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(54) **CARPET AND PRODUCTION METHOD THEREOF**

(57) The invention relates to a carpet and to the production method thereof. The carpet includes at least one layer of fabric (1) formed by a weft of longitudinal paper or cellulose elements (11) and a warp of longitudinal paper or cellulose elements (12), said longitudinal weft and warp elements (11, 12) intersecting one another in essentially perpendicular directions. The cross-section of the longitudinal weft elements (11) is noticeably larger than that of the longitudinal warp elements (12). Moreover, the longitudinal warp and/or weft elements (11, 12) are treated with natural biodegradable waxes and resins and can be dyed. The invention also relates to a method for producing the carpet using weaving techniques.

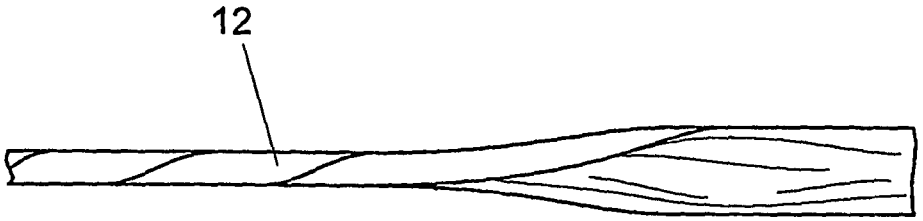

Fig. 4

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Description

Object of invention

[0001] The present invention refers to carpeting, of the type used to cover surfaces, preferentially floors and walls, and the method of manufacture of said carpeting.

Background of invention

[0002] At present, carpeting of different compositions is widely known to be used to cover walls and floors.

[0003] Carpeting presents a generalized problem consisting of the accumulation of electrostatic energy in the same, which is generated by rubbing during use.

[0004] The use of carpeting entails a major problem when used for relatively short time periods, e.g., for exhibitions, trade fairs and similar events. In this case the carpeting must be replaced frequently and it is necessary, once the event or exhibition concludes, to remove the carpeting and proceed to its recycling, which involves additional expense. Due to the problems of using traditional carpeting, there is now a tendency to use other alternative coverings, mainly algae mats and coconut fiber mats.

[0005] Algae mats, aside from providing a rustic finish that is not particularly suitable for trade fairs and other events in which the aesthetic appearance of the site is of special importance, have the drawback of poor resistance to friction. Consequently, their use is not particularly adequate for zones or floors where massive public attendance is expected.

[0006] Coconut fiber mats or carpeting are biodegradable, but over a prolonged period of time, about fifteen years. They also are expensive because they are handmade.

[0007] An additional drawback of coconut fiber mats is that end consumers are often reluctant to install them for fear of contamination, as the producing countries are located in the area of the Pacific where many nuclear tests have been conducted.

Description of invention

[0008] To resolve the problems described above, the carpeting object of the present invention was conceived. It has features that are especially indicated for intensive use because it provides adequate resistance to friction, does not store electrostatic energy, is totally biodegradable in a short time and, in contrast with traditional carpeting, once used, it has a residual value that makes it possible to recover part of the initial cost, because it can be used as biomass or in composting plants.

[0009] In accordance with the invention, this carpeting consists of at least one woven layer consisting of a woof of longitudinal elements of paper or cellulose and a warp of longitudinal elements, also formed of paper or cellulose, the elements constituting the warp and woof crossing each other perpendicularly.

[0010] The manufacture of this carpeting, as will be explained below, is by conventional weaving techniques, not manually, which makes it possible to increase production and obtain a competitive price.

[0011] According to the invention, the longitudinal elements of paper or cellulose that form the woof have an appreciably larger section than the longitudinal elements of paper or cellulose that form the warp.

[0012] Said longitudinal elements of the woof preferentially present a cord-like configuration, each of which may be made of a longitudinal band of paper or cellulose twisted on itself, or various bands or threads of paper or cellulose, either twisted together one over the others or braided into a chain or braid. This second option is chosen when we propose to obtain carpeting with a more spongy and comfortable texture.

[0013] The longitudinal elements of the warp may consist of thread or cords of paper or cellulose, presenting in any case a smaller section than the longitudinal elements of the woof in order to facilitate manufacture using conventional weaving techniques.

[0014] The longitudinal elements of the woof and/or warp are treated with natural biodegradable waxes and resins, and they are tinted or colored with pigments.

[0015] These treatments, in addition to improving the physical properties and the final appearance of the product, allow the fabric of the carpeting to react perfectly in conditions of extreme cold.

