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(54) **HAIR BUNDLE**

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(57) **ABSTRACT**

Related U.S. Application Data

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016492, filed on Apr. 15, 2020.

A hair bundle, including: at least one hair; and at least one linear core material that is bundled together with the hair. The core material is capable of maintaining a deformed state when deformed together with the hair.

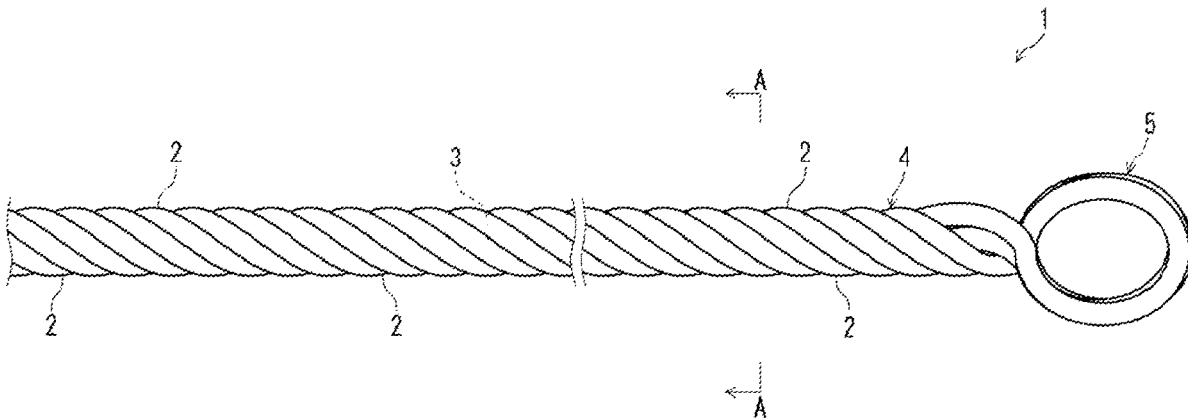


Fig. 1

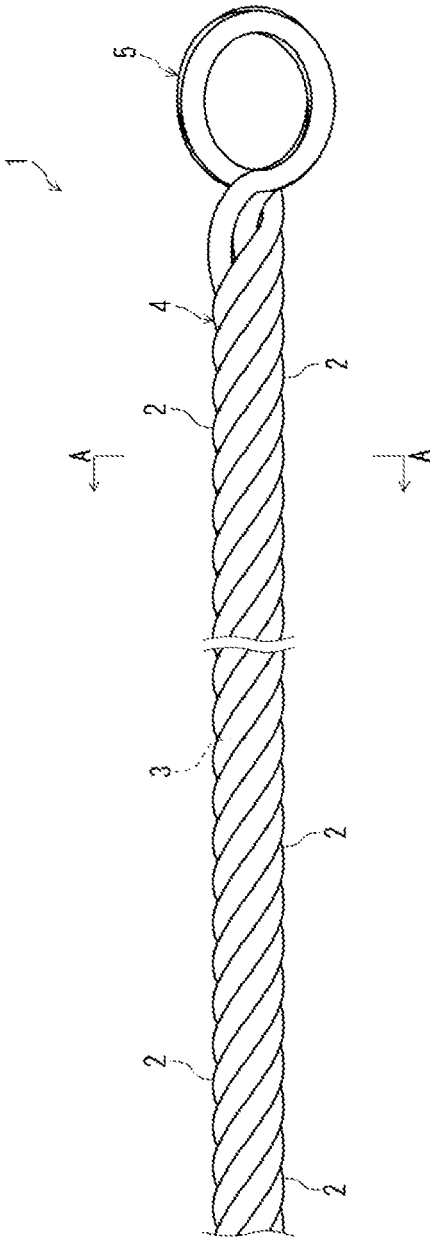


Fig. 2

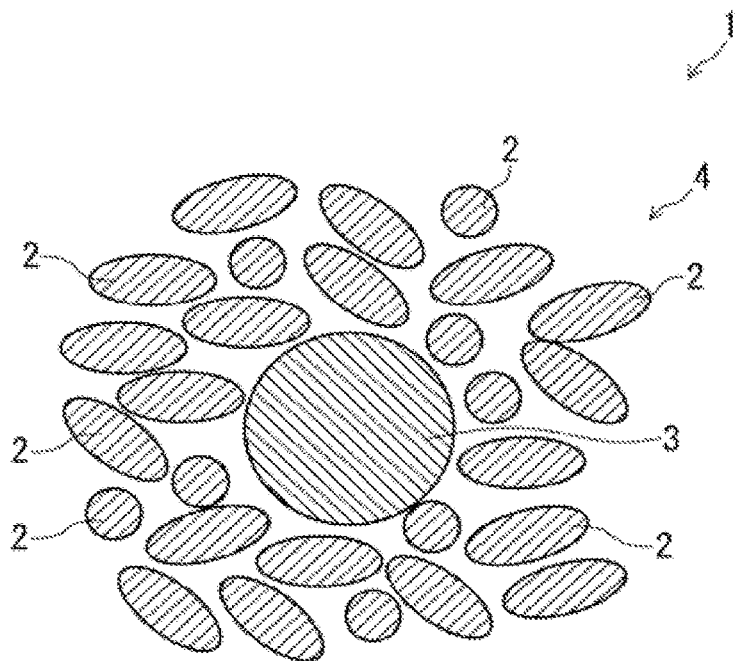


Fig. 3

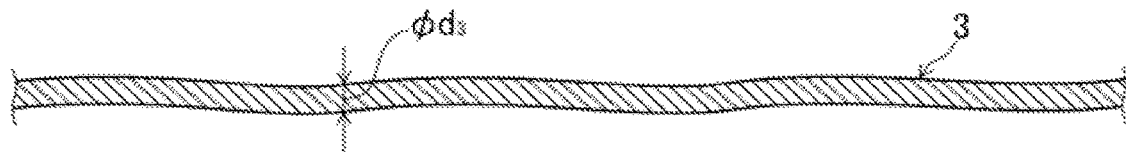


Fig. 4

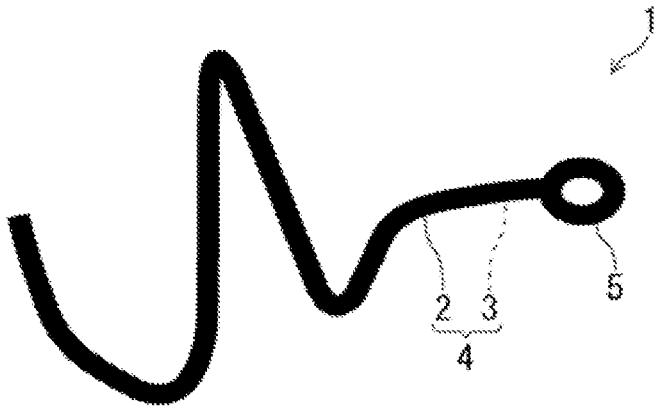


Fig. 5

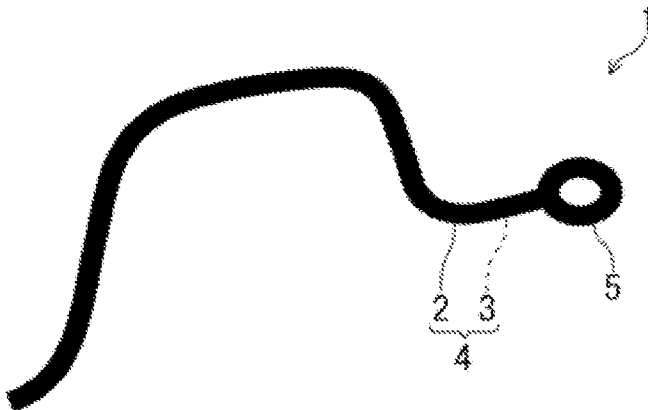


Fig. 6



Fig. 7

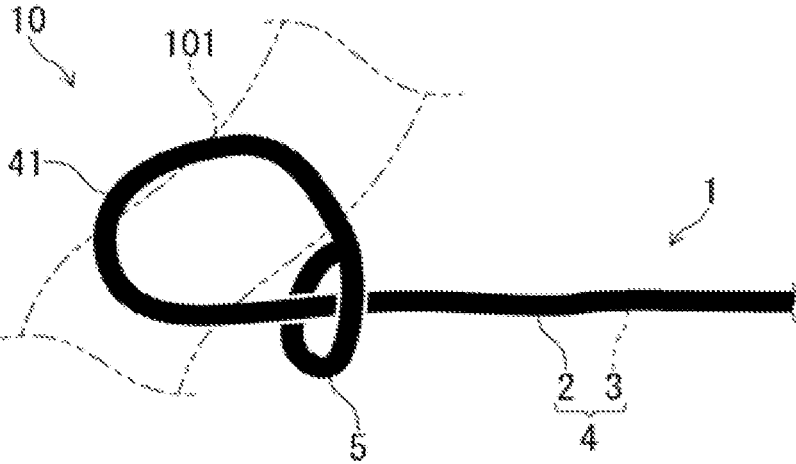


Fig. 8

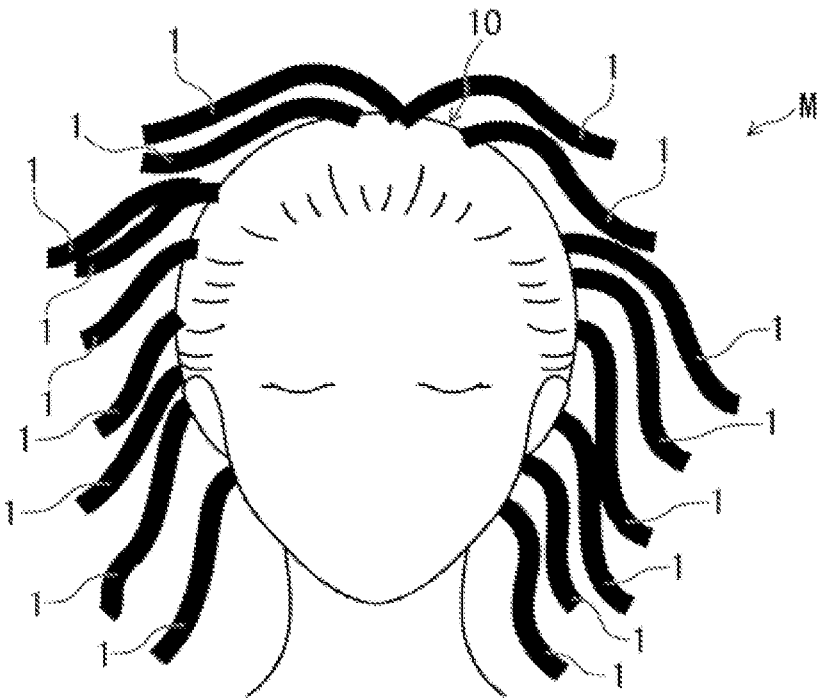


Fig. 9

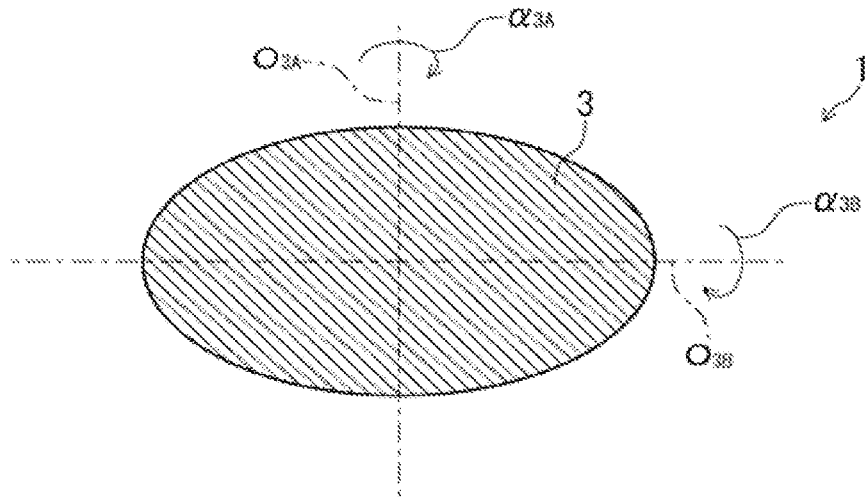


Fig. 10

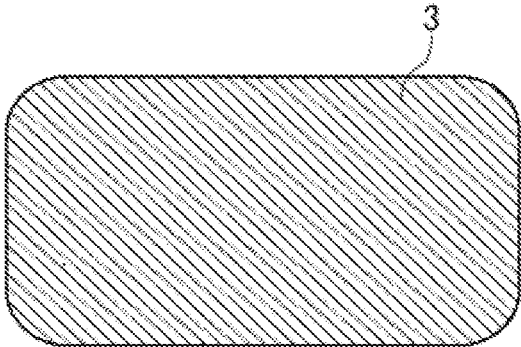


Fig. 11

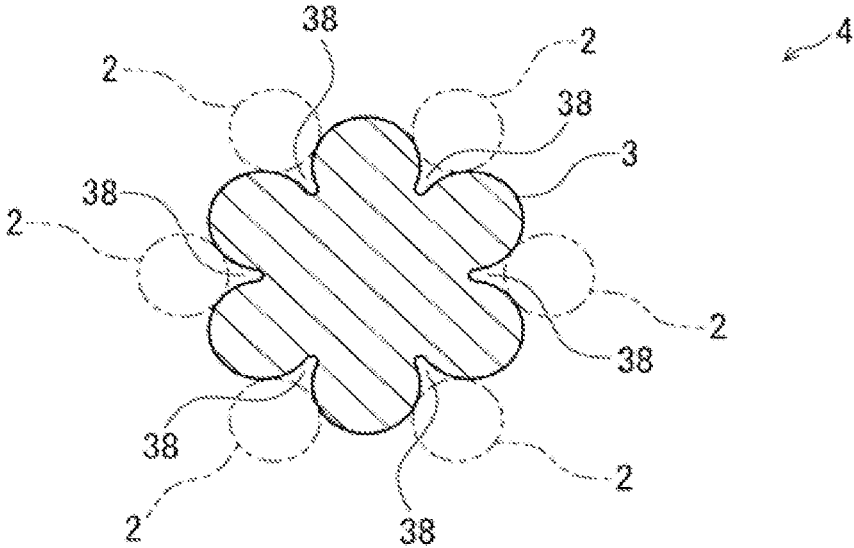


Fig. 12

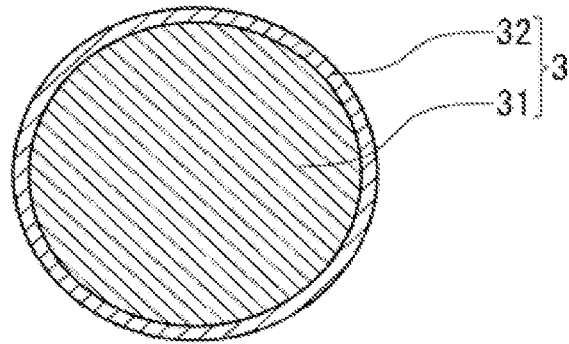


Fig. 13

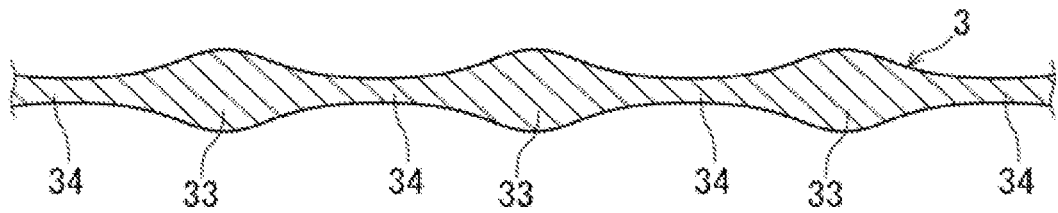
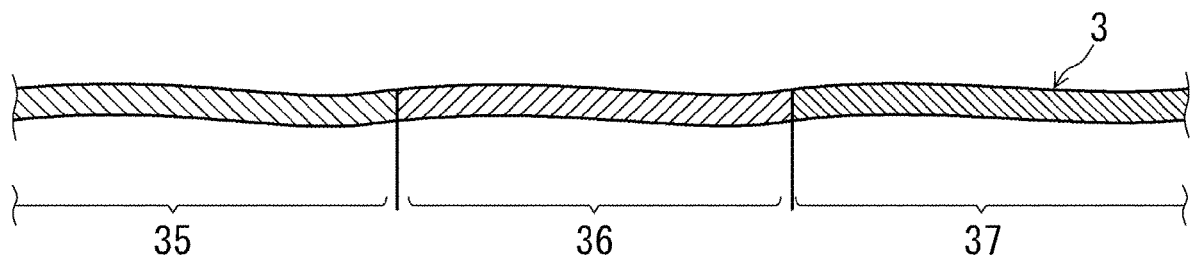


