

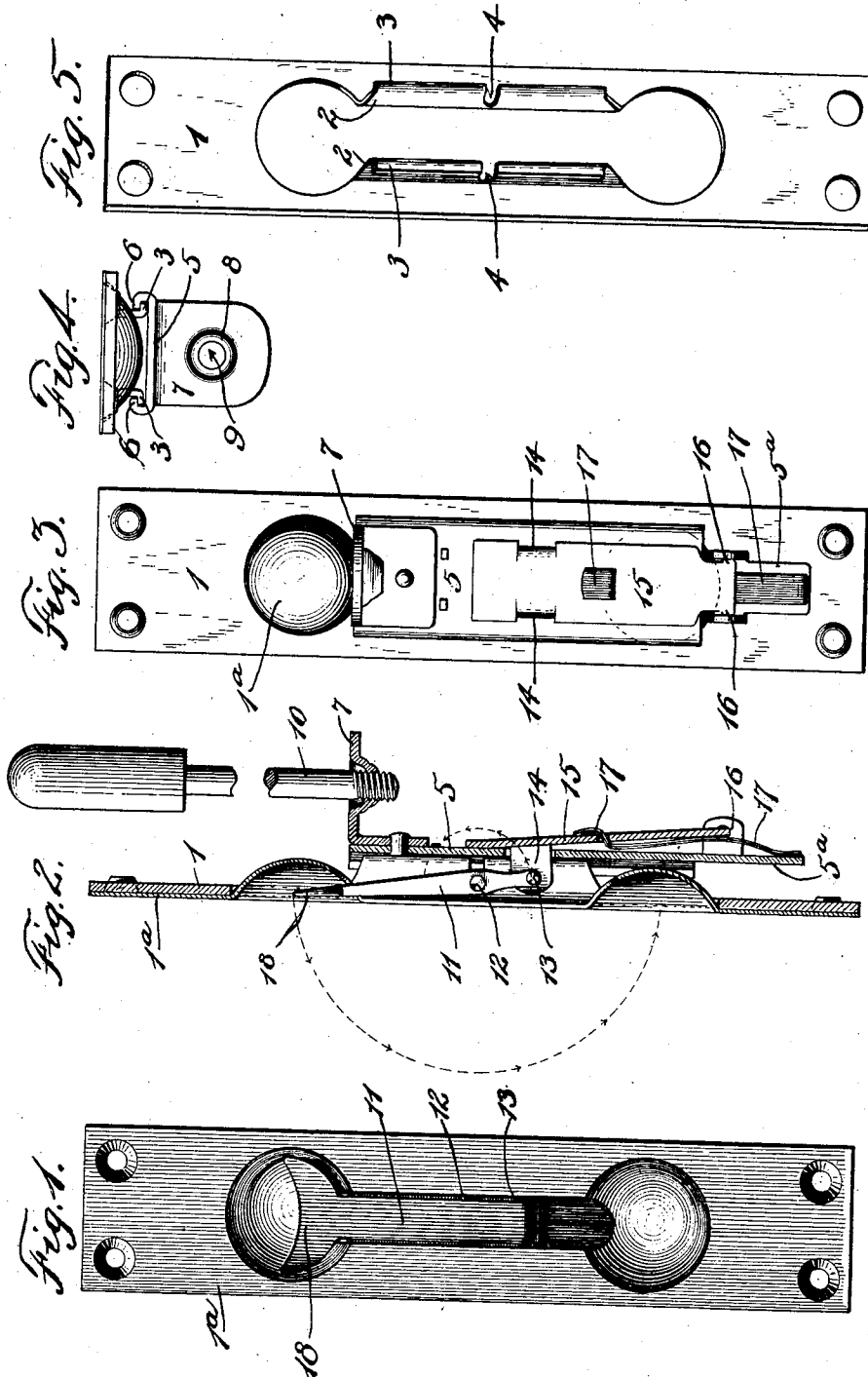
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C. J. CALEY & N. W. GRANDALL.
FLUSH BOLT.

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NO MODEL.



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UNITED STATES PATENT OFFICE.

