the corresponding socket member 33 and is fixed to the latter by a rivet or similar securing element extending through the walls of said socket and said end portion of the shaft 36. The end members E—E are thus fixed to the shaft D and form, in effect, an integral part thereof. As shown most clearly in Figure 10, the crank arm 37 of each keeper engaging end member has substantially straight, flat, opposite side edges 40 and 41 adapted to act as stop shoulders as hereinafter pointed out. The shaft 36 of each member E projects outwardly beyond the outer end of the corresponding bracket C and has the crank arm 37 thereof spaced from said bracket as shown most clearly in Figures 1, 2, 4, 6, 9, and 14.

The crank arms F—F and F—F are arranged in pairs at opposite ends of the door, the members of each pair being respectively carried by the corresponding top and bottom carriers B—B. Each crank arm F is horizontally arranged and has an integral pivot pin member 42 at one end thereof journaled in the opening 25 of the corresponding carrier B. The arm F is thus mounted for swinging movement on the carrier. The other end of the arm F is provided with a sleevelike shaft member 43 journaled in the opening 30 of the corresponding bracket C. The sleevelike shaft member 43 serves as a bearing for the shaft 36 of the corresponding keeper engaging member E and rotatably supports said shaft 36 inwardly of the crank arm 37 thereof. At the outer end of the arm F, a projecting stop lug 44 is provided which extends into the path of movement of the arm 37 of the keeper engaging member E and cooperates with the flat face 40 of said arm 37 to limit the rotation in one direction of the keeper engaging member with respect to the supporting crank arm F.

The latch members G—G and G—G are of similar design, one of said latch members being carried by each crank arm F. The latch member G of each crank arm F is swingingly supported for movement in a vertical plane in a slot 45 provided in the arm F between the ends thereof. As shown most clearly in Figures 4, 11, 12, and 14, the slot 45 faces the corresponding carrier B and has extended side wall portions adapted to accommodate and support a pivot pin 46 extending through the latch member G and on which the latter is pivoted. At the inner end, adjacent to

the pivot thereof, the latch member G is provided with a tail portion 47 adapted to ride on the cam projection 29 of the corresponding carrier B. At the outer end, the latch member G is provided with an undercut lip 48 having a straight flat end face 49 adapted to engage the flat face 41 of the arm 37 of the keeper engaging member E to lock the crank arm F to the crank arm of the keeper engaging member and cause the crank arm F to rotate in unison with the operating shaft D. The bottom face portion of the latch member G inwardly of and immediately adjacent to the undercut lip 48 thereof cooperates with the cam projections 28 of the carrier B to raise the latch to the position shown in Figures 1, 2, 3, 4, 5, 12, and 14.

The operating handle levers H—H are of like design and one of said handles is provided for each shaft D. The handle lever H is forked at its inner end, as indicated at 50, to embrace the shaft D, to which it is pivoted for swinging movement in a vertical plane. The operating handle H is of such a length that the hand grip portion thereof will engage in back of the locking lug 32 of the corresponding lower journal bracket C when the handle lever is swung downwardly and the parts assume the position shown in Figures 6, 7, and 8, and thus lock the door against accidental lateral displacement when the same is being slid along the tracks A—A.

The locking members K—K are fixed to the door and serve to latch the operating handle members H—H in the position shown in Figure 1. These locking members are of the type usually employed in connection with operating handles or levers of refrigerator car doors and are used to lock the handles in fixed position when the door is closed. As these locking or latching members K—K are well-known in the art and the details thereof form no part of the present invention, further description thereof is not needed. However, it is pointed out that the locking members illustrated are of the well-known type which are adapted to receive the ordinary car seals to prevent unauthorized opening of the car door.

As will be evident from the preceding description, each operating shaft or bar D, together with the rigidly attached keeper engaging end members E—E and the crank arms F—F, which are connected to the end members E—E, form a unitary means for moving the door into and out of the door opening, forcing the same tightly closed and prying the same open, the operation thereof being effected by rotation of the shaft or bar by means of its pivoted operating handle member.

