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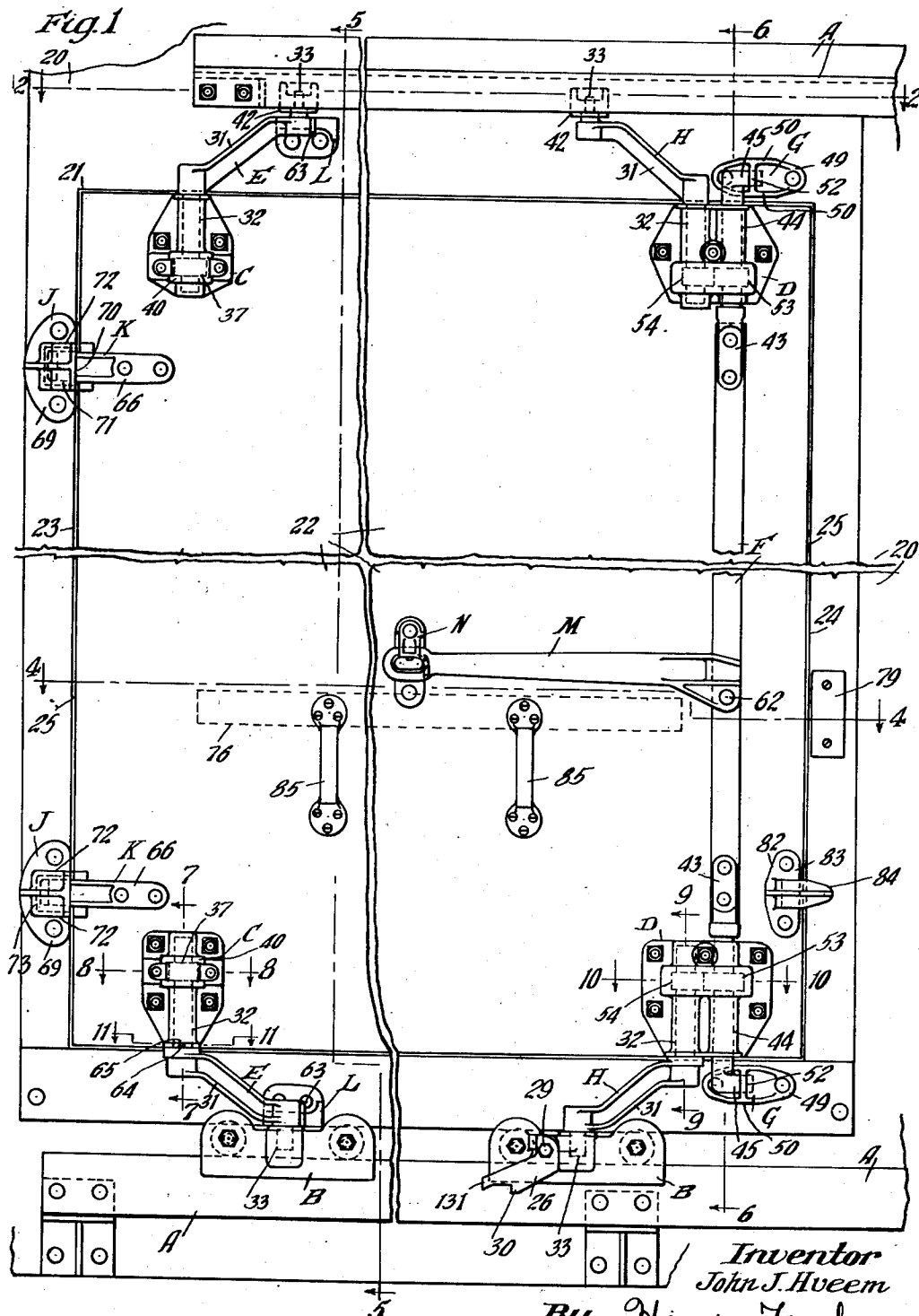
J. J. HVEEM