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FLUSH BOLT.

SPECIFICATION forming part of Letters Patent No. 761,145, dated May 31, 1904.

Application filed January 28, 1904. Serial No. 190 995. (No model.)

To all whom it may concern:

Be it known that we, CHARLES J. CALEY, residing at New Britain, Hartford county, and NATHAN W. CRANDALL, residing at Meriden, New Haven county, Connecticut, citizens of the United States, have invented certain new and useful Improvements in Flush Bolts, of which the following is a full, clear, and exact description.

Our invention relates to improvements in flush bolts; and it consists in improving the structural details thereof hereinafter more fully described.

Our invention has for its object simplicity, economy, and durability of construction.

In the drawings, Figure 1 is a front elevation of the exposed part of a flush bolt embodying our invention. Fig. 2 is a vertical section. Fig. 3 is a rear elevation. Fig. 4 is a plan view. Fig. 5 is a perspective view of one of the details detached.

The construction is such that we are enabled to utilize wrought or sheet metal, which enables us to produce finished articles with great rapidity and at a very much less cost than if the parts were cast and necessarily subsequently machined. The main body of the frame comprises a plate 1. (Shown detached in the perspective view, Fig. 5.) This plate may be formed of sheet metal and has a central longitudinal opening therein, the metal displaced in forming said opening being retained and utilized as a guideway to support the sliding member of the bolt. This may comprise the side bars 2 2, having outwardly-flared edges or flanges 3 3. The metal at the upper and lower ends of the slot in the plate 1 is cut out to provide room for the finger-piece of the operating-lever and to give access thereto.

4 4 are slots formed in the side bars 2 2, in which the pivotal portion of the operating-lever is located.

5 is the slide, which is mounted on the side bars 2 2 of the guideway. The edges of said

slide are curled under the flanges 3 3, as shown at 6 6, Fig. 4, to hold said parts against displacement. The slide 5 is, however, free to reciprocate up and down for the purpose of shifting the bolt.

7 is a rearward extension on the slide 5, and this part may have a countersunk portion 8, in the center of which is a screw-threaded opening 9, arranged to receive the threaded end of the shank 10 of the bolt proper.

11 is the operating-lever.

12 12 are trunnions which rest in notches 4 4 in the side bars 2 2.

13 is a pivot-pin at the end of the lever 11, which makes engagement with ears 14 14 on the spring-controlled link 15. The link 15 is pivoted at one end to ears 16 on the slide 5.

17 is a spring the function of which is to cause the link 15 to normally assume the position indicated in Fig. 2, wherein its free end rests against the back of the slide 5. This link may be actuated in any desired way; but a simple arrangement is indicated in the drawings, in which one end of the spring 17 is slightly hooked and passed through an opening in the link 15, while the other end is bowed upwardly and extended back underneath the pivoted end 16 of the connection 15, the extreme end of the spring 17 resting on a rearward projection 5^a of the slide 5. By this means the tension of the spring is applied in a direction to cause the free end of the connection 15 to swing toward and bear against the slide 5. When the link 15 is in this position, the normal position of the lever 11 will be as shown in Fig. 2, or exactly reversed. The lever 11 may be provided with a suitable finger-piece 18 and to facilitate operation. The plate 1, slide 5, guideways, link 15, spring 17, and the various connecting-ears may be readily shaped up from sheet metal, and hence may be rapidly and economically produced. The lever 18 may also be made of wrought metal. As a finishing-piece, we may provide a veneer-plate 1^a, save that instead of cutting out the rounded

opening adjacent to either position of the finger-piece 18 the metal of the veneer-plate may merely be struck down to form a bowl-like recess. The intermediate part of the veneer-plate 1^a is of course provided with a longitudinal slot registering with the longitudinal slot in the plate 1 between the side bars 2 2. This gives a space for the free operation of the controlling-lever 11.

From the foregoing description it will be understood that the mechanism operates as follows.

