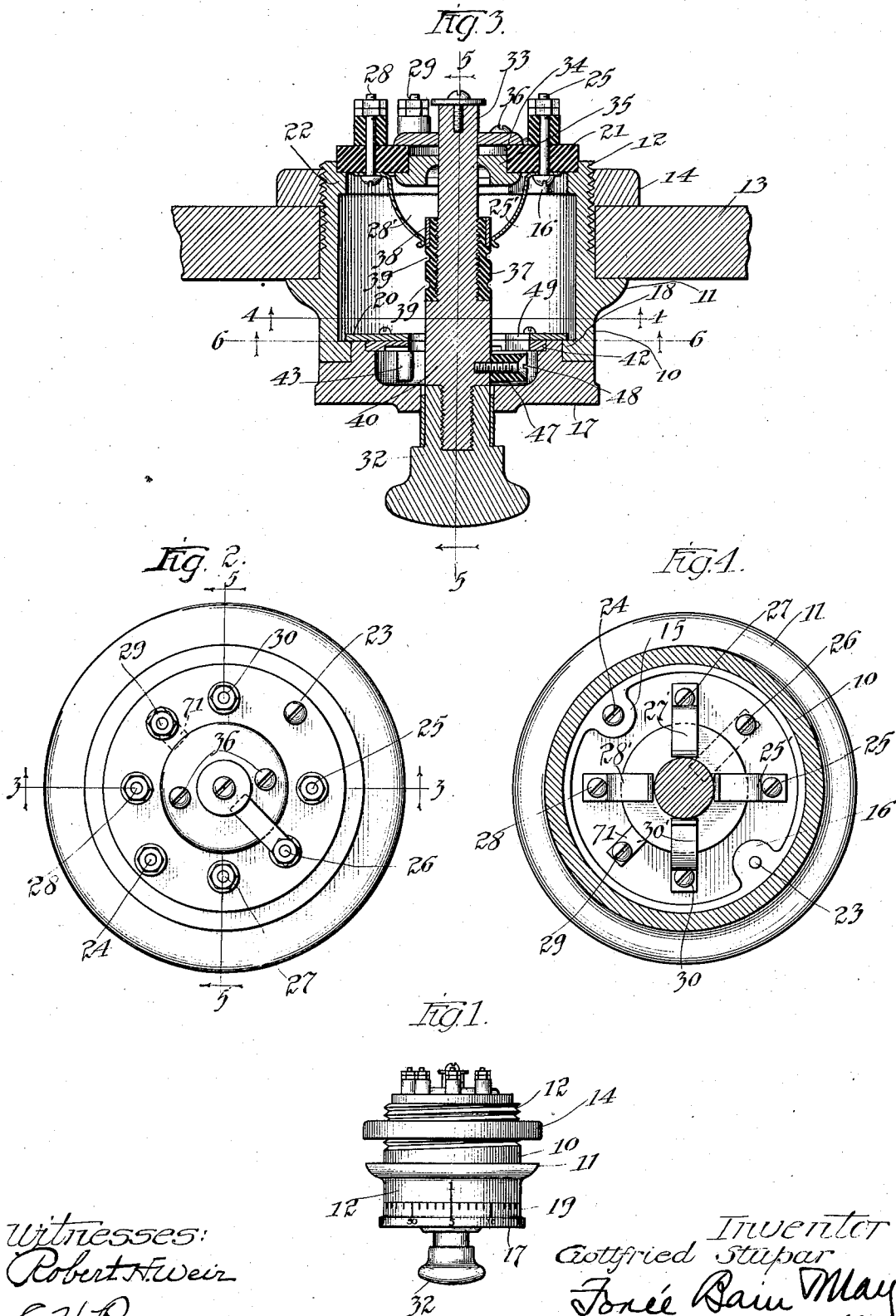


G. STUPAR.
PERMUTATION ELECTRIC SWITCH.
APPLICATION FILED AUG. 28, 1913.

1,118,699.

