O. P. ERHARDT.

ELECTRIC SWITCH.

APPLICATION FILED AUG. 2, 1917.

1,328,622. Patented Jan. 20, 1920.

Fig. 1.

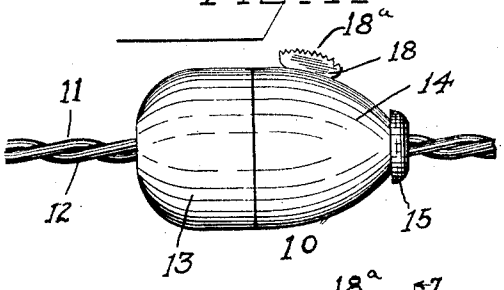


Fig. 2.

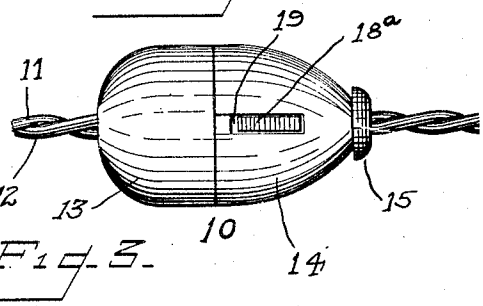


Fig. 3.

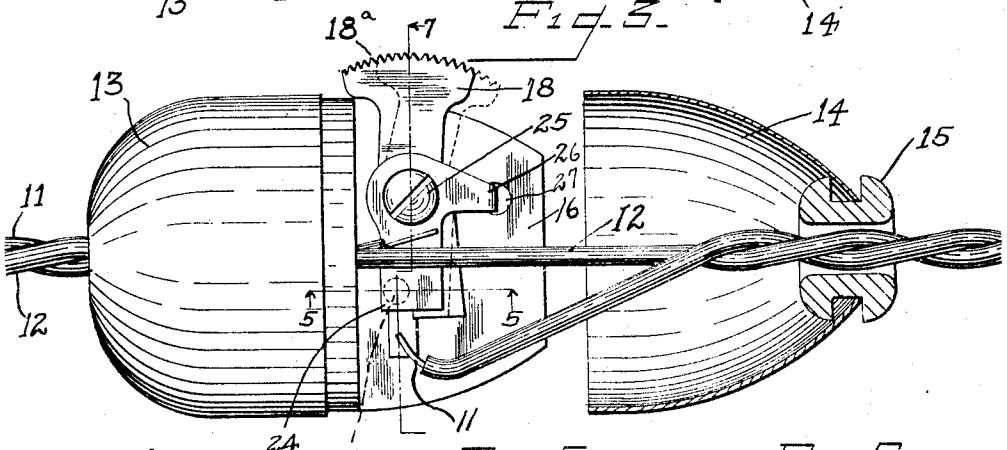


Fig. 4.

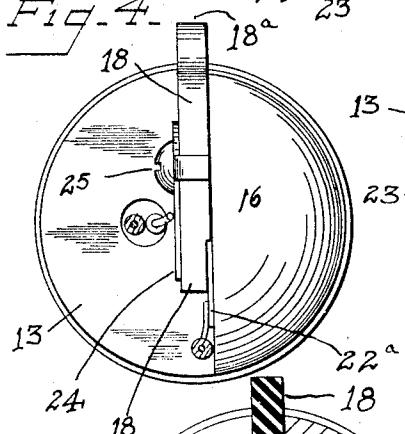


Fig. 5.

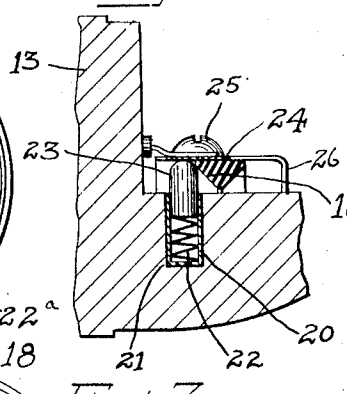


Fig. 6.

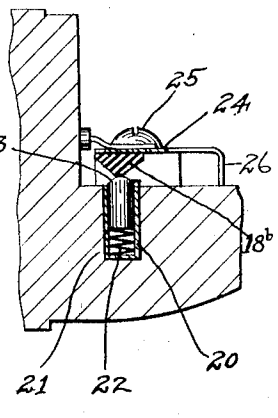
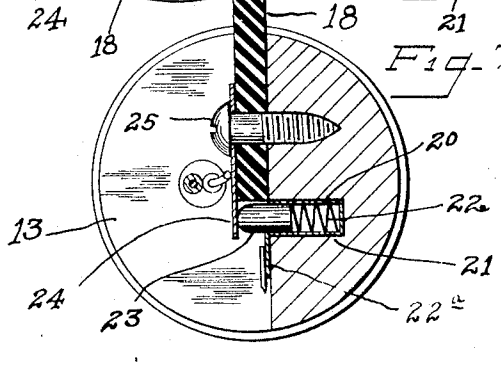


Fig. 7.



