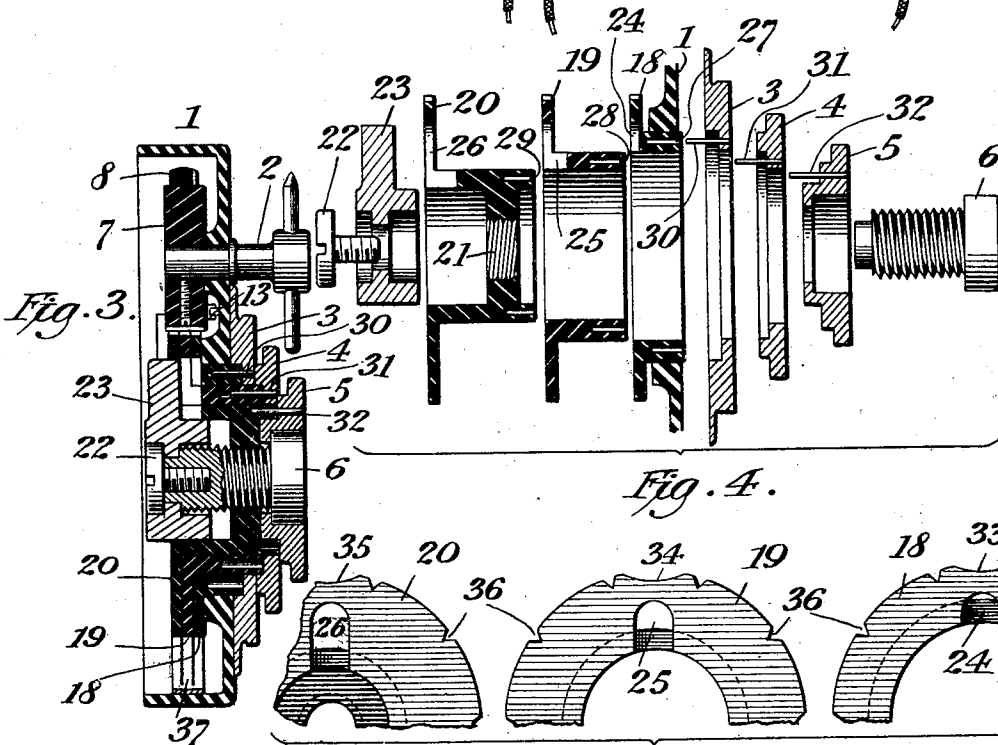
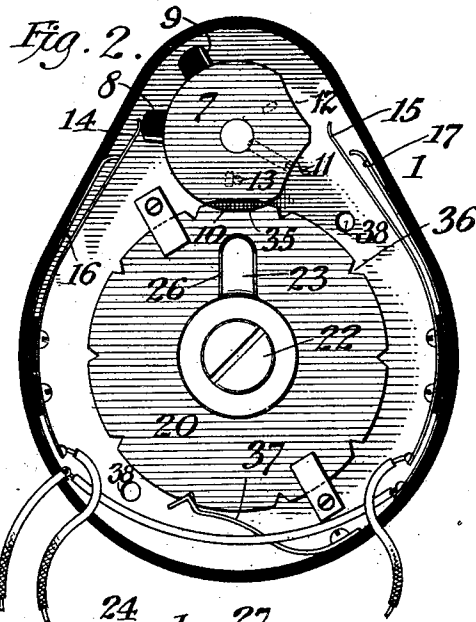
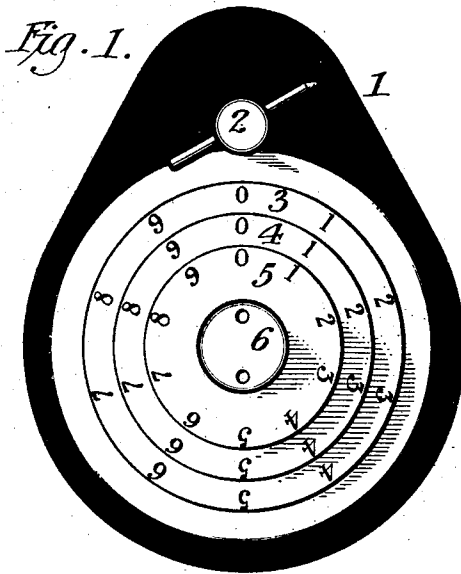


J. T. WHALEN.
 PERMUTATION LOCK SWITCH.
 APPLICATION FILED FEB. 11, 1909.

968,217.

