Oct. 19, 1948. G. E. DATH 2,451,537

DOOR FASTENER

Filed Nov. 14, 1946

2 Sheets-Sheet 1

Fig. 1

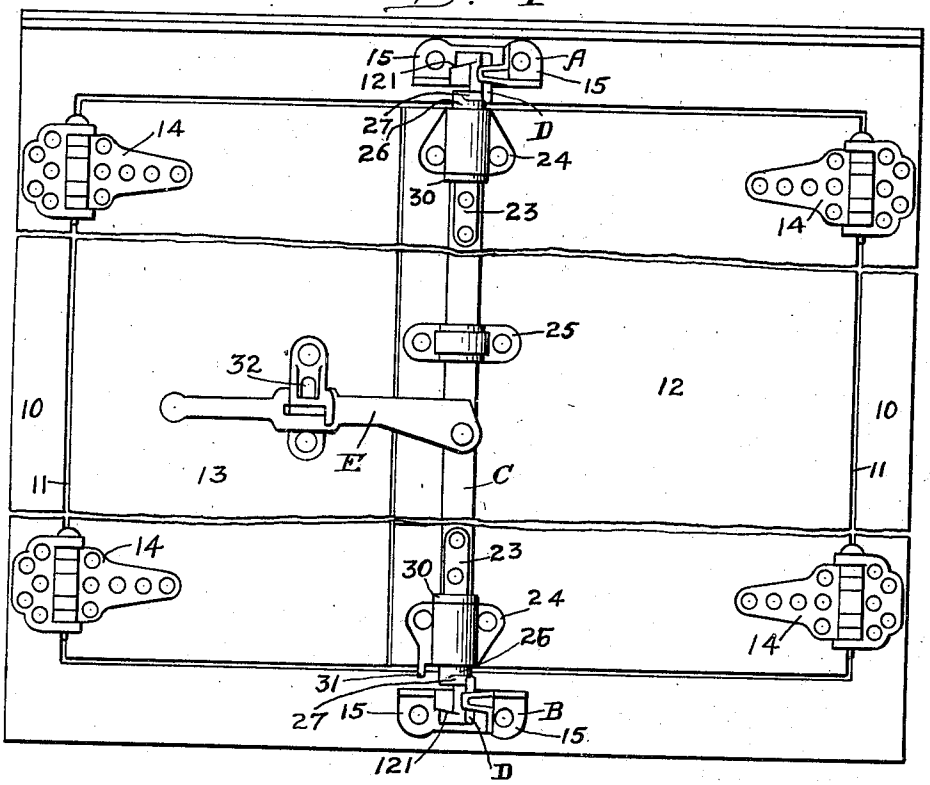
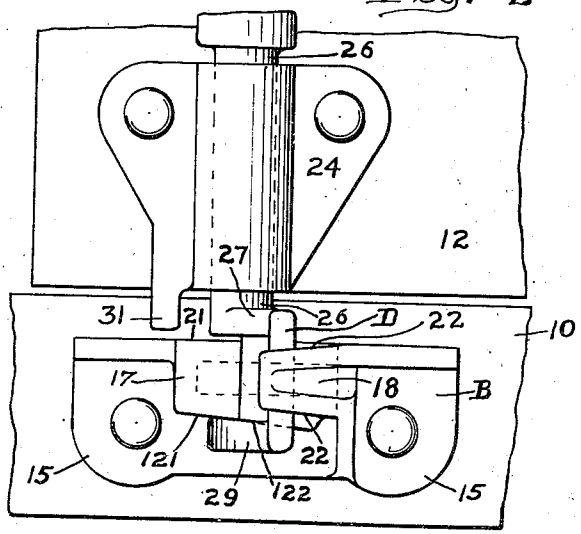


