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## (54) A SYNTHETIC BRAIDING HAIR AND ITS MANUFACTURING METHOD

(57) A new synthetic braiding hair (10) and its manufacturing methods are disclosed. The synthetic braiding hair (10) is comprised of a plurality of the first synthetic fibers (20) configured to have natural ending shape; a plurality of the second synthetic fibers (30) configured to be half-length of the plurality of the first synthetic fibers (20) and have natural ending shape; and the plurality of the second synthetic fibers (30) is combined in the middle of the plurality of the first synthetic fibers (20) and folded together to form a hook (40).

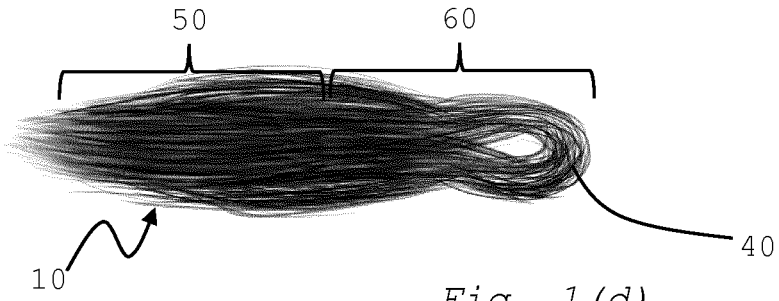


*Fig. 1(d)*

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## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to a new synthetic braiding hair and its manufacturing method. More specifically, the proposed synthetic braiding hair is attached to natural human hair intended to achieve new hair styles and functions.

### BACKGROUND ART

**[0002]** Hair styles for women have changed for many years according to the trends in hair design industries, and the development of synthetic hair products has aided the continuous introduction of new hair styles to the beauty and hair design market. These braiding hair products are normally attached to a natural human hair by braiding or stitching with a special hair needle. Most of the hair styling tools in the market have been continuously improved to facilitate the attaching of synthetic hair to natural hair. However, the creation of new and better braiding hair style products is still in great need.

**[0003]** So far, most of prior arts in the US patents have been focused only on the device used for braiding natural or synthetic hair itself. US Patent No. 5497795 suggested the use of flexible and resilient loops, each loop connected to the next loop in a series and each loop being individually expandable, to prevent natural hair from being loosened from the normal braiding method.

**[0004]** US Publication No. 2008/0163882 disclosed the braid hair weft that attaches a plurality of synthetic hair to a series of strings, designed to reduce the length of time it takes to add hair extensions and attach individual braid to a person's head. The present invention requires anchoring hair fibers to a weft creating an apparatus for quickly adding braids without requiring one to individually braid strands of a person's hair.

**[0005]** US Patent No. 9439498 introduced a flexible tube to embrace the braided hair to protect the natural braid hair from the environment by providing a lengthwise contractible cylindrical evolved hair tube, where the hair tube is resiliently biased toward a preformed state.

**[0006]** These references to the US patents provide examples of improved methods and devices on how to braid natural or synthetic hair extensions, but the disclosing of any new braiding hair itself and its development methods has not been suggested yet. Consequently, hair designers are forced to manually create new hair styles by braiding and extending several different existing styles of synthetic hair products together. This method of braiding has been especially popular in African-American hair shops.

**[0007]** Instead of suggesting another tool or device to create new hair braiding, the present invention discloses a new synthetic braiding hair that has both hot water setting capability and an antibacterial function resistant to moisture and sweat.

**[0008]** To understand the creativity of the present invention, one must review the existing hair products in the market and how noble and new the present invention is compared to the prior art.

**[0009]** For many years, most synthetic braiding hair products have been sold in one large bundle. When the user cuts the bundle in a desired length, the ending tip becomes constant and straight. If the synthetic braiding hair is attached as is to the user's natural hair, its constant ending tips makes the hair style unnatural. To avoid this, hair designers take a small amount of synthetic hair from the large bundle and pull/stretch it little by little. By repeating this process, the length of the ending tip becomes slightly and randomly varied, which creates an effect of a natural hair ending shape. However, in order to make the amount needed to create one hair style with the synthetic braiding hair for a customer, it requires an extensive work of pulling and takes many hours to do.

