

Feb. 2, 1954

H. J. TROCHE ET AL

2,668,076

LOCKING-BOLT OPERATING STRUCTURE

Filed Oct. 17, 1951

2 Sheets-Sheet 1

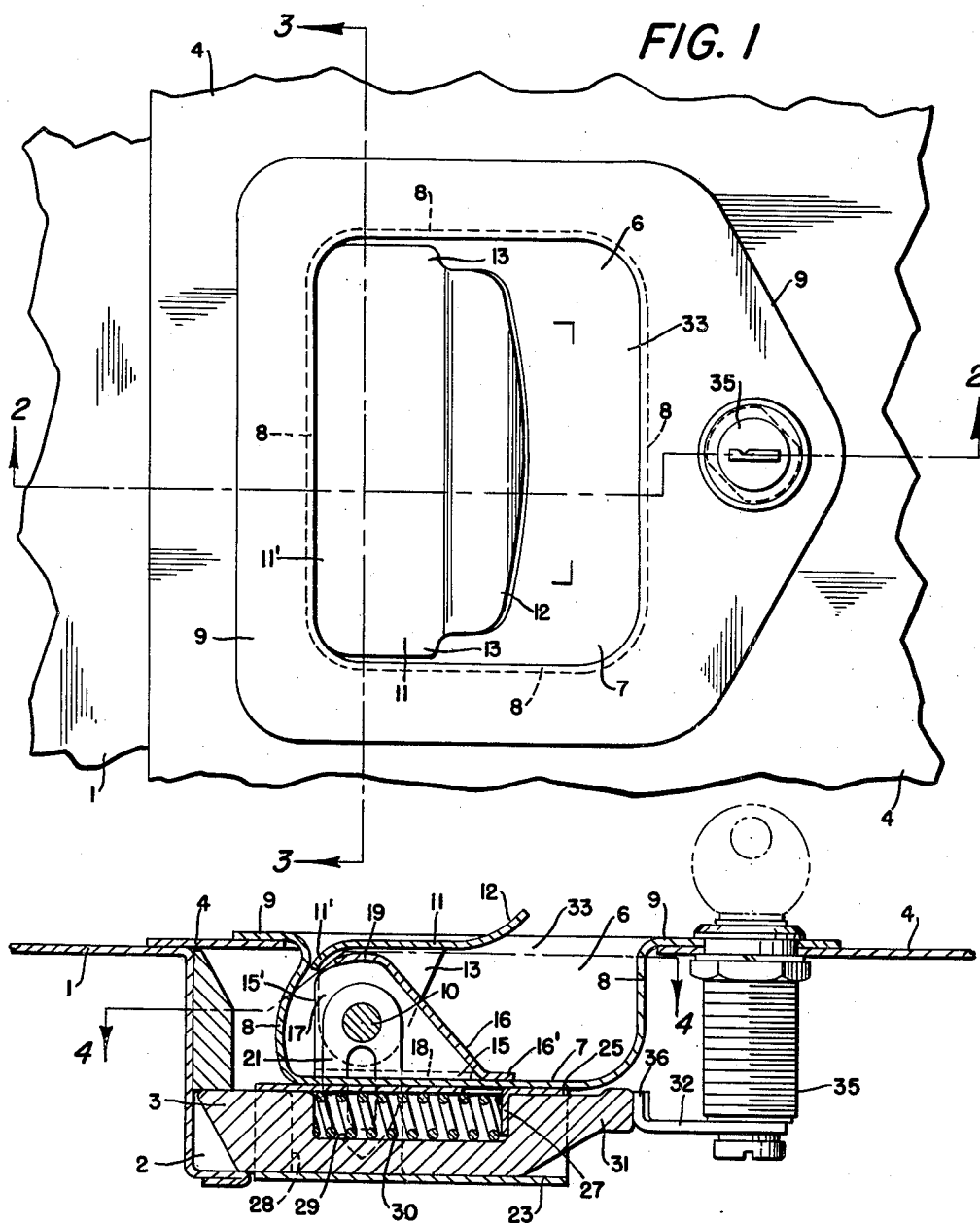


FIG. 2

INVENTORS

HERMAN J. TROCHE &

BY J. HOWARD HOLAN

George W. Saywell
ATTORNEY

Feb. 2, 1954

H. J. TROCHE ET AL

2,668,076

LOCKING-BOLT OPERATING STRUCTURE

Filed Oct. 17, 1951

2 Sheets-Sheet 2

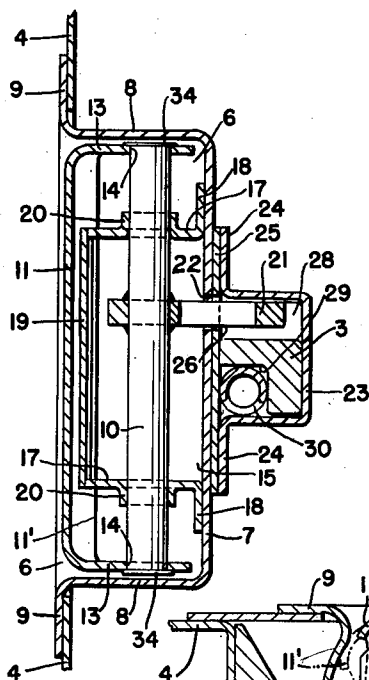


FIG. 3

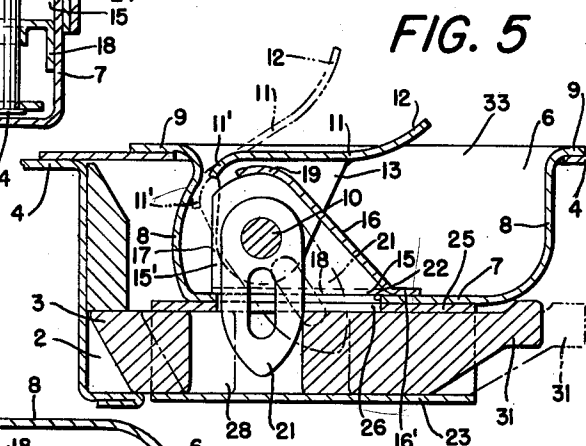


FIG. 5

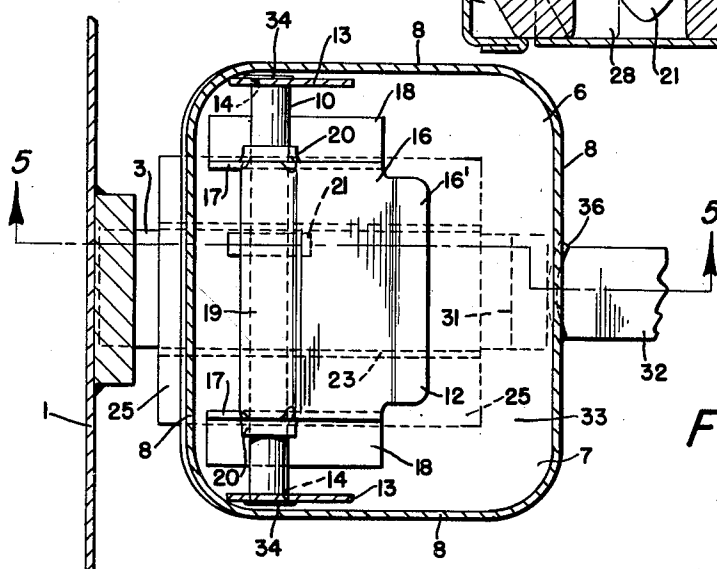


FIG. 4

INVENTORS
HERMAN J. TROCHE &
BY J. HOWARD HOLAN
George W. Saywell
ATTORNEY

UNITED STATES PATENT OFFICE

2,668,076

LOCKING-BOLT OPERATING STRUCTURE

Herman J. Troche, Fairview Park, and James Howard Holan, Rocky River, Ohio, assignors to J. H. Holan Corporation, Cleveland, Ohio, a corporation of Ohio

Application October 17, 1951, Serial No. 251,758

3 Claims. (Cl. 292—336.3)

1

The invention relates to improvements in locking-bolt operating structures and particularly to an assembly of this character of flush panel construction, for use with a closure having a recess breaking its surface. By "flush panel construction" is meant an assembly in which the entire means for actuating a locking bolt lie substantially between the planes defining the outer and inner faces of the closure. Preferably, the means serving as the actuating handle or finger pull-piece are disposed substantially flush with the adjacent outer face of the closure. Such type of locking-bolt operating structure is of highly important advantage when used on utility installation and maintenance vehicles which are subject to use on rough terrain where closure handles outwardly laterally-extended from the vehicle are liable to be severely damaged or torn off. The invention herein is illustrated by a showing thereof in the accompanying drawings and description applied to a utility vehicle door.

