

[54] **SPRING CLIP WIRE TERMINATING
ARRANGEMENT**

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[51] **Int. Cl.**..... **H01r 9/08**

[58] **Field of Search**..... **339/14, 95, 97-99,
339/244, 247, 256**

[56] **References Cited**
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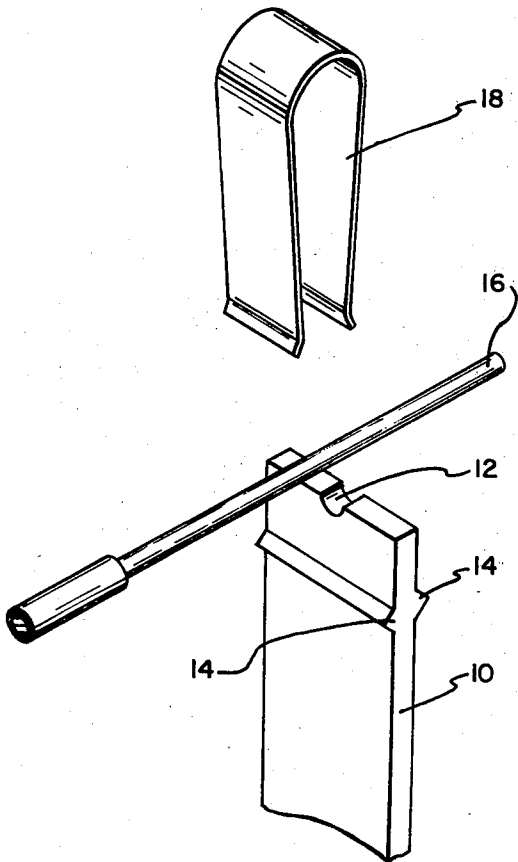
