E. C. TEACHOUT & E. L. HARRISON.

PERMUTATION SWITCH LOCK.

APPLICATION FILED OCT. 22, 1915.

1,190,685. Patented July 11, 1916.

FIG. 1.

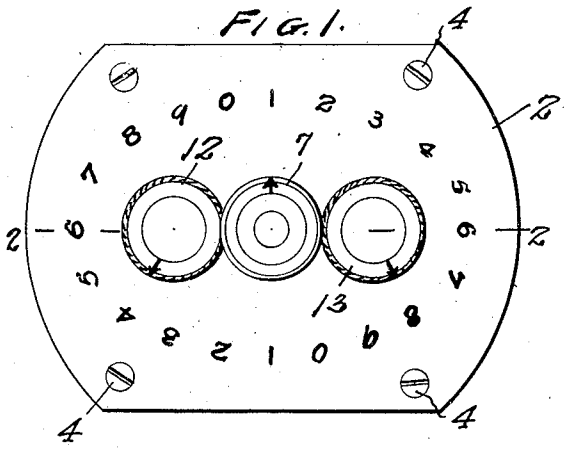
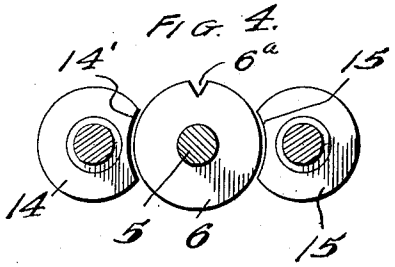


FIG. 4.



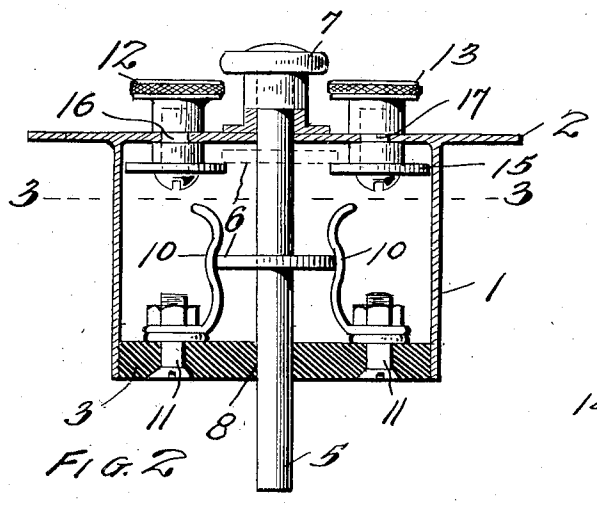


FIG. 2.

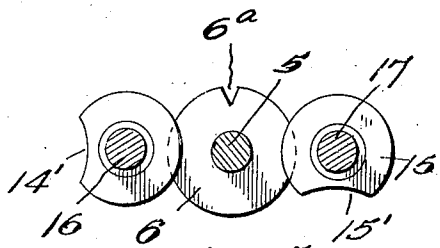
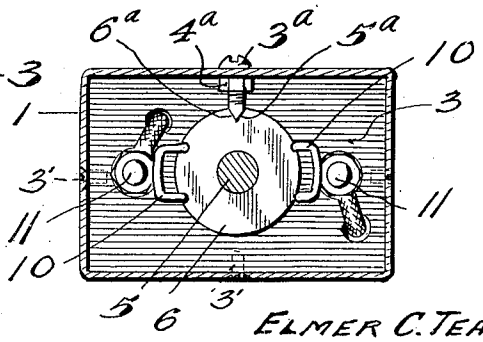


FIG. 5.

FIG. 3



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PERMUTATION SWITCH-LOCK.

1,190,685. Specification of Letters Patent. Patented July 11, 1916.

Application filed October 22, 1915. Serial No. 57,263.

To all whom it may concern:

Be it known that we, ELMER C. TEACHOUT and ELMER L. HARRISON, citizens of the United States of America, residing at Flint, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Permutation Switch-Locks, of which the following is a specification.

The present invention relates to an improved permutation switch lock, designed especially for use in connection with the sparking system of internal combustion engines.

The primary object of the invention is the provision of an efficient locking means for preventing surreptitious manipulation of the switch on an automobile.

The invention involves certain novel combinations and arrangements in a permutation device in connection with the electric switch whereby the switch is held open and may not be closed except when the device is in correct and proper position, as will be pointed out hereinafter.

In the accompanying drawings we have illustrated one complete example of the physical embodiment of our invention constructed according to the best mode we have so far devised for the practical application of the principles of the invention.

Figure 1 is a top plan view of the device. Fig. 2 is a vertical central sectional view on line 2—2, Fig. 1. Fig. 3 is a transverse sectional view on line 3—3, Fig. 2. Figs. 4 and 5 are details showing respectively the switch in unlocked position and in locked position.

