(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 045 821 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
08.04.2009 Bulletin 2009/15

(51) Int Cl.:
H01B 7/12 *(2006.01)* ***H01B 3/44*** *(2006.01)*

(21) Application number: **08016257.1**

(22) Date of filing: **16.09.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

(30) Priority: **03.10.2007 IT MI20071897**

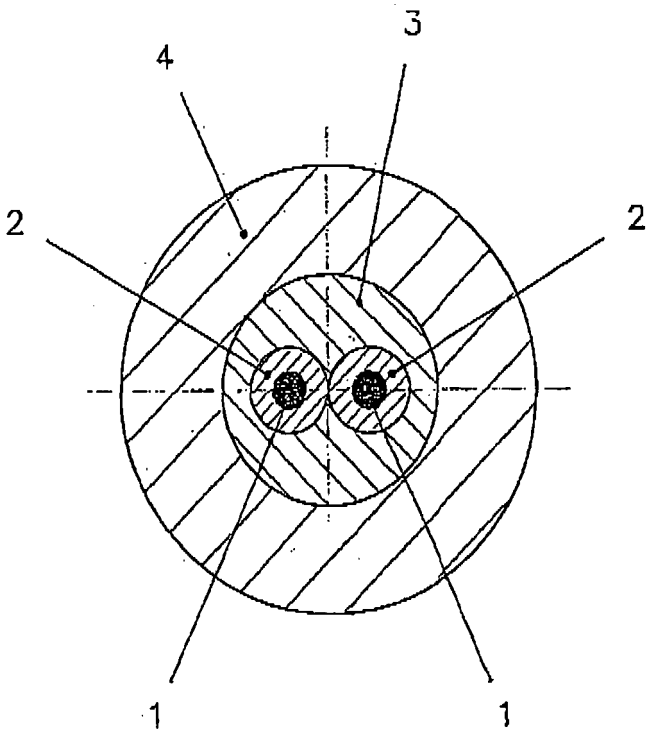
(71) Applicant: **Merlett Tecnoplastic S.p.A.**
21020 Daverio VA (IT)

(72) Inventor: **Tamborini, Ariberto**
21020 Daverio
(Varese) (IT)

(74) Representative: **Cicogna, Franco**
Ufficio Internazionale Brevetti
Dott.Prof. Franco Cicogna
Via Visconti di Modrone, 14/A
20122 Milano (IT)

(54) Electric cable construction, in particular for swimming pool cleaning apparatus

(57) An electric cable construction, specifically designed to be used in swimming pool cleaning apparatus, comprises two copper core elements, each of which is coated by a first polyvinylchloride (PVC) coating, both the copper core elements being encompassed by a second polyvinylchloride (PVC) coating, the assembly being further coated by a foamed polyethylene outer coating.



EP 2 045 821 A1

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to an electric cable construction, specifically designed to be used in apparatus for cleaning swimming pools and the like.

[0002] Robot-controlled apparatus for cleaning swimming pools, aquarium basins and the like, comprising a modular assembly including a cleaning member designed for moving on the bottom of the basin and power supplied through electric cables, are already known.

[0003] In particular the electric cables used in the above apparatus must be of a tight nature.

[0004] Impermeable electric cables used for the above mentioned applications, conventionally comprise two electric copper cable elements, having a cross-section from 1 to 1.5 mm^2, coated by a natural or thermoplastic rubber sheath.

[0005] A very important property of the above electric cables, in addition to their impermeableness, is that of providing a comparatively high resistance against outer agents, such as sun radiations, water and chlorine.

SUMMARY OF THE INVENTION

[0006] Accordingly, the aim of the present invention is to provide such an electric cable construction, specifically designed for cleaning apparatus for cleaning swimming pools and the like, which has very good floating properties, in particular floating properties improved with respect to those of available electric cables intended for the above cleaning applications.

[0007] Within the scope of the above mentioned aim, a main object of the invention is to provide such an electric cable construction which can be advantageously used in a lot of different applications, and, in particular, also in sea water.

[0008] Another object of the present invention is to provide such an electric cable construction which, in addition to having good floating properties, is adapted to provide a very long useful duration and a high water and chlorine resistance, much greater than those of available electric cables for like applications.

[0009] Another object of the present invention is to provide such an electric cable construction which, owing to its specifically designed structural characteristics, is very reliable and safe in operation.

[0010] Yet another object of the present invention is to provide such an electric cable construction which can be easily made starting from easily commercially available elements and materials, and which, moreover, is very competitive from a mere economic standpoint.

[0011] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an electric cable construction, particularly for cleaning apparatus for cleaning swimming pools and the like, **characterized in that** said cable construction comprises two copper core elements, each said copper core elements being coated by a first polyvinylchloride (PVC) coating, both said copper core elements being embedded in a second polyvinylchloride (PVC) coating, the thus made assembly being further coated by an outer foamed polyethylene coating.

BRIEF DESCRIPTION OF THE DRAWING

[0012] Further characteristics and advantages of the electric cable according to the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of the invention, which is illustrated, by way of an indicative, but not limitative, example in the accompanying drawing, the sole figure of which is a cross-sectional view of the inventive electric cable construction, which, in particular, is a floating electric cable construction specifically designed for power supplying apparatus for cleaning swimming pools and the like, according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] With reference to the number references of the above mentioned figure, the electric cable construction according to the present invention comprises two copper core elements, generally indicated by the reference number 1, each said core element being coated by a first polyvinylchloride (PVC) coating, generally indicated by the reference number 2.