The instant improvement in flush panel construction locking-bolt operating structures can be utilized on both horizontal and vertical doors, and also on double paneled or single paneled metal doors. The invention is illustrated in this specification as being applied to a vertical door positioned on the right-hand side of a public utility body.

The invention herewith presented relates to improvements in the invention presented in our application on Locking-Bolt Operating Structures, Serial No. 5,245, filed January 30, 1948 (U. S. Patent No. 2,637,585, issued May 5, 1953).

The annexed drawings and the following description present in detail certain means illustrating our improvements in locking-bolt operating structures, the same describing and showing, however, only one form of assembly in which the invention may be embodied.

In said annexed drawings:

Figure 1 is an outside elevation of a fragmentary part of a door or other closure for an opening into a compartment of a utility vehicle body, in which closure our improvements in locking-bolt operating structures are incorporated, a fragmentary portion of the adjacent vehicle body in which the closure is mounted being also shown;

Figure 2 is a longitudinal, horizontal section, taken in the planes indicated by the line 2—2, Figure 1;

Figure 3 is a transverse, vertical section, taken in the plane indicated by the line 3—3, Figure 1;

Figure 4 is a vertical, longitudinal section, taken in the planes indicated by the line 4—4, Figure 2; and

2

Figure 5 is a longitudinal, horizontal section, taken in the planes indicated by the line 5—5, Figure 4.

Referring to the annexed drawings in which the same parts are indicated by the same several numbers in the respective views, a fragmentary portion of a vehicle body is indicated by "1," the same having a socket 2 formed therein for the accommodation of the end of a slidable locking bolt 3. The body 1 has an opening or a wall compartment for which a closure such as a door is provided. The door, in the design thereof shown for purposes of illustration in the accompanying drawings, is a box-like element having an outer wall 4, and is formed with a recess breaking this outer wall 4, in which recess the instant improvements in locking bolt operating structures are mounted.

Fitting the recess in the door is a cup-like liner or dished plate structure, Figure 3, having an inner base 7, a side wall 8, and an outer peripheral flange 9, the latter abutting the outside face of the door wall 4. The improved locking-bolt operating structure is mounted in the chamber 6 formed by and within the cup-like liner, Figures 2 and 5, and comprises a vertical rotatable operating rod or pin 10 connected to the actuating means for the bolt 3, a mounting for this pin 10, and an outside manually-actuable flanged panel secured to the pin 10 and serving as a finger pull.

First describing the finger pull, it has a panel body 11 whose exterior face is substantially flush with the exterior face of the peripheral flange 9 of the liner, this panel body 11 being disposed adjacent the rear side of the chamber 6 and extending across about one half of the latter and being slightly bent outwardly at its front edge to form a curved finger grip 12, Figures 2 and 5. This structure provides a finger entrance 33 into the chamber 6 between the curved finger grip 12 and the front part of the liner wall 8. The finger pull is also formed with end flanges 13 having holes 14 intersected by the bottom and top ends of the pin 10 which pin ends are secured to the flanges 13 by welding them to the outside faces of the flanges 13, slightly spaced from the side wall 8 of the liner, see "34," Figures 3 and 4.

The mounting for the pin 10 is a housing-like member, open at its inner side, as indicated by "15," Figure 2, and at its rear side, as indicated by "15'" and having a forwardly sloping front side member 16 formed with a front end flange 16' welded to the base 7 of the liner. The housing member is also formed with upper and lower

wings 17 having flanges 18 also welded to the base 7 of the liner.

