

J. BOHANNON.
PERMUTATION LOCK.
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Patented Aug. 21, 1917.

1,237,461.

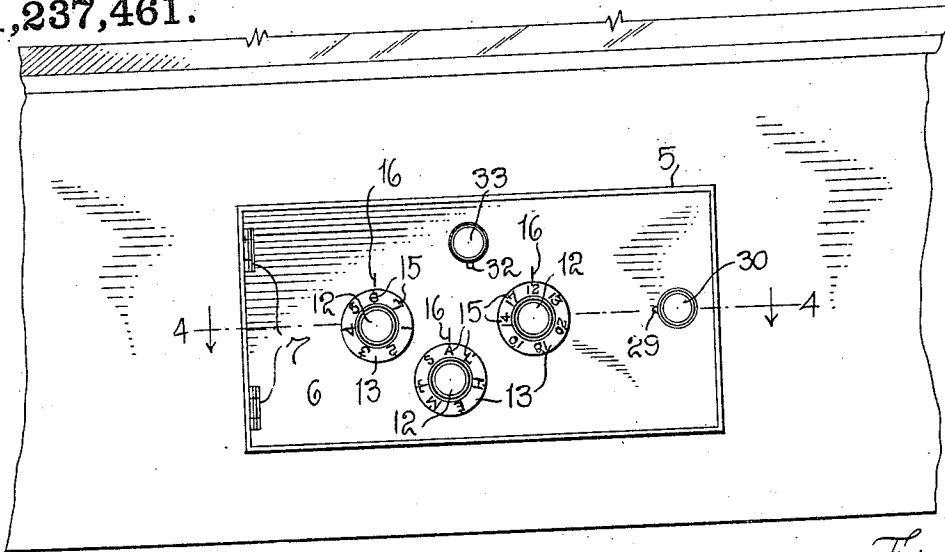


Fig. 1

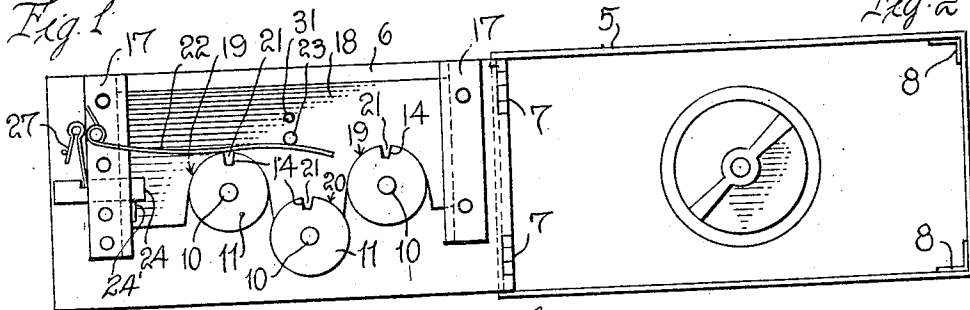


Fig. 2

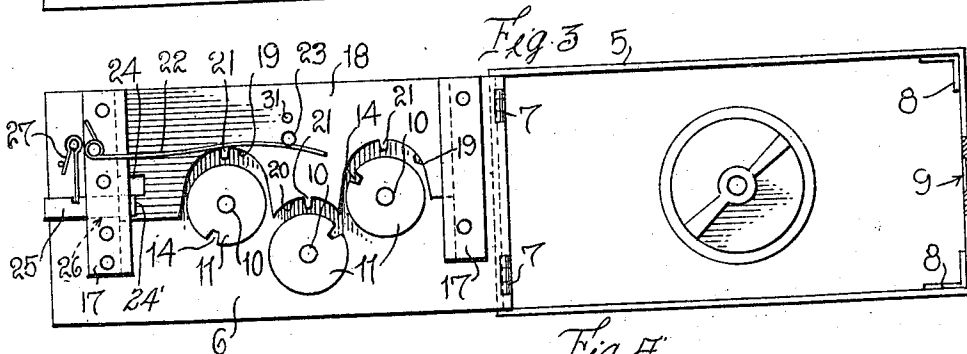


Fig. 3

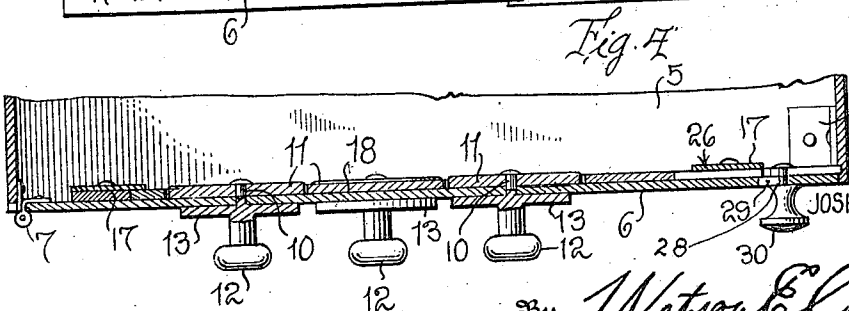


Fig. 4

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PERMUTATION-LOCK.

