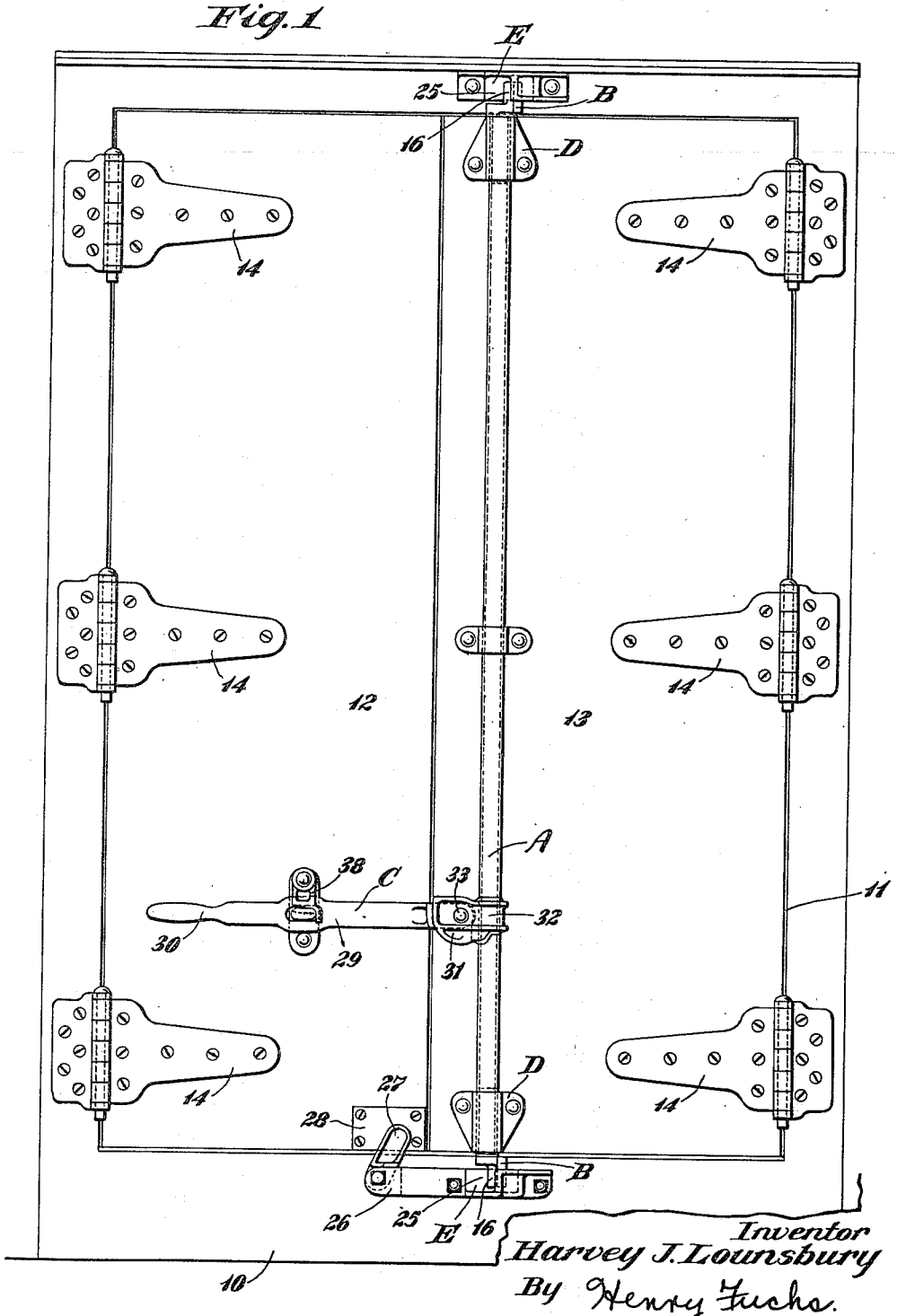
Sept. 29, 1942. H. J. LOUNSBURY 2,297,007

