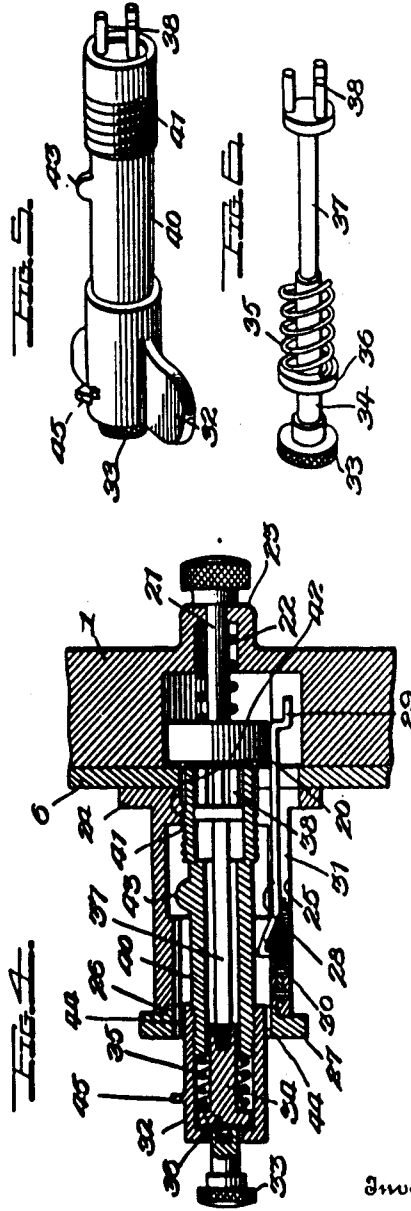
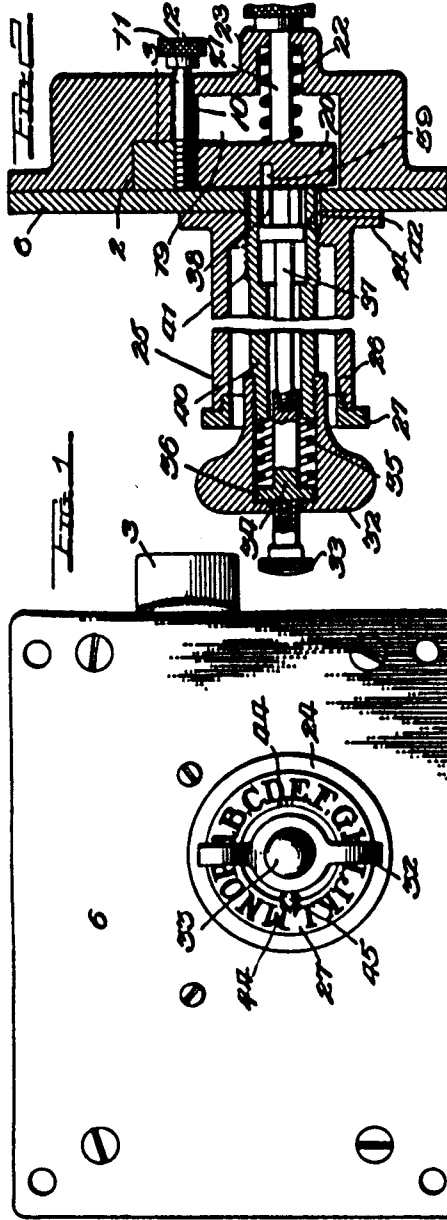


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COMBINED LOCK AND LATCH.
APPLICATION FILED MAY 13, 1912.

1,037,543.

Patented Sept. 3, 1912.

2 SHEETS-SHEET 1.



Witnesses

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FIG. 11. 70 23 22 21 20 26

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COMBINED LOCK AND LATCH.

1,037,543.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DUNCAN MALCOLM RUSSELL, a subject of the King of Great Britain, residing at Pictou, in the county of Huerfano and State of Colorado, have invented certain new and useful Improvements in Combined Locks and Latches, of which the following is a specification, reference being had to the accompanying drawings.

This invention comprehends certain new and useful improvements in combined locks and latches, and the invention has for its primary object a simple and efficient construction of lock, the parts of which may be easily manufactured and readily assembled and not liable to get out of order.

