

PATENT SPECIFICATION

(11) 1 524 684

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- (21) Application No's 44415/77
44416/77
44417/77
44418/77
- (22) Filed 20 Dec. 1974
23 Dec. 1974
16 Apr. 1975
14 Nov. 1975

(19)



- (62) Divided out of No. 1524683
- (23) Complete Specification Filed 22 Dec. 1975
- (44) Complete Specification Published 13 Sep. 1978
- (51) INT. CL.² H02G 15/02

(52) Index at Acceptance
H2E 18 21 22C

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(54) TERMINATION OF ELECTRIC CABLES

(71) We, BICC LIMITED, (formerly BRITISH INSULATED 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 the termination of electric cables and conduits containing electric conductors and to a kit for use therein; more especially (but not exclusively) it is concerned with the termination of cables of a kind that cannot be adequately sealed (for particular purposes) by the use of 'mechanical' cable glands of the kind to which British Standard 6121 relates. Currently it is the practice in such circumstances to terminate the cable into a compound chamber that is separate from but attached to the electrical apparatus to which the cable conductors are connected. This arrangement occupies significantly greater space than a gland-type termination and has the disadvantage that in most cases the cable cannot be disconnected from the apparatus without breaking the seal.

In accordance with one aspect of the invention, an electric cable or conduit is terminated on electrical apparatus as follows:

(1) the cable or conduit end is prepared with the individual conductors projecting forwardly from an end of a surrounding protective layer of the cable or from the conduit end as the case may be;

(2) the cable or conduit is secured in a first gland member, having a passage through which the cable or conduit passes and which has an enlarged section at its forward end, with the end of the protective layer or conduit in the enlarged section;

(3) a quantity of a hardenable insulating compound is applied, in a pasty or viscous condition, so as to fill and stand proud of the enlarged section of the passage in the first gland

member and to adhere to the parts of the cable or conduit and conductors within it;

(4) a second gland member, having a passage with an enlarged section at its rear end, is assembled with the first gland member so as to enclose the insulating compound to an extent sufficient to allow generation of pressure in the compound;

(5) the first and second gland members are drawn together before the insulating compound has hardened so as to press the compound into firm contact with the cable, and

(6) the termination is secured to the electrical apparatus by mechanically engaging at least one of the gland members.

The invention also includes a kit for terminating a cable or conduit comprising (a) a gland comprising a first gland member having a passage for the cable or conduit which has an enlarged section at its forward end; means for securing cable or conduit to the first gland member; a second gland member having a passage with an enlarged section at its rear end, telescopically engageable at its rear end with the first gland member and means for drawing the first and second gland members towards one another, and (b) a quantity of hardenable insulating compound sufficient to fill the enlarged sections of the two passages around a prepared cable or conduit end.

When the method or the kit of the invention is used to terminate a wire-armoured cable, the cable end is preferably secured in the gland by securing the armour wires to the first gland member.

The first and second gland members may be drawn together in various ways. Thus they may be directly engaged by a screw thread to enable them to be drawn together without the intervention of separate members. Another possibility is for them to be drawn together by an additional gland member in screw-threaded engagement with one of them and bearing directly or indirectly on the other. In a further form of the invention two additional gland

members are used in drawing the first and second gland members together, one bearing on the first gland member and the other on the second and the two additional members being drawn together by a direct screw-threaded engagement between them or by drawbolts or equivalent screw threaded means, the latter arrangement resembling conventional practice on the European mainland. When two further gland members directly screwed together are used, they will normally form a gland barrel (engaging the first gland member) and a gland body, (engaging the second gland member).

To assist in generating pressure in the paste or viscous compound, the enlarged portion of the passage in the first gland member preferably has a frustoconical base; and for the same purpose the passage in the second gland member preferably comprises two parallel end portions joined by a frustoconical tapered portion. In this case the second gland member is preferably of uniform wall thickness over at least most of its area and a further gland member bears on the exterior of the tapered portion to provide a self-centring action.

