Dec. 15, 1931. A. F. W. VIEHWEGER 1,836,209

SPRING LOCK

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Fig. 3

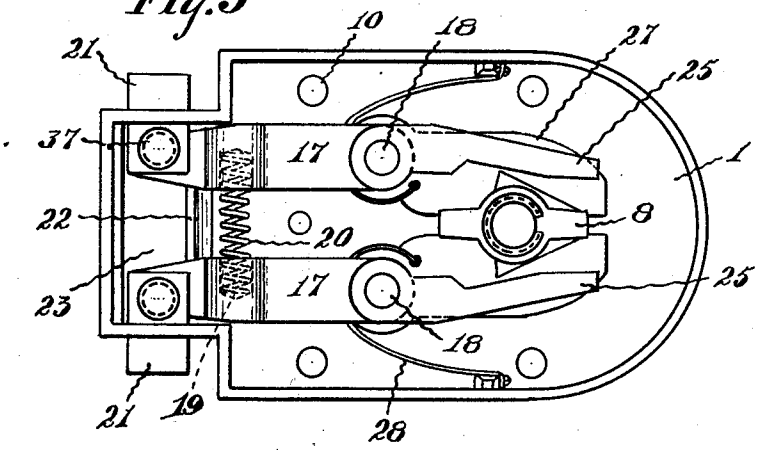


Fig. 2

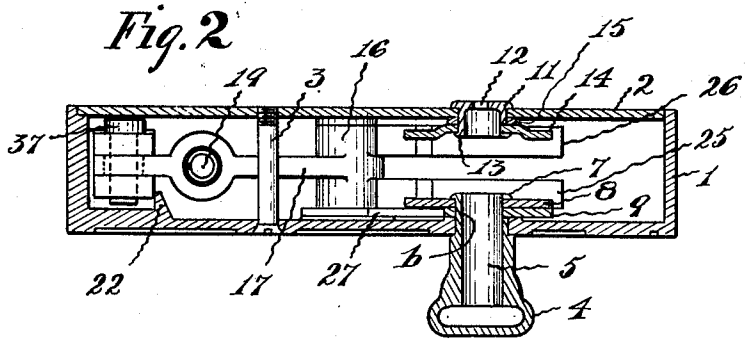
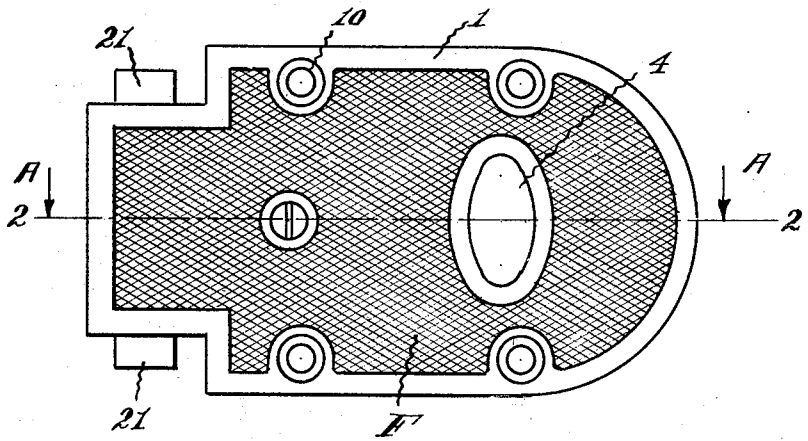