A further object of the invention is an improved construction of lock which will possess the characteristic of safety to a marked degree, which will be practically impossible to pick or otherwise operate except by the use of a particular key and by a predetermined manipulation of such key, and which will be so constructed that even if the key which is especially designed for the lock be inserted therein by a person unacquainted with the combination, his efforts to retract the latch bolt will probably result in moving the roll back to an inoperative position relative to the latch bolt, the roll back being automatically locked in such position and only capable of being released by a predetermined manipulation of the key in the operation of withdrawing the latter.

The invention also has for its object an improved combined latch and lock for doors, drawers, safes, vaults and the like, which, in one embodiment of the invention, may be easily operated from one side of the lock casing but incapable of being operated from the opposite side of the lock casing, except by the use of the specially designed key and a predetermined manipulation thereof. And a still further object of the invention is an improved construction of this character provided with means whereby the latch bolt may be easily held in retracted position, when desired.

With these and other objects in view, as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the inven-

tion, reference is to be had to the following description and accompanying drawings in which,

Figure 1 is a face view of my improved lock. Fig. 2 is a transverse sectional view thereof. Fig. 3 is an inner face view of the casing. Fig. 4 is a horizontal section. Figs. 5 and 6 are detail perspective views of the entire key and a portion thereof detached. Fig. 7 is another transverse section. Fig. 8 is a perspective view. Fig. 9 is a detail perspective view of the latch bolt. Fig. 10 is a similar view of the key-receiving sleeve, and, Fig. 11 is a detail perspective view of the roll back.

Corresponding and like parts are referred to in the following description and designated in the accompanying drawings by like reference characters.

Referring to the drawings, the numeral 1 designates the lock casing which is formed in one face with a longitudinally extending slot or recess 2 for the combined latch and lock bolt 3, said casing being formed, in the recess 2, with laterally projecting interiorly threaded pins 4 which serve a two-fold purpose. These pins are received in longitudinal openings 5 formed in the bolt 3, whereby to properly guide and limit the movements of the bolt, and they are interiorly threaded, as just specified, so that they may receive fastening devices to secure the plate 6 to the main body portion of the casing, whereby to properly house the actuating parts. Within the contracted rear end 7 of the recess 2, an expansion spring 8 is mounted, said spring bearing against the rear or inner end of the bolt 3 and tending to move the bolt forwardly or outwardly into engagement with the keeper or strike 9. The forward end of the latch bolt 3 is beveled, whereby it will automatically move rearwardly for engagement with the keeper.

When the lock is designed for use on the door of a room or other inclosure, it is provided with means whereby it may be easily opened from the inside of the room and also with means whereby the bolt 3 may be easily held in retracted position. To accomplish these results, the bolt 3 is formed on one side with a laterally projecting pin 10 which extends through a longitudinal slot 11 formed in the casing 1 and which is provided at its protruding extremity with a finger knob 12, so that by grasping said knob, the latch bolt may be easily slipped

back. In order to hold the bolt in retracted position, it is formed in the side from which the pin 10 projects, with a socket or cavity 13 which is designed to receive an inwardly spring pressed detent pin 14, said pin working in a key-hole shaped slot 15 in the casing 1 and being provided with a nib or lug 16 and a knob or finger piece 17. Obviously, by pulling the pin 14 outwardly until the lug 16 passes out of the contracted portion of the opening 15 and by then turning the pin to the right or to the left, it may be held in its outer inoperative position. When it is desired to hold the bolt 8 in its retracted position, the pin 14 is turned so that its lug 16 will register with the contracted portion of the opening 15, the bolt 8 is shot back by grasping the finger knob 12 and the pin 14 is forced by its spring into the socket 13. As soon as the pin 14 is pulled out again, the spring 8 will be permitted to act to shoot the bolt forwardly.

The bolt 8 is formed in its lower edge with a shouldered recess 18 which is designed to accommodate the shouldered portion 19 of a roll back 20. This is secured to one end of a transversely extending rod 21, around which a coiled expansion spring 22 extends, said spring having a tendency to maintain the roll back 20 in an operative relation to the shouldered recess 18 of the bolt 8 and yielding when the roll back 20 is pressed backwardly, so as to move entirely out of the recess and thus have no operative relation to the bolt. The purpose of this transverse movement of the roll back 20 and the means for automatically holding it in its inoperative relation to the bolt 8 will be hereinafter more fully set forth. One end of the rod 21 is journaled in a bearing 23 formed on the outer face of the casing 1.