**[0010]** Synthetic braiding hair products are usually stitched onto the user's original hair with a hair stitching tool. Then it is further styled by braiding or temperature control, called "hot water setting", to create naturally shaped curls. Hot water setting is performed as follows.

**[0011]** First, the synthetic hair is twisted, then it is immersed in hot water of about 50-60 degrees Celsius. The shape of the synthetic braiding hair is fixed as previously twisted, then natural hair curls can be produced thereof. This type of synthetic braiding hair is widely used because of its changeability of the shape by the temperature control. The user can easily create curly hair style through the hot water setting.

**[0012]** However, there are drawbacks to existing hot water setting capable synthetic braiding hair materials. Due to the nature of the fiber used for manufacturing this kind of synthetic hair, it tends to easily absorb moisture from the environment, especially when it is attached to the human hair, the sweat, or secretion from the human skin. It becomes difficult to manage the hygiene of the scalp when moisture is impregnated into the fiber.

**[0013]** Many users using the synthetic hair product cannot wash or clean with water because the synthetic hair is susceptible to shape changes when it absorbs moisture. A chemical cleaning product is available and used instead to cleanse the scalp. However, this cleaning solution sometimes results in itchiness, and/or rashes on the scalp and causes additional hygiene issues.

**[0014]** In addition, the weight of the synthetic hair becomes heavier when moisture is absorbed, which burdens the wearer of the hair.

### DISCLOSURE OF INVENTION

**[0015]** To overcome several issues caused by the current synthetic braiding hair product, the objective of the present disclosure is to develop a new braiding synthetic hair that provides a prestretched bundle with natural ending shape so that the user can easily attach the product to the hair without additional pulling work.

**[0016]** In addition, the new braiding synthetic hair con-

tains two types of synthetic fibers that deliver different functionalities. The first fiber with longer length is mainly positioned from the middle to the end of it, having conventional hot water setting capability for the user to style curly hair easily.

**[0017]** The second fiber placed adjacent to the scalp is antibacterial and also resistant to moisture and sweat. Thus, the scalp is effectively maintained healthy and clean.

**[0018]** The second fiber is also lighter than the first fiber because it does not absorb moisture from the environment and its length is half of the first fiber. Thus, the overall weight of the presented synthetic hair becomes much lighter than the conventional synthetic hair, giving much less weight burden on user's scalp.

**[0019]** The illustrative embodiment in the disclosure shows a synthetic braiding hair comprising a plurality of the first synthetic fibers configured to have natural ending shape and a plurality of the second synthetic fibers that are half-length of the first synthetic fibers and have natural ending shape as well. The group of second fibers is then combined in the middle of the plurality of the first fibers and folded together to form a hooked shape.

**[0020]** In the present disclosure, the plurality of the first synthetic fibers is capable of hot water setting to form a curly hair style, while the plurality of the second synthetic fibers is antibacterial and resistant to moisture and sweat.

**[0021]** In the present disclosure, the plurality of the first synthetic fibers positioned to the other end of the hook is used for the hot water setting, while the plurality of the second synthetic fibers positioned near the hook is stitched to the human hair and antibacterial and resistant to moisture and sweat.

## BRIEF DESCRIPTION OF DRAWINGS

**[0022]**

Fig. 1(a) through 1(d) is a conceptual diagram for describing the plurality of the first and second synthetic fibers.

Fig. 2 is a conceptual diagram of a combing device and a pulling device for describing how to pull the plurality of the first and second synthetic fibers to create a natural ending shape.

Fig. 3 is a flow diagram for describing how to manufacture the synthetic hair using the plurality of the first and second synthetic fibers.

## BEST MODE FOR CARRYING OUT THE INVENTION

**[0023]** Hereinafter, illustrative embodiments and examples will be described in detail so that inventive concept may be readily implemented by those skilled in the art. However, it is to be noted that the present disclosure is not limited to the illustrative embodiments and examples but can be visualized in various other ways. In drawings, parts not directly relevant to the description are omitted to enhance the clarity of the drawings, and like reference numerals denote like parts throughout the whole document.

**[0024]** Throughout the whole document, the term "on" that is used to designate a position of one element with respect to another element includes both a case that the one element is adjacent to the other element and a case that any other element exists between these two elements.

