Sept. 29, 1925. 1,555,151

G. A. PARSELL

ELECTRIC SWITCH

Filed Oct. 18, 1922

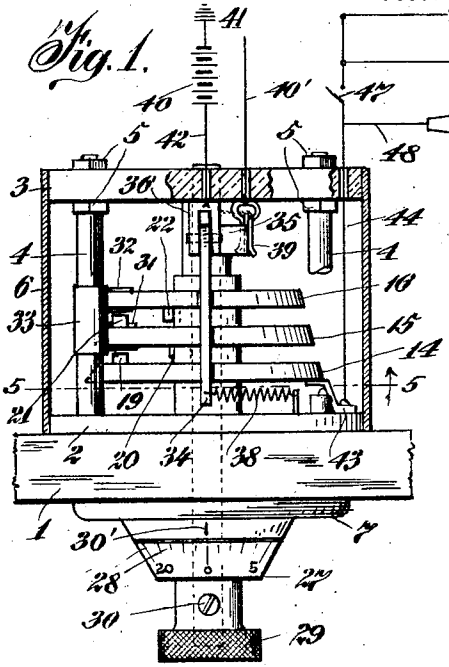


Fig. 1.

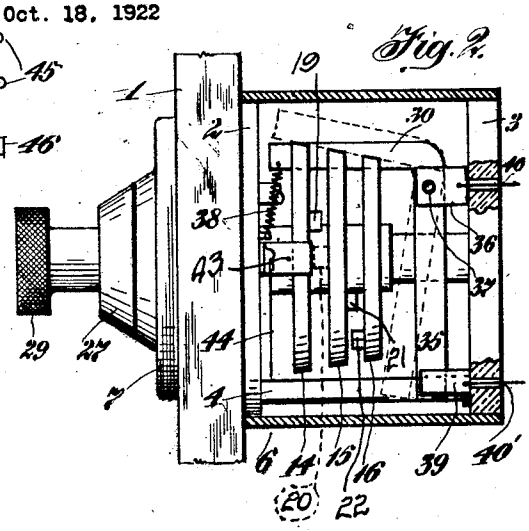


Fig. 2.

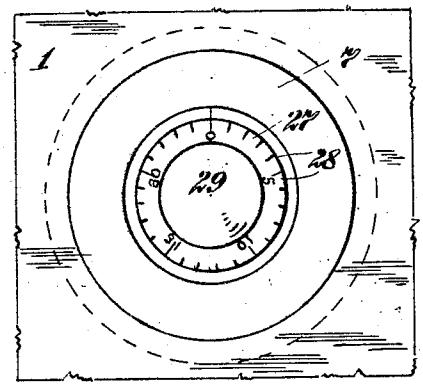


Fig. 3

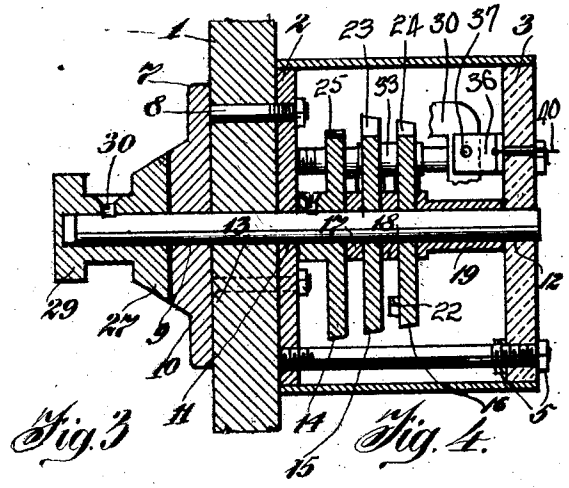


Fig. 4.

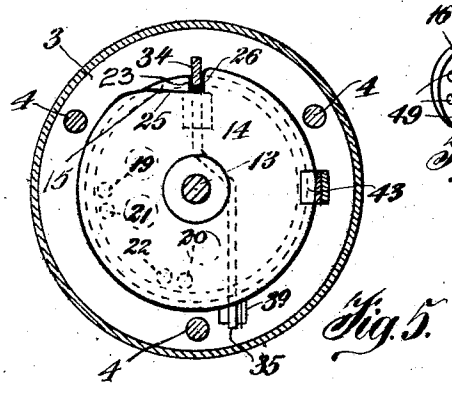


Fig. 5.

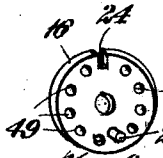


Fig. 6

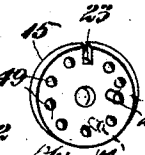


Fig. 7.



Fig. 8.

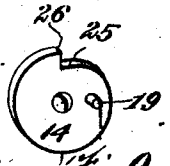


Fig. 9.

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UNITED STATES PATENT OFFICE.

GEORGE A. PARSELL, OF ST. LOUIS, MISSOURI.

ELECTRIC SWITCH.