1,237,461.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSHUA BOHANNON, a citizen of the United States, residing at Eminence, in the county of Henry and State of Kentucky, have invented certain new and useful Improvements in Permutation-Locks, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an improved permutation lock and has for its primary object to provide a locking device particularly designed for locking the switch key of the ignition system of an automobile, though it will be understood, as the description proceeds, that the device may also be employed for various other purposes.

It is the primary object of the invention to provide a lock of the above type which is so constructed that the same cannot be opened by utilizing the sense of hearing or touch in the manipulation of the permutation locking disks, whereby the efforts of unauthorized persons unfamiliar with the combination to obtain access to the switch key will be obviated.

It is another object of my invention to provide a permutation locking device having a locking bolt yieldingly held in its retracted position, a shiftable tumbler plate, and a series of locking disks, said tumbler plate having means to co-act with the disks in one position thereof and permit the locking bolt to move to its normal position, and a spring acting to disengage the tumbler plate from the disks when the bolt is projected to its locking position to dispose said plate in co-acting relation to the locking bolt and prevent the retraction of the latter.

It is a further general object of my invention to improve and simplify the construction of locking devices of the above character whereby the same is rendered positive and reliable in its operation, highly serviceable and convenient in practical use, and capable of manufacture at relatively small cost.

With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawing, in which,

Figure 1 is a front elevation of my improved lock;

Fig. 2 is an elevation showing the cover plate of the lock casing open and illustrating the locking mechanism on the inner face of said plate;

Fig. 3 is a view similar to Fig. 2, showing the locking bolt in its projected position; and

Fig. 4 is a section taken on the line 4—4 of Fig. 1.

Referring in detail to the drawing, 5 designates the frame or body wall of the lock case which, in the illustrated application of the invention, is secured in any suitable manner upon the front of the dash of the vehicle body around the switch key. It will, of course, be understood that in motor vehicles where the switch key for the ignition system is mounted upon the steering post, the form and manner of attachment of the lock casing will be somewhat different from that illustrated in the accompanying drawing. However, the changes necessary in the construction and mounting of the lock case are of an obvious character and it is, therefore, unnecessary to specifically illustrate and describe the same. To one end of the body wall or frame 5 of the lock case, the cover plate 6 is hinged, as shown at 7, and to the other end of the case body, within the same and at the corners thereof, the angle plates 8 are fixed, upon which the free end of the cover plate 6 is adapted to rest when said plate is in its closed position. The inner face of this latter end wall of the body 5 is provided with a recess shown at 9 for the reception of the locking bolt to be presently referred to.

In the cover plate 6, the spaced spindles 10 are rotatably mounted and the permutation locking disks 11 are fixed upon said spindles on the inner side of the plate 6. To the outer end of each of the spindles, a suitable knob or head 12 is secured having a circular base flange 13. Each of the disks 11 is provided with a single notch or recess 14 in its perimeter. Each of the flanges 13 has a series of letters, numerals, or other indicative characters stamped in its surface, and the outer edge of each of these flanges has spaced index marks thereon indicated at 15, disposed in line with each of said characters. An index mark 16 is also provided upon the face of the plate 6 adjacent to the edge of each of the flanges 13.

Upon the inner face of the plate 6, adja-

cent the opposite ends thereof, guides 17 are fixed, and in these guides the ends of a tumbler plate 18 are engaged for sliding movement. This tumbler plate has spaced, substantially semi-circular recesses 19 therein to receive the end locking disks 11 and the central portion of the plate between these recesses has its end edge curved, as at 20, in concentric relation to the other or central disk 11. This curved edge of the plate and the edge of each of the recesses 19 at the center thereof, is provided with a lug 21 for engagement in the notches 14 in the respective disks 11. A wire spring 22 is suitably fixed at one of its ends to one of the guides 17 and has its other end engaged beneath a stud 23 fixed in the plate 18. This spring normally acts to move the plate in one direction and out of locking engagement with the disks 11. In one end of the plate 18, a rectangular notch or recess 24 is provided. The locking bolt 25 is movable through a transverse channel 26 provided in the guide 17. The outer end of the notch 24 is widened or downwardly or laterally extended, as at 24', to receive the end of the bolt 25 when the latter is in its locking position, whereby the movement of the tumbler plate 18 under the action of the spring 22 is positively limited. A leaf spring 27 has one of its ends engaged with the locking bolt and normally urges the same inwardly to its released position. The bolt 25 carries a pin 28 which projects outwardly through a slot 29 in the cover plate 6, and upon the outer end of this pin a suitable finger piece 30 is secured, whereby the locking bolt may be conveniently projected to its locking position. The plate 18 is also provided with a similar pin 31 projecting outwardly through a slot 32 in the cover plate, and a finger piece 33 is secured on the outer end of this pin whereby the plate may be moved against the action of the spring 22 to dispose the notch 24 in position to receive the locking bolt 25.

