

Description

This invention relates to the termination of mineral insulated electric cables, that is to say cables of the kind comprising at least one conductor insulated from a surrounding metal sheath, and where there is more than one conductor from the other conductor or conductors, by compacted mineral insulating powder, usually but not necessarily magnesium oxide.

Compacted mineral insulating powder is particularly vulnerable to water penetration and it is the general practice to protect an end of a mineral insulated cable against the ingress of moisture by a metal sealing pot which is screwed or otherwise secured to the cable sheath and which is filled with waterproof sealing compound. Assembly of a sealing pot on an end of a mineral insulated electric cable in such a way as to provide an effective waterproof termination requires a degree of skill and the time taken to terminate mineral insulated electric cables of a mineral insulated electric cable installation contributes to a substantial proportion of the overall cost of the installation.

GB-A-2 227 617 discloses a mineral insulated cable termination in which a preformed insulating cap, which comprises a tube open at one end and closed at the other by an integral end wall, is applied over the cut back end of the cable.

It is an object of the present invention to provide a mineral insulated electric cable having an end terminated by an improved sealing pot which is simple and inexpensive and readily secured to the end of the cable by semi-skilled or unskilled personnel.

According to the invention, an improved mineral insulated electric cable termination comprises a tube of flexible electrically insulating material which at one end of the tube fits over the cut-back sheath of the cable and which at the other end of the tube is closed by an end wall spaced from the end face of the cable, the or each cable conductor passing through a throughbore or one of a plurality of throughbores in the end wall and, filling the space within the tube between the end face of the cable and said end wall, waterproof electrically insulating compound, wherein at a first position around the circumferential wall of the tube the wall is slit throughout its length and radial thickness and at at least one position circumferentially spaced from said first position the wall is adapted to constitute a hinge extending throughout the length of the wall, the abutting longitudinally extending parts of the wall at said first position being so shaped that one effects a snap fit with the other throughout the length of the tube.

When assembling the improved mineral insulated electric cable termination on an end of the cable, the tube is presented to the cut-back end of the cable in its open state; before or after the or each cable conductor is or has been threaded through the throughbore or throughbores in the end wall of the tube, at

least one of the hinged parts of the tube is substantially filled with waterproof electrically insulating compound; and the parts of the tube are then applied to the cut-back end of the cable and snapped together so that the space within the tube between the cut-back end of the cable and the end wall of the tube is substantially filled with waterproof electrically insulating compound, any excess compound being squeezed out of the tube between the or each conductor and the surrounding boundary wall of the throughbore through which it passes.

The abutting longitudinally extending parts of the circumferential wall at said first position may be of any complementary shapes that will effect a snap fit with one another throughout the length of the tube but, preferably, one of said two abutting parts has extending longitudinally throughout its length an outwardly extending protuberance which effects a snap fit in a groove of complementary cross-sectional shape extending longitudinally throughout the length of the inner surface of the other part.

Preferably, the circumferential wall of the tube at the or each position circumferentially spaced from said first position is of such a transverse cross-sectional shape and/or of such a radial thickness that the wall at this position effectively constitutes a hinge.

Where the mineral insulated electric cable has one conductor or two conductors, preferably the circumferential wall of the tube is adapted to constitute a hinge extending throughout the length of the wall at a second position substantially diametrically opposite said first position and, in this case, the end wall of the tube may be integral with one of the two hinged parts of the tube or it may be slit substantially diametrically from said first position to said second position so that each part of the end wall is integral with one of the two hinged parts of the tube.

Where the mineral insulated electric cable has three conductors, preferably the end wall of the tube is slit transversely over a part of its width extending from said first position along its diameter and over the majority of the remainder of its width along two substantially parallel planes on opposite sides of the axis of the end wall dividing the end wall into a central portion and two other portions, the diametrically extending slit containing the axis of one throughbore and each of said two parallel slits containing the axis of one of the other two throughbores, and the circumferential wall of the tube at two circumferentially spaced positions extending from the closed ends of the two parallel slits in the end wall and throughout the length of the circumferential wall is adapted to constitute two circumferentially spaced hinges.

Where the mineral insulated electric cable has two or four conductors, preferably the end wall of the tube is slit transversely over the majority of its width along two substantially parallel planes on opposite sides of the axis of the end wall dividing the end wall

into a central portion and two other portions, one of said two parallel slits containing the axis of a first throughbore or the axes of two throughbores in said end wall and the other of said two parallel slits containing the axis of the second throughbore or the axes of third and fourth throughbores in said end wall, and the circumferential wall of the tube at two circumferentially spaced positions extending from the closed ends of the slits in the end wall and throughout the length of the circumferential wall is adapted to constitute two circumferentially spaced hinges.

Instead of being integral with one or each of the parts of the tube, the end wall may consist of a separately formed button of ceramic or vitreous insulating material secured within the tube at or near said other end. In a preferred embodiment, the tube is closed at said other end by an end wall integral with at least one of the hinged parts of the tube and by a button of ceramic or vitreous insulating material secured within the tube at or near said closed end, the or each conductor of the cable passing through axially aligned throughbores in the button and said end wall.

An embodiment in which said other end of the tube is closed by an end wall integral with at least one of the hinged parts of the tube and/or by a separately formed button has the important advantage that, after the or each cable conductor has been passed through the throughbore or throughbores in the end wall and/or button and insulating compound has been disposed in one or each part of the tube, as the hinged parts of the tube are closed the mineral insulated cable can be urged axially towards said other end of the tube thereby acting as a piston compressing the insulating compound within the space bounded by the tube and out of the tube between the or each conductor and the surrounding boundary wall of the throughbore through which it passes.

The end wall of the tube, both when it is integral with at least one of the hinged parts of the tube and when it is a separately formed button of ceramic or vitreous insulating material, preferably has extending lengthwise and outwardly from the end wall a sleeve or two or more sleeves in substantially axial alignment with the throughbore or throughbores in the end wall and surrounding the cable conductor or conductors. Where the end wall has one throughbore or two throughbores and is slit substantially diametrically from said first position to said second position, the axis of the or each throughbore may lie on said diametrically extending slit and the or each sleeve may be slit transversely throughout its length so that one part of the sleeve is integral with one portion of the end wall and the other part of the sleeve is integral with the other portion of the end wall. Where the end wall has two, three or four throughbores and is slit transversely over the majority of its width along two parallel planes on opposite sides of the axis of the end wall, each of the sleeves may be slit transversely

throughout its length so that one part of the sleeve is integral with the central portion of the end wall and the other part of the sleeve is integral with one of the other portions of the end wall.

Where a button of ceramic or vitreous material is secured within the tube at or near said other end, preferably the button has means positively preventing movement of the button with respect to the tube in a direction away from the said other end of the tube. The internal surface of the wall of the tube near said other end may have a peripherally continuous groove in which the button fits and within which it may be permanently secured by an appropriate cement. Over at least a part of the length of the or each throughbore of the button remote from said other end of the tube, preferably the internal diameter of the throughbore increases smoothly in a direction towards the end face of the cable to form, in effect, a throat into which a conductor can be readily guided.

