A. A. PAGE.

AUXILIARY SPRING FOR LATCHES.

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1,089,435. Patented Mar. 10, 1914.

Fig. 1.

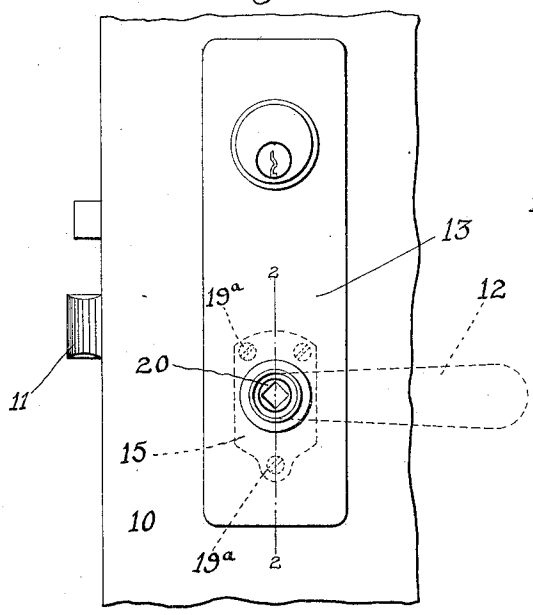


Fig. 2.

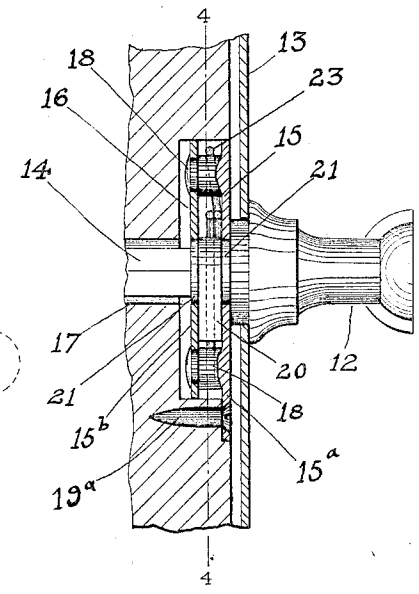


Fig. 3.

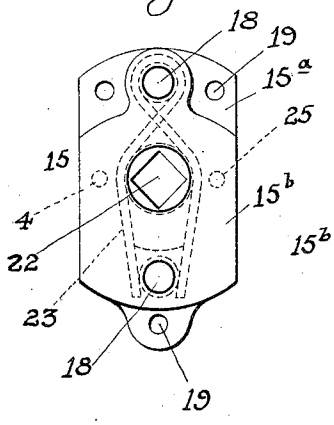


Fig. 5.

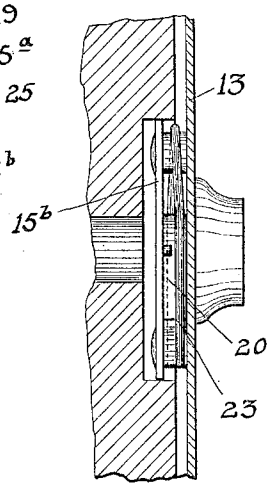
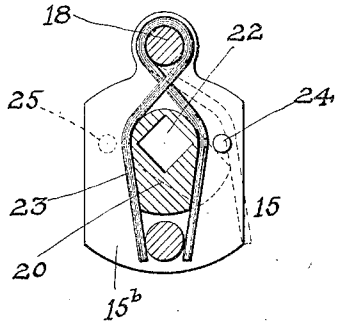


Fig. 4.



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AUXILIARY SPRING FOR LATCHES.

1,089,435. Specification of Letters Patent. Patented Mar. 10, 1914.

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To all whom it may concern:

Be it known that I, ALBERT A. PAGE, a citizen of the United States, residing in East Haven, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Auxiliary Springs for Latches, of which the following is a full, clear, and exact description.

This invention relates to auxiliary springs for locks in which a spring protracted latch bolt is retractable by means of a knob or lever handle.

