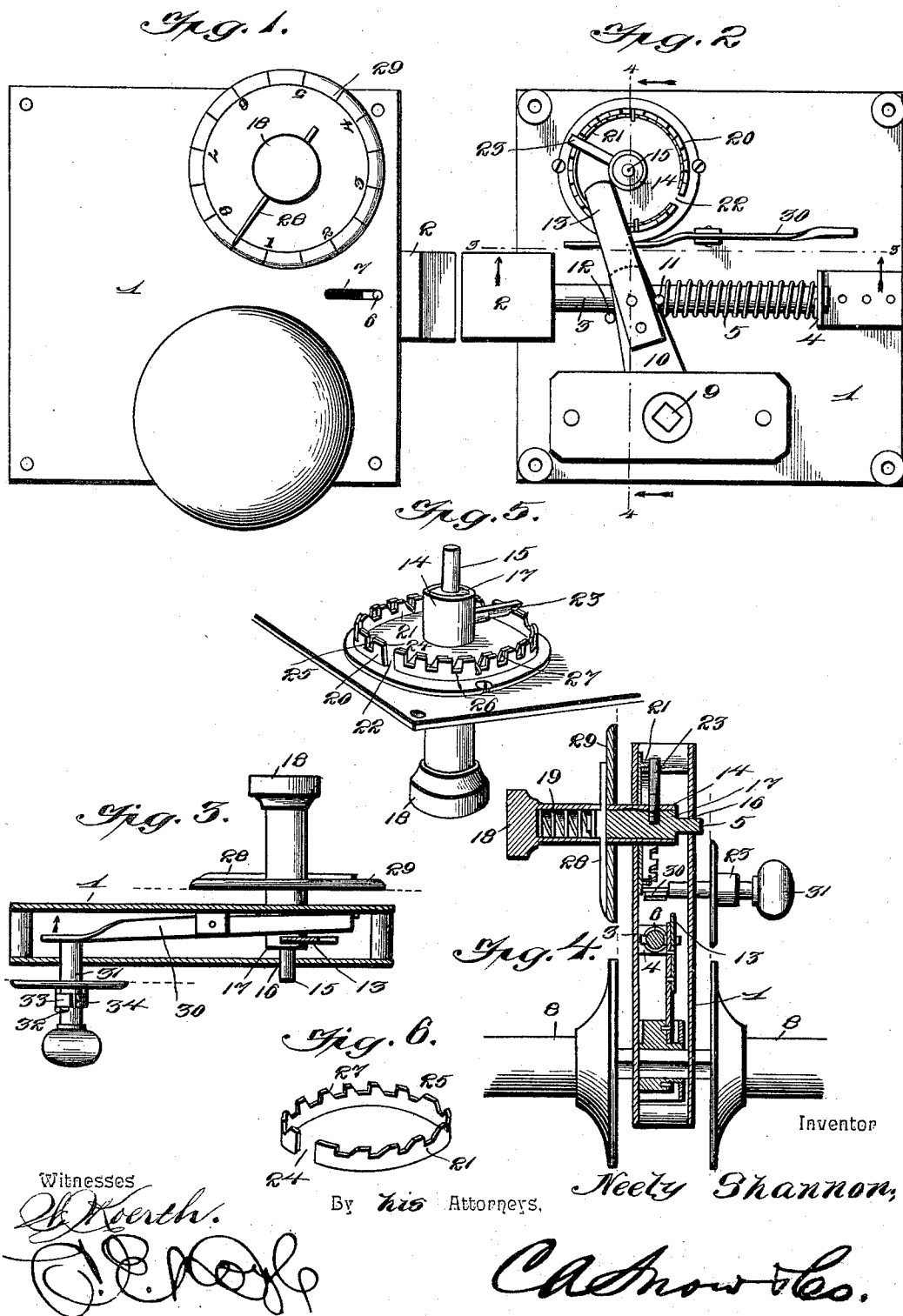


(No Model.)

N. SHANNON.
COMBINATION LOCK.

No. 585,538.

Patented June 29, 1897.



UNITED STATES PATENT OFFICE.

NEELY SHANNON, OF HUNTSVILLE, ALABAMA, ASSIGNOR TO C. F. YARBROUGH, OF SAME PLACE.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 585,538, dated June 29, 1897.