2,453,793

REFRIGERATOR CAR DOOR

Filed Sept. 3, 1943

4 Sheets-Sheet 1



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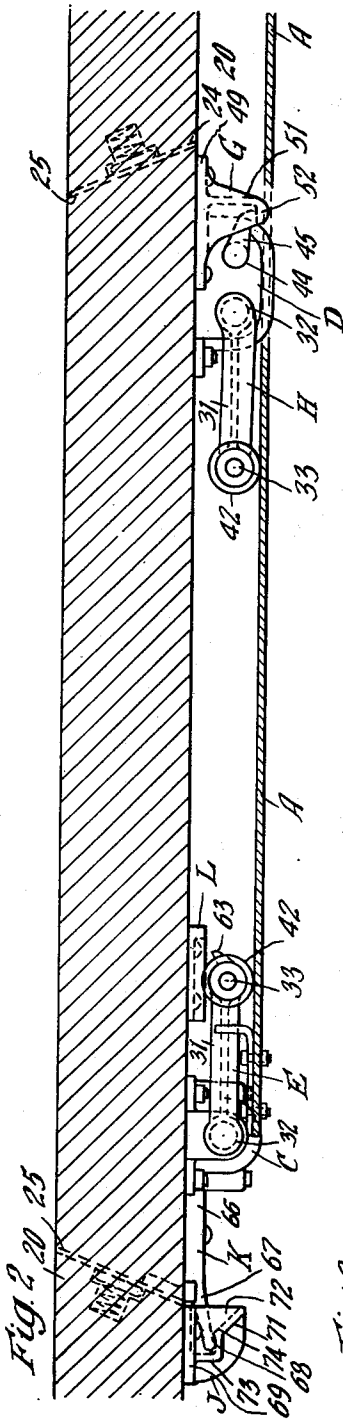
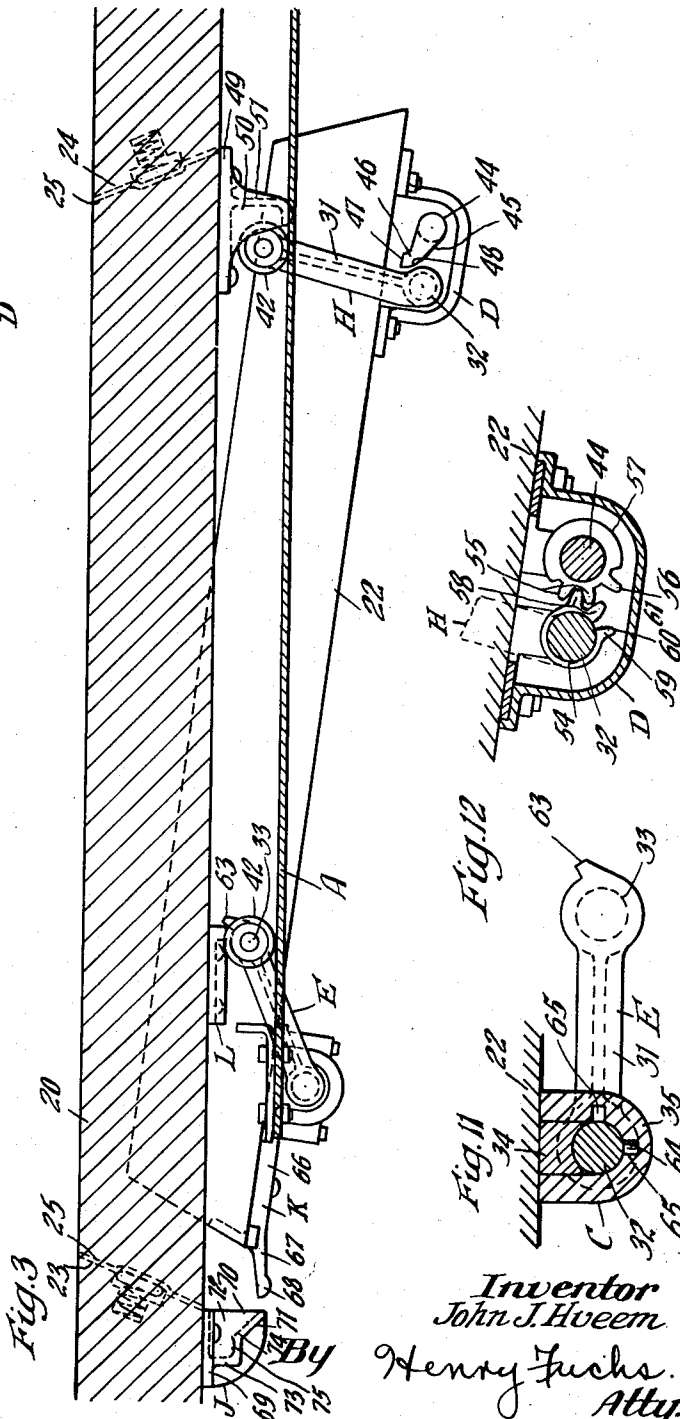
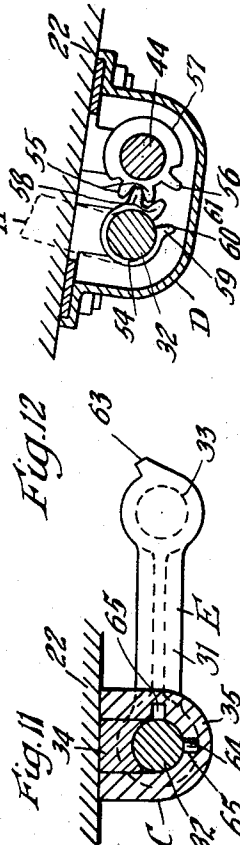
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REFRIGERATOR CAR DOOR