**[0025]** The terms "comprises or includes" and/or "comprising or including" used in the document means that one or more other components, steps, operations and/or existence or addition of elements are not excluded in addition to the described components, steps, operations and/or elements unless context dictates otherwise. The terms "about or approximately" or "substantially" are intended to have meanings close to numerical values or ranges specified with an allowable error and intended to prevent accurate or absolute numerical values disclosed for understanding of the present disclosure from being illegally or unfairly used by any unconscionable third party. Throughout the whole document, the term "step of" does not mean "step for".

**[0026]** Throughout the whole document, the term "combination of" included in the Markush type description means a mixture or combination of one or more components, steps, operations and/or elements selected from the group consisting of components, steps, operations and/or elements described in the Markush type and thereby means that the disclosure includes one or more components, steps, operations and/or elements selected from the Markush group.

**[0027]** Furthermore, in the following description of illustrative embodiments, terms related to a direction or a position (upper side, lower side, up and down directions, etc.) are defined with respect to the arrangement state of individual components shown in drawings. For example, the "upper side" and the "lower side" may be defined as the upper side and the lower side when viewed from Fig. 1, that is, the "left side" and the "right side" on a paper plane. However, it should be noted that when the illustrative embodiment is practically applied, the components may be arranged in various directions with the upper side and the lower side reversed, for example.

**[0028]** Below, illustrative embodiments and examples of the present disclosure will be described in detail.

**[0029]** In Fig. 1(a) through Fig. 1(d), a synthetic braiding hair (10) is comprised of a plurality of the first synthetic fibers (20) and a plurality of the second synthetic fibers (30). The plurality of the first synthetic fibers (20) is firstly cut on both ends in a desired length (20-1) from a large fiber bundle. The ending tip of the plurality of the first synthetic fibers (20-1) then becomes constant.

**[0030]** The ending tip is then pulled through a combing process to make it more like a natural hair ending shape. In Fig. 2, the combing process is performed using a comb table (70) and a pulling device (80). The comb table is comprised of a plurality of needles (71) perpendicularly

extruded from a flat surface thereof. A gripper (81) is located in the middle of the pulling device. One end of the plurality of the first synthetic fibers (20-1) is held by a gripper (81) and the other end of the plurality of the first synthetic fibers is placed around the plurality of needles (71) on the comb table (70). The pulling device parallelly moves away from the comb table (70). The plurality of the first synthetic fibers (20-1) passes through the plurality of the needles (71) then is stretched. In a pulling motion, the gripper is slightly and continuously open and close its gap, which holds and releases the plurality of the first synthetic fibers (20-1) simultaneously so that the end of the plurality of the first synthetic fibers (20-1) is differently aligned. The slight misalignment of the fiber eventually gives a natural hair ending shape effect at the tip of it.

**[0031]** The plurality of the first synthetic fibers is capable of hot water setting to form a curly hair style.

**[0032]** The plurality of the second synthetic fibers (30-1) is cut about a half length of the plurality of the first synthetic fibers (20), then, as shown in Fig. 1(b), its ending is stretched through a combing process in the same manner described above to create a natural hair ending shape (30-2).

**[0033]** The plurality of the second synthetic fibers is antibacterial and resistant to moisture and sweat.

**[0034]** In next procedure, the plurality of the first synthetic fibers (20-2) and the plurality of the second synthetic fibers (30-2) is placed together. In Fig. 1(c), each center of the plurality of the first and second synthetic fibers (20-2, 30-2) is aligned.

**[0035]** The combined plurality of the first and second synthetic fibers is folded together along the center line to form a hook (40), as shown in Fig. 1(d). The hook is used for stitching the combined plurality of the first and second fibers, or the synthetic braiding hair, (10) to the user's natural hair.

**[0036]** The plurality of the first synthetic fibers is mostly positioned to the other end of the hook (50) and is used for the hot water setting.

**[0037]** The plurality of the second synthetic fibers is mostly positioned near the hook and stitched to the human hair, and is antibacterial and resistant to moisture and sweat.

