

Feb. 20, 1945.

H. G. VOIGHT

2,369,873

DOOR LATCH

Filed May 21, 1943

2 Sheets-Sheet 1

Fig. 1.

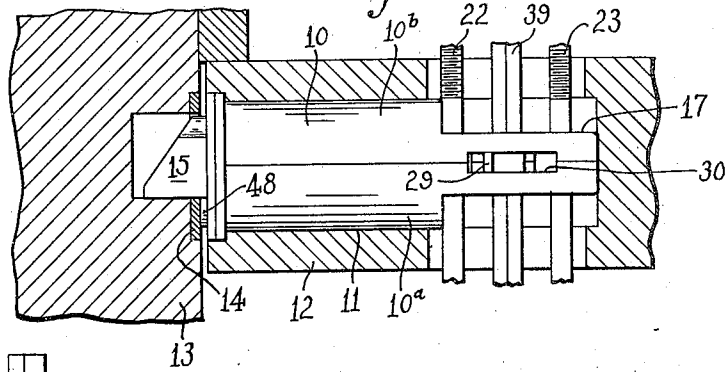


Fig. 2.

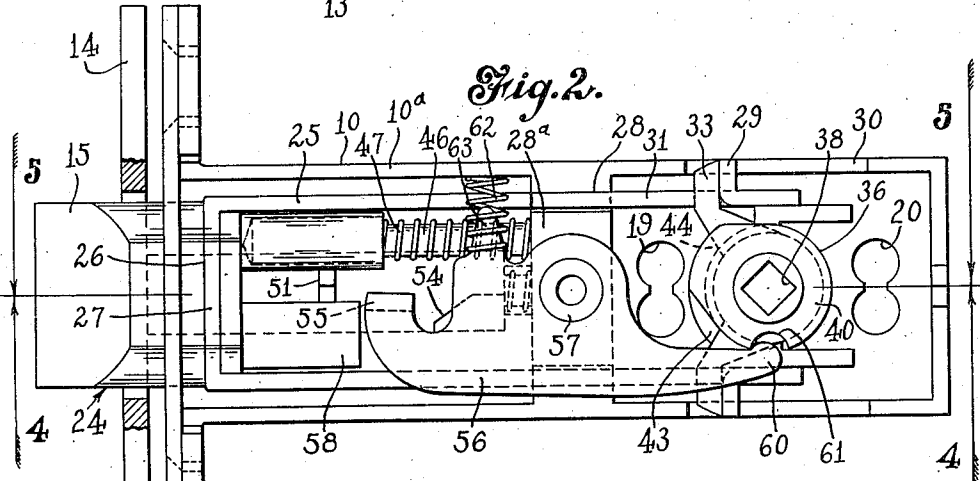
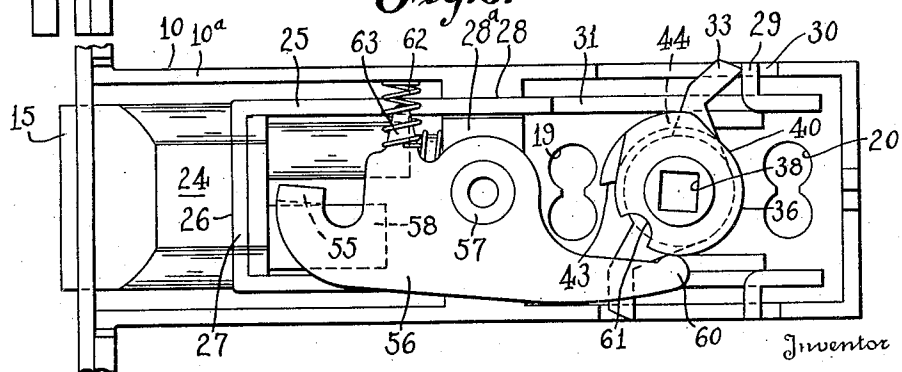


Fig. 3.



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Fig. 4.

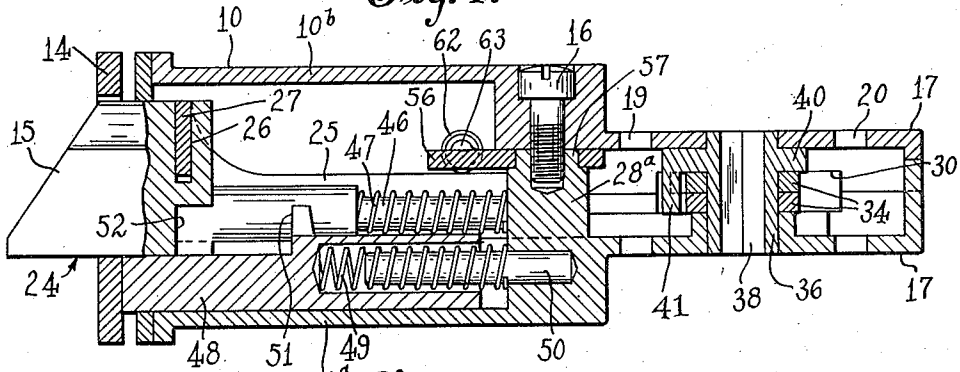


Fig. 5.

