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ELECTRIC SWITCH WITH TERMINAL ASSEMBLY ESPECIALLY ADAPTED FOR CONNECTION TO PRINTED CIRCUITS

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Fig. 2.

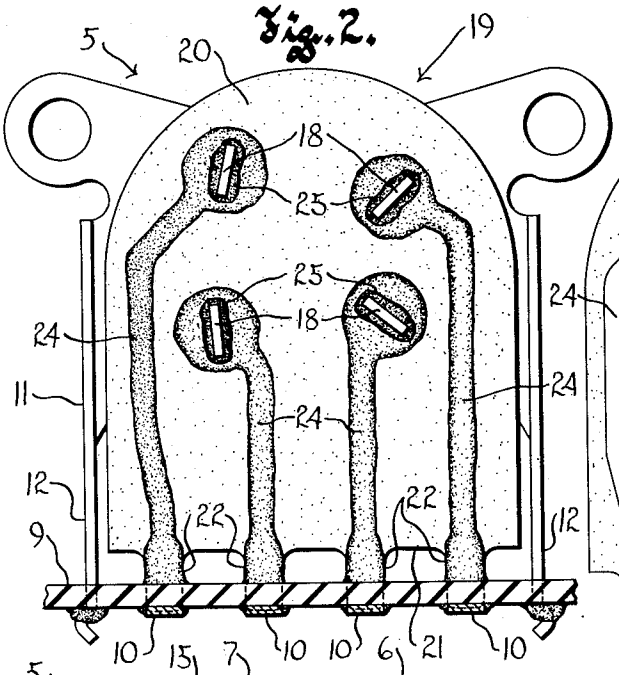


Fig. 3.

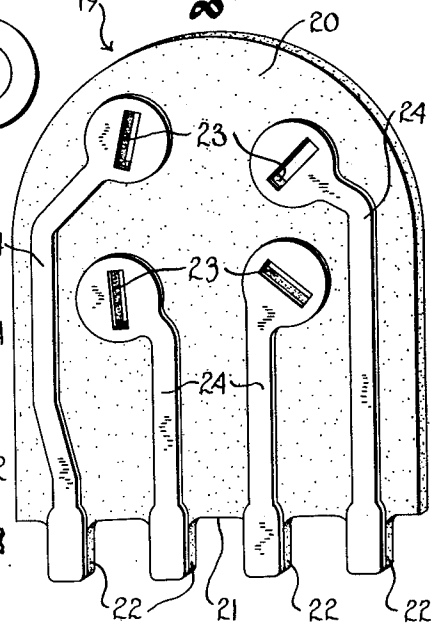
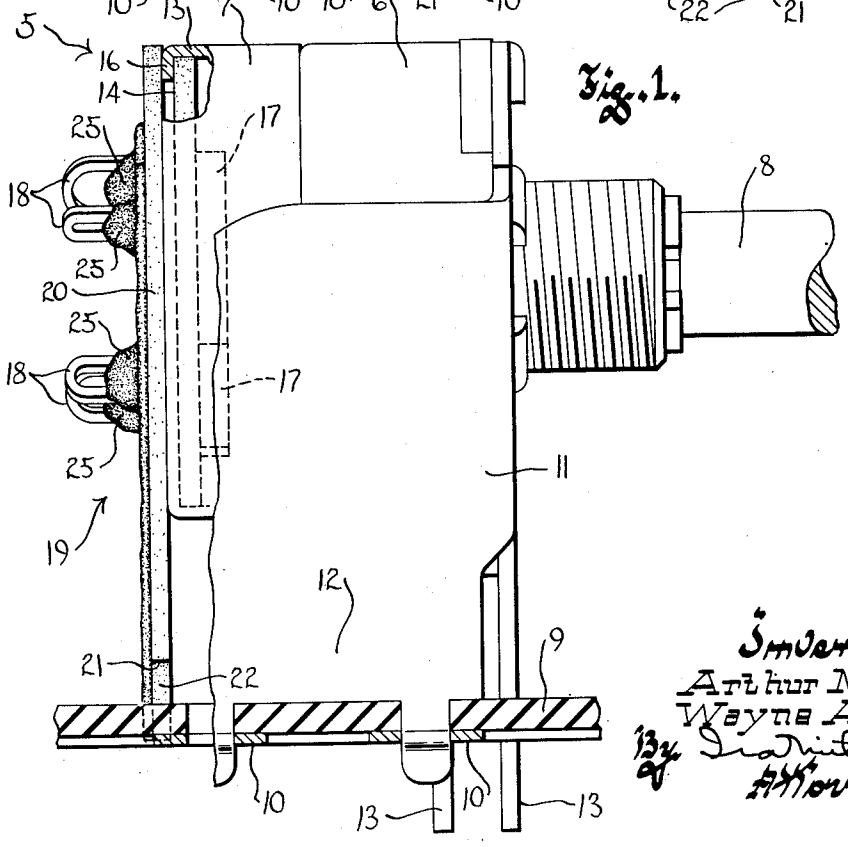


Fig. 1.



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ELECTRIC SWITCH WITH TERMINAL ASSEMBLY ESPECIALLY ADAPTED FOR CONNECTION TO PRINTED CIRCUITS

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3 Claims. (Cl. 200—166)

This invention relates to electric switches of the type used in radio and television receivers and generally mounted on the back of a variable resistor to be operable by the control shaft of the resistor, as in the combination control of the copending application Serial No. 403,401, filed January 11, 1954, by Mervin B. Arisman to which the present invention is closely related.

The object of the invention is to provide a simple, inexpensive way of adapting such a switch for convenient connection into a printed circuit.

