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E. HALPERN

DOOR LATCH

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Fig. 1.

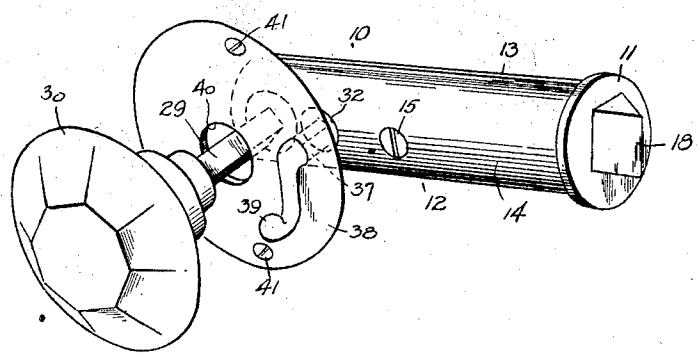


Fig. 3.

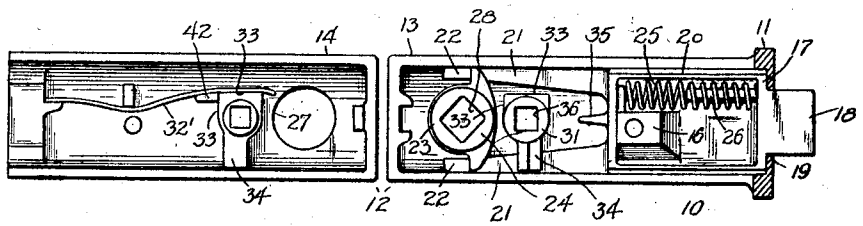
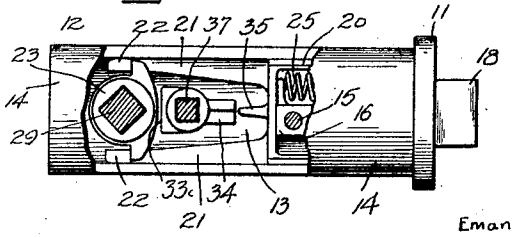


Fig. 2.

Fig. 4.



Emanuel Halpern

INVENTOR

BY

his ATTORNEY.

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UNITED STATES PATENT OFFICE.

EMANUEL HALPERN, OF NEW YORK, N. Y.

DOOR LATCH.

Application filed December 7, 1926. Serial No. 153,055.

My invention relates to a spring door latch of the type utilizing a single spring bolt and thumb latch, wherein operation of the latter results in blocking or releasing the said bolt.

Door latches of this character and especially those adapted for inside doors usually consist of a flush plate and housing mortised into the edge of the door. The bolt in such latches may be operated from both sides of the door, but the thumb latch may be operated on one side of the door only, so as to block movement of the bolt from what may be termed the outside of the door. The housing for the latch mechanism in ordinary practice is a rectangular box-shaped member which requires a similar shaped opening in the door to accommodate it. Openings of this particular character are troublesome and expensive to make because only a very skilled artisan is capable of properly making the opening and setting the latch. As a consequence face latches are often used which consist of a housing attached to the side or face of the door and only requiring key and knob spindle openings to complete the installation. Such a contrivance, while it may operate efficiently and is relatively inexpensive to install is very unsightly and detracts considerably from the appearance of the door.

With the foregoing in mind, it is the purpose of the present invention to provide a door latch unit of this character, which may be mortised into a door by a single operation requiring no particular skill. I accomplish this purpose by simplifying the latch mechanism to such an extent that the same may be assembled and effectively operated within a small cylindrical housing having a disc face plate, the housing and disc being accommodated in a single drilled opening in the edge of the door.

Another object of the invention is to further condense the latch mechanism so as to require a single small opening in the face of the door to accommodate therein both the knob and thumb spindles of the latch. I accomplish this object by arranging the two spindles in such close proximity that the distance between them may easily be circumscribed by one opening and covered by one plate.

One embodiment of my invention is illustratively exemplified in the accompanying drawing in which, Figure 1 is a perspective view of my improved latch installed in a door and having the knob and thumb spindles slightly extended to disclose otherwise hidden parts; Figure 2 is an elevational view of one half of the cylindrical housing and enclosed latch mechanism; Figure 3 is a similar view of the other half or cover piece; Figure 4 is a view similar to Figure 2 except that the thumb latch is operated to block movement of the bolt to release the door.

Referring to the drawings, 10 denotes the complete latch unit comprising a disc shaped flush plate 11 and perpendicularly projecting cylindrical housing 12. The housing is preferably formed of two sections separated along a longitudinally disposed line, one section being formed as an integral part of the flush plate 11, and being further adapted to carry substantially all of the latch mechanism, as illustrated clearly in Figure 2. The section of the housing attached to the flush plate 11 is designated 13 and the cover section 14, the latter being attached to the former by a screw 15 adjustable in a boss 16 projecting from the inner surface of the section 13.

Slidably mounted within the housing 12 and carried by the section 13 is the bolt proper 17 comprising a beveled nose portion 18 operable in a slot 19 in the flush plate 11, a slotted midsection 20, and longitudinally projecting arms 21, the latter being provided with upturned lugs 22 which embrace the hub 23 of winged roll-back 24 and are adapted to be engaged by the wings of the latter to retract the bolt 17. The bolt is yieldably held in projected position by a coiled spring 25 which bears against the boss 16 at one end, while at the other end its coils embrace a pin 26, as a guide and abut the end wall of the slot 19 in the bolt proper.

