

July 8, 1924.

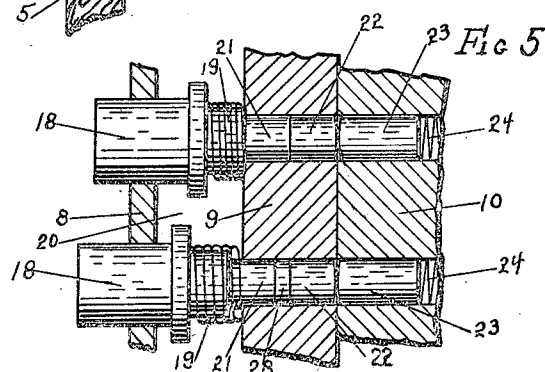
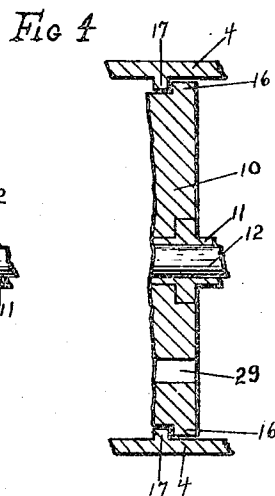
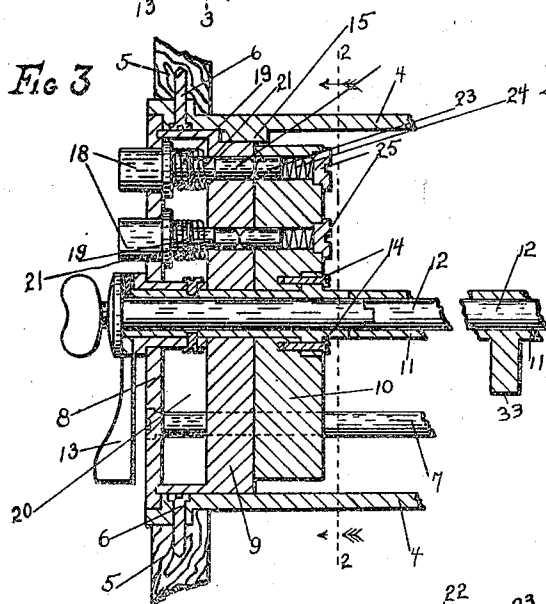
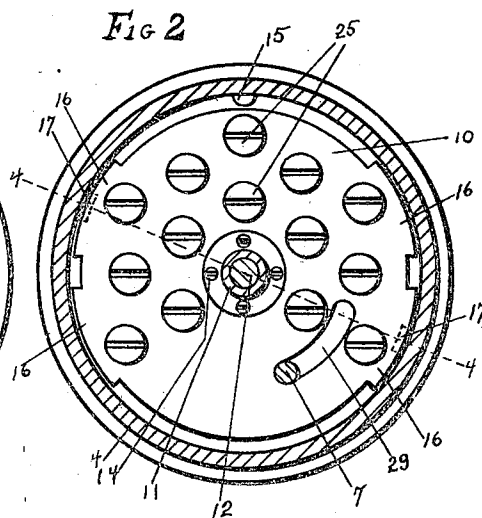
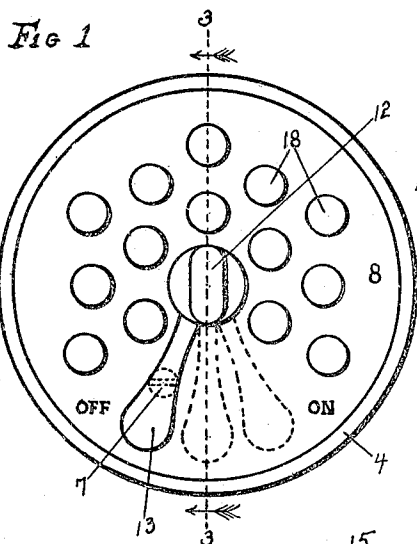
1,500,657

