Fig. 1

Fig. 2a

Fig. 2b

Inventors.
Herbert Krautwald, E.
Erwin Müller.
By J. J. S. J. J. S.
PLUG AND SOLDERING BASE UTILIZING KNIFE CONTACTS

Herbert Krautwald and Erwin Muller, Munich, Germany, assignors to Siemens Aktiengesellschaft, a corporation of Germany

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1 Claim

ABSTRACT OF THE DISCLOSURE

A plug or solder base utilizing a blade-like knife contact mounted in an elongated slot of a base plate of insulating material. The knife contact has a pair of spring shanks at one end, which is a terminal for soldering a circuit using a longitudinal slot extending from the one end and terminating in a round opening adjacent the other end, which is the prong or male contact adapted for reception in the female socket. Each of the shanks are provided with a pair of shoulders for engaging the edge of the slot of the base plate after the contact has been assembled therein. The longitudinal slot has a width which is bridged by solder during the attachment of the circuit wire to the terminal to prevent the shank from being moved inwardly after the circuit wire has been attached to the terminal and therefore prevent the removal of the knife contact from the elongated slot of the base plate.

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation of our copending application Ser. No. 672,408, filed Aug. 22, 1967, and now abandoned, which is, in turn, a continuation of Ser. No. 424,722, filed Jan. 11, 1965, and now abandoned.

The invention relates to a plug and soldering base, especially for relays. In known plug and soldering bases it is necessary for the support of the contact blades, to use several base parts joinable by means of screws or rivets. This supporting of the contact blades is, however, relatively expensive for a mechanized manufacturing process, and further, there has been no lack of attempts to simplify such devices.

Thus, plug and soldering bases have become known in which, for the reception of the contact blades, only a single base plate is necessary, in which, however, the attachment of the contact blades has to be carried out by an additional operation. As a rule, the contact blades are secured in the base by notching or twisting or, after the introduction of the contact blades, there is carried out a re-forming of the corresponding base openings, in order to assure a secure clamping of the contact blades. These types of support of the contact blades have, however, beside involving a relatively complicated manufacturing, the serious disadvantage that a changing of the contact blades is not possible, so that, above all, an equipping at will of the socket slots with connecting blades of different kinds is prevented.

The disadvantages described are eliminated according to the invention, in a plug and soldering base provided with knife contacts, through the feature that flat contact blades, insertable into the base plate, are provided with a longitudinal slot, thereby forming two spring shanks, each carrying a shoulder member, and can be snapped into place and retained therein by means of lugs.

The special advantage of this solution is to be seen in the fact that the contact blades can be formed as simple cut pieces and, moreover, a mechanized assembly at relatively low expense is possible. The fact that the contact blades, on introduction into the base slots, snap in place exclusively by spring force, offers the further advantage that a changing of the contact blades or an equipping of the individual base slots, repeatable at will, is thereby made possible.

A preferred embodiment of the invention provides that, for better resilience of the spring shanks, the lower end of the longitudinal slot therein is enlarged by a preferably round opening. Moreover, the base plate can be produced either as a molded part or as a cut part. To facilitate introduction of the contact blades it is expedient for the base plate to be provided with bevels and/or for the free ends of the spring shanks to be wedge-shaped with converging outer edges.

Further details of the invention appear from the following description, and the drawings, in which:

FIG. 1 illustrates a female socket of a relay in allocation to a corresponding holder; and

FIGS. 2a and 2b illustrate, taken at right angles to one another, sections through a socket plate with an inserted contact blade.

The knife contact base A in conjunction with the corresponding socket B is illustrated merely for explanation of the invention. It will be apparent, therefore, that the base plate 1 of the plug and/or soldering base and the relay, which is situated under the protective cap C, comprise a structural unit. In utilization as a plug base the blade contacts 2 are arranged for insertion into corresponding counter-contact receptacles in the socket B. Occasionally, however, it may be desirable to dispense with a plug connection in which case the knife contacts may be utilized as terminal members to which soldered connections can be made.