Fig. 14



HAIR BUNDLE

TECHNICAL FIELD

[0001] The present invention relates to a hair bundle used for dolls or humans. More specifically, the present invention relates to a hair bundle that is mounted to dolls or human hairs such that various hairstyles can be achieved.

BACKGROUND ART

[0002] Hair products such as wigs and hair wigs that are attached to the hair of the head are known. As a hair product, for example, there is a fiber for artificial hairs that is subjected to a forming process that deforms such as curls and waves etc. by heating (see, for example, patent document 1).

PRIOR ART DOCUMENT

Patent Document

[0003] Patent document 1: WO2012/157561A1

SUMMARY OF THE INVENTION

Problems to be Solved by the Invention

[0004] However, in the fiber for artificial hairs described in patent document 1, when performing the forming process, a heating equipment such as a hair iron etc. must be used, and the forming process takes time and effort accordingly. Further, when performing the forming process, it is necessary to heat the fiber for artificial hairs at a suitable temperature for it, and it may take time and effort to adjust the temperature. For example, if the heating temperature is too low, the forming process for the fiber for artificial hairs may be insufficient, so that the durability of curls, waves, etc. after the forming process may decrease. On the other hand, if the heating temperature is too high, the fiber for artificial hairs may be degenerated, so that the forming process for the fiber for artificial hairs may become impossible.

[0005] An object of the present invention is to provide a hair bundle that can easily change the hairstyle and sufficiently maintain the changed state, for example when using it by attaching to the hairs of the head.

Means for Solving the Problem

[0006] An aspect of the hair bundle of the present invention comprises at least one hair, and at least one linear core material that is bundled together with the hair and has a shape maintainability that maintains the deformed state when deformed together with the hair.

Effects of the Invention

[0007] According to the present invention, the hairstyle can easily be changed and the changed state can be maintained, for example when using the hair bundle by attaching to the hairs of the head.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a schematic plan view showing a first embodiment of the hair bundle of the present invention.

[0009] FIG. 2 is a sectional view (cross sectional view) along the line A-A in FIG. 1.

[0010] FIG. 3 is a longitudinal sectional view of the core material included in the hair bundle shown in FIG. 1.

[0011] FIG. 4 is a plan view showing an example of a deformed state of the hair bundle shown in FIG. 1.

[0012] FIG. 5 is a plan view showing an example of a deformed state of the hair bundle shown in FIG. 1.

[0013] FIG. 6 is a plan view showing an example of a deformed state of the hair bundle shown in FIG. 1.

[0014] FIG. 7 is a view showing a state in which the hair bundle shown in FIG. 1 is attached to the one's own hair.

[0015] FIG. 8 is a view showing an example of using the hair bundle shown in FIG. 1.

[0016] FIG. 9 is a cross-sectional view of the core material included in the hair bundle (second embodiment) of the present invention.

[0017] FIG. 10 is a cross-sectional view of the core material included in the hair bundle (third embodiment) of the present invention.

[0018] FIG. 11 is a cross-sectional view of the core material included in the hair bundle (fourth embodiment) of the present invention.