**[0038]** To manufacture the synthetic braiding hair disclosed herein, the procedure of the following method is suggested in the diagram in Fig. 4, as it shows the step by step procedure of manufacturing a synthetic braiding hair in detail.

**[0039]** First, a plurality of the first synthetic fibers is stretched. This includes a step of using a gripper that alternately holds and releases one end of the plurality of the first synthetic fibers while combing the other end of the same plurality of the first synthetic fibers with a combing device.

**[0040]** The combing device is comprised of a plurality of needles on a flat surface. One end of the plurality of the first synthetic fibers is placed onto the plurality of the needles. The gripper alternately holds and releases the other end of the plurality of the first synthetic fibers when pulling it from the plurality of the needles. Through the combined combing motion with alternating gripping, the end of the fibers are aligned with a slightly different length, which results in the natural ending shape similar to the human hair.

**[0041]** The plurality of the second synthetic fiber is stretched in the same way as the plurality of the first synthetic fibers to create the natural ending shape.

**[0042]** Then, the plurality of the second synthetic fibers is placed in the middle of the plurality of the first synthetic fibers. This step also includes setting the length of the plurality of the second synthetic fibers to be half of the plurality of the first synthetic fibers.

**[0043]** Lastly, a hook is formed by folding the plurality of the first and the second synthetic fibers together. The step of forming a hook also includes folding the middle of the now combined first and second synthetic fibers so that there is only the plurality of the first synthetic fibers on the other side of the hook. The user is able to perform hot water setting to create their own curly hair style at this end.

**[0044]** The plurality of the second synthetic fibers is placed adjacent to the hook, so that the user can attach the synthetic braiding hair to his/her own natural hair using the hook. The plurality of the second synthetic fibers is antibacterial and resistant to moisture and sweat, preventing any skin damage and itchiness.

## INDUSTRIAL APPLICABILITY

**[0045]** The description above of the illustrative embodiments is provided for the purpose of illustration, and it would be understood by those skilled in this profession so that various changes and modifications may be made without changing technical conception and essential features of the illustrative embodiments. Thus, it is clear that the illustrative embodiments described above are illustrative in all aspects and do not limit the present disclosure. For example, each component described to be of a single type can be implemented in a distributed manner. Likewise, components described to be distributed can be implemented in a combined manner.

**[0046]** The scope of the inventive concept is defined by the following claims and their equivalents rather than by the detailed description of the illustrative embodiments. It shall be understood that all modifications and embodiments conceived from the meaning and scope of the claims and their equivalents are included in the scope of the inventive concept.

## Claims

**1.** A synthetic braiding hair comprising:

a plurality of the first synthetic fibers configured

to have a natural ending shape;
a plurality of the second synthetic fibers configured to be half-length of the plurality of the first synthetic fibers and have a natural ending shape; and
wherein the plurality of the second synthetic fibers is combined in the middle of the plurality of the first synthetic fibers and
folded together to form a hook.

**2.** The synthetic braiding hair of claim 1, wherein the plurality of the first synthetic fibers is capable of hot water setting to form a curly hair style.

**3.** The synthetic braiding hair of claim 1, wherein the plurality of the second synthetic fibers is antibacterial and resistant to moisture and sweat.

**4.** The synthetic braiding hair of claim 1, wherein the plurality of the first synthetic fibers positioned to the other end of the hook is used for the hot water setting.

**5.** The synthetic braiding hair of claim 1, wherein the plurality of the second synthetic fibers positioned near the hook is stitched to the human hair and antibacterial and resistant to moisture and sweat.

**6.** A method of a synthetic braiding hair comprising the steps of:

stretching a plurality of the first synthetic fibers;
stretching a plurality of the second synthetic fibers;
placing the plurality of the second synthetic fibers in the middle of the plurality of the first synthetic fibers; and
forming a hook by folding the plurality of the first and the second synthetic fibers together.

**7.** The method of a synthetic braiding hair in claim 7 in which the step of pulling the plurality of the first synthetic fibers uses a gripper that alternately holds and releases one end of the plurality of the first synthetic fibers while combing the other end of the plurality of the first synthetic fibers with a combing device.

