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(54) **Continuous protecting sheath for coating an electric cable bundle**

Kontinuierliche Schutzumhüllung zum Beschichten von einem elektrischen Kabelbaum

Gaine protectrice continue pour revêtir un faisceau de câbles électriques

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(56) References cited:
DE-U- 9 201 789

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a continuous protecting sheath for coating an electric cable bundle.

[0002] As is known, for properly protecting electric cables it is necessary to provide a protecting sheath operating as a protection against mechanical stresses, chemical agents and aggressive liquids such as water, oils and the like.

[0003] For providing such a sheath, protecting sheaths have been already designed which are made starting from a foamed material embedding therein the electric cables of the electric cable bundle, so as to provide a very good barrier against chemical agents and penetration of moisture or aggressive liquids, said sheath providing an efficient sealing depending on the used material and on the foamed construction.

[0004] However, during the foaming approaches, it is not possible to surely prevent the individual electric cables of the electric cable bundle from contacting the surface of the mold, and, accordingly, it is not possible to assure a full coating of all the individual cables and, because of these reasons, individual cables can be exposed for short lengths.

[0005] These exposed cables, on the other hand, are subjected to an attack of their insulation layer, for example because of a possible rubbing against mechanical pieces of a car body or engine, if the cable bundle is used, for example, on a motor vehicle.

[0006] Other prior solution provides to cover the electric cable bundle by a substantially rigid sheath opened along its main axis.

[0007] Also in this case individual cables can be exposed, with a consequent lackinq of protection.

[0008] Document DE-U-9201789 discloses a continuous protecting sheath for coating an electric cable bundle according to the preamble of claim 1.

SUMMARY OF THE INVENTION

[0009] Accordingly, the aim of the present invention is to solve the above mentioned problems, by providing a continuous protecting sheath for coating an electric cable bundle as claimed in claim 1.

[0010] Within the scope of the above mentioned aim, the present invention provides such a protective sheath which is adapted to afford very high protection and which can be made by a comparatively simple foaming method.

[0011] The present invention also provides such a protecting sheath which is very reliable and safe in operation.

[0012] The present invention further provides such a protecting sheath which can be made starting from easily available elements and materials and which, moreover, is very competitive from a mere economic standpoint.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Further characteristics and advantages of the present invention will become more apparent from the following detailed disclosure of a possible embodiment of a continuous protective sheath for coating a bundle of electric cables according to the invention, which is illustrated, by way of an indicative, but not limitative example, in the accompanying drawings, where:

Figure 1 is a perspective view illustrating the protective sheath according to the present invention;
Figure 2 is a longitudinal cross-sectional view of the protective sheath shown in Figure 1;
Figure 3 is a further longitudinal cross-sectional view of the protecting sheath according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] With reference to the number references of the above mentioned figures, the continuous protecting sheath for coating an electric cable bundle according to the present invention, which has been generally indicated by the reference number 1, comprises a foamed coating 2, including therein a plurality of electric cables, or electric cable bundle, indicated by 3.

[0015] The main feature of the invention is that, in order to properly protect possible exposed electric cables, projecting portions have been provided, which are evenly geometrically distributed on the coating surface so as to practically form a protective cage preventing an exposed electric cable from being damaged, for example by rubbing or abrading.

[0016] These projecting portions are advantageously made by projecting rings 10 which, preferably, are slanted with respect to the sheath longitudinal axis.

[0017] Thus, the ring elements 10 will provide a corrugated pattern extending along the overall length of the coating.

[0018] Moreover, ribs 11 are also provided, which extend parallel to one another, so as to connect to one another said ring elements, and which are also slanted with respect to the sheath longitudinal axis.

[0019] The ring elements 10 and ribs 11 will practically provide a protective cage about the possible exposed portion of the cable, thereby affording a very good protection.

[0020] In this connection, it should be apparent that both the pitch or distance of the ring elements and the pitch of the ribs can be selected depending on the specific application requirements.

[0021] Thus, the disclosed projecting portions will provide a very good protection against abrading and rubbing, the afforded protection being very efficient since the mentioned projections will provide, as stated, a pro-

tecting cage against a possibly exposed electric cable.

[0022] From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

[0023] In particular, the fact is to be pointed out that a foamed protecting sheath has been provided which efficiently solves the problem of properly protecting possibly exposed electric cables.

