Jan. 22, 1957 H. W. YOUNG ET AL 2,778,665

PUSH-BUTTON ASSEMBLY

Filed May 6, 1954 2 Sheets-Sheet 1

Fig. 1

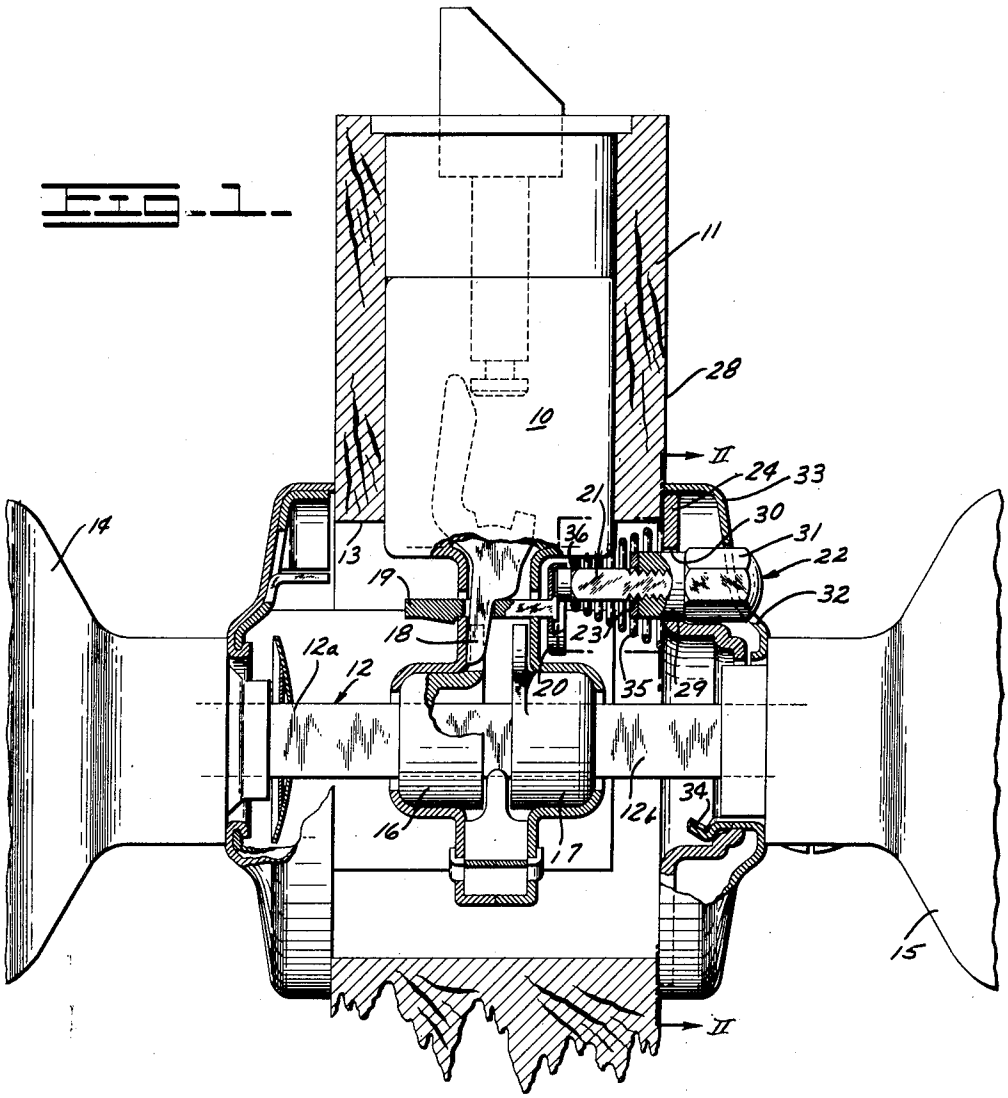
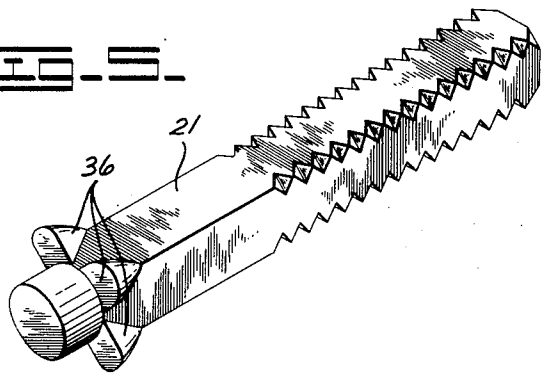