Application filed January 20, 1897. Serial No. 619,957. (No model.)

To all whom it may concern:

Be it known that I, NEELY SHANNON, a citizen of the United States, residing at Huntsville, in the county of Madison and State of Alabama, have invented a new and useful Combination-Lock, of which the following is a specification.

My invention relates to a combination-lock, and has for its object to provide a simple and inexpensive arrangement of parts whereby the latch-bolt of an ordinary door-lock may be effectually secured against retraction except by the manipulation of the tumbler mechanism, which controls a movable stop normally arranged in the path of an arm which is mounted for movement simultaneously with or is the means for communicating motion to the said bolt.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a face view of a mortise-lock constructed in accordance with my invention to show the indicating-dial whereby the tumblers may be adjusted to release the bolt. Fig. 2 is an inside view of the lock with the face-plate omitted. Fig. 3 is a longitudinal section on the line 3 3 of Fig. 2. Fig. 4 is a transverse section on the line 4 4 of Fig. 2. Fig. 5 is a detail view in perspective of the tumbler mechanism and the co-operating bolt-stop. Fig. 6 is a detail view of the movable tumbler detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Mounted in the casing 1 is a sliding bolt 2, of the ordinary construction, having a reduced shank 3, fitted at its rear end in a guide 4 and provided with an actuating or advancing spring 5, the head of the bolt being provided with a guide-pin 6, which operates in a slot 7 in one side plate of the casing. The knob-spindle 8 fits in a knob-spindle socket 9 of the ordinary construction, having an operating-arm 10, which engages a pin 11 on the bolt and is held from forward movement beyond the desired position by means of a stop-

pin 12. The above mechanism is substantially of the ordinary construction.

The operating-arm 10 is provided with an extension 13, forming a tongue for engagement with a bolt-stop 14, which is mounted in the casing for sliding movement parallel with the axis of the knob-spindle socket, said stop having a reduced terminal pin 15, which operates in a guide 16 in the casing, whereby the shoulder 17, which is normally arranged in the path of the extremity of the extension 13, may be removed out of the path of said extension without withdrawing the guide-pin 15 from its bearing. The bolt-stop is extended beyond the opposite side of the casing to form an operating-knob 18, and the exposed portion of the stem of the bolt-stop is of tubular construction to receive an actuating-spring 19, as shown in Fig. 4, which tends to press the knob outwardly in the direction necessary to withdraw the shoulder or extremity of the enlarged portions of the bolt-stop from the path of the arm extension 13.

Arranged concentrically with the bolt-stop is a series of coöperating fixed and movable tumblers 20 and 21, of which the former is permanently secured to the casing, while the latter is adapted to move concentrically therewith. The fixed tumbler-ring is provided with an opening or space 22 for the reception of a detent 23, carried by the bolt-stop 14, the depth of said opening being sufficient to allow the shoulder of the bolt-stop to be withdrawn wholly from the path of the extension 13, and the movable tumbler is provided with a similar opening 24, adapted to register with the opening 22, and also with a contiguous gate 25, which may be arranged to close the opening 22 by producing a partial rotation of the movable tumbler. Thus this main opening or seat 22 for the detent 23 is opened or closed according to the position of the movable tumbler or tumblers, (it being understood that while only one movable tumbler is illustrated in the drawings a greater number may be employed when desired,) and hence, in connection with the above-described mechanism, it is necessary to provide means whereby rotary movement may be imparted to the movable tumbler to produce the opening and

closing of said seat. In order to accomplish this, I employ, in addition to the main seat 22, a series of auxiliary seats or notches 26 in the stationary tumbler, said auxiliary seats 5 being of a depth which is insufficient to allow the detent 23 to move under the tension of the spring 19 far enough to remove the stop from the path of the extension 13. In other words, these notches 26 form false seats in 10 which the detent 23 may be arranged without releasing the latch-bolt. Contiguous to each false seat the movable tumbler is provided with a cam-face 27, which is inclined and is adapted, when encountered by the detent 23, 15 to impart rotary movement to the tumbler 21. The majority of the cams carried by the movable ring are so disposed as to turn the tumbler 21 to close the seat 22, while one of said cams is inclined in the opposite direction 20 to open said seat for the reception of the detent. Hence when the detent is allowed to engage one of the auxiliary seats the movable ring is moved in one direction or the other according to the direction of the contiguous 25 bevel, and as the bevel necessary to adjust the movable tumbler to open the lock is arranged contiguous to only one of the auxiliary seats it will be understood that it is practically impossible to operate the combination 30 by trial or experiment. The accidental seating of the detent in either of the other auxiliary notches will readjust the movable ring to close the main seat.