Oscar P. Erhardt
INVENTOR
By
ATTORNEY

UNITED STATES PATENT OFFICE.

OSCAR P. ERHARDT, OF WEST HAVEN, CONNECTICUT, ASSIGNOR TO THE A. C. GILBERT COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC SWITCH.

1,328,622. Specification of Letters Patent. Patented Jan. 20, 1920.

Application filed August 2, 1917. Serial No. 184,069.

To all whom it may concern:

Be it known that I, OSCAR P. ERHARDT, a citizen of the United States, residing in West Haven, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Electric Switches, of which the following is a full, clear, and exact description.

This invention relates to electric switches, and it has particular reference to switches for small motors and the like, where the switch is connected to, mounted on, or otherwise associated with a flexible conductor or conductors, such as are commonly used in making a connection between the electric machine or apparatus and a lamp socket. One of the primary objects of the invention is to furnish a simple, efficient switch which may be readily interposed in one of the conductors used for connecting the apparatus with the screw plug which screws into the lamp socket.

Another object of the invention is to provide an inexpensive switch device which involves a minimum number of parts, and which can be readily manufactured and assembled and used with great convenience.

To these and other ends, the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

Reference is to be had to the accompanying drawing, in which—

Figure 1 is a side elevation of an electric switch embodying my improvements;

Fig. 2 is a top plan view;

Fig. 3 is an enlarged side elevation with the cover detached from the body portion or base and shown in longitudinal section;

Fig. 4 is an end view of part of Fig. 3;

Fig. 5 is a detail bottom view of part of Fig. 3, partly in section on line 5—5 of Fig. 3, showing the circuit closed;

Fig. 6 is a view similar to Fig. 5, showing the circuit open; and

Fig. 7 is a section on line 7—7 of Fig. 3.

My improved switch can be very conveniently and readily interpolated in an electric conductor, such as commonly used for connecting electric apparatus with the customary screw plug which screws into the usual lamp socket. Where two insulated conductors are used, which are physically separate from each other but twisted together, both conductors or wires pass through the switch casing, which is located intermediate the plug and the apparatus, and within the casing one of the conductors is divided and connected to opposite poles of the switch mechanism, the other conductor being uninterrupted and running continuously through the switch casing adjacent the first named conductor. The casing is preferably round in cross section, and is made in two parts, one constituting a base for the switch parts and the other a protective cover which may be detachably connected with the base. In the form shown, the base and the cover form, in conjunction, an egg-shaped casing which is transversely divided, but it will be obvious that various changes in this and other respects may be made without departing from the scope of the invention, as defined in the claims.

Referring to the drawing, the switch casing 10, which, in this instance, is illustrated as an ovoid, has a longitudinal passage extending therethrough from end to end, and through this passage extend the separate insulated, flexible wires or conductors 11, 12. The casing consists essentially of a base portion 13, which is preferably made of wood or fibrous insulating material, and a cover 14. The cover 14 fits frictionally over the base or solid portion 13, the former being preferably made of sheet metal with an insulating sleeve 15 of rubber or the like at its outer end, through which the conducting wires pass into the interior of the casing. The base portion 13 forms the greater part of the ovoid for, while it meets the edge of the sheet metal cover about midway of the length of the casing, at which point the edge of the cover has a frictional bearing on the base, said base is extended longitudinally at one side into the cover to form a mounting for the switch parts, as shown at 16. In the form shown, the extension 16 has a flat face extending substantially diametrically across the casing, on which the switch mechanism is supported. The opening and closing of the switch is controlled by the movement of a swinging operating member 18, swiveled on the extension 16 and projecting out of an elongated notch 19 at the inner edge of the cover 14, so that it is accessible at the outside of the casing.

The switch mechanism comprises one pole which is formed on or associated with a metallic sleeve or tube 20 which fits in a