Fig. 2



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Fig. 3

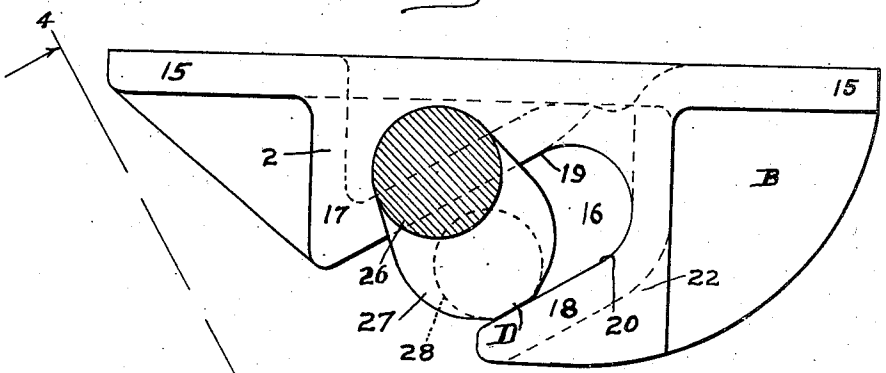


Fig. 4

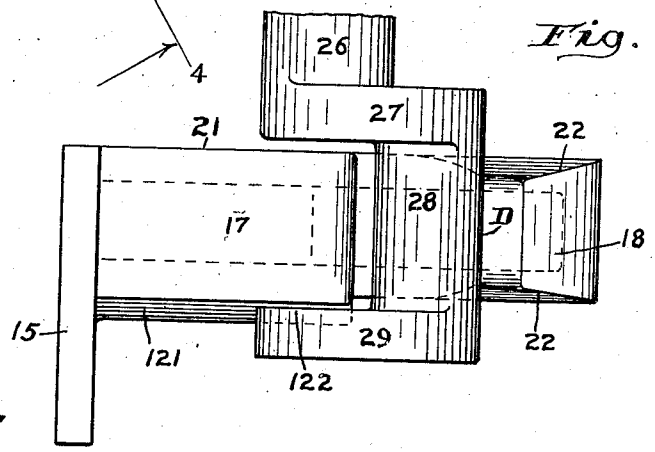
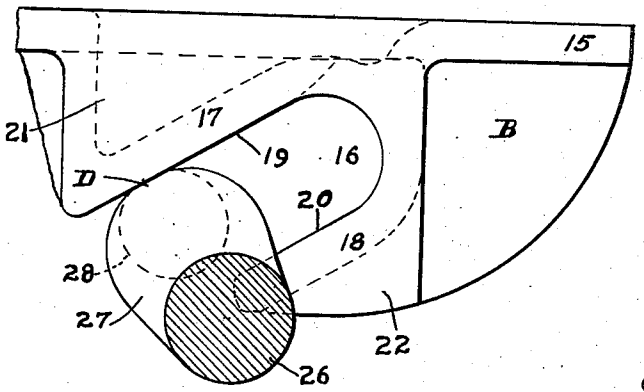


Fig. 5



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UNITED STATES PATENT OFFICE

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DOOR FASTENER

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3 Claims. (Cl. 292—218)

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This invention relates to improvements in door fasteners for hinged doors, and more particularly hinged doors of refrigerator automobile trucks.

One object of the invention is to provide a door fastener of the rotary bar type having keeper engaging crank members at opposite ends adapted to engage fixed keeper members, wherein the crank members and the keepers are provided with interengaging locking means to rigidify the door structure with respect to the body of the automobile truck when the door is fastened in closed position, thereby positively holding the door against weaving.

Another object of the invention is to provide a door fastener comprising a rotary bar having keeper engaging crank members at the top and bottom ends cooperating with top and bottom keepers, wherein the top and bottom keeper engaging crank members have arms respectively engageable above the top keeper and below the bottom keeper in embracing relation to hold the bar against vertical movement with respect to the keepers, thereby locking the door against weaving when it is fastened in closed position by the keepers.

A more specific object of the invention is to provide a door fastener as set forth in the preceding paragraph, wherein the arms which engage above and below the top and bottom keepers have wedging engagement therewith to assure tight locking of the bar to the keepers.