The sloping front member 16 of the housing, at its rear side 19, is curved in over the pin 10 and lies a slight distance inwardly of the body 11 of the finger pull, as shown in Figures 2, 3, and 5. The rear end 11¹ of the body 11 of the finger pull extends somewhat beyond the rear end 19 of the housing 16, i. e., substantially to the plane of the inner faces of the housing wings 17, which plane is somewhat spaced from the rear side wall 8 of the liner. When the finger pull is actuated the rear end 11¹ of the finger pull body 11 plays in the space between the plane of the rear edges of the wings 17 of the pin housing and the rear side wall 8 of the liner, as shown in Figure 5.

The wings 17 furnish material for bearings 20 within which the pin 10 is journaled adjacent its ends. Preferably, the bearings 20 are formed by extruding the material of the wings 17.

A lug 21 which has a cam-like action on the locking bolt 3, as hereinafter described, is secured adjacent one end to the pin 10 about midway the length of the latter, and within the housing member, Figures 2, 3, and 5. The lug 21 extends inwardly through an elongated slot 22 in the base 7 of the cup-like liner, Figure 5, and also through a corresponding slot 26 in an abutting wearing plate 25 forming a mounting for a three-sided open-ended locking bolt housing 23. The housing 23 is formed with side flanges 24 which with the plate 25 are welded to the inside face of the base 7 of the cup-like liner.

The locking bolt 3 slides on the wearing plate 25 in, and through the open ends of, the housing 23 for engagement in, and disengagement from, the socket 2 formed in the vehicle body 1. The locking bolt 3 is formed with a top recess 28 adjacent one side into which recess 28 the swinging end of the lug 21 extends in abutting position with an end wall of the recess 28. The opposite side of the bolt 3 is formed with a recess 29 between an end wall of which and an abutment 27 struck up from the wearing plate 25 and extending into the recess 29 adjacent its opposite end wall is a compression spring 30.

From the foregoing description it is evident that a pull outwardly upon the member 11 will cause the lug 21 to retract the bolt 3 from the socket 2 and that such action will compress the spring 30 which, upon release of the hand pull 11, will effect the return sliding movement of the bolt 3 to door-locking position, as clearly appears in Figures 2 and 5.

The housing structure providing a mounting for the pin 10 prevents entrance of moisture and dirt to the pin chamber and, hence, through the slots 22 and 26, Figure 5, to the utility body.

The housing structure also provides spaces for the movements of the rear end of the finger pull and for the operating movements of the cam 21. The sloping character of the front member 16 of the housing gives more room for finger entrance into the space 33.

A key-operated lock 35 of the barrel type to prevent the opening of the door by actuation of the hand pull 11 is shown in Figures 1 and 2. There is secured to the rotatable barrel of the lock 35 one end of an elongated plate 32 having an angular end portion 36 forming an abutment in the path of opening movement of the tail piece 31 of the bolt 3 if the barrel of the lock 35 is turned by the door key into locked position.

What we claim is:

1. A locking-bolt operating structure, for use with a closure having a recess breaking its surface, the combination therewith of a cup-like liner seated in the recess and having a base, a side wall, and a marginal portion abutting the outer face of the closure, a housing structure having a front wall mounted on and secured to the liner base, the housing structure also having opposed end walls, a pin rotatably mounted in the housing end walls, the housing having also an open inner side, bolt-actuating means connected to the pin and extended through the open side of the housing, and a finger pull having an exterior surface substantially flush with the marginal portion of the liner, the finger pull having flanges extended into the liner and secured to the pin adjacent the respective ends of the latter.

2. A locking-bolt operating structure, characterized as in claim 1, in which bearings for the rotatable mounting of the pin are formed from the opposed housing end walls, and in which the respective ends of the pin are welded to the outside faces of the respective finger pull flanges.

3. A locking-bolt operating structure, characterized as in claim 1, in which the housing structure is open at the rear and is spaced at the rear slightly forwardly of the rear of the side wall of the liner, and in which the rear end of the finger pull is curved inwardly in extended formation to play in the space during the opening and closing movements of the finger pull.

HERMAN J. TROCHE.

JAMES HOWARD HOLAN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,055,688	Halinka	Sept. 29, 1936
2,131,198	Tasman	Sept. 27, 1938
2,136,854	Knott	Nov. 15, 1938
2,317,700	Thompson	Apr. 27, 1943
2,534,693	Adams	Dec. 19, 1950