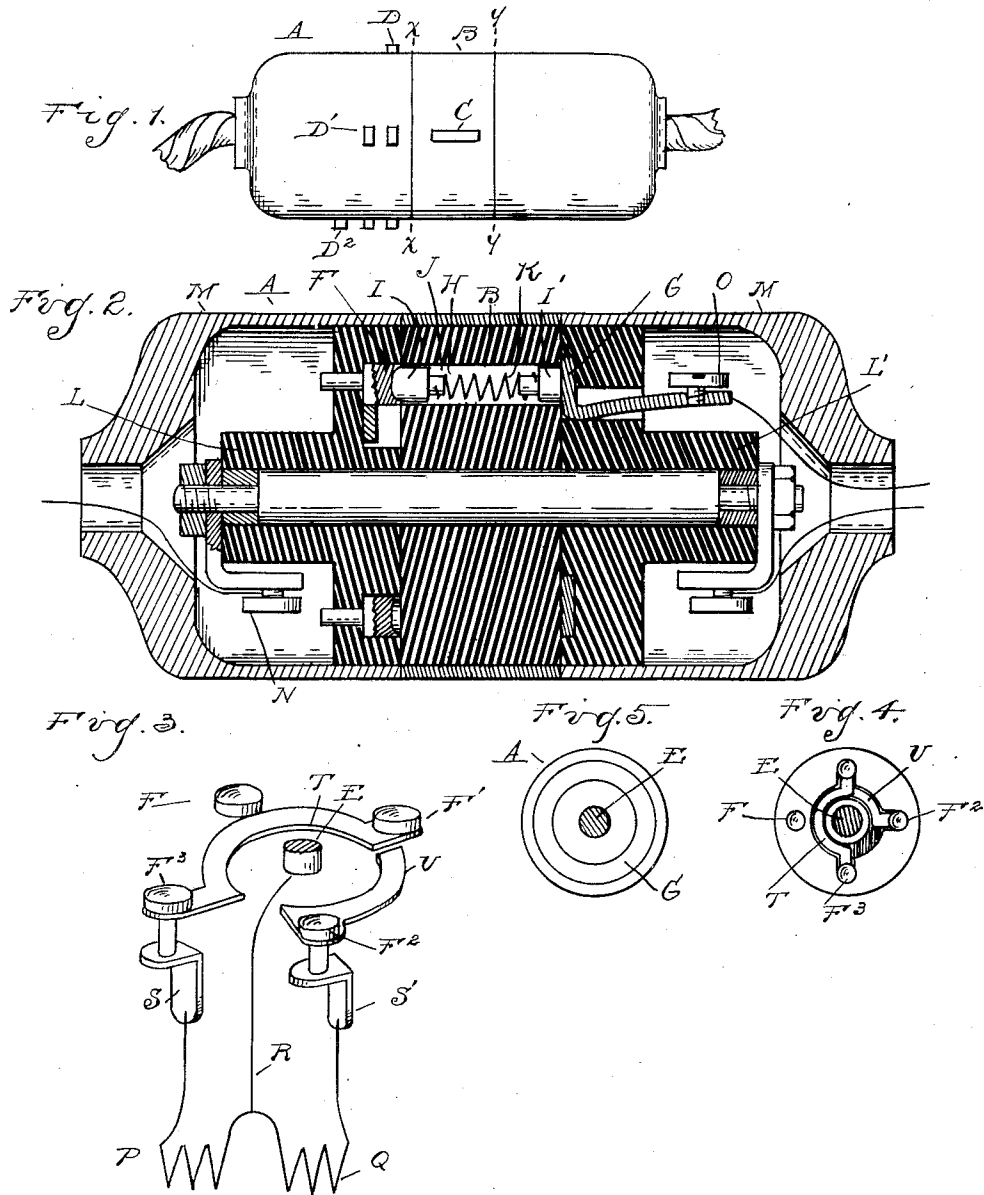


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ELECTRIC SWITCH.
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1,036,126.

