March 20, 1962 F. J. RUSSELL 3,026,137

LATCH BOLT CASING ANCHOR

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FIG. 1.

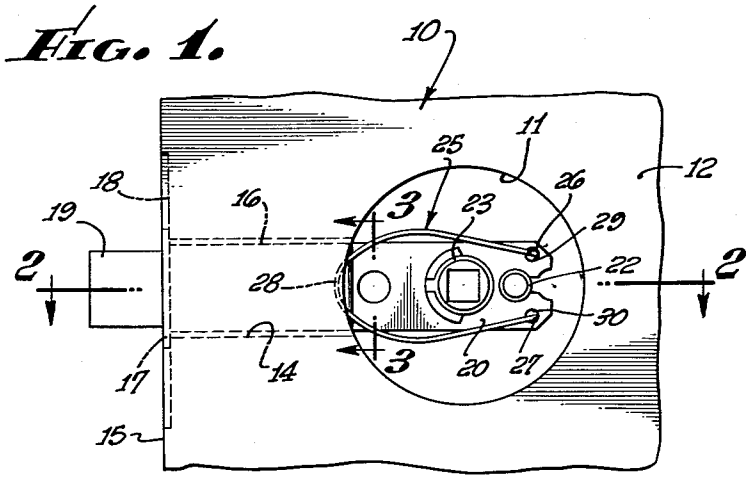


FIG. 2.

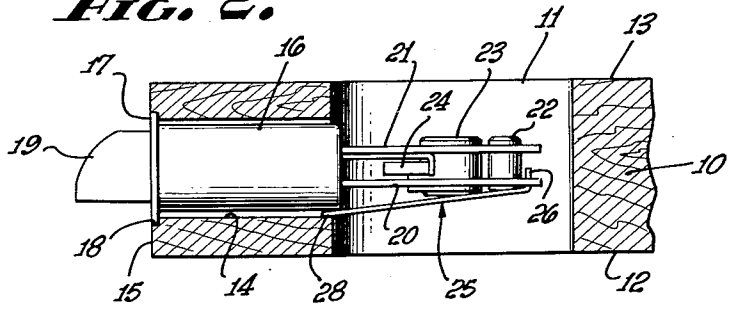


FIG. 4.

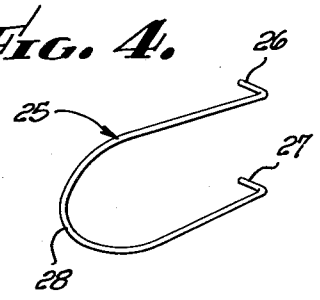
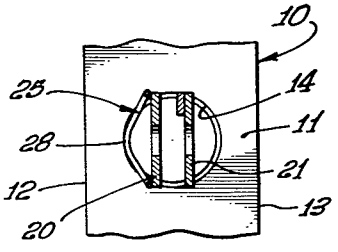


FIG. 3.



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Fig. 5.

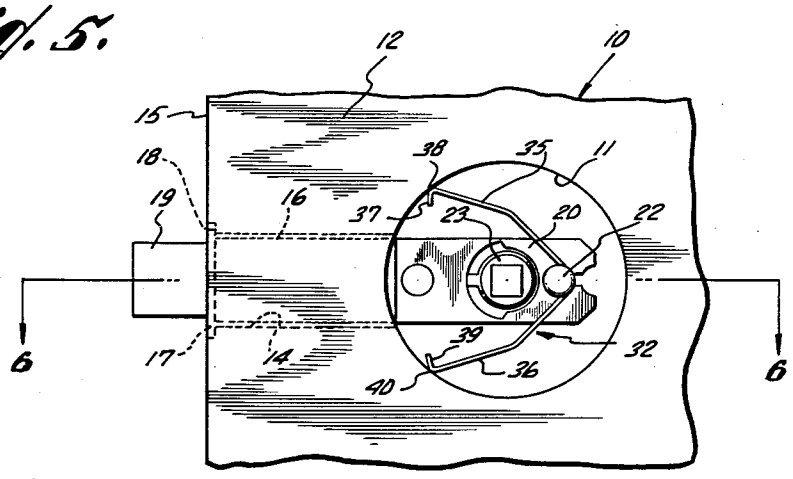


Fig. 6.