Patented Nov. 24, 1914.

2 SHEETS—SHEET 1.



Witnesses:
Robert H. Weir
C. H. Roessner.

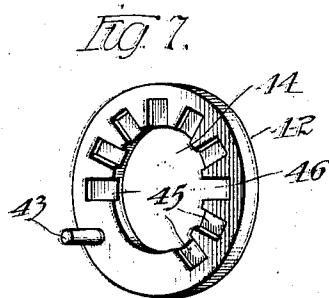
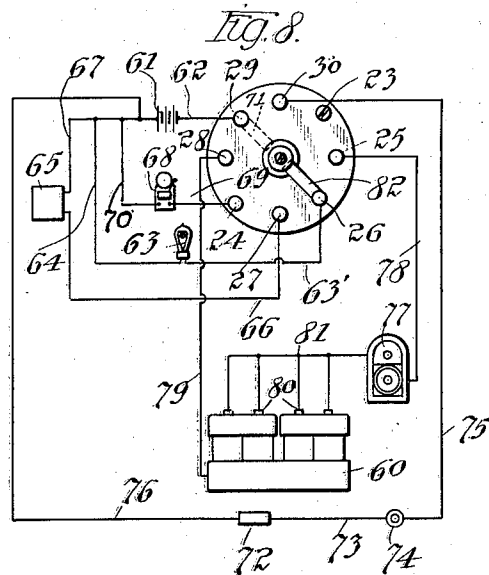
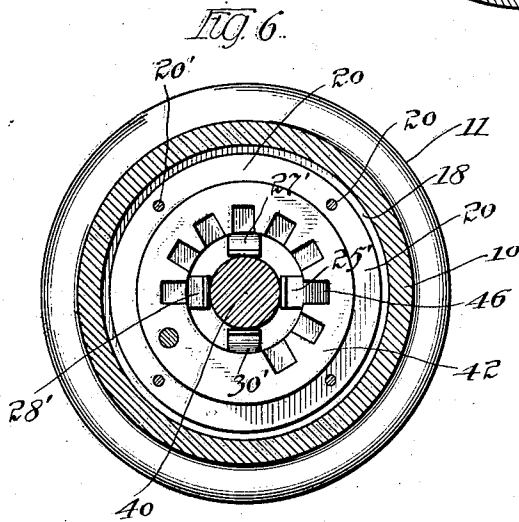
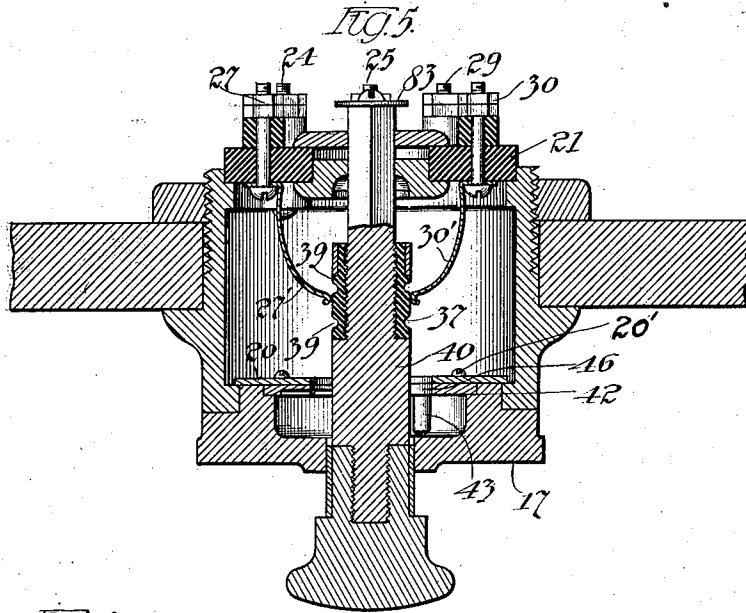
Inventor
Gottfried Stupar
Jonee Bain May
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UNITED STATES PATENT OFFICE.