**8.** The method of a synthetic braiding hair in claim 7 in which the step of pulling the plurality of the second synthetic fibers uses the gripper that alternately holds and releases one end of the plurality of the second synthetic fibers while combing the other end of the plurality of the second synthetic fibers with the combing device.

**9.** The method of a synthetic braiding hair in claim 7 in which the step of placing the plurality of the second synthetic fibers in the middle of the plurality of the first synthetic fibers includes setting the length of the plurality of the second synthetic fibers to be half of the length of the plurality of the first synthetic fibers.

**10.** The method of a synthetic braiding hair in claim 7 in which the step of forming a hook includes folding the middle of the combined first and second synthetic fibers so that there are only the plurality of the first synthetic fibers at the other side of the hook.

**11.** The method of a synthetic braiding hair in claim 7 in which the step of forming a hook includes placing the plurality of the second synthetic fibers adjacent to the hook and the synthetic braiding hair is attached to human hair using the hook.

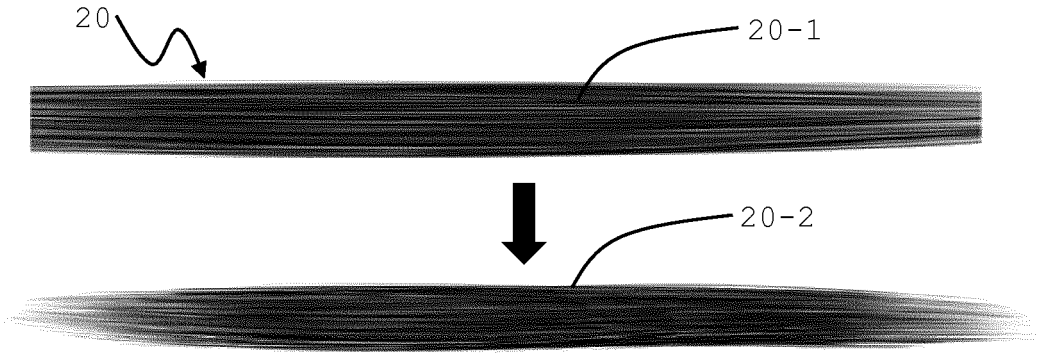



Fig. 1(a)

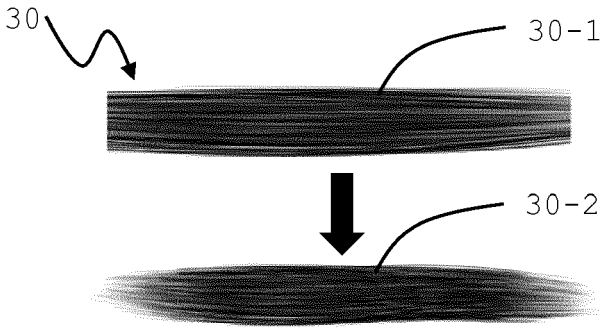



Fig. 1(b)

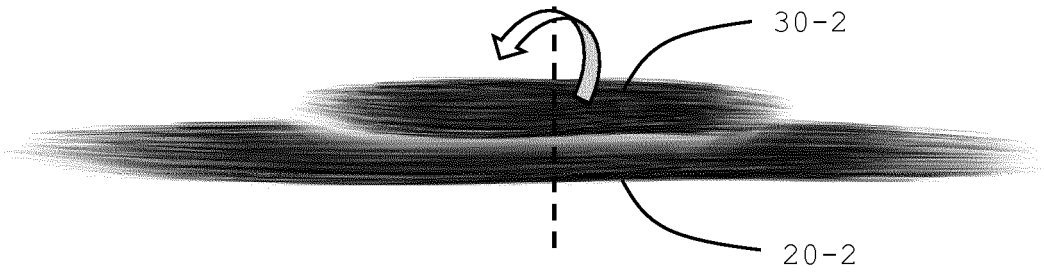



Fig. 1(c)

