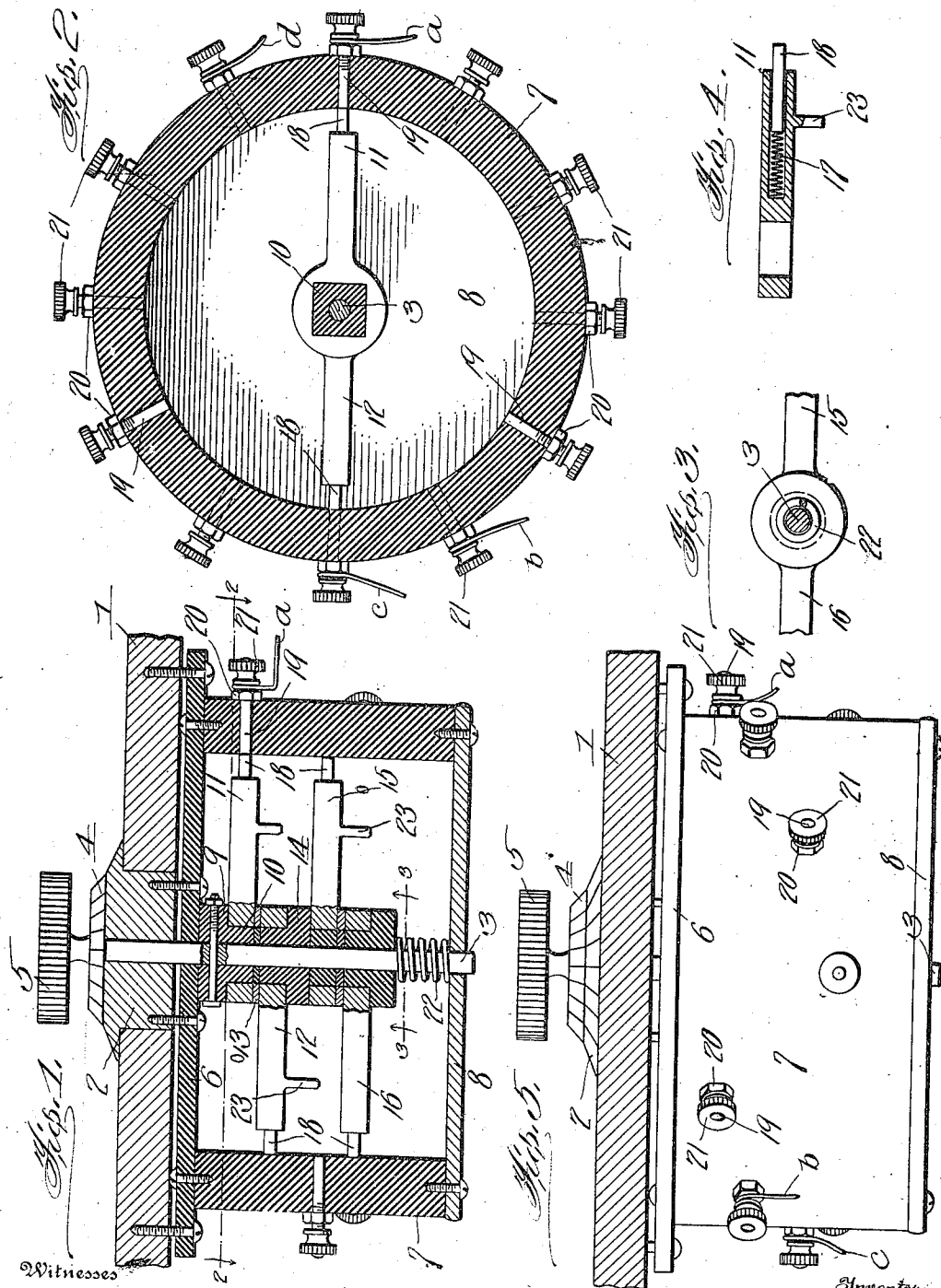


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ELECTRIC SWITCH.
APPLICATION FILED MAR. 6, 1909.

966,286.

Patented Aug. 2, 1910.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

966,286.

Specification of Letters Patent.

Patented Aug. 2, 1910.

