## ELECTRIC SWITCH DEVICE

## Filed March 22, 1934





Tigs 8


# UNITED STATES PATENT OFFICE 

2,039,957<br>ELECTRIC SWITCH DEVICE

Arthur Hall, Indianapolis, Ind., assignor to Yaxley Manufacturing Company, Indianapolis, Ind., a corporation of Indiana

Application March 22, 1934, Serial No. 716,762

7 Claims. (Cl. 200-166)

This invention relates to electric switches and, more particularly, to terminal contact fingers used therein and has for a general object the provision of such contact fingers which are simple yet sturdy of construction, readily and economically manufactured and rapidly, easily and firmly mounted in operative position.

More specifically, an object of the invention is the provision of a contact terminal finger fash0 ioned in a particular configuration from a single blank of resilient metal shaped to provide a contact point, having an anchoring element integral therewith and a terminal post so that when snapped into a slot in a terminal finger support, . it is quickly and easily secured in operative position, the construction of the anchoring element being such that a simple deforming operation will secure it in position without necessitating the use of auxiliary securing means such as rivets or

Another object of the invention is the provision of a terminal finger support having slots of a configuration adapted to receive the aforementioned anchoring element, or cooperatively
25 to associate itself with said element, and perform auxiliary anchoring functions in addition to its other functions.

Other objects of the invention will in part be obvious and will in part appear hereinafter.
The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the invention will be indicated parts broken away of the device depicted in Fig. 1 showing the anchoring element of the terminal finger about to be received in a slot in the switch'base;
Fig. 3 is an enlarged sectional view taken on line 3-3 of Fig. 1 showing the terminal contact finger snapped into position;

Fig. 4 is a view similar to Fig. 3 of the terminal contact finger in operative position after

Fig. 5 is a perspective view of an alternative embodiment of a terminal contact finger;
Fig. 6 is a view of a switch base somewhat similar to Fig. 1 having mounted thereon a terminal contact finger of an alternative embodiment;

Fig. 7 is an enlarged perspective view with parts broken away of the device depicted in Fig. 6;

Fig. 8 is a sectional view taken on line 8-8 of 10 Fig. 6; and
Fig. 9 is a plan view of a stamped terminal contact finger before shaping.
Terminal contact fingers constructed in accordance with the principles of the present invention can be used with particular advantage in electric switch devices which are capable of efficient circuit selection and of simultaneous connection between adjacent circuits when the switches are operated in a manner to cut out one circuit and cut in another and more particularly in such electric switch devices which can be assembled from standard parts into any desired form to meet particular requirements. Such electric switch devices are more fully described in the copending application of Paul G. Andres et al., Serial No. 680,554, filed July 15, 1933, assigned to the same assignee. The use of the improved terminal contact finger of the present invention will be found to be advantageous wherever it is desirable rapidly and efficiently to anchor terminal contact fingers on terminal finger supports.

In accordance with the present invention, a terminal contact finger as illustrated, for example, in Fig. 9 is conveniently stamped out of a single blank of metal and is shaped as is shown in Figs. 2 and 5. The central portion of the terminal contact finger is shaped to provide a $U$-shaped anchoring element which when snapped into a slot in a terminal finger support, such as a switch base, may be deformed readily in a manner rigidly to hold the terminal contact finger in operative position.

Referring more particularly to the drawing, in the preferred embodiment illustrated in Fig. 2, a terminal contact finger indicated general'y at 10 is provided with a $U$-shaped anchoring element II which has the lower portion reduced at 12 to provide wing members 13, 13 which function as auxiliary anchoring means for the terminal contact finger and serve to deffne its position rigidly and permanently. Slots 14 in a terminal finger support 15, shown as preferably constituting a switch base, have two projections 16, 16 disposed
opposite each other to form an I-shaped slot having notches 11, 17. With this construction the reduced portion 12 of the anchoring element 11 when inserted into the slot 14 conveniently passes by the projections 16, 16 and permits the wing members 13, 13 to enter the notches 17, 11 with a close fit to position the terminal contact finger as illustrated in Fig. 3 with a substantial portion of the anchoring element 11 protruding 0 beyond the surface of the switch base. The protruding portion of the anchoring element is then flared in any suitable manner, for example, as shown at 18 in Fig. 4 to hold the contact finger flrmly and rigidly in operative position.