O. H. STOLBERG

PERMUTATION LOCK

Filed March 27, 1922

2 Sheets-Sheet 1



INVENTOR
OTTO H. STOLBERG
 BY
A. S. Paré
 ATTORNEYS

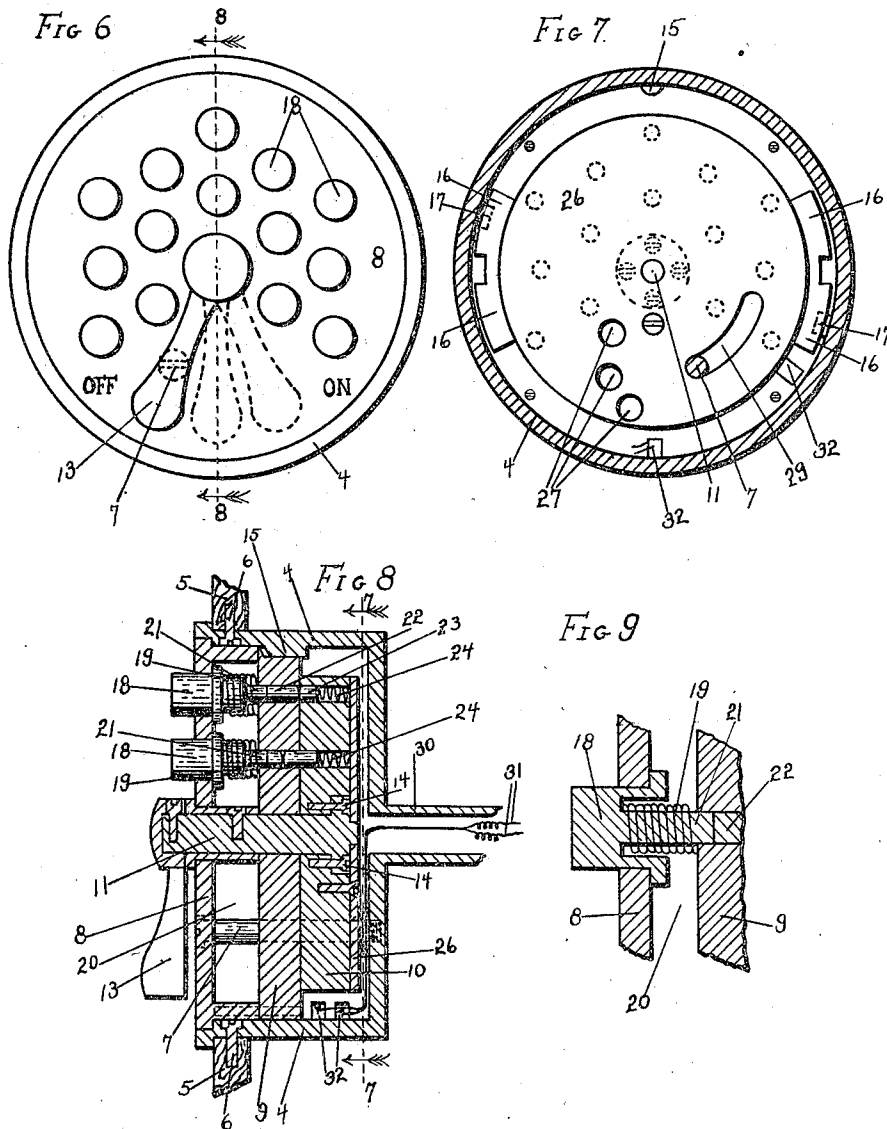
July 8, 1924.

O. H. STOLBERG

1,500,657

PERMUTATION LOCK

Filed March 27, 1922 2 Sheets-Sheet 2



INVENTOR
OTTO H. STOLBERG
 BY
A. S. Paré
 ATTORNEYS

UNITED STATES PATENT OFFICE.