DOOR FASTENER

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Fig. 1



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DOOR FASTENER

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Fig. 2

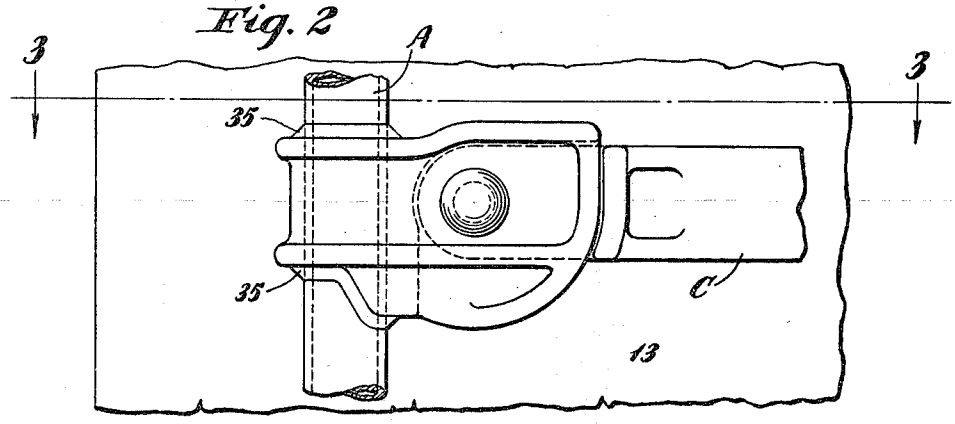


Fig. 3

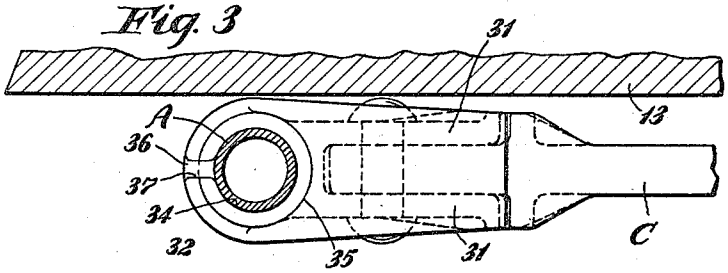


Fig. 4

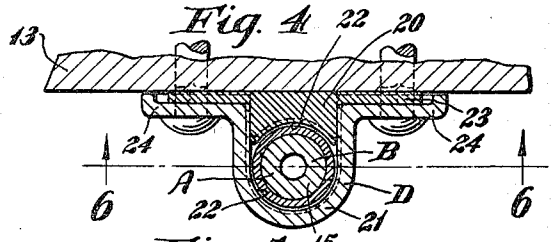


Fig. 5

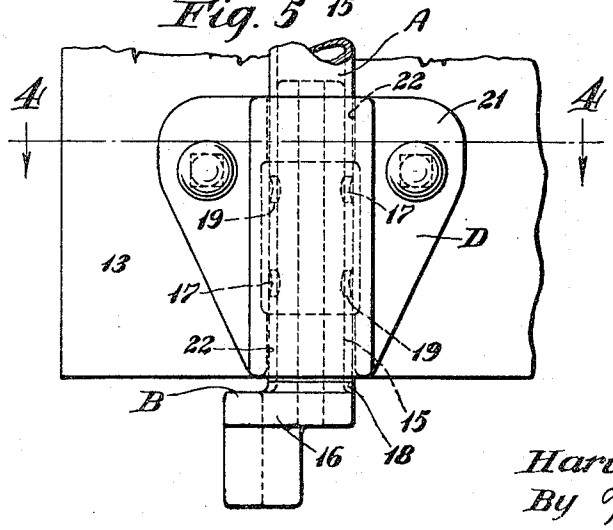
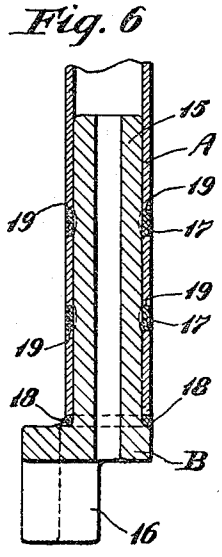


Fig. 6



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UNITED STATES PATENT OFFICE

2,297,007

DOOR FASTENER

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Application August 10, 1940, Serial No. 352,073

2 Claims. (Cl. 292—241)

This invention relates to improvements in door fasteners, especially adapted for double hinged doors of refrigerator cars.