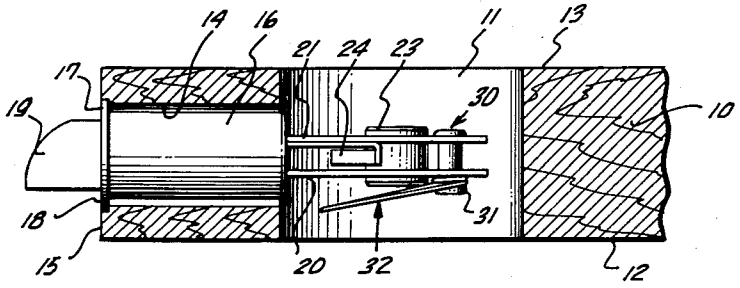


Fig. 8.

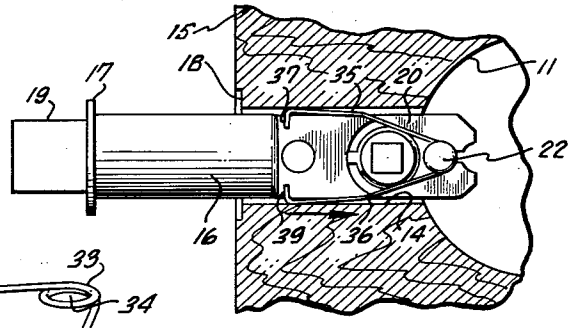
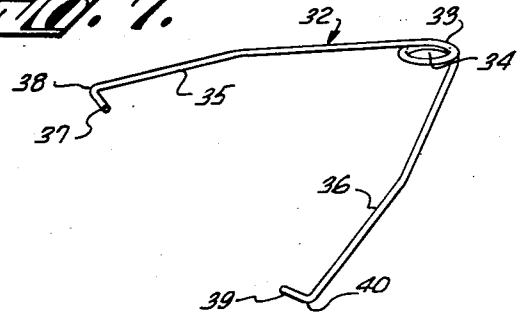


Fig. 7.



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LATCH BOLT CASING ANCHOR

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8 Claims. (Cl. 292—337)

The invention relates to locks and latches and has particular reference to latch bolts frequently identified as tubular type latch assemblies wherein there is provided a housing for the latch bolt mechanism separate and apart from the remaining portion of the lock which is interconnected with the lock upon installation of the several parts in a door.

This is a continuation-in-part of co-pending application Serial No. 707,931, filed January 9, 1958, now abandoned.

One of the problems which regularly confronts installers of typical cylinder lock sets is the necessity for having to provide a non-circular latch face and for having to attach the latch face to the door edge with wood screws.

It is accordingly among the objects of the invention to permit mortising for the face of the latch bolt casing by use of a step drill.

Another object of the invention is to provide a new and improved anchor for a latch bolt casing which resiliently braces between the latch bolt casing and the edge of the side hole in the door itself, thereby fastening the latch bolt casing to the door in a firm and dependable fashion in advance of mounting the operating mechanism in place.

Still another object of the invention is to provide a new and improved latch bolt casing anchor which mounts the latch bolt casing independently in the door quickly and easily without need to secure the latch bolt casing face to the door edge by means of wood screws or other means.

Still another object of the invention is to provide a new and improved anchor mechanism for latch bolt casings which is sufficiently simple in its operation to permit acceptable installations to be made without special skill being involved.

Still further among the objects of the invention is to provide a new and improved latch bolt casing anchor which is sufficiently resilient to compensate for variations in side hole locations in the door.

With these and other objects in view, the invention consists in the method of operation and the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter set forth, pointed out in the appended claims and illustrated in the accompanying drawings.