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

In the accompanying drawings forming a part of this specification, Figure 1 is an elevational view of the end wall of a refrigerator automobile truck provided with a pair of hinged doors, illustrating my improvements in connection therewith, said view being broken to accommodate the same to the sheet of the drawing. Figure 2 is an enlarged elevational view of the structure shown in Figure 1 at the lower ends of adjacent portions of the doors. Figure 3 is a horizontal sectional view through the lower end of the operating bar showing the lower keeper of the fastener in plan, said view being on an enlarged scale. Figure 4 is a side elevational view of Figure 3, looking in the direction of the arrows 4—4. Figure 5 is a

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view, similar to Figure 3, but showing the parts in a different position.

In said drawings, 10 indicates the rear wall member of a refrigerator automobile truck provided with a door opening 11 closed by the usual pair of hinged doors 12 and 13. The doors 12 and 13 are supported along their outer edges by hinges 14 of well-known design. As will be understood by those skilled in this art, the hinged doors 12 and 13 are provided with beveled meeting edges, the edge of the door 12, which is the door last closed, overlapping the adjacent door 13.

My improved door fastener comprises broadly top and bottom keepers A and B secured to the wall 10; a vertically disposed, rotary operating bar C mounted on one of the doors; top and bottom keeper engaging crank members D—D; and an operating handle lever E for the bar.

The keepers A and B are of similar design, except as hereinafter pointed out. Each keeper is in the form of a heavy block provided with securing ear portions 15—15 at opposite sides thereof for fastening the same to the wall 10. The keepers A and B are fixed to the wall 10 above and below the doors in vertical alignment. Each keeper has an inwardly directed cam slot 16 within which the corresponding keeper engaging crank member of the operating bar is engageable. The cam slot 16 is defined by inner and outer, armlike portions 17 and 18 having flat, vertical, inner walls 19 and 20 forming the side walls of the slot. Referring to the lower keeper B, the inner arm 17 presents a flat, horizontally extending, top face 21 and an inclined bottom face 121 for a purpose hereinafter described. The outer arm 18 is tapered outwardly towards its free end, presenting outwardly converging, flat, top and bottom faces 22—22.

The top and bottom keepers are correspondingly designed, but reversely arranged, that is, the top keeper A is inverted with respect to the bottom keeper B, having the inclined face 121 of the arm 17 at the top thereof and the slot 16 of the same extending in the same direction as the slot 16 of the keeper B.

The rotary operating bar C is preferably of rectangular, transverse cross section and has end members 23—23 secured to the top and bottom end portions thereof. Each end member has a

keeper engaging member D formed at the outer extremity thereof. The bar C is rotatably supported by bearing brackets 24—24 secured to the door 12 adjacent the top and bottom end portions of the latter, and an intermediate guide bracket 25 secured to the outer side of said door. The end members have cylindrical bearing portions in the form of short shafts 26—26 journaled in the brackets 24—24. The inner end portions of the end members 23, which inner end portions are secured to the bar C, are of well-known design, being forked to embrace the corresponding end portion of the bar C to which they are riveted.

Each crank member D comprises a horizontally disposed, radially extending arm 27 extending from the free end of the shaft portion 26 of the corresponding end member 23, a vertically disposed crank pin 28 at the outer end of the arm 27, and a second arm 29 on the pin 28 radially projecting from said pin, parallel to and in alignment with the arm 27. As shown in Figures 1, 2, and 4, the lower keeper engaging crank member D has the arm 27 extending from the lower end of the shaft 26 of the corresponding end member, the crank pin 28 depending from the outer end of the arm 27 and the arm 29 extending from the lower end of the crank pin. The arm 29 is adapted to engage beneath the arm 17 of the lower keeper and has its upper side inclined, as indicated at 122, to provide wedging engagement with the same on the underneath face 121 of the keeper B, when the fastener is locked in closed position. The upper keeper engaging crank member has the parts thereof reversed, the crank pin 28 upstanding from the arm 27 and the arm 29 extending from the upper end of the crank pin. The upper keeper engaging crank member D interlocks with the upper keeper in the same manner as the lower keeper engaging crank member when the fastener is locked in closed position, the arm 29 of the upper crank member engaging over the keeper A and having wedging engagement with the top face 121 of the arm 17 thereof. When the top and bottom keeper engaging crank members are interlocked in wedging engagement with the top and bottom keepers, respectively, the operating bar is effectively held against vertical displacement, thus holding the door against weaving. As will be understood, the bar is held against vertical movement with respect to the door by the usual flanges 30—30 provided on the end members 23—23, which flanges respectively engage the lower and upper ends of the top and bottom bearing brackets 24—24. It should also be noted that the tapered arrangement of the outer arms 18—18 of the keepers provides ample clearance for the top and bottom arms of the crank members in their rotary movement.