Fig. 5



HERBERT W. YOUNG

PAUL H. GREVENGOED

INVENTORS

BY Glenn B. Morse

ATTORNEY

Jan. 22, 1957 H. W. YOUNG ET AL 2,778,665

PUSH-BUTTON ASSEMBLY

Filed May 6, 1954 2 Sheets-Sheet 2

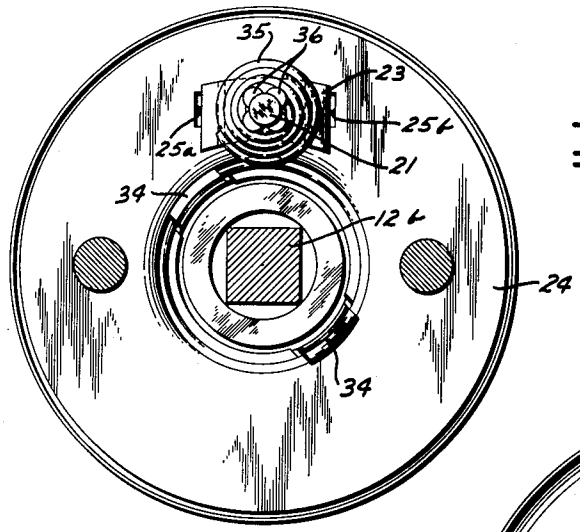


Fig. 2.

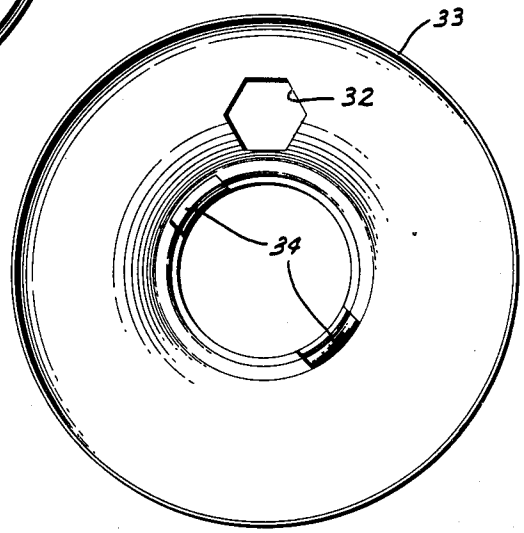


Fig. 3.

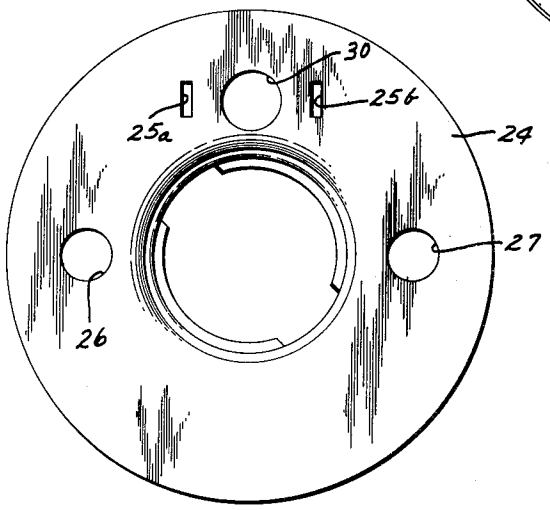


Fig. 4.

HERBERT W. YOUNG
PAUL H. GREVENGOED
INVENTORS

BY Glenn B. Ellong
ATTORNEY

United States Patent Office 2,778,665 Patented Jan. 22, 1957

2,778,665

PUSH-BUTTON ASSEMBLY

Herbert W. Young and Paul H. Grevengoed, Grand Rapids, Mich., assignors to National Brass Company, Grand Rapids, Michigan

