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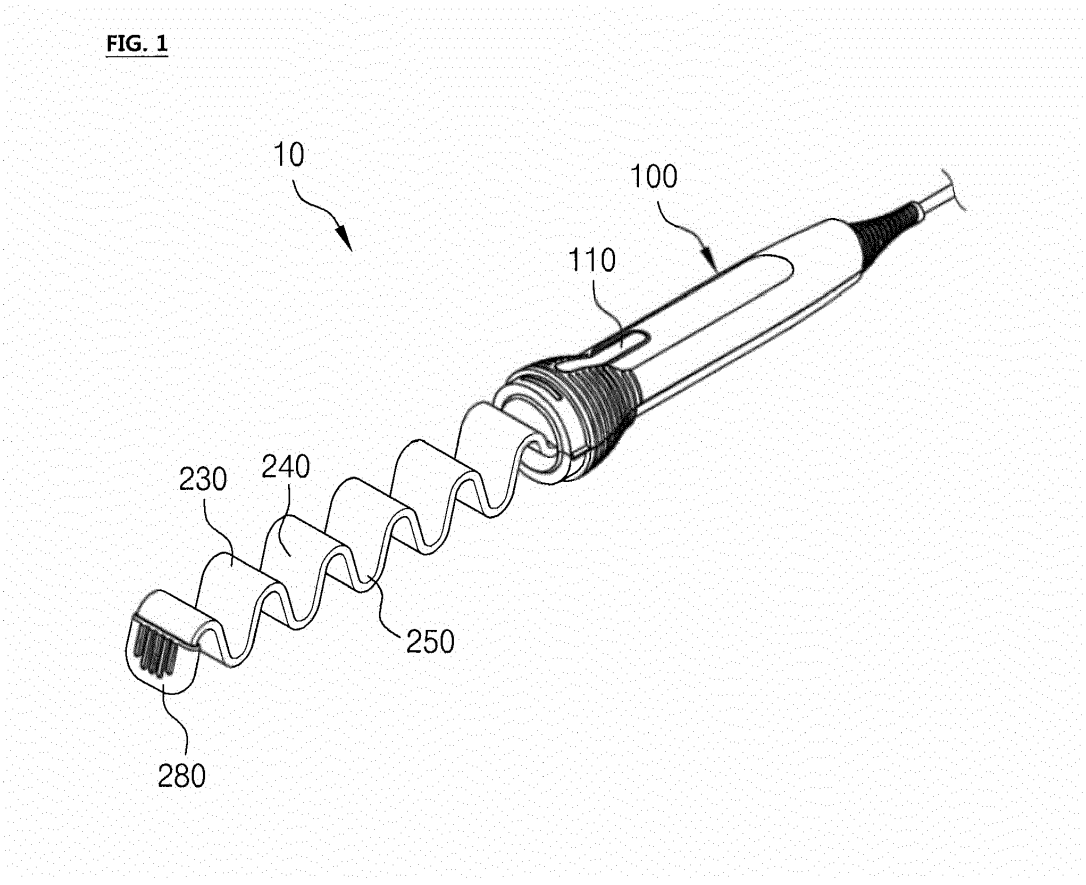
## (54) HAIR STYLING DEVICE

(57) Provided is a hair styling device which includes a handle (100), and an axis (200) which is coupled to the handle and has a heat generating means (260) installed therein. The hair is wound around the axis in an axial direction and is spirally wound while moving spirally, and is sequentially and alternately bent in a longitudinal direction of hair which is wound around a bending means (250) formed at both sides of the axis.

FIG. 1




EP 3 066 950 A1

## Description

### BACKGROUND OF THE INVENTION

#### Field of the Invention

**[0001]** The present invention relates to a hair styling device, and more particularly to, a hair styling device capable of styling hair in a curly or wavy style.

#### Description of the Related Art

**[0002]** Nowadays, as entering the period of personality placing importance on personality, a hair style has been also established as a fashion creating his/her own personality and style. Particularly, the hair style is an important part in women's beauty care, and a hair style as diversified and changeful as a costume is created according to occasion and location.