[0024] In practicing the invention, the used materials, provided that they are compatible to the intended use, as well as the contingent size and shapes, can be any, depending on requirements.

Claims

1. A continuous protecting sheath (1) for coating an electric cable bundle (3), comprising a foamed coating (2) including said electric cable bundle (3), said sheath further comprising, on an outer surface of said foamed coating (2), a plurality of protective projecting portions (10, 11), characterized in that said projecting portions comprise ring elements (10) and ribs (11) coupled to provide a projecting cage construction.

2. A continuous protecting sheath according to Claim 1, characterized in that said ring elements (10) are arranged with a slanted arrangement with respect to the longitudinal axis of said sheath.

3. A continuous protecting sheath according to Claim 1, characterized in that said ring elements (10) have a pitch varying depending on the different cable cross-sections.

4. A continuous protecting sheath according to Claim 1, characterized in that said ribs (1) have a pitch which varies depending on the different cable cross-sections.

5. A continuous protecting sheath according to Claim 1, characterized in that said protecting sheath (1) provides said electric cable bundle (3) with a sealed protection against chemical agents, penetration of moisture, water, oils or aggressive liquids.

Patentansprüche

1. Eine durchgehende Schutzhülle (1), um einen elektrischen Kabelbaum (3) zu bedecken und die eine geschäumte Beschichtung (2) umfaßt, die diesen elektrischen Kabelbaum (3) einschließt, wobei diese Hülle ferner auf einer äußeren Oberfläche dieser geschäumten Beschichtung (2) eine Vielzahl hervorstehender Schutzbereiche (10, 11) umfaßt, dadurch gekennzeichnet, daß diese hervorstehenden Bereiche Ringbauteile (10) und Rippen (11) umfassen, die zur Bereitstellung eines Schutzkäfigs untereinander verbunden sind.

2. Eine durchgehende Schutzhülle nach Anspruch 1, dadurch gekennzeichnet, daß diese Ringbauteile (10) mit einer geneigten Anordnung bezüglich der Längsachse dieser Schutzhülle angebracht sind.

3. Eine durchgehende Schutzhülle nach Anspruch 1, dadurch gekennzeichnet, daß diese Ringbauteile (10) eine Schrittweite aufweisen, die sich in Abhängigkeit von den verschiedenen Kabelquerschnitten verändert.

4. Eine durchgehende Schutzhülle nach Anspruch 1, dadurch gekennzeichnet, daß diese Rippen (11) eine Schrittweite aufweisen, die sich in Abhängigkeit von den verschiedenen Kabelquerschnitten verändert.

5. Eine durchgehende Schutzhülle nach Anspruch 1, dadurch gekennzeichnet, daß diese Schutzhülle (1) diesen elektrischen Kabelbaum (3) mit einem dichten Schutz gegen Chemikalien und das Eindringen von Feuchtigkeit, Wasser, Ölen oder aggressiven Flüssigkeiten versieht.

Revendications

1. Gaine protectrice continue (1) pour revêtir un faisceau de câbles électriques (3), comprenant un revêtement en mousse (2) incluant ledit faisceau de câbles électriques (3), ladite gaine comprenant en outre, sur une surface extérieure dudit revêtement en mousse (2), une pluralité de portions protectrices en saillie (10, 11), caractérisée en ce que lesdites portions en saillie comprennent des éléments annulaires (10) et des nervures (11) couplés pour fournir une construction de cage de protection.

2. Gaine protectrice continue selon la revendication 1, caractérisée en ce que lesdits éléments annulaires (10) sont disposés selon un arrangement incliné par rapport à l'axe longitudinal de ladite gaine.

3. Gaine protectrice continue selon la revendication 1, caractérisée en ce que lesdits éléments annulaires (10) présentent un écartement qui varie en fonction des différentes sections de câbles.

4. Gaine protectrice continue selon la revendication 1, caractérisée en ce que lesdites nervures (11) présentent un écartement qui varie en fonction des différentes sections de câbles.

5. Gaine protectrice continue selon la revendication 1,

caractérisée en ce que ladite gaine protectrice (1) fournit audit faisceau de câbles électriques (3) une protection étanche contre les agents chimiques, la pénétration d'humidité, d'eau, d'huiles ou de liquides agressifs.

