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(54) **Screwless clamp for connection of conductors.**

(57) A clamp (1) for connection of conductors (6), wherein the conductors are secured by a spring or springs (3). The insertion hole (2) for the conductor (6) is through-going, and the clamp (1) has an opening on the side opposite the insertion hole and of a size corresponding thereto.

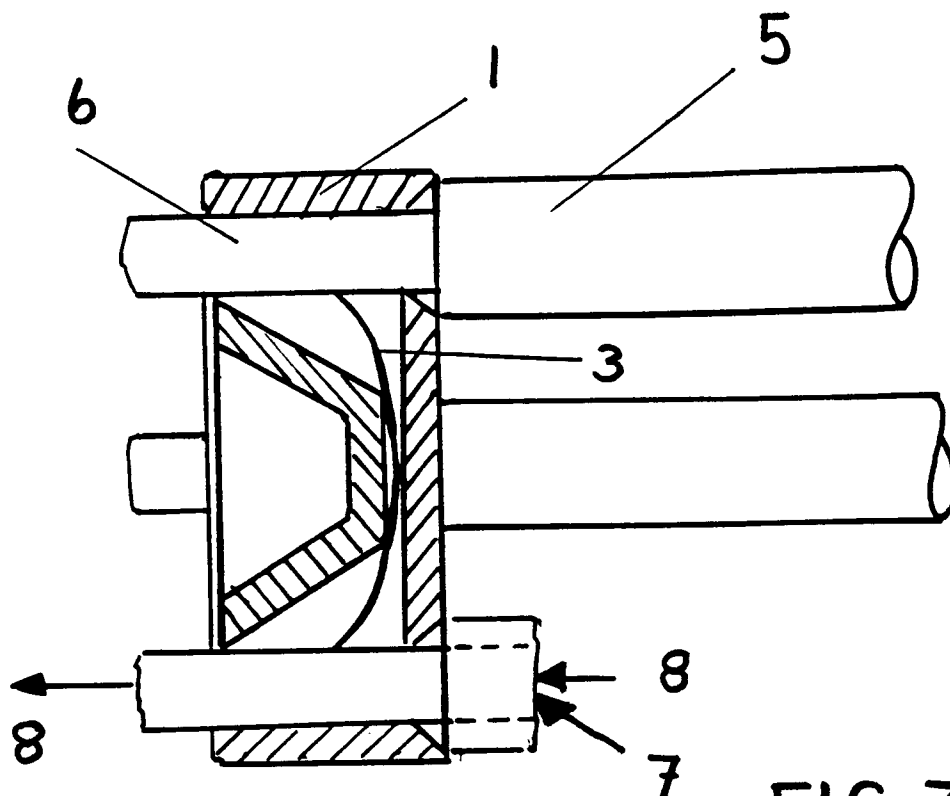


FIG. 3

The present invention relates to a screwless clamp for connection of conductors of the type where the conductor is secured by a spring, or by several springs.

Connection clamps of this type are previously known. An example of such a clamp is shown in US patent no. 3 569 911, where the wire may be disconnected from the clamp by the insertion of a tool into a slot suited thereto, which tool presses the spring away from the conductor, and the conductor may thus be drawn out.

A disadvantage with such previously known clamps is that for releasing the clamp, one is dependent on a special tool to effect the removal.

The task of the present invention is to provide a clamp whereby a plurality of conductors may be rapidly coupled together and, without extra tools, the conductors may be disconnected and new conductors inserted.

This is accomplished, according to claim 1, by means of a clamp device of the type introduced above, where the characterizing feature is that the insertion holes for the conductors are through-going holes, so that the clamp is provided with openings on the side opposite the side for the insertion holes. This means that for removal of a conductor, it is only necessary to clip off the conductor, if need be pulling off the insulation on the conductor stub remaining in the clamp, whereupon the conductor is pushed through the hole with the new conductor that is to be inserted. Thus, with the aid of the present invention, it is possible to splice or join together a plurality of conductors rapidly, and also to make replacements quickly without any extra equipment other than cutting pliers.

Because it may be manufactured in a small and compact size, the clamp is particularly well suited for connections in boxes where previously there have been used so-called screw clamps (twist-clamps) or connectors, which are somewhat complicated and time-consuming to use and, in addition, take up considerable space.

Additional advantageous features of the invention will be apparent from the remaining dependent claims.

In the following, the invention will be described in more detail with the aid of an embodiment example and with reference to the drawings, where:

Fig. 1 shows an example of a clamp embodiment viewed from above.

Fig. 2 is an example of the embodiment in Fig. 1, view in section along line A-A on Fig. 1.

Fig. 3 shows the clamp depicted in Fig. 2 with conductors inserted, and with one conductor indicated as being cut off.

Fig. 4 shows the clamp with an insulating casing mounted thereon.

On Fig. 1 is shown a clamp 1 for connection of four conductors. Such a clamp may naturally be formed in other ways with more holes or fewer holes, and the spring 3 shown on Fig. 1 may naturally also have other forms or consist of a plurality of single springs.