**[0003]** Accordingly, all sorts of beauty tools have appeared to create hair styles. The beauty tools include hair dryers for simply drying hair, hair irons and hair curling devices creating various hair curls by applying heat or physical force to hair, or hair setting devices for fixing or setting hair.

**[0004]** Particularly, the hair curling device is used to style a hair wave again if necessary or to style a wave through a temporary curling work in a drying process.

**[0005]** Meanwhile, a representative example from among various types of hair beauty treatment by using a hair curling device is a perm. The perm is a hair curling treatment in which hair is waved by using a hair rod and a heating tool for perm. Recently, various hair waves may be created through perm tools.

**[0006]** Conventional hair curling devices may be classified into two types.

**[0007]** The first is a heat pressing type having the shape of tongs, which includes a heating rod generating heat at one side thereof, and a pick-up rod which is hingedly coupled to the heating rod and presses hair to the heating rod, and may create a hair curl by heat generated from the heating rod.

**[0008]** However, the heat press type has a limitation in that hair may not be well formed by only applying heat energy to both sides of hair.

**[0009]** That is, since the pressing tongs part, which applies pressure to hair wound around the heating rod, is hingedly coupled to a central portion of a hair iron body, the pressing pick-up rod and the heating rod may not positioned in parallel with each other, when a hair wave is formed while the hair is concentrated on a front portion or rear portion of the heating rod.

**[0010]** Therefore, since the heat energy may not be uniformly transferred to entire hair and also the pressure may not be uniformly applied, there is a limitation in that hair may not be uniformly curled.

**[0011]** The second is a heat winding type, in which a plurality of protrusions are provided on the cylindrical heating rod so that a hair curl may be created by a heating temperature while hair is wound around the heating rod multiple times.

**[0012]** However, since the protrusion only determines a position of the hair, and a hair curl is practically determined by the cylindrical shape of the heating rod, there is a limitation of monotonous hair styling.

### PRIOR ART DOCUMENTS

#### PATENT DOCUMENTS

**[0013]**

(Patent Document 1) Korean Patent Application Laid-open Publication No. 10-2010-0124044 (Nov. 26, 2010)

(Patent Document 1) Korean Patent No. 10-0954210 (Apr. 14, 2010)

### SUMMARY OF THE INVENTION

**[0014]** An object of the present invention is to provide a hair styling device capable of creating a curly or wavy hair style.

**[0015]** Another object of the present invention is to provide a hair styling device in which a heat generating means is installed inside an axis, and according to a position of installing the heat generating means, hair may be variously styled by heating the entire hair or a portion of the hair.

**[0016]** A further object of the present invention is to provide a hair styling device in which an axis is formed such that peaks and valleys are repeatedly connected and the bent state of the peaks and valleys may be selectively varied, allowing a length of hair bending to be adjusted.

**[0017]** According to an aspect of the present invention, there is provided a hair styling device which includes a handle, and an axis which is coupled to the handle and has a heat generating means installed therein, wherein hair is wound around the axis in an axial direction and is spirally wound while moving spirally, and is sequentially and alternately bent in a longitudinal direction of hair which is wound around a bending means formed at both sides of the axis.

**[0018]** According to an aspect of the present invention, the handle may further include a control means controlling heat generation and a temperature of the heat generating means.

**[0019]** According to an aspect of the present invention, the bending means may determine a curvature of a portion which creates a hair style which is alternately bent.

**[0020]** According to an aspect of the present invention, the axis may include a pair of bending means and a connecting means connecting the pair of bending means.

**[0021]** According to an aspect of the present invention,

the axis may be configured such that upper and lower surfaces of the connecting means are connected to surfaces of the bending means to transfer heat to entire hair which is wound around while being pressed against the bending means and the connecting means.

**[0022]** According to an aspect of the present invention, the axis may be formed to have a stepped portion between the connection means and the bending means, so that heat is transferred only to hair which is pressed against the bending means among the hair wound around the axis.

**[0023]** According to an aspect of the present invention, the axis may be formed in a longitudinal direction such that peaks and valleys are sequentially formed.

