May 14, 1929. O. A. JONES 1,712,563

COMBINATION SWITCH

Filed May 6, 1926

Fig. 1.

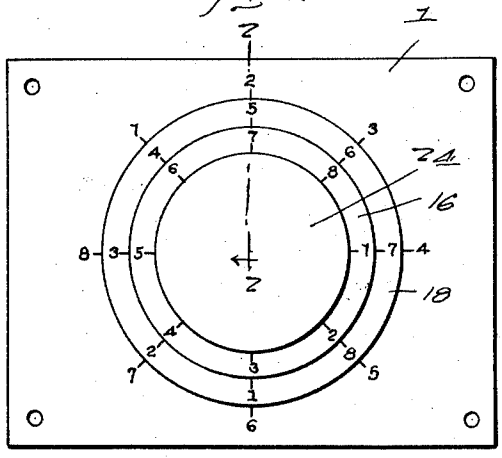
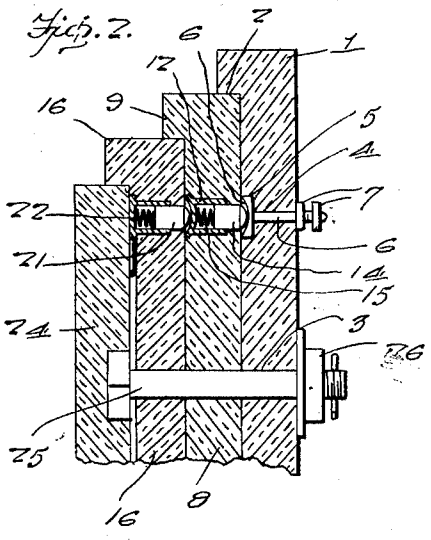


Fig. 2.



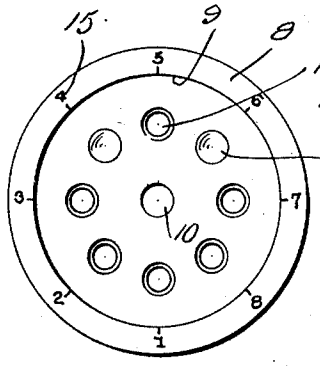


Fig. 4.

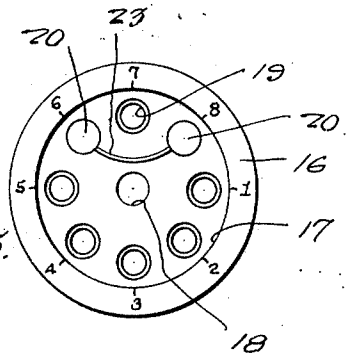


Fig. 5.

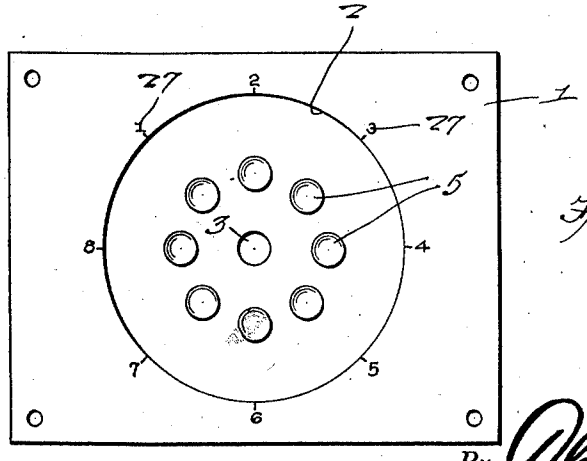


Fig. 3.

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UNITED STATES PATENT OFFICE.

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COMBINATION SWITCH.

Application filed May 6, 1926. Serial No. 107,174.

This invention relates to ignition switches particularly adapted for use on motor vehicles, and especially of a switch to this character requiring a combination of numbers adapted to be set in predetermined relation for closing the circuit.

An object of the invention resides in providing a combination switch which includes a base member and a plurality of relatively rotatable circuit controlling members so constructed as to conceal the position of the contact and prevent access to the assembling means so that it is necessary to know a combination of numbers provided on the exposed face of the member in order to close the circuit controlled by the switch.

The invention further comprehends the provision of a base member with a plurality of interfitting relatively rotatable disks provided with number combinations and interchangeable contact members for controlling the circuit through the switch in a predetermined manner.

The invention includes numerous other objects residing in the details of construction and arrangement of parts for carrying out the invention, which are more particularly pointed out in the following detailed description and claims directed to a preferred form of construction, it being understood, however, that various changes in the size, shape and relation of these parts may be made without departing from the spirit or scope of the invention as herein set forth.

In the drawing forming part of this application:

Figure 1 is a front elevation of the switch construction of this invention.

Fig. 2 is a vertical transverse section taken on the line 2—2 of Fig. 1.

Fig. 3 is a front elevation of the base plate showing the position of the contacts therein.

Fig. 4 is a front elevation of the rotatable contact member adapted to fit in the recess in the base member and showing the detail construction thereof.

Fig. 5 is a detail elevation of the rotary contact member which interfits in the face of the member shown in Fig. 4.

1 indicates the base plate which is formed with a circular recess 2 in the front face thereof, a central opening 3 in the center of the recess 2, and a plurality of counter-sunk openings 4 arranged in concentric relation to the opening 3 and in equal spaced relation with each other. A plurality of contact members 5 are mounted in the counter-sink of the holes 4 and have stems 6 extending through the holes and projecting beyond the rear face of the base plate. The stems 6 are threaded to receive suitable securing nuts 7 for mounting the contacts in the base plate and securing wire connections for the electric circuits to be controlled thereto. The heads of the contacts 5 are concave as illustrated at 6 in Fig. 2 for a purpose which will be explained.

