(No Model.)

2 Sheets—Sheet 1.

H. P. YOUNG.

LATCH LOCK.

No. 315,205. Patented Apr. 7, 1885.

Fig. 1.

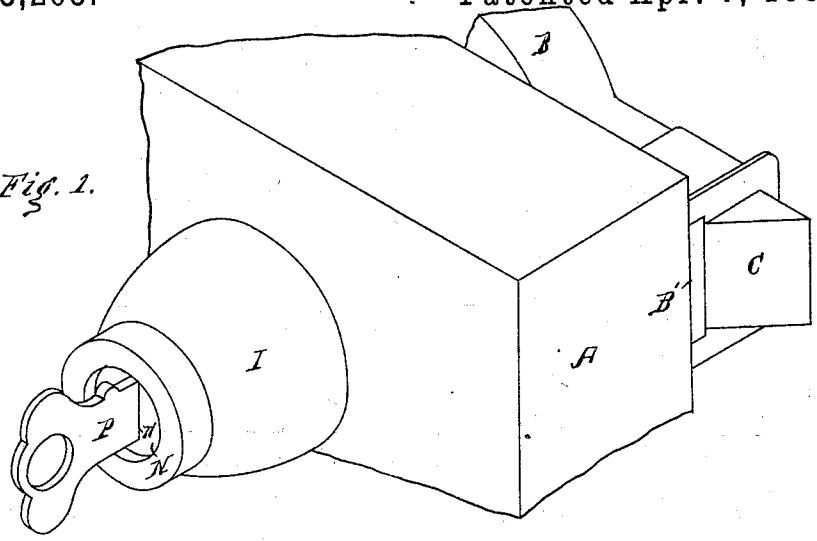
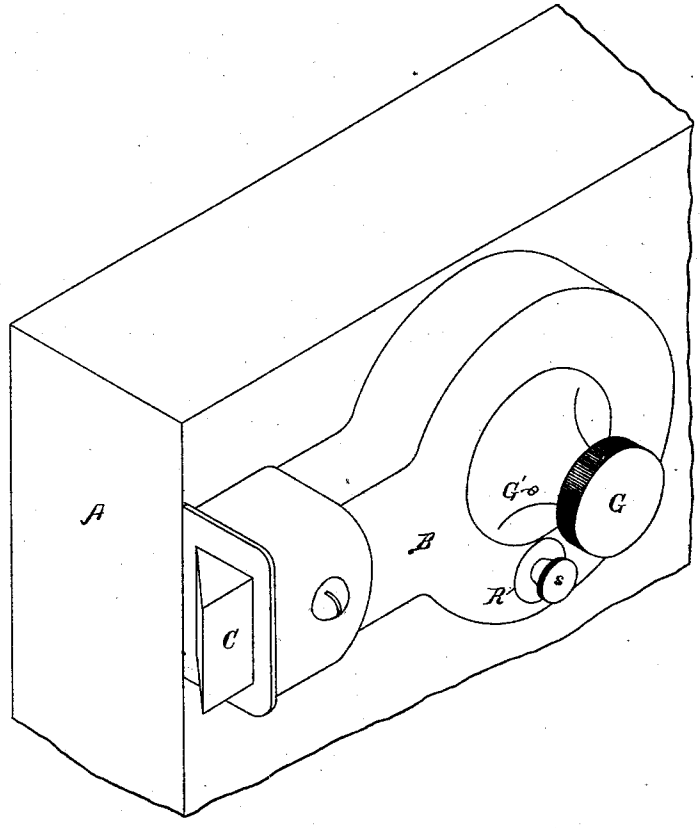


Fig. 2.



Witnesses—

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Harlan P. Young,

By Albert M. Moore,

His Attorney.

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(No Model.) 2 Sheets—Sheet 2.

H. P. YOUNG.

LATCH LOCK.

No. 315,205. Patented Apr. 7, 1885.

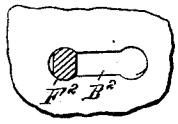


Fig. 8.

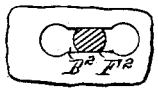


Fig. 9.

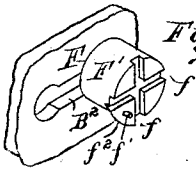


Fig. 10.

