May 20, 1930. W. R. SCHLAGE 1,759,375

SPLIT SPINDLE FOR DOOR LATCHES

Filed July 18, 1928

Fig. 1.

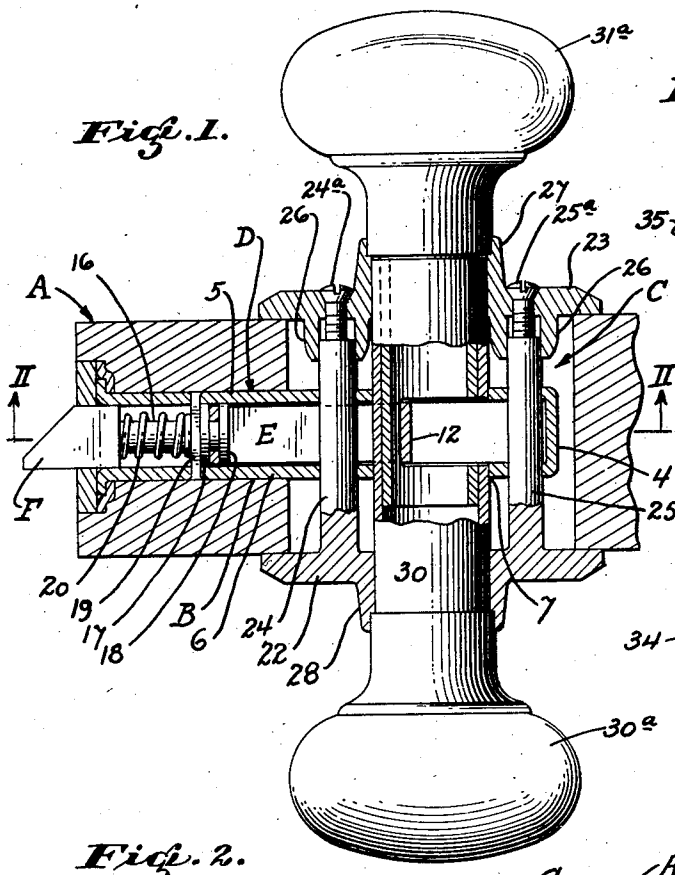


Fig. 3.

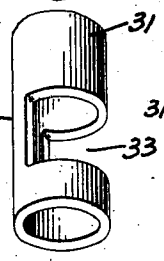


Fig. 5.

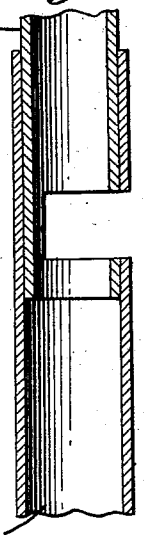


Fig. 4.

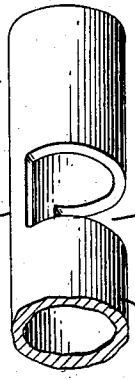


Fig. 2.

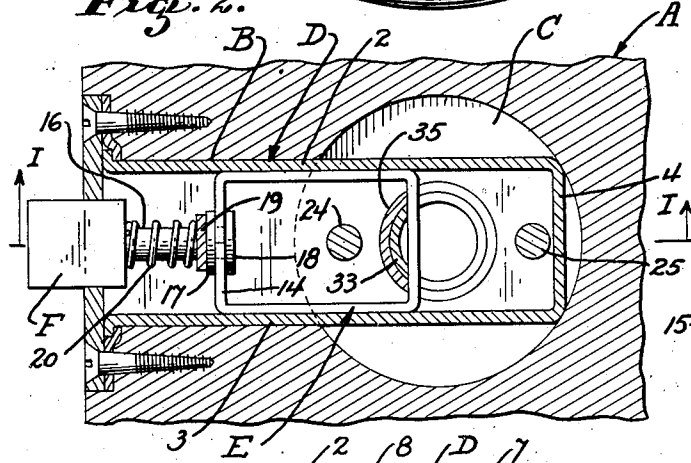


Fig. 6.

