

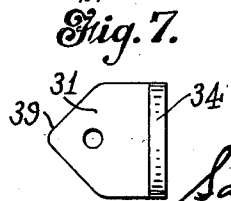
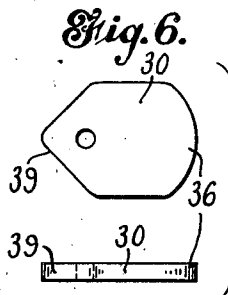
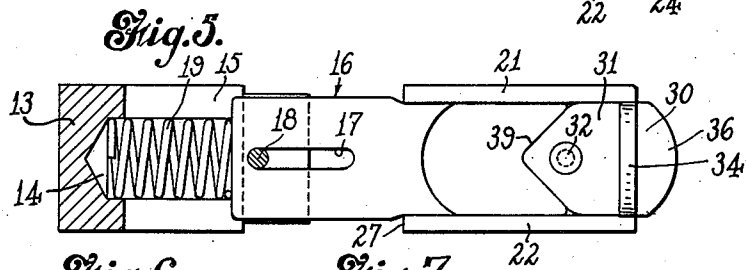
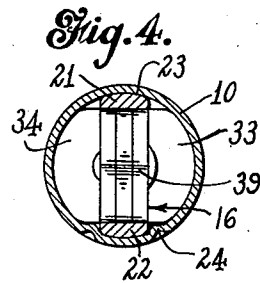
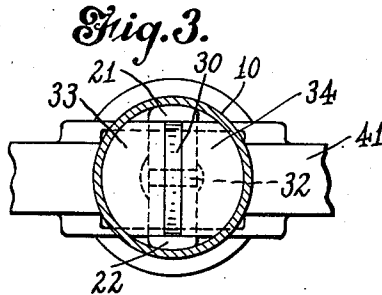
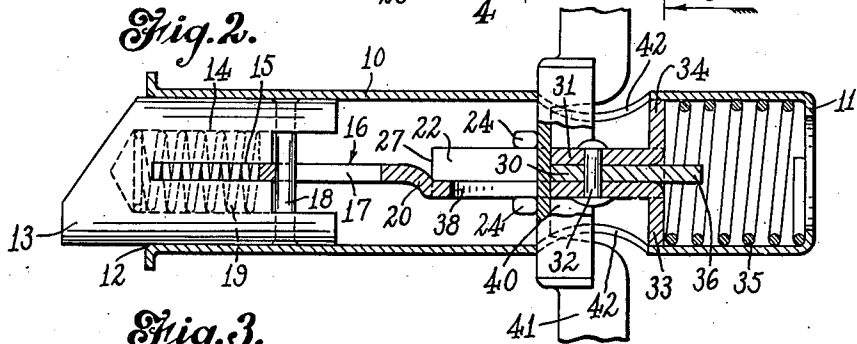
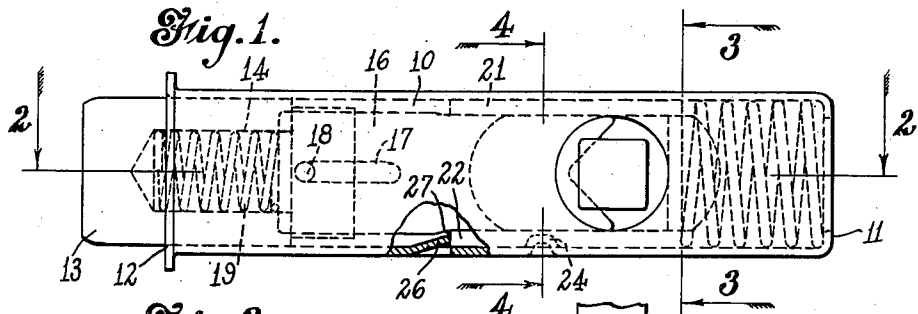
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SCREEN DOOR LATCH

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UNITED STATES PATENT OFFICE

2,391,736

SCREEN DOOR LATCH

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11 Claims. (Cl. 292-169)

This invention relates to door latches, and more particularly to a latch for use with doors of light weight, such as screen doors, for example. As illustrated, the working portions of the latch are housed within a tubular or cylindrical case, the case being such that it may be conveniently formed of seamless tubing, for example, and the parts thereafter inserted therein.

Latches of this character are commonly provided with an operating spindle extending transversely of the case through openings therein, and serving to retract the bolt when the spindle is rotated. During shipping it is common to ship the latches in knock-down condition, and more especially with the spindle removed from its position in the case so that less space is required and so that a smaller package may be employed. As the spindle also acts to hold the parts of the lock within the case, these parts will often become disassembled from the case when it is removed from the carton, as there is nothing to hold the parts in place.

I contemplate by the present invention the construction of a latch of the character described, such that the parts will be retained within the case even when the spindle is removed therefrom, and to so construct the operating parts of the lock that these will be of very simple form, and so that their manufacture will be comparatively inexpensive, while at the same time the working parts of the lock will be positive in operation and will be properly guided in their reciprocating movements to protract and retract the bolt.

One object of the present invention is to provide a door latch of simple and inexpensive construction, the parts of which are so arranged that they may be permanently secured within the case and properly guided in their movements therein.