Fig. 2 shows the clamp depicted in Fig. 1, in section along the line A-A. The clamp illustrated here is provided with a spring 3 that rests against a support surface 4. On insertion of a conductor 6 into hole 2, cf. Fig. 3, spring 3 will bend and press conductor 6 against the wall of clamp 1, thereby giving contact. This designing of the spring and clamp may be executed in other ways and by means known per se, and is not a part of the present invention. The special feature of the present invention is that conductor 6 is inserted into hole 2 and that hole 2 has a corresponding opening on the other side of the clamp such that conductor 6 may be passed through clamp 1. The insulation 5 for conductor 6 will come into abutment with the surface of the clamp, but it will also be possible to make a recess here around the hole so that the insulation passes into the insulated upper part of clamp 1.

If one of the inserted conductors 6 is to be replaced, the conductor is cut, as indicated on Fig. 3 by reference numeral 7. The insulation for the cut conductor may be pulled off with pliers, and on insertion of a new conductor the cut-off conductor is pushed out of the clamp, as indicated by the arrows 8. The conductor may also be pulled out from the back side with the aid of pliers, and the part of the conductor projecting out at the rear side of the clamp.

To comply with the regulations for insulating the connection of the conductor, the clamp may be provided with an insulating casing 9, as shown on Fig. 4, where the casing may be slid on and off the clamp, and where the casing is provided internally with recesses for the conductors projecting out of the clamp. According to regulations, the casing must extend past the clamp itself and a short distance up along the conductor's insulation.

Claims

1. A screwless clamp for connection of conductors (6), where the conductors (6) are secured by a spring or springs (3) which press the conductors against the wall of the clamp, **characterized in** that the insertion holes (2) for the conductors (6) are through-going, thus providing the clamp (1) with openings on the side opposite the side for the insertion holes (2).

2. The clamp according to claim 1, **characterized in** that the insertion holes (2) are provided with recesses at the point of insertion to receive the insulation (5) for the conductor (6).
- 5 3. The clamp according to claims 1-2, **characterized in** that the outlet for the insertion holes (2) for the clamp has a diameter greater than the diameter of the conductors (6).
4. The clamp according to claims 1-3, **characterized in** that the dimensions of the inlet for the holes (2) are such that the insulation (5) for the conductors (6) is prevented from passing into the clamp (1).
- 10 5. The clamp according to claims 1-4, **characterized in** that the clamp (1) is provided with an attachable and removable casing (9) which covers the outlet for the insertion holes from the clamp (1), and that the casing (9) extends along the sides of the clamp (1) and projects over the surface (11) with the insertion holes (2).

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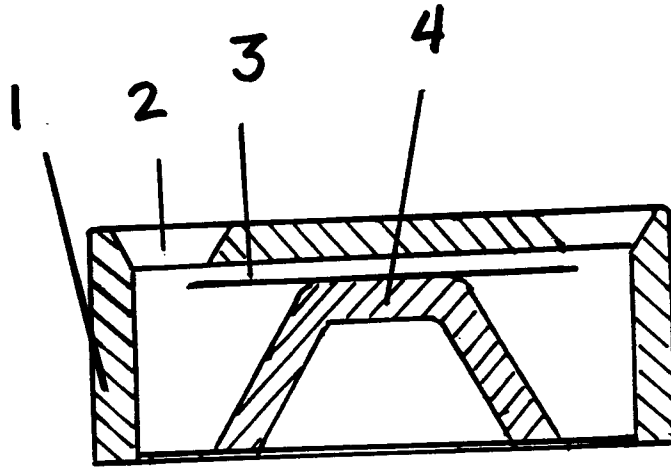