[0014] Typically, but not limitatively, each said copper core element 1 has a cross-section of 1.3 mm^2, and the overall cross-section of the bipolar conductor, including a second coating or sheath 3 also made of PVC embedding therein the two above mentioned coated core elements, is of 2.45 mm^2, thereby providing a conductor of a type STYLE 2517 2 X AWG 16, according to the USA UL 758-1581 standard.

[0015] For other countries, it would be also possible to provide electric cable constructions specifically designed for meeting the related standards of each said country.

[0016] According to the present invention, the above mentioned bipolar conductor or wire, is coated by a foamed plastic material outer coating, generally indicated by the reference number 4, providing the cable construction with good floating properties.

[0017] Advantageously, the material of said outer coating comprises foamed polyethylene having a density from 0.400 to 0.600 g/cm^3, thereby providing very good floating characteristics.

[0018] It has been found that the present invention fully achieves the intended aim and objects.

[0019] In fact, the invention provides a floating electric cable construction having a resistance against outer agents which is much greater than that of prior commercially available like cables, which are devoid of the above

disclosed floating properties.

[0020] In particular, the inventive electric cable construction may be advantageously used in a lot of applications in which the floating characteristics, together with the atmospheric agent resistance properties, are very important such as in nautical applications, and immersed pump power supply applications.

[0021] In practicing the invention, the used materials, as well as the contingent size can be any, depending on requirements.

Claims

1. An electric cable construction, particularly for cleaning apparatus for cleaning swimming pools and the like, **characterized in that** said cable construction comprises two copper core elements, each said copper core element being coated by a first polyvinylchloride (PVC) coating, both said copper core elements being encompassed by a second polyvinylchloride (PVC) coating, the thus made assembly being further coated by an outer foamed polyethylene coating.

2. An electric cable construction, according to claim 1, **characterized in that** said electric cable construction is a floating electric cable construction.

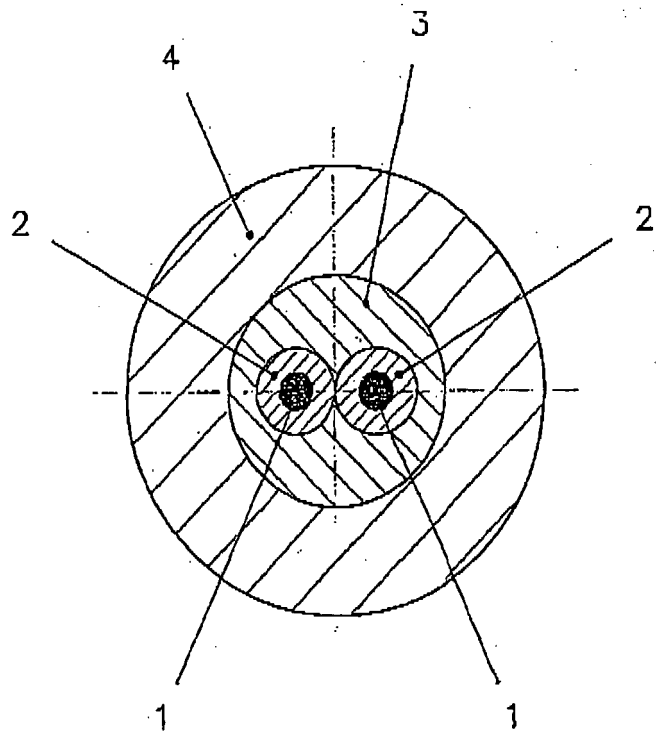
3. An electric cable construction, according to claim 1, **characterized in that** each said copper core element has a cross-section of 1.3 mm^2.

4. An electric cable construction, according to claim 1 or 2, **characterized in that** the overall cross-section of the bipolar conductor, including the second PVC coating encompassing said two coated core elements, is typically, but not limitative, of 2.45 mm^2.

5. An electric cable construction, according to claim 4, **characterized in that** said bipolar conductor is, typically but not limitatively, of a STYLE 2517 2 X AWG 16 type, according to the USA UL 758-1581 standard, said bipolar conductor being adapted to be also fitted to electric cable standards of any desired countries.

6. An electric cable construction, according to one or more of the preceding claims, **characterized in that** said outer coating is made of foamed polyethylene having a density from 0.400 to 0.600 g/cm^3, thereby providing said electric cable construction with very high floating properties.

7. An electric cable construction, according to one or more of the preceding claims, **characterized in that** said electric cable construction comprises one or more of the disclosed and/or illustrated characteristics.


3
4
2
2
1
1

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 08 01 6257

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 4 745 238 A (KOTTHAUS ALFRED [DE] ET AL) 17 May 1988 (1988-05-17) * column 1, line 9 - line 42 * * column 2, line 25 - line 40; claims 1-4; figures 1-4 *	1-7	INV. H01B7/12 H01B3/44
A	EP 1 124 236 A (NEXANS [FR]) 16 August 2001 (2001-08-16) * claims 1-7; figure 2 *	1-7	
A	EP 0 082 700 A (AKZONA INC [US]) 29 June 1983 (1983-06-29) * page 3, line 15 - page 4, line 21; figure 3 *	1-7	

TECHNICAL FIELDS SEARCHED (IPC)

H01B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	26 January 2009	Marsitzky, Dirk

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

1 EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 01 6257

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-01-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4745238 A	17-05-1988	DE 3447225 C1	06-02-1986
		EP 0186062 A2	02-07-1986
EP 1124236 A	16-08-2001	AT 283537 T	15-12-2004
		DE 60107303 D1	30-12-2004
		NO 20010247 A	09-08-2001
EP 0082700 A	29-06-1983	CA 1196071 A1	29-10-1985
		DE 3275882 D1	30-04-1987
		US 4481379 A	06-11-1984

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82