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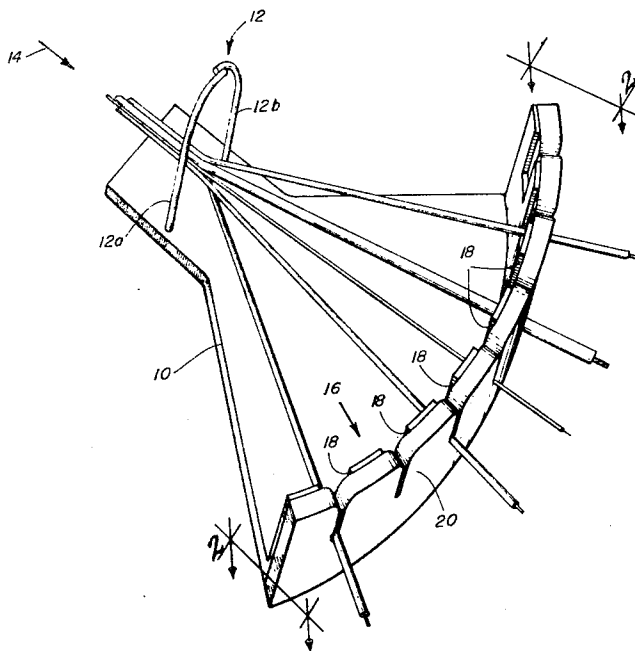
[54] **WIRE-HOLDING COMB**
3 Claims, 2 Drawing Figs.

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24/130, 28/54, 24/262

[51] Int. Cl..... **B25b 5/14**

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255 (Cursory), 257 (Cursory), 255 (RS), 262,
264; 132/11; 28/54; 242/157; 57/106;
19/(Inquired)

ABSTRACT: A device is disclosed for holding wires in place as they are "laid-up" in a machine for assembling wire harnesses, and each device includes a rigid portion with slots for loosely receiving the wires, and a resilient backing portion also provided with slots. The backing portion has somewhat narrower slots than those in the rigid portion so that after insertion of the wires, tension tends to draw the backing material into the rigid portion to positively hold the wires in the comb.



