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☒ Description : paged ...1... to paged ...2...
☒ Claim(s) : paged ...3... to paged ...7...
☒ Drawing(s) : paged ...9... to paged ...-...
☒ Abstract : paged ...1... to paged ...3...
DATE OF RECEIPT

Filler piece for sealing cables

In German Offenlegungsschrift 3,148,386 there is described a filler piece which comprises a profiled piece of plastic material and a coating of hot-melt adhesive.

5 Used as the plastic material, were, for example, thermoplastics, i.e. similar materials to those also used as cable insulations.- The hot-melt adhesives are of course of such a nature that they adhere well on such materials. The hot-melt adhesive melts when a shrink tube

10 is shrink-fitted around the assembly comprising filler piece and cables.

However, it has been found that, in the case of the conventional fillers, the bond, and consequently the sealing, in central regions was not optimum. The present

15 invention is based on the object of overcoming this disadvantage of known filler pieces. This object is achieved by the combination of features according to Claim 1.

The present invention is based on the realization

20 that the inadequate bonding in the case of conventional filler pieces could be attributable to an insufficient melting of the hot-melt adhesive in central regions. Elastomers have a significantly better thermal conductivity than thermoplastics. With the filler pieces

25 according to the invention as claimed in Claim 1, the effect is therefore achieved that, during the shrink-fitting of the shrink tube, the heat rapidly flows even into the interior and a uniform temperature distribution over the cross-section is achieved. As a result, the hot-

30 melt adhesive is melted even in central regions and therefore bonds well with the cables. Consequently, a good, closely bonded assembly is achieved.

Elastomeric profiled pieces additionally have the major advantage that the recesses in the form of cylinder

35 segments can enclose the cable over more than 180°. The filler pieces can then be snap-fitted onto the cables concerned.

Elastomeric profiled pieces have not been considered until now because the known hot-melt adhesives

adhere relatively poorly to the commercially available elastomers or polymer blends. The measures according to Claims 3 and 4 overcome this difficulty.

Exemplary embodiments of the invention are explained below with reference to the drawings, in which:
5 Fig. 1 shows a perspective view of a filler piece,
Fig. 2 shows a cross-section through another embodiment, and
10 Fig. 3 shows a cross-section through the profiled element of a third embodiment.

The filler pieces represented comprise an elastomeric profiled piece 1 having a plurality of recesses 3, 4, in the form of circular-cylinder sectors, and a sheathing of a hot-melt adhesive 2. In the case of
15 the embodiment according to Fig. 1, the recesses 3 enclose an angle of more than 180°. The relatively thick cables to be used there are thus snap-fitted into the recesses 3. The profiled piece 1 preferably consists of SBR/NBR/polychloroprene. To improve the adhesion with
20 respect to the hot-melt adhesive, either an adhesion-activating additive, in particular based on an anhydride-modified EVA comonomer, is added to the material of the profiled piece 1 during its production. Alternatively, it is also possible to treat the surface of the elastomeric
25 filler piece 1 with an adhesion promoter, for example by a halogenizing preparation with polychloroprene solution, or by a hydroaromatic cyclization or polarization of the profiled piece 1, which, when obtaining the hot-melt adhesive bond, during heating up to 190°C leads to
30 diffusion crosslinking with the hot-melt adhesive 2.

Suitable as the hot-melt adhesive are heteropolar and two-component hot-melt adhesives, in particular polyamide, EVA, PU, acrylate and epoxy two-component hot-melt-adhesives.