Patented Aug. 23, 1910.



Witnesses:
Raphael Ketter
Kansas Hogart

John T. Whalen Inventor
 By *his Attorneys*
Betts Sheffield Bentley Betts

UNITED STATES PATENT OFFICE.

JOHN T. WHALEN, OF NEW YORK, N. Y., ASSIGNOR TO THE WHALEN COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PERMUTATION-LOCK SWITCH.

968,217.

Specification of Letters Patent.

Patented Aug. 23, 1910.

Application filed February 11, 1909. Serial No. 477,398.

To all whom it may concern:

Be it known that I, JOHN T. WHALEN, of the borough of Brooklyn, city of New York, State of New York, have invented certain new and useful Improvements in Permutation-Lock Switches, of which the following is a description.

My invention relates to electrical switches, and is more particularly directed to switches for use in connection with electrical circuits in which two separate and distinct sources of current are connected alternately to the consumption circuit.

The object of my invention is to provide a simple double-throw switch whereby connection may be made to either of these sources of electric current, and which may be locked in either of these positions or in the off position, to prevent unauthorized persons from changing the connections.

A further object of my invention is to provide a lock switch which may be opened without the use of a key, and the combination of which may be readily changed by a person familiar with the combination.

The construction and operation of my improved switch will be more clearly understood by reference to the following specification and the annexed drawings which describe and illustrate the preferred form of my invention.

Referring to the drawings: Figure 1 shows a front elevation of my improved switch. Fig. 2 shows the rear elevation of my improved switch. Fig. 3 shows a vertical section of my improved switch. Fig. 4 is a sectional view of the tumblers and permutating dials shown disassembled. Fig. 5 is a view of portions of the tumblers of my improved switch.

Referring to Fig. 1: 1 indicates a housing or casing which is preferably made of insulating material such as vulcanite, in which are mounted a switch handle 2, and a plurality of permutating dials here shown as three in number, 3, 4 and 5. Permutating dials 3, 4, 5 are held in place by screw 6. The switch handle 2 is connected to a latch disk 7 (see Fig. 2), which is preferably made of insulating material such as vulcanite or red fiber, and is provided with bosses or extensions 8 and 9, and with three curved segmental notches or cut-away portions 10, 11 and 12, and with a pin 13, adapted to limit the motion of the latch disk by engaging

bosses on the inside of casing 1. Extensions 8 and 9 are adapted to engage contact strips 14 and 15 when the latch disk is thrown to a proper position, and thereby bring contact strips 14 and 15 in contact with contact strips 16 and 17 respectively, thereby closing the electrical circuit. Contact strips 14, 15, 16 and 17 are connected by means of suitable wiring to the sources of current and the consumption circuit.

Mounted upon screw 6 and connected with permutating dials 3, 4 and 5, are tumblers 18, 19 and 20, which tumblers are provided with cylindrical extensions, so that all three may be mounted concentrically, and tumbler 20 is provided with a screw thread 21, adapted to engage the threads in screw 6. Screw 6 has a threaded hole in one end adapted to engage screw 22, which holds a movable detent 23 in place. Tumblers 18, 19 and 20 each have a slot 24, 25, 26, cut in them adapted to engage movable detent 23 when screw 6 is unscrewed. When screw 6 is screwed up, movable detent 23 engages the slot in tumbler 20 only, and revolves with it. In the cylindrical extensions of tumblers 18, 19 and 20 are a series of holes 27, 28, 29, adapted to engage pins 30, 31, 32 on permutating dials 3, 4, 5, so that by unscrewing screw 6, and thereby bringing detent 23 into slots 24, 25 and 26, permutating dials 3, 4, 5, may be disconnected from tumblers 18, 19, 20, and the relative positions of the permutating dials and tumblers, changed, thereby effecting a change in the combination. It will be observed that this may only be accomplished when the lock is in the open position, for in that position only are the slots 24, 25 and 26 in line, thus permitting the movement of movable detent 23 in them. Each tumbler has a curved segmental notch or cut-away portion 33, 34, 35 in its periphery and also a number of sharp notches 36, preferably equal in number to the number of divisions on the permutating dials, which notches are adapted to cooperate with click-springs 37.

