Aug. 7, 1928. 1,679,846

C. E. WARNER

SWITCH CONSTRUCTION

Filed June 5, 1924

Fig. 1

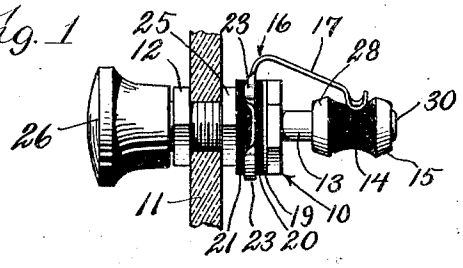


Fig. 2

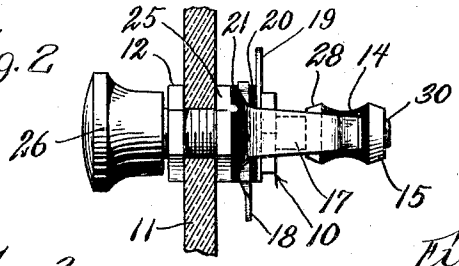


Fig. 3

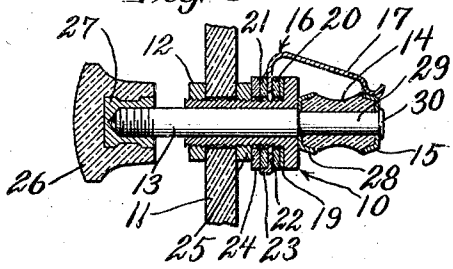


Fig. 4

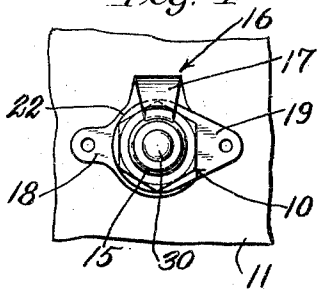


Fig. 5

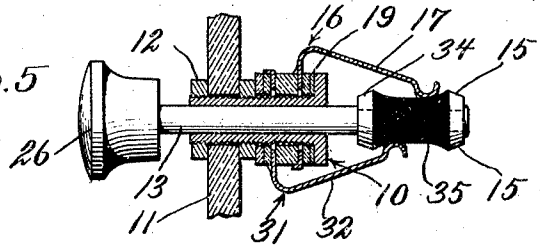
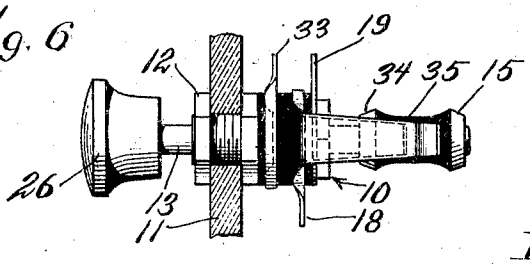


Fig. 6



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Attys

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UNITED STATES PATENT OFFICE.

CHESTER E. WARNER, OF BERWYN, ILLINOIS, ASSIGNOR TO BENJAMIN ELECTRIC MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SWITCH CONSTRUCTION.

Application filed June 5, 1924. Serial No. 718,027.

My invention relates to switch construction and more particularly to a light low duty switch construction which would be suitable for radio equipment.

One of the objects of my invention is to provide a switch construction of this type which will be cheap, simple, durable and efficient.

Further objects will appear from the description and claims.

In the drawings, in which two forms of my invention are shown—

Figure 1 is a side elevation of the switch in place on a panel;

Fig. 2 is a plan view of the construction shown in Fig. 1;

Fig. 3 is an axial section;

Fig. 4 is a rear view;

Fig. 5 is an axial section showing a single pole double throw switch; and

Fig. 6 is a top view of the construction shown in Fig. 5.

Referring to the drawings in detail and first to Figs. 1 to 4, inclusive, the construction shown therein comprises a tubular metal bushing 10, the shank portion of which extends through the insulating panel 11, a nut 12 for clamping the tubular bushing on the panel, a metal plunger 13 slidably mounted in the bushing 10, an insulating sleeve 14 mounted on the plunger 13, an annular contact member 15 mounted on the plunger 13 and supported by the insulating sleeve 14, a sheet metal stamping 16 (comprising a spring contact finger 17 co-operating with the annular contact 15 and a wiring terminal projection 18 to which the feed wire may be soldered or otherwise secured,) and a wiring terminal member 19 to which the other feed wire may be secured.

The stamping 16 is mounted on the metal bushing 10 but insulated therefrom by a pair of insulating washers 20 and 21 between which the annular portion 22 of the metal stamping is clamped. In order to position the stamping 16 on the metal bushing and prevent the inner edges of the annular portion from coming into contact with the tubular bushing, this annular portion is provided with peripheral flange portions 23 which snugly engage the outer edge of the washer 21. A spacing washer 24 is provided between the washer 21 and the clamping nut 25 to maintain a suitable distance between the metal stamping 16 and this clamping nut. An insulating operation button 26 is screwed onto the outer end of the metal plunger, a threaded metal bushing 27 being molded into this button for this purpose.

An annular reenforcing and contact member 28 is mounted on the plunger 13 and embraces the insulating sleeve 14. This annular member ensures a good electrical connection between the bushing 10 and the plunger 13 and also supports and reenforces the insulating sleeve 14.