35 The hot-melt adhesive 2 may also extend only over part of the length of the profiled piece 1.



Patent claims

1. Filler piece for sealing cables, comprising an elastomeric profiled piece (1) having a plurality of recesses (3, 4), in the form of circular-cylinder sectors, and a sheathing of a hot-melt adhesive (2).
2. Filler piece according to Claim 1, the elastomeric profiled piece consisting of SBR/NBR/poly-chloroprene.
3. Filler piece according to Claim 1 or 2, the elastomeric material of the profiled piece containing an adhesion-activating additive, in particular based on an anhydride-modified EVA comonomer.
4. Filler piece according to Claim 1 or 2, the surface of the elastomeric profiled piece (1) being treated with an adhesion promoter.
5. Filler piece according to Claim 4, the adhesion promoter being a halogenizing preparation with poly-chloroprene solution.
6. Filler piece according to Claim 4, the surface of the profiled piece being hydroaromatically cyclized or polarized in such a way that, on heating to the melting temperature of the hot-melt adhesive, a diffusion cross-linking with the hot-melt adhesive occurs.
7. Filler piece according to one of Claims 1 to 6, the sheathing extending only over part of the length of the profiled piece (1).



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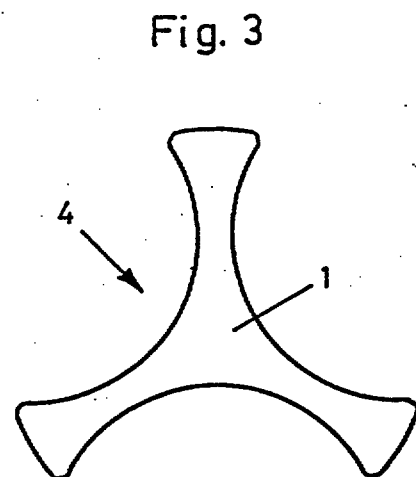
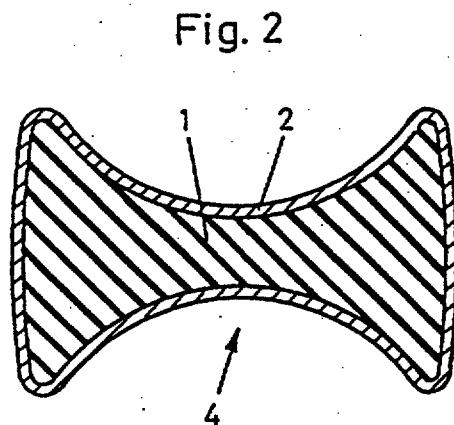
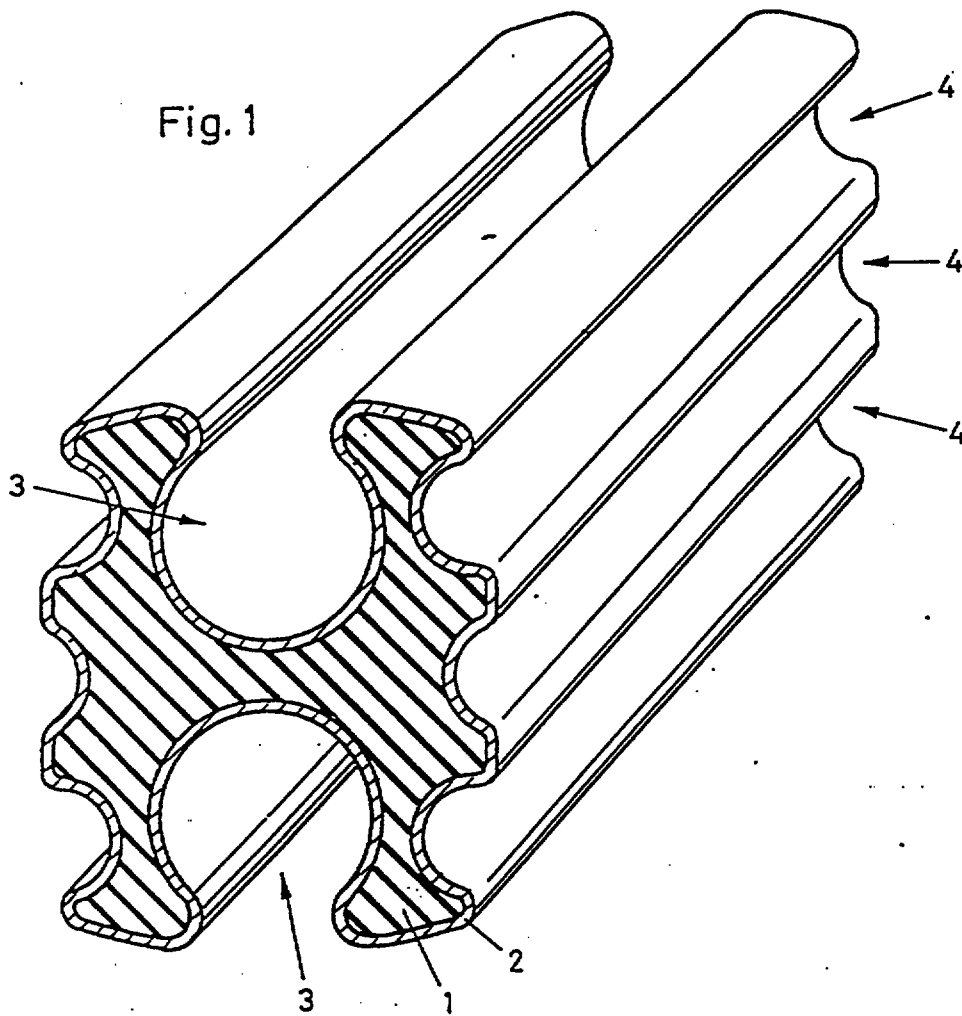
Abstract