In carrying out the method of the invention, the cable or conduit may be secured to the first gland member by a standard gland (by which is meant a gland that is not flameproof) and the invention includes a kit including a standard gland and an adaptor for mounting on it to form a gland of the kind defined above.

Preferably the second gland member projects forwardly of any other gland member so that its presence can be confirmed by visual inspection, and similarly the quantity of insulating compound used is preferably sufficient to protrude at the front end of the second gland member.

The invention may be used in terminating mineral insulated cables, and in the case of such cables with an oversheath of lead, a composite seal in accordance with our British patent 1346297 is preferably used.

Other preferred features of the invention will be apparent from the drawings and the description thereof which follows.

The invention includes terminations made by the method described.

The invention will be further illustrated, by way of example, with reference to the accompanying drawings in which:

Figure 1 is a longitudinally sectioned view of one form of cable termination in accordance with the invention;

Figure 2 is a similar view of a modified termination;

Figure 3 is a similar view of a more economical but less technically satisfactory termination;

Figure 4 is a cut-away view of another modified termination in accordance with the invention;

Figures 5 and 6 each show another modified form of termination;

Figures 7 and 8 are a longitudinal section and end-view respectively of a draw-bolt gland termination in accordance with the invention;

Figure 9 is a longitudinally sectioned view of a mineral insulated cable termination in accordance with the invention;

Figure 10 is a longitudinally sectioned view of a termination in accordance with the invention made with a standard gland and an adaptor; and

Figure 11 is a longitudinal section of another termination in accordance with the invention.

In making the termination shown in Figure 1 the end of a cable is cut back in the conventional way to expose, besides the outer sheath 2, appropriate lengths of armour wire, bedding (or inner sheath) 4 and insulated conductor 5. A gland barrel 6 carrying a conventional outer seal assembly 7 not yet tightened, is slid over the prepared cable end, followed by an armour gripping ring 9. The armour wires are now splayed out to the position shown and a first gland member 9 is inserted with its armour cone 10 radially beneath the armour wires, which are gripped by temporarily screwing a gland body 11 into the barrel.

The gland body 11 is now removed, and a suitable quantity of a cold-setting resinous insulating "compound" 12 is pressed by hand or otherwise into an enlarged portion with a frustoconical base 13 at the forward end of the passage through the first gland member 9 so as to completely fill it and stand proud of it to a considerable extent. While the hardening compound is still in a paste or viscous condition, a second gland member 14 is passed over the cable conductors 5 and fitted inside the first gland member 9. This second gland member has parallel end-parts 15, 16, the front end part 15 being smaller in diameter than the rear end-part 16 and the two end parts being joined by a frustoconical intermediate part 17. When the gland body 11 is again screwed into the gland barrel 6, the intermediate part 17 engages a correspondingly tapered shoulder 18 to urge the first and second gland members together and so generate pressure in the compound, and to centre the parts to form a flame-gap 19 between them.

The outer seal 7 may now be tightened, and the termination may be secured to the electrical apparatus by screwing the spigot 20 on the body into a threaded aperture in the usual way. It will be observed that the second gland member 14 and the compound 12 are both visible at the front end of the gland.

The termination of figure 2 differs only in having the first gland member 9 enter the rear part 16 of the second gland member 14. This reduces the risk that compound leaking between the first and second gland members will bond them to the body 11.

The termination of figure 3 is similar to that of figure 2 except that the second gland

member 14 itself acts as the body (11) of the gland. This arrangement of course prevents rotation of the gland body with respect to the cable, unless the seal is broken, and may be disadvantageous in some installations.

5 Figure 4 illustrates another modification, in which the first and second gland members 9 and 14 are themselves screwed together at 21. The outer surface 22 is knurled to facilitate turning or alternatively (not shown) two or more flats may be provided to allow use of a spanner.