In assembling, the contact member 28, the insulating sleeve 14 and contact member 15 are slipped on over the reduced portion 29 of the plunger and the plunger is then riveted over at 30 to hold these parts in place. The wiring terminal member 19, the washer 20, the stamping 16 and washers 21 and 24 are then slipped on over the threaded shank portion of the metal bushing 10 and the clamping nut 25 is then screwed onto the bushing to clamp the washers, the stamping and the wiring terminal member in place. The plunger is then slipped into the bushing 10 and the bushing inserted through the opening in the panel 11. The nut 12 is then threaded onto the bushing to hold it on the panel. The operating button 26 is then screwed onto the plunger.

The circuit is from the wiring terminal member 19 through the bushing 10, contact member 28, plunger 13, contact 15 and spring contact finger 17 to the wiring terminal 18.

The construction shown in Figs. 5 and 6 is substantially the same as that just described except that here an additional stamping 31 is provided having a spring contact finger 32 and a wiring terminal portion 33, and the plunger 13 has sufficient movement so that in one position of the plunger the spring contact finger 17 engages the annular contact 15 while in the other position of the plunger the spring contact finger 32 engages the annular contact 34.

In this form, in "On" position of the switch, the circuit is from the wiring terminal 19 through the bushing 10, plunger 13, annular contact 15 and spring finger 17 to the wiring terminal 18, while in the other "On" position of the switch the circuit is from the wiring terminal member 19 through the bushing 10, plunger 13, annular contact 34 and spring contact finger 32 to the wiring terminal 33. In the "Off" position of the switch shown in Fig. 5, both

contact fingers 17 and 32 rest on the insulating sleeve 35.

While I have shown but two forms of my invention, it is obvious that it may be embodied in other forms covered and defined by the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the U. S. is:—

1. A circuit controller comprising a metal bushing having a tubular threaded portion for extending through a panel and having also an annular flange, a nut screwed on the threaded tubular portion for holding it on the panel, a metal plunger slidable back and forth in said tubular portion, a contact carried by said metal plunger and electrically connected therewith, a metal binding terminal member comprising a terminal portion and an annular securing portion integral with said terminal portion surrounding said tubular portion and held against said annular flange, and a combined binding terminal and contact member comprising an annular metal securing portion mounted on and surrounding said tubular portion but insulated therefrom and comprising also a contact portion integral with said securing portion for cooperating with the contact carried by the plunger.

2. A circuit controller comprising a metal bushing having a tubular threaded portion for extending through a panel and having also an annular flange, a nut screwed on the threaded tubular portion for holding it on the panel, a metal plunger slidable back and forth in said tubular portion, a contact carried by said metal plunger and electrically connected therewith, a metal binding terminal member comprising the terminal portion and an annular securing portion integral with said terminal portion surrounding said tubular portion and held against said annular flange, and a combined binding terminal and contact member comprising an annular metal securing portion mounted on and surrounding said tubular portion but insulated therefrom and comprising also a contact portion integral with said securing portion for cooperating with the contact carried by the plunger, and means for insulating the annular portion of said combination member from said annular bushing comprising a pair of insulating washers surrounding said tubular portion, between which washers the annular portion of said combination member is held, said combination member having a flange portion engaging the edge of one of said washers to position the combination member.

3. A circuit controller comprising a metal bushing having a tubular portion for extending through a panel, a metal plunger slidable back and forth in said tubular portion, a contact carried by said metal plunger and electrically connected therewith, a metal binding terminal member comprising the terminal portion and an annular securing portion integral with said terminal portion surrounding said tubular portion and mounted thereon, and a combined binding terminal and contact member comprising an annular metal securing portion mounted on and surrounding said tubular portion but insulated therefrom and comprising also a contact integral with said securing portion for cooperating with the switch contact carried by the plunger.

4. A circuit controller comprising a metal bushing having a tubular portion for extending through a panel, a metal plunger slidable back and forth in said tubular portion, a contact carried by said metal plunger and electrically connected therewith, a metal binding terminal member comprising the terminal portion and an annular securing portion integral with said terminal portion surrounding said tubular portion and mounted thereon, and a contact member mounted on said tubular portion but insulated therefrom and cooperating with the contact carried by the plunger.

5. A circuit controller comprising a metal bushing having a tubular portion for extending through a panel, a metal plunger slidable back and forth in said tubular portion, a switch contact carried by said metal plunger and electrically connected therewith, and a contact member comprising an annular metal securing portion mounted on and surrounding said tubular portion but insulated therefrom, and comprising a contact portion integral with said securing portion for cooperating with the contact carried by the plunger.

6. A circuit controller comprising a metal bushing having a tubular portion for extending through a panel, a metal plunger slidable back and forth in said tubular portion, a switch contact carried by said metal plunger and electrically connected therewith, and a contact member comprising an annular metal securing portion mounted on and surrounding said tubular portion but insulated therefrom, and comprising a contact portion integral with said securing portion for cooperating with the contact carried by the plunger, and an insulating washer mounted on and surrounding said tubular portion, the annular portion of said contact member having a flange engaging the edge of said insulating washer to position it.

In witness whereof, I have hereunto subscribed my name.

CHESTER E. WARNER.