No. 610,702. Patented Sept. 13, 1898.

J. C. COLTRIN.

LOCK.

(Application filed Feb. 21, 1898.)

(No Model.) 2 Sheets—Sheet 1.

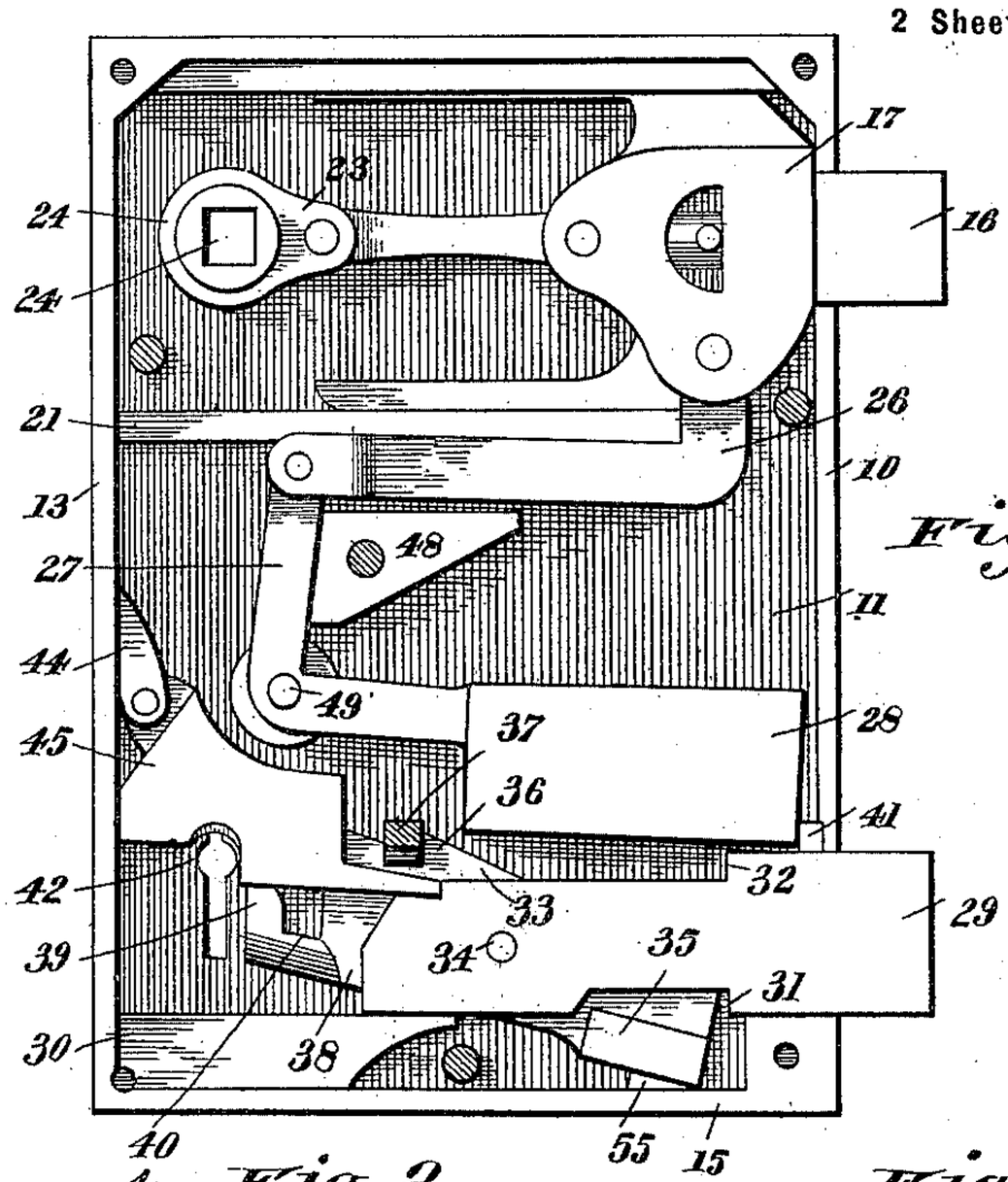


Fig. 1.