10 The termination of figure 5 is similar to that shown in figure 2 except that a flameproof sealing ring is inserted between the second gland member 14 and the gland body 11, and that of figure 6 is similar except that the ring 23 is housed between square shoulders 24, so that the parts are no longer self-centering. In both these cases the sealing ring is preferably bonded in the factory to the second gland member (or to the body) to avoid accidental loss. Both these designs can be modified by using a ring of a suitable cold setting resinous compound (applied in a pasty or viscous condition) instead of the ring.

15 Figures 7 and 8 show a "continental style" termination which is similar to that shown in figure 2 except that there is no outer seal and the gland barrel and body (6 and 11 respectively in figure 2) are replaced by two further gland members 25, 26 which are drawn together by bolts 27 instead of directly screwing together.

20 Figure 9 shows a termination on a mineral insulated cable having a copper or aluminium sheath 28 with a lead oversheath (or jacket) 29. As in the forms previously described, a seal is formed by resinous sealing compound 12 pressurised between first and second gland members 9 and 14 respectively and these are drawn together by a gland barrel 6 and a gland body 11. In this case however the fitting is mounted on the cable end by a seal, in accordance with British patent 1346297, comprising an elastomeric ring 30 (for example of polychloroprene) and a lead insert 31. A skid washer 32 co-operates with the first gland member 9 to compress the seal without relative rotation of the gripping surfaces, and the resilience of the elastomeric ring 30 provides stable sealing and contact pressure and ensures a good range-taking capacity.

25 Figure 10 shows a form of termination which is similar to figure 2 except that the first gland member 9, instead of being directly mounted on the cut-back cable end, is secured to it by a standard (non-flameproof) gland 33. For illustration a type E1W gland (British Standard 6121: 1973) has been shown, but many other suitable types can be used. Further gland members 34, 35 perform the main functions of gland barrel and body (6 and 11, figure 2) respectively.

30 Figure 11 shows another form of

termination, generally similar to that of figure 2 but for an unarmoured cable. The first gland member 9 is secured to the cable in a first operation by screwing into it a compressor 38, both these components 9, 38 having flats, knurled surfaces or similar means for the purpose. This compresses an elastomeric ring 43, a skid washer 39 being interposed between the ring and the compressor in the usual way. After introduction of the compound 12 and assembly of the remaining parts, the first and second gland members 9, 14 are drawn together by screwing the gland nut 40 onto the body 11. In this instance the spigot 41 is shown with a tapered thread 42 for engagement with a standard taper-threaded conduit, but it will be understood that a parallel thread, as in the other drawings, can be used. Equally the other designs illustrated could be made with a tapered thread if required.

35 In most cases a fluid-tight seal between the second gland member and the gland body or other further gland member surrounding it is advantageous, but there may be special cases in which it is undesirable. In this case, a continuous flame-gap may be ensured by providing ribs or another suitable spacer or spacers on either of these members at an appropriate position or positions along the length of the flame gap. For example, figure 4 shows grooves 36 in the external frustoconical surface of the second gland member to ensure a continuous pressure equalising passage from the front of the gland to the space 37 in which the armour wires are terminated. Similar provision may be made in other terminations, when appropriate.

40 Certain forms of the present invention may be within the scope of the claims of the patent to be granted on our copending applications nos 55233/74, 55480/74, 15654/75 and 47113/75 (serial no. 1524683).

WHAT WE CLAIM IS:-

45 1. A method of terminating an electric cable or conduit on electrical apparatus in which

(1) the cable or conduit end is prepared with the individual conductors projecting forwardly from an end of a surrounding protective layer of the cable or from the conduit end as the case may be;

(2) the cable or conduit is secured in a first gland member, having a passage through which the cable or conduit passes and which has an enlarged section at its forward end, with the end of the protective layer or conduit in the enlarged section;

(3) a quantity of hardenable insulating compound is applied, in a pasty or viscous condition, so as to fill and stand proud of the enlarged section of the passage in the first gland member and to adhere to the parts of the cable or conduit and conductors within it;

(4) a second gland member, having a passage with an enlarged section at its rear end,

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member 14 itself acts as the body (11) of the gland. This arrangement of course prevents rotation of the gland body with respect to the cable, unless the seal is broken, and may be disadvantageous in some installations.