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To all whom it may concern:

Be it known that I, JOSEPH H. WRIGHT, a citizen of the United States, residing at North Fort Worth, in the county of Tarrant and State of Texas, have invented a new and useful Improvement in Electric Switches, of which the following is a specification.

This invention relates to an electric switch in the form of a combination lock, the object of the invention is to complete an electric circuit upon the turning in the proper manner a dial similar to those employed in combination locks, the tumblers usually used in such locks being replaced by contact points, thereby permitting the switch to be so set or operated as to complete a circuit only by a party having the combination, the said combination being changeable at will.

The device can be employed in any place where it is desired to make and break an electric circuit, and where it is desired that the making of said circuit should be under the control of certain parties only.

The device can be employed in connection with an electrically operated lock, so that the doors of safes, or other doors when properly locked can be opened only by operating my switch so as to complete the electric circuit. The device can also be applied to automobiles for making and breaking the circuit to the igniting devices, thus making it impossible for any one not knowing the combination to start the engine. It will be obvious that the device can also be employed in connection with any engine in the operation of which a sparking plug is employed, thus preventing the engine from being at any time tampered with by unauthorized persons. It will be further obvious that the switch can be inserted in a telephone circuit thereby preventing outsiders from making personal use of the telephone.

From the above it will be clear that the device can be found of use in a great variety of ways in connection with electric circuits of all kinds. The device can also be connected electrically with any kind of burglar alarm system so that the turning of the dial, when the device is so connected, will turn in a burglar alarm.

The invention consists of the novel features of construction hereinafter described, pointed out in the claims and shown in the accompanying drawings, in which,

Figure 1 is a diametric section through my device, the operating mechanism being shown in elevation. Fig. 2 is a section on the line 2-2 of Fig. 1. Fig. 3 is a detail section on the line 3-3 of Fig. 1. Fig. 4 is a longitudinal section through one of the contact carrying arms. Fig. 5 is a side view of the cylinder.

In these drawings, 1 represents a section of a wall, door, or of a casing inclosing the switch, which casing can be secured to a wall, post or any other form of support.

Fitting in a suitable circular opening formed in the wall, is a stationary portion 2 of a dial and passing through said portion and rotating therein is a shaft 3 the outer end of which has formed or fixed upon it the revoluble portion 4 of the dial, and this shaft also carries a head 5 by means of which the shaft is rotated, these parts are of course all insulated from the current carrying portion of the mechanism which will be described hereafter.

A circular plate 6 is secured by screws to the stationary portion 2 of the dial. Carried by the plate 6 is a cylinder 7 formed of fiber, hard rubber or other suitable insulating material.

The inner end of the cylinder is closed by an end plate 8. Upon the shaft 3 and adjacent the plate 6 is a sleeve 9 of insulating material which is pinned or otherwise keyed to the shaft. This sleeve is provided with a squared hub portion 10 upon which is mounted a tubular arm 11, said arm rotating spoke-like with the hub. Adjacent this arm is loosely mounted upon the shaft a second arm 12, also insulated from the shaft, but electrically connected to the first arm by a copper washer 13, also insulated from the shaft. A washer 14 of an insulating material spaces the arm 12 from an arm 15. The arm 15 is electrically connected by a copper washer similar to that of 13 with a fourth arm 16. With the exception of the first arm which is fixed upon the shaft all of these arms are loosely mounted, all of them are insulated from the shaft, and while I have shown two sets of arms as many sets may be employed as desired, the greater the number of sets the more complicated the combination becomes and consequently the more difficult to operate. As all of these arms are similar in construction

and purpose the object being to bridge electrically the space inclosed within the cylinder 7, a description of one of them in detail will suffice for all. Within the arms are
 5 springs 17 and slidable contact points 18, pressed outwardly by the springs and always held in close contact with the smooth inner face of the cylinder. Upon the inner walls of this cylinder are placed contact plates 19
 10 which are arranged in four sets, there being three plates in each set the said plates being equi-distant apart and the plates of one set are staggered with respect to those of the other sets. Each of the contact points 18
 15 travels over the three plates of one set, the contact plates 19 as shown in the drawings may be in the form of the inner end of a binding post, said posts being provided with lock nuts 20 bearing upon the outer face of
 20 the cylinder, and these posts carry binding screws 21. Electric conductors *a*, *b*, *c*, and *d* run respectively to a binding post in each set. In the form illustrated there are twelve of the binding posts, and the dial is
 25 divided into twelve graduations, corresponding to the numbered graduations of the usual combination lock dial. A coil spring 22 encircles the rear end portion of the shaft 3 and by passing upon the rearmost washer
 30 serves to hold the loosely mounted arms in contact.