The filler piece proposed consists of an elastomer extrusion (1) with several part-cylindrical recesses (3,4) and a hot-melt adhesive coating (2). This ensures that, when a shrink-fit hose is shrunk on to the assembly of filler piece and cables, the temperature distribution over the cross-sectional area of the filler piece is uniform and the hot-melt adhesive reaches its melting point even in the middle of the extrusion.

(Fig. 1)

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REPLACEMENT SHEETS SG
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The invention relates to a filler piece for sealing cables. In German Offenlegungsschrift 3,148,386 there is described a filler piece which comprises a profiled piece of plastic material and a coating of hot-melt adhesive. Used as the plastic material, were, for example, thermoplastics, i.e. similar materials to those also used as cable insulations. The hot-melt adhesives are of course of such a nature that they adhere well on such materials. The hot-melt adhesive melts when a shrink tube is shrink-fitted around the assembly comprising filler piece and cables.

However, it has been found that, in the case of the conventional fillers, the bond, and consequently the sealing, in central regions was not optimum. The present invention is based on the object of overcoming this disadvantage of known filler pieces. This object is achieved by the combination of features according to Claim 1.

The present invention is based on the realization that the inadequate bonding in the case of conventional filler pieces could be attributable to an insufficient melting of the hot-melt adhesive in central regions. Elastomers have a significantly better thermal conductivity than thermoplastics. With the filler pieces according to the invention as claimed in Claim 1, the effect is therefore achieved that, during the shrink-fitting of the shrink tube, the heat rapidly flows even into the interior and a uniform temperature distribution over the cross-section is achieved. As a result, the hot-melt adhesive is melted even in central regions and therefore bonds well with the cables. Consequently, a good, closely bonded assembly is achieved.

Elastomeric profiled pieces additionally have the major advantage that the recesses in the form of cylinder segments can enclose the cable over more than 180°. The filler pieces can then be snap-fitted onto the cables concerned.

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Date: 03 JUL 1997

In EP-A 0 068 780 in connection with the embodiment of Fig. 14 a filler piece is described with a profile piece consisting of a cross formed core of metal or of thermoplast. The
5 four arms of the core have coupling elements on their free end for coupling with an encasing formed from a shrinkable sleeve. The sides of the arms are covered with an elastomer which has circular sector shaped grooves. The surface of the grooves is coated with a hot melt adhesive.

