

(12)

PATENT SPECIFICATION

(11) 1 498 515

1 498 515

- (21) Application No. 14141/75 (22) Filed 7 April 1975
(23) Complete Specification filed 11 May 1976
(44) Complete Specification published 18 Jan. 1978
(51) INT CL² H01R 11/08
(52) Index at acceptance H2E 10B 22B
(72) Inventor JOHN MADELEY



(54) IMPROVEMENTS IN OR RELATING TO CRIMPABLE ELECTRICAL CONTACT ELEMENTS AND THEIR APPLICATION

(71) We, PRESSAC LIMITED, a British Company of Leopold Street, Long Eaton, Nottingham, NG10 4QL, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to crimpable electrical contact elements and their application.

It is sometimes desirable to crimp at the same time, by automatic or gang crimping, a whole series of contact elements on to the conductor wires of leads with each contact element inserted for a part of its length into an aperture in a housing, e.g. a moulding, of a component being made so as to leave a crimpable portion of each contact element exposed and subsequently to insert the contact elements fully into the housing after gang crimping has been effected.

A problem heretofore experienced with crimping of contact elements on to wires in the manner set forth above is to ensure that each contact element is not pushed too far into its associated aperture before crimping takes place and the object of the present invention is to avoid or minimise such a drawback.

According to one aspect of the invention there is provided an elongate electrical contact element of general U-shaped cross-section having intermediate of its ends at least one crimpable portion provided with at least one external flange projecting laterally from a limb of the U-shape so as to increase the width of the cross-section at said crimpable portion relative to the cross-section of the remainder of the contact element. Preferably at least one crimpable portion is provided with a pair of opposed external flanges projecting laterally from the limbs of the U-shape. The contact element may have two crimpable portions spaced apart from one another longitudinally, preferably separated from one another by a

cut-out or recessed portion. One end of the contact element may be provided with spring biased latching means. Preferably the or each flange may take the form of a leg or ear formed integrally with the contact element when for instance the contact element is formed as a pressing.

According to another aspect of the invention we provide a method of crimping one or more contact elements of the kind defined in the preceding paragraph on to one or more conductors of the kind hereinafter defined with each contact element inserted for only a part of its length into an aperture in a house in which it is intended to be housed, comprising the steps of inserting the or each contact element into a corresponding housing aperture until the or each external flange of said contact element engages the mouth of the respective aperture and arrests further movement of the contact element into the aperture so as to leave the or each crimpable portion of the contact element exposed, crimping the or each crimpable portion about one or more said conductors whereby the said flange or flanges is/are also crimped onto the said conductor(s) to reduce the enlarged cross-section of the contact element to enable the folded flange portion to be inserted into the aperture and inserting the crimped contact element to the required distance in the housing.

By the term "conductor" we mean an electrically conducting elongate member which may take the form of a single wire or a multi-strand wire.

A preferred embodiment of the invention will now be described by way of example with reference to the drawings accompanying the Provisional Specification, wherein:—

Figure 1 is a side view of one form the contact element may take and also indicating in chain-dotted outline a housing, e.g. moulding which is to receive the contact element;

Figure 2 is a transverse cross-section taken on the line II—II of Figure 1;

Figure 3 is a plan view of Figure 1;

Figure 4 is a transverse section showing how the flanges stop the contact element from completely entering the aperture before a conductor is engaged in the contact element, and

Figure 5 is a transverse cross-section after crimping of the contact element on to the conductor and showing the flanges folded inwards during crimping to allow the complete contact element to enter the aperture.

Referring to the drawings, a contact element is indicated generally at 1 and is intended to be representative of many various other forms the contact element may take. This contact element is formed as a pressing and has crimpable portions 2 and 3 intended to be crimped respectively about an electrical conductor 4 consisting of a multistrand wire (Figure 5) and the covering insulation thereof.

A housing, e.g. moulding, for receiving the contact element is illustrated in chain-dotted outline generally at 5 and an aperture in which a respective contact element is to be housed is indicated at 6.

To prevent the crimp comprising the crimpable portions 2 and 3 of each contact element 1 being pushed into the associated aperture 6 in the housing 5 before the conductor 4 has been engaged in the contact element and a crimping operation carried out, each contact element is formed integrally with pressed-out flanges 7 to serve as abutments and which can be in the form of shoulders, ears or legs which engage the mouth of the aperture 6 when the contact element has been partly inserted in the aperture 6 but leaving the crimp comprising the crimpable portions 2 and 3 still exposed outside the aperture to permit a crimping operation to be carried out. During this crimping operation the flanges 7 are folded inwards as shown in Figure 5, and so allow the crimped contact to enter the aperture 6. Although two flanges 7 are shown in the drawings, it is to be appreciated that a single flange or more than two flanges may be provided and that such flange(s) may be of any appropriate form and shape.

In the illustrated embodiment the contact element is shown provided with a springy retaining latch 8 that snaps into a slot and behind an edge 9 of the housing to prevent unintentional withdrawal of a partly inserted contact element from the housing 5.

of general U-shaped cross-section having intermediate of its ends at least one crimpable portion provided with at least one external flange projecting laterally from a limb of the U-shape so as to increase the width of the cross-section at said crimpable portion relative to the cross-section of the remainder of the contact element.

2. A contact element according to Claim 1, wherein at least one crimpable portion is provided with a pair of opposed external flanges projecting laterally from the limbs of the U-shape.

3. A contact element according to Claim 1 or Claim 2, having two crimpable portions spaced apart from one another longitudinally.