Fig. 1



INVENTOR

August F. W. Viehweger,

BY

Harold D. Penney ATTORNEY

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Fig. 4

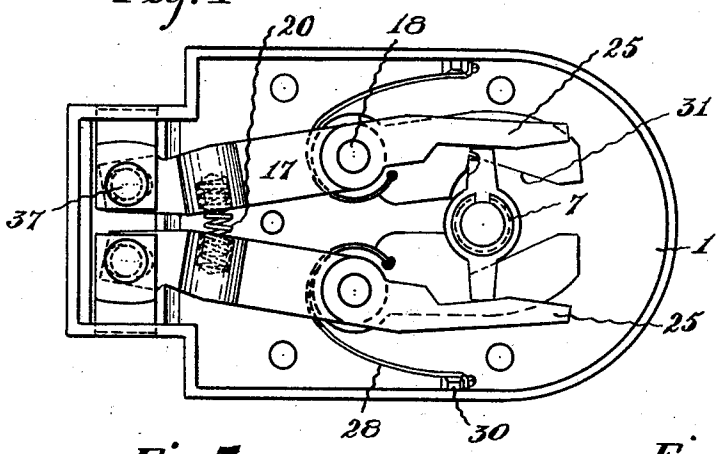


Fig. 5

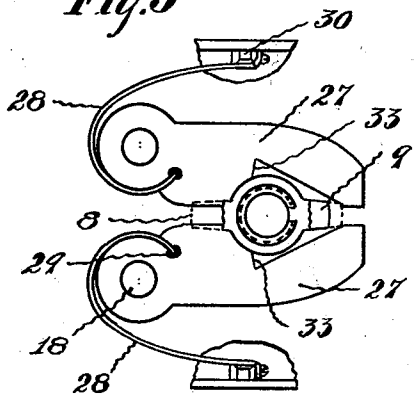


Fig. 7

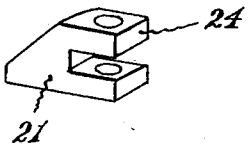
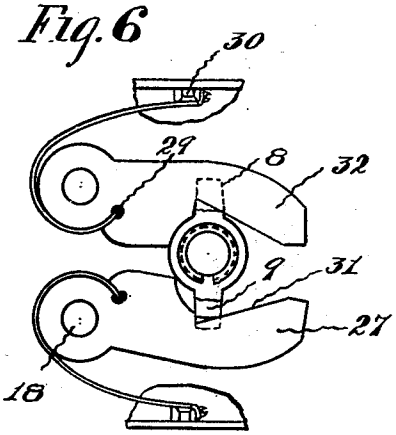


Fig. 6



INVENTOR

August F. W. Viehweger,

BY

Harold D. Penney

ATTORNEY

Patented Dec. 15, 1931 1,836,209

UNITED STATES PATENT OFFICE

AUGUST F. W. VIEHWEGER, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO DURABLE LOCK COMPANY, INC., OF POUGHKEEPSIE, NEW YORK, A CORPORATION OF NEW YORK

SPRING LOCK

Application filed March 9, 1928. Serial No. 260,370.

This invention relates to locks and more particularly to spring locks for doors. It is noted however that the invention is not limited to door locks nor in some respects even to spring locks.

One of the main objects of this invention is to provide a locking device which in normal position locks a door automatically upon shutting of the said door.

Another important object of this invention is to provide a spring lock which has means associated therewith to set the locking means in open position regardless of the direction of movement of the said setting means.

Another object of this invention is to provide a spring lock normally in closed position and a hand knob associated therewith, and means associated with the lock and cooperating with the knob whereby the lock may be placed in open position and positively maintained in such position by movement of the hand knob only, in either clockwise or counter clockwise direction, thereby eliminating the usual latching catch-lock therefor.

A further object of this invention lies in the manner in which the lock bolts are mounted on their respective levers, whereby they may be set to care for outward or inward swung doors. Further, as will be herein noted, the major operative parts of my lock are duplicates, and may be interchanged, as to operative positions, thereby accomplishing a great manufacturing economy, and simplifying the parts and labor of lock assembly.

Other objects of the invention are to improve generally the simplicity and efficiency of such devices and to provide a device or apparatus of this kind which is economical, durable and reliable in operation, and economical to manufacture.

I desire it to be understood that this invention is not limited to any specific form or arrangement of parts or steps except in so far as such limitations are specified in the claims.

In the drawings:—

Fig. 1 is a view of the lock from the hand knob side.

Fig. 2 is a sectional view of the lock along line 2—2 looking in the direction of the arrows A, A.

Fig. 3 is a view of the interior of the lock with the bolts in normal operative position.

Fig. 4 is a view similar to Fig. 3 with the bolts in retracted position.

Fig. 5 is a detailed view of the spring retractor latch plates in normal position.

Fig. 6 is a view similar to Fig. 5 but showing the spring plates in retracted bolt and latch locking position.

Fig. 7 is a detailed perspective view of one of the bolts.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the different views, the lock casing 1 has an inset cover 2 removably secured thereto by a single machine screw 3.