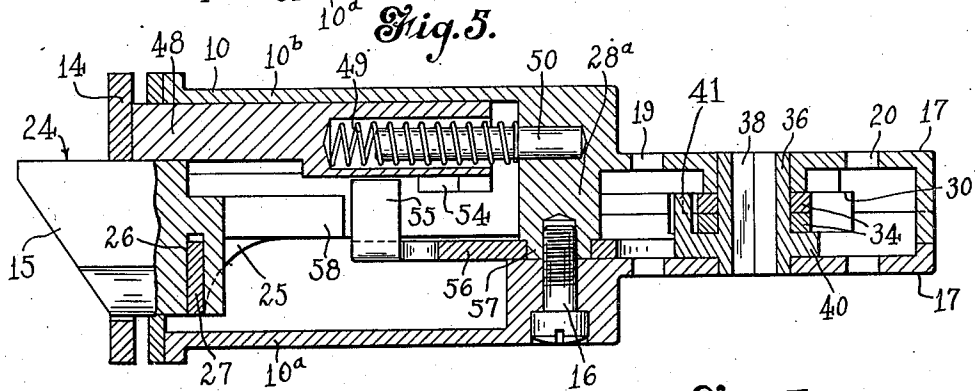


Fig. 6.

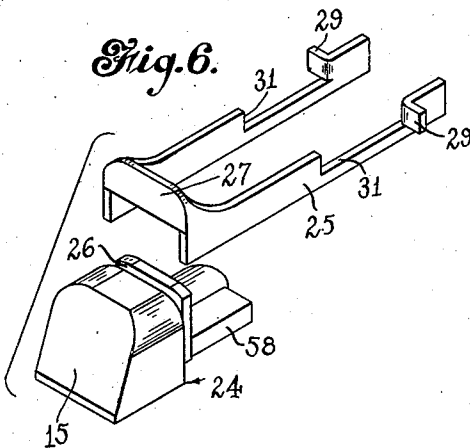
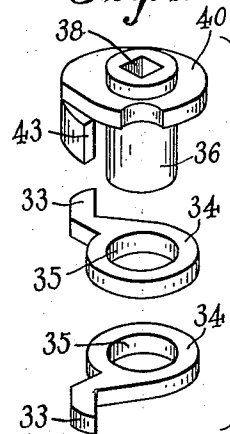


Fig. 7.



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UNITED STATES PATENT OFFICE

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DOOR LATCH

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Application May 21, 1943, Serial No. 487,854

6 Claims. (Cl. 292-169)

This invention relates to door latches and more particularly to a device of the so-called night latch type, the mechanism of which is enclosed in a case generally tubular in form so that it may be inserted in a cylindrical opening bored through the edge of the door.

In the past some disadvantage has resulted in latches of this type in that the mechanism of the structure is not symmetrical with the case so that adjustments have to be made to adapt the latch for right and left hand doors or else two separate latches had to be made, one for a door of each hand.

In the present invention I contemplate the provision of a door latch the mechanism of which, and particularly the knob spindle and associated parts, will be symmetrically arranged with respect to the central horizontal plane of the latch structure whereby the latch may be used on a door of either hand, simply by inverting the latch case so that the beveled side of the latch bolt faces in the opposite direction. I also provide in the present structure a guard bolt or dogging plunger so arranged that when the door is closed the latch bolt will be dogged against retraction by a tool inserted between the edge of the door and the door jam.

One of the objects of the present invention is the provision of a door latch of the tubular type which is simple and inexpensive in construction, and which may be used without alteration upon either a right or left hand door.

A further object of the invention is the provision of a door latch mechanism enclosed in a casing generally tubular in form, the mechanism being so arranged that it is generally symmetrical with respect to a horizontal plane through the center of the case whereby the case may be placed upon the door with the latch bolt facing in either direction whereby it may be used without change upon either right or left hand doors.

A still further object of the invention is the provision of a night latch structure of the character described having improved means for operating the latch bolt.

To these and other ends the invention relates to the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Figure 1 is a top plan view of my improved latch mechanism, generally mounted in a door, the door being shown in horizontal section;

Fig. 2 is a view of the latch mechanism with the cover of the case removed to expose the

working parts in the position assumed when the bolt is protracted;

Fig. 3 is a view similar to Fig. 2, showing the bolt in retracting position;

Fig. 4 is a horizontal sectional view on line 4-4 of Fig. 2;

Fig. 5 is a similar view on line 5-5 of Fig. 2;

Fig. 6 is an isometric view of the latch bolt and associated retractor;

Fig. 7 is an exploded view of the retractor hub and roll-backs.