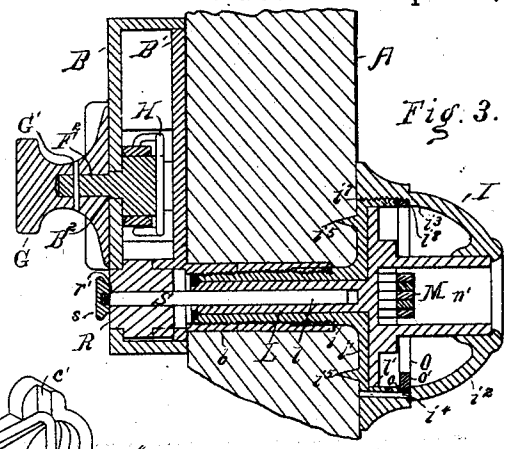


Fig. 3.

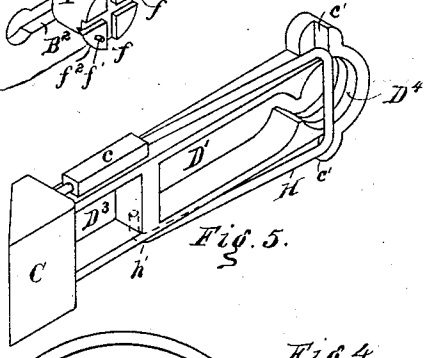


Fig. 5.

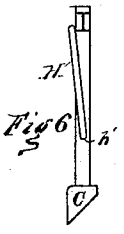


Fig. 6

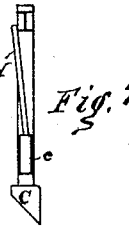


Fig. 7.

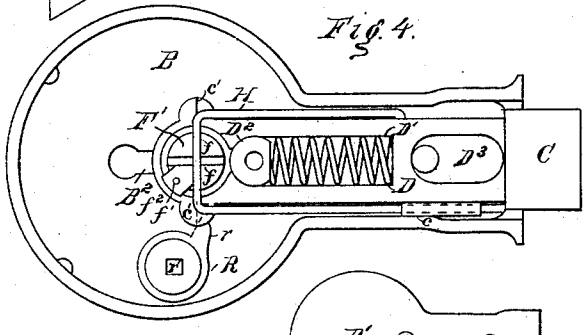


Fig. 4.

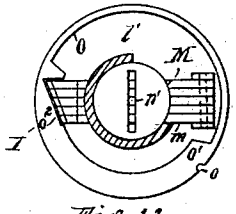


Fig. 11.

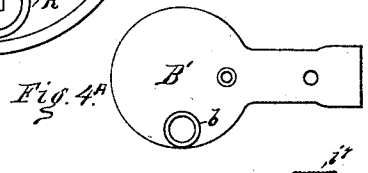


Fig. 4A

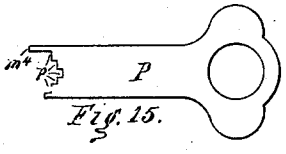


Fig. 15.

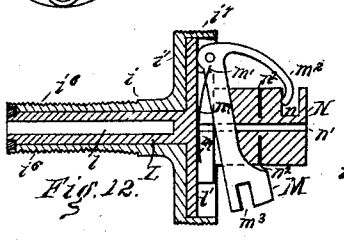


Fig. 12.

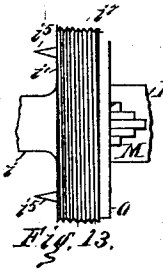


Fig. 13.

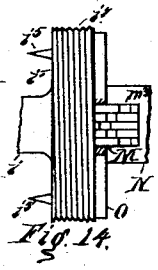


Fig. 14.

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By Albert M. Moore,
His Attorney.

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UNITED STATES PATENT OFFICE.

HARLAN P. YOUNG, OF LOWELL, MASSACHUSETTS, ASSIGNOR OF SIX-NINTHS TO CHARLES R. KIMBALL, ABEL WHEELER, AMASA H. SMITH, FRANK M. MERRILL, FRANK W. STEVENS, AND ALBERT M. MOORE, ALL OF SAME PLACE.

LATCH-LOCK.

SPECIFICATION forming part of Letters Patent No. 315,205, dated April 7, 1885.

Application filed October 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, HARLAN P. YOUNG, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Spring-Latch Locks, of which the following is a specification.

My invention relates to means of securing the latch-case and the lock-case to each other and to the door, to means of locking, unlocking, and reversing the bolt, and to burglar-proof devices.