OTTO H. STOLBERG, OF SAN FRANCISCO, CALIFORNIA.

PERMUTATION LOCK.

Application filed March 27, 1922. Serial No. 546,967.

To all whom it may concern:

Be it known that I, OTTO H. STOLBERG, a citizen of the United States, and a resident of the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Permutation Locks, whereof the following is a specification.

This invention relates to permutation locks.

The invention is designed more especially to control the ignition systems of motor vehicles, but is capable of other uses.

The invention is a further improvement on the subject-matter of the application heretofore filed by me on Nov. 29, 1920, Serial No. 426,939.

The present invention may be best understood by a study of the accompanying two sheets of drawing, and the description thereof which follows. In the drawing I have illustrated a lock adapted for use on automobiles.

Figure 1 is a face view of the dial of the lock, showing the ignition handle in its off position.

Figure 2 is a sectional view taken on the line 2, 2, of Figure 3, looking in the direction of the arrows, showing the rear view of the locking mechanism.

Figure 3 is a cross-sectional view, taken on the line 3, 3, of Figure 1, and shows the interior parts of the lock, in their relation to each other.

Figure 4 is a fragmentary view, or section, taken on the line 4, 4, of Figure 2, and shows a means by which the locking mechanism is secured to the outer casing.

Figure 5 is an enlarged fragmentary view, showing two of the push buttons, one of them being arranged to release the lock only when pushed fully in, and the other arranged to release the lock when pushed partly, but not wholly, in.

Figure 6 is a similar view to Figure 1, but shows the permutation shaft solid, instead of hollow, as in Figure 1.

Figure 7 is a back view of the locking mechanism, being a section taken on the line 7, 7, of Figure 8, looking in the direction of the arrows.

Figure 8 is a cross-section taken on the line 8, 8, of Figure 6, looking in the direction of the arrows, and shows the interior of the locking mechanism.

Figure 9 is a modified form of button and spring arrangement.

In the figures,—the casing 4 is removably secured in the woodwork 5, by means of screws 6, and within the casing the locking mechanism is also removably secured by means of screw 7.

The locking mechanism comprises the front plate 8, the middle plate 9 and the back plate 10 as shown particularly in Figs. 3 and 8, and partially Figure 4, arranged one behind the other in the order named, and traversed by the stem 11. The stem 11 may be hollow, and traversed by the lighting stem 12, as indicated in Figures 1, 2, 3 and 4, or may be solid, as indicated in Figures 6, 7 and 8. The stem 11 is revoluble in plates 8 and 9, by the ignition handle 13 and is secured to back plate 10 in any convenient manner, as by ears and screws at 14, so that plate 10 is oscillated with and by the handle 13. To ensure fixity of the locking plate in the casing 4, a notch and lug, as at 15, may be provided. To prevent withdrawal of the plates, the back, or other plate, may be provided with a mutilated flange, as at 16, to engage projections 17.

The front plate 8 is perforated to receive any desired number of buttons 18, pressed outward by springs 19, contained in the space 20, between plates 8 and 9, and bearing against the latter. Each button terminates in a short stub 21, which enters into registering perforations in plate 9, but does not extend through the same. A short stub section 22 bears against the inner end of stub 21, and a second stub section 23 bears against the inner end of this latter and extends into plate 10, which is in approximate contact with plate 9. A spring 24 presses the stub sections outward, its inner end bearing against the bottom of the perforation, which may be formed by screws 25, or by a bottom plate 26, as seen in Figures 7 and 8, or otherwise. In the latter case the bottom plate may be provided with slot or line of perforations 27, as seen in Figure 7, for convenience in placing the stubs and springs in position within their respective perforation.

It will be observed that the stub sections 22 and 23 are made in two lengths, and may be reversed in position for the purpose now to be set forth.

