

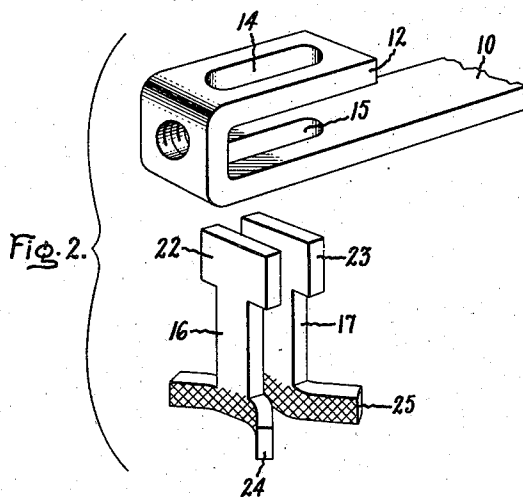
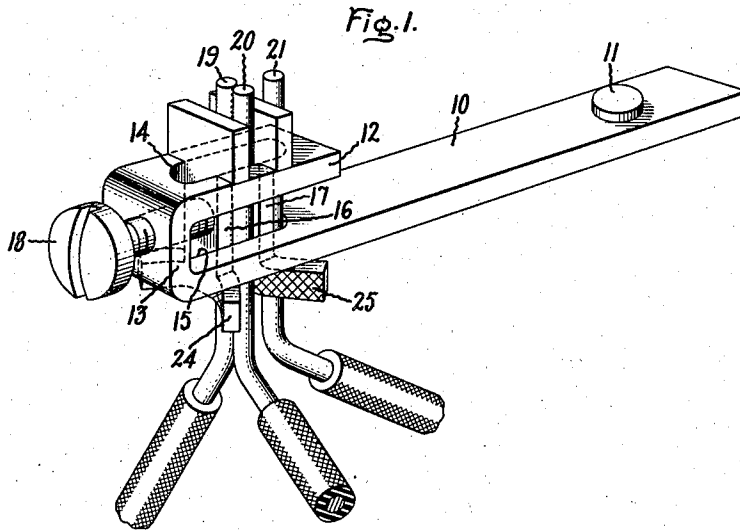
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TERMINAL CONNECTOR

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TERMINAL CONNECTOR

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2 Claims. (Cl. 173—324)

My invention relates to terminal connectors, more particularly to terminal connectors of the detachable type such as used to join wires or cables to the terminals of an electric switch or contactor, and has for its object a simple and reliable connector for connecting a plurality of wires or cables to a terminal member.

In carrying out my invention in one form, I provide a terminal member in the form of a strap having its outer end bent over to form a U-shaped portion, the sides of the U being provided with parallel elongated slots. In these slots I provide clamping members which are slidably mounted in the slots, together with a screw in the base of the U-shaped portion by means of which the clamping members can be clamped on wires inserted between them and also between the clamping members and the end walls of the slots. At adjacent ends of the clamping members I provide elongated shoulders which form projections diverging away from each other by means of which the clamping members can be separated by the end of the wire to be inserted between them.

For a more complete understanding of my invention, reference should be had to the accompanying drawing, Fig. 1 of which is a view in perspective of a terminal connector embodying my invention showing three wires secured to it; while Fig. 2 is an exploded view in perspective of the device shown in Fig. 1.

Referring to the drawing, in one form of my invention I provide an electrically conducting terminal member 10 in the form of a strap and having a stationary switch contact portion 11 secured to it at one end. It will be understood that the terminal member 10 will be mounted on a suitable electrically insulating support, as by means of screws (not shown), in such position that the contact 11 is engaged and disengaged by a movable contact. For example, the terminal member suitably shaped may be used in the electromagnetic switch or contactor described and claimed in Patent No. 2,064,632, issued on December 15, 1936, to Richard H. Schmitt. In accordance with the Schmitt patent, the terminal members would be arranged in pairs with the two contacts 11 suitably spaced apart for cooperation with a movable bridging contact member.

On the end of the terminal member 10 I provide a quickly detachable connector by bending the end of the strap over to form a U-shaped portion comprising the bent-over portion 12, a cross connecting base portion 13, and the end

portion of the strap forming with the bent-over portion 12 the two sides of the U-shaped portion. The two sides or arms of the U-shaped portion are provided, respectively, with elongated slots 14 and 15 which, as shown, extend lengthwise of the strap and are in parallel relation with each other.

Slidably mounted in these slots or apertures 14 and 15 and extending through them are clamping members 16 and 17 in the form of flat bars extending crosswise of the slots, i. e., with the planes of the bars at right angles with the longitudinal dimensions of the slots. These bars have widths somewhat less than the widths of the slots to provide for insertion of the bars in the slots in parallel relation with the slots, after which they are turned to their transverse positions shown, and also to provide for free slidable movement of the bars in the slots. Thus by means of a clamping screw 18 extending through the base 13 of the U-shaped portion, the two bars may be clamped together against the ends of two electric conductors or wires 19 and 20 inserted between the bars and against a third electric conductor 21 inserted between the bar 17 and the ends of the slots. Thus the conductors are clamped securely to the terminal member 10 in good electrically conducting relation therewith.