Figure 4 illustrates another modification, in which the first and second gland members 9 and 14 are themselves screwed together at 21. The outer surface 22 is knurled to facilitate turning or alternatively (not shown) two or more flats may be provided to allow use of a spanner.

The termination of figure 5 is similar to that shown in figure 2 except that a flameproof sealing ring is inserted between the second gland member 14 and the gland body 11, and that of figure 6 is similar except that the ring 23 is housed between square shoulders 24, so that the parts are no longer self-centering. In both these cases the sealing ring is preferably bonded in the factory to the second gland member (or to the body) to avoid accidental loss. Both these designs can be modified by using a ring of a suitable cold setting resinous compound (applied in a pasty or viscous condition) instead of the ring.

Figures 7 and 8 show a "continental style" termination which is similar to that shown in figure 2 except that there is no outer seal and the gland barrel and body (6 and 11 respectively in figure 2) are replaced by two further gland members 25, 26 which are drawn together by bolts 27 instead of directly screwing together.

Figure 9 shows a termination on a mineral insulated cable having a copper or aluminium sheath 28 with a lead oversheath (or jacket) 29. As in the forms previously described, a seal is formed by resinous sealing compound 12 pressurised between first and second gland members 9 and 14 respectively and these are drawn together by a gland barrel 6 and a gland body 11. In this case however the fitting is mounted on the cable end by a seal, in accordance with British patent 1346297, comprising an elastomeric ring 30 (for example of polychloroprene) and a lead insert 31. A skid washer 32 co-operates with the first gland member 9 to compress the seal without relative rotation of the gripping surfaces, and the resilience of the elastomeric ring 30 provides stable sealing and contact pressure and ensures a good range-taking capacity.

Figure 10 shows a form of termination which is similar to figure 2 except that the first gland member 9, instead of being directly mounted on the cut-back cable end, is secured to it by a standard (non-flameproof) gland 33. For illustration a type E1W gland (British Standard 6121: 1973) has been shown, but many other suitable types can be used. Further gland members 34, 35 perform the main functions of gland barrel and body (6 and 11, figure 2) respectively.

Figure 11 shows another form of

termination, generally similar to that of figure 2 but for an unarmoured cable. The first gland member 9 is secured to the cable in a first operation by screwing into it a compressor 38, both these components 9, 38 having flats, knurled surfaces or similar means for the purpose. This compresses an elastomeric ring 43, a skid washer 39 being interposed between the ring and the compressor in the usual way. After introduction of the compound 12 and assembly of the remaining parts, the first and second gland members 9, 14 are drawn together by screwing the gland nut 40 onto the body 11. In this instance the spigot 41 is shown with a tapered thread 42 for engagement with a standard taper-threaded conduit, but it will be understood that a parallel thread, as in the other drawings, can be used. Equally the other designs illustrated could be made with a tapered thread if required.

In most cases a fluid-tight seal between the second gland member and the gland body or other further gland member surrounding it is advantageous, but there may be special cases in which it is undesirable. In this case, a continuous flame-gap may be ensured by providing ribs or another suitable spacer or spacers on either of these members at an appropriate position or positions along the length of the flame gap. For example, figure 4 shows grooves 36 in the external frustoconical surface of the second gland member to ensure a continuous pressure equalising passage from the front of the gland to the space 37 in which the armour wires are terminated. Similar provision may be made in other terminations, when appropriate.

Certain forms of the present invention may be within the scope of the claims of the patent to be granted on our copending applications nos 55233/74, 55480/74, 15654/75 and 47113/75 (serial no: 1524683).