FIG. 2

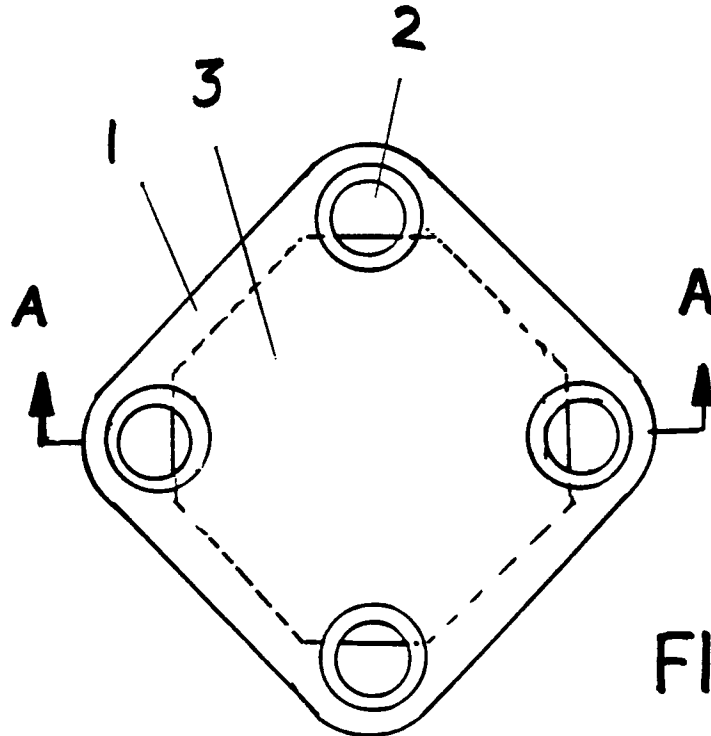
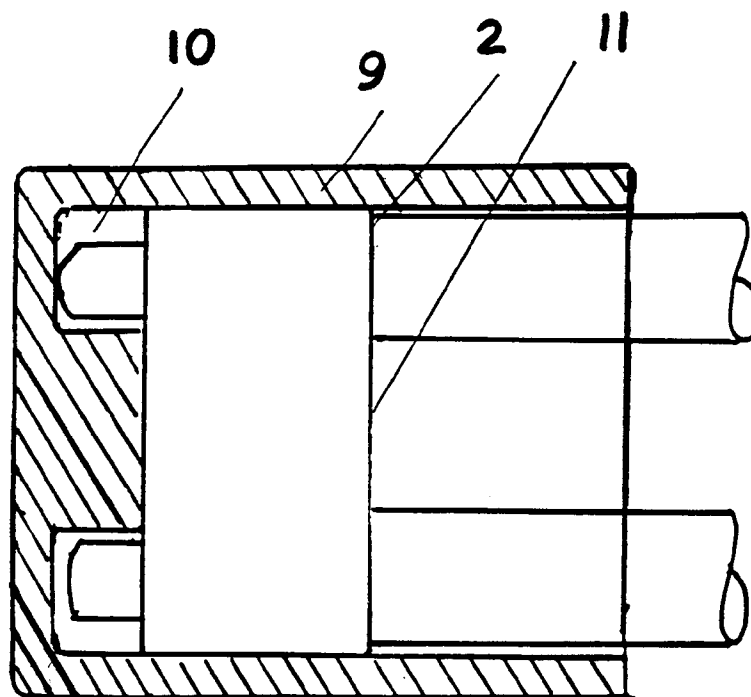
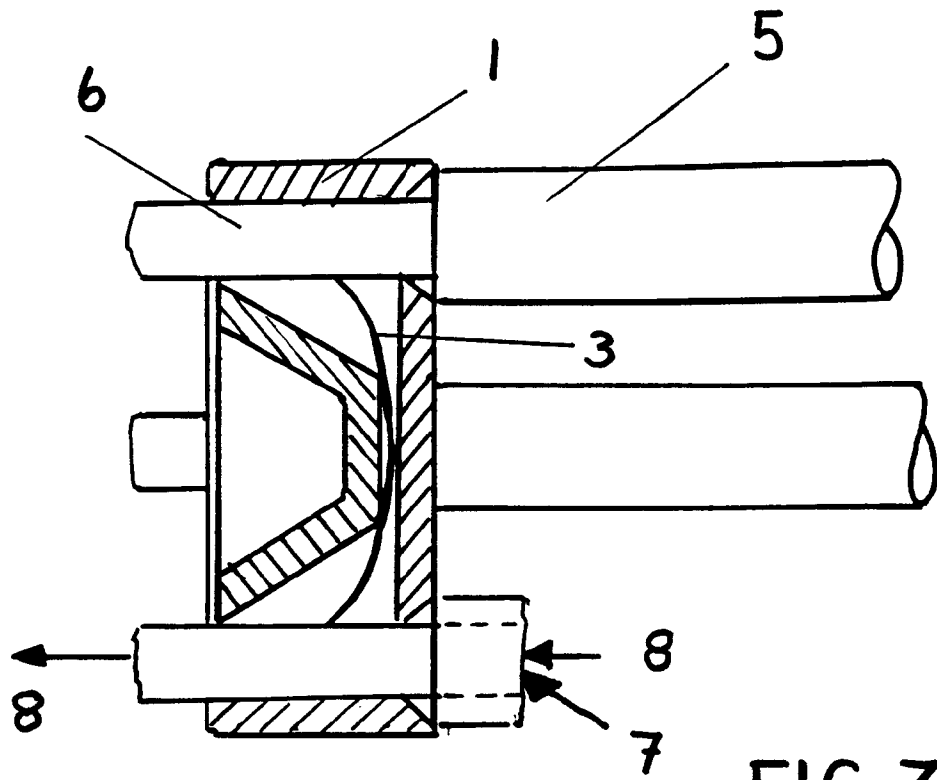


FIG. 1





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 93 85 0031

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	EP-A-0 458 410 (PHILIPS) * column 4, line 11 - column 4, line 43; figures 4A-4C * ---	1-4	H01R4/48
A	FR-A-2 216 690 (BRUN) * page 1, line 1 - page 1, line 37; figures 3-6 * * page 4, line 33 - page 5, line 26 * ---	1-4	
A	DE-U-8 608 463 (AMP DEUTSCHLAND) * claims 1-5; figures 1-3 * ---	1-5	
A,D	US-A-3 569 911 (BOGDANOWICZ) * the whole document * -----	1-3	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			H01R H02G
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 03 JUNE 1993	Examiner HAHN G.
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