In the drawings:

FIGURE 1 is a side elevational view of a latch bolt casing anchored in place by use of one form of the invention in a typical door and which employs the method hereinafter described.

FIGURE 2 is a horizontal sectional view taken on the line 2—2 of FIGURE 1.

FIGURE 3 is a cross-sectional view taken on the line 3—3 of FIGURE 1.

FIGURE 4 is a perspective view of an anchoring element of the type used in FIGURES 1, 2 and 3.

FIGURE 5 is a side elevational view of a latch bolt casing anchored in a door by use of a second form of the invention.

FIGURE 6 is a transverse sectional view on the line 6—6 of FIGURE 5.

FIGURE 7 is a perspective view of the form of anchoring device used in FIGURES 5 and 6.

FIGURE 8 is a view similar to FIGURE 5 showing the device in a partially assembled condition.

In the embodiment of the invention illustrated in FIGURES 1, 2, 3 and 4 there is shown a fragmentary section of a door **10**. A transverse substantially cylindrical bore **11** extends from one face **12** of the door **10** to another face **13**. A hole forming a second and smaller bore **14** extends inwardly from an edge **15** into and communicating with the bore **11**. With respect to the bores just described, they are formed in a conventional manner and have the same relationship as has been in use for a considerable period of time for the mounting of door locks of the cylinder lock type with which this disclosure is concerned.

A latch bolt assembly including a casing **16** is here shown as being substantially cylindrical in cross-section and has an annular plate or flange **17** located at its outer end in a position such that it bears against the bottom of a depression **18** in the edge **15** of the door.

In the latch bolt casing is a reciprocating latch bolt **19**, the mechanism of which is substantially conventional.

In the form chosen for the purpose of illustration there is shown as part of the latch bolt assembly an extension comprising parallel plates **20** and **21** which may be secured together by some appropriate device such as a rivet **22** in order to contain a hub **23** to which may be attached a conventional roll-back cam **24**.

The parts identified are those which comprise any one of a number of substantially conventional cylinder latch bolt mechanisms. In the interest of clarity, the operating mechanisms featuring knob and spindle have been omitted.

In order to anchor the latch bolt casing in the position illustrated in FIGURES 1, 2 and 3, a loop such as that illustrated in FIGURE 4 and identified by the reference character **25** may be employed. The loop shown by way of illustration is of relatively stiff resilient wire and is provided with bent ends **26** and **27** and includes an arcuate portion **28**. In the plate **20** are provided apertures **29** and **30** into which the bent ends **26** and **27** are inserted. When the loop is assembled with the latch bolt casing the ends **26** and **27** are first inserted into the respective apertures and the loop is then sprung sufficient to permit the arcuate portion **28** to be pressed into the position shown in FIGURES 1, 2 and 3. As there illustrated, the arcuate portion is received within the innermost end of the smaller bore **14**, thereby locking it in place and bears against the junction of the inner end of the small bore **14** with the larger bore **11**.

When this form of the device is assembled, the latch bolt casing is first inserted in position, as shown in FIGURES 1 and 2. It should preferably be pressed as far in as it can be and until the plate or flange **17** is within the depression **18** and bears against the appropriate edge portion **15** of the door. The loop **25** is then applied as has just been described and when once in position the resiliency resident in the loop will tend to force the extension embodied in the plates **20** and **21** inwardly or in a direction from left to right, as viewed in FIGURES 1 and 2. This will tend to press the plate or flange **17** against the edge of the door and will firmly anchor the latch bolt casing in proper operative position wherein the requisite operating mechanism can be attached in a substantially conventional fashion.

In a form of the invention illustrated in FIGURES 5, 6 and 7 the same latch bolt casing is mounted in the hole or bore **14** with plates **20** and **21** extending into the mid-portion of the bore **11**.