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4 Sheets-Sheet 2



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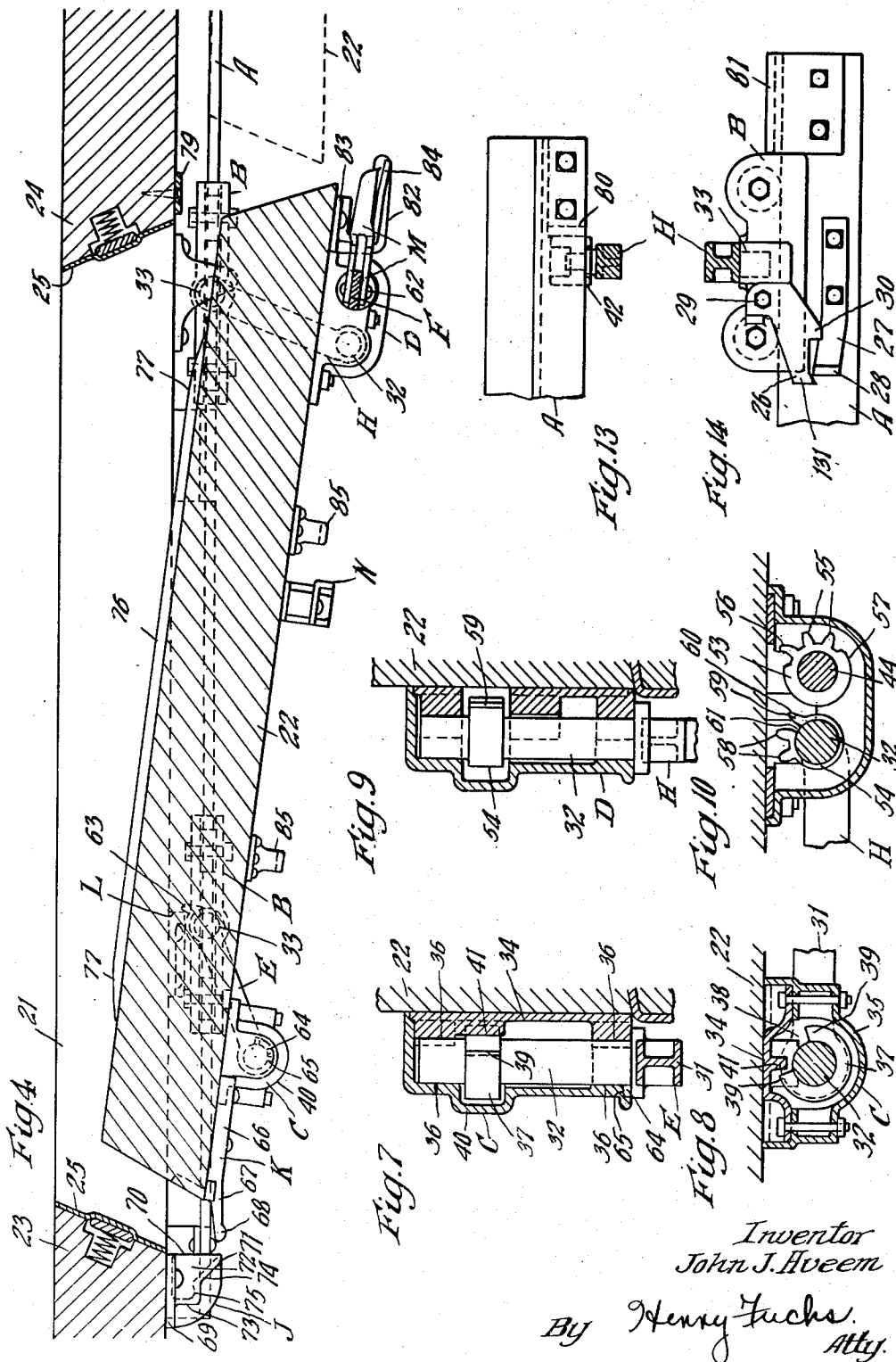
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REFRIGERATOR CAR DOOR

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4 Sheets-Sheet 3



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REFRIGERATOR CAR DOOR

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4 Sheets-Sheet 4

Fig. 5

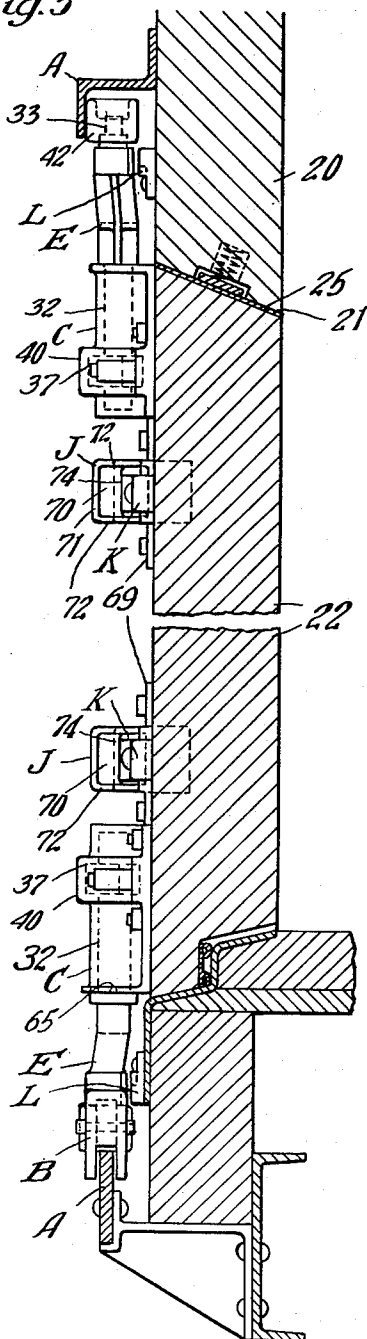
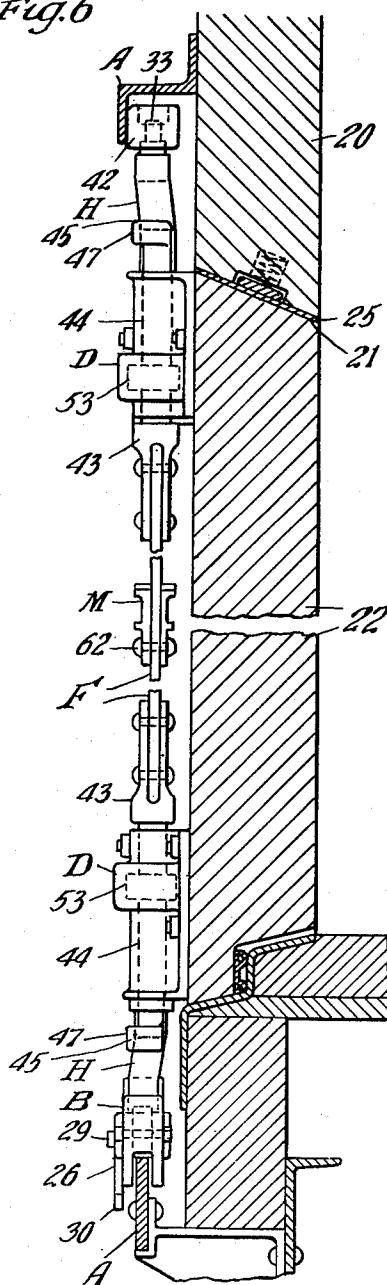