GOTTFRIED STUPAR, OF CHICAGO, ILLINOIS.

PERMUTATION ELECTRIC SWITCH.

1,118,699.

Specification of Letters Patent.

Patented Nov. 24, 1914.

Application filed August 28, 1913. Serial No. 787,065.

To all whom it may concern:

Be it known that I, GOTTFRIED STUPAR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Permutation Electric Switches, of which the following is a specification.

My invention relates to improvements in electric switches, and has especial reference to switches of this character, in which one of the switch moving elements comprises an element for a permutation switch-locking device, whereby to retain the switch parts in open or closed positions in which they may have been placed.

One of the objects of my invention is to provide a simple, inexpensive and reliable electric switch and lock therefor, whereby the switch moving elements may be shifted to open or close certain associated electric circuits and maintained in position in which they may have been placed by a locking device, operable by predetermined movement of permutable parts.

Another object of my invention is to generally improve electric switches of this character.

Other and further objects of my invention will become readily apparent, to persons skilled in the art, from a consideration of the following description when taken in conjunction with the drawings wherein—

Figure 1 is a side elevation of the device. Fig. 2 is a rear, or bottom view thereof. Fig. 3 is a central section, taken on line 3—3 of Fig. 2. Fig. 4 is a transverse section, taken on line 4—4 of Fig. 3. Fig. 5 is a central section, taken on line 5—5 of Fig. 2. Fig. 6 is a transverse section, taken on line 6—6 of Fig. 3. Fig. 7 is a detail of a rotatable tumbler of the lock. Fig. 8 is a diagrammatic view of the electric circuits that may be controlled by the switch.

In all the views the same reference characters are employed to indicate similar parts.

In the illustrative embodiment of my invention a casing 10, provided with an annular shoulder 11 and a cylindrical screw threaded portion 12, is adapted to be held to a support 13, as by means of a screw threaded ring, or nut 14. The casing is provided with inwardly projecting ears 15 and

16 and an inwardly projecting annular flange 18. A rotatable cover or cap 17, is graduated on its outer surface, as at 19, and is held in place over the front opening of the casing by means of a plate or ring 20 so that the cap 17 may be freely turned but will be retained inseparably with the casing. The casing cap 17 fits closely in the opening provided between the annular flange 18, on either side thereof, and the plate 20 overlies the flange so as to be held thereby in proper operative association with the casing. A ring 21, of insulating material, is secured in the other end of cylindrical portion 12 of the casing, upon the shoulder 22 thereof, by means of screws 23, and the binding post 24 taking into the ears 15 and 16, respectively. The screw 24 serves as a binding post or terminal for an electric circuit, as shown in the diagram in Fig. 8. Spaced around practically equal distances apart of the ring 21 are other binding screws, or terminals, such as 25 to 30 inclusive.

Secured to the screws or terminals 27 and 30, respectively, are the stationary switch elements consisting of the conducting springs 27' and 30'. These springs are situated on opposite sides of the axis of the insulating ring 21, and project inwardly to bear upon a centrally disposed stem which forms one element of the switch. Located at substantially right angles to the first mentioned springs are conducting springs 25' and 28' connected to the ring 21, by means of the screws 25 and 28, respectively. These springs are similar in general character to the springs to which reference has just been made with the exception that they are shorter and therefore have bearing in a different transverse plane on the same axially shiftable stem. The shiftable stem 33, is located at the axis of the casing 12 and cover or cap 17 and is adapted to be longitudinally reciprocated therein for performing the switching functions. The smaller end, 33, is square or rectangular in cross section and is guided in squared apertures in the bearing washers 34 and 35. These washers are held together on the insulating ring 21 by screws 36—36. The stem is freely reciprocable in the bearing provided by the washers, but is prevented from rotating.