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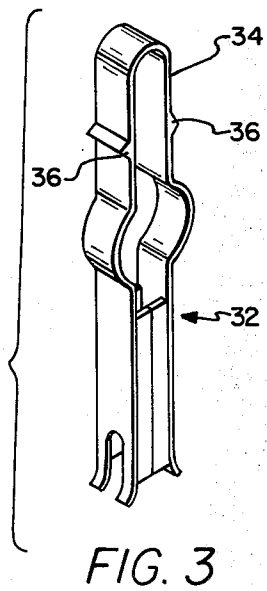
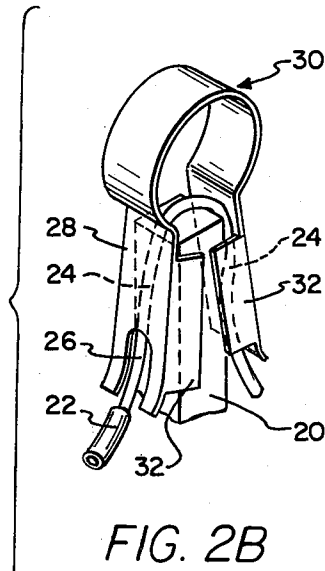
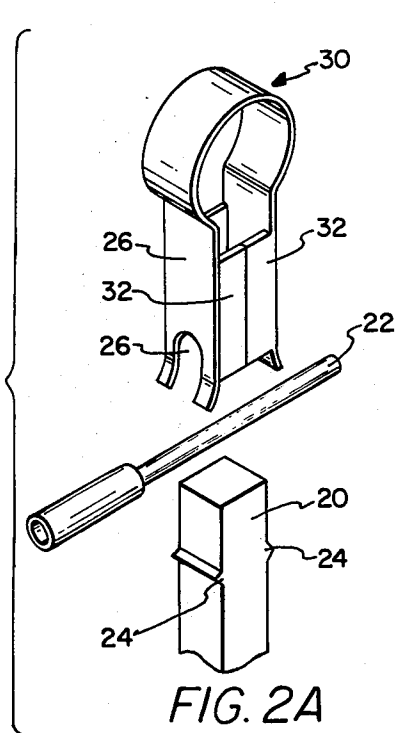
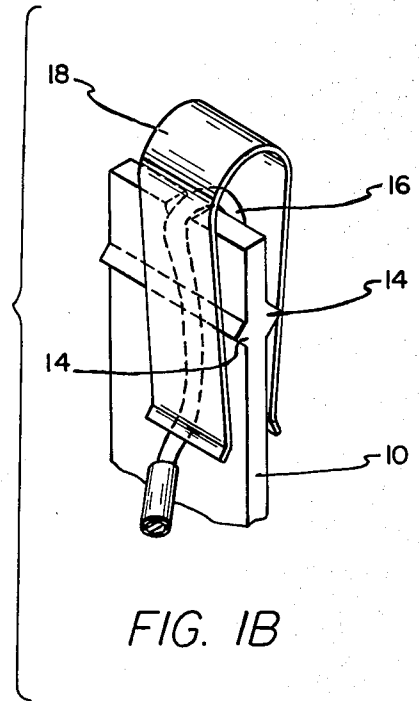
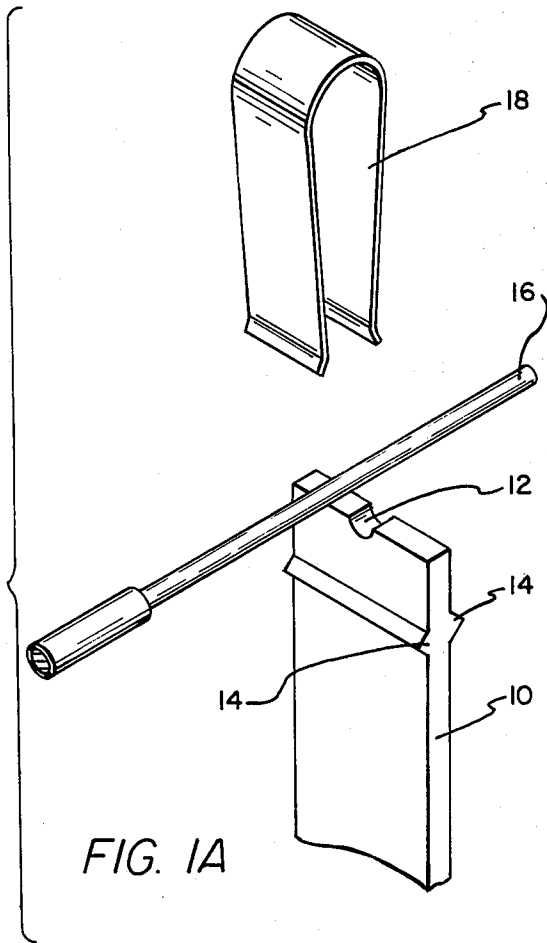
Primary Examiner—Joseph H. McGlynn

