Oct. 27, 1953 A. A. DEDOES 2,657,085

DOOR LATCH

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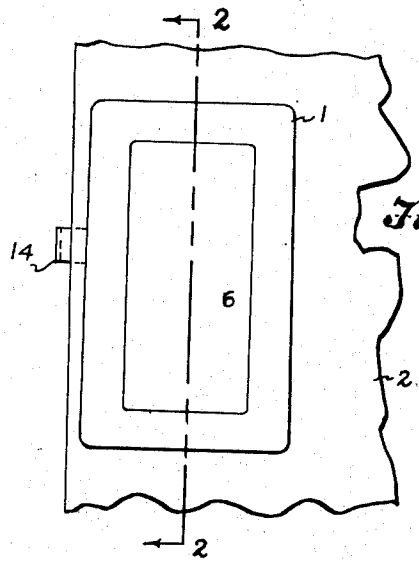


Fig. 1

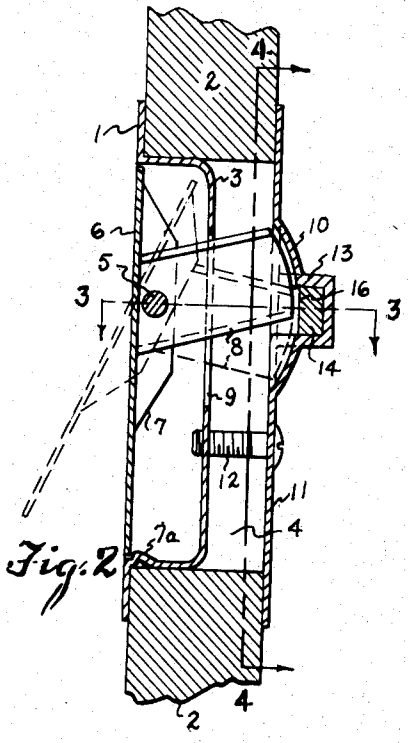


Fig. 2

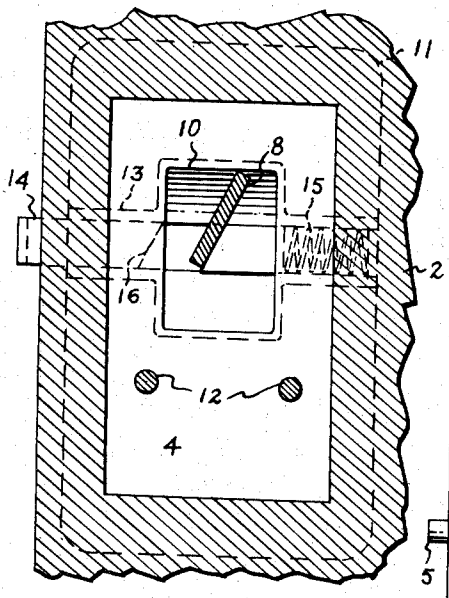


Fig. 4

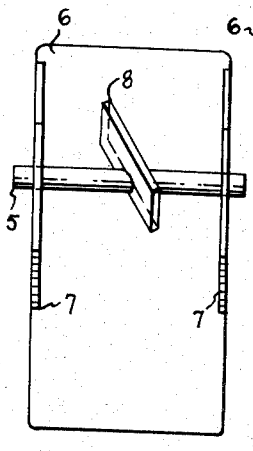


Fig. 5

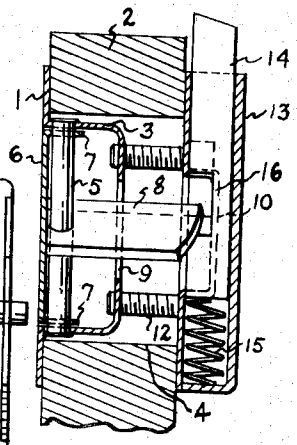


Fig. 3

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DOOR LATCH

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2 Claims. (Cl. 292—169)

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This invention relates to door latches and particularly latches of the type having an actuator normally substantially flush with a door face.

An object of the invention is to combine an actuator pivotal about a suitable axis and normally substantially flush with a door face, with a bolt movable in substantial parallelism with said axis, and to control the bolt by such actuator through a highly simplified mechanism.

Another object is to render a single spring effective to normally maintain the latching position of the bolt and the flush relation of the actuator to the door.

Another object is to rigidly attach to said pivotal actuator a tongue terminally engaging the latch bolt and functioning as a cam to retract the bolt in parallelism with the pivotal axis of the actuator.

Another object is to adapt a spring normally projecting the bolt to take effect through said tongue on the actuator for yieldably maintaining the latter in a normal flush relation with a door face.

These and various other objects are attained by the construction hereinafter described and illustrated in the accompanying drawing, wherein:

Fig. 1 is a front view of my improved latch as applied to a door.

Fig. 2 is a longitudinal sectional view of the latch, taken on the line 2—2 of Fig. 1.

