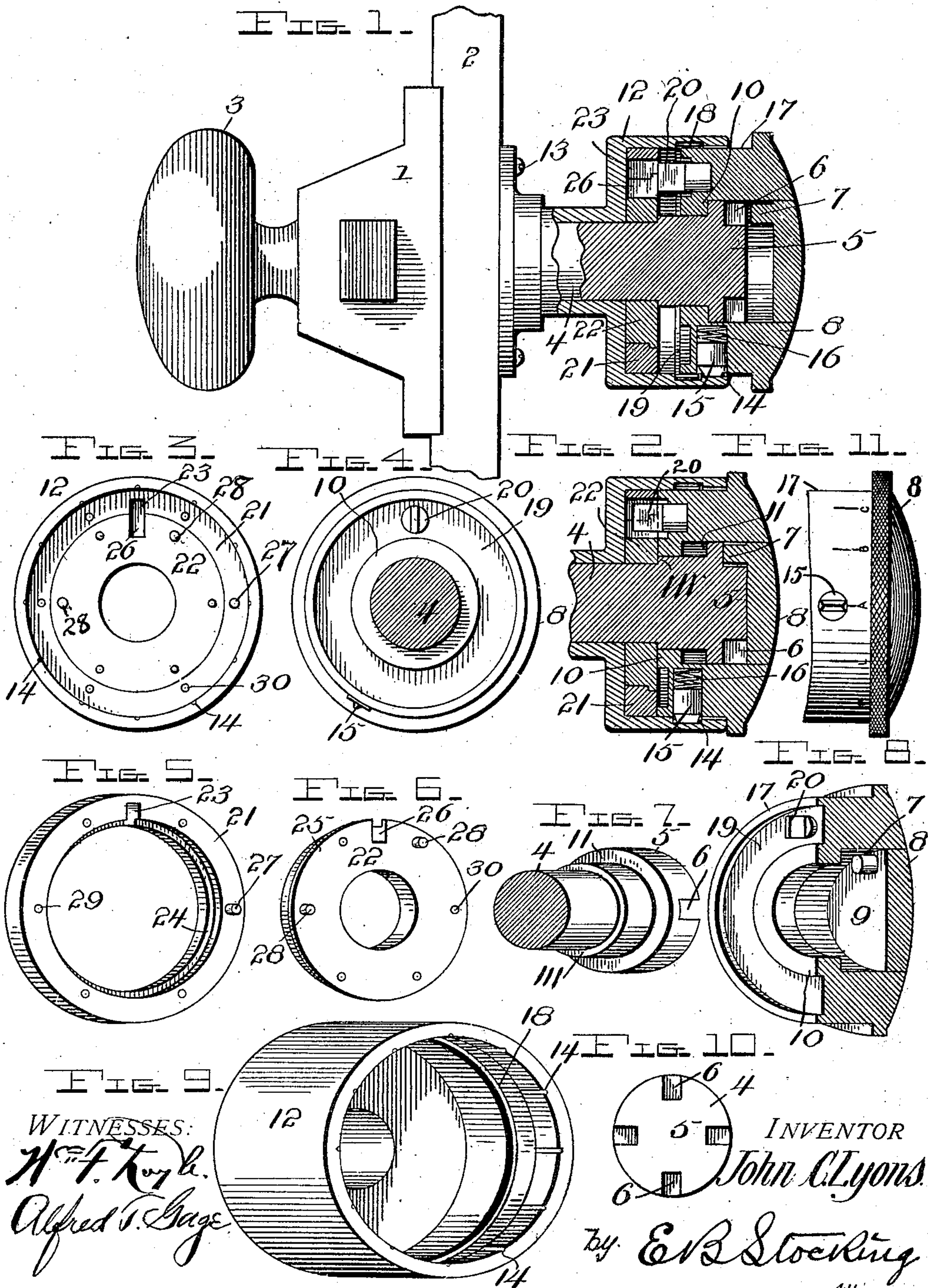


No. 847,348.