**[0024]** According to an aspect of the present invention, the peaks and valleys may be connected by an arc-shaped curved means.

**[0025]** According to an aspect of the present invention, the bending means may have a circular cross-section.

**[0026]** According to an aspect of the present invention, the connecting means may have a space formed inside thereof and a heat generation means are installed in the space.

**[0027]** According to an aspect of the present invention, the bending means may have a space formed inside thereof and a heat generation means are installed in the space.

**[0028]** According to an aspect of the present invention, the peaks and valleys may be bent so that the length of the axis may be varied by allowing distance pitches between the peaks and valleys to be adjusted.

**[0029]** According to an aspect of the present invention, the axis may be variably adjusted such that a folding degree of any one of the peaks and valleys which are repeatedly connected.

**[0030]** According to an aspect of the present invention, the bending means may be formed with a minor arc smaller than semi-circle.

**[0031]** According to an aspect of the present invention, the bending means may be formed with a major arc larger than semi-circle.

**[0032]** According to an aspect of the present invention, a passage groove may further be formed in the space in which a temperature sensor detecting a temperature of the heat generation means is installed.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0033]** The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

FIG. 1 is a perspective view illustrating a hair styling device in accordance with a first embodiment;

FIG. 2 is a front view illustrating a hair styling device in accordance with the first embodiment;

FIG. 3 is a plan view illustrating a hair styling device in accordance with the first embodiment;

FIGS. 4A and 4B are cross-sectional views illustrating a space in a hair styling device in accordance with the first embodiment;

FIG. 5 is a perspective view illustrating a hair styling device in accordance with a second embodiment;

FIGS. 6A and 6B are cross-sectional views illustrating a space in a hair styling device in accordance with the second embodiment;

FIGS. 7A, 7B, and 7C are front views illustrating a state of length adjustment in a hair styling device in accordance with the second embodiment; and

FIG. 8 is a photograph showing a hair curl created by a hair styling device in accordance with embodiments.

## DETAILED DESCRIPTION OF THE INVENTION

**[0034]** Preferred embodiments of the present invention will be described below in more detail with reference to the accompanying drawings. First, it should be aware that like reference numerals denote like elements in appreciating the drawings. Moreover, detailed descriptions related to well-known functions or configurations will be ruled out in order not to unnecessarily obscure subject matters of the present invention.

**[0035]** The term "about or approximately" or "substantially" is 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 invention from being illegally or unfairly used by any unconscionable third party.

**[0036]** FIG. 1 is a perspective view illustrating a hair styling device in accordance with a first embodiment; FIG. 2 is a front view illustrating a hair styling device in accordance with the first embodiment; FIG. 3 is a plan view illustrating a hair styling device in accordance with the first embodiment; FIGS. 4A and 4B are cross-sectional views illustrating a space in a hair styling device in accordance with the first embodiment; FIG. 5 is a perspective view illustrating a hair styling device in accordance with a second embodiment; FIGS. 6A and 6B are cross-sectional views illustrating a space in a hair styling device in accordance with the second embodiment; FIGS. 7A, 7B, and 7C are front views illustrating a state of length adjustment in a hair styling device in accordance with the second embodiment; and FIG. 8 is a photograph showing a hair curl created by a hair styling device in

accordance with embodiments.

**[0037]** First, as illustrated in FIGS. 1 to 8, a hair styling device 10 of the present invention includes a handle 100 and an axis 200.

**[0038]** The axis 200 is coupled to the handle 100, and includes a heat generating means 260 installed therein.

**[0039]** Also, the handle 100 includes a control means 110 which is installed in the axis 200 and controls heat generation and a temperature of the heat generating means 260.

**[0040]** The axis 200 is formed such that peaks 230 and valleys 240 thereof are sequentially and continuously formed in a longitudinal direction.

**[0041]** Also, the peaks 230 and valleys 240 are connected through a bending means 250 having an arc-shaped curvature.

**[0042]** Here, the bending mean 250 may have an arc with a curvature which may be variously adjusted, so that pitches which are distances between the peaks 230 and valleys 240 may be determined through the bending means 250.

