

PATENT SPECIFICATION (11)

1 423 524



1 423 524

- (21) Application No. 31081/72 (22) Filed 3 July 1972 (19)
- (23) Complete Specification filed 3 July 1973
- (44) Complete Specification published 4 Feb. 1976
- (51) INT. CL.² H01R 9/08 9/10
- (52) Index at acceptance
H2E 2A 5 9B
- (72) Inventor NORMAN BARKER

(54) ELECTRIC CONNECTORS

(71) We, BICC LIMITED formerly British Insulated Callender's Cables Limited, a British Company, of 21 Bloomsbury Street, London WC1B 3QN, 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 electric connectors and to connections in which they are used. More particularly it relates to connectors suitable for making connections to unstripped insulated conductors of electric power cables, especially, but not exclusively, solid aluminium conductors. Connectors in accordance with the invention may be designed for making through joints, terminations, or tapping joints.

The connector in accordance with the invention comprises a channel member made of metal of good electrical conductivity, a cap member engageable with the free ends of the limbs of the channel member to resist relative movement of the free ends away from one another, at least two longitudinally extending ribs upstanding from the internal surface of one limb, hereinafter referred to as the first limb, a cutting edge forming the peak of at least one of the ribs, and clamping means associated with the other limb, hereinafter referred to as the second limb for urging a cable conductor into engagement with the ribs.

Preferably the cap member is slidably engaged in grooves in the outer surfaces of and adjacent the free ends of the limbs, and in such cases it will not normally be necessary for it to be positively secured.

The two ribs are preferably both provided with cutting edges, and preferably they are of identical form and opposite orientation. Preferably the ribs have plane surfaces with the adjacent surfaces of the two ribs upstanding substantially at right angles to the first limb.

The means for clamping the conductor is preferably a screw or a longitudinally aligned set of screws directly threaded in the second limb of the channel member. Screws with an

insulating piercing formation, for example a cup point, are preferred.

In the case of a through joint, the connector may simply be made of a sufficient length to receive the two conductors to be connected, one of the conductors entering at each of its ends and suitable clamping means (for example a minimum of one and preferably two screws) being provided for each conductor. This form of connection is relatively cheap to manufacture since it may be made from lengths cut from two extruded sections (one for the channel and another for the cap) without further machining, other than drilling and tapping for the screws.

In other cases, the channel member may be connected in any suitable manner to another conductor or to a terminal, or it may be formed integrally with a terminal.

The invention is further illustrated by a description, by way of example, of an electric connector in accordance with the invention, for use with plastics insulated, solid aluminium cable conductors, with reference to the accompanying drawings in which each of Figure 1 and Figure 2 is a cross-section of a connector showing a clamping screw positioned before and after, respectively, a conductor has been clamped therein.

Referring to the drawing, the connector comprises a channel member 1 and a cap 2, each of which has been cut from an extrudate of aluminium of suitable cross-section, the cap 2 being slidably engaged in grooves 3 in the outer surfaces of, and adjacent, the free ends 4 of limbs 5, 6 of the channel member.

Two ribs 7, which extend longitudinally of the channel member 1 and are upstanding from the internal surface of the limb 5, each have a cutting edge 8 that is of identical form, and of opposite orientation, to that of the other cutting edge, adjacent surfaces 9 of the ribs upstanding at right angles to the limb 5.

A clamping screw 10, having a cup point 11, is threaded through the limb 6 of the channel member 1 such that after a plastics-insulated aluminium cable conductor 12 has been passed into the connector, Figure 1, the screw is tightened to urge the conductor against

the cutting edges 8 of the ribs 7. On further tightening of the screw 10 both the cutting edges 8 and the cup point 11 of the screw pierce the plastics insulation 13, Figure 2, to make electrical and mechanical contact with the conductor 12.

The tendency of the free ends 4 of the limbs 5, 6 to move away from one another caused by tightening of the screw 10 is resisted by the cap 2 slidably engaged in the grooves 3.

WHAT WE CLAIM IS:—

1. An electric cable connector comprising a channel member made of metal of good electrical conductivity, a cap member engageable with the free ends of the limbs of the channel member to resist relative movement of the free ends away from one another, at least two longitudinally extending ribs upstanding from the internal surface of one limb, a cutting edge forming the peak of at least one of the ribs, and clamping means associated with the other limb for urging a cable conductor into engagement with the ribs.

2. An electric cable connector comprising a channel member made of metal of good electrical conductivity, a cap member slidably engageable in grooves in the outer surfaces, and adjacent the free ends of, the limbs of the channel member to resist relative movement of the free ends away from one another, at least two longitudinally extending ribs upstanding from the internal surface of one limb, a cutting edge forming the peak of at least one of the ribs, and clamping means associated with the other limb for urging a cable conductor into engagement with the ribs.

3. An electric cable connector comprising a channel member made of metal of good electrical conductivity, a cap member engageable with the free ends of the limbs of the channel member to resist relative movement of the free ends away from one another, at least two longitudinally extending ribs upstanding from the internal surface of one limb, and clamping means associated with the other limb for urging a cable conductor into engagement with the ribs of which each has a cutting edge and which are symmetrical with respect to the clamping means.