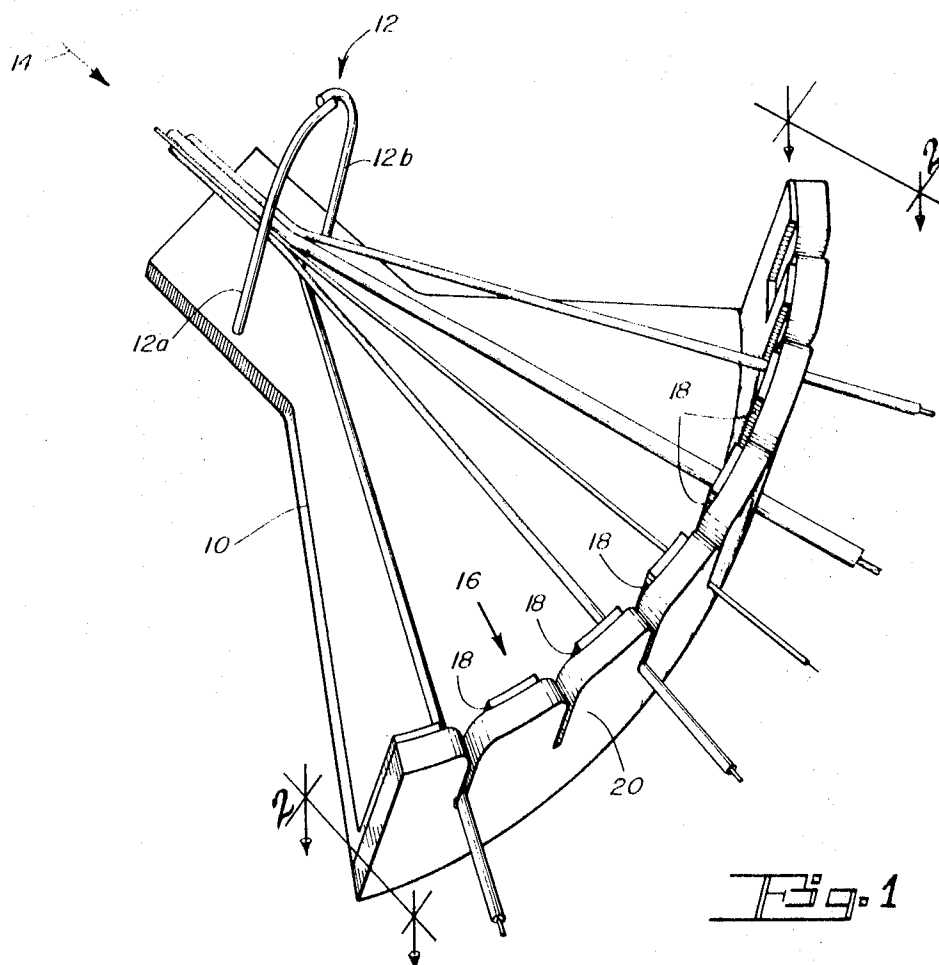


Fig. 1

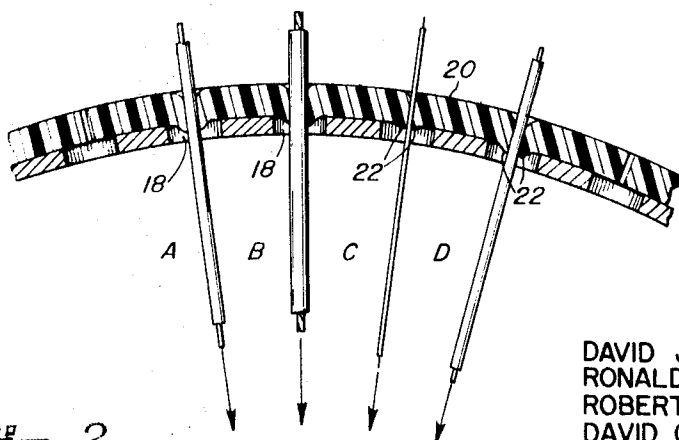


Fig. 2

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WIRE-HOLDING COMB

BACKGROUND OF INVENTION

A conventional wire harness, usually has a plurality of wires, many of which may be of different lengths and/or of different diameters resulting in a rather complex configuration. In order to facilitate "laying-up" these wires each wire may have coded indicia printed thereon so that each wire can be individually laid up on a jig board of predetermined configuration, the procedure being repeated until all of the wires have been properly placed on the board. After the applicable continuity checks have been made, and the wire end portions suitably prepared, electrical connectors can then be assembled at the appropriate locations and the harness removed and another assembly initiated on the jig board. In order to aid in identifying the wires for such a continuity check, or for ease in assembling these wires with a connector, the jig board may be provided with a comblike wire-holding device. The present invention relates to an improved comb construction for use on such a jig board, and deals more particularly with a device which holds a plurality of such wires firmly and positively in place, especially when the wires are laid up under tension as may be the case in automated machine for eliminating the tedious task of manually placing each wire on the board.

The primary object of the present invention then, is to provide an improved wire-holding device which will securely hold the wires adjacent their end portions so that these wires can be laid up under tension, and yet will not tend to slip out of the comb slots because of the unique comb construction adopted herein.

SUMMARY OF THE INVENTION

A device for use in conjunction with a jig board of the type used in making up wire harnesses, and comprising a base adapted for attachment to the jig board, a gate through which the wires are adapted to pass as for example in an automated machine for laying up wire harnesses, and a comb portion into which the wires are inserted by the machine, preferably under tension. The comb portion has a rigid portion and a portion of resilient backing material carried thereby both of which have aligned slots defined therein. The slots in the backing material are somewhat narrower than those in the rigid portion so that tension in the wires after insertion tends to draw the backing material into the slots of the comb and thereby hold the wires in place by friction.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a preferred form of wire-holding device constructed in accordance with the present invention, showing several wires after they have been inserted in the comb portion thereof.

FIG. 2 is a horizontal sectional view taken through the comb portion of the wire holding device shown in FIG. 1.

DETAILED DESCRIPTION

Turning now to the drawing in greater detail, FIG. 1 shows a wire-holding device constructed in accordance with the present invention and comprising a generally flat base 10 which may be provided with pegs or the like on its bottom surface (not shown) to permit the device to be placed at a particular location on a jig board of the type commonly used in preparing or "laying-up" wire harnesses. While the device shown may be adapted for use in manually preparing wire harnesses, it is especially useful for operation in conjunction with an automated machine of the type wherein the wires are individually laid through guide means such as indicated generally at 12, and thence are deflected away from the infeed direction indicated generally by the arrow 14 so as to be inserted in a predetermined slot in the comb portion of the device, as indicated generally at 16.