Fig. 6



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UNITED STATES PATENT OFFICE

2,453,793

REFRIGERATOR CAR DOOR

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2 Claims. (Cl. 20—23)

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This invention relates to improvements in refrigerator car doors, and more particularly to doors of the sliding type.

The main object of the invention is to provide a door construction comprising a sliding door member for closing a door opening, supported by a rotary crank arm, journaled on a carrier slidably mounted on a track, wherein latching means is provided for rendering the crank arm stationary to hold the door in position when moved to its limit outwardly of the door opening, thereby preventing accidental displacement of the door from said position.

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 a broken elevational view of one of the side walls of a refrigerator car and the sliding door for closing the usual door opening illustrating my improvements in connection therewith. Figure 2 is a horizontal sectional view, corresponding substantially to the line 2—2 of Figure 1. Figure 3 is a view, similar to Figure 2, showing the door partly opened. Figure 4 is a horizontal sectional view, corresponding substantially to the line 4—4 of Figure 1, showing the door in the partly open position illustrated in Figure 3, said view also showing in dotted lines the end of the door in fully open position, clear of the door opening. Figure 5 is a vertical sectional view, corresponding substantially to the line 5—5 of Figure 1. Figure 6 is a vertical sectional view, corresponding substantially to the line 6—6 of Figure 1. Figure 7 is a vertical sectional view, on an enlarged scale, through the door supporting means at the leading end of the door, corresponding substantially to the line 7—7 of Figure 1. Figure 8 is a horizontal sectional view through the mechanism shown in Figure 7, corresponding substantially to the line 8—8 of Figure 1. Figure 9 is a vertical sectional view, on an enlarged scale, through the door supporting mechanism at the rear end of the door, corresponding substantially to the line 9—9 of Figure 1. Figure 10 is a horizontal sectional view through the mechanism shown in Figure 9, corresponding substantially to the line 10—10 of Figure 1. Figure 11 is a horizontal sectional view, on an enlarged scale, through the door supporting means at the leading end of the door, corresponding substantially to the line 11—11 of Figure 1. Figure 12 is a view, similar to Figure 10, illustrating the parts in the position assumed when the door is in the position shown in Figures

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3 and 4. Figure 13 is an elevational view of a portion of the upper track beyond the door opening showing a stop member engageable by the roller of the upper crank arm at the rear end of the door, a portion of the crank arm being shown in vertical section. Figure 14 is an elevational view of a portion of the bottom track beyond the door opening, showing a stop member engageable by the lower carrier at the rear end of the door and certain latch means, a portion of the lower door supporting crank arm being shown in vertical section.

In said drawings, 20 indicates the side wall of the car which 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. The frame of the door opening may be of any well known construction, and is provided with the usual door jambs 23 and 24 at the front and rear ends of said opening. 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 25, 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 cooperating with the bottom track; a set of top and bottom bearing brackets C—C at the leading end of the door; a set of top and bottom combined bearing brackets and housings D—D on the rear end portion of the door; supporting crank members E—E journaled in the brackets C—C and connected to the front carrier B and the top track A; a locking bar F journaled in the brackets D—D and having top and bottom keeper engaging arm members thereon; top and bottom keepers G—G on the car wall above and below the door opening engageable by said arm members; top and bottom supporting crank members H—H journaled in the brackets D—D geared to the bar F and swingingly connected at their outer ends to the upper track A and the rear carrier B; a pair of keeper housings J—J on the car wall at the forward end of the door opening; a pair of cam lugs K—K at the leading end of the door engageable with the keeper housings; a pair of combined stop and cam plates L—L on the car wall above and below the door opening; an operating lever M on the bar F; and a latch member N for the lever M.

The tracks A—A are arranged respectively above and below the door opening, extending

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lengthwise of the car and are fixed to the side wall in any well known manner. The top track A is preferably of inverted trough-shaped form in cross section, having the opening thereof directed downwardly, and the lower track A is in the form of a rail or bar. The structure of the tracks A—A is well known in this art, and therefore no further detailed description thereof is needed.