[0016] As mentioned before, this carpeting is biodegradable in a relatively short time, which may vary depending on diverse factors, this time being reduced when buried in earth.

[0017] Under these conditions, the time to disappearance of the carpeting, depending on soil composition, may be six to twenty-four months.

[0018] Optionally, this carpeting may be destined, after use, for processing in composting plants to obtain so-called secants, or in paper recycling plants.

[0019] Another advantage of this carpeting is its lightness because its weight per square meter is 500 to 700 grams.

[0020] This invention also includes a method for the manufacture of the carpeting described above. Said method includes the following phases or steps:

a) the manufacture, from paper or cellulose treated with biodegradable waxes and resins and, optionally, colored with pigments, of two continuous longitudinal elements of different sections, these sections being appreciably constant throughout the respective longitudinal elements destined to form the woof and warp of the carpeting fabric,

b) the moistening of the longitudinal elements of paper or cellulose with water until achieving a moisture content close to that of paper saturation,

c) the intercrossing, using weaving techniques, of the longitudinal elements of paper or cellulose, pre-

viously moistened, and the obtaining of a woof and warp fabric,

d) drying, at room temperature, of the fabric obtained, and

e) application to the dry fabric of a surface treatment with fire-proofing products. It is noteworthy that the moistening of the longitudinal elements of paper and cellulose before weaving is especially important to prevent breakage during the weaving operation.

[0021] The longitudinal element constituting the warp, which is subjected to continuous movement during fabric manufacture, can be moistened, for example, by aspersion, whereas the longitudinal element of paper or cellulose constituting the woof, and subject to noncontinuous movement, can be moistened by use of a damp sponge through which the warp is fed and moistened.

Description of the figures.

[0022] To complement the description made and for the purpose of facilitating understanding of the characteristics of the invention, the present description is accompanied by a set of drawings that, for illustrative but not limitative purposes, represent the following:

- Figure 1 shows a schematic view of part of the carpeting in which the longitudinal elements constituting the woof and warp of the fabric, intercrossed each other, can be seen.
- Figure 2 shows an enlarged detail of an example of the formation of one of the longitudinal elements of the woof, obtained in this case by twisting a band of paper over itself, and in which an end portion of said extended band has been represented.
- Figure 3 shows a variant of the formation of one of the longitudinal elements constituting the woof, formed in this case by three threads or bands of paper or cellulose twisted together, one over another.
- Figure 4 shows an enlarged detail of an example of the formation of one of the threads of the warp, of smaller diameter than those of the woof, obtained by twisting a band or strip of paper.

Preferred realization of the invention

[0023] In the example of realization shown in figure 1, the carpeting is formed by a layer of fabric (1) composed by longitudinal elements (11) of paper or cellulose forming the woof and by longitudinal elements (12) of paper or cellulose constituting the warp; said longitudinal elements (11 and 12) are intercrossed in essentially perpendicular direction to each other.

[0024] In the realization example shown in figure 2 is shown one of the longitudinal elements (11) of paper or cellulose forming the woof and obtained by twisting over itself a longitudinal band of paper or cellulose.

[0025] As can be observed in the realization variant shown in figure 3, each of the longitudinal elements (11) of the woof may be formed by several bands or threads of paper or cellulose twisted together with each other, using this realization in cases in which a more spongy and comfortable to use carpeting is desired. Optionally, as mentioned above, in the case that the longitudinal elements of the woof are composed by several bands, or threads, these can be braided into a chain or braid.

[0026] As can be observed in the realization shown in figure 4, each of the threads (12) of the warp, of smaller section than those of the woof, can be formed by a longitudinal band of paper or cellulose twisted over itself.

[0027] Once the nature of the invention is sufficiently described, as well as an example of preferred realization, it is stated for the opportune effects that the materials, form, size and disposition of the elements described can be modified, as long as this does not entail any alteration of the essential characteristics of the invention as claimed below.

Claims

1. Carpeting, of the type used to cover surfaces, preferentially floors and walls; **characterized by** having at least one layer of fabric (1) composed by a woof of longitudinal elements (11) or paper or cellulose and by a warp of longitudinal elements (12) of paper or cellulose, said longitudinal elements (11, 12) of the woof and warp being intercrossed in essentially perpendicular direction to each other.

2. Carpeting, according to claim 1, **characterized** because the longitudinal elements (11) of paper or cellulose forming the woof present an appreciably larger section than the longitudinal elements (12) of paper or cellulose forming the warp.

3. Carpeting, according to any of the previous claims, **characterized** because the longitudinal elements (11) of the woof present a cord-like configuration and are each formed by a longitudinal band of paper or cellulose twisted over itself.

