A. E. BROWN & J. M. ROBERTS.

COMBINATION DOOR LOCK.

APPLICATION FILED JUNE 2, 1908.

939,210.

Patented Nov. 9, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

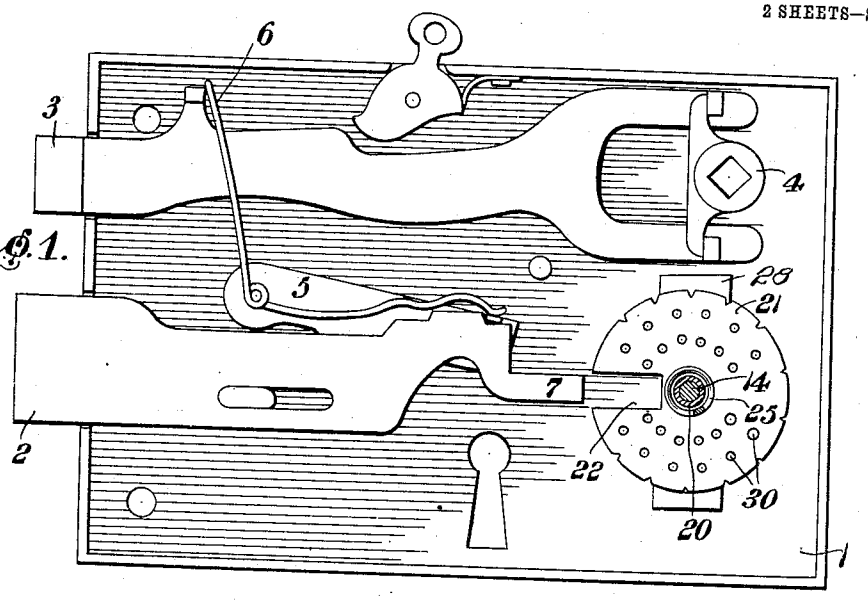
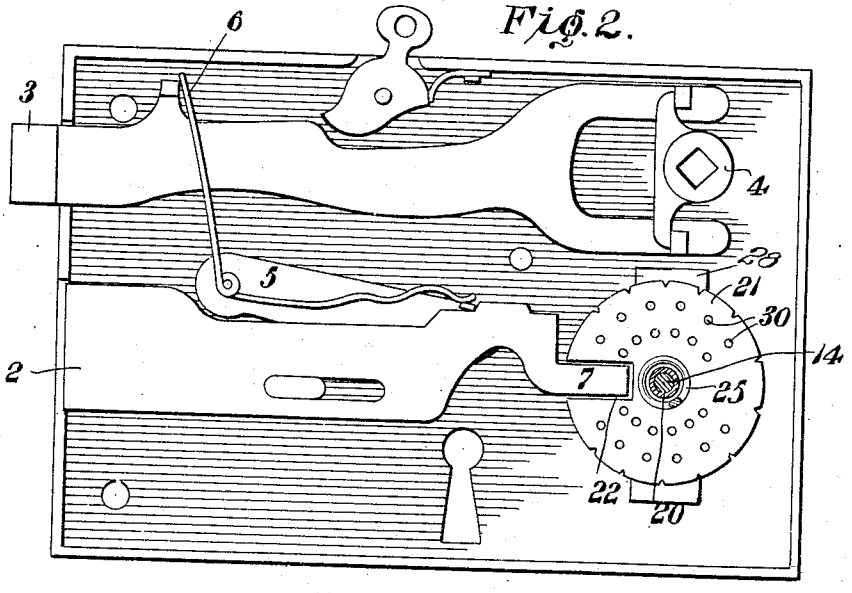


Fig. 2.



Witnesses

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Fig. 3.

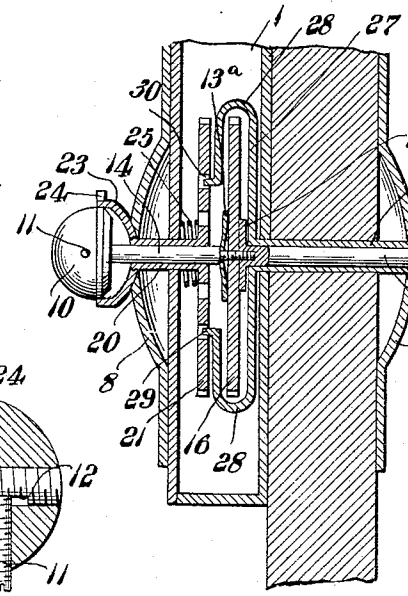


Fig. 4.