The construction of my improved lock switch permits of a most advantageous method of attaching it in place. This is accomplished by means of screws passing through counter-sunk holes 38, 38 in the casing and under the permutating dial 3 nearest the casing. These screws may only be inserted by removing the permutating dials,

and unauthorized persons are thereby prevented from removing the switch and thus obtaining access to the wires of the electrical circuit.

5 The operation of my improved lock switch is as follows: When the permutating dials are placed in the proper position, here shown as position O, O, O, the segmental notches in the tumblers 33, 34 and 35 will
10 be in line and the latch disk 7 may be freely revolved, thereby connecting contact springs 14 and 16 or 15 and 17 at will. In this position, the notches 24, 25, 26 are in line and the screw 6 may be unscrewed, bringing
15 the movable detent 23 into notches 24, 25 and 26, and permitting the relative positions of permutating dials 3, 4 and 5 and tumblers 18, 19 and 20 to be changed, or the removal of permutating dials 3, 4, 5 to
20 attach or detach the switch from its support. To lock my improved switch, any one or all of the tumblers may be turned, thereby bringing the circular tumbler into any one of segmental notches or cut-away
25 portions 10, 11, 12, and locking the switch either in the off position, or in either of the contact positions.

In view of the many modifications which may be made without departing from the
30 spirit of my invention, I do not wish to confine myself to the exact details shown and described.

What I claim as new, and desire to secure by United States Letters Patent is:

35 1. In a lock-switch, the combination of a latch disk, a plurality of pairs of contact strips adapted to be brought into contact by the latch disk in its rotation, and means for holding said latch disk against rotation
40 in any one of the positions of contact.

2. In a lock-switch, the combination of a latch disk having a plurality of segmental notches, a plurality of pairs of contact strips adapted to be brought into contact
45 by the latch disk in its rotation, and a plurality of concentrically mounted rotary tumblers each having a segmental notch and adapted to engage said latch disk in any of the positions of contact.

50 3. In a lock-switch, the combination of a latch disk, a plurality of pairs of contact strips adapted to be brought into contact by the latch disk, said latch disk having a plurality of segmental notches correspond-
55 ing to the positions of contact and to the

"off" position, and a plurality of concentrically mounted rotary tumblers each having a segmental notch, and adapted to engage said latch disk and hold it against rotation in any one of its positions. 60

4. In a lock-switch, the combination of a plurality of pairs of contact strips adapted to be brought into contact by a latch disk, a latch disk having a plurality of segmental notches and a plurality of concentrically
65 mounted tumblers, each and all adapted to enter any one of said segmental notches.

5. In a lock-switch, the combination of a plurality of pairs of contact strips adapted to be brought into contact by a latch disk, a
70 latch disk having a plurality of segmental notches, and a plurality of concentrically mounted tumblers, each having a segmental notch, and each and all adapted to enter any one of the segmental notches of the latch
75 disk and to permit the latch disk to enter the segmental notches in the tumblers when said segmental notches of the tumblers are in alinement.

6. In a lock-switch, the combination of a
80 plurality of concentrically mounted rotary tumblers each having a segmental notch, a plurality of permutating dials equal in number to the number of tumblers and adjustably connected thereto, a rotary latch
85 disk having a plurality of segmental notches each adapted to engage any one or all of said tumblers, and a plurality of contact strips adapted to be brought into contact by the latch disk in its rotation. 90

7. In a lock-switch, the combination of a latch disk having a plurality of positions and having a segmental notch corresponding to each of said positions, contact strips adapted to be brought into contact by the
95 latch disk in its rotation, and a plurality of concentrically mounted rotary tumblers each having a segmental notch and each adapted to enter any one of the segmental notches of the latch disk and permitting
100 rotation of the latch disk when the segmental notches of the tumblers are in alinement.

In witness whereof, I have hereunto set my hand in the presence of two witnesses, 105 this 3d day of February 1909.

JOHN T. WHALEN.

Witnesses:

RAMSAY HOGART,
WALTER S. JONES.