From the foregoing description, the manner of operation of the device will be clearly and fully understood. The flanges 13 have the numerals or other indicative characters on the faces thereof so related to the notches 14 in the disks 11 that a certain one of said characters must be disposed in line with the index mark 16 on the face of the plate 6 in order to position the notch 14 in the disk 11 in line with the lug 21 on the plate 18. The combination numeral or letter of each of the disks necessary to properly position the notches in the disk is known only to the owner of the lock, and as the several disks 11 are disposed entirely out of contacting relation with the shiftable tumbler plate 18 when the cover plate 6 is locked against movement, the cover plate could not be opened by one unfamiliar with the combi-

nation merely by manipulating the several disks and utilizing the sense of touch or the sense of hearing to determine when the several disks were disposed in the proper positions.

Assuming that the case is open as shown in Fig. 2, and it is desired to lock the same, the face plate 6 is swung into the body of the case over the switch key, and the operator presses outwardly upon the finger piece 30 toward the end of the lock case, thereby projecting the end of the locking bolt 25 into the recess 9 in the end wall of the lock case. The tumbler plate 18 will thus be released so that the spring 22 will act to force the plate upwardly and disengage the lugs 21 on said plate from the notches in the respective disks 11. These disks are now turned or rotated so that the notches therein are disposed out of alignment with the lugs 21. The end of the plate 18 thus effectively prevents inward movement or retraction of the locking bolt 25, and the inner end of the locking bolt likewise holds the plate 18 against further movement away from the rotatable disks under the action of the spring 22. When it is desired to open the lock, it will of course be understood that the several locking disks are again rotated and the notches disposed in alignment with the lugs 21 by bringing the proper combination numerals or letters on the flanges 13 in radial alignment with the index marks on the plate 6. The finger piece 33 is then engaged and a downward pressure exerted thereon, whereby the plate 18 is forced downwardly against the action of the spring 22 and the lugs 21 move into the notches 14 in the disks 11, thus disposing the recess 24 in the end of the plate 18 in alignment with the locking bolt 25 so that the spring 27 will then act to retract the bolt and disengage its outer end from the notch or recess 9 in the end wall of the lock case. The cover plate 6 can then be swung to its open position so that access may be had to the switch key.

From the foregoing description, taken in connection with the accompanying drawing, the construction, manner of operation, and several advantages of the device will be clearly and fully understood. While the construction and arrangement of the several elements employed is exceedingly simple, it will be seen that I have produced a locking mechanism which is reliable in its action and highly effective for the purpose, in view, as it positively protects the opening of the lock by unauthorized persons. It will be seen that in the open position of the lock case, the bolt 25 holds the tumbler plate 18 in its lowered position upon the inner face of the plate 6 so that it is not necessary to maintain a downward pressure upon the finger piece 33. Thus, when the device is

used as a switch key lock, the cover plate of the case may be disposed in its closed position but with the locking mechanism inoperative, as seen in Fig. 3, so that the cover plate can be instantly swung open when it is desired to manipulate the switch key. By thus housing or completely inclosing the switch key during the operation of the machine by the owner, the possibility of the accidental turning movement of the switch key is obviated. While I have shown in the accompanying drawing three of the combination locking disks, it is manifest, of course, that a greater number of such disks may be employed if desired. Various other changes in the form, construction and relative arrangement of the several parts may also be resorted to in order to adapt the invention to a particular use and it will, therefore, be understood that I reserve the privilege of adopting all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

Having thus fully described my invention, what I desire to claim and secure by Letters Patent is:

1. In a permutation lock, the combination with the part to be locked, of a shiftable tumbler plate mounted upon said part and provided in one of its ends with two recesses, permutation locking means with which said plate is adapted to coact, a sliding spring pressed bolt mounted upon said part, a spring yieldingly urging the tumbler plate

to one position in which one end of the bolt is engaged in one of said recesses in the tumbler plate and held in its locking position, said plate being shiftable in a predetermined position of the permutation locking means into a position to permit of the movement of said sliding bolt under the action of its spring into the other of said recesses in the tumbler plate.

2. In a permutation lock, the combination with the part to be locked, of a plurality of disks rotatably mounted upon said part, a shiftable tumbler plate mounted upon said part, a spring urging said plate in one direction and out of contact with said disks, a sliding locking bolt, a spring urging the bolt to its normal position, said tumbler plate having a recess to receive the locking bolt in the normal position thereof, said disks and the tumbler plate having co-acting means to permit of the movement of the plate to the latter position, the outer end of the recess in the tumbler plate being widened and adapted to receive the inner end of the locking bolt when the same is moved to its locking position whereby the further movement of the tumbler plate under the action of its spring is prevented.

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

JOSHUA BOHANNON.

Witnesses:

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M. R. WILSON.