July 9, 1929. W. E. WREAD 1,720,638

BOLT OPERATING MECHANISM FOR LOCKS AND LATCHES

Filed Sept. 4, 1926

Fig. 1

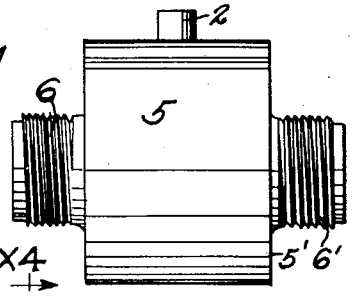


Fig. 2

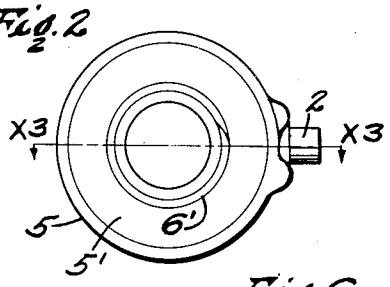


Fig. 3

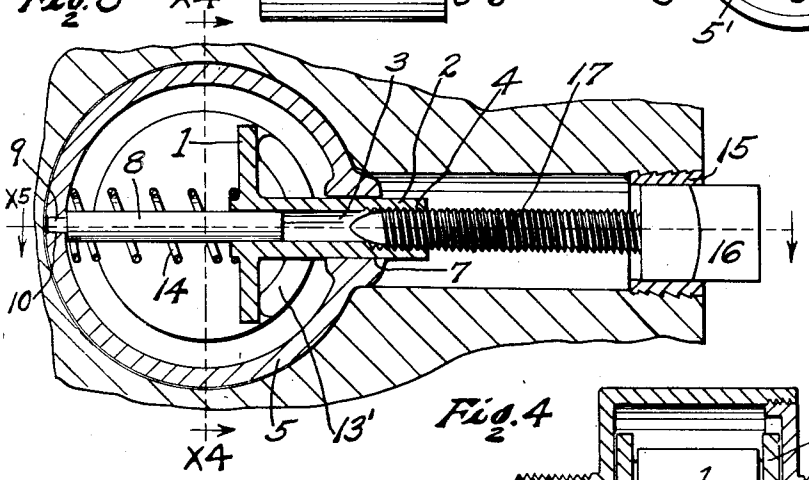


Fig. 6

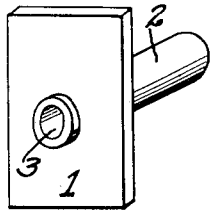


Fig. 4

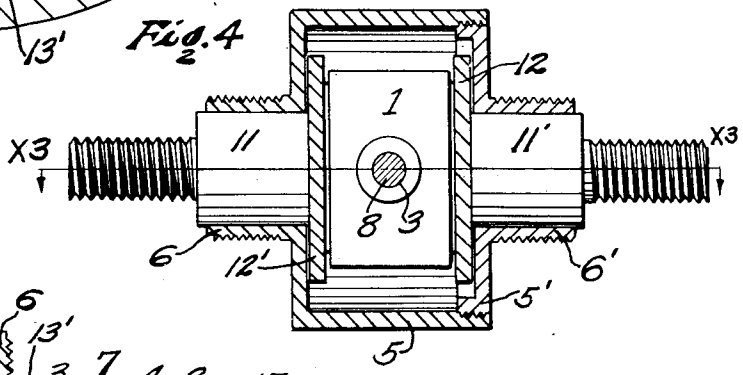
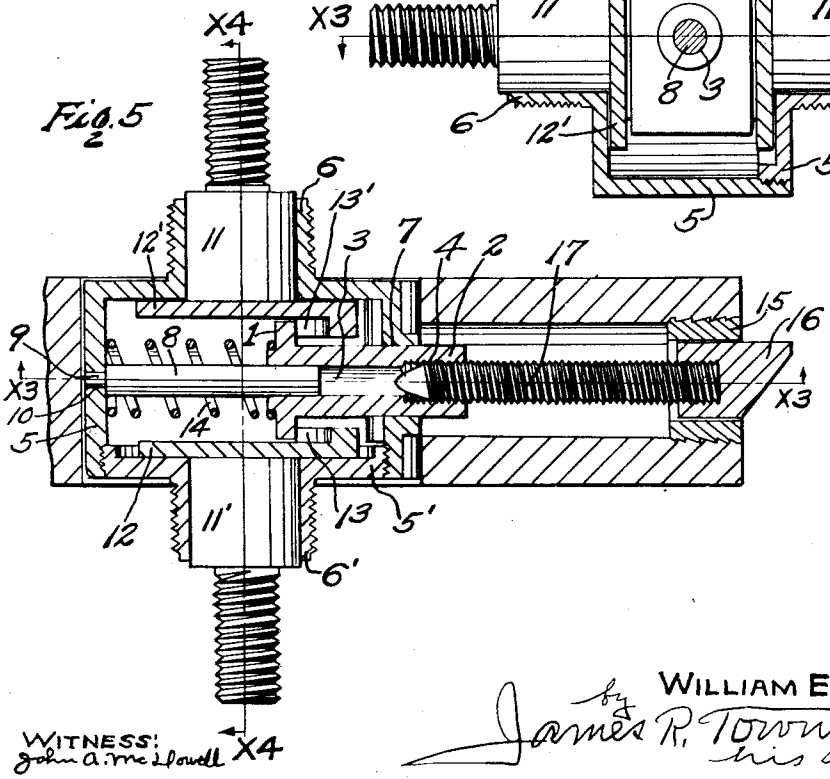