[0019] FIG. 12 is a cross-sectional view of the core material included in the hair bundle (fifth embodiment) of the present invention.

[0020] FIG. 13 is a longitudinal sectional view of the core material included in the hair bundle (sixth embodiment) of the present invention.

[0021] FIG. 14 is a longitudinal sectional view of the core material included in the hair bundle (seventh embodiment) of the present invention.

EMBODIMENTS FOR CARRYING OUT THE INVENTION

[0022] In the following, the hair bundle of the present invention will be described in detail based on a preferred embodiment shown in the attached drawings.

First Embodiment

[0023] FIG. 1 is a schematic plan view showing a first embodiment of the hair bundle of the present invention. FIG. 2 is a sectional view (cross sectional view) along the line A-A in FIG. 1. FIG. 3 is a longitudinal sectional view of the core material included in the hair bundle shown in FIG. 1. FIG. 4 is a plan view showing an example of a deformed state of the hair bundle shown in FIG. 1. FIG. 5 is a plan view showing an example of a deformed state of the hair bundle shown in FIG. 1. FIG. 6 is a plan view showing an example of a deformed state of the hair bundle shown in FIG. 1. FIG. 7 is a view showing a state in which the hair bundle shown in FIG. 1 is attached to the one's own hair. FIG. 8 is a view showing an example of using the hair bundle shown in FIG. 1. In the following, for convenience of explanation, in FIGS. 1 and 4 to 7, the side on which the ring-shaped mounting part (indicated by reference numeral 5 in the figures) is arranged is referred to as the "proximal end", and the opposite side is referred to as the "distal end". In FIGS. 1 and 2, the length direction of the hair bundle is shortened and the thickness direction of the hair bundle is exaggerated and schematically shown for reasons of visibility, wherein the ratio in the length direction and the thickness direction is significantly different from the actual one.

[0024] The hair bundle 1 shown in FIG. 1 comprises a bundled part 4 in which a plurality (a lot) of hairs 2 and a

core material (core wire) **3** are bundled, and a ring-shaped attaching part **5** provided at the proximal end of the bundled part **4**. The hair bundle **1** is a hair extension used for decorating the hairs **10** of the head (see FIG. 8). In the following, the construction of each part of the hair bundle **1** will be described.

[0025] In the bundled part **4**, the hairs **2** are intertwined with each other and form a shape of the bundle of ropes. Thereby, the hair bundle **1** becomes, for example, a hair extension for dreadlocks.

[0026] The hairs **2** are not particularly limited, and may be, for example, human hairs collected by cutting the hair or artificial hairs composed of chemical fibers. In the bundled part **4**, the hairs **2** composed of human hairs and the hairs **2** composed of artificial hairs may be mixed.

[0027] The color of the hairs **2** is not particularly limited, and for example, a black-based color or a brown-based color is preferable.

[0028] The hairs **2** are not particularly limited, but, for example, flame-retardant synthetic fibers such as collagen protein fiber, vinyl chloride fiber, vinylidene chloride fiber, acrylic fiber, flame-retardant polyester fiber, etc. and natural hairs such as human hairs, animal hair (beast hairs) can be used. In particular, from the viewpoint of self-extinguishing property and less likely to cause melting and dripping, for example, Kanekalon (registered trademark) manufactured by Kaneka Corporation such as collagen protein fiber, vinyl chloride fiber, vinylidene chloride fiber, acrylic fiber, flame-retardant polyester fiber, etc. can be preferably used.

[0029] The average total length of the hairs **2** is, for example, preferably 10 cm or more and 100 cm or less, and more preferably 20 cm or more and 60 cm or less.

[0030] The number of hairs **2** is not particularly limited, but, for example, preferably such that the hairs **2** can cover the core material **3** from the outer peripheral side thereof, when the core material **3** is arranged substantially in the center of the bundled part **4** as shown in FIG. 2.

[0031] The attaching part **5** is a part being attached to the one's own hair bundle **101** in which a part of the hairs **10** of the head (one's own hair) is separated. The attaching part **5** is a part in which the proximal end of the plurality of hairs **2** is formed in a ring shape.

[0032] As shown in FIG. 7, the bundled part **4** can be passed through the attaching part **5** from the distal end side thereof, and the ring part **41** can be formed by the bundled part **4**. In a state in which the one's own hair bundle **101** is passed through the ring part **41**, the bundled part **4** is then pulled toward the distal end side as it is, and the ring part **41** is made smaller. Thereby, the one's own hair bundle **101** is fastened by the ring part **41**, so that the hair bundle **1** can be attached to the hairs **10** of the head.

[0033] The attaching part **5** may also be omitted depending on how the hair bundle **1** is attached to the hairs **10** of the head. As methods of attaching the hair bundle **1**, when the mounting part **5** is omitted, a method of connecting the hair bundle **1** to the one's own hair bundle **101** using a hair band, a hair ribbon, etc., and a method of knitting the one's own hair bundle **101** into the hair bundle **1**, etc. can be enumerated.