Patented Aug. 20, 1912.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

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Specification of Letters Patent.

Patented Aug. 20, 1912.

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To all whom it may concern:

Be it known that we, FRANK KUHN and FRANK E. SHAILOR, citizens of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to electric switches and is particularly designed for use in controlling electrically heated warming pads and for similar uses.

It is one of the objects of the invention to provide a switch having a number of positions for controlling different electric circuits, and which may be operated in the dark. To this end means are provided for determining the various positions of the switch by feeling.

The invention further consists in various features of construction as hereinafter set forth.

In the drawings—Figure 1 is an elevation of the switch; Fig. 2 is an enlarged longitudinal central section thereof; Fig. 3 is a perspective view of the switch contacts showing diagrammatically the electric circuits connected therewith. Fig. 4 is a section on line $x-x$ Fig. 1. Fig. 5 is a section on line $y-y$.

Generally described our improved switch comprises two relatively movable members, the one carrying a series of contacts and the other a cooperating contact member. These two relatively movable members are provided with projecting lugs or pins which indicate the various positions of adjustment and which may be distinguished from each other by the number of points. Thus as shown, the switch has four points of adjustment, three of which are indicated respectively by one, two and three lugs upon one member for registration with the single lug upon the opposite member, while the fourth position is indicated by the absence of any lug on the first mentioned member.

More in detail; A is one of the relatively movable members of the switch of substantially cylindrical form; B is the second member arranged centrally between the opposite end portions of the member A. The member B is provided with an elongated lug C which is adapted to be registered with the series of lugs on the member A indicating

the different positions of adjustment. These cooperating indicating lugs D, D' and D² are spaced from each other by one fourth the circumference of the cylinder, and a fourth position having no indicating lug is the position where the switch is out of action.

The members A and B are rotatably secured to each other by a central pin E which also forms the connection for one of the circuit conductors. Arranged concentrically about this are a number of contacts, F, F', F² and F³, which are secured to the insulator body of the member A on one side of the member B. On the opposite side of said member an annular contact G is secured to the member A and connection is established between this annular member and the several contacts F, F', etc., through the medium of a bridge connection H. The latter is preferably formed by a pair of metal pins I and I' for respectively contacting with the members F and G and arranged in an aperture J in the insulator body of the member B.

K is a metallic spring for resiliently pressing the members I and I' in opposite directions and also forming electrical connection therebetween.

With the construction just described, whenever the member B is rotated in relation to the member A, the bridge contact H will travel around to successively pass the contacts F, F', etc. The latter are slightly concaved to engage the relative end of the member I and thus the contacts perform the double function of conveying the current and forming mechanical latches for yieldably holding the switch in its different positions of adjustment.

The member A is preferably formed of a number of sections. The sections L and L' being arranged upon opposite sides of the member B and forming the supports for the contacts F, F', etc., and the contact ring G. On the opposite sides of these members L and L' are binding posts for attaching the electric conductors; said connections being housed by outer shells M secured to the members L and L'. These shells are centrally apertured for the passage outward of the conductors in line with the axis of the switch.

In operation one of the conductors of the circuit is attached to the binding post N

which is secured to the central pivot pin E and a similar binding post at the opposite end of said pin is connected to the continuation of the conductor. The other conductor for the main circuit is attached to the binding post O which is secured to the ring G, and from the latter connection is made through the bridge H alternatively to the contacts F, F', etc. These contacts are connected through their binding posts with the several branch circuits controlled by the switch and diagrammatically indicated in Fig. 3. As shown in this figure, P is one branch circuit and Q another branch. These branches are connected to the common terminal R which leads to the central pivot pin E, while the other terminals of the branches P and Q are respectively connected to the binding posts S and S' of the contacts F³ and F². The contact F' is connected by a bridge T with the contact F³ and overlaps the segmental extension U of the contact F², the arrangement being such that whenever the bridge H engages with the contact F' it will press the latter against the segment U to make electric connection therewith, thereby coupling the contacts F³ and F². Thus in this position of adjustment the two branch conductors P and Q will both be in circuit in multiple, while the engagement of the bridge H with either of the contacts F² or F³ will alternatively complete the circuit through the branches Q and P.