**[0043]** The axis 200 configured as described above has an overall shape of curly or wavy shape.

**[0044]** The hair curling device configured as described above, winds hair while winding the hair around the axis 200 in a longitudinal direction of the axis 200 and spirally moving the hair.

**[0045]** Here, while the hair spirally wound through the peaks 230 is being partitioned, the hair is sequentially wound around the plurality of valleys 240.

**[0046]** Here, while the hair is heated and pressed against both rounded sides of the axis 200 simultaneously with heat generation of the axis 200, the hair curl is created in a curly or wavy style.

**[0047]** Specifically, as shown in FIG. 8, the hair curl is created in a zigzag shape such that the hair of a portion wound around the peaks 230 and the valleys 240 has a curl with a zigzag shape, and the bent portion of the zigzag-shaped hair has an arc-shaped curvature through both rounded sides of the axis 200.

**[0048]** A specific means to create a hair curl with a zigzag shape, in which a bent portion of hair has a curvature as described above, is as follows.

**[0049]** Embodiments of the hair styling device 10 are classified according to cross-sectional shapes.

**[0050]** As illustrated in FIG. 1 to 4B, in a cross-sectional view of the axis 200, the axis 200 of the first embodiment includes a plate-shaped connection means 210 and a pair of bending means 220 formed at both sides of the connection means 210.

**[0051]** Here, the rounded bending means are formed at both sides of the connection means, so that surfaces of the connection means and the bending means are connected.

**[0052]** The axis configured as described above is heated with the hair being pressed against the connection means and the bending means, and thus a hair curl is created corresponding to surfaces of the connection means and the bending means.

**[0053]** That is, hair has a straight curl through the connection means, and has a zigzag-shaped curl having a bent portion with a smooth curvature, and thus a smooth hair curl may be created.

**[0054]** As a result, in the first embodiment, a zigzag-shaped hair curl is created through the connection means and the bending means.

**[0055]** Also, the bending means 220 may determine a bent state of a portion at which a curl which is alternately bent is created.

**[0056]** As illustrated in FIG. 5 to 6B, in a cross-sectional view of the axis 200, the axis 200 of the second embodiment includes a plate-shaped connection means 210 and a pair of bending means 220 formed at both sides of the connection means 210.

**[0057]** Here, the rounded bending means 220 is formed at both sides of the connection means 210 such that an outer circumferential surface of the bending means 220 is formed in a size bigger than that of a surface of the connection means 210 and a stepped portion is defined in a connection between the connection means 210 and the bending means 220.

**[0058]** Through the axis 200 configured as described above, the hair is pressed against the bending means 220, and the hair is not pressed against the connection means 210 due to the stepped portion.

**[0059]** Through this, the hair positioned at the connection means 210 is not pressed against the connection means 210, and is not affected by heat to maintain an original state of the hair.

**[0060]** Also, the hair which is in a state of being pressed against the bending means 220 is allowed to have a smooth curvature corresponding to a curvature of the bending means 220 in a zigzag-shaped bent portion thereof. Thus, a smooth hair curl may be created.

**[0061]** As a result, in the second embodiment, a zigzag-shaped hair curl is created through the bending means 220 while the connection means 210 does not affect the creation of the hair curl.

**[0062]** Also, the bending means 220 may determine a bent state of a portion at which a curl, which is alternately bent, is created.

**[0063]** Here, the bending means 220 of the first and second embodiments has a cross-section with a circular shape.

**[0064]** Particularly, the bending means 220 may be formed with a minor arc shorter than a semi-circle.

**[0065]** Alternatively, the bending means 220 may be formed with a major arc larger than a semi-circle.

**[0066]** Through different curvatures of the bending means 220, a curvature of bent hair may be adjusted.

**[0067]** As illustrated in FIGS. 4A and 4B, in the first embodiment, the position of the space inside the axis at which the heat generating means is installed may be selected.

**[0068]** In FIG. 4A, a space which has the same shape as that of the connection means and the bending means

is formed inside the axis, and the heat generating means is then installed in the space. Thus, the entire surfaces of the connection means and the bending means may be uniformly heated.