[0034] As shown in FIG. 2, a core material **3** is arranged at the center of the bundled part **4**. As shown in FIG. 3, the core material **3** is a linear member. In the bundled part **4**, the core material **3** can be collectively deformed together with each hair **2** into a desired shape (see, e.g., FIGS. 4 to 6). At

that time, the core material **3** exerts the shape maintainability that maintains the deformed state in the bundled part **4**. Here, "shape maintainability" means that the hair bundle **1** is deformed into a desired shape by an external force, and then the desired shape is maintained for a desired time even when the external force is removed. As an example, it means that the condition described later "the return angle by bending 90 degrees is preferably 15 degrees or less, more preferably 10 degrees or less". Further, heat may be applied when an external force is applied.

[0035] Then, as shown in FIG. 8, the user M who attaches a large number of hair bundles **1** on the hairs **10** of the head can easily deform the hair bundles **1** as desired by applying force to each hair bundle **1** with a fingertip etc. without using an instrument such as a hair iron etc. This deformed state is maintained by the core material **3**. Thereby, the user M can enjoy various hairstyles (hair arrangements) and prevent the hairstyles from collapsing. In particular, in this embodiment, dreadlocks with a wavy frizziness are possible.

[0036] As shown in FIG. 2, the cross-sectional shape of the core material **3** is circular. Thereby, when the core material **3** is deformed together with the hairs **2**, it can be easily deformed in a desired direction regardless of the direction.

[0037] As shown in FIG. 3, the outer diameter $\phi d3$ of the core material **3** is constant along the longitudinal direction of the core material **3**. The outer diameter $\phi d3$ is, for example, preferably 0.4 mm or more and 40 mm or less, and more preferably 0.8 mm or more and 20 mm or less.

[0038] The cross-sectional area of the core material **3** is, for example, preferably 2.0% or more and 90% or less, and more preferably 10% or more and 50% or less of the average cross-sectional area of a hair **2**.

[0039] The total length of the core material **3** is preferably 10% or more and 100% or less, and more preferably 50% or more and 90% or less of the average total length of a hair **2**.

[0040] The number of hairs **2** per core material **3** is preferably 100 or more and 10000 or less, and more preferably 1000 or more and 5000 or less.

[0041] By satisfying the above numerical range, for example, the core material **3** is stably arranged in the center part of the bundled part **4**, so that it is possible to prevent the core material **3** from protruding from the gap between the hairs **2** during the use of the hair bundle **1**. Moreover, the deformed state of the bundled part **4** can be stably maintained.

[0042] The core material **3** is preferably composed of the following materials from the point of view of the shape maintainability.

[0043] The constituent material of the core material **3** is not particularly limited, and for example, a thermoplastic resin satisfying the condition that the return angle by bending 90 degrees is preferably 15 degrees or less, more preferably 10 degrees or less can be used (see e.g. JP2003-278026A). Here, "bending 90 degree" means a state in which a force is applied to the core material **3** to bend the core material **3** at a right angle, i.e. 90 degrees and maintain this state is performed for 5 minutes. The condition "return angle is 15 degrees or less, more preferably 10 degrees or less" means that after releasing the force required for bending 90 degrees, the core material **3** returns preferably 15 degrees or less, more preferably 10 degrees or less due to the spread of the bent of the core material **3** by the restoring force of the core material **3** itself. In general, the restoring

force appears at the moment when the applied force is released and becomes almost zero in about a few minutes, so that the thermoplastic resin which has the above-mentioned return angle after leaving it as it is for approximately 10 minutes is preferable as the core material from the point of view of shape maintainability.

[0044] The thermoplastic resin is not particularly limited, and for example, polyolefin can be used, wherein polyolefin is particularly preferably a polymer containing an ethylene-based unit, and is more preferably polyethylene or ethylene- α -olefin copolymer.

[0045] The core material **3** can be manufactured by forming such a thermoplastic resin into a linear-shaped body, and stretching this linear-shaped body at a temperature of preferably 100° C. or less, more preferably 85 to 100° C. such that the above-mentioned shape maintainability (plastic deformability) arises.

[0046] As the core material **3** is composed of a thermoplastic resin from the distal end to the proximal end, the degree of shape maintainability is constant along the longitudinal direction of the core material **3**. Here, the description “the degree of shape maintainability is constant along the longitudinal direction of the core material **3**” means that the above-mentioned shape maintainability is kept substantially constant along the longitudinal direction, and for example, that the difference in the return angles at arbitrary locations in the longitudinal direction of the core material **3** is preferably within 10 degrees, more preferably between 0 and 5 degrees. Thereby, for example, when manufacturing the hair bundle **1**, the core material **3** can be arranged regardless of the orientation of the core material **3**, i.e., regardless of which of the core material **3** is on the distal end side or the proximal end side, and thus, the manufacture thereof becomes easy.

[0047] As the core material **3** is composed of a thermoplastic resin from the distal end to the proximal end, the weight can be reduced in comparison with the case in which the core material **3** is composed of a metal material, and the safety for the user **M** is also high. The color of the core material **3** itself can be freely set for example in accordance with the color of the hairs **2**. Thereby, the core material **3** is prevented from being conspicuous in the bundled part **4**.