To illustrate a preferred embodiment of my invention, I have shown in the drawings a latch mechanism comprising a case 10 of generally tubular shape mounted in a door or cylindrical opening 11 in door 12, the door cooperating with a door jamb 13 upon which is carried a strike plate 14 cooperating with the head 15 of the latch bolt when the latter is in retracted position. The case, as shown in Fig. 1, may be made in two halves 10^a and 10^b which may be secured together by the screw 16 (Fig. 4). At the rear end of the case, the latter is flattened as shown at 17 and this flattened portion is provided with twin openings 19 and 20 through which may be passed screws 22 and 23 to assist in screwing the lock in place.

The bolt 24, having the head 15, is slidably mounted at the forward end of the case and projects through the usual opening at the front of the case to be received in an opening provided in the strike plate 14. Associated with the bolt is a retractor 25 shown in Fig. 6 of the drawings, the bolt being provided adjacent the rear face of the head thereof with a slot 26 within which slot is received a connecting plate 27 joining the two legs of the retractor 25. In this manner the retractor and bolt may be readily connected together so that they will be permanently associated together as long as they are within the case but may be readily detached when removed from the case. The legs of the retractor extend rearwardly through slots 28 into the portion 17 of the case and are there provided with oppositely turned lugs or abutments 29 which abutments are guided in slots 30 in the case.

The abutments 29 may be conveniently formed by bending outwardly portions of the legs of the retractor 25 thus leaving slots 31 in the legs of the retractor within which may be received arms 33 of a pair of roll-backs 34. These roll-backs are similarly formed as shown in Fig. 7 but are oppositely disposed when mounted in the lock case so that the arm 33 of one member bears against one of the lugs 29 and the arm 33 of the

other bears against the other lug 29 when the openings 35 of the roll-backs are in registration.

By means of these openings the roll backs are rotatably mounted upon a hub member 36 which in turn is rotatably mounted in the portions 17 of the lock case. As shown in Fig. 7 this hub member is provided with a non-circular central opening 38 to non-rotatably receive the knob spindle 39 of similar shape.

Secured to the hub 36, adjacent one end thereof, is a cam member 40 provided with an inwardly projecting lug 41 having shoulder portions 43 and 44 thereon, designed respectively to engage back of the arms 33 of the roll-backs and actuate one or the other of the latter members thus causing it to be moved against the lugs 29 and retract the latch bolt by means of the retractor 25. It will be apparent that when the knob spindle 39 is turned the retracting cam 40 will be turned and the shoulder members 43 or 44, depending upon the direction in which the knob spindle is rotated, will be moved against one of the lugs 29. It will also be obvious that when one of the roll-backs 34 is actuated the other may remain at rest as the two are entirely separate from each other and only one is moved by the hub cam depending upon the direction of rotation of the spindle 39 but that regardless of the direction in which the spindle is rotated the latch bolt will be retracted. It is also noted that the hub 36 as well as the roll-backs 34 are symmetrically mounted with respect to a central longitudinal plane through which the lock extends, so, regardless of the position in which the latch mechanism may be mounted upon the door, these parts will occupy the same position with respect to the escutcheon and other mounting parts of the lock which cooperate with the lock case.

Secured to the member 28^a is a forwardly extending post 46 about which is a spring 47, which post and spring are received in an opening in the rear end of the bolt 24 so that the spring 47 will tend to urge the bolt toward protracted position shown in Fig. 4 and the post 46 will guide the bolt in its retracting movements.

The guard bolt 48 is reciprocally mounted in the lock case to project therefrom at the rear edge of the latch bolt head 15, this guard bolt being urged forwardly by a spring 49 mounted on a post 50 secured at its rear end to the latch case and is provided with a shoulder 51 designed to contact with a portion 52 of the rear surface of the bolt head so that it will be moved rearwardly when the bolt is cammed inwardly by engagement of the beveled face of the bolt head with the strike plate. This guard bolt is also provided with a beveled lug 54 adapted when the guard bolt is protracted to move under and raise a laterally extending arm 55 on a dogging lever 56 pivoted in the case at 57. This arm 55 of the dogging lever is adapted, when the parts are in the position of Fig. 2 and the guard bolt retracted by the strike plate, to stand behind a portion 58 of the latch bolt and dog the same against retraction. When, however, the guard bolt is protracted by its spring, the member 54 moves below the laterally extending end 55 of the lever 56 and moves the part 55 from its dogging position so that the latch bolt is free for retraction.