Fig. 2.

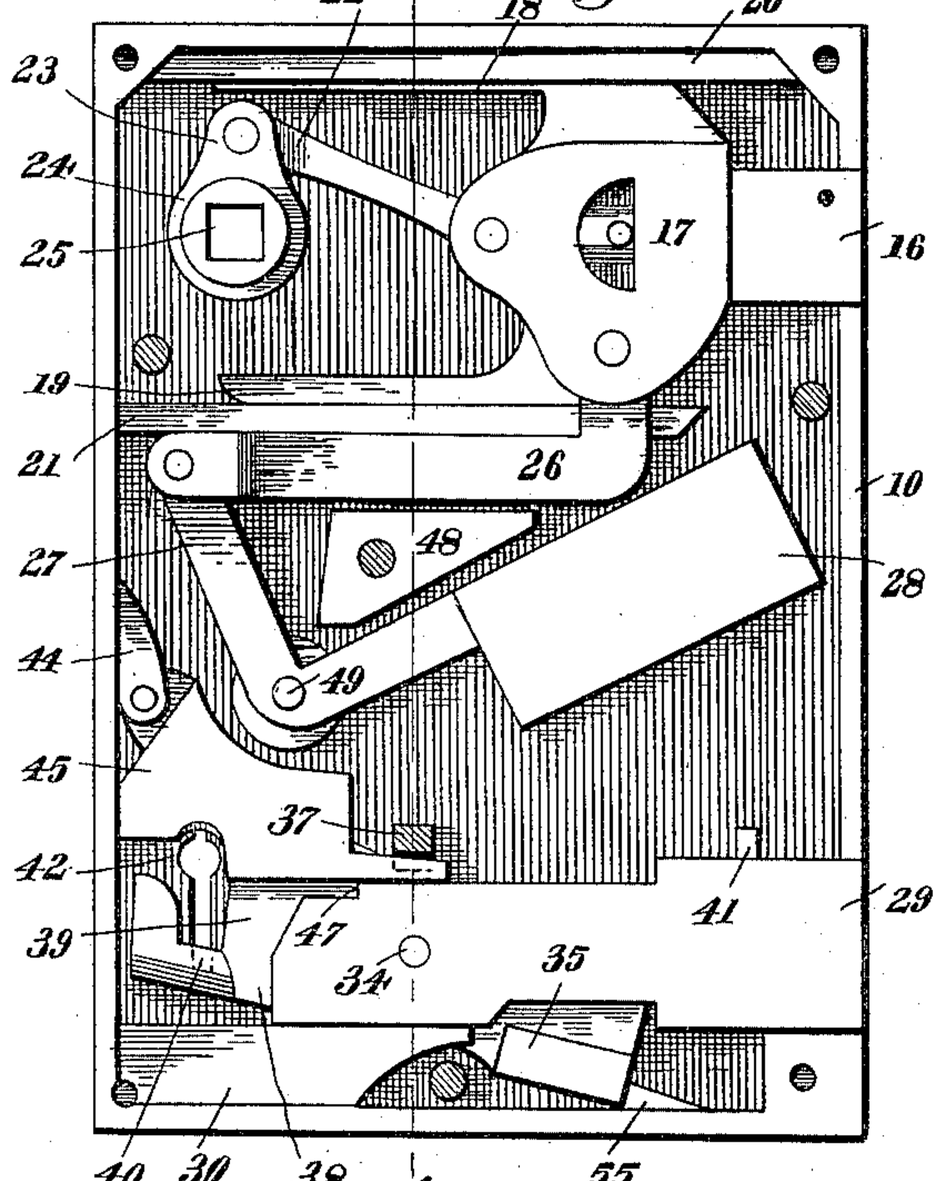
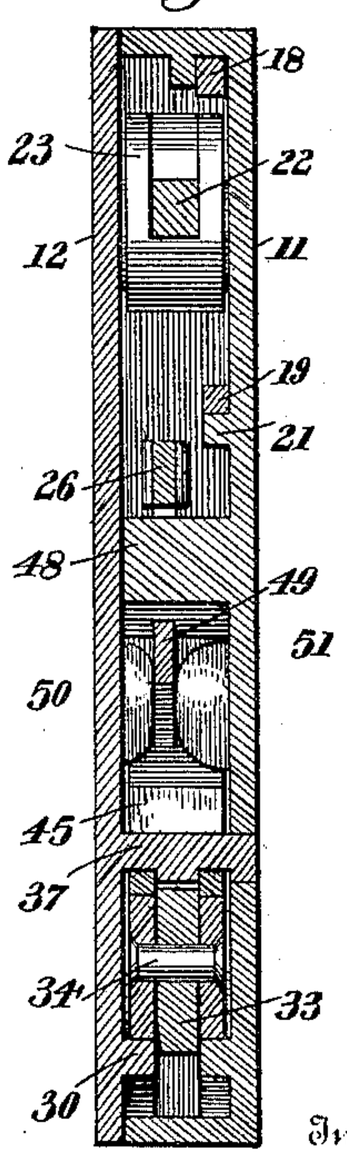