Fig. 5



INVENTOR
WILLIAM E. WREAD

by James R. Townsend
his atty

WITNESS:
John A. McDowell

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UNITED STATES PATENT OFFICE.

WILLIAM E. WREAD, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO McKINNEY MANUFACTURING COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BOLT-OPERATING MECHANISM FOR LOCKS AND LATCHES.

Application filed September 4, 1926. Serial No. 133,628.

This invention relates more particularly to an assembly for mounting and operating locks and latches in the door or other closure that is to be secured thereby.

An object of the invention is to provide a bolt operating mechanism which is easy to make and assemble, and which is smooth in operation, and cannot be caused to rattle when installed; which is free from any likelihood of getting out of order, and which is easily installed in its closure and is easily connected with the handles or knobs by which it may be turned.

Another object is to provide an assembly of this character which can be easily accommodated to the installation of various forms of latching and locking devices.

This invention comprises a housing, a bolt carrier slidably and non-rotatably mounted in said housing and provided with a bolt receiving extension reciprocating through the housing; and a spring to project said bolt receiving extension outwardly from the housing. And I provide the bolt carrier with a bore extending through the extension and threaded to receive a threaded stem on which the bolt is mounted, and I also provide a pin fixed to the housing and extending into the inner end of the bore so that the bolt carrier is guided by contact with the pin and also with the walls of the opening through which it extends from the chamber of the housing.

I also provide means for operating the bolt carrier to retract the bolt carrying extension against the pressure of the spring.

Said bolt carrier is also provided with a boss around its bore to receive and center the spring.

Other objects are cheapness and simplicity of construction and ease of installation and operation.

This bolt operating mechanism may be applied in any form of case or housing suitable therefor and the bolt operated thereby may be a latch bolt or a lock bolt and may be of any desired form, and said bolt may be guided by any form of guide, and the bolt operating mechanism which constitutes this present invention may be operated either by a key or by a door knob or other form of handle.

It will be sufficient for the present invention to illustrate the mechanism as the same is constructed for connection to door knobs or other handles.

In the device illustrated herein the mechanism will be shown in the specific form of housing which is described and claimed in my copending application for Letters-Patent of the United States, Serial Number 133,630, filed on the 4th day of September, 1926.

For convenience of illustration the mechanism will be shown arranged to operate a latch bolt operable through a bolt guide which forms the subject matter of my copending application Serial Number 133,629, filed on the 4th day of September, 1926.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

The accompanying drawing illustrates the invention.

Figure 1 is a side elevation of an assembly in which the bolt operating mechanism is mounted inside a housing of the character referred to.

Fig. 2 is an elevation of that end of the said assembly having the detachable end piece.

Fig. 3 is a sectional elevation on line indicated at x^3, Figs. 2 and 4 mounted in a door closure, a fragment of which is shown.

Fig. 4 is a view partly in section on line x^4, Figs. 3 and 5.

Fig. 5 is a horizontal section on line x^5, Fig. 3 of the device mounted with a bolt in a door, a fragment of which is shown.

Fig. 6 is a perspective view of the bolt carrier.

The bolt carrier comprises a tappet 1 and a straight bolt carrying extension 2 integral therewith, and is provided with a bore 3 extending through said extension and having a screw threaded socket 4 at its outer end.

