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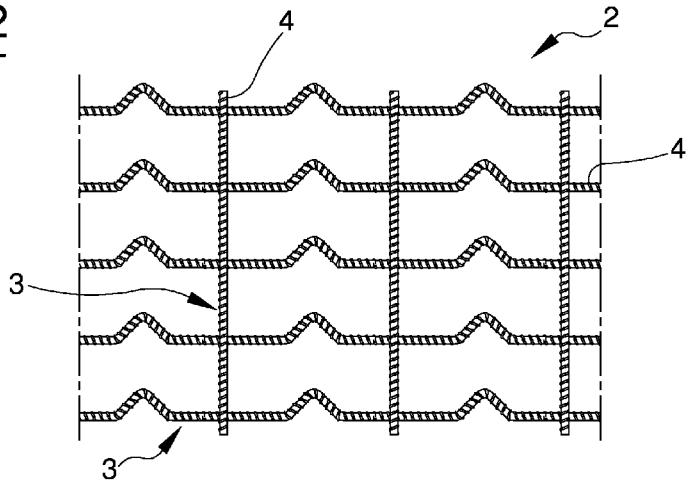
(54) Title: ARMATURE FOR CONCRETE COATING OF TUBES

Fig. 2



(57) Abstract: The present invention relates to an armature for concrete coating of tubes (1). The armature in question is realised through a continuous metal band (2) constituted by a mesh of circular-section electro-welded wires (3), which have protrusions (4) projecting from the external surface of the wire and can have various shapes and lies with respect to the axis of the wire itself.

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ARMATURE FOR CONCRETE COATING OF TUBES.

Field of the invention

The present invention relates to an armature for concrete coating of tubes. It refers in particular to armatures for coating underwater conduits.

Background Art

The art of coating underwater conduits with reinforced concrete has been known for some time; this is performed both to make such conduits heavier, hence preventing them floating, and to provide protection against the corrosion of the conduits themselves. These coatings are normally obtained with a continuous metal band, constituted by a metal mesh generally realised with electro-welded wires, which acts as an armature; the width of this mesh is standard and is 190.5 cm. Through appropriate and known machinery, at the time of laying the tube in water such a band is wound in a spiral onto the tube and simultaneously buried in the concrete that is sprayed onto the external surface of the tube to conglobate and cover the armature. All of the above has been known for some time and described, for example, in patent US4033387.

The problems connected with such technology relate to the need to prevent cracks or damage to the concrete coating of tubes, since this could lead to corrosion problems or damage to the conduits.

The object of the present invention is to limit the problems indicated above as far as possible.

An advantage of the present invention is providing an armature which, with the same performance, is cheaper than the known armatures.

These objects and advantages and others are reached by the present invention as characterised by the following claims.

Disclosure of the invention

Further characteristics and advantages of the invention will become clear from the following detailed description of a preferred but not exclusive embodiment of the armature in question, illustrated by way of non-limiting

example in the attached figures wherein:

- Figure 1 shows a schematic view of a known machine for coating tubes;
- Figure 2 shows a view of a stretch of the armature tape in question;
- Figure 3 shows an enlarged section view of a detail of figure 1.

The armature in question is applied, using widely known systems and technologies, to realise a concrete coating for tubes 1 normally used for the realisation of underwater conduits. This armature is realised through a continuous metal band 2 that is constituted by a mesh of electro-welded wires 3. The meshes that constitute the band have a standard width of 190.5 cm and are realised with circular-section wires, normally zinc-plated, having diameters comprised between 1.5 and 5 mm. The band is realised with longitudinal and transversal wires that may be straight or shaped; for the longitudinal and transversal wires, wires having different diameters can be used.

The wires 3 with which the metal band (i.e. the armature) in question is realised comprise protrusions 4 that project from the external surface of the wire, are obtained along their entire development and are arranged with various lies with respect to the axis of the wire itself.

In particular the protrusions 4 can have a spiral shape that winds along the whole length of the wire and that can have one or two screw leads with a preferably constant pitch and comprised between 1 and 4 times the diameter of the wire onto which it is wound.

The protrusions can also have different shapes; for example, they can have a circular shape and be arranged parallel and distanced along all the length of the wire; or they can be shaped as segments, or discontinuous elements, which can be arranged at various angulations with respect to the axis of the wire and along the whole length of the wire itself.

The protrusions that project from the wires preferably have a height, measured in a radial direction of the wire, that is comprised between 20 and 50% of the diameter of the wire itself.

The protrusions described can be envisaged on the longitudinal or transversal wires of the mesh, or on both.

With the armatures described above, with respect to known armatures, better results are obtained in terms of adhesion to the concrete mortar and therefore the possibilities of movement of the armature and the dangers of cracking or damage to the concrete coating of the tubes are substantially reduced.

Furthermore, with the same performance, armatures can be used having wires with a lower diameter, hence weight; therefore the cost of the material used to realise the armature is reduced, to the extent that it fully compensates for the slightly higher cost of the wire constituting the metal mesh band.

CLAIMS

1. An armature for concrete coating of tubes, of a type to be applied to tubes (1) for underwater conduits and realised with a continuous metal band (2) constituted by a mesh of circular-section electro-welded wires (3), characterised in that the wires (3) with which the metal band is realised comprise, along an entire development thereof, protrusions (4) projecting from the external surface of the wire and arranged with various lies with respect to the axis of the wire itself.