A more specific object of the invention is to provide an inexpensive terminal assembly securable to the back of the switch, which not only adapts the switch to easy and quick connection into a printed circuit, without necessitating any change in the switch from the design and construction found desirable through years of experience, but in addition is so constructed that it suitably insulates the terminals by which the switch is connected in the printed circuit from the metal cover or housing of the switch.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

The accompanying drawing illustrates one complete example of the physical embodiments of the invention constructed according to the best modes so far devised for the practical application of the principles thereof and in which:

Figure 1 is a side view of a combined resistor and switch having the terminal assembly of this invention incorporated therein and showing the control mounted on a printed circuit panel;

Figure 2 is a rear view of the thus mounted control; and

Figure 3 is a perspective view of the terminal assembly per se shown detached from the switch, but illustrating a slightly modified embodiment of the invention.

Referring now particularly to the accompanying drawing, the numeral **5** designates generally a combination control consisting of a variable resistor **6** and an electric switch **7** arranged in tandem with the switch mounted on the back of the resistor so that both components are operable by a common control shaft **8**. The control is adapted to be mounted upon a supporting panel **9** on which the various circuit leads **10** are printed. The mounting of the control upon the panel **9** is effected primarily by means of a bracket **11** fixed to the front of the resistor **6** and provided with spaced apart legs **12** which embrace the control and have a plug in or snap in engagement with the panel **9**. The copending application, Serial No. 403,401, filed January 11, 1954, by Mervin B. Arisman describes this mounting bracket in greater detail. It should be noted that in the mounting of the control the terminals **13** (only two of which are shown) of the variable resistor protrude through the mounting panel **9** to be connected to their respective leads of the printed circuit.

The instrumentalities of the resistor and also of the switch form no part of this invention and therefore have not been illustrated. It is sufficient to observe that the switch is contained within a housing comprising a flat end wall **14** of insulating material and a cylindrical metal side wall **15** having an inturned flange **16** overlying the outer rear face of the end wall **14**. The stationary contacts **17** of the switch are mounted on the inner face of the end wall **14** and have terminal extensions **18** projecting rearwardly through and beyond the end wall **14**. The switch may be of the type forming the subject matter of Patent No. 2,660,634, issued November 24, 1953, and if it is of the double pole single throw type, there are of course, four stationary switch contacts, and hence four terminal extensions **18**.

Flatwise overlying the rear end wall **14** is the terminal assembly of this invention indicated generally by the numeral **19**. This terminal assembly comprises a plate of insulating material **20** of a size to cover the entire rear face of the switch and preferably has an inverted U shape so as to have a round upper end and a straight bottom edge **21**. The height of the plate is approximately one and one-half times the diameter of the switch housing and its width is substantially equal to the diameter of the switch housing.

Projecting from the bottom edge **21** of the plate **20** is a row of equispaced teeth **22**. These teeth are integral with the plate and all project substantially the same distance from the edge **21**. A corresponding number of slots or oblong shaped holes **23** is formed in the portion of the plate **20** which overlies the rear wall **14** of the switch. These holes are so located and disposed that they align with the terminal extensions **18**, and when the terminal assembly is in position on the switch, the terminal extensions pass through the holes **23**. Since there are four terminal extensions **18**, there are four holes **23** and four teeth **22**, the holes and teeth being paired.

Each hole **23** is connected with its tooth **22** by a conductor path **24**, which may be formed by spraying metal onto the back of the plate **20** (as in Figures 1 and 2) or it may be a strip of thin sheet metal or foil suitably adhered to the back of the plate **20** (as in Figure 3). In either case, the conductor path extends out over its respective tooth or prong **22** to be contiguous to one of the printed leads **10** on the panel **9** when the control is mounted on the panel with the edge **21** of the plate **20** contiguous to the panel and the teeth **22** protruding through holes in the panel. Also, in either case, the other end portion of the conductor path is enlarged to surround its respective hole **23** in the plate, so that it may be readily soldered to the terminal extension protruding through the hole **23** to provide a good electrical connection **25** between the extension and the conductor path and also secure the terminal assembly to the switch.

Where the conductor paths are sprayed on, it is of course essential that the surface of the plate **20** be properly prepared to receive and have the sprayed metal adhere thereto, and also, that suitable means be employed to assure that the conductor path will cover only the intended area of the plate.

It will be seen that the terminal assembly of this invention coacts with the mounting bracket **11** to properly position the control on the mounting panel, and also that when the control is mounted on the panel the connection of its various terminals to their respective leads printed on the panel, may be easily and quickly effected

by any one of the several techniques developed for this purpose.

What is claimed as our invention is:

1. An electric switch having a housing comprising a flat end wall of insulating material and a metal side wall provided with an inturned flange overlying the outer face of the marginal portion of the end wall, and having contacts mounted on the inner face of the end wall with terminal extensions projecting through the end wall, characterized by a terminal assembly to facilitate connecting the switch into a circuit printed on a mounting panel, said terminal assembly comprising: a plate of insulating material flatwise overlying the outer face of said end wall and the inturned flange with a portion of the plate projecting beyond the side wall of the switch housing and having an edge remote from the side wall positionable adjacent to the printed circuit panel, said plate having holes in line with the terminal extensions of the contacts and through which said extensions pass; a row of teeth integral with the plate and extending from said edge of the plate to enter holes in the panel when the switch is in position on the panel, there being one tooth for each of said holes; a metal conductor path leading from each of said holes, across the rear face of the plate and along the rear face of one of said teeth; and a soldered connection between each terminal extension and the conductor path which leads from the hole in the plate in which the terminal extension is received so that each terminal extension is electrically connected with one of the teeth.

2. The structure of claim 1 further characterized by the fact that said conductor paths consist of metal sprayed onto the plate.

3. The structure of claim 1 further characterized by the fact that said conductor paths are strips of thin sheet metal adhered to the plate.

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