One object of the invention is to provide a door fastener comprising a rotary operating bar mounted on a swinging door and having keeper engaging crank ends cooperating with keepers mounted on the car wall adjacent the door opening, wherein the parts are so designed that they may be cheaply and economically manufactured and may be readily combined in the complete device to provide a strong and rugged construction having bearing portions properly and truly aligned to efficiently cooperate with the bearing brackets by which the mechanism is supported on the door and assure free rotation without any possibility of binding in said bearing brackets.

A further object of the invention is to provide a door fastener of the character set forth in the preceding paragraph wherein the operating bar is in the form of a truly cylindrical tube providing truly cylindrical bearing means at opposite ends to properly cooperate with the supporting brackets on the door, and wherein the keeper engaging crank members are securely joined to the operating bar by providing shank portions thereon which are telescoped within the ends of the tube and welded thereto.

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 front elevational view of a pair of vertically disposed hinged doors of a refrigerator car, illustrating my improvements in connection therewith. Figure 2 is an enlarged elevational view of a portion of the operating bar of the door fastener illustrated in Figure 1, the view being taken at the operating handle lever of the device, and the bar being shown rotated to a position through 180° from the position shown in Figure 1. Figure 3 is a horizontal sectional view, corresponding substantially to the line 3—3 of Figure 2. Figure 4 is a horizontal sectional view, on an enlarged scale, through the lower bearing bracket for the operating bar shown in Figure 1 and corresponding substantially to the line 4—4 of Figure 5. Figure 5 is a front elevational view of the structure shown in Figure 4. Figure 6 is a vertical sectional view, corresponding substantially to the line 6—6 of Figure 4.

In the drawings, 10 designates the side wall member of a refrigerator car having a door opening 11 therein, which is closed by a pair of hinged door members 12 and 13. Each door member is provided with the usual hinges 14—14—14 along the vertical outer edges thereof by which the doors are swingingly supported. The door 12, which is that first closed, and the door 13 have meeting edges which are beveled, as is well-known in this art, the inclination of the bevel being such that the door 13 will maintain the door 12 in closed position and wedge the same shut when the fastener mechanism is actuated. As usual, the edges of the two doors and the cooperating edges of the door frame are provided with insulating packing material, not shown.

My improved door fastener mechanism proper comprises broadly: a tubular operating or locking bar A; a pair of end members B—B; an operating handle lever C; bearing brackets D—D; and a pair of keepers E—E.

The bar A is in the form of an elongated tube or pipe which is of truly cylindrical exterior contour.

Each of the end members B—B comprises a cylindrical shank or shaft portion 15 and a crank portion 16 at the outer end of the shaft portion. The shank portion 15 is telescoped within the corresponding end of the tube A and welded thereto, as indicated at 17—17 and 18. The tube A is preferably provided with a plurality of openings 19—19 therethrough to receive the welding fillet which is fused into said opening and to the shank 15. Lugs are in effect thus provided which are integral with the shank 15 and extend into the openings of the tube A and are welded to said tube. The welded joint 18 is in the form of a ring or collar of metal surrounding the shank 15 of the end member B and filling the space between the outer end of the tube A and the crank arm of the keeper engaging end member, the metal of the welded joint being fused with the end of the tube and the shank 15. As will be understood, my invention is not limited to the precise welded joints illustrated in the drawings, it being within the scope of the invention to spot weld the shank 15 of the keeper engaging member to the tube A.

The end members B—B, which are welded to the top and bottom ends of the tube A, project beyond the top and bottom edges of the door and cooperate with the keepers E—E in the usual manner to force the door open or closed.

The bearing brackets D—D are mounted on the door 13 adjacent the top and bottom edges of the same and support the tubular bar A for rotary movement. Each bracket D is of two part construction, comprising a block 20 and a strap 21 overlying the block. The block 20 and the

strap 21 have opposed interior cylindrical bearing faces 22—22 which together form a complete bearing member to accommodate the corresponding end section of the cylindrical tubular member A. As shown in Figure 5 the bearing faces 22—22 of each bracket D are spaced apart vertically, the opening between said vertically spaced faces being of greater internal diameter than the bearing openings formed by the faces 22—22. The block 20 has laterally extending securing lugs 23—23 over which engage laterally projecting lugs 24—24 of the strap 21. The parts of the bearing bracket are held assembled and secured to the door by bolts or similar securing elements extending through the lugs 23 and 24 of said block and strap.