Fig. 4.



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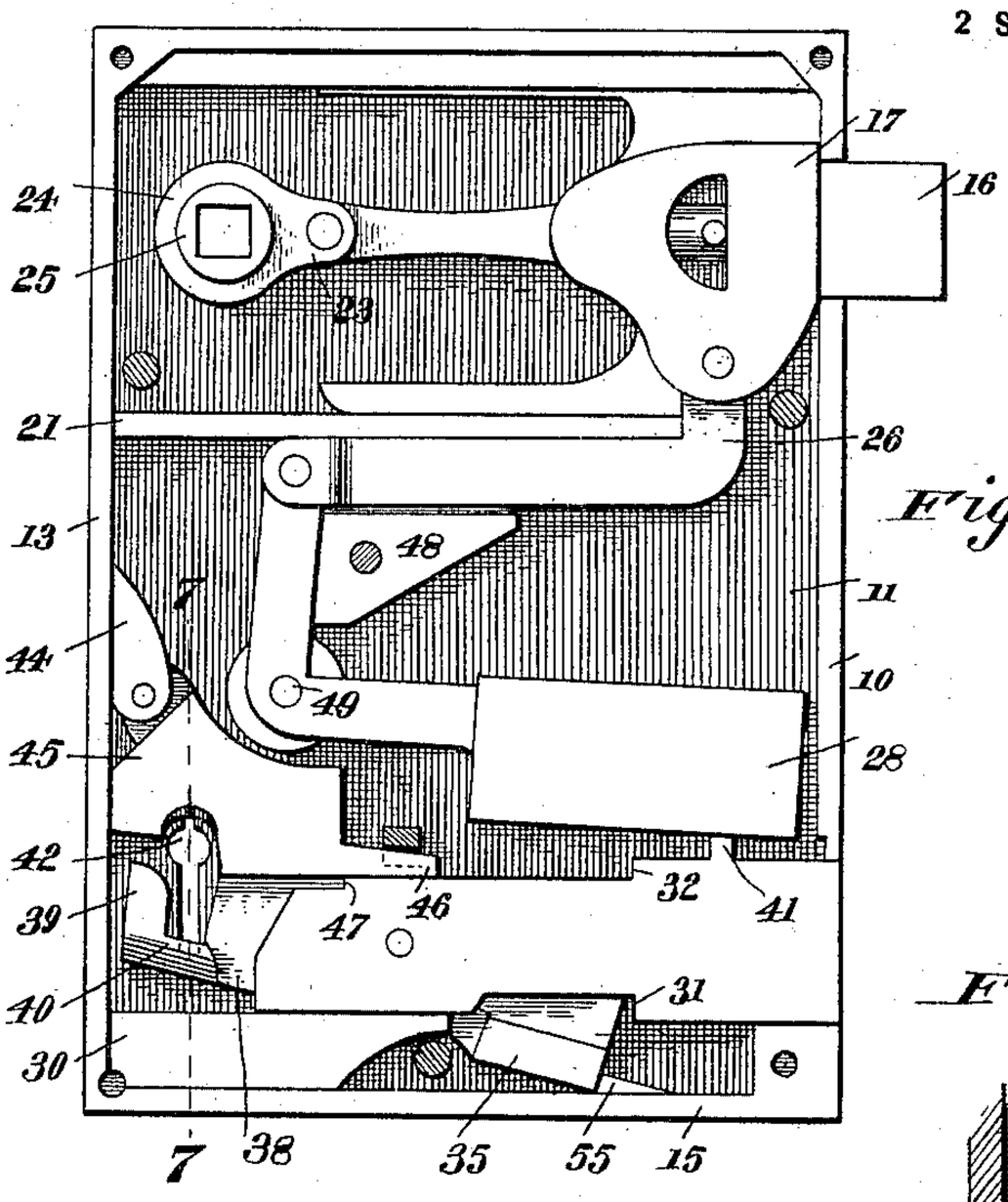