In the accompanying drawings, on two sheets, Figure 1 is an oblique view of a part of the lock-stile of a door, with the spring lock or latch on the inner side, and the unlocking mechanism on the outer side, of the door; Fig. 2, an oblique view of part of the lock-stile and the spring-lock secured to the inner face thereof; Fig. 3, a vertical section through the lock and a part of the lock-stile and through the middle of the unlocking mechanism; Fig. 4, an elevation of the lock-case and its contents, the back or cover of the case being removed to show the contents; Fig. 4^a, an elevation of the back or cover of the case; Fig. 5, an oblique detached view of the bolt and a spring which holds the knob in position; Fig. 6, a detached view of one side of said bolt and spring; Fig. 7, a similar view of the other side of said bolt and spring. Fig. 8 is an elevation of a part of the case around the slot and the shank of the knob in the slot, said shank being in section and being at the end of the slot and turned to hold the bolt from being moved; Fig. 9, the same as Fig. 8, except that the shank is in the middle of the slot and is turned into a position to allow the bolt to move; Fig. 10, an oblique view of the same part of the case, showing the enlarged and slotted end of the shank; Fig. 11, a side elevation of the unlocking mechanism with the cover removed; Fig. 12, a section through the center of the unlocking mechanism parallel with the levers; Figs. 13 and 14, side views of a part of the unlocking mechanism with the cap removed, showing the levers, the same being in Fig. 13 in the position they occupy when the key is not in the lock. Fig. 15 is a side elevation of the key.

A is the lock-stile of a door. B is the case of the spring-latch; B′, the removable back or cover of the same; C, the bolt beveled at its front to strike and be pushed into the case by so striking the usual catch on the door-casing. A spiral spring, D, placed within the slot D′ of the bolt and its back end pressing against the stud D^2, crowds the beveled end of the bolt out of the case.

In front of the slot D′ is another slot, D^3, to allow the screw E to pass through the case to secure the lock to the door. There is a circular hole, D^4, through the bolt, which opens into the slot D′, and which receives and fits the head F′ of the stud F. The shank F^2 of said stud projects out of the case B through a slot, B^2, into the knob G, and is secured to the knob by a pin, G′, driven through the said knob and shank. By holding the knob in the fingers the bolt may be drawn back. The shank F is in shape a cylinder with two opposite sides flattened, and the slot B^2, through which the shank projects to enter the knob, has parallel sides through the greater portion of its length, and is just wide enough to allow the shank to move in it when the flat sides of the shank are parallel with the sides of the slot B^2; but this slot at each end is circular and large enough to allow the shank to be turned around ninety degrees, (see Fig. 8,) so that when the bolt is drawn back and the knob is turned quarter-way around the bolt is locked in the case and will not be pushed out by the spring; so, also, that when the bolt is projecting from the case it may be locked by turning the knob in a similar manner, the greatest thickness of the shank F^2 being too great to pass through the slot B^2.

In order that the shank may always stand in one of the two positions above described, the end of the head F′ is provided with two grooves, *f f*, crossing each other at right angles, (see Figs. 4 and 10,) and there is a wire spring, H, bent three times at about right angles, attached to the sides of the bolt, as shown,

one end, h, of the spring passing into or through a hole in a projection, c, on the side of the bolt C, the other end, h', of the wire passing into a hole in the other side of the bolt, the straight middle part of the spring bearing down upon the center of the top of the head, so that as the knob is turned the spring H serves as a pawl to hold the shank F^2 in position; but the sides of the grooves $f\,f$ being slightly flaring the knob can be turned, because the spring H will ride up on the grooves. This spring H serves to keep the knob from turning when the lock is jarred, and by the slight clicking sound of the spring falling into the grooves $f\,f$ indicates when the knob is turned quarter-way round. In one of the projecting parts between the grooves $f\,f$ there is a projecting pin, f', which, by striking against the spring H, prevents the head from turning entirely around. The curved outer edge of the quadrant f^2 of the head in which the pin f' is inserted projects out beyond the head and is beveled under, as shown in Figs. 4 and 10, and the circular hole D^4 in the bolt C is also beveled out on each side, as shown, so that the head holds the bolt down in place against the tendency of the spring H to lift it off from the head. The beveled part of the head F′ is, however, cut away, so that the head may be drawn through the bolt, or rather the bolt may be lifted from the head, by lifting the spring H and turning the beveled part f^2 around to the opening which connects the slot D′ and the hole D^4. The bolt C, being lifted off from the head, as above described, may be reversed by drawing the short bent end of the spring H out of the bolt C and turning the spring around to the other face of the bolt and springing the end of the wire back into the same hole, the bolt being then placed the other side up in the case.