Fig. 3 is a cross sectional view of the latch, taken on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2, particularly showing the bolt in its relation to the tongue by which it may be retracted.

Fig. 5 is a view of the reverse or inner face of the latch actuator.

In these views the reference character 1 designates an escutcheon plate, preferably rectangular and seated against the outer face of a door 2. Said plate has a central rectangular portion 3 deeply indented into and substantially flitting an opening 4 extending through the door. A pin 5 is mounted in opposite walls of the indented portion 3 and a sheet metal plate 6, forming an actuator for the latch, is pivoted on the pin, by opposite margins 7 inturned to receive the pin. The actuator is so proportioned and pivoted that it may normally lie flush with the seat-forming margin of the plate 1, completely covering the chamber formed by the indented portion 3. As shown in dash lines in Fig. 2, one end of the actuator is adapted to be

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swung out for the dual purpose of retracting a bolt and affording engagement of one or more fingers in back of the actuator, and the pivot pin 5 is considerably closer to the upper end of the actuator than to its lower end, so that the latter end may be amply tilted outward to be gripped by a finger or fingers. The lower end of the actuator normally engages a protuberance 7a on an inwardly extending wall of the indentation 3, whereby inward movement of said end is limited. Rigidly carried by and inwardly projecting from the actuator is a sheet metal tongue 8, the root portion of which is pierced by and symmetrical to the pivot pin 5. Said tongue passes freely through a rectangular opening 9 in the bottom of the indentation 3 and extends into a pocket 10 formed in a rectangular plate 11 seated against the inner face of the door 2. This plate covers the opening 4 and is held in place by the heads of screws 12 threaded into the indentation 3 and thus also holding the plate 1 in place. Rigidly mounted on the plate 11, inwardly of the door 2 is an elongated bolt housing 13 centrally intersecting the pocket 10, whereby a bolt 14 in such housing is slidable through said pocket. The bolt extends parallel to the pivot pin 5 and is urged to a projected or latching position by a coiled spring 15 interposed between the rear end of the bolt and a closed end of the housing. The bolt is transversely grooved as indicated at 16 to receive the free end of the tongue 8, the groove walls being diagonal to the bolt and said tongue having its width parallel to said walls. This establishes a cam reaction between the tongue extremity and the groove walls, whereby swinging of the tongue in unison with the actuator serves to retract the bolt in parallelism with said pin. It would suffice, of course, if the free end only of the tongue conformed to the groove walls but the construction as illustrated serves the purpose. As illustrated, the opposed walls of the groove 16 form substantially a sixty degree angle with the bolt axis, the tongue 8 conforming to this angle. It is desirable that said angle be as large as will derive the desired cam retraction and thereby adequately retract the bolt, since the width of the groove 16 may thus be minimized to minimize swinging play of the tongue in the groove. It will be appreciated in this connection that the more nearly the width of the tongue approaches parallelism with the bolt axis, the wider must be the groove to afford necessary swinging of the tongue. It is found that an angle of approximately sixty degrees be-

tween the groove walls and the bolt axis adapts the tongue to readily actuate the bolt, while assuring an effective reaction of the bolt on the tongue such as to permit the spring 15 to return the plate to its normal position, in projecting the bolt.

To retract the latch bolt, the pressure of a thumb may be applied to the upper end of the actuator to depress such end and swing the lower end outward, as appears in dash lines in Fig. 2. This permits one or several fingers of the hand applying thumb pressure to be inserted in back of the actuator plate to pull open the door equipped with the described latch, the bolt having been retracted by the described swinging of the actuator. As soon as the actuator is released in either the closed or an open position of the door, the spring 15 projects the bolt and simultaneously returns the actuator to its normal flush relation with the plate 1.

The described mechanism, while extremely simple, secures the advantage of a flush type control with elimination of unsightly knobs and handles now common. It may be designed for doors of any size but is particularly desirable on such relatively small doors as those of kitchen cabinets, linen closets, clothes chutes, etc.

What I claim is:

1. A door latch comprising a pair of spaced mounting plates, a bolt, means on one of said plates for guiding the bolt in a substantially rectilinear travel, an actuator, means pivoting the actuator on the other of said plates to turn about an axis substantially parallel to the bolt travel, a tongue on the actuator having a cam reaction with the bolt to retract the bolt, and means for interconnecting said plates and thereby clamping them against inner and outer faces of a door.

2. A door latch comprising a plate for seating against a door, the central portion of such plate being indented to occupy an opening of the door, an actuator proportioned to substantially fit within the indented portion in a substantially flush relation with said plate, means pivoting said actuator upon the indented portion to turn about an axis unequally spaced from opposite ends of the actuator, whereby as the shorter end portion is pressed into the indented portion, the longer end portion will be swung out, a tongue fixed on the actuator and projecting through and beyond the indented portion, such portion having an opening accommodating said tongue, and a bolt slidable in substantial parallelism with the pivotal axis of the actuator and engaged and movable by said tongue responsive to rocking of the actuator.

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