Preferably, the circumferential wall of that part of the length of the tube which fits over the cut-back sheath of the cable has in and protruding inwardly from the circumferential wall a device of metal or metal alloy whose protruding part so mechanically engages with and secures the tube to the cable sheath as to restrain the tube against removal from the cable. In a preferred embodiment, the metal retaining device is a clip which has a protruding part of substantially C-shape between the limbs of which the cable sheath is a force fit. The radially inner edge of the C-shaped clip may have one or more than one inwardly extending tooth of such a shape that it bites into the cable sheath and serves to restrain the tube against rotational movement on and with respect to the cable.

The invention also includes, for use in the assembly of an improved mineral insulated electric cable termination as hereinbefore described, an improved mineral insulated cable terminating device comprising a tube of flexible electrically insulating material open at one end and closed at or near its other end by an end wall having therein at least one throughbore, wherein at a first position around the circumferential wall of the tube the wall is slit throughout its length and radial thickness and at at least one position circumferentially spaced from said first position the wall is adapted to constitute a hinge extending throughout the length of the wall, the longitudinally extending parts of the wall at said first position being so shaped that one is adapted to effect a snap fit with the other throughout the length of the tube.

Where a mineral insulated electric cable with which the improved mineral insulated cable terminating device is to be used has one conductor or two conductors, preferably the circumferential wall of the tube is adapted to constitute a hinge extending throughout the length of the wall at a second position substantially diametrically opposite said first position and the end wall is slit substantially diametrically from said

first position to said second position so that each part of the end wall is integral with one of the two parts of the tube. Where a mineral insulated electric cable with which the improved mineral insulated cable terminating device is to be used has three conductors, preferably the end wall of the tube is slit transversely over a part of its width extending from said first position along its diameter and over the majority of the remainder of its width along two substantially parallel planes on opposite sides of the axis of the end wall dividing the end wall into a central portion and two other portions, the diametrically extending slit containing the axis of one throughbore and each of said two parallel slits containing the axis of one of the other two throughbores. Where a mineral insulated electric cable with which the improved mineral insulated cable terminating device is to be used has two or four conductors, preferably the end wall of the tube is slit transversely over the majority of its width along two parallel planes on opposite sides of the axis of the end wall, one of said two parallel slits containing the axis of a first throughbore or the axes of two throughbores in said end wall and the other of said two parallel slits containing the axis of the second or the axes of third and fourth throughbores in said end wall. In each of the latter two cases, the circumferential wall of the tube at two circumferentially spaced positions extending from the closed ends of the slits in the end wall and throughout the length of the circumferential wall is adapted to constitute two circumferentially spaced hinges.

At least one of the hinged parts of the tube may be pre-filled with waterproof electrically insulating compound of a grease-like nature.

The invention is further illustrated by a description, by way of example, of two preferred mineral insulated electric cable terminations with reference to the accompanying drawings, in which:-

Figure 1 is a plan view of the mineral insulated cable terminating device used in the first preferred mineral insulated electric cable termination, drawn on a greatly enlarged scale;

Figures 2 and 3, respectively, are end views of the terminating device shown in Figure 1 in the directions of Arrows II and III;

Figure 4 is a sectional side view of the first preferred mineral insulated electric cable termination, drawn on a greatly enlarged scale;

Figure 5 is an end view of the termination shown in Figure 4 in the direction of Arrow V;

Figure 6 is a plan view of the mineral insulated cable terminating device used in the second preferred mineral insulated cable termination, drawn on a greatly enlarged scale;

Figures 7 and 8, respectively, are end views of the terminating device shown in Figure 6 in the directions of Arrows VII and VIII;

Figure 9 is a sectional side view of the second

preferred mineral insulated electric cable termination, drawn on a greatly enlarged scale, and Figure 10 is an end view of the termination shown in Figure 9 in the direction of Arrow X.

Referring to Figures 1 to 3, the mineral insulated cable terminating device to be used in the first preferred mineral insulated electric cable termination comprises a tube 1 of electrically insulating plastics material which at one end has an end wall 2 having a centrally disposed throughbore 4 of a diameter such that the tube will effect a tight fit over the cut-back sheath of a mineral insulated electric cable and which at the other end has an end wall 3 having two throughbores 6 for passage of conductors of the cable and, extending outwardly from the end wall 3, two sleeves 7 in axial alignment with the throughbores. At a first position 9 around the circumferential wall 8 of the tube 1, the wall is slit throughout its length and radial thickness so that the tube consists of two hinged parts 1', 1", and, at a second position substantially diametrically opposite the first position, the circumferential wall is of such a transverse cross-sectional shape and radial thickness that the wall at the second position effectively constitutes a hinge 10. The end wall 3 is slit diametrically from said first position 9 to the hinge 10 so that each of the two portions of the end wall is integral with one of the two hinged parts 1', 1" of the tube 1. The axis of each throughbore 6 in the end wall 3 lies on the diametrically extending slit in the end wall and each sleeve 7 is slit transversely throughout its length so that one part of the sleeve is integral with one portion of the end wall and the other part of the sleeve is integral with the other portion of the end wall.

One of the two abutting parts of the circumferential wall 8 of the tube 1 at the first position 9 has extending throughout its length an outwardly extending protruberence 14 which will effect a snap-fit in a groove 15 of complementary cross-sectional shape extending longitudinally throughout the length of the inner surface of the other part. The portion of the end wall 2 integral with each hinged part 1', 1" of the tube 1 has between its inner and outer end faces a recess 16 of substantially semi-circular shape and the circumferential wall of the hinged part 1' of the tube has in and protruding inwardly from the circumferential wall into the recess 16 a metal clip 17 of substantially C-shape, the limbs of the C-shaped clip being so spaced apart that, when the tube is fitted over the cut-back sheath of a cable, they will mechanically engage with and secure the tube to the cut-back sheath to restrain the tube against removal from the cable.

In each hinged part 1', 1" of the tube 1, the portions of the end walls 2, 3 and the circumferential wall 8 bound a well 18 and, in the hinged part 1' of the tube the well 18 is bounded on three sides by an upstanding wall 19 which, when the two hinged parts of the tube are closed together, will bear against the internal surface of the well of the hinged part 1". The well 18

of one of the hinged parts 1', 1" of the tube 1 may be pre-filled with waterproof electrically insulating compound of a grease-like nature (not shown).

When using the mineral insulated cable terminating device shown in Figures 1 to 3 to assemble the first preferred mineral insulated cable termination shown in Figures 4 and 5, if the well 18 of one of the hinged parts 1', 1" of the tube 1 has not been pre-filled with waterproof electrically insulating compound of a grease-like nature, such a compound 20 is introduced into the well 18 of one of the hinged parts and the hinged parts of the tube are so applied to the cut-back end of a mineral insulated cable that the cut-back sheath S of the cable is disposed between the portions of the end wall 2 and protrudes between the wells 18 and the conductors C of the cable are disposed in parts of the throughbores 6 in the end wall 3 and sleeves 7 of one hinged part of the tube. The hinged parts 1', 1" of the tube 1 are then closed so that the protruberence 14 effects a snap-fit in the groove 15 and the end wall 2 effects a tight fit on the cut-back sheath S of the cable, the limbs of the C-shaped clip 17 mechanically engaging with and securing the tube to the sheath so as to restrain the tube against removal from the cable. Excess insulating compound 20 is squeezed out of the tube 1 between each conductor C and the surrounding boundary wall of the throughbore 6 through which the conductor passes.

