

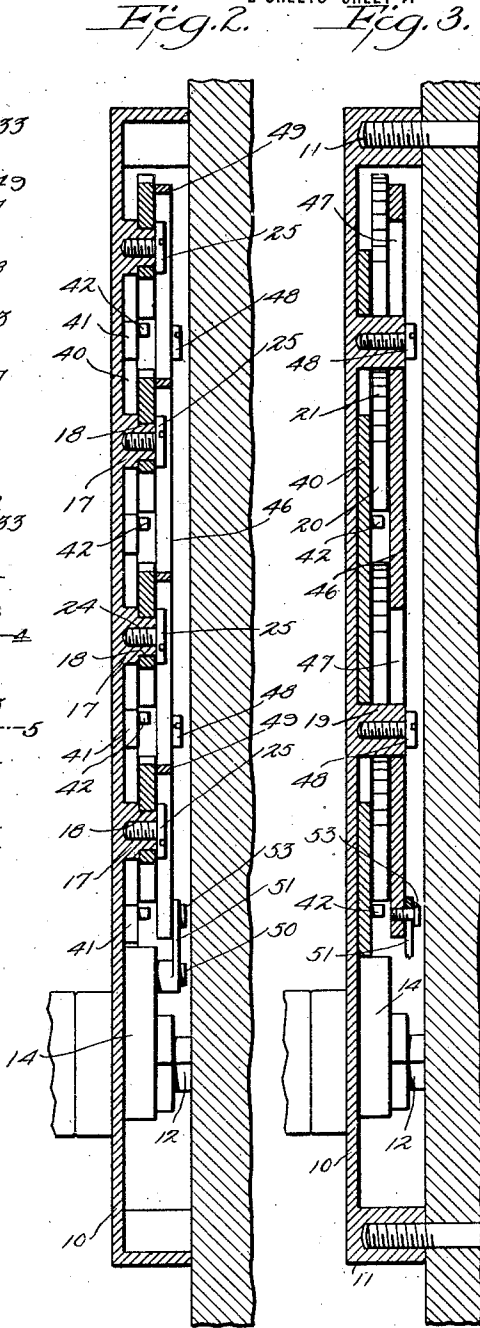
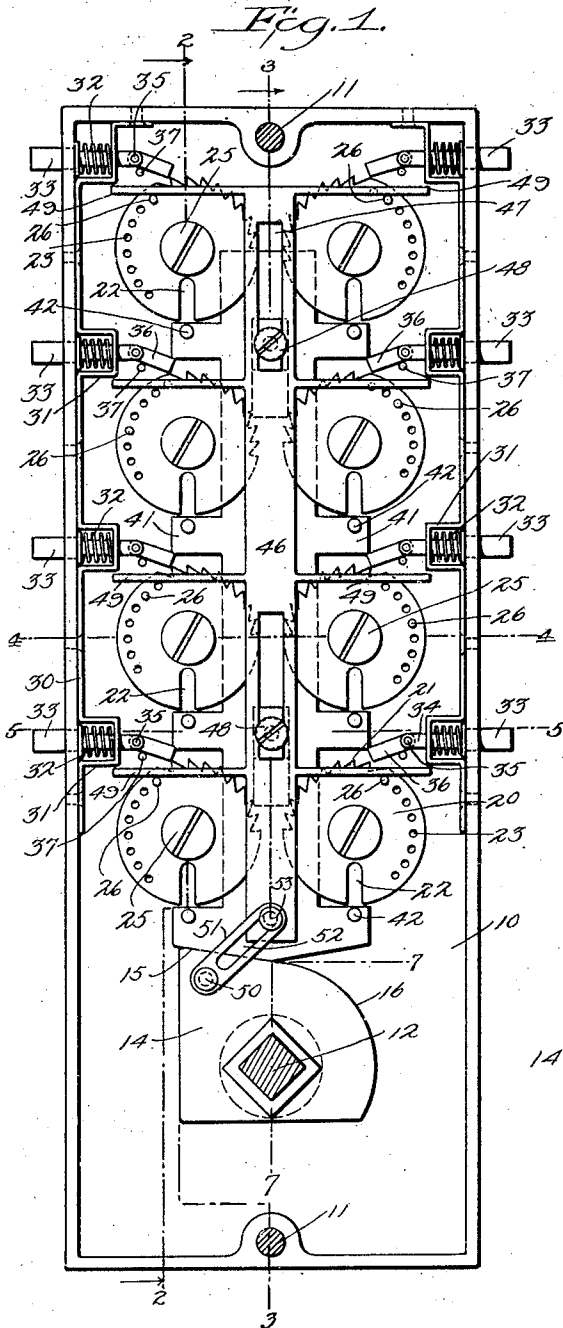
B. F. McCARTHY.
LOCK.