From as much of the description as has preceded, in connection with the correlated views of the accompanying drawings, it will be understood that the bolt 8 may be easily operated from one side of the casing by grasping the finger knob 12, and that it may also be operated by turning the roll back 20 when the latter is in the shouldered recess 18 of the bolt. The roll back is designed to be operated by a key from the side of the casing opposite to the finger knob 12, and the means for thus operating the roll back and retracting the bolt will now be described.

Secured to the plate 6 by screws or similar fastening devices passing through its flanged end 24, is a sleeve 25 which is designed to receive the operating key for the lock, and which registers at its inner end with the roll back 20. The outer end of the sleeve 25 is interiorly screw threaded, as indicated at 26, and screwed in this end of the sleeve, is a dial ring 27, the outstanding flange of which, in the present instance, dis-

plays a circularly arranged series of letters. Secured at its outer end within the sleeve 25, is a spring catch 28 which extends inwardly through the sleeve, the inner relatively free end of said spring catch being extended laterally, as indicated at 29, to form a shoulder adapted to snap over the roll back 20 when the same is pushed far enough inwardly against the tension of its spring 22. The catch 28 is formed intermediate of its ends with a releasing cam 30 which is movable through a side opening 31 formed in the sleeve 25 and which faces inwardly relative to the sleeve, whereby the catch may be released from the roll back 20 by the withdrawal of the key in a certain position of the latter, as will be hereinafter specifically set forth. The key itself embodies a handle 32 formed with a longitudinally extending opening in which a finger knob 33 is designed to fit, said knob being secured to one end of a threaded pin 34 which is also mounted in the opening in the finger piece 32. A coiled retracting spring 35 is mounted within the finger piece 32, and bears against a collar 36 formed on the pin 34. A rod 37 is secured to the other threaded end of the pin 34 and is provided at one end with any desired number and form of fingers 38 designed for engagement in properly spaced and formed openings 39 with which the roll back 20 is provided. The rod 37 is longitudinally movable in a tubular stem 40 which is secured at one end by screw threaded connection to the finger piece 32, the other end of said tubular stem being threaded, as at 41, for engagement with the interiorly threaded inner end 42 of the sleeve 25. The threaded end 41 of the stem 40 is formed with a laterally projecting lug 43 which is designed to engage the cam 30 of the catch 28 in a predetermined position of the key, so that as the said key is withdrawn, it will disengage the catch 28 from the roll back 20 and permit the spring 22 of the roll back to act so as to automatically move the same into operative relation to the bolt 8. In order that this projection 43 may pass freely into and out of the sleeve 25 and be turned around in said sleeve in the operation of retracting the bolt 8 by turning the roll back 20, the sleeve is formed on its interior with two longitudinally extending and diametrically opposed grooves 44 and is formed at its inner end with an enlarged bore in which the projection 43 may turn around.

In the practical operation of my improved combined latch and lock, the key is inserted in the sleeve 25, the projection 43 sliding in one of the grooves 44 and the threaded end 41 of the tubular stem 40 of the key is engaged with the interior threads 42 of the sleeve, the key being turned and screwed in until a pointer 45 formed on the handle end 13

of the key registers with the predetermined letter on the dial. When the key is in this position, the pins 88 are in line with the openings 89 of the roll back, because the rod 37 is not rotatable within the tubular stem 40, but is only longitudinally movable therein, and consequently, by pressing inwardly upon the finger piece or knob 88, the said pins will be caused to enter the openings 39 and the key then turned in a direction to partially rotate the roll back 20 and effect the retracting of the bolt. Should a person not acquainted with the proper position endeavor to operate the lock by using the key, he would naturally, after inserting the key in the sleeve 25, continue turning the key in screw threaded engagement with the sleeve until the roll back 20 is pressed back out of the recess 18 and is caught by the catch 28 which holds it in inoperative relation to the bolt 8. Then the operator would be obliged to know how to release the catch before he could operate the lock. To do this he would have to know just where to turn the key so as to cause the projection 43 to engage the cam 80 of the catch when the key is being withdrawn, as otherwise, the catch would remain in engagement with the roll back and hold the latter in an inoperative position. To one who is acquainted with the proper manipulation of the key, this operation would be easy, because he would merely turn the key around until the pointer 45 registered with the predetermined letter on the dial, when he would know that the projection 43 was in line with the cam 80 and that an outward movement of the key would effect the engagement of the projection with the cam and retract the catch from the roll back.