Referring to Figures 6 to 8, the mineral insulated cable terminating device to be used in the second preferred mineral insulated cable termination comprises a tube 21 of electrically insulating plastics material which at one end has an end wall 22 having a centrally disposed throughbore 24 of a diameter such that the tube will effect a tight fit over the cut-back sheath of a mineral insulated electric cable and which at the other end has an end wall 23 having three throughbores 26 for passage of conductors of the cable and, extending outwardly from the end wall 3, three sleeves 27 in axial alignment with the throughbores. At a first position 29 around the circumferential wall 28 of the tube 21, the wall is slit throughout its length and radial thickness so that the tube consists of two hinged parts 21', 21", and, at two circumferentially spaced positions around the circumferential wall, the circumferential wall is of such a transverse cross-sectional shape and radial thickness that the wall at these positions effectively constitutes hinges 30. The end wall 23 is slit transversely over a part 32 of its width extending from the first position 29 along its diameter and over the majority of the remainder of its width along two substantially parallel planes 33 on opposites sides of the axis of the end wall dividing the end wall into a central portion 23' and two other portions 23". The diametrically extending slit 32 contains the axis of one throughbore 26 and each of said two parallel slits 33 contains the axis of one of the other

two throughbores. The end wall 22 is slit transversely over a part of its width extending from said first position along its diameter to the throughbore 24 and over the majority of the remainder of its width from said throughbore along said two parallel planes. Each sleeve 27 is slit transversely throughout its length so that one part of each of two of the sleeves is integral with the central portion 23' of the end wall 23 and the other part of said sleeve is integral with one of the other portions 23" of the end wall and so that each part of the third sleeve is integral with one of said other portions 23" of the end wall.

One of the two abutting parts of the circumferential wall 28 of the tube 21 at the first position 29 has extending throughout its length an outwardly extending protruberence 34 which will effect a snap fit in a groove 35 of complementary cross-sectional shape extending longitudinally throughout the length of the inner surface of the other part. The portion 22" of the end wall 22 integral with each hinged part 21', 21" of the tube 21 has between its inner and outer end faces a recess 36 of substantially arcuate shape and that part of the circumferential wall 28 integral with the central portion 22' of the end wall 22 has therein and protruding inwardly therefrom a metal clip 37 of substantially C-shape, the limbs of the C-shaped clip being so spaced apart that, when the tube is fitted over the cut-back sheath of a cable, they will mechanically engage with and secure the tube to the cut-back sheath to restrain the tube against removal of the cable.

In each hinged part 21', 21" of the tube 21, the portions of the end walls 22, 23 and the circumferential wall 28 bound a well 38 and the well of one of the hinged parts of the tube may be pre-filled with waterproof electrically insulating compound of a grease-like nature (not shown).

Along a transversely extending line interconnecting the diametrically extending slit in the end wall 23 and the parallel slits therein the end wall has a step 25 intermediate of its inner and outer end surfaces so that parts of the portions 23" of the end wall will overlie a part of the central portion 23' of the end wall when the hinged parts 21', 21" are closed together.

When using the mineral insulated cable terminating device shown in Figures 6 to 8 to assemble the second preferred mineral insulated cable termination shown in Figures 9 and 10, if the well 38 of one of the hinged parts 21', 21" of the tube 21 has not been pre-filled with waterproof electrically insulating compound of a grease-like nature, such a compound 40 is introduced into the well 38 of one of the hinged parts and the hinged parts of the tube are so applied to the cut-back end of a mineral insulated cable that the cut-back sheath of the cable is disposed between portions 22" of the end wall 22 and protrudes between the wells 38 and the conductors C of the cable are disposed in parts of the throughbores in the end

wall 23 and sleeves 27 of the central portion 23' and one of the other portions 23" of the end wall. The hinged parts 21', 21" of the tube 21 are then closed so that the protruberence 34 effects a snap fit in the groove 35 and the end wall 22 effects a tight fit on the cut-back sheath S of the cable, the limbs of the C-shaped clip 37 mechanically engaging with and securing the tube to the sheath so as to restrain the tube against removal from the cable. Excess insulating compound 40 is squeezed out of the tube 21 between each conductor C and the surrounding boundary wall of the throughbore 26 through which the conductor passes.

Each of the mineral insulated electric cable terminations shown in Figures 4 and 5 and 9 and 10 is simple and inexpensive and can be readily assembled on an end of a mineral insulated electric cable by semi-skilled or unskilled personnel.

Claims

1. A mineral insulated electric cable termination comprising a tube (1,21) of flexible electrically insulating material which at one end (2,22) of the tube fits over the cut-back sheath (S) of the cable and which at the other end (3,23) of the tube is closed by an end wall spaced from the end face of the cable, the or each cable conductor (C) passing through a throughbore or one of a plurality of throughbores (6,26) in the end wall and, filling the space within the tube between the end face of the cable and said end wall, waterproof electrically insulating compound (20,40), wherein at a first position (9,29) around the circumferential wall (8,28) of the tube the wall is slit throughout its length and radial thickness and at at least one position circumferentially spaced from said first position the wall is adapted to constitute a hinge (10,30) extending throughout the length of the wall, the abutting longitudinally extending parts of the wall at said first position being so shaped that one effects a snap-fit with the other throughout the length of the tube.
2. A mineral insulated electric cable termination as claimed in Claim 1, wherein one of said two abutting parts of the circumferential wall (8,28) of the tube (1,21) at said first position (9,29) has extending longitudinally throughout its length an outwardly extending protuberance (14,34) which effects a snap-fit in a groove (15,35) of complementary cross-sectional shape extending longitudinally throughout the length of the inner surface of the other part.
3. A mineral insulated electric cable termination as claimed in Claim 1 or 2, wherein the circumferen-

tial wall (8,28) of the tube (1,21) at the or each position circumferentially spaced from said first position (9,29) is of such a transverse cross-sectional shape and/or of such a radial thickness that the wall at this position effectively constitutes a hinge (10,30).

4. A mineral insulated electric cable termination as claimed in any one of the preceding Claims in which the mineral insulated electric cable has one conductor or two conductors, wherein the circumferential wall (8) of the tube (1) is adapted to constitute a hinge (10) extending throughout the length of the wall at a second position substantially diametrically opposite said first position and wherein the end wall (3) of the tube is slit substantially diametrically from said first position (9) to said second position so that each part of the end wall is integral with one of the two hinged parts (1',1'') of the tube.
5. A mineral insulated electric cable termination as claimed in any one of Claims 1 to 3 in which the mineral insulated electric cable has three conductors, wherein the end wall (23) of the tube (21) is slit transversely over a part of its width extending from said first position (29) along its diameter and over the majority of the remainder of its width along two substantially parallel planes (33) on opposite sides of the axis of the end wall dividing the end wall into a central portion (23') and two other portions (23''), the diametrically extending slit containing the axis of one throughbore (26) and each of said two parallel slits containing the axis of one of the other two throughbores (26) and wherein the circumferential wall (28) of the tube at two circumferentially spaced positions extending from the closed ends of the two parallel slits in the end wall and throughout the length of the circumferential wall is adapted to constitute two circumferentially spaced hinges (30).
6. A mineral insulated electric cable termination as claimed in any one of Claims 1 to 3 in which the mineral insulated electric cable has two or four conductors, wherein the end wall of the tube is slit transversely over the majority of its width along two parallel planes on opposite sides of the axis of the end wall dividing the end wall into a central portion and two other portions, one of said two parallel slits containing the axis of a first throughbore or the axes of two throughbores in said end wall and the other of said two parallel slits containing the axis of the second throughbore or the axes of third and fourth throughbores in said end wall and wherein the circumferential wall of the tube at two circumferentially spaced positions extending from the closed ends of the slits in the



