Jan. 30, 1945. F. M. NEWELL 2,368,487

LATCH

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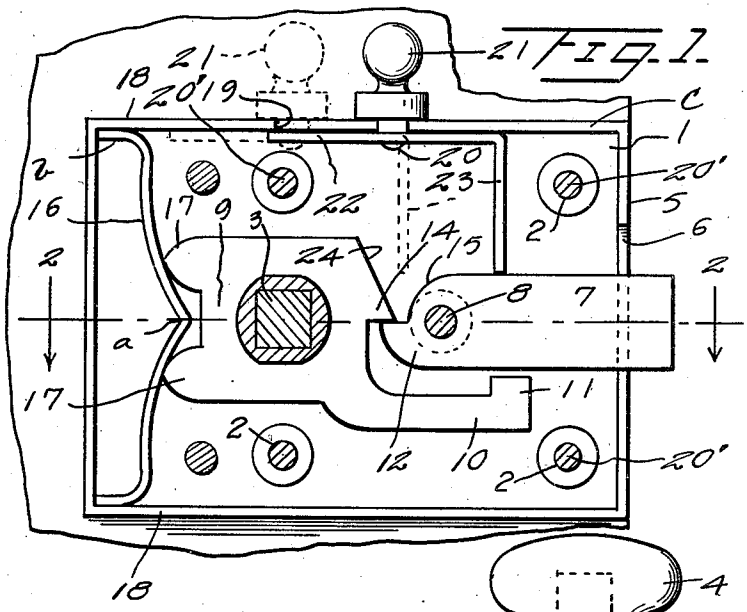


Fig. 1.

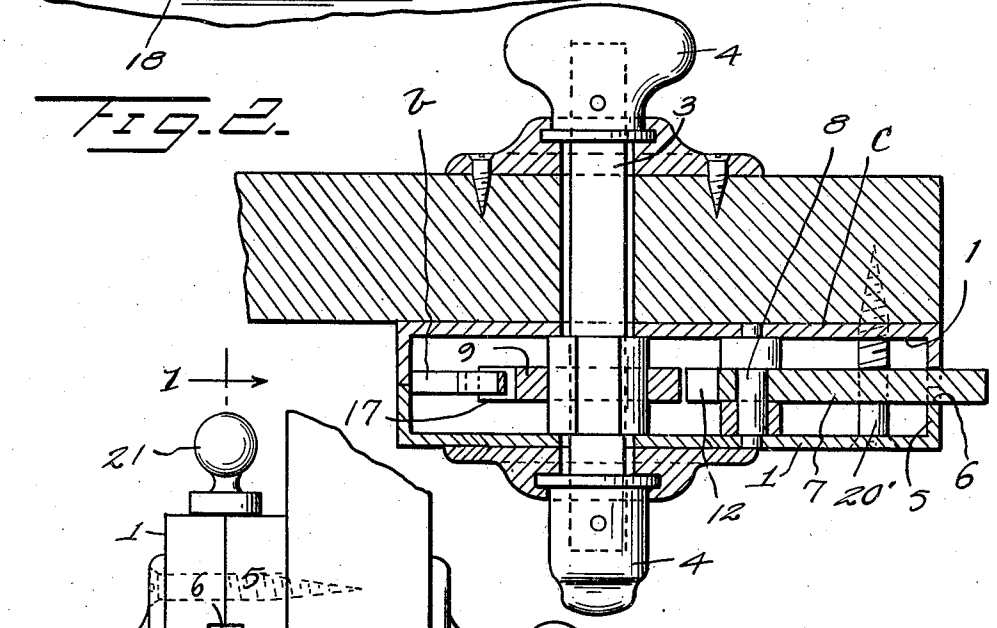


Fig. 2.

