

M. REGA.
COMBINATION DOOR LOCK.
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1,287,435.

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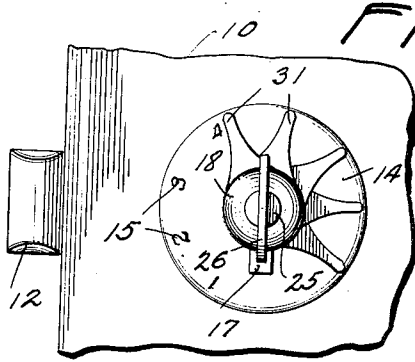
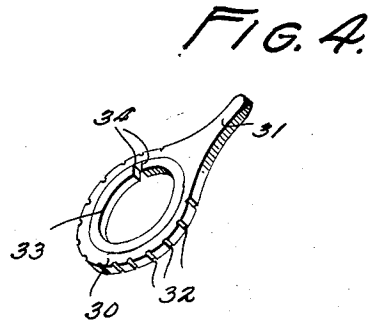
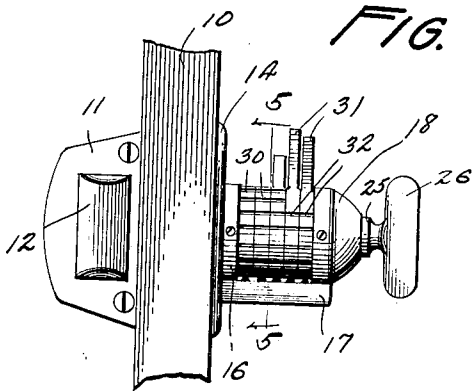
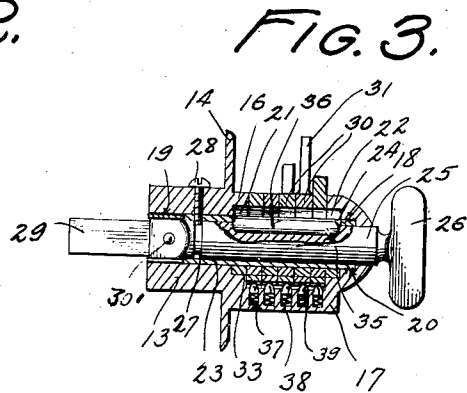


FIG. 5.

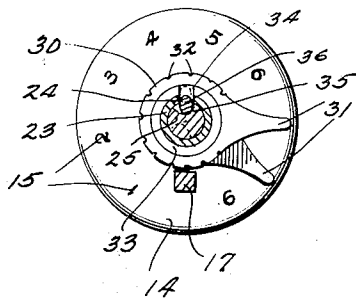
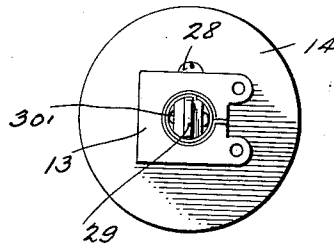


FIG. 6.



WITNESSES

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COMBINATION DOOR-LOCK.

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To all whom it may concern:

Be it known that I, MIKE REGA, a citizen of the United States, residing at Mount Pleasant, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Combination Door-Locks, of which the following is a specification.

This invention is a permutation lock and has for its principal object the production of a device which will allow the latch to be operated only by a party familiar with the combination of the lock.

Another object of this invention is the production of a permutation lock in which a number of tumblers are included, these tumblers being adapted to be shifted to move to such positions as will permit a lock bar to release the spindle, thus permitting the spindle to rotate for shifting the latch.

Another object of this invention is the production of a permutation lock, in which the tumblers are provided with simple and efficient means for holding the same against accidentally shifting, after being moved to adjusted position.

With these and other objects in view, this invention consists of certain novel combinations, constructions and arrangement of parts as will be hereinafter fully described and claimed.

One practical form of construction and assembly of the present invention will be hereinafter described and is illustrated in the accompanying drawing, in which—

Figure 1 is a front elevation of the permutation lock.

Fig. 2 is a side elevation of the complete device.

Fig. 3 is a longitudinal section through the permutation lock.