wall 23 and sleeves 27 of the central portion 23' and one of the other portions 23" of the end wall. The hinged parts 21', 21" of the tube 21 are then closed so that the protruberence 34 effects a snap fit in the groove 35 and the end wall 22 effects a tight fit on the cut-back sheath S of the cable, the limbs of the C-shaped clip 37 mechanically engaging with and securing the tube to the sheath so as to restrain the tube against removal from the cable. Excess insulating compound 40 is squeezed out of the tube 21 between each conductor C and the surrounding boundary wall of the throughbore 26 through which the conductor passes.

Each of the mineral insulated electric cable terminations shown in Figures 4 and 5 and 9 and 10 is simple and inexpensive and can be readily assembled on an end of a mineral insulated electric cable by semi-skilled or unskilled personnel.

Claims

1. A mineral insulated electric cable termination comprising a tube (1,21) of flexible electrically insulating material which at one end (2,22) of the tube fits over the cut-back sheath (S) of the cable and which at the other end (3,23) of the tube is closed by an end wall spaced from the end face of the cable, the or each cable conductor (C) passing through a throughbore or one of a plurality of throughbores (6,26) in the end wall and, filling the space within the tube between the end face of the cable and said end wall, waterproof electrically insulating compound (20,40), wherein at a first position (9,29) around the circumferential wall (8,28) of the tube the wall is slit throughout its length and radial thickness and at at least one position circumferentially spaced from said first position the wall is adapted to constitute a hinge (10,30) extending throughout the length of the wall, the abutting longitudinally extending parts of the wall at said first position being so shaped that one effects a snap-fit with the other throughout the length of the tube.
2. A mineral insulated electric cable termination as claimed in Claim 1, wherein one of said two abutting parts of the circumferential wall (8,28) of the tube (1,21) at said first position (9,29) has extending longitudinally throughout its length an outwardly extending protuberance (14,34) which effects a snap-fit in a groove (15,35) of complementary cross-sectional shape extending longitudinally throughout the length of the inner surface of the other part.
3. A mineral insulated electric cable termination as claimed in Claim 1 or 2, wherein the circumferential wall (8,28) of the tube (1,21) at the or each position circumferentially spaced from said first position (9,29) is of such a transverse cross-sectional shape and/or of such a radial thickness that the wall at this position effectively constitutes a hinge (10,30).
4. A mineral insulated electric cable termination as claimed in any one of the preceding Claims in which the mineral insulated electric cable has one conductor or two conductors, wherein the circumferential wall (8) of the tube (1) is adapted to constitute a hinge (10) extending throughout the length of the wall at a second position substantially diametrically opposite said first position and wherein the end wall (3) of the tube is slit substantially diametrically from said first position (9) to said second position so that each part of the end wall is integral with one of the two hinged parts (1',1") of the tube.
5. A mineral insulated electric cable termination as claimed in any one of Claims 1 to 3 in which the mineral insulated electric cable has three conductors, wherein the end wall (23) of the tube (21) is slit transversely over a part of its width extending from said first position (29) along its diameter and over the majority of the remainder of its width along two substantially parallel planes (33) on opposite sides of the axis of the end wall dividing the end wall into a central portion (23') and two other portions (23"), the diametrically extending slit containing the axis of one throughbore (26) and each of said two parallel slits containing the axis of one of the other two throughbores (26) and wherein the circumferential wall (28) of the tube at two circumferentially spaced positions extending from the closed ends of the two parallel slits in the end wall and throughout the length of the circumferential wall is adapted to constitute two circumferentially spaced hinges (30).
6. A mineral insulated electric cable termination as claimed in any one of Claims 1 to 3 in which the mineral insulated electric cable has two or four conductors, wherein the end wall of the tube is slit transversely over the majority of its width along two parallel planes on opposite sides of the axis of the end wall dividing the end wall into a central portion and two other portions, one of said two parallel slits containing the axis of a first throughbore or the axes of two throughbores in said end wall and the other of said two parallel slits containing the axis of the second throughbore or the axes of third and fourth throughbores in said end wall and wherein the circumferential wall of the tube at two circumferentially spaced positions extending from the closed ends of the slits in the



end wall and throughout the length of the circumferential wall is adapted to constitute two circumferentially spaced hinges.

7. A mineral insulated electric cable termination as claimed in any one of the preceding Claims, wherein the end wall (3,23) of the tube (1,21) has extending lengthwise and outwardly from the end wall a sleeve or two or more sleeves (7,27) in substantially axial alignment with the throughbore or throughbores (6,26) in the end wall and surrounding the cable conductor or conductors (C).
8. A mineral insulated electric cable termination as claimed in Claim 4 wherein the end wall (3) of the tube (1) has extending outwardly from the end wall a sleeve or two sleeves (7) in substantially axial alignment with the throughbore or throughbores (6) in the end wall and surrounding the cable conductor or conductors (C), the axis of the or each throughbore lying on said diametrically extending slit and the or each sleeve being slit transversely throughout its length so that one part of the sleeve is integral with one portion of the end wall and the other part of the sleeve is integral with the other portion of the end wall.
9. A mineral insulated electric cable termination as claimed in Claim 5, wherein the end wall (23) of the tube (21) has extending outwardly from the end wall three sleeves (27) in substantially axial alignment with the throughbores (26) in the end wall and surrounding the cable conductors (C), each of the sleeves being slit transversely throughout its length so that one part of each of two of the sleeves is integral with the central portion (23') of the end wall and the other part of said sleeve is integral with one of the other portions (23'') of the end wall and so that each part of the third sleeve is integral with one of said other portions of the end wall.
10. A mineral insulated electric cable termination as claimed in Claim 6, wherein the end wall of the tube has extending outwardly from the end wall two or four sleeves in substantially axial alignment with the throughbores in the end wall and surrounding the cable conductors, each of the sleeves being slit transversely throughout its length so that one part of the sleeve is integral with the central portion of the end wall and the other part of the sleeve is integral with one of the other portions of the end wall.
11. A mineral insulated electric cable termination as claimed in any one of the preceding Claims, wherein the circumferential wall of that part of the length of the tube which fits over the cut-back

sheath (S) of the cable has in and protruding inwardly from the circumferential wall a device (17,37) of metal or metal alloy whose protruding part (23) so mechanically engages with and secures the tube (1,21) to the cable sheath as to restrain the tube against removal from the cable.