4. Carpeting, according to any of claims 1 and 2, **characterized** because the longitudinal elements (11) of the woof present a cord-like configuration and are each formed by several bands of paper or cellulose twisted together, one over another, and braided together in a chain or braid.

5. Carpeting, according to claims 1 and 2, **characterized** because the longitudinal elements (12) of the warp are formed by threads or cords of paper or cellulose.

6. Carpeting, according to any of the previous claims, **characterized** because the longitudinal elements

(11, 12) of the woof and/or warp are treated with natural biodegradable waxes and resins.

7. Carpeting, according to any of the previous claims, **characterized** because the longitudinal elements (11, 12) of the woof and/or warp are tinted or colored with pigments.

8. Carpeting, according to any of the previous claims, **characterized** because the fabric (1) is given a treatment with fire-proofing products.

9. Carpeting, according to any previous claim, **characterized** because the weight per square meter of fabric (1) forming the carpeting ranges from 500 to 750 grams.

10. Method for the manufacture of the carpeting in the previous claims, **characterized** because it consists of:

a) the manufacture of two continuous longitudinal elements (11, 12) of different, appreciably uniform, sections throughout the respective longitudinal elements destined to form the woof and warp of the fabric of the carpeting, of paper or cellulose treated with biodegradable waxes and resins and, optionally, colored with pigments.
b) the moistening of the longitudinal elements (11, 12) or paper or cellulose with water, to give them a moisture content near saturation of the paper.
c) the intercrossing using weaving techniques of the longitudinal elements (11, 12) of paper or cellulose, previously moistened, and the obtaining of a fabric (1) of woof and warp.
d) the drying, at ambient temperature, of the fabric (1) of paper or cellulose obtained, and,
e) the application to the fabric (1), once dry, of a surface treatment with fire-proofing products.