The operation of my improved mechanism is as follows: In opening the door 22, the operating handle lever members H—H may be actuated simultaneously or successively. Inasmuch as the operating mechanism comprising the shaft D, the end members E—E and the supporting crank arms F—F at each end of the door is the same, the operation of one only of these mechanisms need be described in connection with the opening and closing of the door 22. To actuate the shaft D, the operating handle lever H is first unlocked from the corresponding latch or locking member K. The attendant then pulls the lever G outwardly away from the side wall of the car, thereby rotating the shaft D and actuating the keeper engaging members E—E at opposite ends of said shaft. During the first quarter rotation of the shaft D, the lug or pin 38 of each keeper engaging member E, which is engaged within the keeper slot 27 of the corresponding carrier B, will be swung about the axis of the shaft D, thereby camming the door outwardly from the position shown in Figures 1, 2, and 3 to the position shown in Figures 4 and 5. During this action, the latch member G of each crank arm F is held in raised position by the cooperating cam 28, as shown most clearly in Figures 1 and 4, thus permitting the shaft D to rotate freely with respect to said crank arms F—F. The door thus is swung outwardly on the supporting crank arms F—F through the action of the keeper engaging members E—E, the inner ends of the arms F—F swiveling freely on the shaft portions 36—36 of the keeper engaging members E—E. When the parts reach the position shown in Figure 5, the flat side face 40 of the arm 37 of each keeper engaging member E comes into engagement with the stop shoulder 44 of the corresponding arm F, thereby limiting further relative rotation of the shaft D and the crank arms F—F. Upon further rotation of the shaft D, the crank arms F—F will be rotated in unison with the shaft D through the shouldered engagement of the arms 37—37 of the keeper engaging members E—E with the arms F—F, the latter being thus locked to the shaft D. As the door 22 is swung outwardly on the crank arms F—F, the keeper engaging pins or lugs 38—38 will be swung with the arms F—F about the axes of the pivots 42—42 thereof, thereby moving the keeper engaging lug 38 of each element E clear of the corresponding keeper member 26 from the position shown in Figures 4 and 5 through the position shown in Figures 13 and 14 to the position shown in Figure 7. As the parts move from the position shown in Figures 4 and 5 beyond the position shown in Figures 13 and 14, the tail 47 of the latch member G will ride up on the cam 29, thereby forcing the lip end of the latch downwardly and engaging the lip 48 thereof with the face 41 of the crank arm 37 of the corresponding keeper engaging member to securely lock the shaft D to the corresponding arm F. As shown in Figure 12, the cam 28 is arranged and designed to permit the lowering of the outer end of the latch G. The cam 29 holds the latch G in locked position as shown in Figures 6, 7, 9, and 10, during the remaining rotary movement of the shaft D to withdraw the door completely from the door opening 21. Rotation of the shaft D is positively limited by the arms F—F coming into engagement with the stop lugs 31—31 on the brackets C—C, as shown in Figure 7. When the door has been thus completely withdrawn, the handle lever G is dropped to the position shown in Figures 6 and 8 and the hand grip portion thereof engaged in back of the lug 32 of the corresponding lower bracket C, thereby locking the shaft D against rotation and holding the door in fixed spaced relation with respect to the car wall during sliding movement of the door on the tracks A—A. To complete the opening of the door, the attendant slides the same along the tracks clear of the door opening 21.

In closing the door, the attendant first slides the same along the tracks to bring it into registration with the door opening 21. The stop blocks 24—24 on the tracks determine this position by limiting the movement of the carriers at the left hand end of the door as viewed in Figure 1. After the door has been thus positioned, the handle levers H—H of the shafts D—D are raised to horizontal position, thereby unlocking the same from the lower brackets C—C and freeing the shafts D—D for rotation. The attendant next swings the handle member H of each shaft D from the dotted

line position shown in Figures 6 and 7 to the full line position shown in Figure 1, thereby rotating the shaft D in a direction reverse to the direction of movement of the same during the door opening operation hereinbefore described. Inasmuch as the shaft D is locked to the top and bottom crank arms F—F by means of the latches G—G, the arms F—F will be swung in unison with the shaft D, thereby moving the door 22 inwardly toward the door opening 21. The latch members G—G being controlled by the cams 29—29 will hold the crank arms F—F locked to the shaft D until the tail members 47—47 of the latch members G—G reach the ends of the cams 29—29 and the latch members are raised by riding up on the cam members 29—29. This action will unlock the arms F—F from the shaft D, thus permitting free rotation of the shaft with respect to said arms F—F. This unlocked condition is reached when the parts have been rotated to the position shown in Figures 13 and 14. As will be seen upon reference to Figure 13, the keeper engaging pin or lug of each member E is at this stage of the operation in a position to enter the cam slot 27 of the corresponding keeper 26. During further rotation of the shaft D, the keeper engaging crank pins or lugs 38 cam the door inwardly to force the same tightly into the door opening as shown in Figures 1, 2, and 3. The operating handle member is then latched to the locking member K and the locking member sealed in the usual manner.