12. A mineral insulated electric cable termination as claimed in Claim 11, wherein the metal retaining device is a clip which has a protruding part of substantially C-shape between the limbs of which the cable sheath (S) is a force-fit.
13. A mineral insulated electric cable termination as claimed in Claim 12, wherein the radially inner edge of the C-shaped clip has one or more than one inwardly extending tooth of such a shape that it bites into the cable sheath and serves to restrain the tube against rotational movement on and with respect to the cable.
14. For use in the assembly of a mineral insulated electric cable termination, a mineral insulated cable terminating device comprising a tube (1,21) of flexible electrically insulating material open at one end (2,22) and closed at or near its other end by an end wall (3,23) having therein at least one throughbore (6,26) wherein at a first position (9,29) around the circumferential wall (8,28) of the tube the wall is slit throughout its length and radial thickness and at at least one position circumferentially spaced from said first position the wall is adapted to constitute a hinge (10,30) extending throughout the length of the wall, the longitudinally extending parts of the wall at said first position being so shaped that one is adapted to effect a snap-fit with the other throughout the length of the tube.
15. A mineral insulated electric cable terminating device as claimed in Claim 14, wherein the circumferential wall (8) of the tube (1) is adapted to constitute a hinge (10) extending throughout the length of the wall at a second position substantially diametrically opposite said first position (9) and the end wall (3) is slit substantially diametrically from said first position to said second position so that each part of the end wall is integral with one of the two parts of the tube.
16. A mineral insulated cable terminating device as claimed in Claim 14, wherein the end wall of the tube is slit transversely over the majority of its width along two parallel planes on opposite sides of the axis of the end wall, one of said two parallel planes containing the axis of a first throughbore or the axes of two throughbores in said end wall and the other of said two parallel planes contain-



ing the axis of a second or third throughbore or the axes of third and fourth throughbores in said end wall, and the circumferential wall of the tube at two circumferentially spaced positions extending from the closed ends of the slits in the end wall and throughout the length of the circumferential wall is adapted to constitute two circumferentially spaced hinges.

17. A mineral insulated electric cable terminating device as claimed in Claim 14, wherein the end wall (23) of the tube (21) is slit transversely over a part of its width extending from said first position (29) along its diameter and over the majority of the remainder of its width along two substantially parallel planes (33) on opposite sides of the axis of the end wall dividing the end wall into a central portion (23') and two other portions (23''), the diametrically extending slit containing the axis of one throughbore (26) and each of said two parallel slits containing the axis of one of two other throughbores (26) and wherein the circumferential wall (28) of the tube at two circumferentially spaced positions extending from the closed ends of the two parallel slits in the end wall and throughout the length of the circumferential wall is adapted to constitute two circumferentially spaced hinges (30).

18. A mineral insulated cable terminating device as claimed in any one of Claims 14 to 17, wherein at least one of the hinged parts of the tube is pre-filled with waterproof electrically insulating compound of a grease-like nature.

Patentansprüche

1. Endverschluß für ein mineralisiertes elektrisches Kabel mit einem Rohr (1, 21) aus flexiblem elektrisch isolierendem Material, wobei ein Ende (2, 22) des Rohrs über die zurückgeschnittene Ummantelung (S) des Kabels paßt und das andere Ende (3, 23) des Rohrs durch eine von der Endfläche des Kabels beabstandete Endwand verschlossen ist, wobei der oder jeder Kabelleitungsdraht (C) durch eine Durchgangsöffnung oder eine von mehreren Durchgangsöffnungen (6, 26) in der Endwand durchgeführt wird und der Zwischenraum innerhalb des Rohrs zwischen der Endfläche des Kabels und der Endwand mit einer wasserbeständigen, elektrisch isolierenden Masse (20, 40) verfüllt wird, wobei die Wand an einer ersten Position (9, 29) um die Umfangswand (8, 28) des Rohrs über ihre gesamte Länge und radiale Dicke geschlitzt ist und die Wand an mindestens einer umfangsmäßig von der ersten Position beabstandeten Position so angepaßt ist,

daß sie ein Gelenk (10, 30) bildet, das sich über die gesamte Länge der Wand erstreckt, wobei die aneinander angrenzenden, sich in Längsrichtung erstreckenden Teile der Wand an der ersten Position so geformt sind, daß ein Teil über die gesamte Länge des Rohrs mit dem anderen Teil eine Rastverriegelung bewirkt.

2. Endverschluß nach Anspruch 1, wobei eines der beiden aneinander angrenzenden Teile der Umfangswand (8, 28) des Rohrs (1, 21) an der ersten Position (9, 29) einen sich über die gesamte Länge des einen Teils in Längsrichtung nach außen erstreckenden Vorsprung (14, 34) aufweist, der in eine Nut (15, 35) mit komplementärer Querschnittform einrasten kann, die sich in Längsrichtung über die gesamte Länge der Innenfläche des anderen Teils erstreckt.
3. Endverschluß nach Anspruch 1 oder 2, wobei die Umfangswand (8, 28) des Rohrs (1, 21) an der oder jeder von der ersten Position (9, 29) umfangsmäßig beabstandeten Position in Querrichtung eine solche Querschnittsform und/oder eine solche radiale Dicke aufweist, daß die Wand an dieser Position wirksam ein Gelenk (10, 30) bildet.
4. Endverschluß nach einem der vorangehenden Ansprüche, wobei das mineralisierte elektrische Kabel einen oder zwei Leitungsdrähte aufweist, wobei die Umfangswand (8) des Rohrs (1) dazu angepaßt ist, an einer zweiten Position, die der ersten Position im wesentlichen diametral gegenüberliegt, ein Gelenk (10) zu bilden, das sich über die gesamte Länge der Wand erstreckt, und wobei die Endwand (3) des Rohrs im wesentlichen diametral von der ersten Position (9) zur zweiten Position geschlitzt ist, so daß jeder Teil der Endwand mit einem der beiden Gelenkteile (1', 1'') des Rohrs einstückig ist.
5. Endverschluß nach einem der Ansprüche 1 bis 3, wobei das mineralisierte elektrische Kabel drei Leitungsdrähte aufweist, wobei die Endwand (23) des Rohrs (21) in Querrichtung über einen Teil ihrer Breite geschlitzt ist, der sich von der ersten Position (29) entlang des Durchmessers der Endwand und über den größten Teil des verbleibenden Teils ihrer Breite entlang zwei im wesentlichen parallelen Ebenen (33) an entgegengesetzten Seiten der Achse der Endwand erstreckt, die die Endwand in einen Mittelabschnitt (23') und zwei weitere Abschnitte (23'') teilen, wobei der sich diametral erstreckende Schlitz die Achse einer Durchgangsöffnung (26) und jeder der zwei parallelen Schlitze die Achse eines der anderen beiden Durchgangsöffnungen (26) enthält



und wobei die Umfangswand (28) des Rohrs an zwei umfangsmäßig beabstandeten Positionen, die sich von den geschlossenen Enden der beiden parallelen Schlitzte in der Endwand und über die gesamte Länge der Umfangswand erstrecken, dazu geeignet ist, zwei umfangsmäßig beabstandete Gelenke (30) zu bilden.