In the preferred embodiment of our invention as illustrated in the drawing, the device is inclosed within a housing 1, which is formed with an integral top plate 2, and the open lower end of the housing is closed by an insulating bottom member 3, secured in place by screws 3′. The housing is located at a suitable and convenient position in the automobile, and is secured in place by means of the screws 4 which pass through the plate 2.

A plunger bar or cylindrical rod 5 is the operating member of the device, and this plunger is provided with a round head 6 located within the housing, and a handle 7 located on the upper end of the plunger and outside of the housing above the top plate 2. This plunger is reciprocable in the bottom insulating member and the top plate through the respective openings 8 and 9 which form bearings for the slidable or reciprocable plunger. This plunger is part of the electrical switch and the head 6 is adapted to co-act with the two resilient or spring arms 10, preferably of brass, and located inside the housing. These arms are held to the interior face of the insulating member 3 by the two screw posts 11, and the parts are locked together by the usual nuts and the posts are provided with the usual connecting devices.

We employ two rotary members as portions of the permutation device, indicated as having the knobs 12 and 13, which are knurled and located above the plate 2. These rotary members are equipped with flat circular disks 14 and 15 respectively which are secured to the rotary members by the screws 16 and 17. The disks 14 and 15 as seen in Fig. 2, are located just below the top plate 2, and inside the housing, and each disk is provided with a cut-away portion as 14′ and 15′. These cut outs are upon curved lines concentric with the perimeter of the head 6 of the plunger, and in Figs. 4 and 5, it will be seen that the disks 14 and 15 are the locking members for the plunger 5 which forms the circuit closer of the switch. When the disks 14 and 15 are in the position indicated in Figs. 1, 2, and 3, the plunger is free to move, but when the disks are turned to position as in Fig. 5, the plunger is now locked in inoperative position. In Fig. 2, in dotted lines, the head 6 is indicated in locked position.

In connection with the plunger, we employ two scales, as shown on the plate 2 in Fig. 1, one scale for each knob. Thus, in the drawings, Fig. 1, the scale at the left is arranged with relation to the disk 14 so that when the arrow on the knob is pointing to 4, the plunger head 6 may pass through the curved edge 14′ of the disk 14, and the scale at the right is arranged so that when the arrow on knob 13 is pointing to 8, the head 6 may pass through the cut out edge 15′ of the disk 15. Thus, the combination in this particular lock is set for 4 and 8. It will readily be seen that different combinations for each rotary member may be arranged by adjusting the disks 14 and 15 on their respective screws, and a consequent adjustment of the knob 12 and knob 13 with relation to their scales.

A further guard is provided in the use of the locked screw 3^a which extends through the casing 1 and is locked on the inside of the casing by nut 4^a. This screw has a V-shaped end 5^a and projects inwardly beyond the periphery of the head 6 to prevent downward movement of the plunger when the head 6 is in dotted position (Fig. 2) even though the disks 14 and 15 are in open position. A notch 6^a is formed in the edge of head 6 which permits free movement of the plunger when the arrow on handle 7 is pointing to the upper numeral 1.

In operation, when it is desired to lock the sparking circuit in open position, with the disks 14—15 in the indicated position, the plunger 5 is pulled out of the switch arms 10 to the dotted position of the head 6, in Fig. 2. Then the knobs 12 and 13 may be turned to any point other than the respective points 4 and 8, and the head 6 is now held between the two disks 14—15 and the plate 2. In this position it will be seen that it is impossible to close the switch by pressing down on the handle 7, and the switch cannot be closed nor the engine started until the disks 14 and 15 have been turned through the medium of their knobs 12 and 13 to the position indicated in Fig. 4. The rotary members 12 and 13 have sufficient frictional bearing in the plate 2 to prevent accidental displacement, and the plunger 5 fits neatly in its bearings 8 and 9 in order to provide a stable movement, and it will of course be understood that the resilient arms 10 are adapted to be held spread apart by the head 6 on the plunger as it descends.

What we claim is:—

The combination with an open bottom housing and an insulating member closing the same and resilient switch arms secured to the member within the housing, of a reciprocable plunger having a circular notched head engaging said arms and provided with a handle outside the housing, a locking device fixed in the housing and projecting in the path of movement of the notched head, a pair of rotary members each having a cut away disk in the housing to permit passage of the circular head and an actuating knob outside the housing, a scale for each knob on the housing, and an indicating device on each knob whereby the locking disk scale and indicating device may cooperate for the purpose described.

In testimony whereof we affix our signatures in the presence of two witnesses.

ELMER C. TEACHOUT.
ELMER L. HARRISON.

Witnesses:
JOHN F. BAKER,
LOU S. SHAPIRO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."