**[0069]** Alternatively, in FIG. 4B, a space is formed inside the bending means, and the heat generating means is then installed in the space. Accordingly, heat generated is concentrated at a portion of the bending means, a portion of hair created in a zigzag shape may be thermally deformed with ease.

**[0070]** As illustrated in FIGS. 6A and 6B, in the second embodiment, the position of the space inside the axis at which the heat generating means is installed may be selected.

**[0071]** In FIG. 6A, a space, which has the same shape as that of the connection means and the bending means which has a stepped portion therebetween, is formed inside the axis, and the heat generating means is then installed in the space. Thus, the entire surfaces the connection means and the bending means may be uniformly heated.

**[0072]** Alternatively, in FIG. 6B, a space is formed inside the bending means, and the heat generating means is then installed in the space. Accordingly, heat generated is concentrated at a portion of the bending means, a portion of hair created in a zigzag shape may be thermally deformed with ease.

**[0073]** As illustrated in FIGS. 4A and 6A, a passage groove 270 is formed inside the space, otherwise, as illustrated in FIGS. 4A and 6A, a passage groove connecting a pair of spaces is formed.

**[0074]** A temperature sensor detecting the temperature of the heat generating means 260 is installed in the passage groove, and allows the measured temperature value of the heat generating means 260 to be transmitted to the control means 110. Therefore, the control means 110 may check the current temperature state and thus the control means may control temperature adjustment and whether the heat generating means 260 generates heat.

**[0075]** As illustrated in FIGS. 7A to 7C, bending means 250 connecting the peaks 230 and valleys 240 are allowed to be bent such that pitches between the peaks 230 and the valleys 240 may be adjusted. Thus, the length of the axis 200 may be variably adjusted.

**[0076]** That is, the axis 200 may be configured such that a folding degree of any one of the peaks 230 and valleys 240 which are repeatedly connected is selected to thereby lengthen or shorten a pitch of the distance between the selected peaks and valleys.

**[0077]** Accordingly, in the axis 200, through a change of a bent angle of the peaks 230 and valleys 240, a position of the bent angle, and adjustment of the pitch of the distance between the peaks 230 and valleys 240, the bent angle and the bent position can be changed. Therefore, more diversified hair curl may be created.

**[0078]** A hair styling device of the present invention as described above, which includes a handle, and an axis which is coupled to the handle and has a heat generating means installed therein, wherein hair is wound around the axis in an axial direction and is spirally wound while moving spirally, and is sequentially and alternately bent in a longitudinal direction of hair which is wound around a bending means formed at both sides of the axis, so that hair may be easily styled in a curly or wavy shape.

**[0079]** Also, the hair styling device of the present invention has a heat generating means installed inside an axis, and thus has an effect in that according to a position of the installed heat generating means, hair may be variously styled by heating the entire hair or a portion of the hair.

**[0080]** In addition, the hair styling device of the present invention has an effect of providing a variety of hair styles, since an axis is formed such that peaks and valleys the axis are repeatedly connected, and the bent state of the peaks and valleys may be selectively varied to allow a length of hair bending to be adjusted.

**[0081]** While the inventive concept has been particularly shown and described with reference to exemplary embodiments thereof, it will be understood that various changes in form and details may be made therein without departing from the spirit and scope of the following claims.

## Claims

1. A hair styling device comprising a handle, and an axis which is coupled to the handle and has a heat generating means installed therein, wherein hair is wound around the axis in an axial direction and is spirally wound while moving spirally, and is sequentially and alternately bent in a longitudinal direction of hair which is wound around a bending means formed at both sides of the axis.

2. The hair styling device of claim 1, wherein the handle further comprises a control means controlling heat generation and a temperature of the heat generating means.

3. The hair styling device of claim 1, wherein the bending means determines a curvature of a portion which creates a hair style which is alternately bent.

4. The hair styling device of claim 1, wherein the axis includes a pair of bending means and a connecting means connecting the pair of bending means.