Fig. 4 is a detail perspective view of one of the tumblers and the locking ring used in connection therewith.

Fig. 5 is a vertical section through the lock taken on the line 5—5 of Fig. 2 looking in the direction of the arrows.

Fig. 6 is a rear elevation of the lock removed from a support.

Referring to the accompanying drawing by numerals, it will be noted that the permutation lock is adapted to be carried upon a supporting door 10 to which the latch housing 11, having the latch 12 is secured. It is of course obvious that any form of a

latch locking element desired may be employed in connection with the present invention without departing from the spirit of the device.

The lock casing 13 is substantially rectangular as shown in Fig. 6, thus permitting the rectangular casing 13 to be passed into a suitable opening formed in the supporting door 10. The bearing plate 14 is formed upon the casing 13 and extends outwardly therefrom and this bearing plate 14 is adapted to have reference numerals or characters 15 formed thereon, as illustrated in Fig. 1. It will also be noted by referring to Figs. 1 and 2 that when the lock is mounted upon a door the plate 14 will be bearing upon the door.

An integral cylindrical collar 16 extends forwardly from the front surface of the plate 14 and the bar 17 leads from the lower portion of the collar 16 and also the bearing plate 14. The head 18 is formed on the forward end of the bar 17, as illustrated in Figs. 2 and 3.

The casing 13 is provided with a cylindrical bore 19 extending therethrough, as illustrated in Fig. 3, while the head 18 is provided with an internal socket 20 in alignment with the bore 19 in the same diameter as this bore. The collar 16 however, is spaced from the head 18 and the collar has an internal pocket 21 of the same diameter as the pocket 22 formed in the head 18 communicating with the socket 20.

The bearing sleeve 23 is inserted in the bore 19 and has its inner end inserted in the pocket 20 formed in the head 18. This sleeve 23 is cylindrical and is also provided with a longitudinally extending slot 24, formed in its upper portion, for purposes to be hereinafter set forth.

The spindle 25 is provided with a knob 26 and this spindle projects through the head 18, as illustrated clearly in Fig. 3. This spindle 25 is provided with an annular groove 27 adjacent its inner end and the retaining screw 28 is passed through the casing 13 and the sleeve 23 to have its projecting end extending into the groove 27. Thus it will be seen that the spindle 25 will be held from being slipped from the sleeve, although it is obvious that it will be free to rotate when the combination of the permutation lock has been operated. The shank 29 has its inner end pivotally mounted as in—

indicated at 30' upon the inner end of the spindle 25. This shank 29 is extended into the latch casing 11 to actuate the latch 12 when the knob 26 has been turned, after the combination has been operated.

The tumblers are similarly constructed and attention is invited to Fig. 4, wherein the construction of one tumbler is clearly disclosed. Each tumbler comprises a circular body 30 having an operating finger 31 leading therefrom and projecting from its periphery. It will further be noted that the periphery of the body is transversely notched as indicated at 32. The body 30 however, is hollow and for this reason allows the locking ring 33 to fit therein. This locking ring 33 has its ends 34 spaced apart to form a receiving passage for the locking bar, to be hereinafter described. These tumblers are positioned to fit about the locking sleeve 23, as illustrated clearly in Fig. 3 and it will be noted that the size of the locking rings is sufficient to permit the locking sleeve to be passed therethrough, although the locking rings will fit snugly upon the locking sleeve 23.

The spindle 25 is provided with a longitudinally extending groove 35 for receiving the locking bar 36, when the device is in a locked condition. By referring to Fig. 5, it will be noted that the locking bar 36 is substantially elliptical in cross section, thus permitting of the easy displacement of the locking bar, after the combination has been worked and the spindle is being turned. It will be noted that this locking bar extends into the slot formed in the locking sleeve 23 and for this reason it will be impossible to turn the spindle 25 until after the locking bar has been displaced from the groove in the spindle.