10

In a British abstract of DE-A-2 604 477 a cable coupling box is described consisting of two identical halves. The box halves have circular sector shaped funnels on both ends which serve to introduce a cable when the box is assembled.
15 Adjacent to the funnels half circle shaped grooves are formed in which an elastomeric sealing ring is mounted. A surrounding wall forms an outer chamber outside the two sealing rings and an inner chamber for the splicing joint. Both chambers can be filled up with a sealing compound.

20

Elastomeric profiled pieces have not been used until now in practice because the known hot-melt adhesives adhere relatively poorly to the commercially available elastomers or polymer blends. The measures according to Claims 3 and 4
25 overcome this difficulty.

Exemplary embodiments of the invention are explained below with reference to the drawings, in which:

- 30 Fig. 1 shows a perspective view of a filler piece,
Fig. 2 shows a cross-section through another embodiment,
and
Fig. 3 shows a cross-section through the profiled element
of a third embodiment

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The filler pieces represented comprise an elastomeric profiled piece 1 having a plurality of recesses 3, 4, in the





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Claims

1. Filler piece for sealing cables, comprising an elastomeric profiled piece (1) having a plurality of recesses (3, 4), in the form of circular-cylinder sectors, and a sheathing of a hot-melt adhesive (2), which sheathing in the cross-section extends over the profiled piece's (1) total circumference.
2. Filler piece according to Claim 1, the elastomeric profiled piece consisting of SBR/NBR/polychloroprene.
3. Filler piece according to Claim 1 or 2, the elastomeric material of the profiled piece containing an adhesion-activating additive, in particular based on an anhydride-modified EVA comonomer.
4. Filler piece according to Claim 1 or 2, the surface of the elastomeric profiled piece (1) being treated with an adhesion promoter.
5. Filler piece according to Claim 4, the adhesion promoter being a halogenizing preparation with polychloroprene solution.
6. Filler piece according to Claim 4, the surface of the profiled piece being hydroaromatically cyclized or polarized in such a way that, on heating to the melting temperature of the hot-melt adhesive, a diffusion crosslinking with the hot-melt adhesive occurs.
7. Filler piece according to one of Claims 1 to 6, the sheathing extending only over part of the length of the profiled piece (1).

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DATE OF RECEIPT 16/10/98

FILLER PIECE FOR SEALING CABLES

The invention relates to a filler piece for sealing cables. In German Offenlegungsschrift 3,148,386 there is described a filler piece which comprises a profiled piece of plastic material and a coating of hot-melt adhesive. Used as the plastic material, were, for example, thermo-plastic, i.e. similar materials to those also used as cable insulations. The hot-melt adhesives are of course of such a nature that they adhere well on such materials. The hot-melt adhesive melts when a shrink tube is shrink-fitted around the assembly comprising filler piece and cables.

However, it has been found that, in the case of the conventional fillers, the bond, and consequently the sealing, in central regions was not optimum. The present invention is based on the object of overcoming this disadvantage of known filler pieces. This object is achieved by the combination of features according to Claim 1.

The present invention is based on the realization that the inadequate bonding in the case of conventional filler pieces could be attributable to an insufficient melting of the hot-melt adhesive in central regions. Elastomers have a significantly better thermal conductivity than thermoplastics. With the filler pieces according to the invention as claimed in Claim 1, the effect is therefore achieved that, during the shrink-fitting of the shrink tube, the heat rapidly flows even into the interior and a uniform temperature distribution over the cross-section is achieved. As a result, the hot-melt adhesive is melted even in central regions and therefore bonds well with the cables.

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Consequently, a good, closely bonded assembly is achieved.

Elastomeric profiled pieces additionally have the major advantage that the recesses in the form of cylinder segments can enclose the cable over more than 180°. The filler pieces can then be snap-fitted onto the cables concerned.

In EP-A 0 068 780 in connection with the embodiment of Fig. 14 a filler piece is described with a profile piece consisting of a cross formed core of metal or of thermoplast. The four arms of the core have coupling elements on their free end for coupling with an encasing formed from a shrinkable sleeve. The sides of the arms are covered with an elastomer which has circular sector shaped grooves. The surface of the grooves is coated with a hot melt adhesive.

