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"A TWIN-CONTACT TERMINAL ELEMENT"

The invention relates to a terminal strip incorporating a plurality of twin-contact terminal elements.

Solderless, screwless and stripless clamping connectors with twin-contact members for the connection of two adjacent telecommunication cable conductors or jumper wires are known in various forms.

German Patent Specification 2 142 850 shows an electrical clamping device for connecting one or more insulated wires to a terminal element with at least two slots, and German Patent Specification 1 765 584 shows a clamping connection between one or two insulated wires and a terminal element with two slots, each consisting of two contact arms resilient relative to one another and suited to remove the wire insulation.

These clamping connectors have the drawback that when it is required to mount them in terminal strips the resulting assembly is expensive to manufacture and a large space is necessary in the case where the terminal elements are mounted in a side-by-side arrangement.

Published German Patent Application 2 338 056, on the other hand, shows a V-shaped terminal having two slots, one slot thereof serving to retain and the other one serving to contact the conductor. Both slots are constructed differently.

This terminal element also has the drawback that a good deal of space is required when the elements are mounted in terminal strips. Further, the contact arms are arranged rigidly, and one terminal accommodates only a single wire.

The object of the present invention is to provide a terminal strip in a simple and convenient form.

According to the invention a terminal strip for connecting together pairs of insulated conductors comprises a base part and a cover part which are adapted to be secured together, a plurality of terminal elements located between said parts, each terminal element comprising an electrically conductive strip of resilient material which is folded along its length to V formation so as to define two leaves integrally connected along the fold line, each leaf of each terminal element having a slot formed therein which extends partly along the length of the leaf, each slot having a flared opening to facilitate the insertion of a conductor therein, one or both edges of each slot being adapted to cut the insulation of a conductor inserted into the slot and to make contact with the conducting core of the conductor, a plurality of openings in said cover part in registry with the slots respectively whereby conductors can be passed through the openings into said slots, each terminal element being capable of effecting an electrical connection between a pair of conductors, said terminal elements being disposed in a row with adjacent leaves of an adjacent pair of elements being disposed in spaced parallel relationship.

In the accompanying drawings:-

Figure 1 is a plan view of a terminal strip including a plurality of twin-contact terminal elements, in accordance with the invention,

Figure 1A is a section through a part of the terminal strip shown in Figure 1, and

Figures 2 - 6 are perspective views of different examples of terminal elements.

With reference to the drawings the terminal elements 2 as shown in Figures 1-6 are formed from electrically conductive resilient strip material which is bent or partly folded along its length to "V" section. Each element defines two arms or leaves 2a, 2b. Each of the arms 2a, 2b is provided with a shaped slot which extends from a short edge to receive in use an electrical conductor having an insulating sheath. The arm 2a is divided by the slot into an outer portion 2a' and an inner portion 2a" whilst the arm 2b is divided into an outer portion 2b' and an inner portion 2b". The inner portions of the two arms are connected together and the slots have flared openings so that the conductors can be easily engaged therein, and the side edges which define the slots are constructed to cut through the conductive sheath to effect electrical connection between the elements and the conductors.

The terminal elements are arranged to be mounted in a terminal strip 1 which includes a base part and a cover or closure part the two parts being secured together by interengageable portions once the appropriate number of terminal elements have been located in position in the base part.

The terminal elements shown in all the Figures of the drawings with the exception of Figure 2 have extensions at their ends remote from the slot openings. The extensions 3a and 3 of the elements shown in Figures 3 and 4 respectively are of substantial length and are bent in such a manner that when the elements are assembled in the terminal strips 1 contact portions 5 on the extensions co-operate with each other to form the equivalent of a normally closed switch. A suitable non-conductive plug (not shown), can be inserted through an aperture 4 in the cover to separate the

contact portions and hence break the electrical connections. The extensions are shown with the contact portions 5 in engagement in Figures 1 and 1a.

As shown in Figure 1 and 1a, the cover part of the strip 1 has a plurality of transverse openings through which the conductors are passed to make connection with the terminal elements. The walls of the openings define ribs 6 which engage with the insulating sheath to locate the conductors and provide mechanical support. Mechanical support for the outer portions 2a' and 2b' of the terminal elements is also provided by the cover, the inner portions being self supporting. The arms 2a, 2b are disposed at substantially 90° to each other and so each arm is inclined at about 45° to the axis of the conductor. When the conductors are inserted therefore the outer portions tend to twist thereby enhancing the electrical connection.

In the arrangement shown in Figure 5 two terminal elements are connected together by an integral extension 3. In this case therefore four conductors can be connected together but without the option to isolate two conductors from the other two conductors as with the arrangement shown in Figures 1 and 1a. In the arrangement shown in Figure 6 the integral extension 3 is formed with a contact member 7 for connection to a circuit element such as a surge arrester (not shown).

An important aspect of the design of the terminal strip 1 and the terminal elements is that the adjacent terminal elements in a line of elements are assembled the opposite way round. As shown in Figure 1 and considering the right hand row of elements, the uppermost element is of the type shown in Figure 4 whilst the adjacent element is of the type shown in Figure 3. As a result the presented faces 2c of the adjacent elements are disposed in spaced parallel relationship. This enables adjacent terminal elements to be positioned closer together and so more terminal elements can be accommodated within a given length of strip.

CLAIMS

1. A terminal strip for connecting together pairs of insulated conductors, comprising a base part and a cover part which are adapted to be secured together, a plurality of terminal elements located between said parts, each terminal element comprising an electrically conductive strip of resilient material which is folded along its length to V formation so as to define two leaves integrally connected along the fold line, each leaf of each terminal element having a slot formed therein which extends partly along the length of the leaf, each slot having a flared opening to facilitate the insertion of a conductor therein, one or both edges of each slot being adapted to cut the insulation of a conductor inserted into the slot and to make contact with the conducting core of the conductor, a plurality of openings in said cover part in registry with the slots respectively whereby conductors can be passed through the openings into said slots, each terminal element being capable of effecting an electrical connection between a pair of conductors, said terminal elements being disposed in a row with adjacent leaves of an adjacent pair of elements being disposed in spaced parallel relationship.
2. A terminal strip according to Claim 1 incorporating two rows of terminal elements, and connecting means for effecting an electrical connection between a terminal element in one row and the corresponding terminal element in the other row.
3. A terminal strip according to Claim 2 in which said connecting means comprises an extension integrally formed with the terminal element of one row and the corresponding terminal element of the other row.



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4. A terminal strip according to Claim 3 including a contact member formed integrally with said extension.

5. A terminal strip according to Claim ² in which said connecting means comprises a pair of extensions integral with the terminal elements respectively, said extensions defining contact portions respectively which contact each other to form the electrical connection.

6. A terminal strip according to Claim 5 including openings in said cover part for the reception of a plug whereby said contact portions can be separated to break the electrical connection.

7. A terminal strip according to Claim 1 in which said cover part defines ribs on opposite sides of the openings for engagement with the insulating sheath of a conductor therein.

8. A terminal strip comprising the combination and arrangement of parts substantially as hereinbefore described with reference to the accompanying drawings.