The carriers B—B are in the form of slides supported on the lower track by the usual anti-friction rollers which ride on the track and are suitably journaled in the carriers. The rear carrier B supports a locking dog 26 adapted to lock the carrier in position with the door fully open, that is, slid to the limit of its movement to the left of the door opening, with reference to the position of the parts shown in Figure 1, so that it is entirely clear of the door opening. The locking dog 26 cooperates with a stop member 27, as shown in Figure 14. The stop member 27 is in the form of a barlike bracket, secured by bolts to the bottom track, as shown in Figure 14. The barlike bracket has a laterally outwardly bent end portion 28 with which the dog 26 is adapted to engage. As shown in Figures 1 and 14, the dog 26 is pivotally supported on the rear carrier B, being swingingly mounted on a pivoted pin 29 projecting laterally from said carrier. The dog 26 has a tooth 30 adapted to engage in back of the stop 28 of the bracket 27 to hold the slide B against accidental sliding movement when the door has been slid to fully open position. The dog is extended outwardly beyond the tooth 30 thereof and terminates in a finger piece 31 at the outer end thereof, whereby the dog may be manipulated to disengage the tooth thereof from the stop 28. When the door is pushed open, the tooth of the dog cams over the stop projection 28 and engages in back of the same as clearly shown in Figure 14.

The supporting crank member E—E and H—H which are located at the front and rear ends of the door are of similar design, except as hereinafter pointed out. Each crank member has a radial arm 31 extending from a shaftlike journal portion 32. At the outer end of the arm 31 is a crank pin 33. The shaft portions 32 of the top and bottom crank members E—E are journaled respectively in the bearing brackets C—C secured to the door at the front or leading end thereof. As shown most clearly in Figures 7 and 8, the bearing bracket C at the bottom end of the door is of two piece construction, comprising a back plate 34 and a cover or housing plate 35 secured thereto. The plates 34 and 35 have opposed interior bearing seats 36—36 at the top and bottom ends thereof which embrace the shaft portion 32 of the lower crank member E to mount the crank member for rotation. Between its ends thereof, immediately below the upper bearing seats 36—36 of the bracket C, the shaftlike journal portion 32 is provided with an annular flange 37 which is partly cut away, as indicated at 38, to provide stop shoulders 39—39. To accommodate the flange 37, the housing plate is enlarged, as indicated at 40. The back plate 34 of the lower bracket C is provided with a projecting stop lug 41 adapted to be engaged by the stop shoulders 39—39 to limit rotation of the crank member to 90 degrees.

The bearing bracket C at the top of the door, which rotatably supports the upper crank member E, is of substantially the same design as the lower bracket C and the shaftlike portion 32 of the upper crank member E, which is journaled

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therein, is preferably also provided with stop shoulders which cooperate with a stop lug on the bearing bracket to limit rotation of said crank member.

The crank pin 33 of the bottom crank member E is journaled in the front carrier B to provide for swinging movement of the crank member with respect to the carrier. The crank member E at the top of the door has a roller 42 journaled on the crank pin 33 thereof, the roller being guided in the troughlike way of the upper track A. As will be evident the front end of the door 22 is thus swingingly supported on the tracks by the crank members E—E and guided into the door opening by said crank members in their swinging movement.

The top and bottom crank members H—H at the rear end of the door are rotatably journaled in the bearing housings D—D, the bottom crank member H having the crank pin 33 thereof journaled in the rear carrier B and the top crank member H having its crank pin end guided in the channel of the top track A by means of the roller 42 which is rotatably journaled on said crank pin.

The locking bar F is vertically disposed and mounted on the door inwardly of the rear end thereof. The bar F has end member 43—43 secured to the top and bottom thereof. Each end member 43 comprises a cylindrical shiftlike section 44 having a radially extending, relatively short crank arm 45 at the outer end thereof adapted to cooperate with the corresponding keeper G. Each crank arm 45 has a short laterally offset end portion 46 having a flat transverse end face 47. As shown in Figure 2, the rear edge of the crank arm 45 is curved at the offset end portion 46 thereof, as indicated by 48, to provide a cam portion.

The keepers G, with which the top and bottom crank arms 45 of the bar F cooperate, are secured to the side wall of the car, above and below the door opening at the rear end of the latter, as shown in Figure 1. Each keeper G comprises a platelike base portion 49, horizontal, outstanding top and bottom flanges 50—50, and a vertically disposed, outstanding web 51 connecting said top and bottom walls. The web 51 is at right angles to the base 49 and has a right angularly turned outer end portion 52 forming a short stop wall. The stop wall 52 is so spaced with respect to the base plate 49 that the crank arm 45 has a certain amount of play between said plate and wall 52 in being rotated toward the door, as seen in Figure 1. The keepers G are fixed to the car wall by any suitable securing elements, such as bolts, engaged through the base plates thereof.

The cylindrical shaftlike sections 44—44 of the end members 43—43 of the bar F are journaled in bearing openings in the housings D—D, laterally offset with respect to the bearings of the shaftlike sections 32—32 of the crank members H—H, as clearly shown in Figures 1 and 10. The shaftlike sections 44—44 thus support the bar F for rotation on a vertical axis.