Thus it will be seen that I have provided a simple, durable and efficient construction of combined latch and bolt which possesses the characteristic of safety to a marked degree which is composed of comparatively few parts that may be easily manufactured and readily assembled and which is so constructed that an unauthorized attempt to work the lock, even by the key designed for it, will, in all probability result merely in moving the roll back to an inoperative position with relation to the bolt, when it will be held by the catch 28.

While the accompanying drawings illustrate what I believe to be the preferred embodiment of my invention, it is to be understood that the invention is not limited thereto, but that various changes may be made in the construction, arrangement and proportions of the parts without departing from the scope of the invention, as defined in the appended claims.

The tubular stem 40 is made detachable, so that if through unavoidable accident, a part of the key should break, it can be re-

placed at a small cost to the owner. Should the owner desire to change his lock, it is obvious that he can easily do so merely by substituting one roll back for another and changing the rod 37 to match the openings of the new roll back.

What I claim is:—

1. A lock of the character described, including a casing, a latch bolt mounted therein, a roll back engageable with the latch bolt to move the latter, a key engageable with said roll back to turn the same, the roll back being movable into an operative relation to the latch bolt, a catch adapted to engage and hold the roll back in its inoperative position, and means for disengaging the catch from the roll back by and upon the withdrawing movement of the key.

2. A lock of the character described, including a casing, a latch bolt mounted therein, a roll back engageable with the latch bolt to move the latter, a key engageable with said roll back to turn the latter, the roll back being movable transversely of the movement of the latch bolt, whereby it may be moved to one side of the latch bolt into inoperative relation therewith, and a catch adapted to engage and hold the roll back in its inoperative position, the key being formed with a projection designed to disengage the catch from the roll back in the withdrawing movement of the key.

3. A lock of the character described, including a casing, a latch bolt movable therein, a roll back engageable with the latch bolt and movable transversely of the movement of the latch bolt, the roll back being formed with a spindle extending transversely of the casing, the casing being formed with a bearing for said spindle, a spring encircling said spindle and bearing against the roll back in a direction to move the same automatically into operative relation with the latch bolt, and a catch engageable with the roll back to hold it to one side of the latch bolt upon the movement of the roll back in a direction against the tension of the spring.

4. A lock of the character described, including a casing, a latch bolt movable therein, a roll back engageable with said latch bolt, a sleeve secured to said casing in registry with the roll back, the sleeve being provided with a dial and with longitudinally disposed interior grooves leading toward the roll back, the roll back being movable in a direction transverse to the movement of the latch bolt, means within the casing engaging the roll back and tending to move it into operative relation to the latch bolt and toward the sleeve, a key adapted for insertion in said sleeve into engagement with the roll back, the key being formed with a projection slidable through the grooves of the sleeve, and a catch mounted in the casing and adapted to engage the roll back to hold

it against the tension of the spring to one side of the latch bolt, said catch being engageable with the projection of the key, for the purpose of releasing the catch from the roll back.

5 5. A lock of the character described, including a casing, a latch bolt movable therein, a roll back engageable with the latch bolt to retract the latter, the roll back being
10 movable in a plane transverse to the movement of the latch bolt, means tending to move the roll back outwardly in the casing into operative relation with the latch bolt, a sleeve secured to the casing in registry
15 with the roll back, said sleeve being formed at its inner ends with interior screw threads, a key insertible in the sleeve and formed with threads for engagement with the screw threads of the sleeve and with means for
20 engagement with the roll back to turn the latter, a catch member in the casing and adapted to engage the roll back to hold it out of line with the latch bolt, said catch being secured to the sleeve and formed with
25 an intermediate cam portion and the key being formed with a projection engageable with the cam portion, whereby to release the catch from the roll back.

6. A lock of the character described, in-

cluding a casing, a latch bolt movable therein, a roll back engageable with the latch bolt to retract the latter, the roll back being movable in a plane transverse to the movement of the latch bolt, a spring mounted in the casing and engaging said roll back and
30 having a tension thereon to move the roll back into operative relation with the latch bolt, a catch secured in the casing and adapted to engage and hold the roll back upon the movement of the latter out of
35 alignment with the latch bolt, a sleeve secured to the casing and in registry with the roll back, a key insertible in said sleeve and formed with pins for engagement with the roll back and with a projection, the sleeve
40 and key being threaded for engagement with each other, the projection of the key being adapted to release the catch from the roll back, and a spring pressed rod included in the key and carrying said pins, for the
45 purpose specified.
50

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

DUNCAN MALCOLM RUSSELL.

Witnesses:

WILLIAM McLENNAN,
JOHN NEILSON.

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