Application May 6, 1954, Serial No. 428,057

4 Claims. (Cl. 292—1)

This invention relates to the construction of door locks of the type having a bolt-reciprocating rollback mechanism and also a locking system for blocking the movement of the rollback mechanism. It is conventional practice in mechanisms of this type to provide a laterally-movable actuating member for the locking system, with this member being controlled by a push-button extending through the rose plate adjacent the knob where it is readily accessible. This invention provides a construction in which a sub-assembly including the parts directly associated with this push-button may be mounted on a reinforcement plate underneath the rose as a complete sub-assembly. This feature makes it unnecessary to put together a number of small parts at the installation of the latch mechanism, and thereby reduces the installation time and eliminates the troublesome tendency for such small parts to become mislaid. Since the standard latch mechanism may be assembled in doors of widely-varying thicknesses, and since the push-button structure must operate in a certain desirable relationship to the outer surface of the door, an adjustment is necessary which will accommodate the push-button assembly to the varying distances between the latch mechanism and the door surface. The necessity of providing this adjustment has heretofore resulted in the marketing of latch mechanisms with the push-button components separated from the remainder of the structure for installation to suit the requirements of the particular door.

This invention provides a push-button sub-assembly which includes the rose reinforcement plate, the button member itself, and an extension shaft for the transfer of forces axially from the button member into the interior of the door for engagement with the locking actuator of the latch mechanism, and a suitable spring which preferably maintains the push-button in an inward position with light pressure against the locking actuator. The push-button member and the extension shaft have threaded engagement, and relative rotation of one with respect to the other has the effect of increasing the length of the unit to accommodate it to varying thicknesses of doors. The rotary adjustment of the push-button to the proper setting is made prior to the installation of the "rose plate" or exterior decorative escutcheon. The rose plate is provided with a hole which fits a non-circular cross-section of the push-button so that the button is received therein in slideable but non-rotative engagement. The installation of the rose plate thereby sets the adjustment of the push-button.

The several features of this invention will be analysed in detail through a discussion of the particular embodiments illustrated in the accompanying drawing. In the drawing,

Figure 1 presents a section taken on a horizontal plane through a door in which a mechanism embodying this invention is installed.

Figure 2 is a view of the sub-assembly including the rose plate and the components related to the push-button.

Figure 3 is a view of the rose plate shown in Figure 1.

Figure 4 is a view of the rose reinforcement plate shown in Figure 1.

Figure 5 is a view of the push-button extension shaft shown in Figure 1.

Referring to Figure 1, a latch mechanism **10** is shown installed in a horizontal bore in the door **11**. A bar **12** is positioned in the hole **13** machined in the door to intersect the bore in which the mechanism **10** is positioned. The handles **14** and **15** are in driving engagement with the bar sections **12***a* and **12***b*, respectively, these sections respectively controlling the rollback members **16** and **17**.

The mechanism shown in Figure 1 may be locked against opening from the left as viewed in Figure 1 through the action of a system which prevents the turning of the knob **14**. A locking lever **18** is positioned by the bar **19** which is slideably mounted for transverse movement with respect to the latch mechanism. This bar **19** may be regarded as an actuator for the lock, and is provided with a head **20** to create an enlarged surface against which the push-button system may operate. The actuator bar is positioned by the inner end of the extension shaft **21**, the shaft having threaded engagement with the push-button member **22**. The shaft **21** is of non-circular cross-section, and is slideably and non-rotatively mounted in the bracket **23** which is fixed with respect to the rose reinforcement plate **24**. The ends of the bracket **23** are formed to extend through the apertures **25***a* and **25***b* of the rose reinforcement plate and are crimped into firm engagement therewith on assembly. Suitable screws (not shown) pass through the holes **26** and **27** to secure the rose reinforcement plate against the outer surface **28** of the door. The bracket **23** may be regarded as an inward extension of the rose reinforcement plate **24** to utilize the space provided by the hole **13**. The push-button **22** has a portion of its length preferably formed with a circular cross-section **29** which is slideably and rotatively received within the hole **30** in the rose reinforcement plate. The outer extremity **31** of the push-button is non-circular in cross-section, and registers with a similarly formed opening **32** in the exterior rose plate **33**. The rose plate is snapped into fixed position with respect to the reinforcement plate on the installation of the latch mechanism, and is held in position preferably through integrally-formed leaf spring members as indicated at **34**, which are suitably disposed around the axis of rotation of the knobs. Installation of the rose plate **33** will set the angular adjustment of the push-button **22** with respect to the extension shaft **21**, since further rotation of the push-button is prevented by the engagement of the portion **31** of the push-button with the similarly formed aperture **32** in the rose plate. A suitable spring **35** acts between the inner surface of the reinforcement plate and a set of formed abutments **36** adjacent the inner end of the extension shaft to generate a light biasing action urging the button assembly inwardly. The magnitude of this biasing action is insufficient to actuate the bar **19** into locking position, and is merely for the purpose of removing lost motion between the head **20** and the end of the shaft **21**.