APPLICATION FILED JAN. 10, 1920.

1,374,749.

Patented Apr. 12, 1921.

2 SHEETS—SHEET 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

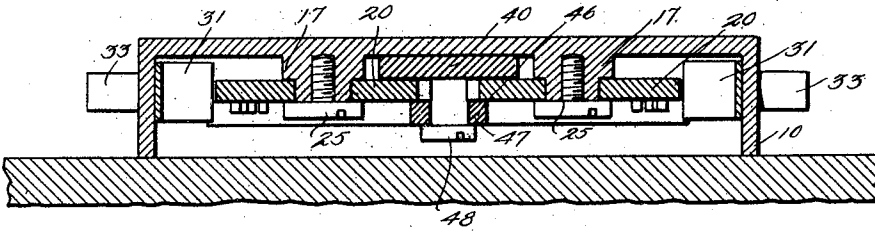


Fig. 5.

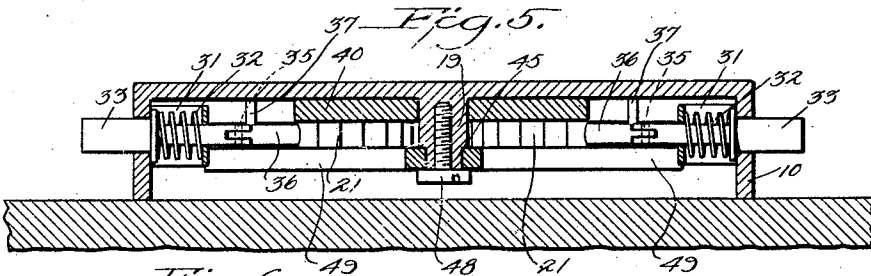


Fig. 6.

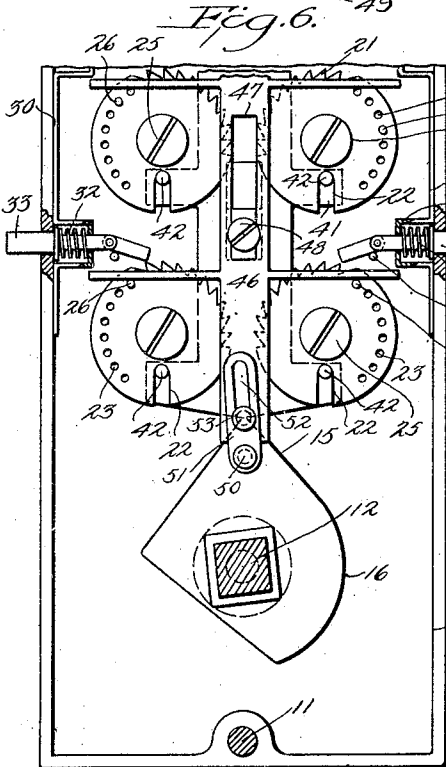


Fig. 7.

