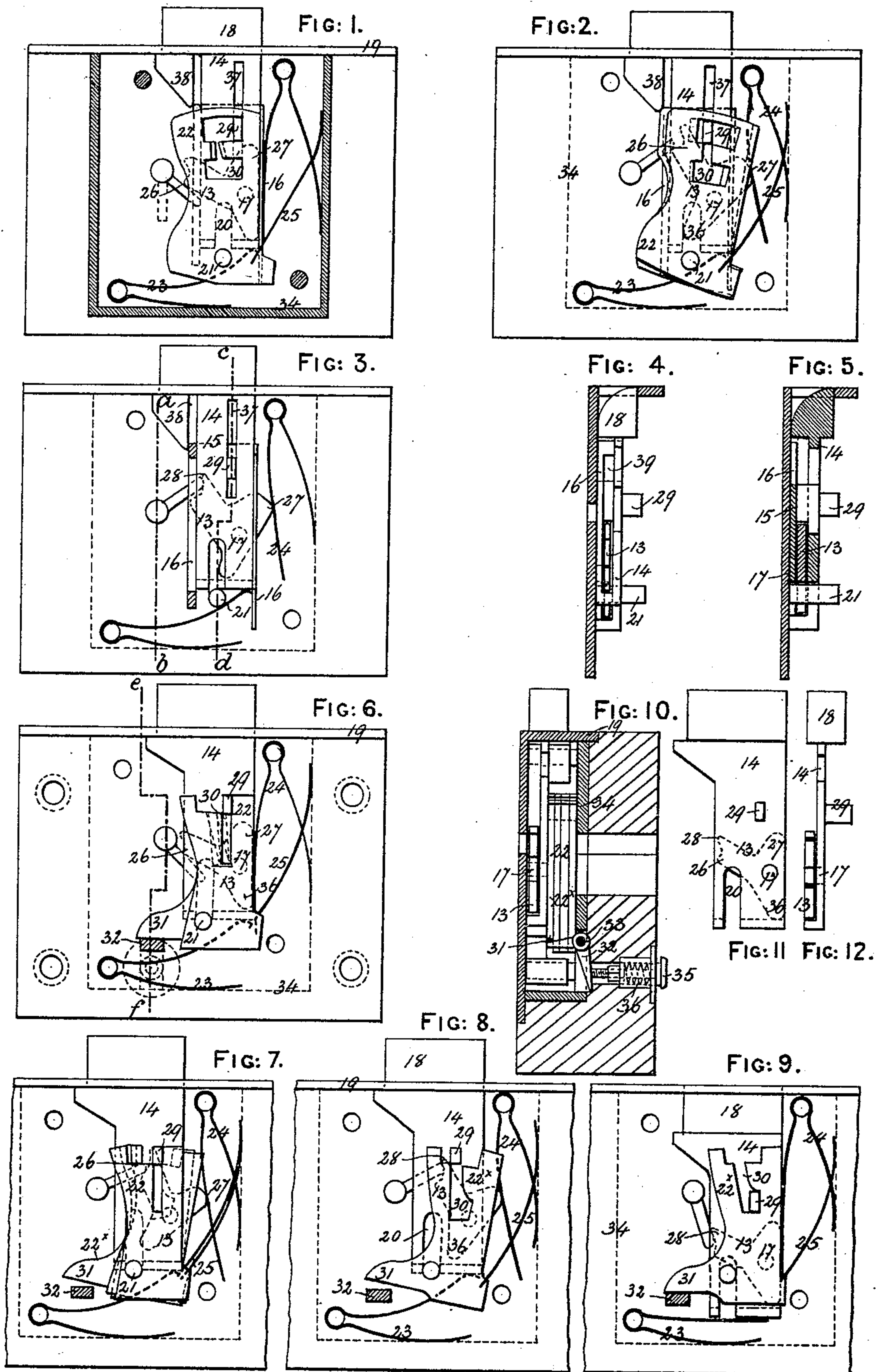


(No Model.)

J. T. COLE.
LOCK.

No. 460,561.

Patented Oct. 6, 1891.



WITNESSES.

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JOHN THOMAS COLE, OF SYDNEY, NEW SOUTH WALES.

LOCK.

SPECIFICATION forming part of Letters Patent No. 460,561, dated October 6, 1891.