On the upper ends of the bars, as seen in the drawing, are transverse portions 22 and 23 forming shoulders on each of the sides of the bars which engage the outside walls of the slot 14 thereby to secure the bars against sliding movement downward, as seen in the drawing, out of the slots. Also, on the lower ends of the bars are transverse portions 24 and 25, also forming shoulders on the lower ends of the bars for securing the bars against slidable movement upward through the slots. These transverse portions, however, are elongated, as shown in the drawing, on each side of the bars, and the portions of the pair on each side adjacent each other are bent away from each other in diverging relation with each other. These pairs of diverging projections 24 and 25 on each side of the bars at their lower ends provide for convenience in the insertion of the ends of the electric conductors 19 and 20 between them. Thus the bars 16 and 17 will often be in closely spaced relation or in engagement with each other when the end of the conductor is to be inserted. In that case, the end of the conductor is inserted first between the diverging ends 24 and 25 and moved laterally between these diverging ends

thereby to separate the bars after which, when the end of the conductor reaches a position between the bars and in alignment with the two slots, it is moved longitudinally between the bars and through the two slots to the position shown in Fig. 1. Also the portions 24 and 25 are knurled or roughened on each side, as shown in the drawing, to provide for more effective clamping of the wires.

It will be understood that the end of the conductor 21 can readily be inserted by using it first to push, if necessary, the bar 17 toward the left hand, as seen in the drawing, after which the conductor 21 can be inserted longitudinally through the two slots. The end walls of the slots are curved, i. e., convex, as shown in the drawing, whereby after the conductor 21 is inserted it is positioned when pressure is applied by the clamping screw 18 in the bottoms of the curved end walls and therefore centrally with respect to the slots.

Although provision can be made for the securing of a desired number of conductors or wires by means of the connector, I have illustrated the connector as securing three wires, the slots 14 and 15 being wide enough to permit the positioning of the wires 19 and 20 in substantial side-by-side relation crosswise of the slot. To assure effective clamping of the two wires, the widths of the slots should be somewhat less than the sum of the diameters of the two wires so that when the clamping screw 18 is turned down against the bars, the two wires 19 and 20 are forced tightly together and wedged in substantial side-by-side relation in the slots. This narrow slot thus assures the application of pressure to each wire and the clamping of each wire against a roughened inner surface of the transverse portion 24 or 25. Also, the positioning by means of the curved or concave end walls of the third wire 21 midway of the slots effects the positioning of this wire with its center line opposite the line of engagement between the two wires 19 and 20. In other words, the longitudinal center line of the conductor 21, after it is positioned in the slots, lies in a plane containing the line of contact between the two conductors 19 and 20 and passing through the longitudinal centers of the slots.

While I have shown the longer transverse portions 24 and 25 on the lower ends of the bars, if desired the connector as a whole may be inverted to bring the longer portions at the upper ends of the bars, or the bars may be inserted in the slots in inverted relation as compared with the drawing. In such case the portions 24 and 25, being uppermost, effectively prevent the bars from falling through the slots even though the bars may be turned in parallel relation with the

slots, the portions 24 and 25 being longer than the slots.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made, and I therefore contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent in the United States is:

1. A terminal connector comprising a terminal member provided with an integral U-shaped portion at one end, each side of said portion having an elongated slot and said slots being substantially parallel with each other, two clamping members extending through said slots, each of said clamping members having shoulders at each end for securing it on said U-shaped portion and said shoulders on at least two adjacent ends of said clamping members being elongated and shaped to form projections diverging away from each other so that an electric conductor can be inserted first between said diverging shoulders thereby to separate said members for insertion of the conductor between them and through said slots, and a clamping screw extending through and threaded in said base of said U-shaped portion for clamping said members together thereby to secure a conductor between them.

2. A terminal connector comprising an electrically conducting strap provided with an integral U-shaped portion at one end, each side of said portion being provided with an elongated slot and said slots being parallel with each other, two clamping members extending loosely through said slots, each of said clamping members having shoulders at each end for securing it on said U-shaped portion and said shoulders on at least two adjacent ends of said clamping members being elongated and shaped to form projections diverging away from each other so that an electric conductor can be inserted first between said diverging shoulders thereby to separate said members for insertion of a conductor between them, and a clamping screw extending through and threaded in the base of said U-shaped portion for clamping said members together thereby to secure between them two conductors in substantial side-by-side relation, the end walls of said grooves opposite said base being curved to provide for the positioning midway between said two conductors of a third conductor inserted between said end walls and the adjacent clamping member so that said screw secures all three of said conductors to said strap in electrically conducting relation with each other.

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