WHAT WE CLAIM IS:-

1. A method of terminating an electric cable or conduit on electrical apparatus in which

(1) the cable or conduit end is prepared with the individual conductors projecting forwardly from an end of a surrounding protective layer of the cable or from the conduit end as the case may be;

(2) the cable or conduit is secured in a first gland member, having a passage through which the cable or conduit passes and which has an enlarged section at its forward end, with the end of the protective layer or conduit in the enlarged section;

(3) a quantity of hardenable insulating compound is applied, in a pasty or viscous condition, so as to fill and stand proud of the enlarged section of the passage in the first gland member and to adhere to the parts of the cable or conduit and conductors within it;

(4) a second gland member, having a passage with an enlarged section at its rear end,

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is assembled with the first gland member so as to enclose the insulating compound to an extent sufficient to allow generation of pressure in the compound;

- 5 (5) the first and second gland members are drawn together before the insulating compound has hardened so as to press the compound into firm contact with the cable; and

- 10 (6) the termination is secured to the electrical apparatus by mechanically engaging at least one of the gland members.

2. A method as claimed in Claim 1 in which the first and second members are threaded and directly screwed together.

- 15 3. A method as claimed in Claim 1 in which the first and second gland members are drawn together by a further gland member in screw-threaded engagement with one of them and bearing directly or indirectly on the other.

- 20 4. A method as claimed in Claim 3 in which the first and second gland members are drawn together by two further gland members, one bearing on the first gland member and the other on the second.

- 25 5. A method as claimed in Claim 4 in which the two further gland members are directly screwed together.

- 30 6. A method as claimed in Claim 4 in which the two further gland members are drawn together by drawbolts or equivalent screw-threaded means.

- 35 7. A method as claimed in Claim 2 in which the further gland members comprise a gland body engaging the second gland member and a gland barrel engaging the first gland member, the body and barrel having co-operating screw threads.

- 40 8. A method as claimed in Claim 7 in which the barrel engages the first gland member *via* an armour-gripping ring.

9. A method as claimed in Claim 7 or Claim 8 in which the gland body and the first gland member, in engaging together, centre themselves to form a flame gap between them.

- 45 10. A method as claimed in any one of Claims 7-9 in which the barrel supports at its rear end means forming a seal to a layer of the cable outside the armour.

- 50 11. A method as claimed in any one of Claims 7-10 in which the enlarged section of the passage through the first gland member has a frustoconical base.

- 55 12. A method as claimed in any one of Claims 7-11 in which the armour is secured by a ring that surrounds an armour-gripping cone on the first gland member and urges armour-wires into engagement with it.

- 60 13. A method as claimed in any one of Claims 1-12 in which the passage in the second gland member comprises two parallel portions joined by a frustoconical tapered portion.

- 65 14. A method as claimed in Claim 13 in which the second gland member is of uniform wall thickness over at least most of its area and in which a further gland member bears on the

exterior of the tapered portion.

15. A method as claimed in any one of Claims 1-13 in which the first gland member slides inside the second.

- 70 16. A method as claimed in any one of Claims 3-10 in which the second gland member projects beyond the (or all the) further gland member(s).

- 75 17. A method as claimed in Claim 16 in which the quantity of the compound used is sufficient to fill the second gland member completely and to protrude from the front end thereof.

- 80 18. A method of terminating an armoured electric cable on electrical apparatus comprising

(1) cutting back the cable end and securing the armour to a first gland member having a passage through which the cable passes and which has an enlarged section at its forward end

(2) applying a quantity of hardenable insulating compound in a pasty of viscous condition, so as to adhere to the parts of the cable within the armour and to fill and stand proud of the enlarged section of the passage in the first gland member;

(3) assembling a second gland member, having a passage with an internal cross-section that is enlarged at its rear end, with the first gland member so as to enclose the insulating compound to an extent sufficient to allow generation of pressure in the compound;

(4) drawing the first and second gland members together by at least one further gland member before the insulating compound has hardened so as to press the compound into firm contact with the cable; and

(5) securing the terminated cable end to the electrical apparatus by mechanically engaging one of the gland members.

- 105 19. A method as claimed in Claim 18 in which the first and second gland members are drawn together between two further gland members and the cable end is secured by mechanically engaging one of the further gland members.