Each shaftlike section 44 is suitably geared to the shaftlike section 32 of the corresponding supporting crank arm H to transmit intermittent motion to the latter so that rotation of the bar F is intermittently produced. The arrangement is such that when the bar F is rotated in either direction the crank members H—H remain idle while the keeper engaging arms 45—45 of the bar F are cooperating with the keepers G—G, and are actuated when the keeper engaging arms are out of engagement with the keepers. In other

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words, the intermittent drive is so designed that rotary movements of the crank members H—H and the keeper engaging arms 45—45 of the bar F are synchronized in such a manner that, in opening the door, the keeper engaging members first free the door from the door opening, and movement of the rear end of the door out of said door opening is completed by actuation of the crank members H—H, and that in closing the door the same is moved inwardly toward the door opening by the crank members H—H until the keeper engaging arms are engaged with the keepers G—G, and is then forced tightly closed by the keeper engaging members cooperating with the keepers. The particular form of drive gearing employed for this synchronizing action of the crank members H—H and the keeper engaging members of the bar F may be of any well known design, and the particular gearing herein shown comprises an interrupted drive gear 53 formed integral with the shaft section 44 and an interrupted driven gear 54 formed integral with the shaft section 32 of the corresponding crank member H. The gear 53 is provided with a set of interrupted teeth, comprising two teeth 55—55 of the usual type employed in spur gears, and a third tooth, which is indicated by 56, which is slightly bent away from the adjacent tooth 55 at its outer end, thus forming in effect a hook-shaped tooth member. The remaining or blank portion of the gear 53 is in the form of an annular flange 57, which acts as a guide or stop cooperating with the end teeth of the set of interrupted teeth of the gear 54 to restrict relative rotation of said gear with respect to the gear 53 to such an extent that the teeth of the gear 54 will be properly presented to be engaged by the teeth of the gear 53 when the latter is rotated to an extent to present the teeth thereof to the gear 54.

The interrupted set of teeth of the gear 54 comprise two teeth 58—58 of the usual type employed in spur gears, and a third tooth 59 which is of slightly different design. The tooth 59 is inset with respect to the teeth 58 and has a pointed extremity 60. The metal of the gear between the tooth 59 and the adjacent tooth 58 is cut away at the base of the tooth 59, thus forming a recess 61 to provide clearance for the hooked end of the tooth of the gear 53.

The parts are so designed that the gears 53 and 54 are in the unmeshed position shown in Figure 10 when the corresponding keeper engaging arm 45 is in the position shown in Figure 2. In Figure 2 the arm 45 is in abutment with the wall 52 of the keeper G, thereby holding the door in tightly closed position. When the gear 53, as shown in Figure 3, is rotated in a counterclockwise direction by the bar F, the crank arm 45 is swung away from the stop wall 52 toward and against the rear wall or base plate 49 of the corresponding keeper G. As rotation of the locking bar F is continued, the rear end of the door is forced outwardly by camming engagement of the arms 45 at the top and bottom ends of the bar F with the rear walls or base plate portions of the top and bottom keepers G—G. During this time, the teeth of the gears 53 and 54 of each set remain out of mesh. As the rear end door swings outwardly on the rear supporting crank members H—H, a slight rotation of the gears 54—54 is necessarily produced. As the keeper engaging arms 45—45 of the bar F complete their camming operation, the hooked teeth 56—56 of the upper and lower gears 53—53 pick up and mesh

with the pointed teeth 58—58 of the upper and lower gears 54—54, thereby positively rotating the latter to swing the top and bottom crank members outwardly to move the door entirely out of the door opening, as shown in Figure 3. When the door reaches the position shown in Figure 3, the gears 53 and 54 are meshed, as shown in Figure 12.

Now assuming that the gear 53 is rotated by the bar F in a clockwise direction, as shown in Figure 12, the gear 54 will be rotated in counterclockwise direction, thereby causing the corresponding crank member H to swing in clockwise direction and carry the rear end of the door inwardly. This action will continue until the gears 53 and 54 and 53 and 54 at the top and bottom of the door become unmeshed. As the gears unmesh, the keeper engaging crank arms 45—45 enter the keepers G—G and the offset extremities 46 of said arms approach the stop walls 52—52 of the keepers and finally engage these walls. When the arms 45—45 engage the walls 52—52, the gears are completely out of mesh and further swinging movement of the arms cams the door to the closed position shown in Figures 1 and 2. Inasmuch as the gears 53 and 54 are out of mesh when the keeper engaging arms are operative in forcing the door open or closed, the required rotative differential movement between the locking bar and the crank members H—H is provided while this operation is taking place.

The operating lever M serves as means for effecting rotation of the bar F and is pivoted thereto, as indicated at 62, so that the lever may be either dropped to pendant position, parallel to the bar F, or raised to horizontal position at right angles to said bar.

The latch member N is of the type commonly employed to lock the operating handle of a locking bar in horizontal position, and, as shown in Figure 1, serves to lock the lever M in such a manner as to prevent rotation of the bar F, thereby locking the door tightly closed. This latch is adapted to receive the usual car seal, as is well known in this art.