Fig. 3.

Fig. 7.

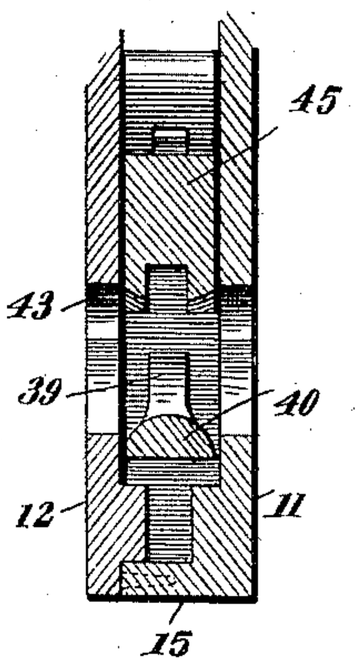


Fig. 5.

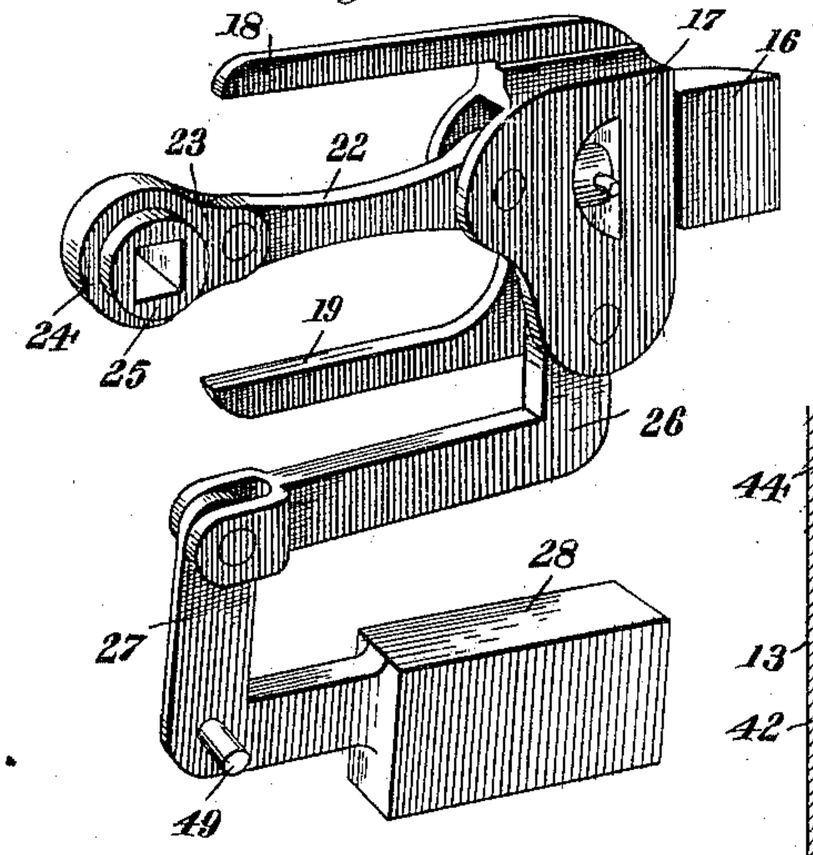


Fig. 6.