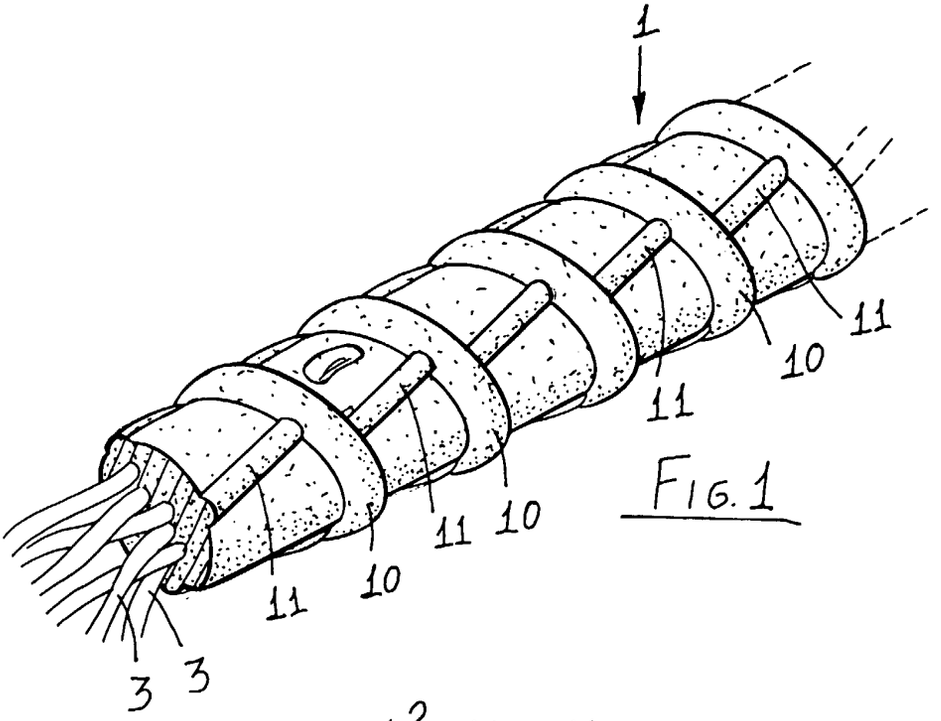


FIG. 1

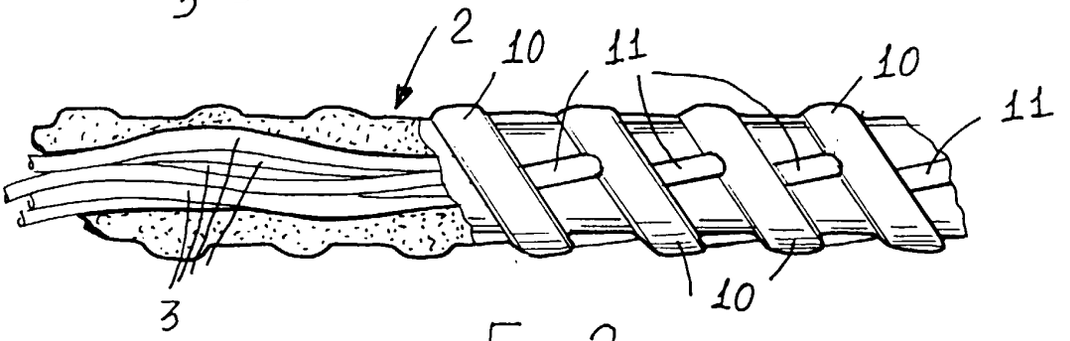


FIG. 2

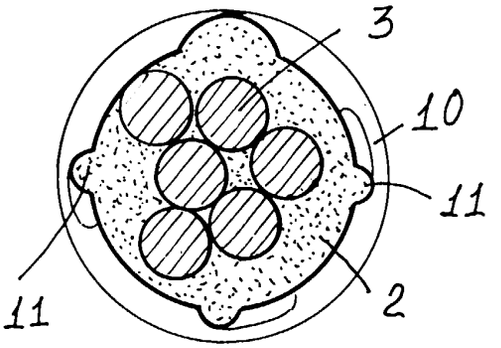


FIG. 3