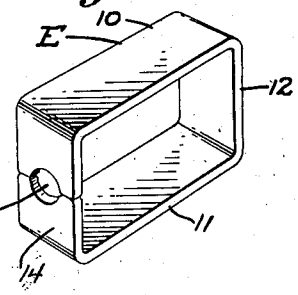
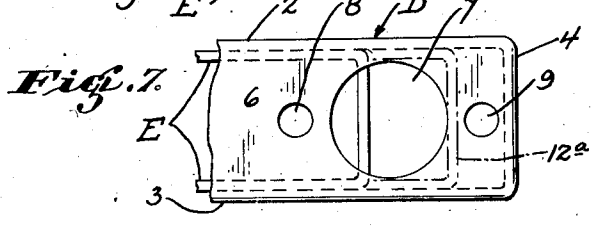


Fig. 7.



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UNITED STATES PATENT OFFICE

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SPLIT SPINDLE FOR DOOR LATCHES

Application filed July 18, 1928. Serial No. 293,560.

This invention relates to door latches such as shown in my co-pending application entitled "Post anchored door latch" filed July 18, 1928, Serial Number 293,561, and especially to a split spindle structure through which the door latch is actuated.

The object of the present invention is to generally improve and simplify the construction and operation of door latches of the character described, to provide a split spindle whereby the latch may be retracted by rotation of either spindle, to provide a split spindle consisting of two telescoping sections independently operable with relation to each other, and further to provide a spindle structure whereby an interlock is formed between the spindle and a cooperating retractor, said interlock securing the spindle against endwise movement in either direction.

A door latch employing the split spindle is shown by way of illustration in the accompanying drawings, in which:

Fig. 1 is a horizontal longitudinal section taken on line I—I of Fig. 2, said view showing the door latch assembled in a door and also showing the split spindle sections telescoping with relation to each other,

Fig. 2 is a vertical longitudinal section taken on line II—II of Fig. 1,

Fig. 3 is a perspective view of the inner end of the inside spindle,

Fig. 4 is a perspective view of the inner end of the outside spindle,

Fig. 5 is a central longitudinal section of the inner ends of the two spindles, showing them telescoped with relation to each other,

Fig. 6 is a perspective view of the retractor,

Fig. 7 is a side elevation of the inner end of the latch housing.

Referring to the drawings in detail, and particularly to Figs. 1 and 2, A indicates a portion of a door in which the door latch is assembled and inserted. To receive the latch, two holes are drilled in the door, one through the edge, as indicated at B, to receive the latch housing, and one at right angles thereto, as indicated at C, to receive the escutcheon plates and the latch actuating mechanism. The latch mechanism comprises a housing, generally indicated at D, which consists of top and bottom plates 2 and 3, an end plate 4, and side plates 5 and 6. The inner end of the latch housing is closed by the end plate 4, but the side plates are each provided with three holes, such as indicated at 7, 8 and 9 to permit the spindles to pass therethrough, and also a pair of anchor posts as will hereinafter be described.

Slidably mounted in the housing is a retractor, generally indicated at E, see Figs. 2 and 6, and connected therewith is the bolt or latch proper, as indicated at F. The retractor may be constructed in any suitable manner. In this instance it is shown as formed from a piece of strap iron, which is bent to a rectangular shape so as to form top and bottom sections, indicated at 10 and 11 respectively, and end sections 12 and 14. The retractor is guided by the top and bottom plates 2 and 3, and by the side plates 5 and 6, as the width of the retractor is equal to the spacing between the side plates and the height is equal to the distance between the top and bottom plates of the housing.

The forward end of the retractor is provided with an opening 15. A bolt 16, suitably secured to the latch F, extends through this opening and it is secured to the retractor by means of a collar 17, and a head member 18. A bar 19 extends crosswise of the housing and this bar is also perforated to permit the bolt 16 to pass therethrough. A spring 20 surrounds the bolt 16, and is interposed between the latch F and the cross bar 19, and as such exerts a pressure which normally maintains the retractor and the latch in the extended position shown in Figs. 1 and 2.

The latch actuating unit illustrated in the present instance consists of an outer escutcheon plate 22, and an inner escutcheon plate 23. These plates egage the opposite face of the door, and they are secured thereto by a pair of posts 24 and 25, and a pair of cooperating screws 24^a and 25^a, which extend through the inner escutcheon plate. The posts 24 and 25 are formed integral with the outer escutcheon plate 22, or otherwise secured thereto, and their outer ends extend into perforated guide lugs 26 formed on the inner face of the escutcheon plate 23 so as to

maintain a coaxial alignment between the escutcheon plates and the mechanism to be supported thereby. Each escutcheon plate is also provided with a central hub member, such as shown at 27 and 28, and these hub members form journal members for a pair of spindles, indicated at 30 and 31. Both spindles are provided with knobs, such as shown at 30ª and 31ª, and these knobs serve the function of transmitting rotary movement to the spindles when the door latch F is to be retracted or projected.