It will be apparent from the above that when the door is closed and the latch bolt is protracted it will be dogged against retraction. It is therefore necessary to arrange to move the dogging member 55 out of its operative position when the knob spindle is turned to retract the latch. For

this purpose the dogging lever 56 is provided with a tail portion 60 designed to lie in a semi-circular recess 61 in the hub cam 40 and, as will be obvious from Fig. 2, regardless of the direction in which the hub 36 is rotated, the cam will move the end 60 of the dogging lever out of the recess 61 and thus move the dog 55 upwardly (referring to Figure 2) until it no longer engages the member 58 on the bolt whereby the bolt will be free for retraction by one or the other of the roll-backs 33.

A spring 62 acting against the lock case and surrounding a finger 63 on the dogging lever 56 tends to maintain this lever in its operative position.

It will be apparent that I have provided a tubular latch structure of very simple construction which is reversible so that it may be mounted upon either right or left hand doors and that the knob spindle and associated mechanism is symmetrical with respect to the lock case. Moreover, regardless of the direction in which the knob spindle is rotated, one or the other of the roll-backs 33 will be picked up by the cam 40 on the hub 36 and actuated to retract the latch bolt. Also, when rotated in either direction, the hub cam 40 will serve to move the dogging lever 56 against the tension of its spring 62 to a position to free the bolt for retraction.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. A door latch comprising a case of generally tubular shape, a latch bolt reciprocally mounted therein, a pair of spaced retracting members connected to the bolt, a hub rotatably mounted in the case between said members, a pair of roll-backs mounted on the hub, each having an arm thereon, said arms projecting in opposite directions to engage said retracting members respectively, a cam on said hub adjacent one end thereof, said cam having an inwardly extending lug thereon disposed between said arms; and means on said lug to actuate one or the other of said arms depending upon the direction of rotation of said hub.

2. A door latch comprising a case of generally tubular shape, a latch bolt reciprocally mounted therein, a pair of spaced retracting members connected to the bolt, a hub rotatably mounted in the case between said members, a pair of roll-backs movably mounted in the case, each having means thereon to engage one of said retracting members, a cam on said hub adjacent one end thereof, said cam having an inwardly extending lug thereon disposed between said means, and means on said lug to engage and actuate one or the other of said rollbacks depending upon the direction of rotation of said hub, each of said rollbacks being movable independently of the other.

3. A door latch comprising a case of generally tubular shape, a latch bolt reciprocally mounted therein, a pair of spaced retracting members connected to the bolt, a hub rotatably mounted in the case between said members, a pair of roll-backs mounted on the hub, each having an arm thereon, said arms projecting in opposite directions to engage said retracting members respectively, a cam on said hub adjacent one end thereof, said cam having an inwardly extending lug thereon disposed between said arms, and means on said lug to actuate one or the other of

said arms depending upon the direction of rotation of said hub, said hub and rollbacks being symmetrically arranged relatively to a horizontal plane through the center of the case.

4. A door latch comprising a case of generally tubular shape, a latch bolt reciprocally mounted therein, a pair of spaced retracting members connected to the bolt, a hub rotatably mounted in the case between said members, a pair of rollbacks mounted on the hub, each having an arm thereon, said arms projecting in opposite directions to engage said retracting members respectively, a cam on said hub adjacent one end thereof, said cam having an inwardly extending lug thereon disposed between said arms, means on said lug to actuate one or the other of said arms depending upon the direction of rotation of said hub, a bolt-dogging lever in the case, and means on said cam to actuate said lever regardless of the direction of rotation of the hub.

5. A door latch comprising a case of generally tubular shape, a latch bolt reciprocally mounted therein, a pair of spaced retracting members connected to the bolt, a hub rotatably mounted in the case between said members, a pair of rollbacks each having an opening rotatably receiving said hub and an arm to engage one of said

retracting members to retract the bolt, a cam on said hub adjacent one end thereof, said cam having an inwardly extending lug thereon provided with a pair of shoulders, one of which picks up and moves one of said rollbacks depending upon the direction of rotation of said hub, a bolt-dogging lever mounted in the case having a tail portion, and said cam having a recess in its periphery in which the tail portion of said lever normally is disposed.

6. A door latch comprising a case of generally tubular shape, a latch bolt reciprocally mounted therein, a pair of spaced retracting members connected to the bolt, a hub rotatably mounted in the case between said members, a pair of rollbacks mounted on said hub, each of said rollbacks having an arm to engage one of said retracting members, a cam on said hub adjacent one end thereof, said cam having a lug extending substantially parallel to the hub and disposed between said arms to actuate one or the other thereof depending upon the direction of rotation of said hub, a bolt dogging lever mounted in the case having a tail portion, and means on said cam engaging the tail portion of said lever to actuate the same when the hub is rotated.

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