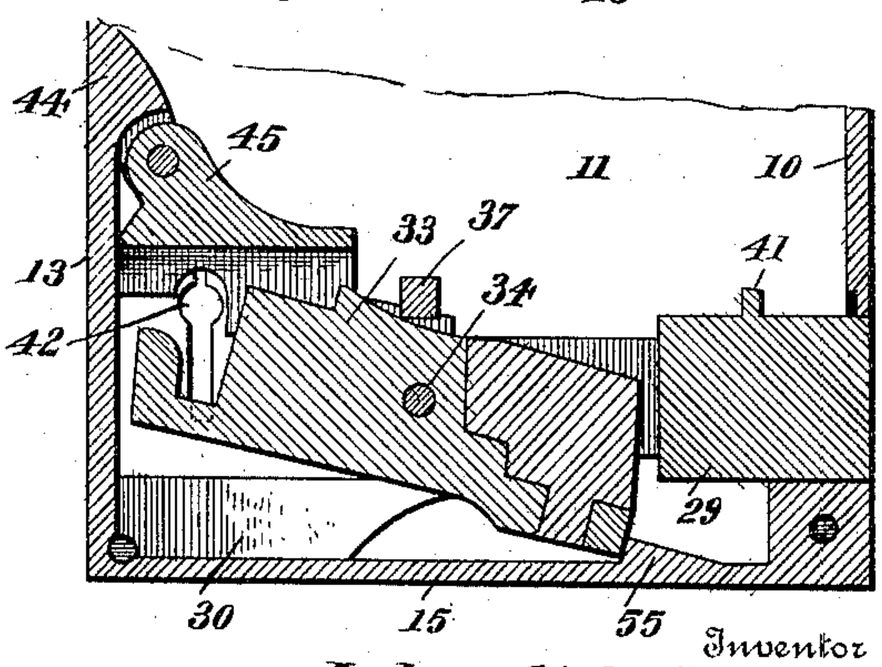
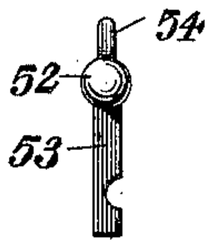


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN CHARLES COLTRIN, OF DENVER, COLORADO, ASSIGNOR OF ONE-HALF TO ARCHIE ALEXANDER, OF SAME PLACE.

LOCK.

SPECIFICATION forming part of Letters Patent No. 610,702, dated September 13, 1898.

Application filed February 21, 1898. Serial No. 671,111. (No model.)

To all whom it may concern:

Be it known that I, JOHN CHARLES COLTRIN, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented a new and useful Lock, of which the following is a specification.

My invention relates to locks, and more particularly to that class of locks known as "combined" locks and latches.

The object of my invention is to provide an improved lock in which springs are entirely dispensed with, weights being substituted therefor.

A further object of my invention is to furnish an improved lock and latch in which the bolt cannot be withdrawn without operating the latch.

A further object of my invention is to furnish an improved combination lock and latch in which springs are dispensed with and weights substituted therefor.

With these objects in view my invention consists in the improved construction, arrangement, and combination of parts hereinafter fully described, and afterward specifically pointed out in the appended claims.

In order to enable others skilled in the art to which my invention most nearly appertains to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view of the lock with the exterior plate removed, the latch and bolt being shot or in their locked positions. Fig. 2 is a similar view with the latch and bolt withdrawn. Fig. 3 is a similar view with the latch shot and the bolt withdrawn. Fig. 4 is a vertical section on the line 4 4 of Fig. 2, looking in the direction indicated by the arrow. Fig. 5 is a detail perspective view of the latch and its operating-weight mechanism removed from the casing. Fig. 6 is a detail fragmentary sectional view on the line 6 6 of Fig. 7. Fig. 7 is a fragmentary detail sectional view on the line 7 7 of Fig. 3. Fig. 8 is an end view of the key.