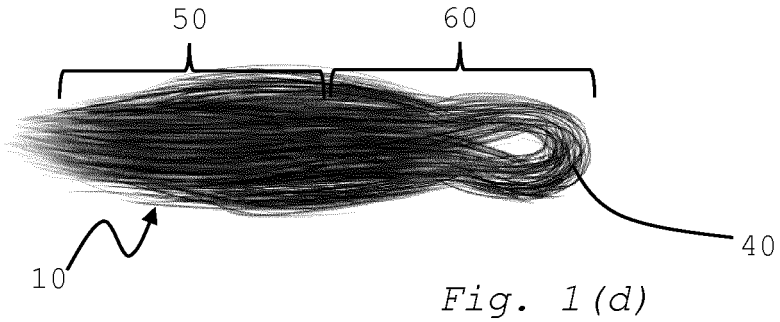
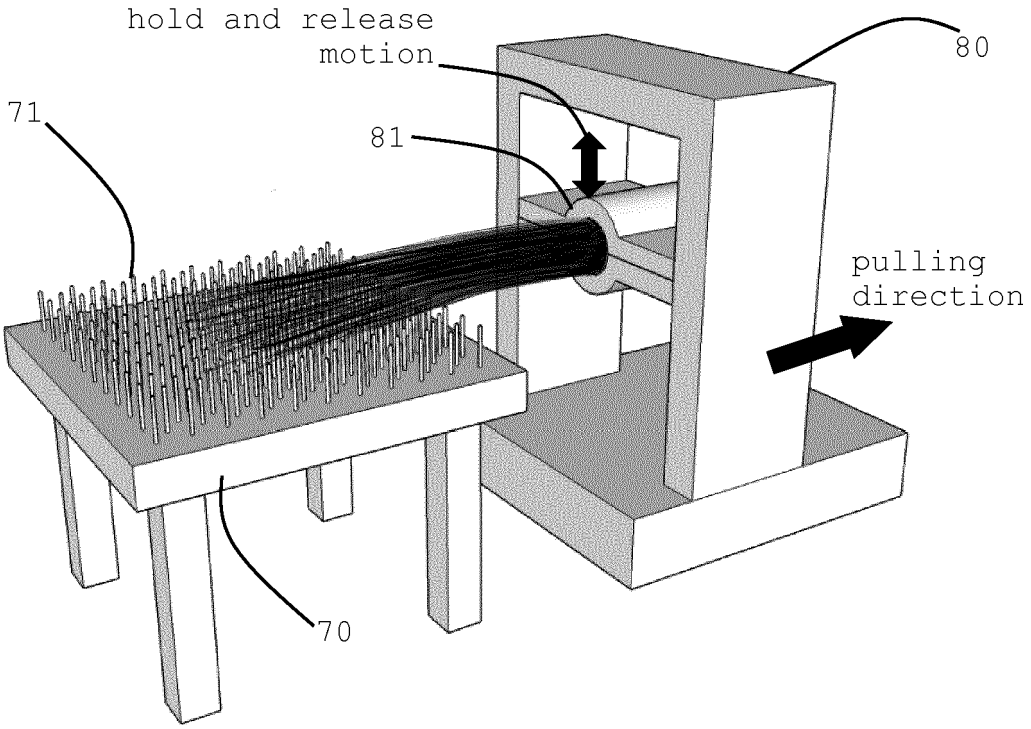



Fig. 1(d)