A bolt retractor knob 4 having a hollow interior 5 is exteriorly mounted on the lock casing 1 so as to be rotatable therein. The knob has an extension having a spun-over head 7 which retains the latches 8 and 9 respectively against the lock casing 1 for preventing withdrawal of the knob.

Four screw apertures 10 are provided in the lock casing 1 and are adapted to receive screws therein which pass through the cover 2 to fasten the lock against a door with the knob face F exposed to view. A hollow key cylinder socket 11 having a key slot 12 is rotatably mounted in the cover 2. A spun-over head 13, formed at the cylinder end opposite to the key slot, retains the key latch 14 against the cover 2, a friction washer 15 being inserted therebetween to maintain the key latch operatively against the head 13.

A pair of bolt lever castings 17 are pivoted on pins 18 at lugs 16. The pins 18 may be integral with the lock casing 1 or may be riveted or screwed thereto.

As shown in Fig. 3, the bolt levers comprise boss portions having recesses 19 drilled therein to receive a spring 20 for keeping the levers apart and the bolts 21 in normal or closed position. An abutment 22 integral

with the casing 2 provides a guide channel 23 in which the bolts 21 reciprocate from the closed position shown in Fig. 3 to the open position shown in Fig. 4. As shown in Fig. 7, each bolt has integral therewith a pair of apertured spaced lugs 24. Headed pins 37 pass thru the apertured lugs 24 and also through apertures in the levers 17 and thus connect the bolts 21 to the levers whereby movement of the levers toward one another align movement of the bolts along the guide channels 23, and to and from one another with a straight line movement.

The levers 17 have integral extensions in the form of forked lever cams 25 and 26. The cams 25 of both levers cooperate with the latch 8 as shown in Figs. 3 and 4; while the cams 26 cooperate with the key latch 14, as shown in Fig. 2. In other words, each lever 17 (see Fig. 2), has integral therewith a cam 26 and a cam 25.

In order to resiliently hold the knob 4 in either closed or open positions I provide spring detent latches or arms 27 disposed between the lock casing 1 and the lug 16 and pivoted on the pin 18. The latch detents are spring pressed towards one another by a pair of flat trigger springs 28 which are secured at one end to the latches 27 as at 29 by soldering or otherwise. The springs are screwed at the other ends against abutments 30 as in Figs. 5 and 6. The latches 27 have cam profiles 31 along which the latch arms 9, as in Figs. 4, 5, and 6, travel and spread the detent latches 27 apart against the pressure of the trigger springs 28 thus securing the knob 4 in retracted position. It will be seen from Fig. 4 that the latch 8 slides over the side faces 32 of the detent latches 27 as the latch arm 9 travels along the cam profile 31.

In operation, the lock is normally in a position as shown in Fig. 3. That is to say, the bolts are spring pressed into closed position and in locking engagement with a conventional striker plate (not shown). It will be noticed that the trigger springs 28 in this position urge the detent latches 27 toward one another. To retract the bolts, which results in an open position of the lock, the knob 4 may be rotated in either direction. As the knob is rotated the latch arm 9— travels along the cam path 31 and either of the detent latches 27, depending on the direction in which the knob is turned, is moved away from the other, as in Fig. 6. The latch 8 in the meantime slides over the side face 32 of the detent latch 27 until it contacts with the cam ends 25 of the bolt levers as in Fig. 4, and travels along the cam path thereof, resulting in the drawing together of levers 17 against the pressure of the spring 20, and the retraction of the bolts 21 along the guide channel 23. It will be noticed that in this retracted position the knob 4 is secured in position by one of the detent latches 27 clamping the latch arm 9. This assures a positive securing of the hand knob in the retracted position of the bolts.

To release the bolts the knob is turned back along the path it originally travelled. Rotating the knob clockwise or counter-clockwise results in a retraction of the bolts. It should be observed that the knob cannot be turned more than 180 degrees because of the detent notches 33 in the detent latches 27 which prevent the latch arm 9 from moving beyond the positions shown in Figs. 4 and 6.

When the lock is in closed position and it is desired to open the lock by key, the key is inserted into the key slot 12 and the cylinder 11 rotated in either direction. The key latch 14 is thus moved along cam 26, as in Fig. 2, and the levers 17, being movable independently of the detent latches 27, are drawn towards each other and the bolts retracted.