The tumbler-operating knob 18 carries an 35 index or pointer 28, which traverses a dial 29 to facilitate the seating of the tumblers to suit the combination upon which the lock may be opened, the axial movement of said tumbler-operating knob being independent of said in- 40 dex.

In order to allow the lock to be manipulated from the inside without reference to the combination upon which it is set, I employ a trip-lever 30, which is arranged under the extension 13, the latter being preferably of yielding construction and consisting of a spring-blade, and a trip-pin 31, arranged in operative relation with one end of the trip-lever, 45 as shown clearly in Fig. 3, and provided with a catch whereby it may be secured in such a position as to hold the tongue 13 out of the path of the bolt-stop. In the construction illustrated this catch consists of a stud 32 on the trip-pin and a sleeve 33, provided with a 50 bayonet-slot 34. By pressing the trip-pin inwardly to move the trip-lever in the direction indicated by the arrow in Fig. 3 and then rotating it to cause the engagement of the stud 32 with one of the offset portions of the bayonet-slot the parts are secured in such a position as to allow free movement of the latch-bolt by means of the operating or latch arm 10. 60

I do not wish to be understood as limiting myself to employing this combination-lock 65 on doors, as it is obvious that the same form of lock may be employed in the construction

of drawer-locks, padlocks, &c. Indeed the lock may be universally employed wherever it is susceptible of application.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention. 75

Having described my invention, what I claim is—

1. In a lock, the combination with a bolt and an operating-arm therefor, of an axially-movable bolt-stop arranged in the path of said 80 arm, coöperating tumblers concentric with the bolt-stop, and having seats adapted to be arranged in alinement, and a swinging detent carried by and movable with the bolt-stop for engagement with alined seats in the tumblers 85 to allow the axial removal of the bolt-stop from the path of the arm, substantially as specified.

2. In a lock, the combination with a bolt and an operating-arm, of an axially-movable bolt-stop normally arranged in the path of the operating-arm, fixed and movable tumblers arranged concentrically with the bolt-stop, the fixed tumbler being provided with main and auxiliary seats, and the movable tumbler being 95 provided with a gate for closing the main seat of the fixed tumbler and cams arranged respectively contiguous to the auxiliary seats of the same, and a detent carried by the bolt-stop for engagement with the auxiliary seats 100 and simultaneous engagement with said cams to adjust the movable tumbler, and also adapted for engagement with the main seat to allow the retraction of the bolt-stop from the path of the operating-arm, substantially as 105 specified.

3. In a lock, the combination with a bolt and an operating-arm, of an axially-movable bolt-stop having an exposed operating-knob, and normally arranged in the path of said operating-arm, said bolt-stop being provided with an actuating-spring adapted to withdraw it from the path of the operating-arm, fixed and movable tumblers for coöperation with a detent carried by the bolt-stop, the fixed tumbler having main and auxiliary seats, and the movable tumbler having a gate and cam-faces 115 for engagement by the detent on the bolt-stop, and means, as a dial and a pointer traversing the same, for accomplishing the adjustment 120 of the tumbler mechanism, substantially as specified.

4. In a lock, the combination with a bolt, of an operating-arm having a yielding extension, a bolt-stop normally arranged in the path 125 of said extension and adapted to be withdrawn therefrom, tumbler mechanism for controlling the position of the bolt-stop, and means for deflecting the yielding extension to allow retraction of the bolt without the adjustment 130 of the tumbler mechanism, substantially as specified.

5. In a lock, the combination with a bolt, of an operating-arm having a yielding extension, a bolt-stop normally arranged in the path of said extension, tumbler mechanism for controlling the position of the bolt-stop, and trip mechanism for deflecting the extension to allow retraction of the bolt without the adjustment of the tumbler mechanism, said trip mechanism including a trip-lever, a pin cooperating with the trip-lever, and a catch for se-

curing said pin in its operative position, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

NEELY SHANNON.

Witnesses:

THOS. F. GIVEN,
L. J. SEARCY.