PATENTED MAR. 19, 1907.

J. C. LYONS.  
PERMUTATION DOOR KNOB.  
APPLICATION FILED APR. 26, 1906.





# UNITED STATES PATENT OFFICE.

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## PERMUTATION DOOR-KNOB.

No. 847,348.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed April 26, 1906. Serial No. 313,816.

*To all whom it may concern:*

Be it known that I, JOHN C. LYONS, a citizen of the United States, residing at McComb, in the county of Pike, State of Mississippi, have invented certain new and useful Improvements in Permutation Door-Knobs, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to a permutation-knob, and particularly to a structure adapted for application to a door-latch.

The invention has for an object to provide a novel and improved construction of the 15 tumblers adapted to cooperate with a projection carried by the knob-body and adapted to enter recesses carried by the tumblers when they are in alinement, so as to permit an inward movement of the knob for the purpose of clutching the same in operative relation to the spindle of the latch mechanism.

Other and further objects and advantages of the invention will be hereinafter fully set forth and the novel features thereof defined 25 by the appended claims.

In the drawing, Figure 1 is an elevation of a door-latch, showing the permutation-knob in section and out of operative relation with the spindle of the latch. Fig. 2 is a similar 30 section of the permutation-knob with the parts in operative position for turning the latch-spindle. Fig. 3 is an elevation of the knob-casing and the tumblers carried thereby. Fig. 4 is a similar view of the inner face of the knob. Fig. 5 is a detail perspective of one of the tumblers. Fig. 6 is a similar view of the cooperating tumbler. Fig. 7 is a sectional perspective of one end of the latch-spindle. Fig. 8 is a similar view of the co- 40 operating knob-section. Fig. 9 is a detail perspective of the knob-casing. Fig. 10 is an end view of the latch-spindle, and Fig. 11 is a detail plan showing the indicating characters carried by the knob.

45 Like numerals of reference designate like parts throughout the several views of the drawing.

The numeral 1 indicates a latch which may be of any desired construction and is mounted upon a door or other structure, as indicated at 2. This latch is provided with the usual operating-handle 3 at one side thereof and with the extended spindle 4, which passes through the door to the opposite side 55 thereof and is provided with the clutching-

head 5 of any preferred construction, one form of which is herein shown and comprises the series of recesses 6, disposed at the edges thereof and adapted to cooperate with a clutch-pin 7, carried by the knob-section 8 60 and secured thereto, so as to enter the recesses 6 when the knob is pushed inward upon the spindle. For the purpose of permitting this motion a recess 9 is provided within the knob, and the flange 10 at the inner face of this recess prevents the withdrawal of the knob from the spindle by engagement with the shoulder 11 upon the head 5 thereof. This knob is disposed within the 65 casing 12 of any desired construction or configuration, which is secured to the door by means of the plate 13 and is provided upon its inner periphery, at the outer edge thereof, with a series of notches or recesses 14, adapted to be engaged by the spring-pressed 75 catch 15, which is disposed within one of the recesses when the knob is held in contact with the casing by means of the spring 16. This catch when in the position shown in Fig. 1 engages successively each of the 80 notches 14 to resist the free rotation of the knob and to indicate the relative position of the indicating data carried by the periphery 17 of the knob, Fig. 11. When the knob is clutched on the spindle 4, this catch falls 85 into a circular groove 18, provided on the inner face of the casing, and travels therein to permit free rotation of the knob and spindle, while resisting an outward pull of the knob.

The inner face 19 of the knob is provided 90 with a projection 20, extending therefrom, which normally travels upon the outer face of the tumblers 21 and 22. These tumblers are disposed one within the other, and the tumbler 21 is provided with the recess 23 and 95 the seat 24, adapted to receive the flanged edge 25 of the tumbler 22. This latter tumbler is also provided with a recess 26, adapted to be drawn into alinement with the recess 23, as shown in Fig. 3, at which time the projection 20 may enter both recesses to permit the knob to be clutched to the spindle. For the purpose of rotating these tumblers into the position shown in Fig. 3 for throwing 100 them out of said relation when it is desired to throw off the combination of the lock the ring or tumbler 21 is provided with the operating-pin 27 and the tumbler 22 with two similar pins 28, both of which are disposed in the path of the projection 20 as the knob 110



is turned. The tumbler 21 is also provided with a series of spaced recesses 29, by means of which the operating-pin may be shifted when it is desired to change the combination, while similar recesses 30 are provided in the cooperating tumbler.

