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(71) Applicant: **Chu, Peng-Fei**  
**114 Taipei (TW)**

(72) Inventor: **Chu, Peng-Fei**  
**114 Taipei (TW)**

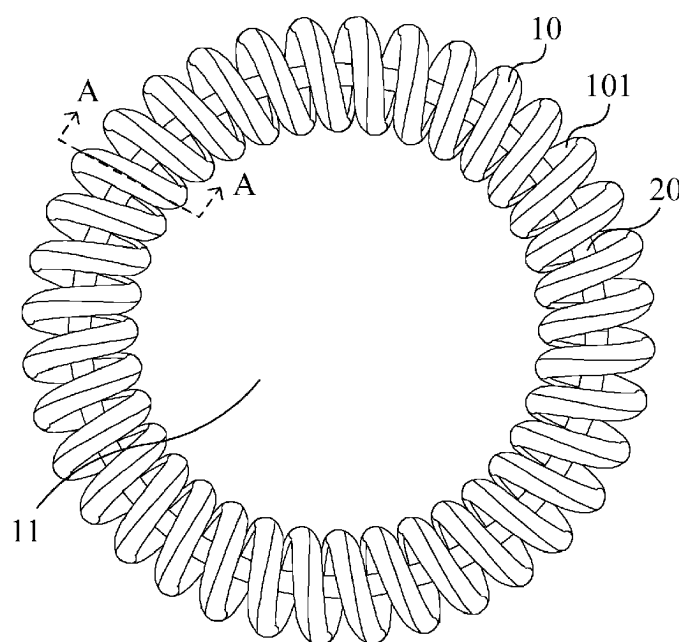
(74) Representative: **Reichert & Lindner**  
**Partnerschaft Patentanwälte**  
**Bismarckplatz 8**  
**93047 Regensburg (DE)**

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(54) **COIL HAIR TIE**

(57) A coil hair tie includes: a spiral coil body (10) configured as a head-to-tail connected ring with a hollow portion (11) for allowing hair to pass through, wherein the spiral coil body (10) has a hollow chamber (101) therein; and a linear elastic restoring member (20) comprising at least one one-dimensional elastic body (20, 201, 202, 203, 204) extending in a direction substantially parallel to the spiral coil body (10) and disposed in the hollow chamber (101) of the spiral coil body (10), and

being head-to-tail connected to form a ring configuration. When the spiral coil body (10) is stretched into a tensile configuration with a lower coil density, the elastic restoring member (20) is also stretched, and when the tensile force applied to the spiral coil body (10) is removed, the spiral coil body (10) restores to a retracted configuration having a higher coil density through the tensile restoring force of the elastic restoring member (20).

**FIG. 2A****EP 3 505 005 A1**

## Description

**[0001]** The present invention relates to a coil hair tie, and more particularly to a coil hair tie having an elastic restoring force.

**[0002]** A hair ring is a commonly used device for tying hair, such as a ponytail. After the hair is tied with a conventional linear circle of hair ring, the hair often leaves a dent as being pressed by the hair ring. Even if the linear circle of hair ring is covered by a fabric to form a scrunchie, similar problems still exist. The coil hair tie as shown in FIG. 1 is popular because it causes little or no trace after the hair is tied and then released. Such coil hair ties are usually made of a thermoplastic plastic material such as TPU (Thermoplastic polyurethanes) or TPR (Thermoplastic rubber), which achieves stretching and recovery objects through a spiral-shaped structure 1. Although such materials have a certain degree of elasticity, they do not have sufficient elastic restoring force like the general elastic hair ring under the consideration of the hardness required for molding. Therefore, after the conventional coil type hair ring is used repeatedly, the coil will become looser and looser and the density of the coil will become lower and lower, and there will be no effect of tightening the hair any longer.