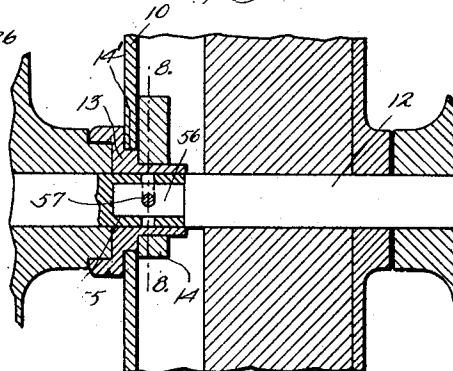


Fig. 8.

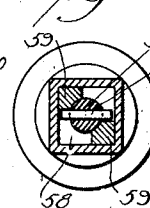
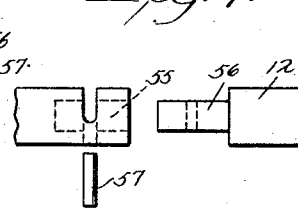


Fig. 9.



WITNESSES

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To all whom it may concern:

Be it known that I, BARTHOLOMEW F. MCCARTHY, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Lock, of which the following is a full, clear, and exact description.

The present invention relates to new and useful improvements in locks, and it pertains more particularly to locks of the permutation type.

It is the primary object of the present invention to provide a mechanism which is capable of being attached to the knob spindle of an ordinary door latch in such a manner that operation of the knob spindle is prevented until the various mechanisms of the device have been set.

It is another object of the invention to provide means for individually setting the mechanisms to permit of an operation of the locking device.

It is a further object of the invention to so construct the mechanism that the combination may be changed from time to time at the will of the operator.

It is a still further object of the invention to provide means whereby the controlling elements of the locking mechanism are from time to time moved in such a manner that the combination is disturbed or completely broken up.

With the above and other objects in view, reference is had to the accompanying drawings in which—

Figure 1 is a partial sectional view of a device constructed in accordance with the present invention;

Fig. 2 is a longitudinal sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a similar view taken on the line 3—3 of Fig. 1;

Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 1;

Fig. 6 is a fragmentary view of the locking mechanism in a position opposite to the position in which it is shown in Fig. 1;

Fig. 7 is a vertical sectional view of a door and door knob spindle;

Fig. 8 is a transverse sectional view on the line 8—8 of Fig. 7, and

Fig. 9 is a disassembled view of the construction shown in Figs. 7 and 8.

Referring more particularly to the drawings, the device comprises a casing or housing 10, one side of which is open, said housing or casing 10 being adapted to be secured in place with its open side adjacent the side of the door by means of screws, bolts, or the like 11. This casing or housing 10 is adapted to be so positioned on the door as to receive the door knob spindle 12, which passes through the bearing member 13 mounted in an opening 14' in the casing or housing 10. Secured to this door knob spindle 12 in such a manner as to rotate therewith, is a cam member 14, and said cam member 14 is provided on one of its sides with a cam shoulder 15, the other side of the cam member 14 being curved as designated by the reference character 16, in such a manner that as the cam member 14 is rotated, the curved edge 16 thereof will rotate in the arc of a circle corresponding to the rotation of the door knob spindle 12.

Cast integral with the inner face of the housing or casing 10 and arranged in pairs, are lugs 17, and as best seen in Fig. 2, each of these lugs 17 is provided with a reduced portion 18. The housing or casing 10 is further provided on its inner face with a plurality of integral lugs 19, there being preferably two, and said lugs 19 are centrally disposed with respect to the side walls of said housing. Mounted on the reduced portions 18 of the lugs 17 are disks 20, and said disks 20 have a portion of their peripheral edge provided with notches or teeth 21. Each of these disks 20 is provided with a notch 22, and between the notch 22 and the teeth 21, is arranged a series of perforations 23, the purpose of which will be hereinafter referred to. Each of the lugs 17 is provided with an interiorly screw-threaded recess 24, and adapted to have threaded engagement with said recess 24, is a screw bolt 25. The screw bolts 25 form the means by which the disks 20 are secured in place on their respective lugs 17, as best shown in Fig. 2. The perforations 23 heretofore mentioned as in the disks 20 are adapted to receive a pin or the like 26, and said pin is capable of adjustment around the disks 20 dependent upon the perforation in which it is placed. Secured to the opposite sides of the housing or casing 10 are sheet metal guides 30, and said guides 30 are so bent to form receptacles 31 for coil springs 32.