- 110 20. A method as claimed in Claim 19 in which the further gland members comprise a gland body engaging the second gland member and a gland barrel engaging the first gland member, the body and barrel having co-operating screw threads.

- 115 21. A method as claimed in Claim 20 in which the barrel engages the first gland member *via* an armour-gripping ring.

- 120 22. A method as claimed in Claim 20 or Claim 21 in which the gland body and the second gland member, in engaging together, centre themselves to form a flame gap between them.

- 125 23. A method as claimed in any one of Claims 20-22 in which the barrel supports at its rear end means forming a seal to a layer of the cable outside the armour.

- 130 24. A method as claimed in any one of the Claims 18-23 in which the enlarged portion of



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the passage through the first gland member has a frustoconical base.

25. A method as claimed in any one of Claims 18-24 in which the armour is secured by a ring that surrounds an armour gripping cone forming part of the first gland member and urges armour-wires into engagement with it.

26. A method as claimed in any one of Claims 18-25 in which the passage in the second gland member comprises two parallel portions joined by a frustoconical tapered portion.

27. A method as claimed in Claim 26 in which the second gland member is of uniform wall thickness over at least most of its area and in which a further gland member bears on the exterior of the tapered portion.

28. A method as claimed in any one of Claims 18-27 in which the first gland member slides inside the second.

29. A method as claimed in any one of Claims 18-28 in which the second gland member projects beyond the (or all the) further gland member(s).

30. A method as claimed in Claim 29 in which the quantity of the compound used is sufficient to fill the second gland member completely and to protrude from the front end thereof.

31. A method of terminating an armoured cable substantially as described with reference to Figure 1 of the drawings.

32. A method as claimed in any one of Claims 1-21 and 23-30 in which a flameproof seal is formed between the second gland member and a further gland member that concentrically receives it by a flameproof sealing ring or sealing compound.

33. A method of terminating an electric cable or conduit substantially as described with reference to any one of figures 4-6 or to figures 7 and 8.

34. A method of terminating an electric cable or conduit on electrical apparatus comprising

(1) terminating the cable or conduit end by a gland that is not flameproof, leaving individual conductors and the end of a surrounding protective layer of the cable or the conduit, as the case may be, projecting forwardly from the gland;

(2) securing the forward end of the gland to an adaptor member, having a passage through which the cable or conduit passes and which has an enlarged section at its forward end, with the end of the protective layer or conduit in the enlarged section;

(3) applying a quantity of a hardenable insulating compound, in a pasty or viscous condition, so as to fill and stand proud of the enlarged section of the passage in the first adaptor member and to adhere to the parts of the cable or conduit and conductors within it;

(4) assembling a second adaptor member, having a passage with an enlarged section at its rear end, with the first adaptor member so as to

enclose the insulating compound to an extent sufficient to allow generation of pressure in the compound;

(5) drawing the first and second adaptor members together before the insulating compound has hardened so as to press the compound into firm contact with the cable; and

(6) securing the termination to the electrical apparatus by mechanically engaging at least one of the gland members.

35. A method of terminating an armoured electric cable or conduit as claimed in any one of Claims 1-17 in which the cable or conduit end is secured to the first gland member by a gland that is not flameproof.

36. A method of terminating an armoured electric cable as claimed in any one of Claims 18-30 in which the armour wire is secured in the first gland member by a gland that is not flameproof.

37. A method of terminating an electric cable or conduit substantially as described with reference to Figure 10 of the drawings.

38. A method of terminating a mineral-insulated cable as claimed in any one of Claims 1-37.

39. A method in accordance with Claim 38 of terminating a lead-sheathed mineral-insulated cable comprising sealing the lead sheath to the gland by a sealing gland claimed in any one claim of Patent No. 1346297.

40. A method of terminating a mineral-insulated cable substantially as described with reference to Figure 9 of the drawings.

41. A method as claimed in Claim 20 or 21 in which a continuous flame-gap between the gland body and the first gland member is ensured by providing a spacer or spacers at an appropriate position or positions along the length of the flame gap.