The hub 23 of the roll-back 24 is stepped down in diameter at its opposite ends which bear in alined openings 27 adjacent the inner ends of the sections 13 and 14. The hub 23 is further provided with a square bore 28 to accommodate a spindle 29 adapted to project through the hub and outwardly on both sides of the door. Opposite ends of the spindle 29 accommodate knobs 30 of the usual type utilized for this purpose. The mechanism thus far described pertains

merely to the bolt proper and its operation which will take place by the usual twist of one or the other of said knobs 30.

Referring now to the thumb latch mechanism, the latter comprises a rotary member 31 having a hub portion stepped down in diameter at its ends to bear in an opening 32 in the cover section 14 and depression or socket disposed on the inner wall of the section 13. In accordance with the present invention the rotary member is arranged in such close proximity to the roll-back 24 that only a very short space intervenes between the axes of the rotary member and roll-back. The rotary member 31 is virtually carried by the cover section 14 because the hub of the member projects through the wall of this section and is yieldably held in closed or open position by a flat spring 32′ which engages either one of two flat sides 33 of the tumbler hub, as illustrated clearly in Figure 3. The rotary member 31 is provided with a radially projecting arm or stop 34 which revolves with the member to one of the two positions illustrated in Figures 2 and 4 respectively. In Figure 2 the member is disposed to block movement of the bolt proper, a condition which is accomplished by turning the dog 34 to a position longitudinal with the axis of the housing and bolt and in a direction towards the flush plate 11. In this position the end of the dog is directly in the path of movement of a projecting finger 35 integral with the bolt proper and disposed at one end of the slotted portion 20 between the arms 21. The hub of the rotary member is provided with a square bore 36 to receive the inner end of a square spindle 37, the opposite end being rotatably carried by a face plate 38 and terminating in a lever arm or thumb piece 39. The face plate 38 is further provided with a central opening 40 to accommodate the shank of the knob 30 and peripheral openings to receive wood screws 41 adapted to fix the plate on the face of the door and to cover the single opening made to accommodate both knob and thumb spindles.

In order to limit the movement of the rotary member 31 to release the bolt proper, a stop 42 is provided on the inner wall of the cover section 14, as illustrated in Figure 3.

The installation operation and advantages of my invention will be readily understood in connection with the following: The door to receive the latch is first drilled by making a single round hole in the edge of the door to a depth equal to the length of the cylindrical housing 12 and flush plate 11. The drilled opening is then countersunk to accommodate the flush plate 11 in a position which is flush with the surface of the edge of the door. At a point corresponding with the square openings in the two tumblers, a second hole is drilled transversely of the hole for the housing. The door is then ready to receive the latch. The cylindrical housing 12 is inserted in the hole in the edge of the door and the face or flush plate 11 is disposed flush with the face of the wood surrounding the opening. The square openings in the roll-back and rotary member 24 and 31 will then be visible in the opening drilled in the face of the door and are in position to receive their respective spindles 29 and 37. The face plates 38 are adjusted and secured to the door and the knobs 30 attached in the usual manner.

The thumb piece 39 is normally in its down position, as illustrated in Figure 1, which brings the projection or dog 34 at what is virtually the bottom of the housing. The bolt is then free to be reciprocated against the action of the spring 25 by turning the knobs 30 in either direction. To block the bolt as previously described the thumb piece 39 is raised until the dog 34 is in the direct path of the projection 35, as illustrated in Figure 2.

It will be clear from the foregoing that the present invention is extremely simple in construction and in mode of operation as well as being capable of installation by almost anyone who is sufficiently skilled to use a brace and bit.

Having now described the nature of my invention what I claim and desire to secure by Letters Patent is:

1. In a latch of the character described, the combination of a longitudinally divided housing for the latch mechanism, a spring bolt slidably arranged in one section of the housing and terminating at one end in a pair of arms and a centrally disposed finger, a knob operated roll-back mounted between the housing sections, and operating to reciprocate the said bolt by contact with the arms thereof, and a thumb operated rotary member disposed intermediate said arms and having a projection operating into and out of the path of the finger of the bolt to block or release the latter to movement by the roll-back.

2. In a latch of the character described, the combination of a longitudinally divided cylindrical housing for the latch mechanism, one section terminating in a round disc shaped flush plate having an opening therein, a spring bolt slidably arranged in the latter section and having one end operating in said opening in the flush plate, said bolt having its opposite end provided with projecting arms and a finger therebetween, a pair of elements comprising a roll-back and a rotary member straddled by said arms and operating in the housing, one thereof being adapted to cooperate with the arms to retract the bolt and the rotary member being operated to bring the said fingers into the

path of movement of the finger to block release of the bolt, a pair of parallel spindles for said roll-back and rotary member, one spindle being provided with a knob at opposite ends and operating the roll-back controlling movement of the bolt and the second spindle being connected with the rotary member for blocking the bolt and projecting from only one side of the housing, and a face plate for the door receiving the latch comprising a member having openings to accommodate therethrough both of said spindles.

3. In a latch, the combination of a longitudinally divided cylindrical housing terminating in a round disc flush plate, a spring bolt within the housing and projecting through said flush plate, a pair of closely arranged elements comprising a roll-back and rotary member for operating and blocking said bolt, spindles for said elements, and a face plate therefor, one spindle being rotatably mounted in the plate and the other spindle projecting through the plate and housing to receive a knob on opposite ends.

In testimony whereof I affix my signature.

EMANUEL HALPERN.