[0048] A part of the core material **3** is arranged in the ring part **41**. Thereby, as the fastened state of the ring part **41** with respect to the one's own hair bundle **101** is maintained, the hair bundle **1** is prevented from being unintentionally detached from the hairs **10** of the head.

Second Embodiment

[0049] FIG. **9** is a cross-sectional view of the core material included in the hair bundle (second embodiment) of the present invention.

[0050] In the following, the second embodiment of the hair bundle of the present invention will be described with reference to this figure, however, the differences from the above-mentioned embodiment will be mainly described, and the same matters will be omitted.

[0051] The present embodiment is the same as the first embodiment except that the cross-sectional shape of the core material is different.

[0052] As shown in FIG. **9**, in the present embodiment, the cross-sectional shape of the core material **3** is elliptical. Thereby, the core material **3** can be easier bent in the direction of the arrow α 3B around the long axis O3B than

in the direction of the arrow α 3A around the short axis O3A. Therefore, the core material **3** having an elliptical cross-sectional shape has an effective construction when it is desired to define the direction of the easiness of bending the bundled part **4** (core material **3**).

Third Embodiment

[0053] FIG. **10** is a cross-sectional view of the core material included in the hair bundle (third embodiment) of the present invention.

[0054] In the following, the third embodiment of the hair bundle of the present invention will be described with reference to this figure, however, the differences from the above-mentioned embodiment will be mainly described, and the same matters will be omitted.

[0055] The present embodiment is the same as the second embodiment except that the cross-sectional shape of the core material is different.

[0056] As shown in FIG. **10**, in the present embodiment, the cross-sectional shape of the core material **3** is a rectangle with rounded corners. Analogous to the second embodiment, this construction is also effective when it is desired to define the direction of the easiness of bending the bundled part **4**.

[0057] The cross-sectional shape of the core material **3** is not limited to a rectangle, and may be, for example, a square, a trapezoid, or another polygon such as a triangle etc.

Fourth Embodiment

[0058] FIG. **11** is a cross-sectional view of the core material included in the hair bundle (fourth embodiment) of the present invention.

[0059] In the following, the fourth embodiment of the hair bundle of the present invention will be described with reference to this figure, however, the differences from the above-mentioned embodiment will be mainly described, and the same matters will be omitted.

[0060] The present embodiment is the same as the first embodiment except that the cross-sectional shape of the core material is different.

[0061] As shown in FIG. **11**, in the present embodiment, the core material **3** has grooves **38** arranged at equal distance along the circumferential direction. A part or the whole of the hairs **2** can enter each groove **38**. Thereby, the state can be maintained in which the core material **3** is arranged substantially in the center part in the bundled part **4**, whereby the core material **3** is prevented from being exposed to the outside, and the core material **3** can be still hidden.

Fifth Embodiment

[0062] FIG. **12** is a cross-sectional view of the core material included in the hair bundle (fifth embodiment) of the present invention.

[0063] In the following, the fifth embodiment of the hair bundle of the present invention will be described with reference to this figure, however, the differences from the above-mentioned embodiment will be mainly described, and the same matters will be omitted.

[0064] The present embodiment is the same as the first embodiment except that the construction of the core material is different.

[0065] As shown in FIG. **12**, in the present embodiment, the core material **3** comprises a resin part **31** composed of

the thermoplastic resin and a coating layer **32** that covers the outer peripheral part of the resin part **31**. The coating layer **32** is the outermost layer of the core material **3** and is composed of the same material as the hairs **2**. Thereby, the core material **3** is more reliably prevented from being conspicuous in the bundled part **4**.

Sixth Embodiment

[0066] FIG. 13 is a longitudinal sectional view of the core material included in the hair bundle (sixth embodiment) of the present invention.

[0067] In the following, the sixth embodiment of the hair bundle of the present invention will be described with reference to this figure, however, the differences from the above-mentioned embodiment will be mainly described, and the same matters will be omitted.

[0068] The present embodiment is the same as the first embodiment except that the longitudinal sectional shape of the core material is different.

[0069] As shown in FIG. 13, in the present embodiment, the outer diameter of the core material **3** changes along the longitudinal direction of the core material **3**. Namely, the core material **3** comprises a large diameter part **33** and a small diameter part **34** having a small outer diameter than that of the large diameter part **33** such that the large diameter part **33** and the small diameter part **34** are repeatedly arranged along the longitudinal direction of the core material **3**. Thereby, when the bundled part **4** is deformed, the intensity of the change can be created, and thus the variation of the hairstyle increases.

Seventh Embodiment

[0070] FIG. 14 is a longitudinal sectional view of the core material included in the hair bundle (seventh embodiment) of the present invention.

[0071] In the following, the seventh embodiment of the hair bundle of the present invention will be described with reference to this figure, however, the differences from the above-mentioned embodiment will be mainly described, and the same matters will be omitted.

[0072] The present embodiment is the same as the first embodiment except that the construction of the core material is different.