In a British abstract of DE-A-2 604 477 a cable coupling box is described consisting of two identical halves. The box halves have circular sector shaped funnels on both ends which serve to introduce a cable when the box is assembled. Adjacent to the funnels half circle shaped grooves are formed in which an elastomeric sealing ring is mounted. A surrounding wall forms an outer chamber outside the two sealing rings and an inner chamber for the splicing joint. Both chambers can be filled up with a sealing compound.

Elastomeric profiled pieces have not been used until now in practice because the known hot-melt adhesive adhere relatively poorly to the commercially available elastomers or polymer blends. The measures according to Claims 3 and 4 overcome this difficulty.

Exemplary embodiments of the invention are explained below with reference to the drawings, in which:

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- Fig. 1 shows a perspective view of a filler piece,
Fig. 2 shows a cross-section through another embodiment, and
Fig. 3 shows a cross-section through the profiled element of a third embodiment

The filler pieces represented comprise an elastomeric profiled piece 1 having a plurality of recesses 3, 4, in the form of circular-cylinder sectors, and a sheathing of a hot-melt adhesive 2. In the case of the embodiment according to Fig. 1, the recesses 3 enclose an angle of more than 180° . The relatively thick cables to be used there are thus snap-fitted into the recesses 3. The profiled piece 1 preferably consists of SBR/NBR/polychloroprene. To improve the adhesion with respect to the hot-melt adhesive, either an adhesion-activating additive, in particular based on an anhydride-modified EVA comonomer, is added to the material of the profiled piece 1 during its production. Alternatively, it is also possible to treat the surface of the elastomeric filler piece 1 with an adhesion promoter, for example by a halogenizing preparation with polychloroprene solution, or by a hydroaromatic cyclization or polarization of the profiled piece 1, which, when obtaining the hot-melt adhesive bond, during heating up to 190°C leads to diffusion crosslinking with the hot-melt adhesive 2.

Suitable as the hot-melt adhesive are heteropolar and two-component hot-melt adhesives, in particular polyamide, EVA, PU, acrylate and epoxy two-component hot-melt adhesives.

The hot-melt adhesive 2 may also extend only over part of the length of the profiled piece 1.

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CLAIMS

1. Filler piece for sealing cables, comprising an elastomeric profiled piece (1) having a plurality of recesses (3, 4), in the form of circular-cylinder sectors, and a sheathing of a hot-melt adhesive (2), which sheathing in the cross-section extends over the profiled piece's (1) total circumference.
2. Filler piece according to **Claim 1**, the elastomeric profiled piece consisting of SBR/NBR/polychloroprene.
3. Filler piece according to **Claim 1** or **2**, the elastomeric material of the profiled piece containing an adhesion-activating additive, in particular based on an anhydride-modified EVA comonomer.
4. Filler piece according to **Claim 1** or **2**, the surface of the elastomeric profiled piece (1) being treated with an adhesion promoter.
5. Filler piece according to **Claim 4**, the adhesion promoter being a halogenizing preparation with polychloroprene solution.
6. Filler piece according to **Claim 4**, the surface of the profiled piece being hydroaromatically cyclized or polarized in such a way that, on heating to the melting temperature of the hot-melt adhesive, a diffusion crosslinking with the hot-melt adhesive occurs.
7. Filler piece according to one of **Claims 1** to **6**, the sheathing extending only over part of the length of the profiled piece (1).

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ABSTRACT

FILLER PIECE FOR SEALING CABLES

The filler piece proposed consists of an elastomer extrusion (1) with several part-cylindrical recesses (3, 4) and a hot-melt adhesive coating (2). This ensures that, when a shrink-fit hose is shrunk on to the assembly of filler piece and cables, the temperature distribution over the cross-sectional area of the filler piece is uniform and the hot-melt adhesive reaches its melting point even in the middle of the extrusion.