2. The armature of claim 1, characterised in that the said protrusions are spiral-shaped and wind along a whole length of the wire.

3. The armature of claim 2, characterised in that the said spiral protrusions wind along the wire with two screw leads.

4. The armature of claim 2, characterised in that the pitch of the spiral realising the protrusion is comprised between 1 and 4 times the diameter of the wire on which it is wound.

5. The armature of claim 2, characterised in that said protrusions have a circular shape and are arranged parallel and distanced along all the length of the wire.

6. The armature of claim 1, characterised in that the said protrusions are shaped as discontinuous segments and are arranged at various angulations with respect to the axis of the wire.

7. The armature of claim 1, characterised in that the said protrusions have a height, in a radial direction of the wire, comprised between 20 and 50% of the diameter of the wire.

Fig. 1

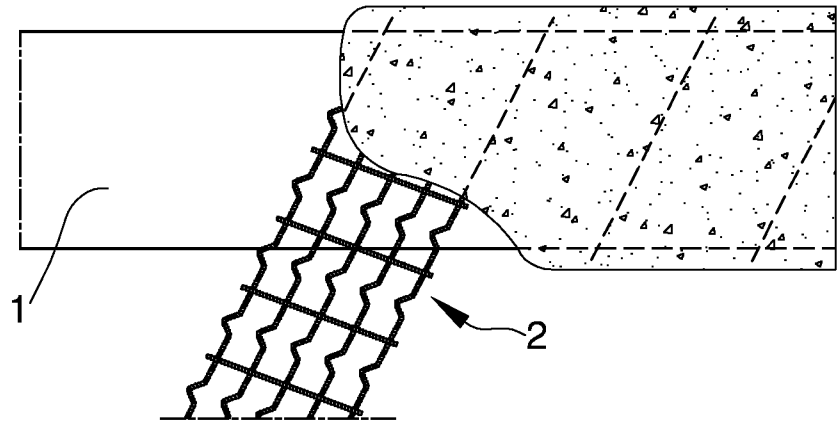


Fig. 2

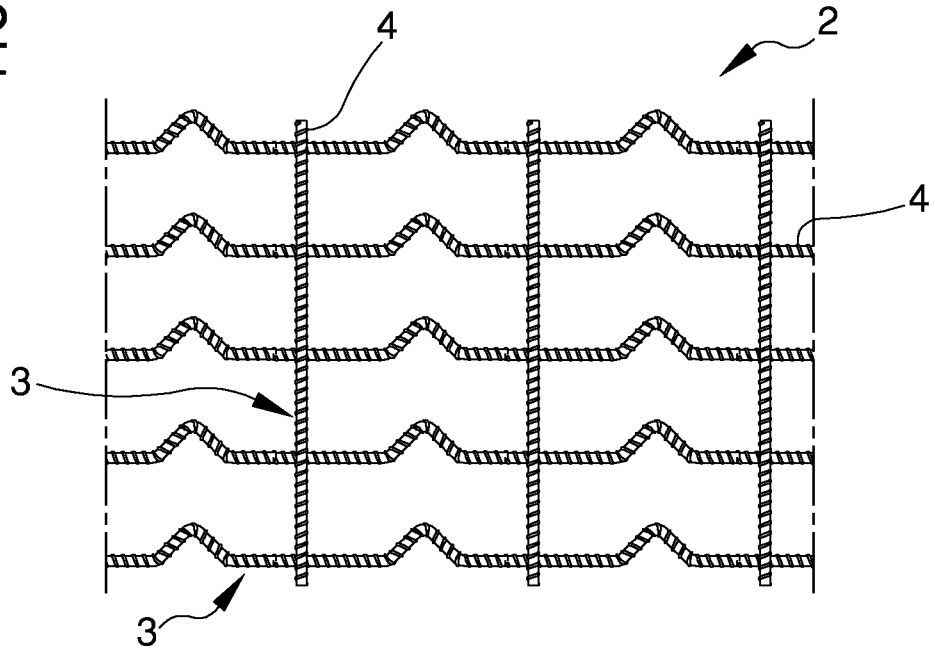
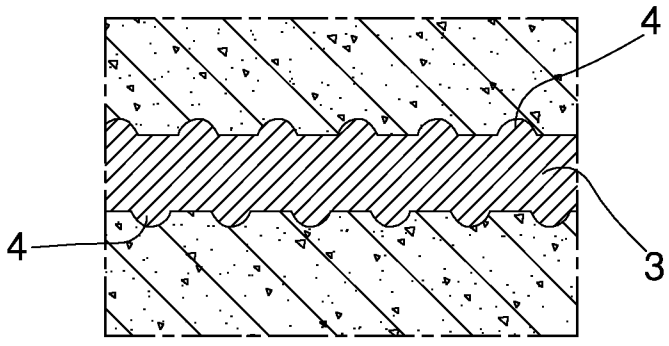


Fig. 3



INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. F16L58/06 E04C5/03 B21C37/12 B21F27/12
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F16L E04C B21C B21F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	GB 2 411 183 A (COMPANIA ESPANOLA DE LAMINACION [ES]) 24 August 2005 (2005-08-24) abstract figures 4-12	1-4 5-7
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[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents :

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"P" document published prior to the international filing date but later than the priority date claimed

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	page 1, line 9 - line 95 figures 1-4	1-6

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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