Secured to the stem 33, is a sleeve of insulating material 37, provided with a metal

ring 38, secured thereto. When the stem 33 is pulled out, as shown in Fig. 3, the brushes 25' and 28' bear upon the metal ring 38 and thereby the circuit is closed between the binding post screws 25 and 28.

Annular grooves 39—39 are made in the insulating sleeve 37, so that the ends of the brushes or springs will engage the grooves so that the operator may know that the stem has been moved the proper distance to perform its functions. When the stem 33 is out, as shown in Fig. 3 and Fig. 5, the brushes 27' and 30' are insulated, one from the other, by their bearing upon the insulating sleeve 37. When the stem is pushed inwardly, as far as it will go, then the brushes 27' and 30' will make contact with the main body portion 40 of said stem 33 and thereby circuit will be closed between the binding screws 27 and 30.

The binding screw 24, provided with a clamping nut as shown in Fig. 2, makes engagement with the ear 15 of the cylinder body 12 and the screw 23 is screw threaded into the ear 16, of said cylinder body whereby the insulating ring 21 is held firmly in its place and the binding screw 24 is in electrical contact with the main body portion of the device.

A tumbler ring 42 is confined between the rotating cap 17 and the annular plate 20 but is free to be rotated by its frictional engagement with the cap 17 and is provided with a projecting pin 43. It is centrally perforated, as at 44, and around the edge of the perforation is provided a series of radial depressions 45 that pass part way through the surface of the ring or tumbler. A notch 46 is cut through the tumbler.

Projecting from one side of the part 40, of the stem 33, is a lug, comprising a hard rubber insulating sleeve 47, secured in place on the stem by a metal screw 48. In the plate 20 is a notch 49, and when these two notches are in registering position, the projection 47 will pass freely therethrough. When the parts are in positions shown in Fig. 3, the stem 33 may be pressed inwardly, the projection 47 will pass through the notches 46 and 49 and circuit will be broken between the springs 25' and 28' and will be simultaneously closed between the springs 27' and 30' and the reverse of this action is effected when the stem is pulled out.

My lock switch is especially adapted for locking the various electrical instrumentalities associated with an automobile and may be fastened to the dash board 13 by means of the screw threaded ring or nut 14. It is then readily accessible by the occupant of the vehicle.

In Fig. 8, the diagram of circuits, I have shown means for connecting the switch with circuits associated with an engine 60 and

battery 61. The battery 61 is connected to the binding post 29 of the switch by wire 62 and the electric lights 63, of the vehicle, are connected to a binding post 26 by wire 63 and to the return wire of the battery by wire 64. The induction coil or transformer 65 may be provided with a lock to prevent unauthorized tampering which may be connected to the binding post 27 by wire 66 and to the battery by wire 67. An alarm bell 68, may be connected to binding post 24, by wire 69, and to battery by wire 70.

The binding post 29, to which one terminal of the battery is designed to be connected, is connected through the bearing washers 34 and 35, by means of a strip 71, so that the body portion 40, of the reciprocable stem 33, is thereby in circuit but said stem is insulated from the casing by the ring 21 and by an insulating knob 32.

A hood lock 72, may be energized by a circuit being connected by wire 73 to a push button 74, and by wire 75, to terminal 30, and by wire 76, to the other end or terminal of the battery 61. The hood lock 72, normally holds the hook locked, and it can be opened only when the push button 74 is pressed, at which time suitable instrumentalities, associated with the lock are energized and the hood may be opened and at no other time. The hood is normally locked by a spring or the like and is unlocked when the push button closes the electric circuit so that it cannot be opened by unauthorized persons, or persons unacquainted with the operation of the locking device.

The primary winding of the magneto 77, may be open circuited, by the wire 78 connected to the terminal 25 of the switch, and the ground wire 79 connected to the frame of the engine and to the binding post 28. The spark plugs 80 are connected to the magneto by wire 81.