The unlocking mechanism is mostly contained in a case, I, consisting of a sleeve, i, and circular plate i', formed in one piece, and a bell-shaped cover, i^2, screwed to said plate i', the plate having an externally-threaded flange, i^7, and the cover a corresponding internal thread at i^3 for that purpose. When the parts of the case are thus screwed together, a hole is drilled partly in the circular plate and partly in the cover at their line of junction, and a pin, i^4, or screw is inserted in the hole, so that the cover i^2 cannot be removed from the plate i' when said plate is in its proper position. The plate i' has spurs i^5 to enter the wood of the door and prevent the plate i' from turning. The sleeve i is provided with an external screw-thread, i^6, and a tubular projection, b, from the cover B′ of the latch-case B has a corresponding internal thread, which engages with said screw-thread i^6, so that, the sleeve i being placed through a hole in the door, and the projection b being turned on over it, the spurs i^5 will be drawn into the wood, and the case will be held on the outside of the door without other fastening.

Within the sleeve i is a cylinder, L, provided with a central, longitudinal square or many-sided hole, l. This cylinder L is perpendicular to the center of and is formed in one piece with a circular plate, l'. Pivoted to ears l^2 on the plate l' are any convenient number of levers M, the free ends of which are swung away from the plate l' by springs m, formed in one piece with the levers M—that is, one spring punched with its lever from sheet metal; or, if the levers are very small, the springs m may be separate pieces, in which case one end of each spring m is inserted in a notch, m', in a lever, M, and the other end bears upon the plate l'.

Where the lever and spring are in one piece, the spring may either be formed on the under side of the lever or on the upper side, as shown at m^2 in Fig. 12, where the free end of the spring rests in a groove, n, in the plug N, which contains the key-hole n'. There is a ring-shaped ward-plate, O, the external diameter of which is the same as that of the plate i', and it is held in place between the flange i^7 of said plate i' and a shoulder, i^8, on the inside of the cover i^2, and is prevented from turning by the pin l^4, above referred to, entering the notch o in said ward-plate O. One side, o', of the ward-plate O is broad, and serves as a stop for the pivoted ends of the levers M to strike against when the plate l' is turned, and the other side of the ward-plate O is narrow, and serves merely to stiffen the plate and hold it in place. The plate O is notched, as shown at o^2, to receive the ends of the levers, which ends are all beveled, as shown. The ends of the levers M are notched at different distances from the plate l', and these notches m^3 are each of a size to admit the ward-plate O in its broadest part, and a key, P, with notches p or steps on its end, being put down into the key-hole n', presses the levers down, so as to bring the notches in the ends of the levers M into position to allow them to be turned with the plate which supports them. Of course the key has as many steps as there are levers, and the steps are each of the width of a lever, and the levers may change places with each other if corresponding changes are made in the steps of the key. Turning the key after pushing the key into place—that is, pushing it in until the long projection m^4 of the key, which acts as a stop, touches against the plate l'—will turn the plate l' and the cylinder secured to said plate, as above described. Within the latch-case is a hub, R, provided with an arm, r, which strikes, when the hub is turned, against the projection c' on the side of the bolt C, retracting the bolt. The hub R has a square hole, r', running through its center, of the same size as the hole l in the cylinder L, and a square spindle, S, fitting said holes $l\,r'$, is passed through the hub into said cylinder, so that turning the key P, and thereby turning the cylinder, turns the hub and unlocks the door. The spindle S is provided with a head, s, by grasping which with the fingers it may be drawn out of the cylinder or

entirely out of the hub R, and then in either case the door cannot be unlocked from the outside, even by one who has the proper key.

In order that the key-hole plug N may be broken off rather than the outer case, I, containing the unlocking mechanism, be turned by a false key or a screw-driver, said plug is purposely weakened by cuts n^2 on opposite sides of the same and extending from the outer surface nearly in to the key-hole n'.

I claim as my invention—

1. The combination of the outside case, the plate provided with an externally-threaded tube, the inside case provided with an internally-threaded tube, said tubes being adapted to engage with each other, the lever-plate provided with a cylindrical projection having a central longitudinal many-sided hole, the levers pivoted to the last-named plate, the ward-plate, the hub provided with a many-sided hole, means for preventing said hub from making a complete revolution, and the many-sided spindle fitting the holes in said hub and lever-plate, as and for the purpose specified.

2. The combination of the bolt provided with a hole, the U-shaped spring, and means of attaching the same to said bolt, and the shank extending through the case and into the hole in the bolt, its head slotted, as described, as and for the purpose specified.

3. The combination of the bolt provided with a hole, the U-shaped spring, and means for attaching the same to said bolt, and the shank, its head slotted, as described, having an enlarged quadrant for limiting the rotary movement of the shank, as and for the purpose specified.

4. The combination of the bolt provided with a hole, the U-shaped spring, and means of attaching the same to said bolt, and the shank, its head slotted, as described, having an enlarged quadrant and pin projecting from said quadrant, as and for the purpose specified.

HARLAN P. YOUNG.

Witnesses:
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IRVING S. PORTER.