As will be evident upon reference to Figures 4 and 5, the tubular bar A has direct bearing engagement with the interior bearing surfaces of both the upper and lower bearing brackets D—D substantially throughout the vertical heights of said bearing surfaces. The welded portions 17—17 of the bar A are disposed in the opening between the top and bottom bearing faces 22—22 of the bracket D. The portions of the tubular member A which contact these bearing faces 22—22 are thus left smooth and true. In this connection it is pointed out that inasmuch as the bar A is in the form of a tube or pipe of true cylindrical exterior contour a perfect bearing is provided between each end section of the tube and the corresponding bearing bracket. Further, the bar A being in the form of a fabricated pipe or tube, straightness of the bar with consequent true axial alinement of the bearing portions at the top and bottom ends thereof is assured.

The keepers E—E are of similar design except as hereinafter pointed out. Each keeper is in the form of a casting secured to the door frame. The castings E—E are provided with guide or cam slots 25—25 with which the crank members 16 of the operating bar engage in a well-known manner. These keepers are substantially the same as the keepers disclosed in Patent No. 1,925,234, granted to C. E. Dath, September 5, 1933.

The keeper E at the bottom of the door opening has an extended portion, indicated by 26, on which a pivoted latch finger 27 is supported, which engages the lower right hand corner of the door 12, as viewed in Figure 1, to hold the door in position when closed, a wear plate 28 preferably being employed at the lower corner end of the door with which the latch finger 27 cooperates.

The operating handle lever C, which is employed to effect rotation of the bar A comprises an arm 29 having a hand grip portion 30 at the outer end thereof. At the inner end, the arm 29 is pivotally supported for swinging movement in a vertical plane between the arms 31—31 of the forked bracket 32, a rivet 33 extending through the arms 31—31 of the bracket and the inner end of the arm 29 serving to swingingly mount the latter. The bracket 32 has a vertical opening 34 therethrough which accommodates the tube A. The bracket 32 is fixed to the tube A in any suitable manner, being preferably welded thereto. To provide a rugged welded connection the bracket is welded to the outer side of the tube by collars of metal 35—35 at the top and bottom of said bracket, the collars of welding metal forming fillets which are fused to the tube or pipe and the upper and lower edges of the bracket where the latter surrounds the tube.

To provide additional rigidity the bracket is also welded to the tube by a fillet of metal 36 accommodated in a slot 37 provided in the side of the bracket and extending entirely through the wall thereof, this fillet of metal being fused to the bracket and tube.

The operating handle lever C is adapted to be locked as shown in Figure 1 by any suitable locking device, as indicated at 38, and sealed in any suitable manner customary in connection with railway cars.

In closing or opening the door 13 the bar is rotated in the usual manner, thereby operating the keeper engaging crank members to cam the door either inwardly or outwardly as is well known. The pivotal connection of the handle lever 29 with the bracket 32 permits the lever to be dropped to pendant out of the way position when desired.

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 fastener for hinged doors, the combination with a tubular cylindrical operating bar; of elongated bearing brackets on the door at the top and bottom ends thereof for rotatably mounting the bar, each bracket having its bearing portions spaced vertically one above the other; and keeper engaging crank members at opposite ends of the bar, each crank member having a shank telescoped within the corresponding end of the bar and welded thereto at a point between and removed from the upper and lower bearing portions of each bracket.

2. In a fastener for hinged doors, the combination with top and bottom bearing brackets mounted on the door, each of said brackets having vertically disposed cylindrical bearings at the top and bottom ends thereof providing bearing openings, said openings being vertically aligned and concentric, each of said brackets being of an internal diameter between the bearings thereof greater than the diameters of the openings provided by said bearings; of a cylindrical tubular bar extending through said brackets and journaled in the bearings of the latter, said bar being or uniform diameter throughout its length; and keeper engaging crank members at opposite ends of said bar having cylindrical shank portions telescoped within the ends of said bar, said shank portions being secured to said bar at zones embraced within the portions of said brackets which are of said greater internal diameter.

HARVEY J. LOUNSBURY.