It has been customary heretofore in some cases, especially where a heavy lever handle is employed, to have an auxiliary spring act on the spindle of the lever handle at a point beneath the escutcheon for the purpose of relieving the latch bolt spring from the work of returning the handle to its normal position each time that the lock is actuated. In most cases, however, the auxiliary spring has been single acting, that is, it has been arranged to act on the spindle in only one direction, and the usual constructions lack moreover the desired simplicity of manufacture and installation. Furthermore, they do not in many instances protect the lock mechanism from breakage when the lever handle or knob is forcibly manipulated by a burglar or sneak thief for the purpose of breaking the lock, or where the handle or knob is roughly handled by any person in the ordinary operation of the lock.

The object of the present invention is to provide an auxiliary spring device attachment for locks which is of simple, strong, inexpensive and durable construction and wherein all of the above mentioned defects are avoided.

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, Figure 1 is an elevation of a portion of a door equipped with the improved device, the lever handle or knob being omitted, Fig. 2 is an enlarged detail section on line 2—2 of Fig. 1, Fig. 3 is a detail rear face view of the auxiliary spring device shown in Fig. 2, Fig. 4 is a section on line 4—4 of Fig. 2, and Fig. 5 is a section similar to Fig. 2 but illustrating a modified construction.

Referring to the drawing, 10 indicates a portion of a door equipped with a lock comprising a latch bolt 11 retractable by a manipulating member such as a lever handle 12. This lever handle is mounted in the usual way in an escutcheon 13 of ordinary type and is attached to a spindle 14 coöperating with the latch bolt 11 in any preferred manner in order to retract the same. As the latch retracting mechanism itself forms no part of the present invention I have not considered it necessary to illustrate and describe it in detail but it will be understood that the latch bolt is usually equipped with a comparatively light spring by means of which it is normally held in its protracted position.

Referring to Figs. 1 and 2, 15 indicates, generally, an auxiliary spring device acting on the spindle 14 at a point beneath the escutcheon 13. The device 15 is preferably set in a mortise 16 in communication with the bore 17 for the spindle. It consists of substantially parallel front and rear plates 15^a, 15^b connected with each other in spaced relation by means of distance pieces or studs 18, the plate 15^a being provided with holes 19 for screws 20 by means of which it is secured in the mortise. The spindle 14 passes through alined holes in the plates 15^a, 15^b, and between the plates the spindle is embraced by a cam 20 having trunnions or bearing portions 21 fitting the aforesaid holes or openings in the plates. In this manner, the cam 20 is rotatably supported between the plates, and as the opening 22 therein is of polygonal shape to correspond with the spindle 14, it will be understood that as the spindle is oscillated the cam will oscillate correspondingly.

The cam 20 is acted on by a double acting spring 23 which is preferably constructed of a single piece of stout spring wire bent around one of the studs or distance pieces 18 and crossed over in such a manner that it presents oppositely acting legs or branches which pass along and contact with opposite sides of the cam 20.

The spring 23, in pressing uniformly against the cam from opposite sides normally holds it, together with the spindle 14, in the neutral position shown in full lines in Figs. 1 and 4, in which position the latch bolt occupies its usual protracted position. If the latch bolt is retracted by swinging the lever 12 upward with reference to Fig. 1

the cam will be moved into the position shown in dotted lines in Fig. 4 so that the right hand branch of the spring will be put under increased tension. As a consequence, when the lever 12 is released by the operator, the right hand portion of the spring will be effective without other assistance to return the lever handle to the normal position shown in Fig. 1. On the other hand, when the lever handle is depressed to retract the latch bolt the cam 20 will be swung to the left with respect to Fig. 4 thereby bringing the left hand branch of the spring into operation with similar results. It will therefore be understood that although the spring is formed of a single piece of material, it has a right and left action on the spindle-connected cam so as to return it with the proper amount of force when the spindle is oscillated in either direction.

In order to protect the interior mechanism of the lock against breakage by rough handling of the lever handle or its equivalent, I provide stop means for limiting the movement of the cam 20 in both directions. In the embodiment illustrated, the plate 15^b is provided with a stop pin or lug 24 adapted to be contacted by the side of the cam as the latter is thrown in one direction, while the plate 15^a carries a similar stop pin or lug 25 with which the cam coöperates in the same way when it is oscillated in the opposite direction. Hence it will be understood that when the lever handle is roughly or forcibly manipulated the cam 20 will be positively arrested in its oscillating movement in either direction in such a manner as to prevent the lock mechanism from being subjected to strain, the stops being properly spaced, of course, with respect to the cam to bring about this result.