A still further object of the invention is to provide a door latch of the type described having a latch-retracting member of improved construction, which may be more economically manufactured than the corresponding parts in common use.

A still further object of the invention is to provide a door latch of the character described having a simple and inexpensive arrangement for retaining and guiding the bolt and associated parts within the case, so that these parts will be held against rotational displacement, whereby the latch may be readily installed upon a door without the necessity of reversing the position of the parts of the mechanism within the case.

To these and other ends the invention consists

in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawing:

Fig. 1 is a side elevational view of a latch embodying my invention;

Fig. 2 is a longitudinal sectional view on line 2-2 of Fig. 1;

Fig. 3 is a transverse sectional view on line 3-3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a transverse sectional view on line 4-4 of Fig. 1, looking in the direction of the arrows;

Fig. 5 is a view of the bolt and bolt retractor, the former being shown in section and the latter in side elevation;

Fig. 6 comprises plan and side elevational views of one of the parts of the retractor; and

Fig. 7 is a top plan view of another part of the retractor.

To illustrate a preferred embodiment of my invention, I have shown a latch case 10 of tubular form, the case being partly closed at the back, as shown at 11, and being open at the front end, as at 12, for the projection therefrom of the bolt 13. As shown, the case is integrally formed of tubular stock and is devoid of seams. As shown, the bolt is provided with a bore or recess 14 opening through the rear end of the same, and is also provided with a longitudinal slot 15 which intersects this bore and which also opens through the rear end of the bolt, leaving the head or nose of the bolt solid, as shown more especially in Fig. 5.

Secured to the bolt by a lost-motion connection, as will be hereinafter described, is a bolt carrier or retractor 16 in the form of a flat link or elongated plate, this member being provided with a slot 17 near its forward end within which is received a pin 18 passed through the outer walls of the bore 14 in the bolt to secure the retractor thereto. As shown more especially in Fig. 5, the retractor is of somewhat greater width than the diameter of the bore 14, so that it will extend into the slot 15 and slide therein, the pin 18 moving in the slot 17.

A spring 19 is positioned in the bore 14 and acts against the front of this bore at its forward end, and at its rear end against the forward end of the retractor 16, so as to normally retain these parts in extended position, with the pin 18 at the forward end of the slot 17, as shown in Fig. 5. It will be apparent that with this arrangement when the door is closed and the bolt cammed rearwardly by engagement with a strike, in the usual manner, the bolt may move rearwardly against the tension of the spring 19 in order to

permit the door to close, this movement taking place relatively to the retractor 16, which will ordinarily remain stationary during this operation.

As stated, the retractor 16 is in the form of a flat link or plate, and may be conveniently made by a stamping or pressing operation. As shown more especially in Figs. 2 and 5, this member is offset intermediate its length, as shown at 20, and rearwardly of this offset portion is provided with laterally or horizontally extending flanges 21 and 22. These flanges may be slightly rounded upon their outer surfaces, as shown, for example, at 23 in Fig. 4, so that they will fit snugly the inner wall of the case 10, which, as shown, is substantially circular in cross-section. In order to guide the retractor in its reciprocatory movements within the case, lugs 24 are formed upon the inner surface of the case, one of which lugs abuts the body of the retractor itself, and the other the edge of the flange 22, so that the retractor will not be permitted to rotate within the case. It will be apparent that, as the forward end of the retractor is slidably engaged within the slot 15 of the bolt, the latter will also be prevented from rotational movement. In order to hold the retractor in the case, a tongue 26 may be struck inwardly from the wall of the case, as shown more especially in Fig. 1, this tongue serving to abut the forward edge 27 of the laterally extending flange 22. This engagement will limit the forward movement of the retractor and prevent it and the bolt from being withdrawn entirely from the case. It is understood that the tongue 26 is displaced inwardly after the parts have been assembled in the case.

Adjacent its rear end certain parts are superposed upon and secured to the web portion of the retractor, as will now be described. A small plate 30 of the shape shown in Fig. 6 is placed between the flanges 21 and 22 in such a position that its rear end extends rearwardly beyond the retractor itself, while superposed upon the plate 30 is a second plate 31, the two plates being secured to the retractor web by the rivet 32, and preferably the width of these two plates is, as shown in Fig. 2, substantially equal to the width of the flanges 21 and 22, so that they lie within the outline of these flanges. As shown in Figs. 2 and 7, a part of the retractor member is turned laterally as at 33 and rounded upon its end to fit snugly against the wall of the case, while a similar laterally turned end portion 34 is provided upon the plate 31, these laterally turned portions serving to assist in guiding the retractor in the case, and also serving as an abutment against which may act the spring 35 mounted in the case behind the retractor, and acting at its rear end against the wall 11. It will be understood that the rearwardly extending end 36 of the intermediate plate 30 extends within the spring 35, so that this spring will have a surface of considerable area to act upon, notwithstanding the fact that the retractor in general is formed of a flat piece of stock.