4. An electric cable connector comprising a channel member of uniform cross-section and made of metal of good electrical conductivity, a cap member engageable with the free ends of the limbs of the channel member to resist relative movement of the free ends

away from one another, at least two longitudinally extending ribs upstanding from the internal surface of one limb, a cutting edge forming the peak of at least one of the ribs, and clamping means associated with the other limb for urging a cable conductor into engagement with the ribs.

5. An electric cable connector as claimed in Claim 4, in which the channel member is formed from an extrudate of the metal of good electrical conductivity.

6. An electric cable connector as claimed in any one of Claims 3 to 5, in which the cap member is slidably engageable in grooves in the outer surfaces, and adjacent the free ends of, the limbs of the channel member.

7. An electric cable connector as claimed in any one of the preceding Claims, in which the cap member is of uniform cross-section and is formed from an extrudate.

8. An electric cable connector as claimed in any one of the preceding Claims, in which the ribs are of identical form and opposed ribs are of opposite orientation.

9. An electric cable connector as claimed in any one of the preceding Claims in which the ribs have plane surfaces and the adjacent surfaces of opposed ribs are substantially at right angles to the first limb.

10. An electric cable connector as claimed in any one of the preceding Claims, in which the clamping means consists of a screw or a longitudinally aligned set of screws directly threaded in the second limb.

11. An electric cable connector as claimed in Claim 10, in which the or each screw is provided with an insulation piercing formation.

12. A through joint connecting two electric cable conductors together, which comprises a connector as claimed in any one of the preceding claims.

13. A through joint as claimed in Claim 12, in which at least one clamping screw is provided for each conductor.

14. An electrical terminal which is connected to or is formed integrally with an electric cable connector as claimed in any one of Claims 1 to 11.

15. An electric cable connector substantially as hereinbefore described with reference to and as shown in Figures 1 and 2.

R. F. TARBOX,
Agent for the Applicants,
38 Wood Lane,
London W12 7DX.



the cutting edges 8 of the ribs 7. On further tightening of the screw 10 both the cutting edges 8 and the cup point 11 of the screw pierce the plastics insulation 13, Figure 2, to make electrical and mechanical contact with the conductor 12.

The tendency of the free ends 4 of the limbs 5, 6 to move away from one another caused by tightening of the screw 10 is resisted by the cap 2 slidably engaged in the grooves 3.

WHAT WE CLAIM IS:—

1. An electric cable connector comprising a channel member made of metal of good electrical conductivity, a cap member engageable with the free ends of the limbs of the channel member to resist relative movement of the free ends away from one another, at least two longitudinally extending ribs upstanding from the internal surface of one limb, a cutting edge forming the peak of at least one of the ribs, and clamping means associated with the other limb for urging a cable conductor into engagement with the ribs.

2. An electric cable connector comprising a channel member made of metal of good electrical conductivity, a cap member slidably engageable in grooves in the outer surfaces, and adjacent the free ends of, the limbs of the channel member to resist relative movement of the free ends away from one another, at least two longitudinally extending ribs upstanding from the internal surface of one limb, a cutting edge forming the peak of at least one of the ribs, and clamping means associated with the other limb for urging a cable conductor into engagement with the ribs.

3. An electric cable connector comprising a channel member made of metal of good electrical conductivity, a cap member engageable with the free ends of the limbs of the channel member to resist relative movement of the free ends away from one another, at least two longitudinally extending ribs upstanding from the internal surface of one limb, and clamping means associated with the other limb for urging a cable conductor into engagement with the ribs of which each has a cutting edge and which are symmetrical with respect to the clamping means.

4. An electric cable connector comprising a channel member of uniform cross-section and made of metal of good electrical conductivity, a cap member engageable with the free ends of the limbs of the channel member to resist relative movement of the free ends

away from one another, at least two longitudinally extending ribs upstanding from the internal surface of one limb, a cutting edge forming the peak of at least one of the ribs, and clamping means associated with the other limb for urging a cable conductor into engagement with the ribs.

5. An electric cable connector as claimed in Claim 4, in which the channel member is formed from an extrudate of the metal of good electrical conductivity.

6. An electric cable connector as claimed in any one of Claims 3 to 5, in which the cap member is slidably engageable in grooves in the outer surfaces, and adjacent the free ends of, the limbs of the channel member.

7. An electric cable connector as claimed in any one of the preceding Claims, in which the cap member is of uniform cross-section and is formed from an extrudate.

8. An electric cable connector as claimed in any one of the preceding Claims, in which the ribs are of identical form and opposed ribs are of opposite orientation.

9. An electric cable connector as claimed in any one of the preceding Claims in which the ribs have plane surfaces and the adjacent surfaces of opposed ribs are substantially at right angles to the first limb.

10. An electric cable connector as claimed in any one of the preceding Claims, in which the clamping means consists of a screw or a longitudinally aligned set of screws directly threaded in the second limb.

11. An electric cable connector as claimed in Claim 10, in which the or each screw is provided with an insulation piercing formation.

12. A through joint connecting two electric cable conductors together, which comprises a connector as claimed in any one of the preceding claims.

13. A through joint as claimed in Claim 12, in which at least one clamping screw is provided for each conductor.

14. An electrical terminal which is connected to or is formed integrally with an electric cable connector as claimed in any one of Claims 1 to 11.

15. An electric cable connector substantially as hereinbefore described with reference to and as shown in Figures 1 and 2.

R. F. TARBOX,
Agent for the Applicants,
38 Wood Lane,
London W12 7DX.