In the operation of the invention when the parts are in the position shown in Fig. 1 the permutation-knob may be turned without operating the latch-spindle and cannot be forced inward into clutching relation with this spindle until the recesses in the tumblers are brought into alinement, as shown. This movement of the tumblers is effected by the rotation of the knob in opposite directions to the desired extent, depending upon the relative position of the operating-pins on the tumblers, and when the recesses are brought into alinement, as shown in Fig. 3, the knob may be pushed inward into the position shown in Fig. 2, which clutches it to the spindle of the latch to permit an operation thereof by means of the knob. In order to throw off the combination and prevent an operation of the latch by the knob, it is only necessary to withdraw the same from the position shown in Fig. 2 to that indicated in Fig. 1 and by the proper rotation of the knob throw the recesses out of alinement with each other, so that an inward movement of the knob upon the spindle cannot be effected. The latch can be locked against operation by the knob through a rotation thereof toward the right, so that the tumblers are moved from the position shown in Fig. 3 until the pin 28 at the right of the recess is brought into alinement with the pin 27, which throws the recesses of the two tumblers out of alinement, and thus prevents a clutching of the knob to its spindle. To set the combination for operating the spindle with the parts in the position just stated, the knob should be turned first to the left, Fig. 3, thus picking up the pin 28 at the left of the recess and carrying it around into alinement with the pin 27. The knob is then turned to the right and picks up pin 28 at the right of the recess, carrying it back into alinement with the pin 27 when the direction of movement of the knob is reversed to the left to engage pin 28 at the left of the recess, and thereby carry the tumbler in that direction until the parts are in the position shown in Fig. 3, which is indicated by the data upon the knob where the graduations are relative to the pins on the tumblers. The invention therefore provides a very simple and efficient construction in which the use of gearing and other complicated parts are avoided, and all the advantages of a combination or permutation lock may be secured in an ordinary latch mechanism of a door and requiring a knowledge of the setting of the knob to permit it to be thrown in operative relation with the latch-spindle.

Having now described my invention and set forth its merits, what I claim, and desire to secure by Letters Patent, is—

1. In a device of the class described, a latch-spindle provided with a clutch connection at its free end, a rotatable knob slidably mounted on said spindle to engage said clutch, a casing surrounding said spindle, and tumblers disposed in said casing to be actuated by the rotary movement of the knob upon the spindle.

2. In a device of the class described, a latch-spindle provided with a clutch connection at its free end, a knob slidably mounted on said spindle to engage said clutch, a casing surrounding said spindle, rotatable tumblers provided with recesses adapted to be brought into alinement, and a projection carried by said knob and adapted to enter said recesses when so alined.

3. In a device of the class described, a latch-spindle provided with a clutch connection at its free end, a knob slidably mounted on said spindle to engage said clutch, a casing surrounding said spindle, rotatable tumblers provided with recesses adapted to be brought into alinement, a projection carried by said knob and adapted to enter said recesses when so alined, and operating-pins carried by each of the tumblers and disposed in the path of said projection.

4. In a device of the class described, a latch-spindle provided with a clutch connection at its free end, a knob slidably mounted on said spindle to engage said clutch, a casing surrounding said spindle, rotatable tumblers provided with recesses adapted to be brought into alinement, a projection carried by said knob and adapted to enter said recesses when so alined, an operating-pin upon one tumbler and a plurality of said pins upon an adjacent tumbler and disposed in the path of said projection, and a spring-catch carried by the periphery of said knob and adapted to engage recesses in said casing as the knob is rotated therein.