The carrier is mounted with its tappet inside a housing formed of a shell 5 and a detachable end piece 5′, and said housing has hubs provided with journal bearings 6, 6′ at its opposite ends, and a lateral bolt guiding orifice 7 through which the bolt carrying extension 2 reciprocates and which extends through a portion of the shell wall that is thickened to provide an extended bearing for the bolt-carrying extension. It will be observed that the thickened wall is protruded

both inwardly and outwardly of the housing, the outward thickening or protuberance conforming substantially to the orifice through which the bolt reciprocates. Since the tappet 1 slides upon the pin 8 and may be alternately operated by the cams 13 and 13′ which exert pressure near the edge of the tappet, and there would be a tendency to throw the bolt carrying extension out of line, it is desirable that there be provided an extended bearing in the wall of the housing. With the bolt carrier supported at its inner end on the pin 8 and at its outer end in the thickened wall, its movements will always be in straight line, and any jamming avoided.

8 is a guide pin fixed to one wall of the shell 5 and extending in co-axial alinement with the orifice 7 and extending into the bore 3 and forming an internal guide for the bolt carrier.

Said pin is shown as having its rear end reduced as at 9 and is fixed to the shell by means of such reduced end inserted from the inside of the shell outwardly into a hole 10 in the shell directly opposite to the orifice 7, and is riveted in place.

11, 11′ indicate spindles journaled in the bearings 6 and 6′ and provided inside the housing with heads 12, 12′ respectively carrying cams 13, 13′ adapted to act independently on the tappet 2 to retract the bolt carrier against the pressure of a spring 14, which is shown as a spiral spring surrounding the guide pin 8 and normally holding the bolt carrier in bolt extending position to project through the bolt guide 15, a bolt 16 having a threaded stem or shank 17 screwed into the threaded socket 4.

The housing may be of any suitable construction and is shown as constructed of a shell 5, having a threaded open end and a threaded detachable end piece 5′ screwed into said shell; said end piece being provided with the journal bearing 6′ for the hub 11′.

In assembling the mechanism, one of the heads 12 with its cam 13 adjacent the side of the chamber through which the orifice 7 extends, will be inserted into the shell, and its spindle thrust through the journal bearing 6; the guide pin 8 will be inserted into the tubular body 1 with its reduced end 9 at the rear; the spring 14 will be mounted on the pin and compressed so that the bolt carrier with pin and spring can be inserted into the shell, and the tubular extension 1 thrust from the inside outward through the orifice 7, and then the reduced end 9 of the pin is inserted into the hole 10 therefor, and riveted in place. Then the other head 12′ will be inserted into the chamber of the case with its cam 13′ between the tappet and the front wall of the case in a manner corresponding to that with the cam 13 previously inserted, and the detachable end piece 5′ will then be applied to the spindle 11′ and screwed into place in the open end of the shell.

When the parts are thus assembled and the bolt shank 17 is screwed into the seat 4 therefor, rotation of either of the spindles 11, 11′ will cause the tappet for such spindle to retract the bolt carrier against the spring, which when released, immediately returns the bolt.

The heads of the spindles are shown as flat disks connecting the cams to their respective spindles and said cams are arcuate and each has its ends normally in contact with the tappet on the face thereof adjacent to the orifice and at the opposite edges of such face, and are shown rounded so as to have a measurably rolling contact with the tappet so as to insure smooth action.

I claim:—

1. In a fixture of the class described, a housing having a portion of its wall thickened and a lateral orifice through said thickened portion, whereby an extended bearing surface is provided; a bolt carrier comprising a tappet and a bolt carrying extension, the outer end of which extension is supported by said extended bearing surface and operable through the lateral orifice, a pin inside of said housing by which the inner end of the bolt carrier is supported and on which it reciprocates, a spring tending to project the bolt carrier through the orifice, and means acting on said tappet to retract said bolt carrier.

2. In a fixture of the class described, a housing having a portion of its wall thickened and a lateral orifice through said thickened portion whereby an extended bearing surface is provided; a bolt carrier comprising a tappet and a bolt carrying extension, the outer end of which extension is supported by said extended bearing surface and operable through the lateral orifice, a pin inside of said housing by which the inner end of the bolt carrier is supported and on which it reciprocates, a spring tending to project the bolt carrier through the orifice, and means acting on said tappet at one side of the longitudinal center of the bolt carrier to retract the carrier.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 1st day of July, 1926.

WILLIAM E. WREAD.