A primary control disk is illustrated at 8 which is annular in form as shown in Fig. 4 in detail and is adapted to rotatably fit in the recess 2 of the base plate. This primary control member or disk is formed with a recess 9 in its front face and the central portion with an opening 10 adapted to register with the opening 3 in the base plate while concentrically of the opening 10 are a plurality of counter-sunk openings 11 arranged in concentric relation and adapted for axial alinement with the openings 4 of the base plate.

These counter-sunk openings 11 are adapted to removably receive socket members 12 having concave closed ends at 13 and slidably receiving and housing studs 14 which are projected through the rear face of the disk by coiled springs 15 positioned in the socket member. The studs 14 are adapted to be projected beyond the rear face of this primary controlling disk for fitting cooperation in the concave faces 6 of the contact members 5 of the base plate and are adapted to normally retain the primary control disk 8 against the rotation in the base plate.

The outer edge of the control member 8 is provided with suitable indicia indicated at 15 adapted to form part of the controlling combination of the switch and indicates the position of the contacts in the openings 11.

A secondary control member or disk is illustrated at 16 in Fig. 5, which is of a size adapted to rotatably fit in the recess 9 of the control member 8 and is similar in construction to the member 8 in having a recess 17 in its front face, an opening 18 in the central portion thereof, and a plurality of counter-sunk bores 19 arranged in circumferential relation and in the same spaced relation as the openings 11 of the control member 8 so that in one position they will be alined therewith. A pair of contact members 20 are interchangeably mounted in the openings 19 and have sockets formed therein for slidably receiving the contact studs 21 which

are projected through the rear face of the control disk by a coiled spring 22 mounted in the socket of the members.

These contact members are suitably joined by a flexible wire connection 23 to permit interchanging of the positions of the contact members in any of the openings in any predetermined relation and to complete the circuit therebetween.

A retaining disk 24 is adapted to rotatably fit within the recess 17 of the secondary control disk 16 and is preferably formed of molded material formed over the bolt 25 which is adapted to project through the openings 3, 10 and 18 and rotatably mount the primary and secondary control disks in assembled relation on the base plate as shown in Figs. 1 and 2. The end portion of the bolt 25 is threaded to receive a nut and retaining washer 26 which is positioned in the assembled relation of the parts of the base plate 1.

This switch construction is particularly adapted to provide an ignition control switch for automobiles and it is to be understood that it may as well be adapted for numerous other purposes in controlling electric circuits. For this purpose the circuits to be controlled are connected to the stems 6 of the contact members 5 in a predetermined manner and preferably to a pair of the contacts which may be any pair of the group mounted in the base plate.

For the purpose of illustration, it may be assumed that the circuit wires of the ignition system or other electrical circuit are connected to the contacts 5 in the base plate as are represented by the indicia 1 and 3 as indicated at 27 on the face of the base plate adjacent to the recess 2. To form a combination switch for controlling this circuit, the combination will be effected by selecting any two of the desired openings 11 in the primary control disk 8 and placing a pair of contact members 12 therein which for example are placed opposite the indicia 4 and 6. The contact members 20 are then arranged in a similar relation in any pair of openings as shown in Fig. 5, which for illustration, are positioned opposite the numbers 6 and 8 on the edge of the disk.

With the part assembled as in Fig. 1, it will be seen that unless the combination is known the disk cannot be placed in the proper relation on the base disclosed in circuit between the contacts 5 opposite the numerals 1 and 3. It is therefore necessary to know the combination of the switch as above described, which is 1—3, 4—6, and 6—8. Persons authorized to operate the switch will accordingly know this combination, and will accordingly operate the control disk 8 to bring the numerals 4 and 6 on the edge of the disk into registry with the numerals 1 and 3 on the base plate, and will then operate to control the secondary control disk 16 to bring the numerals 6 and 8 into registry with the numerals 1 and 3 on the base plate.

This will position the contacts so that the contact members 12 of the control disk 8 will be in alinement with the pairs of contacts 5 to which the circuit is connected and makes circuit therewith, while the contacts members 22 will be engaged with the contact members 12 in the control disk 8 so that the circuit will be closed by the cooperation of the contact members in both of the control disks and the base member. In this way a switch construction is provided using a combination instead of a key in which persons authorized to operate the automobile, when the device is used as an ignition switch, can readily position the parts to close the ignition switch and operate the motor vehicle in the usual manner.

From the above description it should be readily apparent that it would be almost impossible to close the circuit controlled by this combination switch without knowing the combination and that unauthorized persons in attempting to steal an automobile equipped with an ignition switch of this type would have to disassemble the entire switch construction from the automobile before the combination could be solved and the switch operated to close the circuit. This would take a substantial amount of time and as a result would often result in the apprehension of the thief.

Having thus described my invention, what I claim as new is:—

In a combination switch a base plate having an annular recess formed in its outer surface, a plurality of permutation discs of successively stepped diameters arranged in superposed relation with the large discs rotatably seated in said recess, and with the outer surfaces of said discs formed with an annular recess for rotatably receiving the adjacent discs, each of said discs being adapted for rotation independent of each other, a control disc rotatably seated in the recess of the smaller outermost disc, means for operatively mounting said control disc with respect to said permutation discs and contact members for said permutation discs adapted to be alined whereby to transmit an electric current therethrough.

In testimony whereof I affix my signature.

OTIS A. JONES.