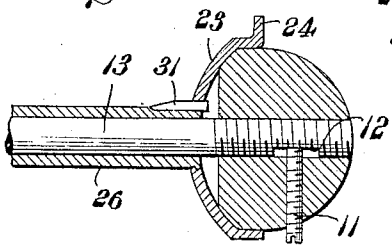
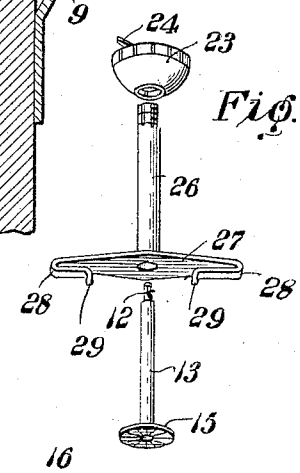


Fig. 6.



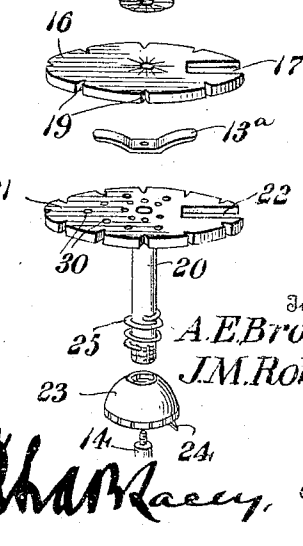
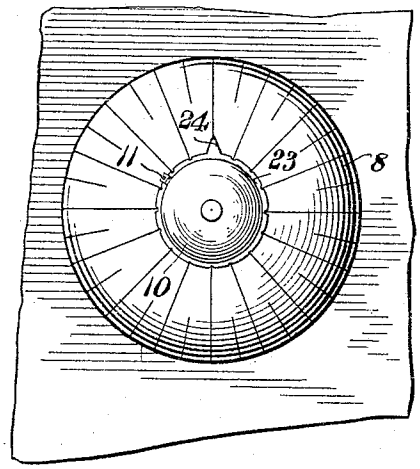


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALVIE E. BROWN AND JAMES M. ROBERTS, OF CRAYNE, KENTUCKY.

COMBINATION DOOR-LOCK.

939,210. Specification of Letters Patent. Patented Nov. 9, 1909.

Application filed June 2, 1908. Serial No. 436,209.

To all whom it may concern:

Be it known that we, ALVIE E. BROWN and JAMES M. ROBERTS, citizens of the United States, residing at Crayne, in the county of Crittenden and State of Kentucky, have invented certain new and useful Improvements in Combination Door-Locks, of which the following is a specification.

The present invention appertains to locks particularly designed for doors of dwellings and like structures, and has for its object to combine with the usual key-operated lock bolt novel means for preventing the throwing of the lock-bolt when projected, either by means of the proper key, or other device without first setting the means holding the lock bolt projected, the setting being effected by combination mechanism which is of such construction as to be changed at will without requiring the opening of the lock for such purpose.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which:

Figure 1 is a view in elevation of a lock embodying the invention, the cap plate being removed and showing the position of the parts when the lock bolt is projected. Fig. 2 is a view similar to Fig. 1, showing the position of the parts when the lock bolt is withdrawn. Fig. 3 is a transverse section of the lock, showing it applied to a door. Fig. 4 is a longitudinal section of a hollow shaft, showing the knob shaft and the means for securing the knob and finger piece to the respective shafts. Fig. 5 is a detail view in elevation of the inner dial, knob and finger piece. Fig. 6 is a detail perspective view of the parts forming the combination mechanism, said parts being separated and arranged in the order which they will occupy when assembled.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The invention may be applied to rim or mortise locks. When the invention is adapted to mortise locks, the dials are attached to the sides of the door, but when applied to a rim lock, such as illustrated in the accompanying drawings, one dial forms a part of or is applied to a side of the lock casing and the other dial is attached to a side of the door, the side opposite that to which the lock is attached.

The lock casing 1 may be of any design, construction or size, according to the type or make of lock to which the invention is adapted. The lock mechanism comprises lock-bolt 2, latch-bolt 3, latch operating tumbler 4, tumbler 5 coöperating with the lock-bolt 2, and spring 6 arranged to project the latch-bolt and to depress the tumbler 5. The lock-bolt has a rear extension 7 which when the bolt is retracted, is accommodated in registering notches in the tumblers of the combination mechanism and which in sundry other positions of said tumblers, is prevented from entering the notches so as to hold the lock-bolt projected when shot into the socket or keeper of the jamb or like part against which the door closes. A dial 8 is provided upon a side of the lock casing. A companion dial 9 is arranged upon the outer side of the door or upon the side opposite to that provided with the dial 8, so that a dial may appear upon each side of the door to assist in properly positioning the combination mechanism of the lock-bolt. A shaft is mounted in opposite sides of the lock casing and extends beyond opposite sides of the door and is provided at its outer ends with knobs 10, the same being secured to the shaft in any convenient and substantial way. As shown, the knobs 10 are threaded upon the outer ends of the shaft and are secured in the adjusted position by means of set screws 11 whose inner ends engage with flat sides 12 of the shaft. The shaft consists of sections 13 and 14 which are connected at their inner ends by means of a screw thread joint. The shaft section 13 is formed at its inner end with an outstanding flange 15 designed for frictional engagement with a tumbler 16 that is mounted upon the reduced threaded extremity of the shaft section 14 and that is formed with a slot 17 adapted in one posi-