[57] **ABSTRACT**

An arrangement for terminating a wire to a terminal post wherein the wire is accurately located with respect to the terminal post by the configuration of the post and/or a spring clip which forces the wire against the terminal post without translation of the wire with respect to the post.

6 Claims, 5 Drawing Figures





SPRING CLIP WIRE TERMINATING ARRANGEMENT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to the field of solderless electrical connections and more particularly to a new and improved arrangement for terminating wires to a terminal post.

2. Description of the Prior Art

Prior to the present invention the solderless connection of a wire to a post type terminal has been accomplished in either of two ways. The so-called wirewrap approach involves wrapping the wire tightly about a sharp edged post as disclosed in U.S. Pat. No. 2,759,166 which issued to P. F. Mallina on Aug. 14, 1956. Connections so formed are of a basically permanent nature in that once the wire is wrapped, if it must be removed from the terminal post, it may not be reused. The other generally accepted solderless connection is described in U.S. Pat. No. 3,239,918 which issued to R. F. Calough on Mar. 15, 1966 and involves the use of a spring loaded clip over the terminal post and wire. This type of connection involves a wiping action of the wire against the terminal post due to the longitudinal translation of the wire which is generally considered undesirable.

Other solderless connection techniques involving the use of spring clip arrangements may be found in U.S. Pat. Nos. 3,122,604 and 3,528,050, however, both of these clips are intended for connecting a wire to a ground plane where accurate location of the wire with respect to a particular point on the plane is not of concern. Neither approach is considered adequate for accurately terminating a wire to a terminal posts such as are used in the backplane of modern electronic equipment.

OBJECTS AND SUMMARY OF THE INVENTION

From the foregoing it will be understood that among the various objectives of the present invention are the following:

the provision of a new and improved solderless electrical connection of a wire to a terminal post wherein the wire is accurately positioned with respect to the post, and

to provide a connection of the above-described character which does not produce longitudinal translation of the wire with respect to the post.

These and other objectives of the present invention are efficiently achieved by providing a wire clip and terminal post in a configuration adapted to accurately locate the wire to be terminated with the terminal post. A specially configured terminal post having a wire locating notch at the end thereof may be used with a simple spring clip. Alternatively the spring clip may be provided with means for locating the wire with respect to itself and means for locating itself with respect to a simple terminal post.

The foregoing as well as other objects, features and advantages of the present invention will become more apparent from the following detailed description taken in conjunction with the appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is a disassembled view of a spring clip and terminal post arrangement wherein the wire location means is provided on the terminal post;

FIG. 1B illustrates the arrangement of FIG. 1A in assembled form;

FIG. 2A is a disassembled view of a wire terminating arrangement wherein the wire to be terminated is located with respect to the spring clip and the spring clip is located with respect to the terminal post;

FIG. 2B illustrates the arrangement of FIG. 2A in assembled form; and

FIG. 3 illustrates an alternate spring clip configuration permitting termination of multiple wires to a single terminal post.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning now to FIG. 1A there is shown a terminal post 10 of a type which is sufficiently large to accommodate a wire locating notch 12 in the end thereof. It is also preferred that the post 10 be provided at opposed sides with transverse ridges 14 which provide contact zones for the wire 16 to be terminated. A clip 18 is formed from flat spring stock into a U-shaped configuration which is adapted to fit over the end of the terminal post 10, and is preferred to be slightly flared at its open end to facilitate its installation over the post 10.

To effect the wire termination the pre-stripped wire 16 is placed over the end of the terminal post 10 in register with the wire locating notch 12, and the spring clip 18 is placed on top of the wire 16. As soon as the spring clip 18 engages the wire 16 and terminal post 10 the wire is located with respect to the post by the notch 12 such that it cannot fall off the end thereof. As the spring clip 18 is pressed down onto post 10 the wire 16 is dressed to the sides of the post and is deformed around the end thus being indexed to the post. After complete installation of the spring clip 18, past the ridges 14 as illustrated in FIG. 1B the wire 16 is pressed with sufficient force against the post 10 to form a gas tight connection. Because the wire 16 is connected to the post 10 on both sides, the equivalent of a bifurcated contact is formed, however, it will be noted that the contact is non-sliding in that there is no longitudinal translation of the wire with respect to the post. The use of a pre-stripped wire 16 is illustrated but it will be understood that it may also be possible to form an electrical connection to unstripped wire if the spring force, contact zone shape and wire insulation properties are selected appropriately. Finally, it will be seen that the wire 16 may easily be removed by removing the spring clip 18 from the post 10 and the wire may be reused in a termination to another post.

In certain applications it may be necessary to use terminal posts of a size which is too small to permit the use of a wire locating notch in the end thereof. In such cases it is possible to provide a spring clip with a wire locating means and further with means for locating the spring clip with respect to the terminal post. Such an embodiment is shown in FIGS. 2A and 2B.