**[0003]** To solve this problem, German Patent No. DE 102015115002 B3 discloses a two-component hair ring consisting of a spiral TPU-ring and a corrugated rubber ring inside the TPU-ring. This type of hair ring includes a wavy or spiral hair ring made of a material that is less elastically fatigued inside the conventional coil type hair ring, thereby extending the strength and durability of the coil type hair ring. Although this kind of improvement helps to improve the strength and durability of the conventional coil type hair ring, the complicated inner ring manufacturing is disadvantageous in cost and process, and the inner and outer spiral coils may have entanglement problems. The effect of maintaining the density of the outer ring coil is also limited, as it is also necessary to sacrifice the elastic restoring force of the inner ring material, like the outer ring, in order to maintain its configuration.

**[0004]** Therefore, there is a need to develop a hair ring having a relatively simple structure, which can have non-marking and non-tangling effects of a coil type hair ring, and meanwhile, can have sufficient elastic restoring force to improve strength and durability.

**[0005]** A coil hair tie includes: a spiral coil body configured as a head-to-tail connected ring with a hollow portion for allowing hair to pass through, wherein the spiral coil body has a hollow chamber therein; and a linear elastic restoring member comprising at least one one-dimensional elastic body extending in a direction substantially parallel to the spiral coil body and disposed in the hollow chamber of the spiral coil body, and being head-to-tail connected to form a ring configuration. When the spiral coil body is stretched into a tensile configuration with a lower coil density, the elastic restoring member is also

stretched, and when the tensile force applied to the spiral coil body is removed, the spiral coil body restores to a retracted configuration having a higher coil density through the tensile restoring force of the elastic restoring member.

**[0006]** The linear elastic restoring member may consist of two or more one-dimensional elastic bodies of different materials, sizes and configurations.

**[0007]** The above contents of the present invention will become more readily apparent to those ordinarily skilled in the art after reviewing the following detailed description and accompanying drawings, in which:

FIG. 1 is a schematic diagram illustrating a conventional coil type hair ring;

FIG. 2A is schematic diagram illustrating a coil hair tie according to a first embodiment of the present invention;

FIG. 2B is schematic diagram illustrating a cross section of the coil hair tie of FIG. 2A, which is taken along the A-A line;

FIG. 3 is a schematic diagram illustrating the use of a coil hair tie according to the present invention;

FIG. 2A is schematic diagram illustrating a coil hair tie according to a second embodiment of the present invention;

FIG. 4B is schematic diagram illustrating a cross section of the coil hair tie of FIG. 4A, which is taken along the B-B line;

FIG. 5 is a schematic cross-sectional view of an elastic restoring member of a coil hair tie according to a third embodiment of the present invention; and

FIG. 6 is a schematic partial perspective view of an elastic restoring member of a coil hair tie according to a fourth embodiment of the present invention.

**[0008]** Referring to FIG. 2A, a coil hair tie according to a first embodiment of the present invention includes a spiral coil body 10, which is integrally formed or joined to form a head-to-tail-connected ring-shaped member so that the entire coil body 10 forms a hair ring with a hollow portion 11 for allowing hair to pass through. Furthermore, the coil body 10 itself is configured to have a hollow chamber 101. The coil hair tie according to the present invention additionally includes at least one linear elastic restoring member 20, which is formed of a one-dimensional elastic body extending substantially in a linear direction (parallel to the spiral coil body) and forming a head-to-tail phase in an integrally formed or joined manner, and extensively disposed in the hollow chamber 101 of the coil body 10. In the present embodiment, only one one-dimensional elastic body is disposed in the hollow chamber 101 of the coil body 10 as the elastic restoring member 20, as shown in FIG. 2B, which is taken along the line A-A of FIG. 2A. When the user stretches the coil body 10 as shown in steps A and B of FIG. 3, the elastic restoring member 20 is also stretched, and when the user loosens the coil body as shown in step C of FIG. 3, the

coil body 10 can restore to its initial coil density by way of the restoring force of the elastic restoring member 20 for subsequent uses. The one-dimensional elastic body 20 used in this embodiment may be any suitable material having stretch characteristics, such as natural or synthetic rubber, plastic, latex or a mixture thereof generally used for producing hair rings. The size design should be compatible with the size and material of the coil body. The size of the coil body 10 is matched with the material, which should not be too thin to cause breakage or elastic fatigue when stretching together with the coil body 10, nor should it be too thick to make the coil body 10 difficult to stretch.