It is to be observed that the bolts 21 can be disposed in the guide channel 23 in either of two ways. The inclined faces of the bolts shown in Fig. 7 may be arranged in the lock assembly facing the face F or the cover 2 as shown in Fig. 4. This alternate arrangement would take care of outward or inward swung doors.

I have thus provided a spring lock which normally presents the bolts in closed position, whereby closing a door automatically locks the doors, until the bolts are retracted by the turning of the knob in either direction as described above, or upon movement of the key latch.

The embodiment illustrated is shown by way of preference only. The foregoing detailed description has been given for clearness of understanding. Hence no unnecessary limitation should be understood. The appended claims should be construed as broadly as permissible in view of the prior art.

What I claim is:

1. A door lock comprising, a plurality of bolts, lever means to maintain said bolts normally operative in door closing position, means operatively associated with said lever means to retract said bolts into door opening position, latch means concentric with and operated with said retracting means, and spring pressed detent latches cooperating with said latch means to secure said bolts in door opening position.

2. A door lock comprising, a pair of bolts, spring-pressed levers associated with the bolts maintaining the latter in normally door closing position, each lever being provided with a cam path, detent latch arms normally spring-pressed into converging position, a knob, a door opening latch secured to said knob, and operated thereby, to cooperate with said cam paths to move said bolts to door opening position, and a detent latch, secured to said knob to interengage with one of said

detent latch arms and thereby secure said knob and said bolts in door opening position.

3. In a door lock a pair of oppositely directed slidably mounted bolts, a pivotally mounted lever, pivotally connected to each of said bolts, an initially stressed spring, in engagement with each of said levers, thereby tending to turn said levers in a direction to move said bolts into door closing position, a pivotally mounted door knob, a pair of door opening latches secured thereto, to contact with said levers, to turn the same by the turning of said knob in a direction to retract said bolts into door opening position, a pair of pivotally mounted spring pressed detent latch arms, and a detent latch means, secured to said knob, to be interengaged with a part on either one of said arms, whereby said knob and said bolts may be maintained in a door opening position.

4. In a door lock a casing, a pair of bolts, a guide channel on said casing, for said bolts to reciprocate therein, a pair of pivotally mounted levers in said casing, for operating said bolts, a spring, interposed between said levers, for normally maintaining said bolts in door closing position, trans-pivotal extensions on said levers, having thereon cam paths, a pair of detent latch arms in said casing, disposed in a plane parallel to said levers, trigger springs, to force said arms towards each other, a knob, pivotally mounted on said casing, a double ended retractor latch, secured to said knob, to diverge said extensions, thereby converging said levers and retracting said bolts in said channel into door opening position, and a detent latch, secured to said knob, to interengage with one of said arms when said bolts are in said position, thereby maintaining said knob and said bolts in said position.

5. In a door lock a pair of normally divergent bolts in door closing position, a means for yieldably keeping said bolts in said position, a knob, a latch secured to said knob to act on said means to retract said bolts into door opening position, a pivotally mounted spring pressed detent latch arm, and a detent latch secured to said knob to interengage with said arm and thereby retain said knob and said bolts in door opening position.

6. In a door lock a casing, a pair of normally divergent bolts, slidably mounted therein, a pair of pivotally mounted levers, operatively connected to said bolts, a knob and a key socket, pivotally mounted in said casing, on opposite sides thereof, a pair of transpivotal extensions on each of said levers, a double ended door opening latch, secured to said knob, to contact with one extension of each of said levers, and another double ended door opening latch, secured to said socket, to contact with the other extension of each of said levers, said latches to actuate said levers independently of each other to retract said bolts into a door opening position thereof.

7. In a door lock a casing, a bolt, slidably mounted therein and normally disposed in door locking position, a pivotally mounted lever, operatively connected to said bolt, a knob and a key socket, pivotally mounted in said casing on opposite sides thereof, a pair of transpivotal extensions on said lever, a door opening latch, secured to said knob, to contact with one extension of said lever, another door opening latch, secured to said socket, to contact with the other extension of said lever, said latches to actuate said lever independently of each other to retract said bolt into a door opening position.

Signed at Poughkeepsie in the county of Dutchess and State of New York this 10th day of January A. D. 1928.

AUGUST F. W. VIEHWEGER.