Application filed October 18, 1922. Serial No. 595,268.

To all whom it may concern:

Be it known that I, GEORGE A. PARSELL, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to electric switches, in the form of permutation locks, and, is a distinct and practical improvement to overcome certain practical objections to the construction, and defects in, combined permutation locks and electric switches particularly adapted for motor propelled vehicles, watercraft and the like wherein electric circuits are employed.

The object of my present invention is to provide an improved type of electric switch of the permutation lock type, so constructed that the ignition circuit of an automobile or craft can only be completed, or closed by the manipulation of the several parts to a predetermined combination of positions, which definite arrangement of parts are not known, or apparent to the observer, other than the party, or parties possessed of the secret working combination of the several parts of the switch-lock for closing the circuit, thus rendering the ignition or other desired electric circuit, of a motor vehicle, or craft, inoperative to an unauthorized person, and the unauthorized use of the vehicle, or craft impossible by unauthorized persons and discourage the illicit use thereof.

A further object of the invention is to provide novel means to establish and close a lighting circuit, whether the ignition circuit is opened, or closed.

A still further object of the invention is to provide simple and efficient means, easily applied to any make of automobile, or craft employing an electric circuit, or circuits, whereby the circuit forming means may be easily set, when a secret working combination is known for closing the circuit.

A still further object of the invention is to provide effective means for opening the ignition circuit disclosed in the drawings.

With the above and other objects in view, the invention consists in the novel features of construction, arrangement and combination of parts hereinafter more fully described and finally pointed out in the claim hereto appended.

Referring to the accompanying drawings forming a part of this specification, wherein like characters of reference denote similar parts throughout the several views:

Fig. 1, is a plan view of my invention with the housing shown in cross-section.

Fig. 2, is a side elevation of the device.

Fig. 3, is a front elevation of the device.

Fig. 4, is a vertical sectional view of the device.

Fig. 5, is a sectional view of the device taken on line 5—5 of Fig. 1.

Fig. 6, is a perspective view of the rear disk.

Fig. 7, is a perspective view of the center disk.

Fig. 8, is a side view of the center disk.

Fig. 9, is a perspective view of the front disk.

Referring to the drawings, the reference character 1 represents the dash-board of a motor vehicle, or craft employing an electric circuit or circuits.

In carrying out the aim of my invention, I employ a suitable frame comprising a front plate 2, preferably metallic, and an insulated rear plate 3. These plates are suitably spaced apart, held and united in such spaced relation by means of a plurality of tie rods 4. Each tie rod 4 is suitably fixed at its front end to the front plate 2 and has its rear end screw threaded and provided with a pair of spaced nuts 5 to engage the inner and outer faces of the insulated plate 3 for locking said plate in its spaced relation to the front plate 2. The frame described supports the several parts of the switch, and, to protect these parts from being observed, I employ a tubular casing, or shell 6 which engages the front and rear plates 2 and 3 and spans the space therebetween, thereby concealing the parts within the same.

A hub plate 7 is fixed to the front face of the dash-board 1 by means of suitable fastening devices 8. These fastening devices are suitably fixed to the inner face of the hub plate 7 and pass through the dash-board 1 and through the front plate 2 of the frame for securing the frame to the rear face of the dash-board. The hub plate 7, the dash-board 1, the front plate 2 and the rear plate 3 are provided with the aligned openings 9, 10, 11 and 12, respectively for the reception and support of a centrally disposed drive shaft 13.

A series of tumbler disks, designated 14, 15 and 16 are supported upon the shaft

13 within the casing formed by the frame members and their tubular covering, as clearly shown in Figs. 1, 2 and 4. The tumbler disk 14, which will be known hereinafter as the propeller disk, is suitably and removably fixed to the drive shaft 13 adjacent the front plate 2. The tumbler disks 15 and 16 are each loosely or rotatably mounted upon the shaft 13 to the rear of the disk 14, there being a spacer collar 17 disposed upon the shaft 13 between disks 14 and 15 and a spacer collar 18 disposed upon the shaft between disks 15 and 16 and a spacing sleeve disposed upon the shaft 13 between the disk 16 and the insulated rear plate 3, the several parts being arranged for the purpose of holding the several coaxially aligned disks in their spaced parallel relation to, or mutual alignment with one another.

To effect movement of the disks 15 and 16 through the rotation, in either direction of disk 14, I provide the front disk 14 with a stud 19 extending laterally from the inner face of the disk. I provide the central disk 15 with the studs 20 and 21 extending in opposite directions from the faces of the disk and I also provide the rear disk 16 with a stud 22 extending laterally from the inner face thereof. In the movements of the disks, the stud 19 of disk 14 is adapted for contact engagement with stud 20 of disk 15 and stud 21 of disk 15 is adapted for contact engagement with stud 22 of disk 16 for revolving the latter two disks to predetermined positions. Disks 15 and 16 are provided with peripheral notches or mortises 23 and 24, respectively, while disk 14 is provided with a peripheral cam shaped depression 25 terminating in a stop shoulder 26 for tripper functions.