6. Endverschluß nach einem der Ansprüche 1 bis 3, wobei das mineralisierte elektrische Kabel zwei oder vier Leitungsdrähte aufweist, wobei die Endwand des Rohrs in Querrichtung über den größten Teil ihrer Breite entlang zwei parallelen Ebenen an entgegengesetzten Seiten der Achse der Endwand geschlitzt ist, die die Endwand in einen Mittelabschnitt und in zwei weitere Abschnitte teilen, wobei einer der beiden parallelen Schlitzte die Achse der ersten Durchgangsöffnung oder die Achsen zweier Durchgangsöffnungen und der andere der beiden parallelen Schlitzte die Achse der zweiten Durchgangsöffnung oder die Achsen der dritten und der vierten Durchgangsöffnung in der Endwand enthält, und wobei die Umfangswand des Rohrs an zwei umfangsmäßig beabstandeten Positionen, die sich von den geschlossenen Enden der Schlitzte in der Endwand und über die gesamte Länge der Umfangswand erstrecken, dazu angepaßt ist, zwei umfangsmäßig beabstandete Gelenke zu bilden.
7. Endverschluß nach einem der vorangehenden Ansprüche, wobei die Endwand (3, 23) des Rohrs (1, 21) eine oder zwei oder mehr sich in Längsrichtung und von der Endwand nach außen erstreckende Buchsen (7, 27) aufweist, die mit der Durchgangsöffnung oder mit den Durchgangsöffnungen (6, 26) in der Endwand im wesentlichen axial ausgerichtet sind und den Kabelleitungsdraht oder die Kabelleitungsdrähte (C) umgeben.
8. Endverschluß nach Anspruch 4, wobei die Endwand (3) des Rohrs (1) eine oder zwei sich von der Endwand nach außen erstreckende Buchsen (7) aufweist, die mit der Durchgangsöffnung oder mit den Durchgangsöffnungen (6) in der Endwand im wesentlichen axial ausgerichtet sind und den Kabelleitungsdraht oder die Kabelleitungsdrähte (C) umgeben, wobei die Achse der oder jeder Durchgangsöffnung auf dem sich diametral erstreckenden Schlitz liegt und die oder jede Buchse in Querrichtung über ihre gesamte Länge geschlitzt ist, so daß ein Teil der Buchse mit einem Teil der Endwand und der andere Teil der Buchse mit dem anderen Teil der Endwand einstückig ist.
9. Endverschluß nach Anspruch 5, wobei die Endwand (23) des Rohrs (21) drei sich von der End-

wand nach außen erstreckende Buchsen (27) aufweist, die mit den Durchgangsöffnungen (26) in der Endwand im wesentlichen axial ausgerichtet sind und die Kabelleitungsdrähte (C) umgeben, wobei jede der Buchsen in Querrichtung über ihre gesamte Länge geschlitzt ist, so daß ein Teil jeder von zwei Buchsen mit dem Mittelabschnitt (23') und der andere Teil der Buchse mit einem der anderen Abschnitte (23'') der Endwand einstückig ist und daß jeder Teil der dritten Buchse mit einem der anderen Abschnitte der Endwand einstückig ist.

10. Endverschluß nach Anspruch 6, wobei die Endwand des Rohrs zwei oder vier sich von der Endwand nach außen erstreckende Buchsen aufweist, die mit den Durchgangsöffnungen in der Endwand im wesentlichen axial ausgerichtet sind und die Kabelleitungsdrähte umgeben, wobei jede der Buchsen in Querrichtung über ihre gesamte Länge geschlitzt ist, so daß ein Teil der Buchse mit dem Mittelabschnitt der Endwand und der andere Teil der Buchse mit einem der anderen Abschnitte der Endwand einstückig ist.
11. Endverschluß nach einem der vorangehenden Ansprüche, wobei die Umfangswand des Teils der Länge des Rohrs, der über die zurückgeschnittene Ummantelung (S) des Kabels paßt, in der Umfangswand und von dieser nach innen hervorstehend eine Vorrichtung (17, 37) aus Metall oder einer Metalllegierung aufweist, deren hervorstehender Teil (23) mit der Kabelummantelung mechanisch in Eingriff kommt und das Rohr (1, 21) an der Ummantelung befestigt, so daß das Ablösen des Rohrs vom Kabel verhindert wird.
12. Endverschluß nach Anspruch 11, wobei die Haltevorrichtung aus Metall eine Haltevorrichtung mit einem C-förmigen hervorstehenden Teil ist, zwischen dessen Schenkeln die Kabelummantelung kraftschlüssig eingepaßt wird.
13. Endverschluß nach Anspruch 12, wobei der radiale Innenrand der C-förmigen Haltevorrichtung einen oder mehr sich nach innen erstreckende Zähne mit einer derartigen Form aufweist, daß der Zahn oder die Zähne in die Kabelummantelung greifen und dadurch verhindern, daß das Rohr sich drehbar auf dem Kabel oder bezüglich des Kabels bewegen kann.
14. Endverschlußvorrichtung für ein mineralisiertes Kabel zur Verwendung beim Aufbau eines Endverschlusses für ein mineralisiertes elektrisches Kabel, wobei die Vorrichtung aufweist: ein Rohr (1, 21) aus flexiblem elektrisch isolierendem Material, das an einem Ende (2, 22) offen



und am anderen Ende oder in der Nähe von dessen anderem Ende durch eine Endwand (3, 23) verschlossen ist, in der mindestens eine Durchgangsöffnung (6, 26) vorgesehen ist, wobei die Wand an einer ersten Position (9, 29) um die Umfangswand (8, 28) des Rohrs über ihre gesamte Länge und radiale Dicke geschlitzt ist und die Wand an mindestens einer von der ersten Position umfangsmäßig beabstandeten Position dazu angepaßt ist, ein Gelenk (10, 30) zu bilden, das sich über die gesamte Länge der Wand erstreckt, wobei die sich in Längsrichtung erstreckenden Teile der Wand an der ersten Position so geformt sind, daß ein Teil dazu angepaßt ist, über die gesamte Länge des Rohrs in das andere Teil einzurasten.

15. Endverschlußvorrichtung nach Anspruch 14, wobei die Umfangswand (8) des Rohrs (1) dazu angepaßt ist, ein Gelenk (10) zu bilden, das sich an einer der ersten Position (9) im wesentlichen diametral gegenüberliegenden zweiten Position über die gesamte Länge der Wand erstreckt, wobei die Endwand (3) im wesentlichen diametral von der ersten Position zur zweiten Position geschlitzt ist, so daß jeder Teil der Endwand mit einem der beiden Teile des Rohrs einstückig ist.

16. Endverschlußvorrichtung nach Anspruch 14, wobei die Endwand des Rohrs in Querrichtung über den größten Teil ihrer Breite entlang zwei parallelen Ebenen an entgegengesetzten Seiten der Achse der Endwand geschlitzt ist, wobei eine der beiden parallelen Ebenen die Achse einer ersten Durchgangsöffnung oder die Achsen von zwei Durchgangsöffnungen in der Endwand und die andere der beiden parallelen Ebenen die Achse einer zweiten Durchgangsöffnung oder die Achsen einer dritten und einer vierten Durchgangsöffnung in der Endwand enthält und wobei die Umfangswand des Rohrs an zwei umfangsmäßig beabstandeten Positionen, die sich von den geschlossenen Enden der Schlitzte in der Endwand ausgehend über die gesamte Länge der Umfangswand erstrecken, dazu angepaßt ist, zwei umfangsmäßig beabstandete Gelenke zu bilden.