The spindles are constructed as shown in Figs. 1, 3, 4 and 5. These spindles telescope, one with relation to the other, the largest diameter spindle 30 carrying the outer knob 30ª and the smaller diameter spindle 31 carrying the inner knob 31ª. In fact, the outer spindle 30 is extended into the bearing hub 27 of the inner escutcheon plate and as such rotates not only with relation to the bearing hub 27 but also with relation to the outer bearing hub 28. The inner spindle 31 in turn rotates within the outer spindle. Both spindles are cut away, as indicated at 32 and 33. A connecting web is left, as indicated at 34 and 35 and these webs form the function of roll back members, as they engage the inner end 12 of the retractor and as such impart a reciprocal movement thereto when one spindle or the other is rotated. The cut away portions indicated at 32 and 33 perform another function besides that of forming the roll back members 34 and 35—to-wit—that of securing the spindles against endwise movement either in an inward or outward direction. This is due to the fact that the cut away portions straddle the end plate 12 of the retractor and as the retractor is held against lateral movement by means of the side plates 5 and 6 of the latch housing it is obvious that the spindles are secured against endwise movement in either direction.

In actual operation when the door is prepared for the reception of the door latch by drilling the holes indicated at B and C, it is first necessary to insert the latch housing D, secondly, when this is inserted, the outer escutcheon plate is applied to the door by inserting the posts 24 and 25 through the perforations 8 and 9 formed in the side plates 5 and 6 of the latch housing; third, applying the inner escutcheon plate 23 and securing it by means of the screws 24ª and 25ª; fourth, depressing the latch F or pushing it inwardly until the end plate 12 clears the opening 7, or until the end plate assumes the dotted line position shown at 12ª, Fig. 6, fifth, inserting the outer spindle and sixth inserting the inner spindle.

It is then only necessary to release the latch so as to permit the retractor to move forwardly to the full line position shown in Figs. 2 and 7. This forward movement causes the end plate 12 of the retractor to move inwardly, between the cut away portions 32 and 33 of the spindles, thus securing them against endwise removal. The knobs may then be applied if this has not already been done, and the installation of the door latch is complete.

A split structure, such as here illustrated, has many advantages when comparison is made with ordinary split spindles. First of all it will be noted that they telescope with relation to each other in such a manner that one spindle forms a bearing for the other and vice versa. Secondly, full floating bearings are formed for each spindle as they are not only journalled one with relation to each other but they are also journalled in the hub bearings indicated at 27 and 28. This is also important as it maintains a coaxial alignment between the spindles and the escutcheon plates. Another important feature is the cut away portions indicated at 32 and 33. These cut away portions straddle the end plate 12 of the retractor, and as such secure both spindles against endwise movement with relation to each other, and with relation to the escutcheon plates and the latch housing. Furthermore, it permits independent rotation or operation of each spindle. The telescoping of the spindles is of further importance as it materially increases the rigidity and strength of the latch mechanism as a whole.

While certain features of the present invention are more or less specifically described, I wish it understood that various changes may be resorted to within the scope of the appended claims, similarly that the materials and finishes of the several parts employed may be such as the manufacturer may decide, or varying conditions or uses may demand.

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

1. In a door latch of the character described a latch housing, a retractor slidably mounted therein, a spindle extending through the housing at right angles to the longitudinal axis of the housing, said spindle having a cut away portion which straddles the retractor, said cut away portion forming a pair of shoulders engageable with the retractor and securing the spindle against endwise movement, and the remaining metal in alignment with the cut away portion forming a roll back member engaging the retractor.

2. In a door latch of the character described, a latch housing having a pair of openings formed therein, one in each side, a retractor slidably mounted in the housing, a pair of telescoping spindles extending through the openings in the housing, each spindle being tubular and consisting of two

sections which are interspaced and connected by a web forming a roll back member, the roll back member of each spindle engaging the retractor and the interspaced sections of each spindle forming shoulders engaging opposite sides of the retractor and securing the spindles against endwise movement.

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