The swinging down of the lever from the position indicated in Fig. 1 and in the direction of the arrows indicated thereon will cause the free end of the link 15 to swing back and up, so that as the inner end of the lever 11 moves up it will impart to the slide 5 and the bolt proper a corresponding movement. When the lever has reached the position opposite to that indicated in Fig. 2, the link 15 will resume its normal position. It should be noted that the bolt proper cannot be pushed up or down when the lever 11 is in either of its normal positions, because the centers 12 13 are substantially in the line of movement or on a "dead-center." In this way the mechanism is substantially self-locking. These bolts are applied ordinarily to doors, and the slide portion is located at a convenient height to enable the operator to easily grasp the finger-piece 18 of the operating-lever. The bolt, however, projects from either the upper or lower edge of the door, a longitudinal passage being bored in the door to permit the passage of the shank 10 therethrough and into engagement with the set-back extension 7 of the slide 5. Since it is necessary to insert the operating mechanism first and the bolt subsequently, and because the operator is necessarily working in the dark when he seeks to enter the end of the shank 10 into the screw-threaded opening in the extension 7, we have found it most desirable to countersink said rearward extension 7 adjacent to said opening, whereby the end of the shank 10 will be guided directly to the screw-threaded passage therein.

One of the advantages of the foregoing construction resides in the fact that the frame-plate 1 may be made of steel or iron, while the veneer-plate, which gives the finished appearance to the exposed part of the mechanism, may be formed of more costly metal. Obviously this veneer-plate may be made of very light stock and fitted to the outline of the subframe-plate. The bowl-like depressions in the veneer-plate serve to keep said plates in alinement, while the lever in either of its operative positions holds said veneer-plate against accidental disengagement in handling or transportation.

While we have described the preferred form of our invention, it is obvious that modi-

fications may be made without departing from the spirit or scope thereof.

What we claim is—

1. In a device of the character described, a frame-plate, a slide supported thereby and having a longitudinal passage therethrough, a guideway formed integrally with said main plate, the slide being mounted on said guideway, a link hinged at the rear of the slide, means for pressing the free end of said link toward said slide, a swinging lever mounted on said frame-plate and making operative connection with said link through said longitudinal passage and a rearwardly-extending portion arranged to receive said bolt.

2. In a device of the character described, a frame-plate, a slide supported thereby and having a central passage, a guide on the rear of said frame supporting said slide, a link hinged at the rear of the slide, a spring cooperating with said link and pressing its free end toward said slide, a swinging lever mounted on said frame-plate and pivotally connected with said link through said central passage and a bolt operatively connected with said slide.

3. In a device of the character described, a sheet-metal frame-plate, a longitudinal slot therein, the metal displaced in forming said slot being extended rearwardly to form guideways, a slide mounted on said guideways, a pivoted operating-lever, a link connecting one end of said operating-lever with said slide and a bolt carried by the slide.

4. In a device of the character described, a sheet-metal frame-plate, a longitudinal slot therein the metal displaced in forming said slot being pressed rearwardly to form guideways, a slide mounted on said guideways, a bolt carried by the slide, a lever pivoted on said guideways and a link hinged at the rear of said slide, a perforation in the slide said link and lever being connected through said perforation.

5. In a device of the character described, a sheet-metal frame-plate, a slide supported thereby, a bolt carried by said slide, an operating-lever and means of connection between said operating-lever and said slide whereby by the swinging of said lever the slide may be moved up and down and a veneer-plate separate from but covering said frame-plate.

6. In a device of the character described, in combination, a frame, a slide carried thereby and movable thereon, means for manually operating said slide, a rearward extension carried by said slide, a screw-threaded passage therein to receive the screw-threaded stem of a bolt, the entrance to said screw-threaded passage being cup-shaped, substantially as and for the purpose specified.

7. In a device of the character described, a sheet-metal frame-plate, an integral guide-

way carried thereby, a sheet-metal slide having integral flanges engaging said guideway, a sheet-metal link pivotally connected with said slide and having integral lugs forming
5 ears or bearings for an operating-lever, a swinging operating-lever pivotally engaged by said ears on said link and a spring coact-

ing with said link to cause the same to press toward said slide.

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