As shown in Figures 1 and 2, the lower bearing bracket 24 is preferably provided with a depending lug 31 which is in the path of movement of the arm 27 of the lower crank member and engageable thereby to limit rotation of the operating bar when the door is opened, thereby preventing the operating lever from striking the outer side of the door.

The bar C is operated by the usual handle lever E which may be locked against displacement by a latch 32 ordinarily employed for this purpose to maintain the door in fastened and closed position.

As is well known by those skilled in this art, to open and close the doors, the bar C is rotated by the handle lever E to cam the door 12 outwardly or inwardly through the action of the crank pins 28—28 of the crank members D—D within the slots 16—16 of the keepers. As the bar is rotated to open the door, the arms 29—29 of the top and bottom crank members are disengaged from the cooperating arms 17—17 of the keepers as the crank pins are leaving the keeper slots, thereby freeing the door 12 to be swung open. This freed position of the crank member is illustrated in Figure 5, wherein the inner ends of the crank arms 27 and 29 are shown as swung to a position slightly overlapping the arm 18 of the keeper, but in freely embracing relation with respect to the same. The tapered condition of the arm 18 assures ample clearance so that the arms 27 and 29 of the crank member will not drag over the arm 18 as the crank member is rotated, and also when the door is swung outwardly. In rotating the bar C to fasten the door by engagement of the crank pins 28—28 of the crank members D—D within the slots of the top and bottom keepers, the arms 29—29 of the top and bottom crank members are swung into overlapping wedging engagement with the top side of the arm 17 of the upper keeper and the underneath side of the arm 17 of the bottom keeper to lock the bar against vertical displacement.

I claim:

1. In a fastener for a hinged door of a container, the combination with fixed top and bottom keepers on said container above and below the door; of a vertically disposed, rotary operating bar on said door; top and bottom keeper engaging members on said bar having camming engagement with the keepers; and top and bottom, radially extending arms on said keeper engaging members respectively engageable over the top keeper and beneath the bottom keeper to lock said bar against vertical displacement when the fastener is in door locking position, said top arm having wedging engagement with the upper side of the top keeper, and said bottom arm having wedging engagement with the underneath side of the bottom keeper.

2. In a fastener for a hinged door of a container, the combination with fixed top and bottom keepers on said container, each of said keepers having a cam slot having vertical side walls; of a vertically disposed, rotary operating bar on said door; top and bottom crank members on said bar, each of said crank members including a crank pin engageable in the slot of the corresponding keeper to force the door closed and fasten the same in closed position; and an arm connected to the outer end portion of each of said crank pins, said arm of said top crank member being engageable over said top keeper, and said arm of the bottom crank member being engageable with the underneath side of the bottom keeper when the door is fastened in closed position to lock the bar against vertical displacement with respect to said keepers.

3. In a fastener for a hinged door of a container, the combination with fixed top and bottom keepers on said container above and below the door, each of said keepers having a cam slot defined by spaced arms; of a vertically disposed operating bar rotatably mounted on said door; and keeper engaging means fixed to the top and bottom ends of said bar, each keeper engaging means comprising a radial crank arm on said bar, a crank pin having one end connected to the outer end of said crank arm, and a second arm

radially extending from the other end of said crank pin parallel to and in alignment with said crank arm, said crank pins of said top and bottom keeper engaging means being engageable within the slots of the corresponding keepers to force the door closed and fasten the same in closed position, said second named arms of the top and bottom keeper engaging means having wedging engagement with the upper side of the top keeper and the lower side of the bottom keeper, respectively, to lock said bar against vertical displacement.

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The following references are of record in the file of this patent:

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