5. The hair styling device of claim 1, wherein the axis is configured such that upper and lower surfaces of the connecting means are connected to surfaces of the bending means to transfer heat to entire hair which is wound around while being pressed against the bending means and the connecting means.

6. The hair styling device of claim 1, wherein the axis is formed to have a stepped portion between the connection means and the bending means, so that heat is transferred only to hair which is pressed against the bending means among the hair wound around the axis.

7. The hair styling device of claim 1, wherein the axis is formed in a longitudinal direction such that peaks and valleys are sequentially formed.

8. The hair styling device of claim 1, wherein the peaks and valleys are connected by an arc-shaped curved means.

9. The hair styling device of claim 1, wherein the bending means has a circular cross-section.

10. The hair styling device of claim 4, wherein the connecting means has a space formed inside the connecting means and a heat generation means are installed in the space.

11. The hair styling device of claim 4, wherein the bending means has a space formed inside thereof and a heat generation means are installed in the space.

12. The hair styling device of claim 7, wherein the peaks and valleys is bent so that the length of the axis is variable by allowing pitches between the peaks and valleys to be adjusted.

13. The hair styling device of claim 7, wherein the axis is variably adjusted such that a folding degree of any one of the peaks and valleys which are repeatedly connected.

14. The hair styling device of claim 9, wherein the bending means is formed with a minor arc smaller than semi-circle.

15. The hair styling device of claim 9, wherein the bending means is formed with a major arc larger than semi-circle.

16. The hair styling device of claim 10 or 11, wherein a passage groove is further formed in the space in which a temperature sensor detecting a temperature of the heat generation means is installed.