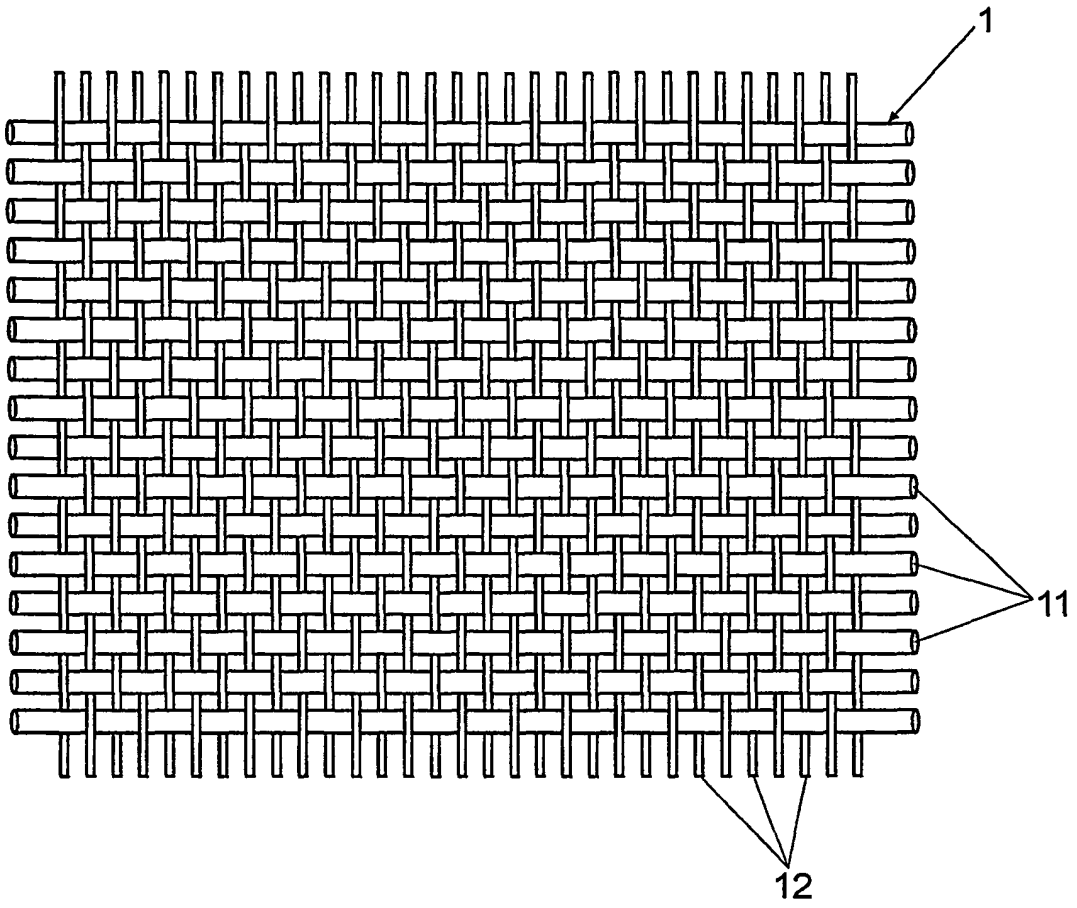

Fig. 1

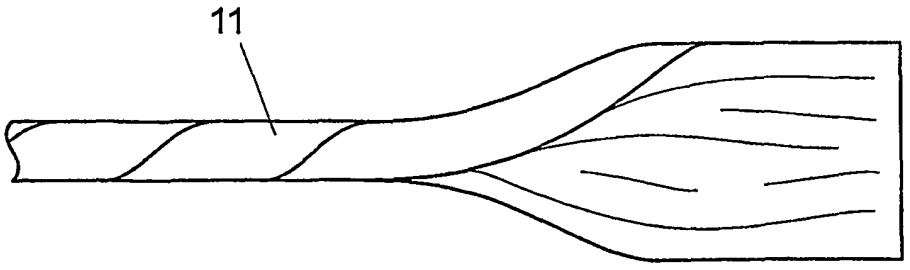

Fig. 2

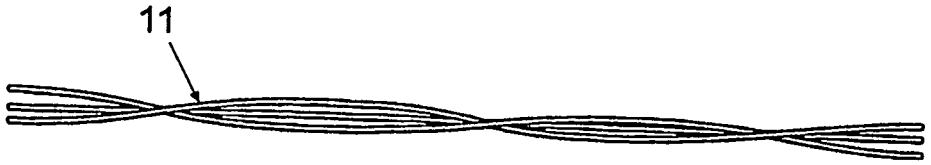

Fig. 3

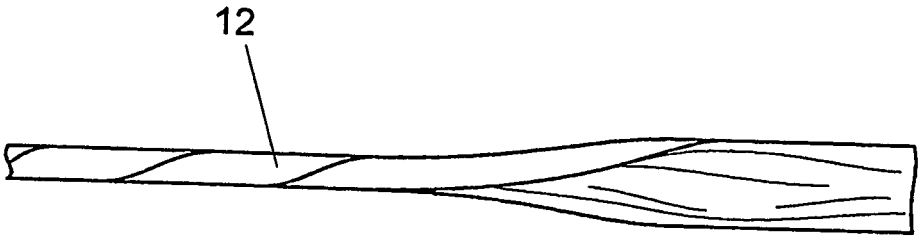

Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 2006/000089

A. CLASSIFICATION OF SUBJECT MATTER

D03D 15/00 (2006.01)
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)
D03D

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

Electronic data base consulted during then international search (name of data base and, where practicable, search terms used)

CIBEPAT,EPODOC, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropiate, of the relevants passages	Relevant to claim No.
X	US 6506697 B1 (SAMEL HIRAM M) 14.01.2003, column 2, line 47 - column 4, line 32; figures.	1-10
X	US 2418215 A (LAMBERT ERNEST E) 01.04.1947, description; figures.	1-9
X	ES 0330120 A1 (SACOPEL, S. A) 16.08.1967, the whole document.	1,3,5
X	ES 2138903 A1 (MIMCORD S A) 16.01.2000, column 1, lines 44-53; column 2, lines 4-7, lines 32-49; abstract; figures.	1,7
A		8, 10

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documentes:
"A" document defining the general state of the art which is not considered to be of particular relevance.
"E" earlier document but published on or after the international filing date
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"O" document referring to an oral disclosure use, exhibition, or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimend inventation cannont be considered to involve an inventive step when the document is combined with one or more other documents , such combination being obvius 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
16 May 2006 (16.05.2006)	
Name and mailing address of the ISA/ Paseo de la Castellana, 75 28071 Madrid, España. Facsimile No. 34 91 3495304	Authorized office M. López Capdevila Telephone No. + 34 91 349 6868

Formulario PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/ ES 2006/000089

Patent Document cited in the search report	Publication Date	Patent family member(s)	Publication Date
US 6506697 B	14.01.2003	US 2002013110 A	31.01.2002
US2418215 A	01.04.1947	NONE	----------
ES0330120 A1	16.08.1967	NONE	----------
ES2138903 A B	16.01.2000	NONE	----------

Form PCT/ISA/210 (patent family annex) (April 2005)