The combined stop and cam plates L—L are in the form of castings and are fixed to the wall of the car immediately above and below the door opening, as shown in Figure 1. As disclosed in Figures 2 and 3, which show the upper crank member E and the top cam plate L, and in Figure 11 which shows the lower crank member E, a radially projecting cam lug 63 is provided on the crank arm 31 of each crank member E. The cam lug 63 forms, in effect, an extension of said arm outwardly beyond the crank pin 33 thereof. The lug 63 is of the shape most clearly shown in Figure 11 and is positioned to engage the corresponding cam plate L when the door is slid along the tracks toward its closed position. After the lugs 63 of the top and bottom crank members E—E become engaged with the cam plates L—L, further sliding movement of the door in closing direction causes the lugs to fulcrum on the cam plates, thereby effecting rotation of the crank members.

The hub portion of the arm 31 at the shaft end of the lower crank member E is provided with a raised rounded cam projection 64, as shown in Figures 1 and 11, which is adapted to seat in notches 65—65 provided in the underneath face of the lower bracket C at the bottom end of the latter. The notches 65—65 are spaced 90 degrees apart, as shown in Figure 11. When the cam projection is seated in the outermost notch 65, the

arm 31 of the lower crank member E is held parallel to the door, as shown in Figure 11, and when the projection is seated in the other notch the arm 31 is held at right angles to the door with the latter displaced to a position free of the door opening and parallel to the car wall. As will be evident when the crank member E is forcibly swung in moving the door either inwardly or outwardly of the door opening, the cam lug will be moved out of the notch with which it is engaged by camming the door upwardly, but the weight of the door will be sufficient to hold the arm locked in either of its positions when the cam projection is seated in the corresponding notch to prevent accidental movement of the arm 31, particularly when the door is in position parallel to the car wall. By thus locking the arm so that the door is held parallel to the car wall, accidental inward displacement of the leading end of the door is avoided during sliding movement of the door toward closed position, the door being held in said parallel condition until the cam projection 64 is positively disengaged from the cooperating notch 65 by forcible movement of the arm 31 of the lower crank member E by engagement with the lower cam plate L.

The cam lugs K—K are two in number, as shown in Figure 1, and are secured to the door 22 at the front or left hand end thereof. The cam lugs or arms K—K cooperate with the keeper housings J—J, which are fixed to the car wall at the front or left hand end of the door opening 21. Although two sets of cam lugs and keeper housings are shown in the drawings, it will be evident that a greater or lesser number may be employed as conditions require.

As shown in Figures 1, 2, 3, and 4, each cam lug K is in the form of a casting secured to the outer side of the door adjacent the front end thereof. Each lug K includes a base portion 66 and a projecting finger or lug 67 inclined outwardly away from said base. The finger or lug 67 projects beyond the leading or front end of the door and has a slightly enlarged head portion 68 at its extremity which is rounded on the outer side to form a cam surface.

The keeper housings J, which are also preferably in the form of castings, are of like design. Each housing J comprises a base plate 69 carrying a socket member 70. The socket member has an outer vertical wall 71 connected to the base plate by horizontal top and bottom walls 72—72 and a vertical end wall 73 at right angles to the base plate forming the closed end of the socket member. The end of the socket nearest the door opening is open to receive the lug or finger 67 of the cooperating cam lug K. At the mouth of the socket, the outer wall 71 is inclined away from the door opening inwardly toward the wall of the car, as indicated at 74. Inwardly of the socket, beyond said inclined portion 74, the front wall is substantially straight, said straight portion being provided on the inner side thereof with a concavity 75 forming a seat for the rounded head 68 of the finger 67 to retain the door in closed position, as shown in Figure 1. As will be evident, the inclined portion 74 of the wall 71 of the housing J serves to cam the door inwardly into the door opening by engagement of the cam lug K therewith as the door is slid to closed position. In this connection it is pointed out that when the cam lugs K—K are engaged within the keeper housings J—J these parts function in the nature of hinge members on which the door is adapted to swing while the rear end is being forced

into the door opening, the parts K—J and K—J forming, in effect, separable hinge members at the front end of the door.

A horizontal guide rib 76 is provided on the inner side of the door extending lengthwise of the same. The rib 76 is preferably in the form of an elongated plate or bar secured to the inner face of the door between the top and bottom thereof. The opposite ends of the rib or guide bar 76 are beveled, as indicated at 77—77. A wear plate 79 is fixed to the car wall at the rear end of the door opening at a proper height to cooperate with the rib 76 and protect the car wall against damage as the door is being slid to open and closed position.

In order to limit opening movement of the door, the upper and lower tracks A—A are respectively provided with stops 80 and 81 adapted to be engaged by the roller 42 of the upper crank member H and by the carrier B at the rear end of the door.

A fixed latch plate 82 is preferably provided for locking the lever M in position and prevent accidental rotation of the bar F and the crank members H—H after the rear end of the door has been moved to its limit out of the door opening. The latch plate 82 comprises a base portion 83 secured to the outer side of the door at the rear edge thereof at a point beneath the lever M. The base plate 83 carries a fixed latch arm 84 in parallel spaced relation to the base plate, projecting beyond the same and also beyond the rear edge of the door, the arm being connected to the base plate by a connecting web at the inner end thereof. The latch plate 82 is employed to lock the bar F against rotation after the same has been rotated to open the door. In moving the door out of the door opening, the operating lever is swung from left to right, through 180 degrees from the position shown in Figure 1. This will place the operating lever to the right of the bar F, parallel to the door. To lock the bar F, the lever is then dropped to pendant position and engaged in back of the latch arm 84 of the latch plate 82.