In order to anchor the casing **16** and attendant parts in the position shown there is provided in this instance a wire spring **32** which is shown in perspective view in FIGURE 7. The spring preferably consists of a single length of wire wherein the wire is turned to form a loop **33** at the mid-portion surrounding a hole **34**. The diam-

eter of the hole 34 is slightly larger than the outside diameter of a rivet end 31 so that the loop 33 can be slipped comfortably over the end of the rivet whereupon the rivet is peened over at its ends to fasten the loop in place. Another fastening method is to force loop 33 to expand over the larger head of the rivet and then to be retained by said rivet head.

Arms 35 and 36 attached to the loop extend outwardly in the general form of a V. The arm 35 terminates in a bent end 37 providing a rounded corner 38 whereas the arm 36 terminates in a bent end 39 providing a rounded corner 40. Initially the arms 35 and 36 spread into the form of a V substantially wider than the spring will have when placed in anchoring position, it being understood that the arms can be pressed toward each other in a spring-like fashion wherein the resistance is provided not only by the tension in the arms but also the tension in the loop 33.

When the casing including the latch bolt assembly with the spring 32 attached is to be anchored by use of the spring 32, the spring arms are pressed together and the casing is inserted into the small bore 14 in the same manner as previously described so that the plate or flange 17 is received in the depression 18 and the plates 20 and 21 extend into the bore 11 placing the hub in a substantially central position. The spring 32 slides freely through the small bore as shown in FIGURE 8 until it is entirely within the large bore 11.

Once in position the arms 35 and 36 spring outwardly away from each other and the rounded corners 38 and 40 are forced outwardly into engagement with the wall of the bore 11. As described the spring anchors with sufficient firmness to hold the casing in its proper position until a spindle (not shown) of a conventional door lock can be passed into and through the hub 23, after which the latch bolt casing cannot be removed in the absence of removal of the spindle. On those occasions where it may be desired to remove the casing, removal can be acomplished by the simple expedient of collapsing the arms 35 and 36 against each other by manual pressure aftert he spindle has been removed, and the spring ends started outwardly through the small bore 14, permitting extraction of the casing 16 and its attendant parts.

From the foregoing description of two types of spring member for removably anchoring a latch bolt assembly and casing in a door it can be understood that the physical embodiments of devices shown exhibit a method of attachment or anchoring by a spring-like agency, the important aspect of which consists of making use of walls of the bore normally made to receive the parts and pressing against oppositely positioned areas of the door in order to force and retain the latch bolt in position by such agency.

It will be understood from the foregoing description in company with the disclosure in the drawings that there has been provided a latch bolt casing which assumes substantially conventional forms and proportions such as may normally be employed and which needs no special design or construction other than the simple expedient shown in order by use of a simple anchoring element to be firmly anchored in place upon the material of the door itself.

While I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a latch bolt device for a door wherein the door has a transverse bore extending therethrough from an outer face to an inner face and a latch bolt bore communicating between said transverse bore and an edge of the door, the combination of a latch bolt casing, a bearing member on an outer end of the casing adapted to bear against said edge of the door, and a resiliently extendible anchoring means having a collapsed condition smaller in transverse dimension than the breadth of said latch bolt bore and greater than said breadth in expanded condition, said anchoring means having one portion thereof adapted to be forced into engagement with the latch bolt device and another portion thereof automatically extended into engagement with the wall of said transverse bore when said latch bolt device is in place in said latch bolt bore whereby to draw said member against the edge of the door and to anchor said casing in position in said latch bolt bore.

2. In a latch bolt device for a door having a substantially cylindrical transverse bore extending therethrough from an outer face to an inner face and a substantially cyindrical latch bolt bore communicating between said transverse bore and an edge of the door, said transverse bore having an area facing in a general inward direction, the combination of a substantially cylindrical latch bolt casing, an annular bearing member on an outer end of the casing adapted to bear in an inward direction against said edge of the door, a portion of said casing facing in a general outward direction, and an automatically extendible anchoring means at the inner end of the casing having one portion thereof in engagement with said portion of the latch bolt assembly and another portion thereof subject to engagement in an opposite direction with said area of said transverse bore which faces inwardly, whereby to anchor said casing in position in said latch bolt bore.