FIG. 1

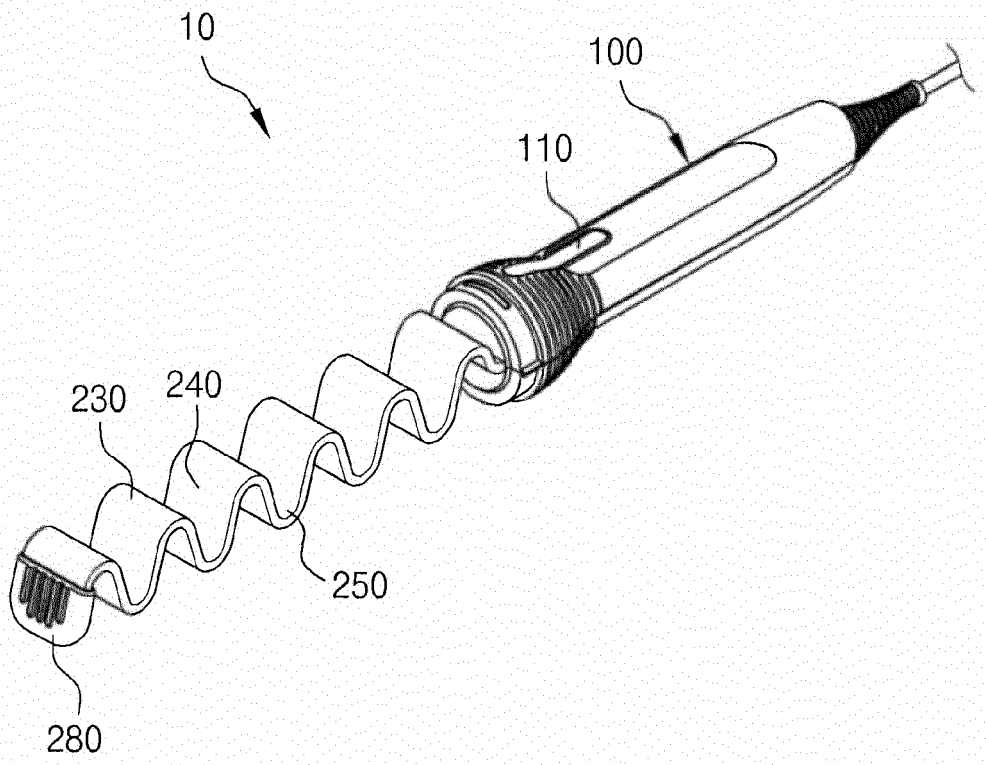


FIG. 2

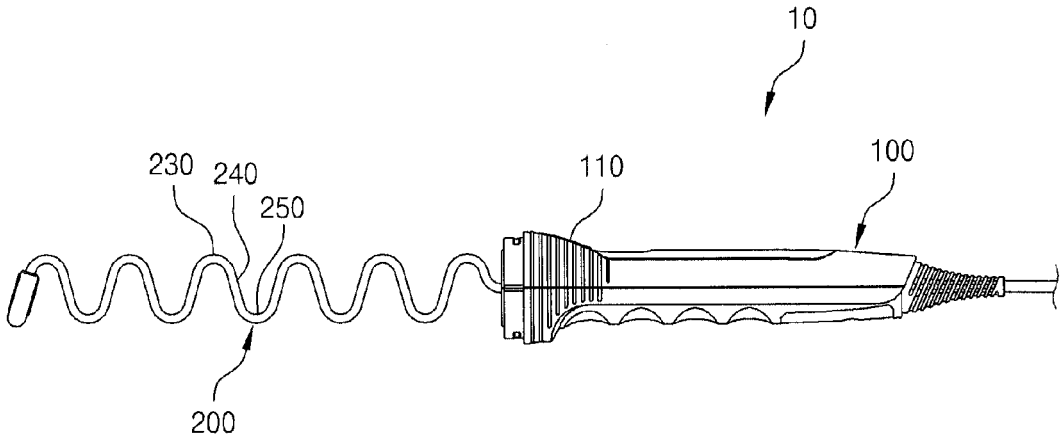



FIG. 3

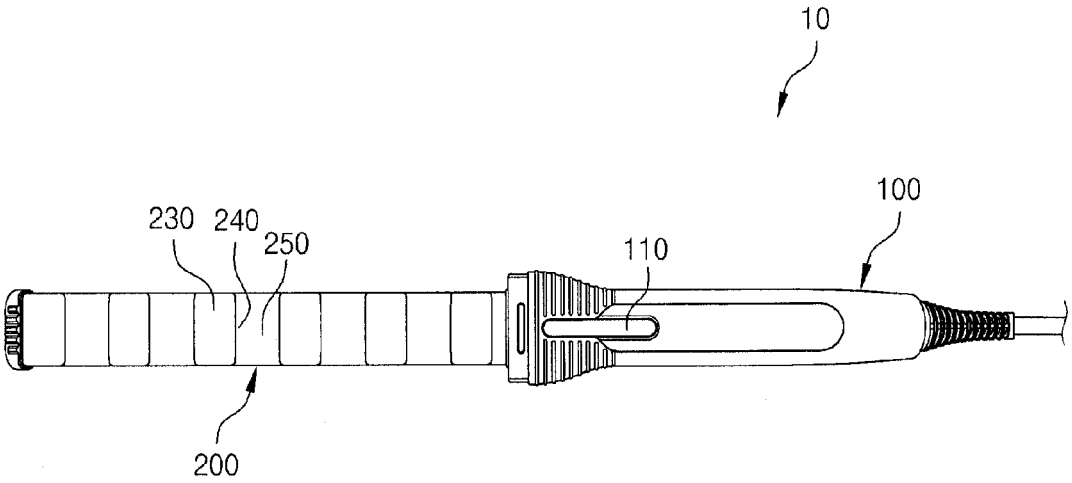


FIG. 4A