Passing through the side walls of the

housing or casing 10, adjacent the receptacles 31, are openings in which are mounted plungers 33, said plungers each having a reduced end 34, to which is pivoted, as at 5 35, a dog or pawl 36. Secured to the inner face of the housing or casing 10, adjacent these plungers 33, are pins or stops 37, and said pins or stops 37 serve the purpose of supporting the pivoted dogs or pawls 36 10 out of the path of the teeth 21, when the plungers are extended under the action of the coil springs 32.

Slidably mounted within the housing or casing 10 and provided with elongated slots 15 which receive the integral lugs 19, is a sliding member 40, and as best shown in Fig. 1 this sliding member 40 is provided with laterally extending arms 41, said arms 41 being arranged in pairs. Rigidly carried 20 by each of the arms 41, and projecting upwardly therefrom is a pin or similar projection 42, and said pin or projection 42 is so arranged with respect to its respective arm 41 that when the disks are properly positioned, the notches 22 thereof will be in the 25 path of travel of these projections 42.

Each of the lugs 19 has a reduced portion, as indicated by the reference character 45, and slidably mounted on the reduced 30 portion 45, is a longitudinally extending member 46, said longitudinally extending member 46 being provided with elongated slots 47, which receive the reduced portions 45 of the lugs 19. Screws or screw bolts 48 35 are employed to retain this member 46 in position on the lugs. The member 46 is provided with lateral extensions 49, which are rigidly secured thereto and are of sufficient length to engage the pins 26 carried 40 by the disks 20 heretofore mentioned.

Pivotally secured as at 50, to the cam member 14, is a link 51, and said link 51 is provided with an elongated slot 52, which 45 is adapted to receive the stud 53 carried on the end of the member 46, as more clearly shown in Fig. 1.

So far as described, the operation of the device is as follows:

The combination of the device is determined by the position of the pins 26 with 50 their respective disks 20. With the parts in the position shown in Fig. 1, it will be seen that all of the disks 20 are so positioned that their notches 22 are in the path 55 of travel of the pins 42. These disks have been so positioned by depressing the plungers 33 the required number of times (which number of depressions is predetermined).

If, now, the knob spindle 12 be rotated 60 to the right in Fig. 1, it will be seen that the cam 15 engaging the end of the sliding member 40, will reciprocate the same, causing the projections 42 to pass into the notches 22 as shown in Fig. 6. This rotation 65 of the knob spindle 12 operates the latch

of the door and permits the same to open. After the door has been opened and is again closed, if the knob spindle 12 be rotated in the opposite direction, *i. e.*, to the left in Fig. 1, the link 51 reciprocates the member 70 46 on the lugs 19 and its lateral projections 49 will engage the pins 26 and in its movement will rotate the disks 20 about their pivotal points sufficiently to move the notches 22 out of alinement with the pro- 75 jections 42. When the parts are in this position, the sliding member 40 is prevented from moving by reason of its projections 42 engaging the peripheral edge of each of the disks. This movement of the 80 sliding member 40 is permitted by reason of the elongated slot 52 in the link member 51, said slot 52 riding on the stud or screw 53.

In order that the door may be opened 85 from the inside, a special knob spindle is employed, as shown in Figs. 7, 8 and 9. This knob spindle is formed in two parts, one of which is provided with a recess 55, the other part being provided with a re- 90 duced end 56, which is adapted to be received within the recess. The reduced end 56 is provided with a transversely-extending pin 57, while the socketed portion 55 is cut away as indicated by the reference character 95 58 to provide two opposed fingers 59.