Turning now to a more complete description of the comb portion 16 of the device for holding these wires, it is a feature

of the present invention that the base portion 10 is fabricated from a relatively stiff or rigid material such as a rigid plastic or metal material. The base 10 has an upstanding arcuate portion which forms a rigid comb on the base and defines a plurality of upwardly open slots 18, 18 wide enough to loosely receive the various wires A, B, C, and D as best shown in FIG. 2 even in the case where such wires may vary somewhat in diameter. This rigid comb extending upwardly from the base 10 is arcuately shaped so that the various slots 18, 18 are located equidistantly from the guide means 12 through which the various wires are layed prior to being inserted in the various slots.

It should be noted that although the comb shown and described herein is of arcuate shape, other shapes can be used to fill particular requirements. That is, a linear might be more advantageous where the wires are to be attached to a linear terminal strip or the like.

In further accordance with the present invention the comb-defining portion 16 of the device further includes a strip or layer of resilient backing material 20, which may be secured adjacent to the convex outer surface of the rigid slot-defining portion of the comb by any suitable means, such as a cement or the like. The resilient backing material 20 preferably comprises an elastomeric compound or the like. The resilient strip 20 also defines a plurality of upwardly open slots each of which is aligned with a slot in the rigid comb and each of which has a width which is significantly less than that of its associated comb slot 18 to permit the slot defining areas 22, 22 of the resilient strip to be pulled into the somewhat wider comb slots 18, 18 by the tension in the wires A, B, C and D after they have been inserted in the appropriate slots by the apparatus for assembling the harness. The actual configuration adopted by these resilient slot-defining areas 22, 22 by the tension in the various wires A, B, C and D is shown in FIG. 2, and it will be apparent from this view that these portions 22, 22 of the strip are in fact drawn into the larger slots 18, 18 in the rigid comb by the tension in the wires. This holding force increases in direct proportion to the tension force used in laying up the harness, and it is an important feature of the present invention that the greater the pull on the wire, the greater the force exerted on the wire by the comb to hold it.

The advantages inherent in such a comb for retaining a plurality of wires in a readily identifiable configuration will be readily apparent to those skilled in the art. Not only is a comb of the type described herein especially useful for assembling harnesses manually on a conventional jig board, but such a comb is especially useful in an automated assembly wherein the wires are automatically placed in the positions shown in FIG. 1 by preprogrammed device. It will also be apparent that an oppositely arranged comb might be adapted for use at the opposite ends of these wires, or that these wires might be directly assembled with a suitable connector and so held in a jig board for manual assembly of the harness.

While the guide means 12 used in orienting the wires prior to insertion in the comb may take any convenient shape, the shape adopted in FIG. 1 has been found especially useful in loosely retaining the bundle of wire for convenient assembly in the resulting harness. Other configurations for the guide means might be readily adopted for use on a comb of the type described herein. For example, possible configurations for such guide means might be the use of two or four upright posts without the inturned upper end portions shown. These inturned upper end portions do, however, represent the preferred form for the present embodiment. As shown in FIG. 1 two such posts are provided, as indicated generally at 12a and 12b with the upper ends of each of these posts being inturned toward one another, and overlapping slightly so as to securely retain a group or bundle of these wires in position for convenient assembly with some sort of permanent collar or the like (not shown).

With the various wires A, B, C and D arranged as shown in FIG. 1 it will be apparent that their end portions are so located as to be quite conveniently identified for continuity checks, or for end stripping, or for assembly with an electric connector.

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We claim:

1. In an apparatus for making up wire harnesses wherein the wires are to be layed up under tension on a jig board or the like, the improvement comprising a device for holding several of these wires in separated fashion for identification or the like, said device including a base adapted for attachment to the jig board, an upstanding rigid comb on the base and defining a plurality of upwardly open slots wide enough to loosely receive these wires, a resilient strip coextensively disposed adjacent said rigid comb and also defining a plurality of upwardly open slots, said slots in said resilient strip being aligned with those in said and each such strip slot having a width which is less than that of its associated comb slot to permit slot-defining areas of said resilient strip to be pulled into said

wider comb slots by the tension of a wire inserted therein.

2. The combination defined in claim 1 further characterized in that said device further includes guide means spaced from said comb for receiving and confining said wires in a bundle prior to the insertion thereof in said slots, and said comb being arcuate in shape so that said slots are equidistantly spaced from said guide means.

3. The combination defined in claim 2 further characterized in that said strip of resilient material is located on the convex outer surface of said comb whereby said wires tend to draw said slot-defining areas of said resilient strip into said comb slots when tension is applied as aforesaid.

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