socket 21 in the extension 16 with its outer end substantially flush with the flat face of the extension. On the rim of the sleeve 20 is a lug 22ª to which is connected by soldering, or in any other suitable way, one of the ends of one of the divided wires, for example, the wire 11. In the sleeve 20 is a helical spring 22 which tends to project a small metal plunger 23, guided in the mouth portion of the tube 20, and the plunger 23 normally makes contact with the under surface of a contact plate 24, which is likewise mounted on the flat face of the extension 16 with its body parallel to said face. Beneath the contact plate 24, the controlling member 18 is pivoted on a screw 25, which passes through an opening in the contact plate 24, and through an opening intermediate of the length of the controlling arm, so as to clamp both the contact plate and the arm in position on the base of the switch, while permitting, at the same time, a pivotal movement of the arm 18, which is pivoted on the screw 25, intermediate of the length of said arm. Rotation of the contact plate 24 is prevented by a short, integral downturned lug 26 thereon, engaging a small socket 27 in the extension 16. The lower end of the arm 18 is interposed between the plunger 23 and the contact plate 24, and is so formed that when the arm is swung in one direction, it prevents contact of the plunger with the plate by pushing the plunger down into its socket in opposition to its spring; whereas, when the arm is swung in the opposite direction, the plunger is permitted to project freely from the sleeve or tube 20 into contact with the plate 24. The other pole of the switch is formed on or associated with the contact plate 24, to which the other end of the divided conductor 11 may be soldered, or otherwise applied. The arm 18 is made of suitable insulating material, such as rubber or the like, so that it will not carry current from the plunger to the coöperating contact plate when the plunger is pressed down into the inoperative position by said arm. The upper end of the arm which projects out of the case is enlarged and serrated, as shown at 18ª, so that the arm may be readily rocked for operating the switch by engaging it with the thumb or finger. The swinging movement of the arm is limited by that face of the base portion 13 which lies at right angles to the axis. When the arm is swung in one direction sufficiently to move its inner end out of engagement with the plunger 23, its operating head contacts with this limiting surface, and when it is swung in the other direction, so that the inner end of the arm lies over the plunger substantially, as shown in Fig. 6, this inner end contacts with said surface. For the purpose of conveniently operating the plunger, the head of the plunger is rounded, as shown in Figs. 5 and 6, and the arm 18 has beveled surfaces 18ᵇ to coöperate therewith. Thus, as the arm is moved laterally in the direction of the plunger, the latter is readily pushed down into its socket out of contact with the coöperating plate.

The improved switch as herein described can be very readily and economically manufactured and installed, and it has been found to operate very efficiently.

The base portion 13 of the switch is bored out in a generally lengthwise direction to form a passage for the conducting wires. This passage is somewhat inclined so that its inner end is located somewhat in front of the flat longitudinal face of the extension 16 and about opposite the body of the contact plate 24.

I have not attempted to illustrate or describe the modifications of the structure which may be made without departing from the scope of the invention, as set forth in the claims.

What I claim is:

1. In an electric switch, a contact plate, a spring pressed contact member normally in contact with said plate, and a controlling member of insulating material adapted to be interposed between said plate and said contact member to separate the same, said controlling member constructed to form insulated supporting means for said plate.

2. In an electric switch, a contact plate, a spring pressed contact member normally in contact with said plate, and an intermediately fulcrumed controlling member of insulating material upon which said plate is seated adapted to be interposed between said plate and said contact member to separate the same.

3. In an electric switch, a base having a socket therein, a spring pressed contact plunger in said socket, an operating member of insulating material adapted to overlie said plunger to depress the same and a contact plate superposed on said controlling member insulated from said plunger but positioned to be engaged thereby.

4. In an electric switch, a base having a socket, a spring pressed plunger in said socket, a swinging controlling member on said base, a contact plate superposed on said controlling member, and a single device for securing said contact plate to the base and mounting said controlling member pivotally.

5. In an electric switch, a base having a socket, a spring pressed plunger in said socket, a swinging controlling member on said base, a contact plate superposed on said controlling member, and a single fastening screw for securing said contact plate to the base and mounting said controlling member pivotally.

6. In an electric switch, a contact plate, a spring operated plunger positioned to contact with said plate, and a control member constructed to be interposed between said plate and plunger when moved to one position and to permit engagement therebetween when moved to a second position, said control member being constructed to be moved to its inoperative position by the plunger when an initial manual movement is imparted to said member.

7. In an electric switch, a contact plate, a spring operated member positioned to contact with said plate, and a control lever constructed to be interposed between said plate and contact member when moved to one position and to permit engagement therebetween when moved to a second position, said control lever being constructed to be moved to its inoperative position by the spring operated member when an initial manual movement is imparted to said lever.

8. In an electric switch, a contact plate, a spring operated plunger positioned to contact with said plate, a swinging control member constructed to separate said contact member and plate when moved to one position, and a single fastening screw for retaining the control member, the contact plate and the plunger in their assembled operating position.

9. In an electric switch, an ovoid case comprising a solid base and a shell-like cover fitting over said base, said base having a portion cut away whereby a wall lying in a longitudinal plane of said base is formed, a contact plate spaced from said wall, a contact plunger slidably mounted in said wall to engage said plate, and a longitudinally swinging lever pivotally mounted upon said wall for disengaging said plunger from said plate.

10. In an electric switch, a case comprising a solid base and a shell-like cover fitting over said base, a contact plate mounted upon said base, a spring operated plunger slidably mounted within said base and positioned to engage said plate, and a controlling element constructed to be interposed between said plate and plunger to break the contact therebetween.

In witness whereof I have hereunto set my hand on the 27th day of July, 1917.

OSCAR P. ERHARDT.