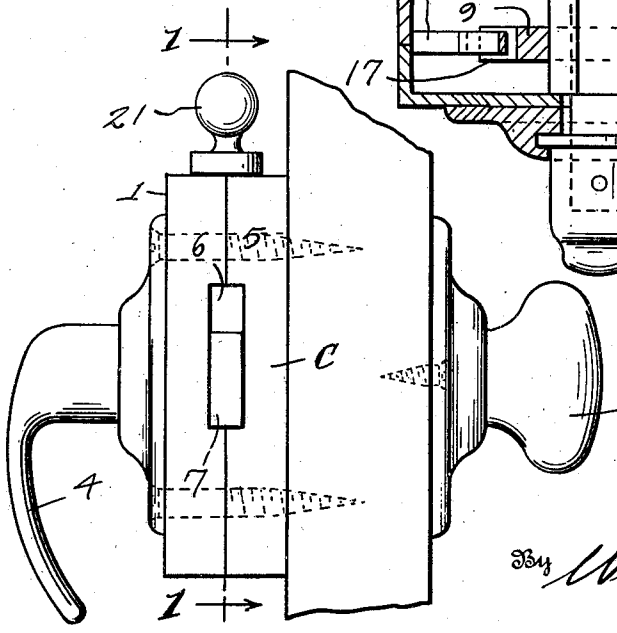


Fig. 3.

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LATCH

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2 Claims. (Cl. 292—236)

This invention relates to latches and has relation more particularly to a device of this kind especially designed and adapted for use in connection with a swinging closure such as a screen door or the like.

Primarily it is an object of the invention to provide a latch of this kind including a freely movable swinging bolt normally maintaining by gravity its effective position, together with means coacting with the bolt to move the same into released or ineffective position.

The invention also has for an object to provide a latch of this kind including a normally freely swinging bolt, together with spindle operating means effective upon turning of the spindle in either direction for moving the bolt into its released or ineffective position.

A still further object of the invention is to provide a latch of this kind including a freely swinging bolt, together with means operable at will to move the bolt into released or ineffective position and wherein further means are provided for holding the bolt against such movement.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved latch whereby certain important advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be better understood, I will now proceed to describe the same with reference to the accompanying drawing, wherein:

Figure 1 is a view partly in section and partly in elevation illustrating a latch structure embodying the invention, a second position of certain of the parts being indicated by broken lines;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1; and

Figure 3 is a view in front elevation.

In the embodiment of the invention as herein illustrated, C denotes a casing of desired dimensions and configuration and which has each of its side plates 1 provided with suitably positioned openings 2 whereby the casing may be effectively secured by screws 20' or otherwise as desired upon a swinging closure, such as a screen door. However, the manner of applying the structure in its detail forms no particular part of the invention.

Disposed transversely through the casing C is a spindle 3 adapted to be rotated in either direction through the medium of the conventional knobs 4 or otherwise as may be preferred.

The front wall 5 of the casing C is provided with the elongated and vertically disposed slot 6 through which projects the forward portion of the elongated flat bolt 7. The rear portion of this bolt 7, or the extremity thereof within the casing C, is pivotally mounted upon the pin 8 or the like carried by and bridging the space between the side plates 1. This mounting of the bolt 7 allows the same to have free swinging movement and the downward swinging movement of the bolt 7 is limited by contact of said bolt 7 with the lower margin of the slot 6 and the position of the slot 6 is such that when the bolt 7 is in its lowermost position, it is substantially horizontal.

Mounted on the spindle 3 for rotation therewith and immediately to the rear of the bolt 7 is a plate 9. The lower front portion of the plate 9 is provided with a forwardly directed elongated arm 10 of a length to extend below the bolt 7 and terminate in advance of the pivot pin 8. The outer extremity of this arm 10 is provided with an upstanding lug 11 for contact from below with the bolt 7 when the spindle 3 is rotated in a direction to upwardly rock the arm 10 and thereby move the bolt 7 into a released or ineffective position relative to the striker with which said bolt coacts. As the striker forms no part of the present invention and may be of any type preferred, a description and illustration thereof is believed unnecessary.

The bolt 7 at its inner end and at the lower portion thereof is provided with a rearwardly disposed tail-piece 12 which is entirely rearwardly of the pivotal mounting 8. This tail-piece 12 underlies a forwardly disposed lug 14 carried by the plate 9 so that when the spindle 3 is rocked forwardly and downwardly, contact of the lug 14 with the tail-piece 12 will also rock the bolt 7 into a released or ineffective position. The arm 10 and the lug 14 are spaced apart a distance sufficient to allow the desired upward swinging movement of the projected or working end portion of the bolt 7 and the rear edge 15 of the bolt 7 above the tail-piece 12 is disposed on an upward and forward curvature to allow unobstructed swinging movement of the bolt 7.