42. A kit for terminating a cable or conduit comprising (a) a gland comprising a first gland member having a passage for the cable or conduit which has an enlarged section at its forward end; means for securing a cable or conduit to the first gland member; a second gland member having a passage with an enlarged section at its rear end, telescopically engageable at its rear end with the first gland member; and means for drawing the first and second gland members towards one another, and (b) a quantity of hardenable insulating compound sufficient to fill the enlarged sections of the two passages around a prepared cable or conduit end.

43. A kit as claimed in Claim 42 in which the first and second gland members have screw threads for direct engagement with one another.

44. A kit as claimed in Claim 42 including an additional gland member which may be screwed on one of the first and second gland members to engage the other directly or indirectly and draw the first and second gland

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members together.

45. A kit as claimed in Claim 42 comprising two further gland members for engaging the first and second gland members respectively to draw them together.

46. A kit as claimed in Claim 43 in which the two further gland members are threaded for direct screw-threaded engagement.

47. A kit as claimed in Claim 45 including drawbolts or equivalent screw-threaded means for drawing the two further gland members together.

48. A kit as claimed in Claim 45 or Claim 46 in which the further gland members comprise a gland body engageable with the second gland member and a gland barrel engageable with the first gland member, the body and the barrel having co-operating screw threads.

49. A kit as claimed in Claim 48 including an armour gripping ring that can be located between and engaged by the barrel and the first gland member.

50. A kit as claimed in Claim 48 or Claim 49 in which the gland body and the second gland member engage self-centeringly to form a flame gap between them.

51. A kit as claimed in any one of Claims 42-50 in which the enlarged section of the passage through the first gland member has a frustoconical base.

52. A kit as claimed in any one of Claims 42-51 in which the said securing means comprises a ring that can surround an armour-gripping cone forming part of the first gland member and urge armour-wires of a cable into engagement with it.

53. A kit as claimed in any one of Claims 42-52 in which the passage in the second gland member comprises two parallel portions joined by a frustoconically tapered portion.

54. A kit as claimed in Claim 53 in which the second gland member is of uniform wall thickness over at least most of its area and in which a further gland member bears on the exterior of the tapered portion.

55. A kit as claimed in any one of Claims 42-54 in which the first gland member is slidable inside the second.

56. A kit as claimed in any one of Claims 42-55 in which, when the parts are fully assembled, the second gland member projects beyond the (or all the) further gland member(s).

57. A kit comprising a gland and a quantity of hardenable insulating compound both substantially as described with reference to and as shown in any one of figures 4-6 or with reference to and as shown in figures 7 and 8 of the drawings.

58. A kit for terminating an armoured cable comprising

(a) a gland comprising: a first gland member having a cable passage which has an enlarged section at its forward end; means for securing cable armour to the first gland

member; a second gland member having a passage with an internal cross-section that is enlarged at one end; slidably engageable at its enlarged end and with the first gland member; and at least one further gland member engageable with the first and second gland members to draw them towards one another, and

(b) a quantity of hardenable insulating compound sufficient to fill the enlarged sections of the two passages around a prepared armoured-cable end.

59. A kit as claimed in Claim 58 comprising two further gland members between which the first and second gland members can be inserted and by which they can be engaged to draw them together.

60. A kit as claimed in Claim 59 in which the further gland members comprise a gland body engageable with the second gland member and a gland barrel engageable with the first gland member, the body and the barrel having co-operating screw threads.

61. A kit as claimed in Claim 60 including an armour gripping ring that can be located between and engaged by the barrel and the first gland member.

62. A kit as claimed in Claim 60 or Claim 61 in which the gland body and the second gland member engage self-centeringly to form a flame gap between them.

63. A kit as claimed in any one of Claims 60-62 in which the barrel supports at its rear end means for forming a seal to a layer of the cable outside the armour.

64. A kit as claimed in any one of Claims 58-63 in which the enlarged portion of the passage through the first gland member has a frustoconical base.