Forwardly of the plates 30 and 31 the retractor is provided with an opening 38, the rear edge of which is cam shaped, as shown at 39, and the forward ends of the plates 30 and 31 are similarly shaped so as to provide a relatively thick cam surface to be engaged by complementary cam surface 40 formed on the spindle 41. This spindle is adapted to extend transversely through the case through openings 42 formed therein.

It may be noted that the members 30 and 31

are identical except for the fact that the member 31 is of L-shaped form. This is a convenience in manufacture, as the parts may be stamped out in identical form, and thereafter the rear end portion of the member 31 turned laterally, as shown at 34. Thus the length of the projection 36 is substantially the same as the length of the laterally turned portion 34, and the forward cam-shaped ends of these members coincide with each other and with the similarly shaped surface 39 at the rear of the opening 38 in the retractor.

It will be apparent that after the parts are assembled in the case and the tongue 26 struck upwardly to engage the shoulder 27, they will be retained within the case independently of the spindle 41. By retracting the parts slightly with the thumb the spindle may be inserted through the openings 42 in the position shown in Fig. 2, in which the cam portion 40 thereof will engage the cam portion 39 of the retractor and serve to retract the bolt. The retractor will, of course, be urged to protracted position by the spring 35, which spring may be slightly stronger than the spring 19 so that the bolt 13 may be forced inwardly when the door is closed without moving the retractor.

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 claims.

What I claim is:

1. A latch bolt construction comprising a casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end, said link having an opening therein and a cam surface at one side of said opening, and a plate secured flatwise to said link adjacent said cam surface to increase the thickness of the link.

2. A latch bolt construction comprising a casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end, the rear end of said link having laterally projecting guide flanges along its upper and lower edges, an opening between said flanges and a cam surface at one side of said opening, and a plate secured flatwise to the link between the flanges and extending rearwardly beyond the end of the link.

3. A latch bolt construction comprising a casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end, said link having an opening therein and a cam surface at one side of said opening, a plate secured flatwise to said link adjacent said cam surface to increase the thickness of the link, said link having its rear end portion turned laterally, and a spring in the casing acting against said turned portion.

4. A latch bolt construction comprising a casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end, said link having an opening therein and a cam surface at one side of said opening, a plate secured flatwise to said link adjacent said cam surface to increase the thickness of the link, said link having its rear end portion turned laterally, a spring in the casing acting against said turned portion, and a second plate secured to the link in superposed position with respect to the first and

having its rear end turned laterally to provide an abutting surface for the spring.

5. A latch bolt construction comprising a casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end, said link having an opening therein and a cam surface at one side of said opening, a plate secured flatwise to said link adjacent said cam surface to increase the thickness of the link, the forward end of the link having a sliding connection with the bolt, and a spring interposed between the bolt and the forward end of the link.

6. A latch bolt construction comprising a casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end, said link having an opening therein and a cam surface at one side of said opening, a plate secured flatwise to said link adjacent said cam surface to increase the thickness of the link, the forward end of the link having a slot therein, said bolt having a recess within which the link is received, a pin carried by the bolt and passing through said slot, and a spring in said recess between the bolt and the forward end of the link.

7. A latch bolt construction comprising a casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end, said link having an opening therein and a cam surface at one side of said opening, a plate secured flatwise to said link adjacent said cam surface and having its rear end turned outwardly and laterally, the rear end of the link being turned laterally in the opposite direction, and a second plate secured between said first plate and link and extending rearwardly beyond said laterally turned portions.

8. A latch bolt construction comprising a casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end, said link having an opening therein and a cam surface at one side of said opening, a plate secured flatwise to said link adjacent said cam surface and having its rear end turned outwardly and laterally, the rear end of the link being turned laterally in the opposite direction, and a second plate secured between said first plate and link

and extending rearwardly beyond said laterally turned portions, and said link having laterally extending flanges on its upper and lower edges overlying the upper and lower edges of said plates.

9. A latch bolt construction comprising a tubular casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end and having laterally projecting guide flanges along its upper and lower edges to contact the casing and guide the link in its movements, a plate secured flatwise to the link between said flanges, and the rear ends of said link and plate being turned laterally in opposite directions and extending in proximity to the opposite walls of the casing.

10. A latch bolt construction comprising a tubular casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end and having laterally projecting guide flanges along its upper and lower edges to contact the casing and guide the link in its movements, a plate secured flatwise to the link between said flanges, the rear ends of said link and plate being turned laterally in opposite directions and extending in proximity to the opposite walls of the casing, and a second plate secured to the link between it and the first-mentioned plate, and the rear end portion of said second plate extending rearwardly of said guide flanges.

11. A latch bolt construction comprising a tubular casing, a latch bolt and retractor therefor slidably mounted in the casing, said retractor comprising a flat link connected to the bolt at its forward end and having laterally projecting guide flanges along its upper and lower edges to contact the casing and guide the link in its movements, a plate secured flatwise to the link between said flanges, the rear ends of said link and plate being turned laterally in opposite directions and extending in proximity to the opposite walls of the casing, a second plate secured to the link between it and the first-mentioned plate, the rear end portion of said second plate extending rearwardly of said guide flanges, and a spring acting between the rear end of the casing and said laterally turned end portions of said link and first plate.

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