[0073] As shown in FIG. 14, in the present embodiment, the core material **3** comprises a first part **35** composed of a first thermoplastic resin and a second part **36** composed of a second thermoplastic resin, and a third part **37** composed of a third thermoplastic resin, wherein each part is arranged along the longitudinal direction. The compositions of the thermoplastic resins of the first part **35**, the second part **36**, and the third part **37** which constitute each part are different from each other. Thereby, the degree of the shape maintainability changes along the longitudinal direction of the core material **3**. Here, "the degree of shape maintainability changes along the longitudinal direction of the core material **3**" means that the shape maintainability as described above differs depending on the position in the longitudinal direction. For example, it means that the difference in the above-mentioned return angle between adjacent parts (for example, the difference between the return angle at an arbitrary location in the first part **35** and the return angle at an arbitrary location in the second part **36**) is preferably more than 5 degrees, more preferably between 6 degrees and

10 degrees. Thereby, when the bundled part **4** is deformed, the intensity of the shape maintainability can be different at the first part **35**, the second part **36**, and the third part **37** respectively, and thus the variation of the hairstyle increases. There may be a part having the shape maintainability and a part not having the shape maintainability along the longitudinal direction of the core material **3**.

[0074] Although the illustrated embodiments of the hair bundle **1** of the present invention have been described above, the present invention is not limited to this, and each part constituting the hair bundle **1** can be replaced with the one which has an arbitrary configuration capable of exerting the same function. Further, an arbitrary component can be added.

[0075] The hair bundle **1** of the present invention may be a combination of any two or more constructions (features) of each of the above embodiments.

[0076] Further, the hair bundle **1** is applied to a hair extension for dreadlocks in each of the above embodiments, but is not limited to this, and may be applied to, for example, a hair extension or a toupee (including a wig and a hair piece) for a blade.

[0077] Further, although the hair bundle **1** comprises a plurality of hairs **2** in each of the above embodiments, the number of hairs **2** is not particularly limited, and at least one hair may be sufficient.

[0078] Further, although the hair bundle **1** comprises one core material **3** in each of the above embodiments, the number of the core material **3** is not particularly limited, and at least one core material **3** may be sufficient.

DESCRIPTION OF THE REFERENCE NUMERALS

- [0079] **1** Hair bundle
- [0080] **2** Hair
- [0081] **3** Core material (core wire)
- [0082] **31** Resin part
- [0083] **32** Coating layer
- [0084] **33** Large diameter part
- [0085] **34** Small diameter part
- [0086] **35** First part
- [0087] **36** Second part
- [0088] **37** Third part
- [0089] **38** Groove
- [0090] **4** Bundled part
- [0091] **41** Ring part
- [0092] **5** Attaching part
- [0093] **10** Hairs of the head
- [0094] **101** One's own hair bundle
- [0095] **M** User
- [0096] **O3A** Short axis
- [0097] **O3B** Long axis
- [0098] α 3A Arrow
- [0099] α 3B Arrow
- [0100] ϕ d3 Outer diameter

1: A hair bundle, comprising:

at least one hair; and

at least one linear core material that is bundled together with the hair,

wherein the core material has a shape maintainability that maintains a deformed state when deformed together with the hair.

2: The hair bundle according to claim 1, wherein an outer diameter of the core material is constant along a longitudinal direction of the core material.

3: The hair bundle according to claim 1, wherein an outer diameter of the core material changes along a longitudinal direction of the core material.

4: The hair bundle according to claim 1, wherein a degree of the shape maintainability is constant along a longitudinal direction of the core material.

5: The hair bundle according to claim 1, wherein a degree of the shape maintainability changes along a longitudinal direction of the core material.

6: The hair bundle according to claim 1, comprising a plurality of the hairs and one core material, wherein a total length of the core material is between 10% and 100% of an average total length of the hairs.

7: The hair bundle according to claim 1, comprising a plurality of the hairs and one core material, wherein a cross-sectional area of the core material is between 2.0% and 90% of an average cross-sectional area of the hairs.

8: The hair bundle according to claim 1, wherein a number of the hairs per one core material is between 100 and 10000.

9: The hair bundle according to claim 1, wherein the core material is at least partially composed of a thermoplastic resin.

10: The hair bundle according to claim 1, wherein the core material has a coating layer as an outermost layer, and the coating layer is composed of a same material as the hair.

11: The hair bundle according to claim 1, further comprising:

an attaching part configured to be attached to a real hair bundle.

12: The hair bundle according to claim 11, wherein the attaching part has a ring shape.

13: A method for decorating hair, comprising:

attaching the hair bundle according to claim 1 to the hair.

14: The hair bundle according to claim 2, wherein a degree of the shape maintainability is constant along the longitudinal direction of the core material.

15: The hair bundle according to claim 2, wherein a degree of the shape maintainability changes along the longitudinal direction of the core material.

16: The hair bundle according to claim 1, wherein the hair is a human hair, an artificial hair composed of a chemical fiber, or a combination thereof.

17: The hair bundle according to claim 9, wherein the thermoplastic resin comprises polyolefin.

18: The hair bundle according to claim 1, wherein the core material is free of a metal material.

19: The hair bundle according to claim 1, comprising a plurality of the hairs and one core material such that the hairs cover an outer periphery of the core material.

20: The hair bundle according to claim 12, wherein a proximal end of the hair is formed in the ring shape to form the attaching part.

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