Application filed July 20, 1888. Serial No. 280,580. (No model.)

To all whom it may concern:

Be it known that I, JOHN THOMAS COLE, locksmith, a subject of the Queen of Great Britain and Ireland, residing at Sydney, New South Wales, have invented certain Improvements in Locks, of which the following is a specification.

This invention relates to certain improvements in or applicable to locks.

The invention is illustrated in the accompanying drawings in two modifications of its construction, one of which, constituting a two-tumbler latch-bolt lock, is illustrated in Figs. 1 to 5, and the other of which, constituting a four-tumbler lock, is illustrated in Figs. 6 to 12.

Figs. 1 to 3 and 6 to 9 are inside elevations illustrating different positions of the lock details, and will be hereinafter more particularly referred to. Figs. 4, 5, and 10 are transverse sections, respectively, through Fig. 3 on the lines *ab* and *cd* and through Fig. 6 on the line *ef*. Figs. 11 and 12 are detached views of the bolt and connected trigger in the modification represented in Figs. 6 to 12.

The especial object of the invention is to prevent the lock from being unlocked by means of its own key unless it be worked in a peculiar way, involving the turning of the key first to a certain extent in one direction, (say to the left,) then in the reverse direction, the key being inoperative in withdrawing the bolt if turned to any extent only in either one of such directions.

To this end the invention consists, essentially, in the application to tumbler-locks of a pivoted trigger-piece or its equivalent in such a manner as to be operative in withdrawing the bolt when actuated by the said reverse turning movement of the key after the said trigger-piece has been set in position and the tumblers have been moved into such a position as will permit of such withdrawal of the bolt by the proper extent of movement of the key in the said first direction.

In carrying the invention into effect the said trigger-piece 13 may be pivoted either directly upon the bolt 14, as represented in the modification illustrated in Figs. 6 to 12, or when a motion of the bolt independent of the trigger is required, as in spring, trunk, pad, and latch-bolt locks, it is pivoted upon a

separate sliding plate or piece 15, working between side guides 16, as represented in the modification illustrated in Figs. 1 to 5.

In the modification represented in Figs. 6 to 12 the under side of the bolt 14 is cut away (*vide* Fig. 12) to permit of the free working of the trigger upon the pivot 17, projecting from the bolt, and the latter is guided by its locking part 18, working through the front plate 19, and by a bifurcated or slotted part 20, engaging with the center pin 21 of the tumblers 22 22^x.

The bolt is shot (when the tumblers are in such relative positions as to permit of its being actuated) by a spring 23, and it is withdrawn against the resistance of such spring by means of the trigger-piece 13, which is normally kept in the position indicated in Figs. 6, 9, and 11, by a spring 24; but is moved in the said first turning movement of the key from the position indicated in Fig. 6 to that indicated in Fig. 7, in which all the tumblers 22 22^x are by the same movement of the key turned into such positions as to allow of the bolt being withdrawn. In Fig. 7 the key is represented as having been turned almost but not quite to its intended full extent, and it will be seen that if the movement of the key were now reversed the trigger-piece and tumblers would be caused by their respective springs 24 and 25 to resume the relative positions indicated in Fig. 6; but upon the turning of the key being continued in its said first direction to its intended fullest extent of movement, (*vide* Fig. 8,) the point 26 of the trigger-piece 13 is caused, by its spring 24 bearing against an extension 27 of the trigger-piece, to slip past the end of the key, the movement of the trigger-piece being, however, immediately arrested by the point 28 catching against the opposite side of the key, (*vide* Fig. 8,) in which the three front tumblers 22, occupying the same positions as those represented in Fig. 7, are shown as removed, and the key is then caused to engage in the concavity of the trigger-piece between such two points 26 and 28 thereof. Now if while the key remains engaged in such concavity of the trigger-piece it be reversed in its movement such movement of the key will cause the bolt to be withdrawn, whereupon the parts assume the relative positions illustrated in Fig. 9,