65. A kit as claimed in any one of Claims 58-64 in which the armour-securing means comprises a ring that can surround an armour-gripping cone forming part of the first gland member and urge armour-wires into engagement with it.

66. A kit as claimed in any one of Claims 58-65 in which the passage in the second gland member comprises two parallel portions joined by a frustoconically tapered portion.

67. A kit as claimed in Claim 66 in which the second gland member is of uniform wall thickness over at least most of its area and in which a further gland member bears on the exterior of the tapered portion.

68. A kit as claimed in any one of Claims 58-67 in which the first gland member is slidable inside the second.

69. A kit as claimed in any one of Claims 58-68 in which, when the parts are fully assembled, the second gland member projects beyond the (or all the) further gland member(s).

70. A kit comprising a gland and a quantity of insulating compound both substantially as described with reference to and as shown in Figure 1 of the drawings.



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71. A kit as claimed in any one of Claims 42-56 and 58-69 in which the second gland member is concentrically receivable in a further gland member and including a sealing ring for forming a flameproof seal between the second gland member and that further gland member. 50
72. A kit as claimed in Claim 71 in which the sealing ring is bonded either to the second gland member or to that further gland member. 55
73. A kit for terminating a cable or conduit comprising (a) a cable or conduit gland that is not flameproof; (b) a flameproof adaptor comprising a first adaptor member having a passage for the cable or conduit which has an enlarged section at its forward end; means for securing the cable or conduit gland to the first adaptor member; a second adaptor member having a passage with an enlarged section at its rear end, telescopically engageable at its rear end with the first adaptor member; and means for drawing the first and second adaptor members towards one another; and (c) a quantity of hardenable insulating compound sufficient to fill the enlarged sections of the two passages around a prepared cable or conduit end. 60
74. A kit as claimed in any one of Claims 42-56 or 71 or 72 in which the means for securing the cable or conduit to the first gland member is a gland that is not flameproof. 65
75. A kit comprising a gland and a quantity of hardenable insulating compound both substantially as described with reference to and as shown in Figure 10 of the drawings. 70
76. A kit as claimed in any one of Claims 42-56, 71 or 72 in which the means for securing the cable or conduit to the first gland member includes a gland as claimed in any claim of Patent No. 1346297. 75
77. A kit comprising a gland and a quantity of hardenable insulating compound both substantially as described with reference to and as shown in Figure 9 of the drawings. 80
78. A kit as claimed in any one of Claims 42-56 and 58-69 in which the second gland member is concentrically receivable in a further gland member and in which a spacer or spacers on the second gland member or that further gland member or between those two members forms a continuous flame gap between them. 85
79. A method of terminating an armoured electric cable substantially as described with reference to either Figure 2 or Figure 3 of the drawings. 90
80. A kit comprising a gland and a quantity of hardenable insulating compound both substantially as described with reference to and as shown in either Figure 2 or Figure 3 of the drawings. 95
81. A cable or conduit termination made by a method claimed in any one of Claims 1-17 and/or by means of a kit claimed in any one of Claims 42-57.
82. A cable termination made by a method claimed in any one of Claims 18-31 and/or by means of a kit claimed in any one of Claims 58-70.
83. A cable or conduit termination made by the method claimed in any one of Claims 34-37 and/or by means of a kit claimed in any one of Claims 73-75.
84. A mineral insulated cable termination made by the method claimed in Claim 38 or Claim 39.
85. A mineral insulated cable termination made by means of a kit as claimed in any one of Claims 42-72 and 77.
86. A cable termination made by a method claimed in Claim 40 and/or a kit claimed in Claim 77.
87. A cable termination made by a method claimed in Claim 79 or by means of a kit claimed in Claim 80.
88. A method of terminating a cable substantially as described with reference to Figure 11 of the drawings.
89. A kit comprising a gland and a quantity of hardenable insulating compound both substantially as described with reference to and as shown in Figure 11 of the Drawings.
90. A cable termination made by the method claimed in Claim 88 and/or using the kit claimed in Claim 89.
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