Like numerals of reference mark the same parts wherever they occur in the different figures of the drawings.

Referring to the drawings by numerals, 10 indicates one end of the casing of a lock, of which 11 is the back plate, 12 the front plate, 13 the other end, 14 the top, and 15 the bottom.

16 indicates the latch-bolt, which is swiveled in a casting 17, which in turn is provided with two parallel projecting arms 18 and 19, the first of which is arranged to slide between a rib 20, projecting inward from the top 14 and the rear plate, while the second slides upon a rib 21, projecting inward from the rear plate 11. A link 22 is pivotally secured to the arm 23 of a hub 24, which is swiveled in openings in the front and back plates in the usual manner and is provided with a central rectangular bore 25 to receive the square bar which connects the knobs. The opening in the front and back plates, the square bar, and the knobs are of the usual construction and are not illustrated.

An angular bar or link 26 is pivotally connected at one end to the casting 17 and at the other end to the upright arm of an elbow-lever 27, which is provided on its horizontal arm with a weight 28.

29 is the lock-bolt which is arranged to slide upon a double block or casting 30, formed on the bottom 15 of the casing. This bolt is provided with shoulders 31 32, and its inner portion is bifurcated, a tumbler 33 being pivotally attached between its forks by means of a pin 34. The tumbler 33 is weighted, as at 35, and is provided with a shoulder 36 to engage a pin 37, projecting inward beyond the bolt, turned upward, as at 39, and beveled off on both sides, as at 40. A rib 41 projects from the upper side of the bolt. The front and rear plates are each provided with keyholes 42 of the usual shape, except that a narrow slot-like extension 43 is provided at their upper ends.

44 is a bifurcated lug formed upon the inside of the end 13 of the lock-casing, to which is pivotally attached a dog 45, which is grooved longitudinally in its under side to receive the rear end of the tumbler 33 and is provided with projecting ends 46 to engage a shoulder 47 on the lock-bolt when it is shot or in its locked position.

The block 48, cast upon the rear plate of

the lock-casing, serves as a stop to limit the movement of the upright arm 47 of the weighted elbow-lever which is pivotally secured upon the pin 49, which passes through two inward-projecting knobs 50 and 51 on the front and rear plates, respectively, of the lock-casing.

In Fig. 8 I have shown an end view of the key which is provided with a stem 52 and a ward 53, as is usual, but is also provided with a thin longitudinal flange 54 on top of the key to fit in the slotted extension 43 of the keyhole.

The construction of my improved combination lock and latch will be readily understood from the foregoing description.