The supporting bar 17 is provided with a plurality of vertically extending sockets 37 which receive the springs 38, as illustrated clearly in Fig. 3. The dogs 39 extend into the sockets 37 and bear upon the springs 38, whereby the dogs will be normally urged outwardly. Therefore, the dogs will be held in engagement with the peripheries of the tumblers and as the dogs will of course fit within the notches 32, the tumblers will be held against accidentally shifting. However, the fingers 31 of the tumblers may be gripped and swung in either of two directions, thus causing the dogs to be slightly depressed by pressing the springs 38, thus permitting the tumblers to be moved to a set position, whereupon when the fingers of the tumblers are released, the dog will again enter other notches and thus hold the tumblers against accidental movement.

When the present invention is in use, it will be obvious that the tumblers will be so rotated as to cause the passage ways 34 in the locking rings 33 to be out of registry

with the slot 24 in the locking sleeve 23. Therefore, it will be impossible to slide the locking bar 36 and for this reason, as the bar will bear against the locking sleeve it will hold the spindle 25 against rotation. Accordingly, it will be impossible for a person to turn the knob 26 and rotate the spindle 25 and the shank 29 to retract the latch 12. However, a person familiar with the combination of the lock may grip the various fingers 31 of the tumblers and move the fingers to registry with the various reference numerals or characters 15 upon the plate 14, as indicated in Fig. 1. The shifting of the tumblers will cause the locking rings 33 to be so shifted, as when the tumblers are moved to proper positions, the passage ways 34 in the locking rings 33 will be in alignment with each other and in registry with the slot formed in the locking sleeve 23, as illustrated in Figs. 3 and 5. Therefore, the knob 26 may then be turned, since the rotation of the spindle will force the elliptical locking bar from the groove in the spindle and cause the bar to be positioned in the slot of the locking sleeve and the locking rings 33, as illustrated in dotted lines in Fig. 5. The spindle can then be rotated so as to cause the latch 12 to be retracted. When however the device is to be again locked, the spindle is turned back to its normal position and the locking bar will then fall down into the groove in the spindle and remain within the slot in the locking sleeve. The tumblers may then be shifted to positions which will cause the passage ways 34 in the rings 33 to be out of registry with the slot in the sleeve and accordingly the bar will be held within the groove of the spindle, since the inner surfaces of the locking rings will then be extending across the groove in the locking sleeve.

If it is desired to change the combination, the permutation lock may be operated to cause the locking bar to be extended into the passage ways in the locking rings. The spindle then being turned could be held for a short time and at this time the tumblers may be shifted to indicate different reference characters than the old combination and obviously such a shifting of the tumblers with the locking bar fitting within the passage ways and also the top of the sleeve will cause the tumblers to rotate for a desired distance independently of like movement on the part of the locking rings. Thus it will be seen that the tumblers may be shifted to new positions in forming the new combination in order to have the passage ways register with the slot in the locking sleeve. Then upon the return of the spindle to its normal position, it is obvious that the locking bar will then return into the groove in the spindle and in this way the new combination has been completed.

From the foregoing description it will be

seen that a very efficient permutation lock has been produced which will prevent the retracting of the latch by a person unfamiliar with the operation of the combination, although a person familiar with such combination may shift the tumblers to such positions as will easily allow the locking bar to be displaced by the rotation of the spindle, these tumblers being held against further rotation by the dogs releasably engaging the periphery of the tumblers.

What is claimed is:

In a permutation lock, a bar provided at opposite ends with a head and a casing, the latter having a plate near its inner end for receiving indicia, a fixed sleeve mounted at its ends in the head and casing and having a longitudinal slot in its upper side, a spindle journaled in the sleeve and having a longitudinal groove in a side thereof, a knob at its outer end and an annular groove near its inner end, a fastening passing through the casing and sleeve and having its inner end en-

tering the annular groove of the spindle to prevent endwise movement thereof, a latch operating element pivoted to the inner end of the spindle, a plurality of tumblers rotatably mounted on the said sleeve each having an outer extension, a split locking ring within each tumbler and snugly fitting the sleeve and having its ends spaced apart a distance equal to the width of the longitudinal slot in the side of the sleeve, a locking bar in the longitudinal groove of the spindle and the slot in the sleeve and displaceable into the spaces formed between the ends of the locking rings, and spring elements in the bar connecting the head and casing and engaging the said tumblers.

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

MIKE REGA.

Witnesses:

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L. S. RHOADES.