By this construction it will be seen that when the member of the knob spindle having the reduced end 56 is turned to the 100 right, the ends of the pin 57 will engage the fingers 59, and if the combination be properly set so that the notches 22 of the disks 20 are positioned in the path of the projections 42, the sliding member 40 may be moved longitudinally of the lock, to permit 105 of the opening of the door. If the combination be not set, the projections 42 will engage the peripheral edges of the disks 20 to prevent a movement of the sliding member 40 and consequently the door latch can- 110 not be operated by the spindle.

If, however, that portion of the knob spindle which has the socket 55 be turned to the right in Fig. 8, it will be apparent that 115 the same is free to rotate regardless of whether or not the combination is properly set a sufficient distance to permit of an actuation of the door latch to open the same. If, however, that section of the knob spindle having the reduced end 56 be turned to the 120 left in Fig. 8, it will be seen that the pin 57 will move through a sufficient space to prevent an operation of the latch of the door.

By means of the foregoing construction, it will be apparent that the door latch is free 125 to be operated from the inside, and, at the same time, is prevented from operation from the outside, or vice versa, depending upon the location of the combination mechanism, it being understood that the door is capable 130

of being opened from the opposite side to that on which the combination mechanism is secured.

It will therefore be seen that the present invention provides means by which the ordinary door latch may be secured against operation, thus providing all of the virtues of a positively actuated lock separate and apart therefrom. Furthermore, the present invention provides means by which the combination after having once been set is automatically disturbed upon an operation of the door knob on the part of the person closing the door.

If that portion of the spindle with the socket 55 be turned to the left, the member 46 will be operated and break up the combination. This allows the combination to be broken up from the inside of the door. In a similar manner, the part 56 when the knob is turned to the right, moves the pin 57 in the slot and breaks up the combination. This is important in the event the combination has been tampered with.

Claims:

1. In combination with a door knob and its spindle, a permutation lock comprising a housing, a cam member carried by the door knob spindle and lying within the housing, a plurality of notched disks arranged in pairs, a reciprocating member movable longitudinally of the housing and provided with arms lying normally between the notched disks, means carried by the reciprocating member for engagement with the notched disks to prevent movement of the reciprocating member, and means to permit movement of the reciprocating member upon turning of the knob spindle by means of the cam carried thereby.

2. In combination with a door knob and its spindle, a lock, comprising a housing, a plurality of notched disks carried by the housing and arranged in pairs, a reciprocating member movable longitudinally of

the housing and provided with arms lying normally between the notched disks, means carried by said arms and adapted to pass into the notches of the notched disks when the latter are in register therewith, means carried by said housing for individually setting said notched disks, and a cam member carried by the door knob spindle and engaging the reciprocating member whereby the reciprocating member is moved upon rotation of the knob spindle when the notches of the disks are positioned opposite the notch-engaging means of the reciprocating member.

3. In combination with a door knob and its casing, a lock comprising a housing, a plurality of notched disks in said housing, means carried by said housing for individually setting said notched disks to predetermined position, a reciprocating member, a cam carried by the spindle and adapted for engagement with said reciprocating member whereby said reciprocating member is moved longitudinally of the lock housing, and pins carried by said reciprocating member and adapted to engage the notches of the notched disk to permit of movement of the reciprocating member, said means also serving to prevent movement of the reciprocating member upon engagement with the peripheral edge of said notched disks.

4. A device of the character described comprising a lock housing, a cam mounted in said housing, a reciprocating member mounted for movement longitudinally of said housing, a plurality of notched disks arranged in pairs, means carried by said housing for individually setting said disks at will, and pins carried by the reciprocating member and adapted for engagement with the peripheral edge of said disks to prevent movement of said reciprocating member's operating means.

BARTHOLOMEW F. McCARTHY.