When the stem 33 is pulled out, as shown in Fig. 3, circuit is closed between the springs 28' and 25' and therefore the primary of the magneto is thus short closed while at the same time the circuit is open between the springs 27' and 30', as shown in Fig. 5. The electric light circuit is energized at this time by means of current from the binding post 29 through the strip 71 to the bearing washers 34 and 35 and over the strip 82, which makes contact with the washer 83 on the stem 33, to the binding post 26, then through the wire 63', the lamps 63, and over the wire 64 to the opposite side of the battery, thus energizing the electric light circuit at the time when the other circuits of the device may be open. Now when the knob 33, of the switch, is pushed in circuit will be complete between the spring 27' and 30' through the body portions 40 of the stem 32 when circuit will be completed through the induc-

tion coil 65 from the binding post 27 and the magneto circuit will be open.

In order that the stem 33 may be pushed inwardly, it is necessary to rotate the graduated disk 17, in accordance with certain predetermined commutations. The tumbler 42 is in frictional engagement with the disk 17, the friction of which may be varied by means of the screws 20'. When the disk 17 is rotated the tumbler is carried with it until the projecting pin 43 comes in contact with the insulating projection 47, carried by the stem 33. When this occurs, the resistance is felt by the rotation of the disk 17 and the disk is then rotated in an opposite direction until the certain designated number on the disk or cover 17 comes opposite to the point marked 1 on the body part of the casing. At this time the notch 46, in the tumbler is in register with the notch 49, of the plate 20. Then the stem 32 may be pressed inwardly as hereinbefore described. Now if the notches 46 and 49 are not in register and the stem 32 be pressed inwardly the screw 48, of the projection 47, will make electrical contact with a portion of the tumbler 42 thereby closing the circuit through the alarm bell 68 and indicating to passers by that an unauthorized person is making effort to tamper with the switch. The notches or depressions 45, are made in the tumbler 42 so that the projection 47 may not be pressed down upon the tumbler and the latter moved around uninterruptedly until it finds the notch 46. When the projection is pushed into one of the recesses 45 the edge of the screw 48 will make electrical contact therewith and ring the alarm bell as heretofore stated. Of course it is evident that instead of the bell 68 an electric signal horn may be substituted or any other alarm device that is susceptible of operation when energized by an electric current.

While I have herein shown and described a single embodiment of my invention for the purpose of clear disclosure, it is evident that considerable change may be made in the location, shape and size of the parts

without departing from the scope of the appended claims.

Having described my invention, what I claim is:

1. An electric switch lock comprising a cylindrical casing; a rotatable, permutable lock member; a movable stem, axially disposed in said casing; a switch member carried thereby, a stationary switch member, engaged by the first mentioned switch member on the axial movement of said stem; coaxing stationary switch members in said casing and a lock member carried by said stem, cooperating with said rotatable lock member to lock and unlock said switch.

2. An electric switch lock comprising a cylindrical casing; a rotatable permutable lock member; a graduated cap or cover closing one end of said casing for moving said permutable member; a movable stem axially disposed in said casing and cover; a switch member carried by said stem; a coaxing stationary switch member in said casing and a lock member carried by said stem cooperating with said rotatable lock member to lock and unlock said switch.

3. An electric switch lock comprising a casing; a plate carrying electric switch members closing one end thereof; a graduated, rotatable cover, closing the other end; an axially disposed stem carrying coaxing switch members; a lock tumbler having a notch in said tumbler frictionally associated with the cover; a projection on the stem to obstruct the tumbler at a predetermined point in its rotation; a fixed part having a notch for registration with the notch in the tumbler and indicating means on the outside of the casing to indicate when said notches are in register for passage of said projection therethrough to close and open said switch.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

GOTTFRIED STUPAR.

In the presence of—

STANLEY W. COOK,
MARY F. ALLEN.