An index dial 27 having graduations 28 integral with and spaced from a suitable knob 29 is mounted upon the front end of the shaft 13 and fixed thereto by suitable means, such for instance as the fastening device 30. The graduations 28 of the dial 27 are adapted to be brought into register with a mark 30′ upon hub plate when working the combination to move the tumbler disks into predetermined operative positions. The two disks 15 and 16 are normally held in their adjusted positions by means of resilient fingers 31 and 32, respectively, yieldingly contacting the periphery thereof to serve as brakes for the disks. The fingers unite in a hub 33 which is supported by means of one of the tie rods 4.

Working in combination with the tumbler disks and component parts, is an L-shaped switch lever, consisting of the arms 34 and 35 pivoted at their juncture to a suitable electric terminal 36 by means of the pin 37. The forward end of arm 34 of the switch lever is connected to one end of a suitable coiled spring 38 which has its opposite end suitably fixed to the front plate 2 for normally holding the free end of arm 35 of the switch lever in contact engagement with a flanged electrical contact terminal 39 which is suitably fixed to the inner face of the insulated rear plate 3.

40 indicates a source of electrical supply grounded, as at 41 and 42 designates a conductor leading from one side of the source of electrical supply to the switch terminal 36 from where it is distributed to the terminal 39 and thence to the ignition conductor 40 when the switch lever is in its closed position, as shown in full lines in Figs. 1, 2 and 5.

To enable a lighting or horn circuit to be carried through the switch, and operative, whether the ignition switch is open or closed, I employ a wiper 43 which I secure to the front plate 2 and cause to contact with the disk 14, thereby transmitting electrical current through the switch lever arm 34 from the terminal 36 and a conductor 44 leading to suitable lights designated 45 and to a horn, 46, if desired. The electric light is controlled by a suitable switch 47, wherein the horn circuit is controlled by means of a suitable switch 48.

The operation of the device is as follows:

Assuming that the ignition circuit is open, which would cause the switch lever to stand in the position shown in dotted lines in Fig. 2, the operator initially turns the knob, dial and disk 14 to the right until the stud of disk 14 engages the front stud of disk 15. The rotational movement of the disk 14 is continued thereby carrying the disk 15 therewith until the rear stud of disk 15 contacts with the stud of the rear disk 16. The rotation of all three disks is now kept up until the peripheral notch of the rear disk 16 is brought directly under the arm 34 of the switch lever. After disk 16 has been adjusted, disk 14 is then turned to the left until the stud thereof contacts with the front stud of disk 15 thereby turning disk 15 with disk 14 until the peripheral notch thereof lies directly below the arm 34 of the switch lever and in alignment with the peripheral notch of disk 16. Finally the disk 14 is again turned, to the right until the arm 34 of the switch lever trips over shoulder 26 and seats itself in the peripheral notches of disks 15 and 16 and the cam depression of disk 14, which movement of the switch lever, due to the recoil of spring 38 also forces the free end of arm 35 of the switch lever into contact engagement with the flanged contact terminal 39 thereby closing the ignition electrical circuit, as is manifest.

To open the circuit, the operator merely turns the knob 29 to the right giving it several complete turns, which moves the center and rear disks from their predetermined

adjusted or operative positions, thereby requiring the disks to be readjusted before the circuit can be closed.

The combination of the lock can be changed, at will, by merely changing the location of the studs of the plunger disks 15 and 16 which is provided for by providing each disk with a plurality of stud receiving openings 49.

The combination of the aforedescribed manipulations of the device, is known to comprise the indices of the index plate to read zero, then with a right turn, to read 10, then with a left turn to read 2 and then with a right turn to read 24.

The many advantages of the herein described invention will readily suggest themselves to those skilled in the art to which it appertains.

I do not wish to be understood as having limited myself to the exact details of construction shown and described, but desire to have it understood that the invention I have shown in the drawings is merely illustrative, as it is manifest that various minor changes may be made in the exact construction and particular arrangement of parts without departing from the spirit of my invention, hence I reserve the right to make any such changes, or modifications as may fairly fall within the scope of the appended claim when fairly construed.

What I claim is:

In an electric switch structure, a supporting frame, a contact member fixed to the frame, a rotatably supported shaft, a tumbler disk having a peripheral shoulder fixed to said shaft, a pair of tumbler disks each having a peripheral notch mounted upon said shaft, contact pins carried by said tumbler disks, said tumbler disks each being of a different diameter and each having a tapered peripheral face and a pivotally supported L-shaped contact arm adapted to ride upon the tapered peripheral faces of the tumbler disks when out of engagement with the contact member and to engage in the peripheral recesses of said pair of tumbler disks and engage the stop shoulder of the first mentioned tumbler disk when the L-shaped contact arm is in engagement with the contact member.

In testimony whereof, I have hereunto signed my name to the specification.

GEORGE A. PARSELL.