FIGURE 1

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Fig. 1

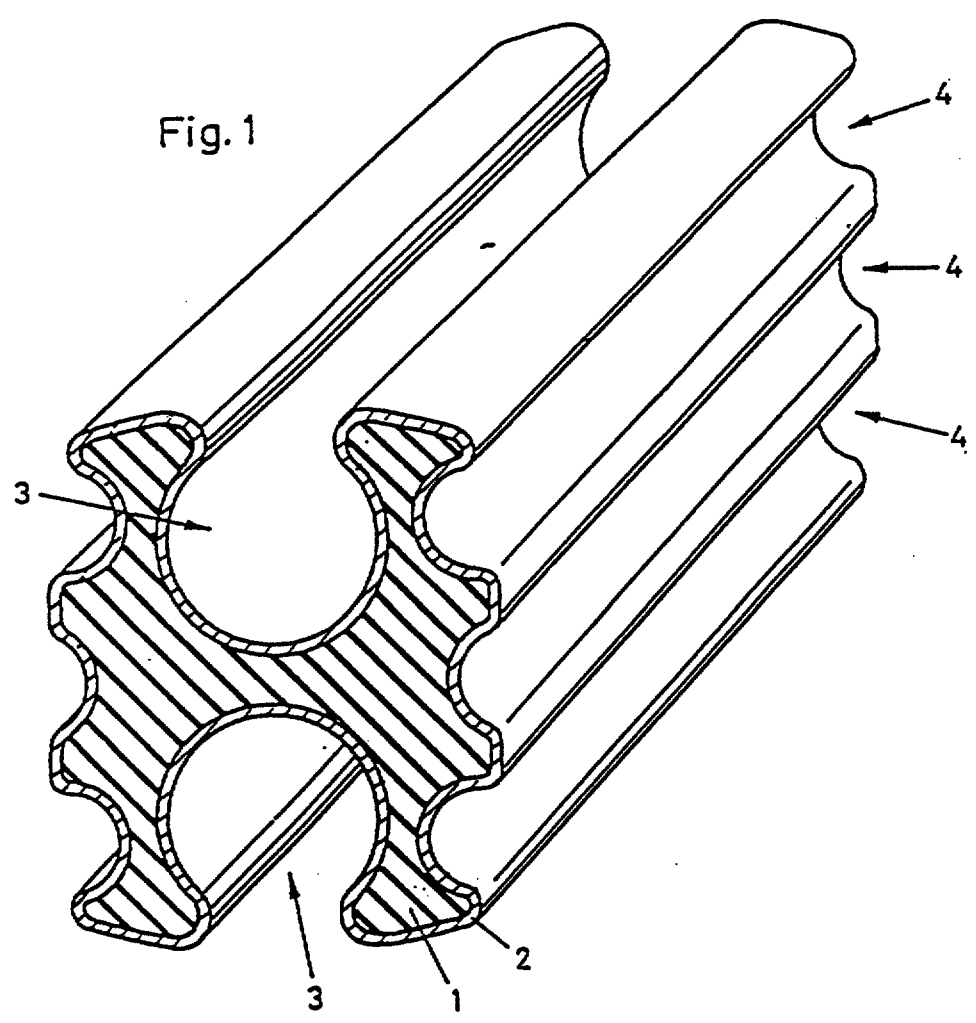


Fig. 2

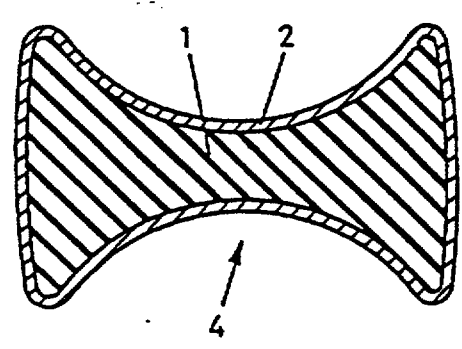


Fig. 3