4. A contact element according to Claim 3 wherein the two crimpable portions are separated from one another by a cut-out or recessed portion.

5. A contact element according to any preceding claim, wherein one end of the contact element is provided with spring biased latching means.

6. An elongate electrical contact element substantially as herein described with particular reference to Figures 1 to 5 of the drawings accompanying the Provisional Specification.

7. A method of crimping one or more contact elements of the kind defined by any one of Claims 1 to 6 on to one or more conductors of the kind hereinbefore defined with each contact element inserted for only a part of its length into an aperture in a housing in which it is intended to be housed, comprising the steps of inserting the or each contact element into a corresponding housing aperture until the or each external flange of said contact element engages the mouth of the respective aperture and arrests further movement of the contact element into the aperture so as to leave the or each crimpable portion of the contact element exposed, crimping the or each crimpable portion about one or more said conductors whereby the said flange or flanges is/are also crimped on to the said conductor(s) to reduce the enlarged cross-section of the contact element to enable the folded flange portion to be inserted into the aperture and inserting the crimped contact element to the required distance in the housing.

8. A method according to Claim 7 substantially as herein described with particular reference to Figures 1 to 5 of the drawings accompanying the Provisional Specification.

9. One or more conductors having one or more contact elements crimped thereon and inserted into an apertured housing as obtained by the method claimed in Claim 7 or Claim 8.

WHAT WE CLAIM IS:—

1. An elongate electrical contact element



Figure 2 is a transverse cross-section taken on the line II--II of Figure 1;

Figure 3 is a plan view of Figure 1;

Figure 4 is a transverse section showing how the flanges stop the contact element from completely entering the aperture before a conductor is engaged in the contact element, and

Figure 5 is a transverse cross-section after crimping of the contact element on to the conductor and showing the flanges folded inwards during crimping to allow the complete contact element to enter the aperture.

Referring to the drawings, a contact element is indicated generally at 1 and is intended to be representative of many various other forms the contact element may take. This contact element is formed as a pressing and has crimpable portions 2 and 3 intended to be crimped respectively about an electrical conductor 4 consisting of a multi-strand wire (Figure 5) and the covering insulation thereof.

A housing, e.g. moulding, for receiving the contact element is illustrated in chain-dotted outline generally at 5 and an aperture in which a respective contact element is to be housed is indicated at 6.

To prevent the crimp comprising the crimpable portions 2 and 3 of each contact element 1 being pushed into the associated aperture 6 in the housing 5 before the conductor 4 has been engaged in the contact element and a crimping operation carried out, each contact element is formed integrally with pressed-out flanges 7 to serve as abutments and which can be in the form of shoulders, ears or legs which engage the mouth of the aperture 6 when the contact element has been partly inserted in the aperture 6 but leaving the crimp comprising the crimpable portions 2 and 3 still exposed outside the aperture to permit a crimping operation to be carried out. During this crimping operation the flanges 7 are folded inwards as shown in Figure 5, and so allow the crimped contact to enter the aperture 6. Although two flanges 7 are shown in the drawings, it is to be appreciated that a single flange or more than two flanges may be provided and that such flange(s) may be of any appropriate form and shape.

In the illustrated embodiment the contact element is shown provided with a springy retaining latch 8 that snaps into a slot and behind an edge 9 of the housing to prevent unintentional withdrawal of a partly inserted contact element from the housing 5.

WHAT WE CLAIM IS:—

1. An elongate electrical contact element

of general U-shaped cross-section having intermediate of its ends at least one crimpable portion provided with at least one external flange projecting laterally from a limb of the U-shape so as to increase the width of the cross-section at said crimpable portion relative to the cross-section of the remainder of the contact element.

2. A contact element according to Claim 1, wherein at least one crimpable portion is provided with a pair of opposed external flanges projecting laterally from the limbs of the U-shape.

3. A contact element according to Claim 1 or Claim 2, having two crimpable portions spaced apart from one another longitudinally.

4. A contact element according to Claim 3 wherein the two crimpable portions are separated from one another by a cut-out or recessed portion.

5. A contact element according to any preceding claim, wherein one end of the contact element is provided with spring biased latching means.

6. An elongate electrical contact element substantially as herein described with particular reference to Figures 1 to 5 of the drawings accompanying the Provisional Specification.

7. A method of crimping one or more contact elements of the kind defined by any one of Claims 1 to 6 on to one or more conductors of the kind hereinbefore defined with each contact element inserted for only a part of its length into an aperture in a housing in which it is intended to be housed, comprising the steps of inserting the or each contact element into a corresponding housing aperture until the or each external flange of said contact element engages the mouth of the respective aperture and arrests further movement of the contact element into the aperture so as to leave the or each crimpable portion of the contact element exposed, crimping the or each crimpable portion about one or more said conductors whereby the said flange or flanges is/are also crimped on to the said conductor(s) to reduce the enlarged cross-section of the contact element to enable the folded flange portion to be inserted into the aperture and inserting the crimped contact element to the required distance in the housing.

8. A method according to Claim 7 substantially as herein described with particular reference to Figures 1 to 5 of the drawings accompanying the Provisional Specification.

9. One or more conductors having one or more contact elements crimped thereon and inserted into an apertured housing as obtained by the method claimed in Claim 7 or Claim 8.



1,498,515

(14) (15)

3

3

HERBERT J. W. WILDBORE,
52/54 Featherstone Street,
London, EC1Y 8ST.
Agents for the Applicants.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1978.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.