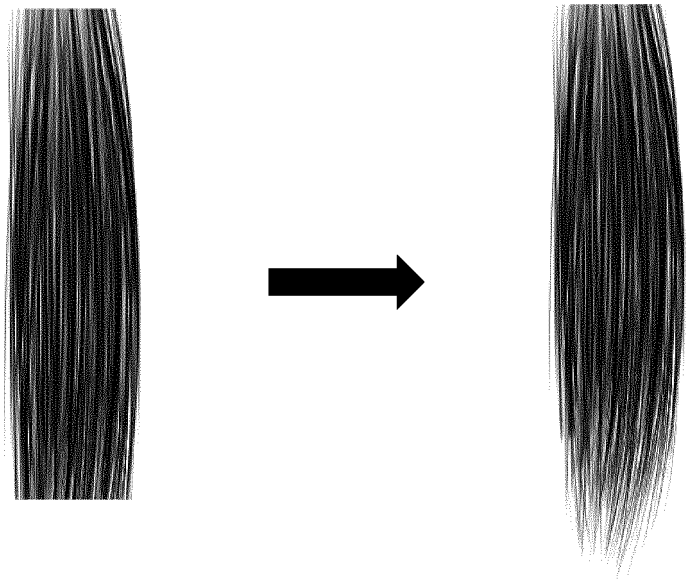



*Fig. 2*

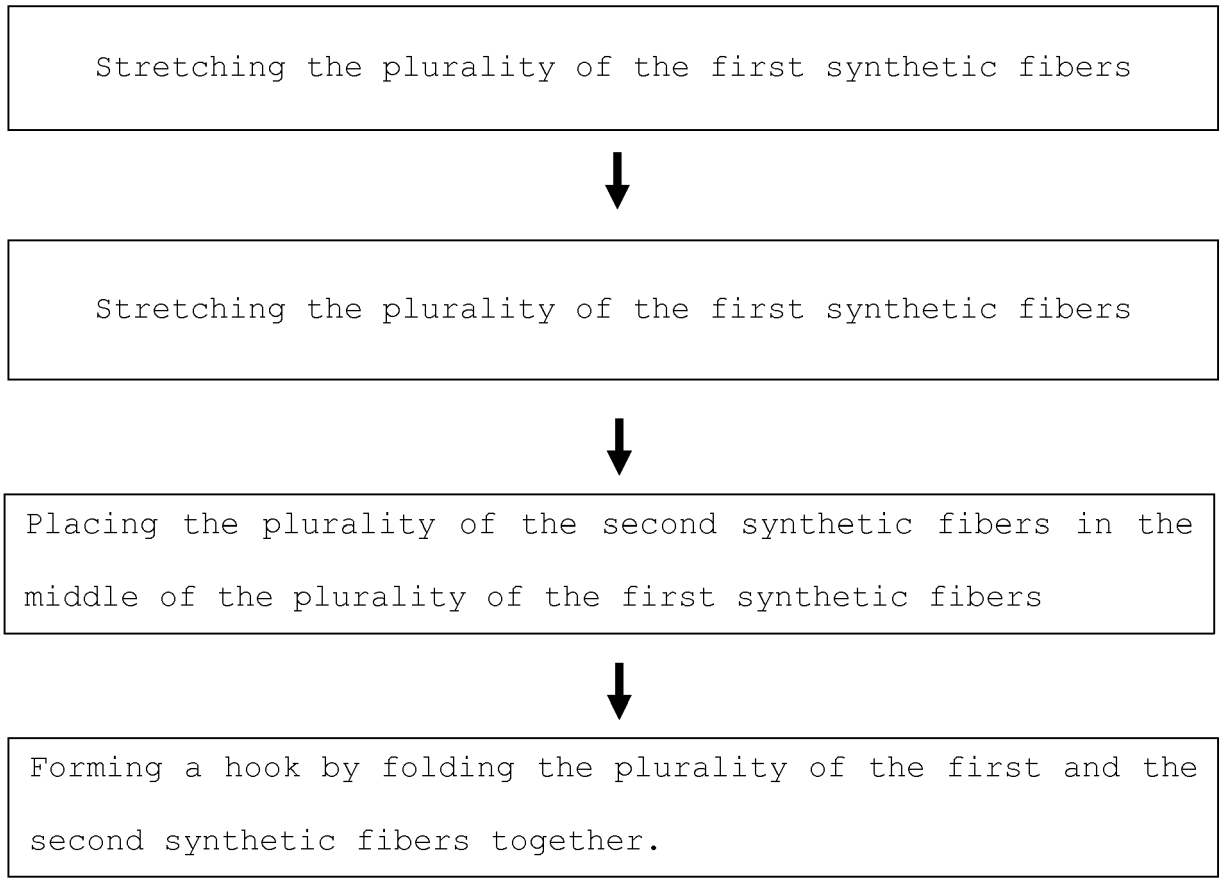

Stretching the plurality of the first synthetic fibers
Stretching the plurality of the first synthetic fibers
Placing the plurality of the second synthetic fibers in the middle of the plurality of the first synthetic fibers
Forming a hook by folding the plurality of the first and the second synthetic fibers together.

*Fig. 3*

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Application Number
EP 18 20 1423

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The present search report has been drawn up for all claims

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CATEGORY OF CITED DOCUMENTS

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