5. In a device of the class described, a latch-spindle provided with a clutch connection at its free end, a knob slidably mounted on said spindle to engage said clutch, a casing surrounding said spindle, rotatable tumblers provided with recesses adapted to be brought into alinement, a projection carried by said knob and adapted to enter said recesses when so alined, an operating-pin upon one tumbler and a plurality of said pins upon an adjacent tumbler and disposed in the path of said projection, a spring-catch carried by the periphery of said knob and adapted to engage recesses in said casing as the knob is rotated therein, and indicating characters carried by said knob upon its periphery relative to said catch.

6. In a device of the class described, a latch-spindle provided with a recessed clutch-



ing-head, a rotatable knob slidingly mounted upon said spindle and provided with a chamber to receive said head, a clutching member carried by the inner face of said knob within  
 5 said chamber, a casing surrounding said spindle, and means carried by said casing to be actuated by the rotary movement of the knob upon the spindle.

7. In a device of the class described a latch-  
 10 spindle provided with a recessed clutching-head, a knob mounted upon said spindle and provided with a chamber to receive said head, a clutching member carried by the inner face of said knob within said chamber, a casing  
 15 surrounding said spindle, rotatable tumblers disposed within each other and within the casing each being provided with a recess adapted to be brought in alinement with the other, and a projection carried by the knob  
 20 adapted to enter each of said recesses when in alinement.

8. In a device of the class described, a spindle provided with a clutching-head, a knob slidably mounted thereon and provided  
 25 with a clutch member to engage said head, a casing surrounding said spindle, rotatable tumblers mounted upon the spindle and each provided with a recess, an operating-pin carried by the outer face of one of said tumblers  
 30 and a plurality of pins upon an adjacent tumbler, and a projection carried by said knob and extending over the meeting-line of said tumblers to engage the pins of both thereof.

9. In a device of the class described, a  
 35 spindle provided with a clutching-head, a knob slidably mounted thereon and provided with a clutch member to engage said head, a casing surrounding said spindle, rotatable tumblers mounted upon the spindle and each pro-  
 40 vided with a recess, an operating-pin carried by the outer face of one of said tumblers and a plurality of pins upon an adjacent tumbler, a projection carried by said knob and extend-  
 45 ing over the meeting-line of said tumblers to engage the pins of both thereof, a shoulder carried upon the inner tumbler to engage the

seat upon the outer tumbler, and a retaining-shoulder upon the spindle adapted to engage the inner tumbler.

10. In a device of the class described, a 50 latch-spindle having a clutching-head, a knob slidably mounted thereon and provided with a coöperating clutch member, a casing surrounding said spindle and knob and pro-  
 55 vided with a circumferential groove in its inner face and a series of sockets disposed in a parallel plane to said groove, and a spring-pressed catch carried by the periphery of the knob to engage said groove when the knob is  
 60 pressed inward and said sockets when the knob is withdrawn.

11. In a device of the class described, a latch-spindle having a clutching-head, a knob slidably mounted thereon and provided with  
 65 a coöperating clutch member, a casing surrounding said spindle and knob and provided with a circumferential groove in its inner face and a series of sockets disposed in a parallel plane to said groove, a spring-pressed catch  
 70 carried by the periphery of the knob to engage said groove when the knob is pressed inward and said sockets when the knob is withdrawn, a projection carried by the inner  
 75 face of said knob, and recessed tumblers one provided with two operating-pins and the other with one pin, and both disposed in the path of said projection when the knob is ro-  
 tated.

12. In a device of the class described, a latch-spindle provided with a clutch connec- 80 tion at its free end, a knob slidably mounted on said spindle to engage said clutch, a casing surrounding the spindle, and movable means inserted within the casing to control the slid-  
 85 ing movement of said knob and adapted to be moved in the rotary movement of said knob.

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

JOHN C. LYONS.

Witnesses:

JNO. K. LEWIS,  
 ROBERT E. EDWARDS.