**[0009]** Next, please refer to FIG. 4A and FIG. 4B to see a coil hair tie according to a second embodiment of the present invention, wherein FIG. 4B is a schematic cross-sectional view taken along line B-B of the coil hair tie shown in FIG. 4A. In the present embodiment, the linear elastic restoring member 20 provided in the hollow chamber 101 of the coil body 10 includes two one-dimensional elastic bodies 201 and 202, and of course, more may be used. The two one-dimensional elastic bodies 201 and 202 may be made of the same or different material and have the same or different size, while still having to be able to cooperate with the coil body 10 to stretch and elastically recover. The advantage of providing two or more one-dimensional elastic bodies is that when one of them is broken or elastically fatigued, there is another one that can support the elastic restoring force, and the color and style of the hair ring can be more varied.

**[0010]** The one-dimensional elastic body 20 illustrated in the first embodiment, the one-dimensional elastic body 201 or 202 illustrated in the second embodiment, or the one-dimensional elastic body 203 or 204 illustrated in the third embodiment may be further wrapped with a protective material 200, which has a lower stretchability than the one-dimensional elastic body, e.g. an elastic cloth, as shown in the cross-sectional view of FIG 5. In addition to beautification, the purpose of the protective material 200 is to confine the stretch range of the one-dimensional elastic body 20 to avoid breakage due to excessive stretching and, in addition, to protect the hair from being adhered by the one-dimensional elastic body 20.

**[0011]** FIG. 6 shows a linear elastic restoring member 20 included in a coil hair tie according to a fourth embodiment of the present invention. The linear elastic restoring member 20 in this embodiment is formed by interweaving two one-dimensional elastic bodies 203 and 204. The one-dimensional elastic bodies 203 and 204 extend substantially in the direction of the spiral coil body 10, and when one of them is broken or elastically fatigued, there is another one that can support the elastic restoring force, and the color and style of the hair ring may be variable.

**[0012]** In summary, the coil hair tie structure according to the present invention has the advantages of not leaving traces on hair after being tied to and released from the hair, and having better durability. In addition, it has been comprehensively considered in aesthetic design and

cost control.

## Claims

1. A coil hair tie, comprising a spiral coil body (10) configured as a head-to-tail connected ring, which encloses a hollow portion (11) for allowing hair to pass through, wherein the spiral coil body (10) has a hollow chamber (101) therein, and **characterized in** further comprising a linear elastic restoring member (20) comprising at least one one-dimensional elastic body (20, 201, 202, 203, 204) extending along the head-to-tail connected ring of the spiral coil body (10) and disposed in the hollow chamber (101) of the spiral coil body (10), and being head-to-tail connected to form a ring configuration, wherein when a tensile force is applied to stretch the spiral coil body (10) into a tensile configuration with a lower coil density, the elastic restoring member (20) is also stretched, and when the tensile force applied to the spiral coil body (10) is removed, the spiral coil body (10) restores to a retracted configuration having a higher coil density through the tensile restoring force of the elastic restoring member (20).
2. The coil hair tie according to claim 1, wherein the linear elastic restoring member (20) comprises two one-dimensional elastic bodies (201, 202) extending substantially in parallel and respectively head-to-tail connected to form the ring configuration.
3. The coil hair tie according to claim 2, wherein the materials and/or sizes of the two one-dimensional elastic bodies (201, 202) are different.
4. The coil hair tie according to claim 1, wherein the linear elastic restoring member (20) comprises two one-dimensional elastic bodies (203, 204) interweaved with each other and head-to-tail connected to form the ring configuration.
5. The coil hair tie according to claim 1, wherein the at least one one-dimensional elastic body (20, 201, 202, 203, 204) is wrapped with a protective material (200), which is different from the material of the one-dimensional elastic body (20).
6. The coil hair tie according to claim 5, wherein the protective material (200) has a lower stretchability than the one-dimensional elastic body (20) for confining a stretch range of the one-dimensional elastic body (20).
7. The coil hair tie according to claim 1, wherein the coil hair tie is integrally formed of a thermoplastic polyurethane or thermoplastic rubber.