The electric circuits can best be explained in connection with a brief description of the operation of the switch. Assuming that the
 35 contact points are out of engagement with the plates 19 it will be obvious that the circuit will be broken, and as one set of arms complete one side of the circuit and the other set complete the return circuit it will be obvious that the circuit is broken in two places.
 40 It will also be understood that while there are twelve contact points and four arms, only four of the binding posts have the circuit wires connected to them, and it will now be obvious that by changing the wire connections from one post to the other the combination can be changed. Each arm carries
 45 a laterally extending lug 23, with the exception of the fourth arm and as the arms are carried about the shaft they engage the adjacent arm by means of these lugs, so that all of the arms are thus rotated upon proper turning of the dial. In order to bring these
 50 arms in the proper position so that their contact points will contact with the plates in the circuit the movable member of the dial is turned to the left three times, stopping upon the third turn at the first figure
 55 of the combination which represents the number of the binding post with which the arm 16 is to connect. This arm is moved by the fixed arm 11 bringing its lug 23 into engagement with the arm 12 which in turn
 60 brings its lug into engagement with the arm 15 which in its turn engages and moves the

arm 16, the said arm reaching its proper position after two complete revolutions, and a sufficient portion of a third revolution for the dial to register at the first figure of the combination. The dial is then turned to the
 70 left twice, stopping on the second turn, the second figure of the combination, thus setting the arm 15, it is then turned to the right to the third figure of the combination thus setting the arm 12, and it is then turned
 75 to the left, leaving the three arms mentioned in their respective places, and by stopping it at the fourth figure of the combination the fixed arm 11 is brought into position with its proper contact plate. A circuit is now
 80 completed, by means of the binding posts and contact plates and the spring pressed points 18 through the arm 12 the copper washer 13, the arm 14, to the electric lock, telephone, motor, sparking plug or other
 85 device in the circuit of which the switch has been placed, and returning through arm 16, the copper washer between it and the third arm and thence along the third arm to the binding post with which said arm is electric-
 90 ally connected.

As previously stated the number of arms is immaterial as they may be two in number or any multiple of two, and the number of binding posts is also immaterial and they
 95 can be arranged about the cylinder in a number of different ways. It will also be obvious that the device can be connected so as to break one circuit two or more times, or if desired the various sets of arms may break
 100 different circuits, so that the operation of the device will simultaneously complete two or more circuits. Or it will also be obvious that the device can be connected in a number of circuits in such a manner that when
 105 one circuit is completed another is broken, thereby rendering it impossible to have two circuits closed at the same time.

What I claim is:—

1. A device of the kind described comprising a rotatable shaft, an arm fixed upon the shaft, a plurality of loose arms, means carried by each arm for engaging and moving
 110 an adjacent arm, a casing concentric with said shaft and inclosing said arms, and a plurality of binding posts carried by said casing, the inner ends of said binding posts forming contact plates for the arms, a portion of said binding posts being included
 115 in an electric circuit, the same forming a part of a lock the combination of which is changed by changing the binding posts included at one time in the circuit.

2. A device of the kind described comprising a cylinder, a series of contact plates arranged circumferentially about the cylinder, said plates being divided into two sets, a rotatable shaft, an arm fixed upon and insulated from the shaft, a spring pressed contact point carried by said arm, said point
 120
 125
 130

traveling over one set of plates, an arm loosely mounted upon and insulated from the shaft, a spring pressed contact point carried by the loosely mounted arm, said point
5 traveling over the other set of plates, binding posts secured to said plates, and electric conductors connected to a binding post of each set of plates, the fixed and loosely mounted arms being electrically connected as and for the purpose set forth.

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Witnesses:

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