3. In a door having a transverse cylindrical bore extending from an outer face to an inner face thereof and a latch bolt hole extending from the edge of the door into communication with said bore, the combination of a latch bolt assembly and an anchor therefor, said latch bolt assembly comprising a casing, and an extension on said casing having a spindle opening therethrough, said anchor comprising a length of spring wire connected intermediate the ends thereof to said extension, said spring wire having ends in resilient extended positions on opposite sides of said extension greater than the breadth of the cylindrical bore.

4. In a latch bolt device for a door having a larger bore extending therethrough from an outer face to an inner face and having a portion thereof facing in a general inward direction, and a smaller bore communicating between said opening and an edge of the door, the combination of a latch bolt casing, a substantially perimetral bearing member on an outer end of the casing adapted to bear in a general inward direction against said edge of the door, a portion of said casing facing in a general outward direction and an anchoring means having one portion thereof adapted to be engaged with said portion of the casing and another portion thereof adapted to be engaged with said portion of the wall of said larger bore, said anchoring means comprising a resilient material having an operating position wherein said one portion thereof is in engagement with said portion of the casing and said other portion thereof is in engagement with said portion of the wall of said larger bore whereby to anchor said casing in the smaller bore by pressure of said bearing member against the edge of the door and pressure of said anchoring means against the interior of the door.

5. In a door having a cylindrical bore therein and a latch bolt hole extending from an edge of the door into communication with said bore, the combination of a latch bolt assembly and an anchor therefor comprising a casing in said hole, a bearing member at the outer end of the casing bearing against said edge of the door, an extension of said casing lying within said bore and having a spindle opening therein, and a rivet on said

extension, said anchor comprising a length of spring wire having a loop mounted on said rivet, resilient arms on said loop extending obliquely outwardly of said extension and ends on said arms releasably engageable with the wall of said bore at a location on opposite sides of said latch bolt hole whereby to anchor the latch bolt assembly in said door.

6. In a door having a transverse cylindrical bore extending from an outer face to an inner face thereof and a latch bolt hole extending from an edge of the door into communication with said bore, the combination of a latch bolt assembly and an anchor therefor comprising a casing in said hole, a bearing member at the outer end of the casing adapted to bear against said edge of the door, an extension on said casing lying within said bore and having a spindle opening therethrough, a rivet on said extension extending in a direction parallel to the axis of said spindle opening and having a protruding end, and a resilient anchor comprising a length of spring wire having a loop at the mid-portion mounted upon the end of said rivet, resilient arms on said loop and bent ends on said arms releasably engageable with the wall of said bore at a location on opposite sides of said latch bolt hole whereby to anchor the latch bolt assembly in said door.

7. In a door having a cylindrical bore therein and a latch bolt hole extending from an edge of the door into communication with said bore, the combination of a latch bolt assembly and an anchor therefor, said latch bolt assembly comprising a casing located in said hole, a bearing member at the outer end of the casing bearing against said edge of the door, and an extension on

said casing lying wtihin said bore and having a spindle opening therein, said anchor comprising a length of spring wire attached intermediate its ends to said casing extension, resilient arms on said spring wire extending obliquely outwardly of said extension, and ends on said arms releasably engageable with the wall of said bore at a location on opposite sides of said latch bolt hole whereby to anchor the latch bolt assembly in said door.

8. In a door having a transverse cylindrical bore extending from an outer face to an inner face thereof and a latch bolt hole extending from an edge of the door into communication with said bore, the combination of a latch bolt assembly and a resilient anchor therefor, said latch bolt assembly comprising a casing located in said hole, a bearing member at the outer end of the casing adapted to bear against said edge of the door, an extension on said casing lying within said bore and having a spindle opening therethrough, and a rivet on said extension and having a protruding end, said anchor comprising a length of spring wire having a loop at the mid-portion mounted upon the end of said rivet, and resilient arms on said loop releasably engageable with the wall of said bore at a location on opposite sides of said latch bolt hole whereby to anchor the latch bolt assembly in said door.

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