From the preceding description taken in connection with the drawings, it will be evident that I have provided a very rugged and substantial, manually operated, actuating means for quickly bringing the door to closed position and pressing the same tightly closed with great force and forcibly prying the door open and quickly withdrawing the same from the door opening, wherein the entire operation is effected by continuous rotary movement of the operating shaft and the power transmitted through the shaft is automatically transferred from the door forcing means to the rapid movement door displacing means, or vice versa, to the end that the opening and closing operations are performed in the most efficient manner.

I have herein shown and described what I now consider the preferred manner of carrying out my invention, but 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. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a door adapted to close said opening; of a guide track on said wall member; a carrier slidably guided on said track; a rotary operating shaft mounted on said door; keeper means on said carrier; keeper engaging means on said shaft engageable with the keeper means to either force the door tightly closed or pry the same open; and a swinging supporting arm pivoted at one end on said carrier and having the other end journaled on said shaft for rotation with respect to said shaft about an axis coincident with the axis of said shaft.

2. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a door adapted to close said opening; of a guide track on said wall member; a carrier slidably guided on said track; a crank member supporting the door on said carrier, said crank member being pivoted at one end to the carrier and at the other end to the door; an operating shaft rotatably mounted on the door in permanently concentric relation with the pivotal connection of the crank member; keeper means on the carrier; keeper engaging means on the operating shaft engageable with the keeper; and latch means for locking the crank arm to the operating shaft for rotation in unison therewith.

3. In a door construction for cars having a wall member provided with a door opening, the combination with a door adapted to close said opening; of a support; fixed keeper means on said support; means for movably mounting said door on said support including a rotary operating shaft on the door, a radially extending crank arm journaled on said shaft for rotation with respect to said shaft about an axis coincident with the axis of said shaft, and a crank pin on the outer end of said arm swiveled to said support; keeper engaging crank means on said shaft cooperating with said keeper means; and latch means actuated by relative rotation of said crank arm and support in one direction for locking the shaft to the crank arm, and actuated by relative rotation in a reverse direction of said crank arm and support for unlocking said shaft from the crank arm.

4. In a door construction for cars having a wall member provided with a door opening, the combination with a door for closing said opening; of a supporting member; a supporting crank arm swingingly mounted at one end on said support; an operating shaft journaled in the other end of said crank arm for rotation on a fixed axis with respect to said arm; means for rotatably supporting said operating shaft on the door; interengageable cooperating means on said shaft and supporting member for moving the door inwardly and outwardly upon rotation of said shaft; and automatically actuated locking means operated by relative movement of said crank arm and supporting member for locking the shaft to and unlocking the same from said crank arm.

5. In a door construction for cars having a wall member provided with a door opening, the combination with a door for closing said opening; of a supporting member provided with a cam slot; an operating shaft rotatably mounted on the door; rigid crank means on said shaft engageable with said cam slot for moving the door inwardly and outwardly upon rotation of said shaft; means for movably mounting the door on said supporting member comprising a crank arm swingingly mounted at one end on said supporting member and having the other end thereof journaled on said shaft for rotation on said shaft about an axis concentric with the axis of rotation of said shaft; a latch member on said crank arm for locking said arm to the shaft for rotation therewith; and means actuated through relative swinging movement of said crank arm and supporting member for actuating said latch member.

6. In a door construction for cars having a wall member provided with a door opening, the combination with a door for closing said opening; of a bearing bracket on the door; a support; a crank arm having a hollow sleeve-like shaft at one end journaled in said bearing bracket, the other end of said arm being pivotally connected to said support; a rotary operating shaft journaled in said sleeve-like shaft; and cooperating keeper and keeper engaging means on said support and shaft.

7. In a door construction for cars having a wall

member provided with a door opening, the combination with a door for closing said opening; of a bearing bracket on the door; a support; a crank arm having a hollow sleeve-like shaft at one end journaled in said bearing bracket, the other end of said arm being pivotally connected to said support; a rotary operating shaft journaled in said sleeve-like shaft; cooperating keeper and keeper engaging means on said support and shaft; and latch means on said crank arm for locking said shaft for rotation in unison with the latter.

8. In a door construction for cars having a wall member provided with a door opening, the combination with a door for closing said opening; of a bearing bracket on the door; a support; a crank arm having a hollow sleeve-like shaft at one end journaled in said bearing bracket, the other end of said arm being pivotally connected to said support; a rotary operating shaft journaled in said sleeve-like shaft; cooperating keeper and keeper engaging means on said support and shaft; a latch member on said crank arm engageable with the shaft for locking the latter to said crank arm; and means for actuating said latch member controlled by relative movement of said crank arm with respect to the support.

9. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a door for closing said opening; of a support; a crank member swingingly mounted at one end on said support and journaled to the door at the other end for pivotal swinging movement; an operating shaft mounted on the door for rotation about an axis concentric with the axis of pivotal swinging movement of the crank member on the door; keeper means on said support; means on said shaft engageable with the keeper means for moving said door; and means for automatically locking said crank member to said shaft while said keeper engaging means is disengaged from said keeper means.

10. In a door construction for cars having a wall member provided with a door opening, the combination with a door for closing said opening; of keepers with respect to which said door is movable; swinging arms for supporting said door and guiding the same into and out of the door opening, each of said arms being pivotally mounted on the door; manually actuated rotary operating means mounted on the door; means operatively connecting said operating means to the swinging arms for actuating the latter through rotation of said operating means to either move the door into the door opening to partially closed position or withdraw the door from the door opening after it has been partially opened; and keeper engaging means fixed to said rotary operating means engageable with said keepers for either forcing the door tightly closed after it has been moved to said partly closed position, or prying said door partially open.

11. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a door adapted to close said opening; of guide tracks on said wall member above and below said door opening; a carrier slidably guided on each track; keeper means on each carrier; a supporting arm swingingly connected to each carrier; means pivotally connecting each arm to the door; a rotary operating shaft mounted on the door; means for locking said shaft to the arms for swinging the latter to move the door into and away from the door opening; and keeper engaging means on said operating member engageable with said keeper means for either forcing the door tightly closed or prying the same open.

12. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a door adapted to close said opening; of guide tracks on said wall member above and below said door opening; a carrier slidably guided on each track; keeper means on each carrier; top and bottom sleevelike shaft members journaled on the door, said shafts being in axial alignment; a radial supporting arm on each shaft, the outer end of said arms being pivotally connected to said carriers respectively; a manually actuated rotary operating shaft having its opposite ends journaled in said aligned sleevelike shaft members, said operating shaft having rotary movement to a limited extent with respect to said sleevelike shaft members; means on said operating shaft engageable with the keeper means for either forcing the door into the door opening or prying the same free of said opening while the operating shaft is rotated to said limited extent; and means for locking said rotary operating shaft to said supporting arms to swing the latter to move the door into and out of the door opening.

13. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a door adapted to close said opening; of guide tracks on said wall member above and below said door opening; a carrier slidably guided on each track; keeper means on each carrier; a swinging arm pivoted to each carrier; pivot means connecting each of said arms to the door for supporting the latter; a rotary operating member on the door; keeper engaging means on said operating member engageable with said keeper means; and means for automatically locking the rotary operating member to said swinging arms for actuating the latter.

14. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a door adapted to close said opening; of guide tracks on said wall member above and below said door opening; a carrier slidably guided on each track, each carrier having a keeper slot therein; a supporting arm swingingly mounted on each carrier; pivot means rotatably connecting each of said arms to the door; an operating shaft coaxial with said pivot means and extending therethrough; crank means on said shaft engageable with the keeper slots; a latch member on each arm cooperating with the shaft to lock the arm thereto; and cam means on said carriers for actuating said latch members upon movement of said arms with respect to said carriers.

15. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a door adapted to close said opening; of a support; a supporting arm for the door, said arm being pivotally connected at one end to said support and having an integral bearing sleeve at the other end; a bearing bracket on the door in which said sleeve is rotatably journaled; a rotary operating shaft extending through said sleeve and rotatably journaled therein; a locking shoulder on said shaft; a pivoted latch member on said arm engageable with said locking shoulder for locking the arm to the shaft for rotation with the latter; an eccentric keeper engaging member on said shaft; and keeper means on said support cooperating with said keeper engaging member.

16. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a door adapted to close said opening; of a rotary operating shaft, said shaft having keeper engaging means thereon adapted to engage with fixed keeper means; supporting and guiding crank arms for the door pivotally connected to the door for swinging movement on an axis coaxial with the axis of rotation of said shaft; interengaging shoulders on said shaft and crank arms for effecting movement of said arm in unison with said shaft; a latch member on said arm; and means actuated through swinging movement of said arm for throwing the latch member into and out of locking engagement with said shaft to lock said arm to said shaft.

17. In a door supporting and actuating means, the combination with a supporting member; of keeper means on said member; a supporting arm having laterally projecting shaft members at opposite ends thereof, one of said shaft members being journaled on said supporting member, and the other shaft being in the form of a hollow sleeve; a bearing bracket on the door in which said hollow sleeve is journaled; an operating shaft extending through said sleeve and rotatably journaled therein; keeper engaging means on said shaft including a crank arm provided with a crank pin, said crank arm having flat stop faces on opposite sides thereof; a shoulder on said supporting arm engageable by one of said stop faces; and a pivoted locking member on said arm engageable with the other of said stop faces.

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