To operate the latch-bolt 16, it is only necessary to turn the knobs in the usual manner, which will rotate the hub 24 and carry around its arm 23, the link 22 acting as a pitman, the arms 18 and 19 guiding the casting 17 in its sliding movement and the latch-bolt 16 being carried back with the casting or block 17. This rearward movement of the block 17 carries with it the link 26, which, operating upon the upright arm 27 of the weighted lever, will raise the weight 28. As soon as the knobs are released the weight will drop and will reverse the motion of all the parts and thus automatically shoot the latch-bolt 16 into its locked position. When the latch-bolt is in its locked position, and consequently the weight 28 in its lower position, the lower corner of said weight will rest behind the rib 41 of the lock-bolt 29, so that the lock-bolt cannot be withdrawn from its shot or locked position without operating the knob to raise the weight 28 from engagement with the rib 41. The lock-bolt being in its unlocked position, as shown in Fig. 3, the weighted end 35 of the pivoted dog 45 will be in its normal lower position and will rest against the stop 55, formed on the inside of the bottom 15 of the lock-casing, so that it must be raised therefrom before the bolt can be shot or thrown into its locked position. To perform this operation the key is passed into the keyhole, which by the contact of the bottom of the ward 53 thereof with the beveled portion 40 of the weighted tumbler will depress the rear end of the tumbler and raise the front end, thus removing the weighted end 35 of the tumbler from contact with the stop 54. The turning of the key so as to throw the ward thereof to the right will cause it to press against the rear end of the weighted tumbler and push the bolt into its locked position, (indicated in Fig. 1,) the latter portion of the movement of the bolt being caused by giving the key a little more than a complete revolution, the ward acting upon the rear end 39 of the weighted tumbler during the latter part of the movement of the key and completing the outward movement of the bolt. When the bolt reaches its outward position, the projecting end 46 of the dog 45 will drop behind the shoulder 47 and the weight 28 will drop behind the shoulder 32, thus firmly holding the bolt in its locked position, the stop 36 of the weighted tumbler engaging also behind the pin 37. To unlock or withdraw the lock-bolt it is, as before stated, necessary to first raise the weight 28 out of contact with the rib 41 by turning the knob slightly. The key is now moved in a reverse direction until the ward rests upon the inner upper edge of the end 39 of the weighted tumbler 35. This will depress the rear end of the tumbler and disengage the stop 36 from the pin 37. The further movement of the key bearing upon the inner side of the end 39 of the tumbler will tend to withdraw the bolt from its locked position, while at the same instant the upper rib 54 of the key will force upward against the under side of the dog 45, disengaging its end 46 from the shoulder 47 of the lock-bolt. All the stops being disengaged, the further movement of the key to a position to be withdrawn from the lock will carry the weighted tumbler and the lock-bolt to their rear or withdrawn positions.

From the foregoing description it will be readily apparent that I have produced a perfect-working combination lock and latch which carries out all the objects of my invention. The weight 28 answers the purpose of a spring usually used to normally keep the latch-bolt 16 in its shot or locked position, all springs being dispensed with. The tumbler 33 being weighted, all necessity for springs to operate it is avoided. The weight 28 in its normal position resting behind the rib 41 of the lock-bolt renders it necessary to turn the knob before the lock-bolt can be withdrawn even though the operator has a properly-shaped key in his possession.

The illustrations in this application represent the lock as in the form known as "rim-locks;" but it may be applied to mortise-locks or any other class of locks. The same lock may also be used for either right or left hand doors, it being only necessary to remove the latch-bolt and its operating mechanism from the case, reverse the position of the latch-bolt by turning it on its swiveled end, and replace it in the case.

While I have illustrated and described the best means now known to me for carrying out my invention, I do not wish to be understood as restricting myself to the exact details of construction shown and described, but hold that any slight changes or variations such as might suggest themselves to the ordinary mechanic would properly fall within the limit and scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a lock, the combination with the casing, of guideways formed thereon, a casting or block having arms projecting into the guideways, a latch-bolt swiveled in said block, a knob-receiving hub with a projecting arm, a ring connecting the said arm with the sliding block, an elbow-lever pivoted to the casing

below the guides having its horizontal arm weighted, and an angular link connecting the upper end of its vertical arm with the sliding block, substantially as described.

2. The combination in a lock, of a lock-bolt having its rear end forked, and a tumbler pivotally secured between its forks, provided at its forward end with a weight and near its rear end with a stop to engage a stationary pin in the case, substantially as described.

3. The combination in a lock, of the lock-bolt forked at its rear end, a stationary pin in the case, a weighted tumbler pivoted between the forks of the lock-bolt and carrying a stop to engage the stationary pin, and a pivoted dog above the keyhole and having a projecting end adapted to engage a shoulder in the lock-bolt, substantially as described.

4. In a lock adapted for use with a key having the usual wards and a longitudinal flange along the upper side of its spindle, the combination with the lock-bolt and a stationary pin in the casing, of a tumbler pivoted to the lock-bolt weighted at its forward end and provided near its rear end with a stop to engage the pin, a lug secured in the case, and a pivoted dog having projecting ends to engage a shoulder on the upper end of the lock-bolt near its rear end, said pivoted dog being arranged to be raised out of contact with the shoulder by the upper flange on the key while the wards of the key are operating upon the weighted tumbler, substantially as described.

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