In the modification shown in Fig. 5, the separate plate 15^a underlying the escutcheon 13 is omitted and the other plate 15^b is attached to and spaced from the escutcheon by means of studs or posts 18. In this case, therefore, the auxiliary spring device is carried by and forms a part of the escutcheon and it is applied to the door with the escutcheon in the manner shown. The action of this modified device with respect to the lock spindle is the same as that previously described.

It will therefore be understood that by my invention I provide a very simple and effective form of double acting spring for the purpose described. The front and rear plates are spaced apart at such a slight distance that the device is very thin and hence very little, if any, mortising is necessary in applying the device to the door.

By the construction described the cost of manufacturing the auxiliary spring device is reduced to a minimum and yet the latch mechanism is fully protected when the manipulating spindle is actuated in either direction. Moreover, the lever handle or its equivalent is always returned quickly to a definite neutral position as soon as it is released by the operator.

While the foregoing description is necessarily a detailed one in so far as it concerns the particular forms of my invention selected for illustration and description, it will be understood that various modifications of the construction may be adopted within the scope of the appended claims.

What I claim is:

1. In an auxiliary spring device for latches, the combination of a supporting plate, a latch spindle passing through said plate, and a double acting spring acting on said spindle and housed beneath said plate; substantially as described.

2. In an auxiliary spring device for latches, the combination of a supporting plate, a latch spindle passing therethrough, and a spring carried by said plate and formed of a single metal piece acting on said spindle to return it to neutral position when the spindle is oscillated in either direction; substantially as described.

3. In an auxiliary spring device for latches, the combination of a latch bolt, an escutcheon, a plate associated with said escutcheon, a cam journaled in said plate, a latch operating spindle passing through said cam, and a double acting spring acting on said cam; substantially as described.

4. A device such as described, comprising a supporting plate, a cam having a bearing in said plate and provided with a polygonal opening, a latch spindle passing through said opening, and a double acting spring on said supporting plate engaged with the cam to return it to neutral position; substantially as described.

5. A device such as described, comprising spaced supporting plates, a cam having bearings in said plates and provided with a spindle opening, and a spring acting on said cam between the plates; substantially as described.

6. A device such as described, comprising spaced substantially parallel supporting plates, a cam interposed between said plates and bearing at its ends in the respective plates, said cam having an opening for the latch spindle, and a double acting spring carried by and interposed between said plates and normally holding the cam in neutral position; substantially as described.

7. A device such as described, comprising a supporting plate, a cam having a bearing therein, a stud or post on said plate, and a spring reacting against said stud or post and having oppositely acting branches engaging opposite portions of the cam, substantially as described.

8. A device such as described, comprising

a supporting plate, a stud or post thereon, a cam rotatable with respect to said plate, and a single spring doubled about said post and having crossed over branches bearing against opposite sides of the cam; substantially as described.

9. A device such as described, comprising a supporting plate, a cam rotatable therein and having an opening for the latch spindle, a double acting spring normally holding said cam in neutral position, and stops to limit the throw of the cam in either direction; substantially as described.

10. A device such as described, comprising a supporting plate, a cam rotatable therein and having an opening for the latch spindle, a post or stud on said plate, a spring reacting against said post and having oppositely acting branches engaged with opposite sides of the cam, and stops at opposite sides of the cam; substantially as described.

11. A device such as described, comprising spaced supporting plates, a cam rotatably mounted between said plates and having an opening therethrough for a latch spindle, a post connecting said plates, a spring reacting against said post and having oppositely acting branches engaged with said cam, and stop pins for limiting the oscillating movement of the cam in both directions; substantially as described.

In witness whereof, I have hereunto set my hand on the 15th day of November, 1912.

ALBERT A. PAGE.

Witnesses:
HENRY H. MUNSON,
CARL W. CARLSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."