The stub sections 21, 22 and 23 are of such lengths, that, when the short section

22 is against the button section 21, and the button in its outermost position, the section 23 extends across the dividing plane of plates 9 and 10 and locks those plates together, and the ignition handle 13 cannot be turned, until the button having that arrangement of sections is pressed in. But if the section 23 is against the button section 21, it just reaches the dividing plane, and plate 10 is free to move. Hence, by varying the relative position of the sections 22 and 23, the plate 10 is locked against movement until certain predetermined buttons are pressed in, thus determining the permutation combination.

As a further complication of the combination a washer or stub-section 28 may be inserted so that one or more of the buttons must be pressed in less than the whole distance to release plate 10, as clearly seen in the lower part of Figure 5. In this case a less pressure of the button will result in plate 10 being locked by stub 23, and a greater pressure of the button will result in plate 10 being locked by stub 22.

A slot 29 in plates 10 and 26 shown in Figures 2, 4 and 7 permits the oscillation of those plates upon fixed screw 7 and also serves as a stop to limit the oscillation of the plate and of the ignition handle 13.

I have shown the ignition handle in its "off" position, see more particularly Figures 1 and 6. In this position the handle covers screw 7, thus protecting it from meddling. The dotted lines show the handle in its "on" position and also in its intermediate position, which it may occupy when coasting, for example.

At 30, in Figure 8 is a tube extending rearward from the outer casing containing the ignition wires 31. In Figures 7 and 8 the ignition circuit is closed by the contact points 32, as shown particularly in Figure 7, by the movement of the plate 10. In Figure 3 the closing or opening of the ignition and the lighting circuits is operated by a switch device 33 on shafts 11 and 12.

Having thus described my invention, and an embodiment of it, in the full, clear and exact terms required by law, and knowing that it comprises novel, useful and valuable improvements in the art to which it pertains, I here state that I do not wish to be limited to the precise construction and arrangement of the several parts, as the same may be variously modified by a skilled mechanic without departing from the spirit and scope of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States, is the following, to wit:—

1. A permutation lock, comprising a casing, two plates, being a front plate and a

middle plate spaced apart and fixed in said casing against oscillation, an oscillable shaft in said casing, a back plate fixed to said shaft and oscillable therewith, co-acting means in said middle and back plates adapted to lock said back plate in an inoperative position and means to release said locking means.

2. A permutation lock comprising an oscillable plate and a removable fixed plate, stub sections normally crossing the dividing plane between said plates, and means engaging said removable plate adapted to move said stubs out of locking position and release said oscillable plate.

3. A permutation lock comprising a series of reciprocable buttons mounted in a dial plate, in combination with said dial plate, a second fixed plate behind said dial plate, said buttons having stubs entering said second plate, and a third, and oscillable plate behind said second plate, said plate having normally registering apertures, a series of stubs in two lengths entering said apertures, said stubs interchangeable to vary the permutation combination, and springs adapted to maintain said parts in their normal position.

4. A permutation lock comprising a front plate, a middle plate and a back oscillating plate, registering apertures in said plates, push buttons in said apertures engaging said front plate, a plurality of studs in said apertures controlled by said push buttons, said studs being interchangeable and adapted to vary the permutation combination and spring means in said apertures to hold said stubs against said buttons.

5. A permutation lock comprising a front fixed plate, a middle fixed plate and oscillating plate behind said middle fixed plate, said plates having normally registering apertures, push buttons in the apertures of said front plate having studs entering the aperture of said middle plate, interchangeable studs engaging the apertures of said middle fixed plate and said oscillating plate adapted to vary the permutation combination, and springs in said apertures adapted to maintain said studs in their normal position.

6. A permutation lock, comprising, a casing, a front plate and a middle plate spaced apart and fixed in said casing against oscillation, an oscillating shaft in said casing, a back plate fixed to said shaft and oscillable therewith and means in said middle plate adapted to engage and lock said back plate in an inoperative position and means on said front plate adapted to release said engagement.

In testimony that I claim the foregoing I have hereto set my hand this 21 day of March, 1922.

OTTO H. STOLBERG.