17. Endverschlußvorrichtung nach Anspruch 14, wobei die Endwand (23) des Rohrs (21) in Querrichtung über einen Teil ihrer Breite geschlitzt ist, der sich von der ersten Position (29) entlang ihres Durchmessers und über den größten Teil des verbleibenden Teils ihrer Breite entlang zwei im wesentlichen parallelen Ebenen (33) an entgegengesetzten Seiten der Achse der Endwand erstreckt, die die Endwand in einen Mittelabschnitt (23') und zwei weitere Abschnitte (23'') teilen, wobei der sich diametral erstreckende Schlitz die

Achse einer Durchgangsöffnung (26) und jeder der beiden parallelen Schlitzte die Achse einer der beiden anderen Durchgangsöffnungen (26) enthält und wobei die Umfangswand (28) des Rohrs an zwei umfangsmäßig beabstandeten Positionen, die sich von den geschlossenen Enden der beiden parallelen Schlitzte in der Endwand ausgehend über die gesamte Länge der Umfangswand erstrecken, dazu angepaßt ist, zwei umfangsmäßig beabstandete Gelenke (30) zu bilden.

18. Endverschlußvorrichtung nach einem der Ansprüche 14 bis 17, wobei mindestens einer der Gelenkteile des Rohrs mit einer schmierstoffartigen, wasserbeständigen, elektrisch isolierenden Masse vorgefüllt ist.

Revendications

1. Terminaison de câble électrique isolé par une matière minérale, comprenant un tube (1, 21) en une matière flexible isolante de l'électricité, qui, à une (2, 22) des extrémités du tube s'ajuste sur la gaine dénudée (S) du câble et qui, à l'autre extrémité (3, 23) du tube, est fermée par une paroi d'extrémité espacée de la face d'extrémité du câble, le conducteur ou chaque conducteur (C) passant à travers un trou traversant ou à travers un trou traversant d'une pluralité de trous traversants (6, 26) de la paroi d'extrémité et l'espace à l'intérieur du tube entre la face d'extrémité du câble et ladite paroi d'extrémité étant rempli par un composé (20, 40) isolant de l'électricité et imperméable à l'eau, terminaison de câble dans laquelle, à une première position (9, 29) sur la paroi circumférentielle (8, 28) du tube, la paroi est fendue sur la totalité de sa longueur et sur la totalité de son épaisseur radiale, et à au moins une position espacée circumférentiellement de ladite première position, la paroi est adaptée pour constituer une charnière (10, 30) s'étendant sur la totalité de la longueur de la paroi, les parties s'étendant longitudinalement et venant en butée contre la paroi à ladite première position étant profilées de façon telle que l'une s'enclenche dans l'autre sur la totalité de la longueur du tube.

2. Terminaison de câble électrique isolé par une matière minérale selon la revendication 1, dans laquelle une des deux parties en butée de la paroi circumférentielle (8, 28) du tube (1, 21) à ladite première position (9, 29) comporte, s'étendant longitudinalement sur la totalité de sa longueur, une protubérance (14, 34) qui s'étend vers l'extérieur et qui s'enclenche dans une rainure (15, 35) de forme transversale complémentaire,



s'étendant longitudinalement sur la totalité de la longueur de la surface intérieure de l'autre partie.

3. Terminaison de câble électrique isolé par une matière minérale selon la revendication 1 ou 2, dans laquelle la paroi circonférentielle (8, 28) du tube (20, 21), à la position ou à chaque position espacée circonférentiellement de ladite première position (9, 29), a une forme de section transversale telle et/ou une épaisseur radiale telle, que la paroi, à cette position, constitue en fait une charnière (10, 30).

4. Terminaison de câble électrique isolé par une matière minérale selon l'une quelconque des revendications précédentes, dans laquelle le câble électrique isolé par une matière minérale comporte un seul conducteur ou deux conducteurs, terminaison dans laquelle la paroi circonférentielle (8) du tube est adaptée pour constituer une charnière (10) s'étendant sur totalité de la longueur de la paroi, à une seconde position sensiblement opposée diamétralement à ladite première position, et dans laquelle la paroi d'extrémité (3) du tube est fendue de façon sensiblement diamétrale depuis ladite première position (9) jusqu'à ladite seconde position, de telle sorte que chaque partie de la paroi d'extrémité fasse partie intégrante d'une des deux parties articulées (1', 1'') du tube.

5. Terminaison de câble électrique isolé par une matière minérale selon l'une quelconque des revendications 1 à 3, dans laquelle le câble électrique isolé par une matière minérale comporte trois conducteurs, la paroi d'extrémité (23) du tube (21) étant fendue transversalement sur une partie de sa largeur s'étendant depuis ladite première position (29) le long de son diamètre et sur la majorité du restant de sa largeur le long de deux plans sensiblement parallèles (33), de part et d'autre de l'axe de la paroi d'extrémité en divisant cette paroi d'extrémité en une portion centrale (23') et deux autres portions (23''), la fente s'étendant diamétralement contenant l'axe de l'un (26) des trous traversants et chacune des deux fentes parallèles précitées contenant l'axe de l'un des deux autres trous traversants (26) et la paroi circonférentielle (28) du tube à deux positions espacées circonférentiellement s'étendant depuis les extrémités fermées des deux fentes parallèles de la paroi d'extrémité et sur toute la longueur de la paroi circonférentielle étant adaptée pour constituer deux charnières (30) espacées circonférentiellement.

6. Terminaison de câble électrique isolé par une matière minérale selon l'une quelconque des re-

vendications 1 à 3, dans laquelle le câble électrique isolé par une matière minérale comporte deux ou quatre conducteurs, la paroi d'extrémité du tube est fendue transversalement sur la majorité de sa largeur le long de deux plans parallèles situés de part et d'autre de l'axe de la paroi d'extrémité en divisant cette paroi d'extrémité en une portion centrale et en deux autres portions, l'une des deux fentes parallèles précitées contenant l'axe d'un premier trou traversant ou les axes de deux trous traversants de ladite paroi d'extrémité et l'autre des deux fentes parallèles précitées contenant l'axe du second trou traversant ou les axes des troisième et quatrième trous traversants de ladite paroi d'extrémité, et la paroi circonférentielle du tube, à deux positions espacées circonférentiellement s'étendant depuis les extrémités fermées des fentes de la paroi d'extrémité et sur la totalité de la longueur de la paroi circonférentielle étant adaptée pour constituer deux charnières espacées circonférentiellement.

7. Terminaison de câble électrique isolé par une matière minérale selon l'une quelconque des revendications précédentes, dans laquelle la paroi d'extrémité (3, 23) du tube (1, 21) comporte, s'étendant dans le sens de sa longueur et à l'extérieur depuis la paroi d'extrémité, un manchon ou deux ou plus de deux manchons (7, 27) en alignement sensiblement axial avec le trou traversant ou les trous traversants (6, 26) de la paroi d'extrémité et entourant le conducteur ou les conducteurs (C) de câble.