tion of the tumbler to receive the extension 7 of the lock bolt. The side of the flange 15 adjacent to the tumbler 16, is roughened or serrated to prevent possible slipping or movement of the parts after they have been secured by tightening the sections 13 and 14. A flat spring 13[a] is slipped upon the reduced end of the section 14 and normally exerts a pressure upon the tumbler 16 to hold the same against the flange 15 to insure movement of said tumbler with the shaft when turning the same. The knobs 10 are provided with indicators to coöperate with graduations of the dials 8 and 9 when properly positioning the tumbler 16 to bring the slot 17 into registry with the extension 7 of the lock-bolt, the indicators being of any approved form, and in the present instance being constituted by the set screws 11. To change the relative position of the shaft and tumbler 16, the sections 13 and 14 of the shaft are loosened and said tumbler is then turned to the required position, after which said sections 13 and 14 are again tightened, thereby clamping the tumbler 16. The tumbler 16 is held from turning when changing the position of the shaft by the rear extension 7 of the lock-bolt entering the slot 17 or by causing said rear extension 7 to enter any one of a series of notches 19 formed in the outer edge of the tumbler 16.

A hollow shaft 20 is slipped upon the main shaft and is provided at its inner end with a tumbler 21 having a slot 22 to register with the slot 17 of tumbler 16 and receive the extension 7 of the lock-bolt. A finger piece 23 is secured to the outer end of the hollow shaft 20 and is preferably made hollow upon its outer side to receive the knob 10. The finger piece 23 is provided with a pointer 24 to coöperate with the graduations of the dial 8 and is also provided with graduations to assist materially in positioning the main shaft so as to bring the slot 17 of tumbler 16 in register with slot 22 of tumbler 21. The hollow shaft 20 has a two-fold movement upon the main shaft, the one being rotative and the other sliding, the latter being for a purpose presently to be fully explained. A spring 25 mounted upon the hollow shaft 20 is confined between the tumbler 21 and the outer plate of the lock casing and normally exerts an inward pressure upon the tumbler 21 for a purpose to be presently disclosed.

A hollow shaft 26 is mounted upon the opposite end portion of the main shaft and is provided at its outer end with a finger piece 23 in a similar manner as the finger piece at the outer end of the hollow shaft 20. A yoke 27 is provided at the inner end of the hollow shaft 26 and its end portions are bent, as shown at 28, to extend over the tumbler 16 and terminate in points 29 which are adapted to enter selected openings of a series of openings 30 formed in the tumbler 21. It will thus be understood that when the points 29 enter openings 30 of the tumbler 21, both hollow shafts 20 and 26 are coupled and turned in unison, thereby enabling the tumbler 21 to be rotated from either side of the door. The spring 25 serves to hold the points 29 in engagement with the selected openings 30. To change the relation of the tumbler 21, the inner hollow shaft 20 is pulled upon, thereby compressing the spring 25 and moving the tumbler 21 away from the yoke 27 and withdrawing the points 29 from the openings 30, after which said shaft 20 and tumbler 21 may be turned independently of the shaft 26, thereby permitting the combination to be changed. Upon releasing the shaft 20, the spring 25 reacting, moves said shaft and tumbler 21 inward to compel the points 29 of the yoke 27 to enter openings 30 in registry therewith, so that the tumbler 21 may be turned by operating either shaft 20 or 26. The openings 30 are formed in a circle and are spaced apart a distance to admit of proper adjustment of the tumbler. The finger pieces 23 are adjustable upon their respective shafts 20 and 26 and are connected thereto by a screw thread joint. Keys 31 are adapted to secure the finger pieces in the adjusted position by engaging a notch formed in the opening of each finger piece and one of a series of notches formed in the sides of the shafts. By this means, the finger pieces may be adjusted to bring their pointers 24 in position according to any selected graduation of the respective dials.