The sections illustrated in FIGS. 2a and 2b, through a part of the base plate 1, show how the contact blades 2 are inserted and supported in the base plate 1 which consists of insulating material. While only a single contact blade is illustrated, in a usual-type base, such as is shown in FIG. 1, there is attached in the same manner a large number of contact blades. The contact base 2 has a longitudinal slot 3 therein, whereby two spring shanks 5 are formed, each of which is provided on its outer edge with two lugs 6 and two shoulder members 7. In order to achieve an optimal spring effect of the spring shanks 5, the lower end of the longitudinal slot 3 is enlarged by a round recess 4.

To facilitate introduction of the contact blade 2 into the cooperable slot of the base plate, the upper free ends of the spring shanks 5 are provided with wedge-shaped ends 9 having converging outer edges. For the same purpose, bevels 8 may be provided on the lower part of the base plate, which bevelling considerably facilitates the insertion of the contact blade 2 into the cooperable slot of the base plate 1. The base plate 1, consisting of insulating material, can be produced either as a molded part or as a cut part.

In the sliding of the contact blade into the slot of the base plate in the direction indicated by the arrow, in a certain position will be reached at which the shoulder members 7 will be disposed at and bear on the underside of the base plate, with the lugs 6 disposed at the upper side thereof. In this position the shanks 5 will spring laterally outward over the upper edge into their normal position illustrated, so that the lugs 6 of the spring shanks 5 overlie the upper edge of the base plate, whereby the contact blade 2 cannot drop out of the base plate 1.

The snap-in action resulting after the introduction of the contact blade 2 presents the advantage that, for the supporting and retention of the contact blade, no ad-
olutional operation is necessary. Moreover, through the particular shape of the contact blade, there is simultaneously achieved a consolidation of the plug and/or soldering functions of the base. Thus, in use as a soldering base, the terminal wires, by the soldering thereof to the spring shanks, are connected therewith by the solder, whereby the contact blades are securely retained in the base plate. After removal of the connecting wires and/or of the solder there here too exists, however, the possibility, as in the use of the structure as a plug base, of changing the contact blades as often as desired and of selecting, at will, the individual base slots which are to receive a contact blade. For this purpose it is merely necessary to bring together the spring shanks, thereby releasing the snapped-in engagement of the contact blade, and permit withdrawal of the contact blade from the base plate.

Changes may be made within the scope and spirit of the appended claim which defines what is believed to be new and desired to have protected by Letters Patent.

We claim as our invention:

1. In a plug having knife contacts extending through elongated slots provided in a base plate of insulative material the improvement comprising:

   said knife contacts each being a flat blade having a pair of spring shanks at one end defined by a longitudinal slot extending from said one end of said plate and terminating in an enlarged opening adjacent to the other end of said blade, thereby increasing the resiliency of said spring shanks to enable the free ends of the shanks to be sprung together, each of said spring shanks having a pair of longitudinally spaced opposed shoulders extending outwardly therefrom,

   the shoulders on one shank being laterally aligned with the shoulders on the other shank and the shoulders of each pair being longitudinally spaced apart a distance substantially equal to the thickness of the base plate, said blade at the respective shoulders having an overall width greater than the corresponding dimensions of the slot in the base plate, thus requiring a springing of the free end of said shanks towards one another to permit insertion thereof into the slot of said base plate, the free ends of said shanks of said blade extending beyond said shoulders and having a length sufficient to form a terminal spaced from said base plate adapted to have a circuit wire soldered thereto, the portion of the blade extending between said shoulders and the other end defining a knife contact extending from the base plate and adapted for insertion into a socket connection, and

   a wire soldered in the end of said longitudinal slot opposite said knife contact, said solder forming a stiffening bridge between said spring shanks, thereby preventing springing of the free shank ends to rigidly interlock the blade contact in assembled relation with respect to the base plate, whereby said flat blade completes a circuit through the base plate of the plug between a wire attached to said terminal and a connection to said other end.

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MARVIN A. CHAMPION, Primary Examiner
P. A. CLIFFORD, Assistant Examiner

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