The terminal contact finger includes a contact point 19 and a terminal post or soldering lug 20 adapted to provide electrical connection with a circuit wire and it will be observed by reference to Fig. 1 that all these parts can conveniently be 0 anchored in one operation. At a point close to where the $U$-shaped member rests in its receiving slot the contact finger is provided with an opening 21 so that maximum resiliency is obtained and concentrated in a particular area of 5 the contact finger, i. e., the neighborhood of the opening.
In an alternative embodiment, illustrated in Fig. 5, a terminal contact finger indicated generally at $10^{\prime}$ is slotted near its central portion, 30 preferably at the time when the finger is stamped out of a metal strip. When shaped to form a depending anchoring element 22, the element comprises two spaced apart members 23. The members are then snapped into a rectangular slot 3524 in a terminal finger support 25 , shown as preferably constituting a switch base so as to protrude slightly beyond the surface of the switch base in a manner similar to that heretofore described with reference to the preferred form. 40 The protruding portions of the spaced apart members 23 are then flared or deformed by spreading them apart to cause them to clench over and bite into the material of the switch base, which for this purpose may conveniently be 45 made of a composition of the nature of bakelite, as shown at 23 in Flg. 8.
It will thus be seen that by means of the present invention there has been provided a device which will rapidly and effciently accomplish the 50 objects set forth and since certailn changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above 55 description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an electric switch, the combination comprising a terminal contact finger, a $U$-shaped anchoring element integral therewith and reduced at its bottom portion to provide wing members as auxiliary anchoring means, and a switch 65 base slotted to provide complementary wing notches and frictionally adapted to engage said wing members in a manner rigidly to hold said finger 1 - operative position.
2. In an electric switch, the combination comblank a terminal contact inger formed from a mid-portion, a terminal end portion, and a contact portion, said $U$-shaped mid-portion being reduced at its bottom portion to provide wing members as auxiliary anchoring means: and a
switch base having a slot provided with complementary wing notches receiving said wing members, said reduced portion extending beyond the bottom surface of said base member and being deformed so that a substantial portion of each side thereof is clenched over the bottom surface of said switch base with the central portion serving as a brace for said clenching portions in a manner rigidly to hold said finger in operative position.
3. In an electric switch, the combination comprising a terminal contact finger having a terminal end portion, a contact portion and a midportion provided with a $U$-shaped anchoring element, and a terminal finger support having a slot receiving said anchoring element, said anchoring element being slotted to from two spaced apart members which when spread apart after insertion of said anchoring element, in said slot hold the terminal contact finger in a rigid operative position while insuring resilience of said contact portion.
4. In an electric switch, the combination comprising a terminal contact finger formed from a blank of resilient metal having a $U$-shaped midportion, comprising two vertical parallel portions and a substantially horizontal portion, a terminal end portion and a contact portion, and a terminal finger support having a slot receiving said U-shaped mid-portion in a manner such that a substantial portion thereof is permitted to extend beyond the bottom surface of said support, said $U$-shaped mid-portion being deformed so that a substantial amount of each vertical parallel portion is clenched over the bottom surface of satd support, said horizontal portion serving as a brace for said clenched partions rigidy to hold said finger in operative position.
5. In an electrical device, the combination comprising an electrical contact finger formed from a strip of metal having a U-shaped mid-portion, and a base of sheet material having an I-shaped hole therein, said contact flnger being moynted on said base with the legs of said U-shaped portion received in the cross-slots of said hole.
6. In an electrical device, the combination comprising an electrical contact finger formed from a strip of metal having a $U$-shaped mid-portion, said strip having greater width than thickness at least in said-mid-portion, and a base of sheet insulating material having an I-shaped hole therein, said contact finger being mounted on said base with the legs of said $U$-shaped portion received in the cross-slots of arit thels.
7. In an electric switch, the combination comprising a terminal-contact member formed from a strip of sheet metal having a $U$-shaped anchoring portion comprising two vertical parallel portions and a substantially horizontal connecting portion, a terminal end portion and a wiping contact surface portion, and a switch base of sheet insulating material having a slot receiving said $U$-shaped anchoring portion in a manner such that sald substantially horizontal portion thereof is permitted to extend beyond the bottom surface of said insulating sheet base, said horizontal connecting portion being spread beyond the boundary of the slotin said switch base so as to provide a pair of oppositcly disposed wing portions clenched over the bottom surface of said disc whereby said terminal contact member is securely held in operative assembly with said switch base.