It will be understood from the foregoing that the combination mechanism may be readily adapted to any style or make of lock having a key operated lock-bolt so as to secure the same when thrown into locked position and that the combination may be easily and quickly changed without necessitating the opening or the removal of the lock for such purpose. When the lock-bolt is thrown into locked position and the tumblers of the combination mechanism moved to throw the slots 17 and 22 out of registry with each other and with the extension 7 of the lock-bolt, the latter cannot be withdrawn or the lock opened, even though the proper key be introduced into the lock. Before the lock may be opened, it is necessary that the combination mechanism be properly set and this is accomplished by means of one of the knobs 10 and a finger piece 23 in conjunction with one of the dials so as to bring the tumblers 16 and 21 into position with the slots 17 and 22 in register and opposite to the extension 7 of the lock bolt to permit of the latter being thrown inward out of locked position.

It is to be understood that the invention may be adapted to any kind of lock, whether

key-operated or not, or to locks designed for money safes, vaults, etc.

Having thus described the invention, what is claimed as new is:

1. A combination lock embodying alining rotary shafts, a tumbler fixed to one of the shafts, and an engaging element carried by the other shaft and having connection with the tumbler to admit of the latter being operated by turning either selected one of the shafts, one of the shafts being movable longitudinally away from the other shaft to disengage said element and tumbler, whereby one of the shafts may be turned relative to the other to re-set the device.

2. A combination lock embodying alining rotary shafts, a tumbler fixed to one of the shafts, and a yoke rigid with the other shaft and engaging with the tumbler to admit of the latter being operated by turning either selected one of the shafts, one of said shafts being movable longitudinally away from the other shaft to disengage the yoke and tumbler, whereby one of the shafts may be turned relative to the other to re-set the device.

3. A combination lock embodying alining rotary shafts, a tumbler carried by one of the shafts to turn therewith, a yoke rigid with the other shaft and adapted for engagement with the tumbler, one of said shafts being movable longitudinally, and means for normally maintaining such movable shaft in operative relation to the other shaft to hold the yoke and tumbler associated and admit of the latter being operated by turning any selected one of the shafts.

4. A combination lock embodying alining rotary shafts, a tumbler carried by one of the shafts to turn therewith, a yoke rigid with the other shaft and adapted for engagement with the tumbler, one of said shafts being movable longitudinally, and means for yieldingly maintaining said movable shaft in operative relation to the other shaft to hold the yoke and tumbler associated and admit of the latter being operated by turning any selected one of the shafts.

5. A combination lock embodying a main shaft, a tumbler carried by the main shaft, hollow shafts rotatably mounted upon the main shaft on opposite sides of the tumbler, a second tumbler carried by one of the hollow shafts, and an operative connection between the hollow shafts.

6. A combination lock embodying alining rotary shafts, a tumbler carried by one of the shafts to turn therewith, and a yoke rigid with the other shaft and having its end portions bent and adapted to make interlocking connection with the tumbler, one of said shafts being movable longitudinally toward the other shaft to hold the yoke and tumbler associated and admit of the latter being operated by turning any selected one of the shafts.

7. A lock comprising a lock-bolt and a combination mechanism coöperating with the lock bolt and embodying a main shaft comprising sections, a tumbler mounted upon the shaft between the sections thereof, a second tumbler, a hollow shaft carrying said second tumbler and mounted upon the main shaft, a yoke having its end portions bent to embrace edge portions of the first mentioned tumbler and adapted to have said bent ends interlock with said second tumbler, a third shaft carrying the yoke and mounted upon the main shaft, and a spring normally exerting a pressure to move one of the two last named shafts toward the other to hold the yoke and second tumbler in interlocking engagement.

8. A combination lock embodying a main shaft, a tumbler mounted thereon, hollow shafts loosely mounted upon the main shaft on opposite sides of the tumbler, a second tumbler carried by one of the hollow shafts, a yoke disposed on the other hollow shaft and embracing the first named tumbler and adapted for interlocking engagement with the second tumbler, and means for maintaining said hollow shafts in operative relation to hold the second tumbler and the yoke in interlocking engagement.

9. A combination lock embodying a main shaft provided at opposite ends with knobs, a tumbler carried by the main shaft, hollow shafts mounted upon the main shaft on opposite sides of the tumbler, a second tumbler carried by one of the hollow shafts, an operative connection between the hollow shafts, and finger pieces arranged in proximity to the respective knobs and adjustably secured to the opposite ends of the hollow shafts.

10. A lock comprising a lock bolt, and a combination mechanism coöperating with the lock bolt and consisting of a main shaft, a tumbler mounted thereon, hollow shafts mounted on the main shaft on opposite sides of the tumbler, a second tumbler carried by one of the hollow shafts, and means carried by the other hollow shaft for detachably engaging the second tumbler.

In testimony whereof we affix our signatures in presence of two witnesses.

ALVIE E. BROWN. [L. S.]
JAS. M. ROBERTS. [L. S.]

Witnesses:
W. A. BLACKHORN,
J. E. SULLINGER.