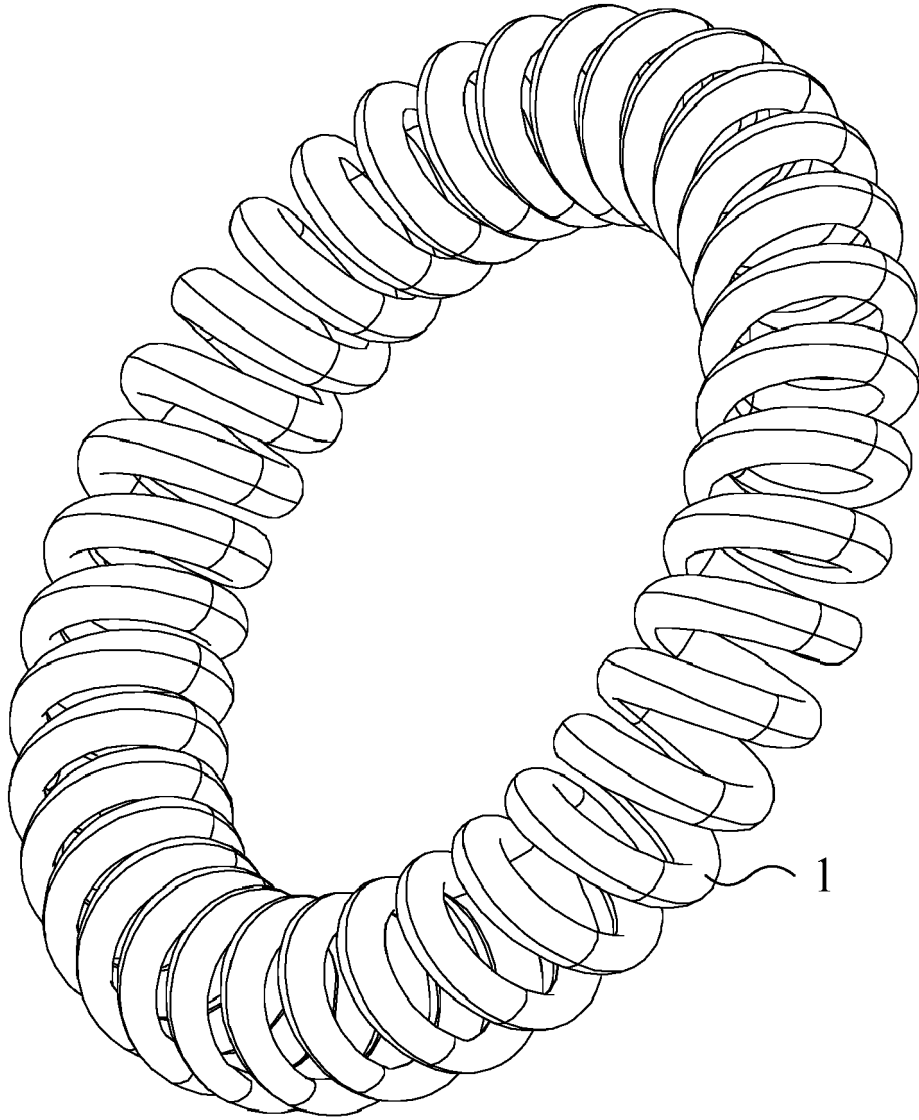


FIG. 1 (PRIOR ART)