In FIG. 2A there is shown a relatively small terminal post 20 (i.e. having a transverse dimension on the order of that of the wire 22 to be terminated). Again it is preferred that the post 20 be provided at opposed surfaces with transverse ridges 24 to form a contact zone. Since

the wire 22 may not readily be located with respect to the end of the terminal post, the initial wire location is provided by vertical notches 26 in the opposed wire engaging surfaces 28 of a spring clip 30. The wire engaging surfaces 28 are each provided with inwardly extending flanges 32 along a portion of their length such that in horizontal cross-section the spring clip 30 would appear to have two opposed, square, C-shaped portions forming a boxlike post-locating structure of a size corresponding generally to the size and shape of the terminal post 20. Again the bottom edges of the spring clip 30 are preferred to be outwardly flared to facilitate initial installation.

To complete a wire termination with the arrangement of FIG. 2A (as shown completed in FIG. 2B) the spring clip 30 is placed over the prestripped wire 22 such that the wire passes through the locating notches 26. It is preferred that the wire locating notches 26 be sufficiently deep that when the wire is in place the post-locating flanges 32 of the spring clip 30 may engage the end of the terminal post 20. In this manner the wire 22 is located to the spring clip 30 and the spring clip is in turn located to the terminal post 20 such that the wire is, in effect, located to the post and may not slip off. The spring clip 30 is then pressed over the post 20 and the wire is dressed against the post contact zones in the manner described with reference to FIGS. 1A-B. Again the resulting connection is reliable, gas tight, easily removable and reuseable.

With reference to FIG. 3 there is shown a modified embodiment of the spring clip of FIGS. 2A-B. The spring clip 32 is provided with a vertical extension 34 over which a second substantially identical spring clip (not shown) or a spring clip such as shown in FIG. 2A may be placed in order to terminate a second wire to a single terminal post. The vertical extension 34, like the terminal post, is preferred to be provided with transverse ridges 36 to this form a contact zone for the second wire.

It will be apparent from the foregoing that the present invention provides a simple arrangement for the solderless non-sliding connection of wires to small terminal posts whereby the wire is efficiently and accurately located to the post as the connection is made. Thus the objectives set forth hereinabove are efficiently achieved.

It is to be understood that since various changes in the above-described construction will occur to those skilled in the art without departure from the principles of the present invention it is intended that all matter contained in the foregoing description or shown in the

appended drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A wire termination apparatus comprising:

a terminal post having an end portion about which said wire is terminated, a U-shaped spring clip formed of flat spring material having configuration complementary to that of and disposed over said terminal post, and operative to dress said wire against opposed sides of said terminal post and compress said wire against said post with a preselected force, and

wire locating means comprising a notch disposed in the opposed surfaces of said spring clip which compress said wire against said post, means for positively locating said spring clip with respect to the end of said terminal post to thereby positively locate said wire with respect to the end of said terminal post, and a vertical extension disposed on said spring clip, having a cross section configuration substantially identical to that of said terminal post, and having an end portion about which a second wire is terminated, a second substantially identical spring clip disposed over said vertical extension, operative to dress said second wire against opposed sides of said vertical extension, and compress said second wire against said vertical extension with a preselected force.

2. A wire terminating apparatus as claimed in claim 1 wherein:

the opposed sides of said vertical extension include transverse ridges which form a contact zone for the termination of the second wire.

3. Apparatus as recited in claim 1 wherein

said spring clip locating means comprises inwardly extending flanges formed at the edges of the wire compressing surfaces of said spring clip and engaging said terminal post.

4. Apparatus as recited in claim 1 wherein said wire locating notches are of a depth with respect to said post engaging flanges which exceeds the dimension of said wire.

5. Apparatus as recited in claim 1 wherein

said terminal post is provided on the opposed surfaces against which said wire is compressed with transverse ridges forming a contact zone.

6. Apparatus as recited in claim 5 wherein

said ridges are of such a shape as to penetrate the insulation of said wire when said wire is compressed against said ridges by said spring clip.

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