the three tumblers 22 being caused to remain in the positions illustrated in Fig. 7, by reason of the projecting piece 29 of the bolt engaging in the slots 30, which may be open or closed, as in Figs. 1 and 2; but a lateral extension of the slot 30 in the under tumbler 22^x (the one represented in Figs. 8 and 9) allows of such tumbler, at the completion of such movement, being returned by its spring 25 over the said lock-piece 29, (*vide* Fig. 9,) and thus causes the bolt to be retained against the pressure of the spring 23 when the key is removed. When it is required that the bolt should be shot, the key is again inserted and turned sufficiently round in either direction to remove the tumbler 22^x from the position illustrated in Fig. 9 to that illustrated in Fig. 8, which permits of the bolt being shot by its spring 23; or such unlocking movement of the tumbler 22^x may be effected by forming the tumbler with an extension 31, with which is caused to engage an angular lifter 32, pivoted at 33 in the lock-case 34, (*vide* Fig. 10,) and which is operated by a push-pin 35, suitably mounted in the case and normally kept in an operative position by a surrounding or contained spring 36, the arrangement being such that upon the pin being pushed in by the hand the lifter 32 is caused to move the tumbler 22^x from the position illustrated in Fig. 9 to that illustrated in Fig. 8, which permits of the spring 23 shooting the bolt 14, carrying with it the trigger-piece 13 to the position illustrated in Fig. 6, and thus permitting of the tumblers 22 22^x resuming the positions represented in such figure. If the said first movement of the key had been continued sufficiently far to allow of the escape of the point 28 of the trigger-piece past the end of the key, it would not have been possible to have withdrawn the bolt by reversing the movement of the key. The trigger-piece thus permits of the key being turned to any extent in either direction without being effective in withdrawing the bolt, the spring 24 of the trigger-piece bearing against its extension 27 or 36 after each passage of the key and returning the trigger-piece to the position illustrated in Figs. 6, 9, and 11 without the bolt being actuated.

In such locks wherein it is also required that the bolt should be capable of closing into its case without being operated by the key, such as when shutting a door fitted with a latch-bolt lock, but wherein it is only intended that the bolt should be unlocked in the manner hereinbefore described, as in the modification represented in Figs. 1 to 5, this is provided for by pivoting the trigger-piece 13 at 17 upon a separate sliding plate 15, which works between the side guides 16, which protect the bolt and trigger-carrier plate from being picked, the under side of the bolt being cut away (*vide* Figs. 4 and 5) to permit

of the free movement of the said plate and trigger-piece. In such modification the plate 15 is adapted to engage with the said locking-piece 29, which engages with closed locking-slots 30 in the tumbler 22, and also engages with a slot 37 made in the bolt 14 in the direction of its movement, so that the plate 15 and bolt 14 can only be withdrawn when the tumblers are in such positions as will permit of the movement of the piece 29 and connected plate. The bolt is also slotted at 38 for the accommodation of the adjacent side guide 16, which, if carried sufficiently high, is slotted, as at 39, (*vide* Fig. 4,) to permit of the movements of the trigger-piece and of the part of the key actuating it.

The operation of such modification in unlocking the bolt is substantially the same as that hereinbefore described with reference to the modification illustrated in Figs. 6 to 12, the trigger-piece being actuated in the same manner, and operative in withdrawing the bolt by means of the slide-piece 15 and projecting part 29 engaging with the bottom end of the slot 37 in the bolt. When the bolt is withdrawn, it can be relocked upon releasing it from the tumblers 22 by turning the key sufficiently in either direction, and if it is shot before the door is closed it will close again into its case as the door is closed, and will then be reshot by its spring 23, and can then only be unlocked by the aforesaid manipulations of the key.

I claim as my invention—

1. The combination, with the bolt having a projection 29 and a tumbler having a slot 30, of a pivoted trigger-piece 13, adapted to be moved aside by the key when the latter is turned in one direction and to be engaged thereby when the key is turned in the reverse direction, the said tumbler and trigger being situated to be simultaneously engaged by the key, whereby the slot 30 and projection 29 are caused to be in line when the key engages the trigger, and connections between the trigger and bolt, substantially as set forth.

2. In a tumbler-lock, the combination of the bolt 14 and a trigger or tumbler 13, adapted to engage with the key on turning a certain distance and to release engagement on turning farther, pivoted on a sliding piece or plate 15, working between side guide 16 and a spring 24, substantially as set forth.

3. In locks, in combination, the tumbler 22^x, formed with a laterally-extending slot 30 and with an opposite extension 31, the pivoted angular lifter 32, and the spring push-pin 35, as herein described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JOHN THOMAS COLE.

Witnesses:

JOHN STORER,

J. BALD. WILSON.