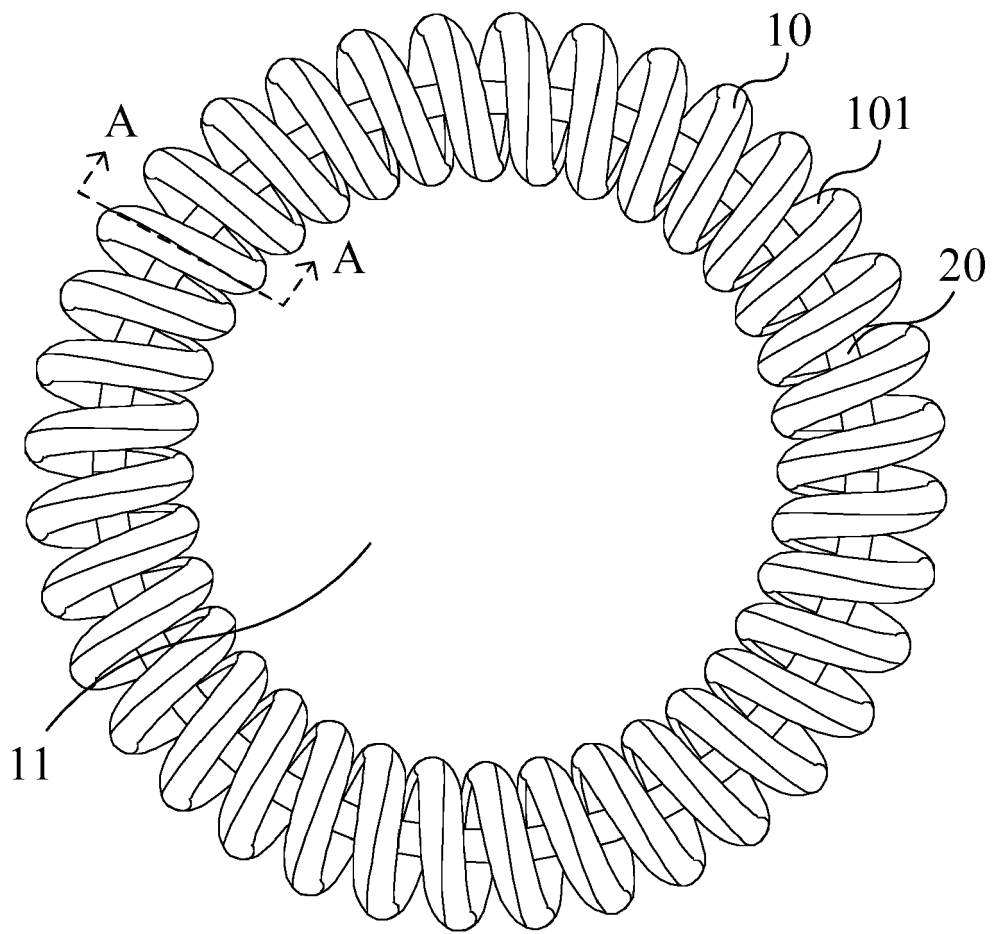


FIG. 2A

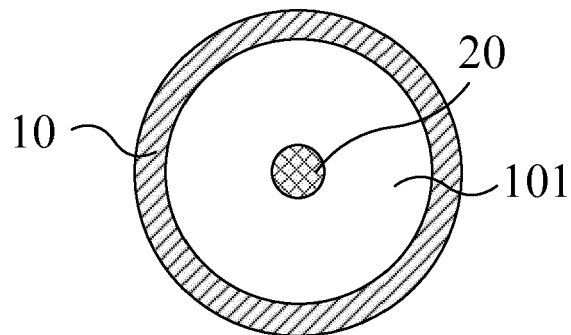


FIG. 2B

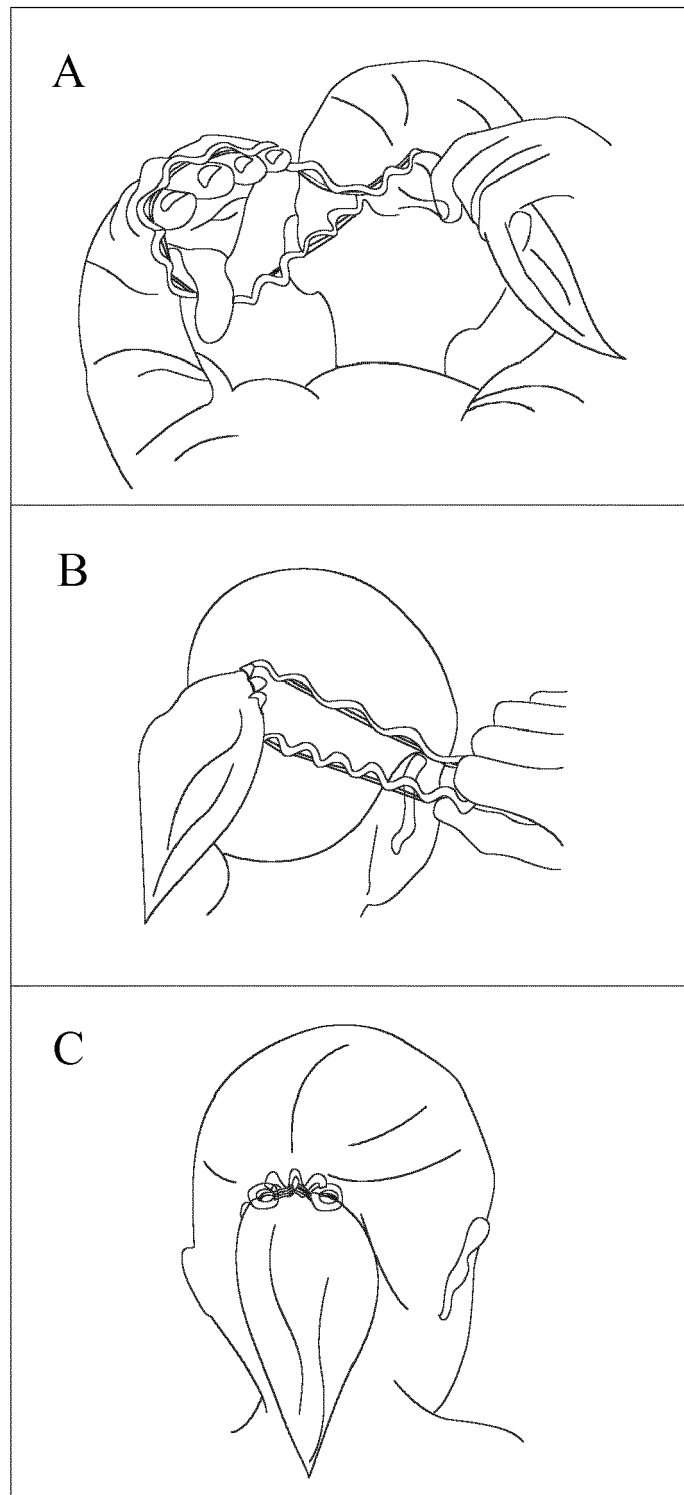


FIG. 3

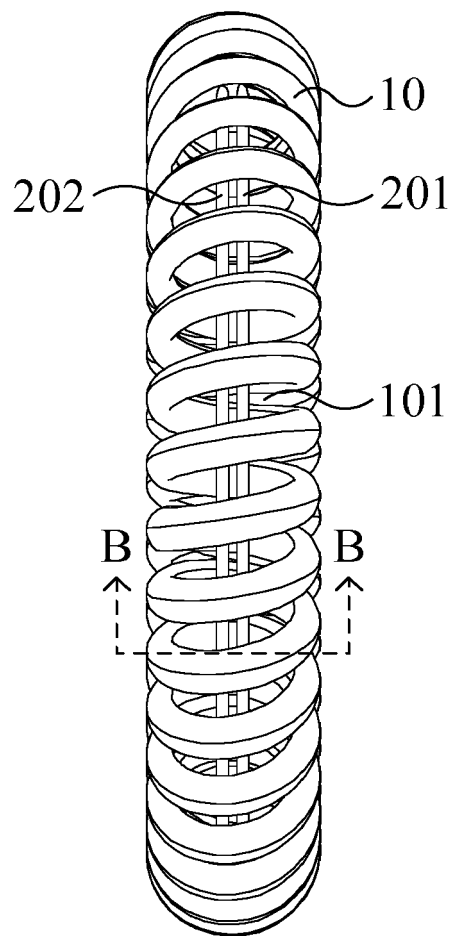


FIG. 4A

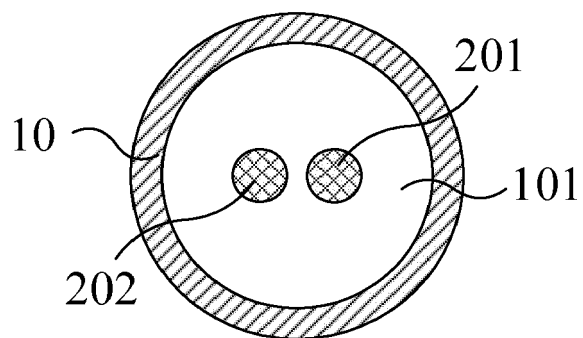


FIG. 4B

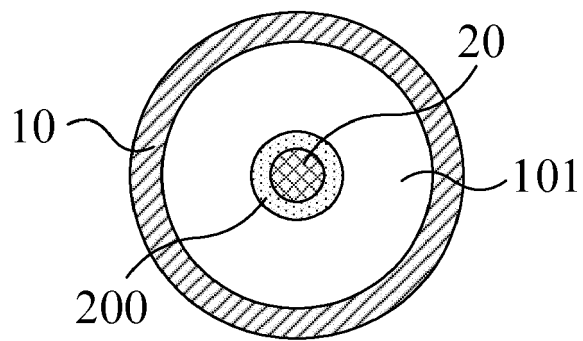


FIG. 5

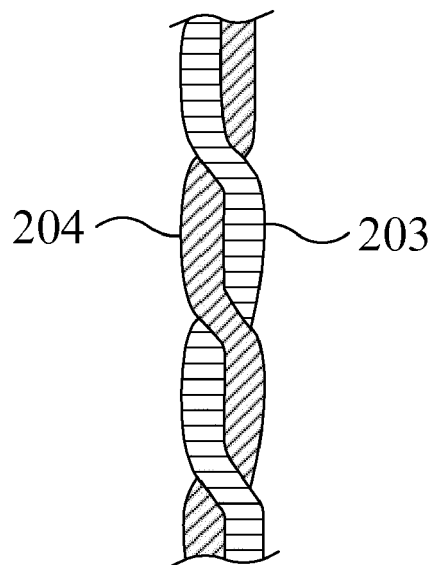


FIG. 6





## EUROPEAN SEARCH REPORT

Application Number  
EP 18 24 8107

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2006/055464 A1 (GOODY PROD INC [US]; KRAFT SARAH [US]; LAU PING CHIU [CN]) 26 May 2006 (2006-05-26) * page 3, line 11 - page 8, line 6; figures 1-5 *	1-3,5-7	INV. A45D8/34
A,D	DE 10 2015 115002 B3 (LEDERER STEFAN [DE]) 21 July 2016 (2016-07-21) * paragraph [0009] - paragraph [0021]; figures 1-3 *	1-7	
			TECHNICAL FIELDS SEARCHED (IPC)
			A45D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 11 March 2019	Examiner Ehrsam, Sabine
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			

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 24 8107

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006055464 A1	26-05-2006	CN 101119653 A	06-02-2008
		EP 1814413 A1	08-08-2007
		US 2006157077 A1	20-07-2006
		WO 2006055464 A1	26-05-2006
-----			
DE 102015115002 B3	21-07-2016	DE 102015115002 B3	21-07-2016
		DE 202015103391 U1	29-06-2016
-----			

EPO FORM P0459

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

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**Patent documents cited in the description**

- DE 102015115002 B3 [0003]