The door is preferably provided with hand grips 85—85 for sliding the same along the tracks A—A.

The operation of my improved door mechanism is as follows: Assuming the door to be closed, as shown in Figures 1, 2, 5 and 6, with the lever M of the bar F locked and sealed by the latch means N, the lever M, after being unlocked by disengaging the latch means N therefrom, is swung from left to right through an arc of 180 degrees, thereby imparting rotation to the same extent to the bar F and the keeper engaging arms 45—45. The arms 45—45, by engagement with the rear walls of the keepers G—G effect outward camming action, thereby prying the rear end of the door out of the door opening. In thus being moved, the door swings about its front edge by rocking sliding movement of the cam lugs K—K of the door in the fixed keeper housings J—J, the members K—J of each set acting as separable hinge members. Upon rotation of the bar F through an angle of approximately 90 degrees, the gears 53 and 54 come into mesh and the supporting crank members H—H are rotated through operation of the bar F. Continued operation of the bar F to the 180 degrees point of rotation brings the door to the position shown in Figures 3 and 4, the gears 53 and 54 being meshed as shown in Figure 12. As shown in Figures 3 and 4, the door is disposed at an angle to the car wall

with the cam lugs K disengaged from the keeper housings J.

To further open the door and completely withdraw the same from the door opening, the door is manually slid to the right, as viewed in Figures 3 and 4, by pulling on the hand grips 85-85. The pulling action on the door has a tendency to swing the front end outwardly of the door opening due to the eccentric lever action of the front crank members E-E. In addition, said front end of the door is positively moved outwardly during the sliding action by the guide rib 76 riding over the wear plate 79 at the rear of the door opening. When the door has been fully opened it is in the dotted line position shown in Figure 4. When the door reaches this position, the crank members E-E at the front end of the door are held in fixed position, with the arms 31 thereof at right angles to the car wall, by the cam projection 64 of the lower arm 31 being seated in the inner notch 65 of the bottom supporting bracket C. In this position of the door, the gravity actuated latch dog 26 locks the door against accidental sliding movement by engagement of the tooth 30 with the stop 27 of the lower track, as shown in Figure 14.

In closing the door, the operator slides the same in front of the door opening, thereby bringing the cam lugs 63-63 of the arms 31-31 of the top and bottom crank members E-E into camming engagement with the cam plates L-L to rotate said crank members and swing the front end of the door inwardly, approximately to the position shown in Figures 3 and 4. The operator then disengages the lever M from the latch 82 by upward swinging movement, lifting the same to its horizontal position. The bar F is now operated to rotate the crank members H-H through the connecting intermittent drive gearing, thereby swinging these crank members with respect to the tracks A-A, the bar being rotated in a direction reverse to the direction of rotation thereof during opening movements of the door. The rear end of the door is thus swung inwardly from the position shown in Figures 3 and 4, toward the position shown in Figure 2, bringing the keeper engaging arms 45-45 of the bar F into cooperative relation with the keepers G-G and at the same time unmeshing the interrupted gears 53 and 54. The crank members H-H having been thus disconnected from operation by the bar F, further operation of the bar F effects independent operation of the keeper engaging arms 45-45 to cam the door inwardly. As the rear end of the door is forced into the door opening, the cam lugs K-K at the front end of the door are forced into the keeper housings J-J, thereby camming the front end of the door inwardly. The door is thus forced tightly closed. The operating handle M is then latched and sealed by the latch member N to lock the door in said closed position.

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 sliding door movable laterally to close said opening; of top and bottom tracks above and below said door opening; top and bottom journal brackets fixed to the door at the front and rear ends thereof, the lower bracket at the front end of the door having a pair of locking seats spaced 90 degrees apart on the underneath side thereof; front and rear bottom crank members for supporting said door, each crank member including a shaft portion journaled in the corresponding bracket, a crank arm extending radially from said shaft portion, and a crank pin at the outer end of said arm; means slidable on said top and bottom track in which the crank pins of said crank members are respectively journaled; and a cam projection, on the inner end portion of the crank arm of the bottom crank member at the front end of the door, engageable with said locking seats respectively to releasably lock said crank arm in two different positions.

2. In a door construction for refrigerator cars having a wall member provided with a door opening, the combination with a sliding door movable laterally to close said opening; of a guide track on the car extending lengthwise of the same; a rotary crank member supporting the door at the leading end thereof, said crank member being slidably connected to said track; releasable latch means frictionally held in latching engagement by the weight of said door for holding said crank member against accidental rotation, when the door is disposed outwardly of the door opening parallel to said car wall; and means actuated by sliding closing movement of the door for forcibly swinging said crank member to release said latch means and actuate the crank member to move the door laterally into said door opening.

JOHN J. HVEEM.

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Certificate of Correction

Patent No. 2,453,793.

November 16, 1948.

JOHN J. HVEEM

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 10, line 23, claim 1, strike out the words "top and";
and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 5th day of April, A. D. 1949.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.