Where the switch is used for controlling an electrically heated warming pad, three different degrees of heat may be obtained; one by the branch P alone; another by the branch Q alone, which is of lower resistance and the third by both branches P and Q in multiple.

The operator can readily adjust the switch to any position desired by rotating the member B, and he can also determine the position by feeling the indicating lugs D, D', etc.

What we claim as our invention is:

1. The combination with a member having electric conductors extending therein at opposite ends, a rotatable member arranged centrally of said first mentioned member, and a switch controlled by the rotation of said rotatable member for regulating the current passing from one conductor to the other.
2. An electric switch, comprising a cylindrical member formed in two sections, a relatively rotatable member between said sections, an axle pin connecting said sections and forming a journal for said rotatable member; said pin also constituting one of the conductors for the circuit, a series of contact members arranged concentrically about said pin on one of the sections of said first mentioned member, an annular contact

upon the opposite section of said member, and a bridge contact carried by the rotatable member having one end in engagement with said ring contact and the opposite end alternatively engaging said series of contacts; said bridge contact also forming a latch for yieldably holding said members in their different positions of adjustment.

3. An electric switch, comprising a rotatable member, a member formed in axially connected sections upon opposite sides of said rotatable member; said sections being hollow, electric conductors extending into said hollow sections, terminal connections for said conductors housed within said hollow sections, a bridge contact member carried by said rotatable member, and a series of contacts for alternative engagement with said bridge contact and forming therewith a latch for holding the members in different positions of adjustment.

4. An electric switch, comprising a rotatable member, a member formed in sections upon opposite sides of said rotatable member, a pin connecting said sections and forming a journal for said rotatable member, a plurality of contacts arranged concentrically about said pin, conductors connected with said contacts and with said pin, and a bridge carried by said rotatable member for engaging said contacts alternatively, and a ring on the opposite side of said rotatable member in permanent contact with said bridge contact.

5. An electric switch, comprising a member having electric conductors extending therein at opposite ends, a rotatable member arranged centrally of said first mentioned member, a bridge contact carried by said rotatable member, a series of contacts for the alternative engagement of said bridge contact, connections for said series of contacts with the conductors passing out from one end of said first mentioned member, a central pin constituting the axis for said rotatable member and a through electrical connection, and a ring in permanent engagement with said bridge contact on said rotatable member.

6. An electric switch, comprising a rotatable member, a member formed in axially connected sections on opposite sides of said rotatable member, a plurality of contacts arranged concentrically about the axis on one section of said member; said contacts having overlapping sections, a bridge contact carried by said rotatable member having a latching engagement with said series of contacts, a resilient means for pressing said bridge contact against said series of contacts adapted to press said overlapping sections together for the purpose described.

7. An electric switch, comprising a rotatable member, a member formed in sections

upon opposite sides of said rotatable member, a spring-pressed contact carried by said rotatable member, an annular contact on one of said sections in permanent contact with said spring-pressed contact, a series of contacts on the other section for alternate engagement with said spring-pressed contact, and connections with said series of contacts and said annular contact.

10 8. An electric switch, comprising spaced sections, an annular contact member on one of said sections, a series of contacts on the other section, electrical connections for said contacts, a rotatable member intermediate

said sections, and a contact carried by said rotatable member, said contact being in permanent engagement with said annular contact member and alternately engaging said series of contacts and having a latching engagement therewith.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK KUHN.
FRANK E. SHAILOR.

Witnesses:

LEO PORDEN,
GEORGE S. TOWAR.