The particular embodiments of the present invention which have been illustrated and discussed herein are for illustrative purposes only, and are not to be considered as a limitation upon the scope of the appended claims. In these claims, it is our intent to claim the entire invention disclosed herein, except as we are limited by the prior art.

We claim:

1. A push-button assembly for a door lock, said lock including roll-back means, locking means adapted to block the movement of said roll-back means, an actuating member slideably mounted for movement along a path substantially parallel to the axis of said roll-back means for

positioning said locking means, a rose-reinforcement plate having an aperture therein disposed opposite said actuating member, and a rose plate superimposed over said rose-reinforcement plate and having an opening adjacent said rose-reinforcement plate aperture, said push-button assembly comprising: a button member having a portion thereof slideably and rotatably received in said aperture, and an exterior portion slideably and non-rotatably received in said opening, said button member being internally threaded on an axis parallel to the axes of said aperture and said opening; shaft means having a threaded portion adapted to cooperate with the threads of said button member, said shaft means having abutment means adjacent the inner end thereof; a bracket member fixed with respect to said rose-reinforcement plate and having an aperture slideably and non-rotatably receiving said shaft means; and spring means confined between said abutment means and a surface fixed with respect to said rose-reinforcement plate and thereby urging said shaft means and button member inwardly.

2. A push-button assembly for a door lock, said lock including roll-back means, locking means adapted to block the movement of said roll-back means, an actuating member slideably mounted for movement along a path substantially parallel to the axis of said roll-back means for positioning said locking means, a rose-reinforcement plate having an aperture therein disposed opposite said actuating member, and a rose plate superimposed over said rose-reinforcement plate and having an opening adjacent said rose-reinforcement plate aperture, said push-button assembly comprising: a button member having a portion thereof slideably and rotatably received in said aperture, and an exterior portion slideably and non-rotatably received in said opening, said button member being threaded on an axis parallel to the axes of said aperture and said opening; and shaft means having a threaded portion adapted to cooperate with the threads of said button member; and a bracket member fixed with respect to said rose-reinforcement plate and having an aperture slideably and non-rotatably receiving said shaft means.

3. A push-button assembly for a door lock, said lock including roll-back means, locking means adapted to block the movement of said roll-back means, an actuating member slideably mounted for movement along a path substantially parallel to the axis of said roll-back means for positioning said locking means, a rose-reinforcement plate having a non-circular aperture therein disposed opposite said actuating member, and a rose plate superimposed over said rose-reinforcement plate and having an opening adjacent said rose-reinforcement plate aperture, said push-button assembly comprising: a button member having an exterior portion slideably and non-rotatably received in said opening; said button member being threaded on an axis parallel to the axes of said aperture and said opening; shaft means slideably and non-rotatably mounted with respect to said rose-reinforcement plate and having a threaded portion adapted to cooperate with the threads of said button member, said shaft means having abutment means adjacent the inner end thereof; and spring means confined between said abutment means and a surface fixed with respect to said rose-reinforcement plate and thereby urging said shaft means and button member inwardly.

4. A push-button assembly for a door lock, said lock including roll-back means, locking means adapted to block the movement of said roll-back means, an actuating member slideably mounted for movement along a path substantially parallel to the axis of said roll-back means for positioning said locking means, a rose-reinforcement plate having a non-circular aperture therein disposed opposite said actuating member, and a rose plate superimposed over said rose-reinforcement plate and having an opening adjacent said rose-reinforcement plate aperture, said push-button assembly comprising: a button member having an exterior portion slideably and non-rotatably received in said opening; said button member being threaded on an axis parallel to the axes of said aperture and said opening; and shaft means slideably and non-rotatably mounted with respect to said rose-reinforcement plate and having a threaded portion adapted to cooperate with the threads of said button member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,295,435 Teich ---------- Sept. 8, 1942