The bolt 7 maintains its lowered horizontal or effective or working position by gravity yet the mounting thereof is such as to readily allow the same to ride into the conventional striker as the door with which the latch structure is employed swings into closed position, thereby eliminating the objection often met with in latch structures now generally in use. To assure this normally free movement of the bolt 7, the arm 10 and the lug 14 must also be normally maintained in sub-

stantially a horizontal position. In the present embodiment of the invention, this maintenance of the arm 10 and the lug 14 is accomplished by a bow spring 16 having a central portion *a* extending inwardly between and contacting with the vertically spaced lug 17 extending rearwardly from the plate 9. The extremities of the bow spring 16 are flexed, as at *b*, to have direct contact with the inner faces of the top and bottom walls 18 of the casing C.

The top wall 18 of the casing C is provided with a suitably positioned slot 19 disposed lengthwise thereof and through which extends the shank 20 of an operating button 21 or the like. This shank 20 is anchored to a slide 22 underlying the top wall 18 of the casing C and in close contact therewith and the forward extremity of the slide 22 is provided with a depending arm 23. This arm 23, as herein disclosed, is straight and of a length to closely approach the upper edge of the bolt 7 when the slide 22 is in its forward position, whereby the bolt 7 is effectively held or locked against upward swinging movement into released or ineffective position.

The slot 19 is so located that when the shank 20 of the button 21 is at the limit of its movement rearwardly of the slot 19, the arm 23 will be rearwardly of the rear curved edge 15 of the bolt 7 and the lug 14, so that the arm 23 will offer no hindrance or obstruction to the upward swinging movement of the bolt 7, under the action of the arm 10. The forward edge 24 of the lug 14 is upwardly and rearwardly beveled, thus assuring sufficient clearance for the downward swinging movement of the lug 14 to also effect the desired raising or lifting movement of the bolt 7.

From the foregoing description it is thought to be obvious that a latch constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

What is claimed is:

1. A latch structure comprising a casing having a slot in a wall thereof, a bolt within the casing and extending out through said slot, means for mounting the extremity of the bolt within the casing to allow the bolt to have free swinging movement, a spindle carried by and extending through the casing, a plate within the casing and mounted on the spindle for turning movement therewith, a forwardly disposed arm carried by the plate for contact from below with the bolt at a point in advance of the mounting of the bolt, said bolt having a tail-piece extending rearwardly of its mounting, a forwardly disposed lug carried by the plate for contact from above with the tail-piece to provide further means for swinging the bolt, said arm and lug being spaced apart a distance to permit free swinging movement of the bolt when said arm and lug are in intermediate position, rearwardly disposed spaced lugs carried by the plate, and a bow spring within the casing and having an intermediate portion extending between said rearwardly disposed lugs of the plate and coacting therewith to normally maintain the forwardly directed arm and lug of the plate in said intermediate position.

2. A latch structure comprising a relatively flat casing having a slot in an edge wall thereof, a pivot pin extending transversely of the casing perpendicular to and spaced from said wall, a bolt member pivotally supported at one end upon said pin and having its other end extended through the slot, the said one end of the bolt member upon the side of the pin remote from said wall having a longitudinally extending tail-piece, the tail-piece having an upwardly directed flat surface lying in the plane of the longitudinal center of the bolt, a spindle carried by and extending transversely through the casing in said plane, a flat plate having said spindle extending therethrough and having a lug extending from an edge adjacent to said tail-piece and disposed over and normally contacting the said top surface of the tail-piece, a substantially straight arm secured at one end to said plate adjacent to said edge and extending in spaced parallel relation with the bolt and below the latter and terminating in an upwardly directed lug upon the side of the pivot pin remote from the first lug, the lower edge of the bolt tail-piece being spaced from said arm a distance sufficient to permit free oscillation of the tail-piece with the bolt, in one direction, independently of the plate, means for oscillating the plate, a pair of spaced lugs formed integral with a vertical edge of the plate opposite from the first mentioned lug, and a bow spring interposed between the pair of lugs and an adjacent wall of the casing and having a portion extended between the pair of lugs to normally maintain the plate in an inoperative position with respect to the bolt.

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