8. Terminaison de câble électrique isolé par une matière minérale selon la revendication 4, dans laquelle la paroi d'extrémité (3) du tube (1) comporte, s'étendant extérieurement depuis la paroi d'extrémité, un manchon ou deux manchons (7) en alignement sensiblement axial avec le trou traversant ou les trous traversants (6) de la paroi d'extrémité et entourant le conducteur ou les conducteurs (C) de câble, l'axe du trou traversant ou de chaque trou traversant se trouvant sur ladite fente s'étendant diamétralement et le manchon ou chaque manchon étant fendu transversalement sur la totalité de sa longueur de telle sorte qu'une des parties du manchon fasse partie intégrante d'une des portions de la paroi d'extrémité et l'autre partie du manchon fasse partie intégrante de l'autre portion de la paroi d'extrémité.

9. Terminaison de câble électrique isolé par une matière minérale selon la revendication 5, dans laquelle la paroi d'extrémité (23) du tube (21) comporte, s'étendant extérieurement depuis la paroi d'extrémité, trois manchons (27) en alignement sensiblement axial avec les trous traver-



- sants (26) de la paroi d'extrémité et entourant les conducteurs (C) de câble, chacun des manchons étant fendu transversalement sur la totalité de sa longueur de telle sorte qu'une des parties de chacun des deux manchons fasse partie intégrante de la portion centrale (23') de la paroi d'extrémité et l'autre partie dudit manchon fasse partie intégrante de l'une des autres portions (23'') de la paroi d'extrémité et de telle sorte que chaque partie du troisième manchon fasse partie intégrante d'une desdites autres portions de la paroi d'extrémité.
10. Terminaison de câble électrique isolé par une matière minérale selon la revendication 6, dans laquelle la paroi d'extrémité du tube comporte, s'étendant extérieurement depuis la paroi d'extrémité, deux ou quatre manchons en alignement sensiblement axial avec les trous traversants de la paroi d'extrémité et entourant les conducteurs du câble, chacun des manchons étant fendu transversalement sur la totalité de sa longueur de telle sorte qu'une des parties du manchon fasse partie intégrante de la portion centrale de la paroi d'extrémité et que l'autre partie du manchon fasse partie intégrante d'une des autres portions de la paroi d'extrémité.
 11. Terminaison de câble électrique isolé par une matière minérale selon l'une quelconque des revendications précédentes, dans laquelle la paroi circonférentielle de la partie de la longueur du tube qui s'ajuste sur la gaine dénudée (S) du câble comporte, dans la paroi circonférentielle et faisant saillie intérieurement depuis la paroi circonférentielle, un dispositif (17, 37) en métal ou en alliage métallique, dont une partie saillante (23) porte mécaniquement contre la gaine du câble et fixe le tube (1, 21) à cette gaine de manière à retenir le tube pour qu'il ne se sépare pas du câble.
 12. Terminaison de câble électrique isolé par une matière minérale selon la revendication 11, dans laquelle le dispositif métallique de retenue est une attache qui comporte une partie saillante ayant sensiblement la forme d'un C entre les ailes duquel la gaine (S) de câble est ajustée à force.
 13. Terminaison de câble électrique isolé par une matière minérale selon la revendication 12, dans laquelle le bord radialement intérieur de l'attache en forme de C comporte une seule ou plusieurs dents s'étendant vers l'intérieur et de forme telle qu'elles mordent dans la gaine du câble et servent à retenir le tube de manière qu'il ne tourne pas sur le câble par rapport à celui-ci.
 14. Pour une utilisation dans l'ensemble d'une terminaison de câble électrique isolé par une matière minérale, un dispositif de terminaison de câble isolé par une matière minérale, comprenant un tube (1, 21) en une matière flexible isolante de l'électricité et ouvert à une de ses extrémité (2, 22) et fermé à son autre extrémité ou près de son autre extrémité par une paroi d'extrémité (3, 23) comportant au moins un trou traversant (6, 26) ou, dispositif dans lequel, à une première position (9, 29) autour de la paroi circonférentielle (8, 28) du tube, la paroi est fendue sur la totalité de sa longueur et sur la totalité de son épaisseur radiale et, à au moins une position circonférentiellement espacée de ladite première position, la paroi est adaptée pour constituer une charnière (10, 30) s'étendant sur la totalité de la longueur de la paroi, les parties de la paroi qui s'étendent longitudinalement à ladite première position étant profilées de manière telle qu'une de ces parties est adaptée pour s'enclencher dans l'autre partie sur la totalité de la longueur du tube.
 15. Dispositif de terminaison de câble électrique isolé par une matière minérale selon la revendication 14, dans lequel la paroi circonférentielle (8) du tube (1) est adaptée pour constituer une charnière (10) s'étendant sur la totalité de la longueur de la paroi à une seconde position sensiblement opposée diamétralement à ladite première position (9) et la paroi d'extrémité (3) est fendue de façon sensiblement diamétrale depuis ladite première position jusqu'à ladite seconde position, de telle sorte que chaque partie de la paroi d'extrémité fasse partie intégrante d'une seule ou des deux parties du tube.
 16. Dispositif de terminaison de câble électrique isolé par une matière minérale selon la revendication 14, dans lequel la paroi d'extrémité du tube est fendue transversalement sur la majeure partie de sa largeur le long de deux plans parallèles de part et d'autre de l'axe de la paroi d'extrémité, l'un des deux plans parallèles contenant l'axe d'un premier trou traversant ou les axes de deux trous traversants de ladite paroi d'extrémité et l'autre des deux plans parallèles précités contenant l'axe d'un second ou troisième trou traversant ou les axes de troisième et quatrième trous traversants de ladite paroi d'extrémité, et la paroi circonférentielle du tube aux deux positions espacées circonférentiellement et s'étendant depuis les extrémités fermées des fentes de la paroi d'extrémité et sur la totalité de la longueur de la paroi circonférentielle est adapté pour constituer deux charnières espacées circonférentiellement.
 17. Dispositif de terminaison de câble électrique iso-



lé par une matière minérale selon la revendication 14, dans lequel la paroi d'extrémité (23) du tube (21) est fendue transversalement sur une partie de sa largeur s'étendant depuis ladite première position (29), le long de son diamètre et sur la majeure partie du restant de sa largeur le long de deux plans parallèles (33) situés de part et d'autre de l'axe de la paroi d'extrémité divisant la paroi d'extrémité en une portion centrale (23') et en deux autres portions (23''), la fente s'étendant diamétralement contenant l'axe d'un trou traversant (26) et chacune des deux fentes parallèles précitées contenant l'axe d'un de deux autres trous traversants (26), et dans lequel la paroi circconférentielle (28) du tube, à deux positions espacées circconférentiellement s'étendant depuis l'extrémité fermée des deux fentes parallèles de la paroi d'extrémité et sur la totalité de la longueur de la paroi circconférentielle est adaptée pour constituer deux charnières (30) espacées circconférentiellement.

18. Dispositif de terminaison de câble isolé par une matière minérale et selon l'une quelconque des revendications 14 à 17, dans lequel au moins une des parties articulées dudit tube est remplie préalablement avec un composé isolant de l'électricité et imperméable à l'eau, d'une nature analogue à de la graisse.

5

10

15

20

25

30

35

40

45

50

55

13