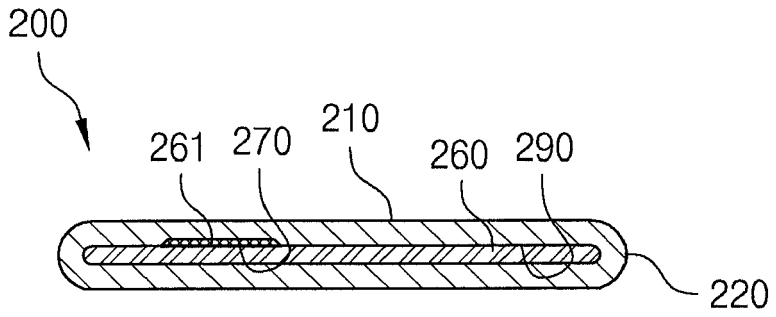



FIG. 4B

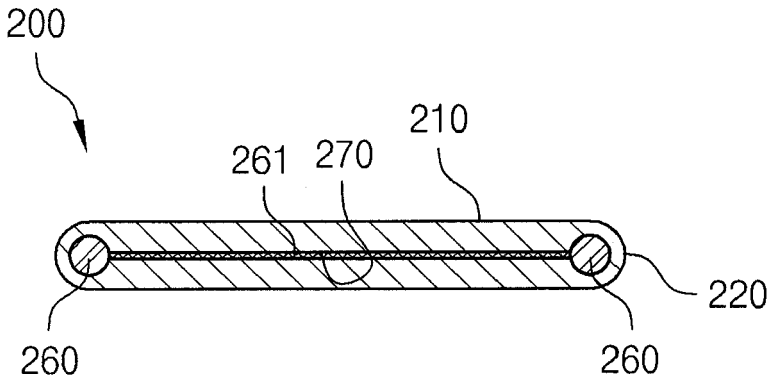


FIG. 5

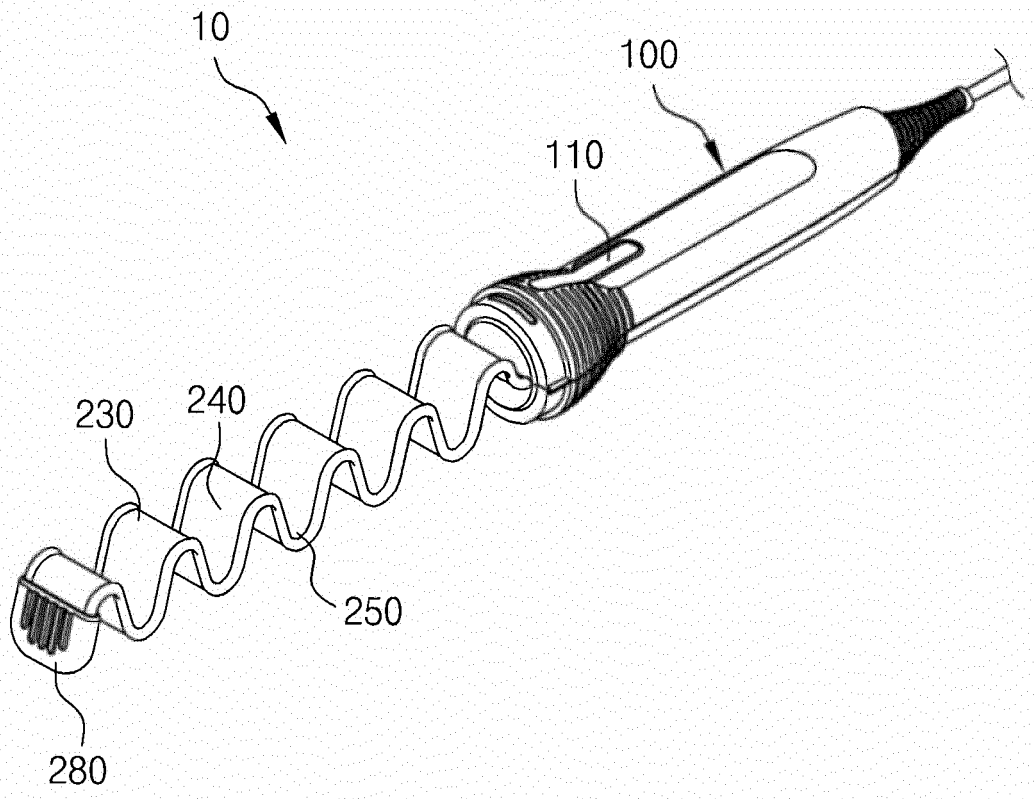


FIG. 6A

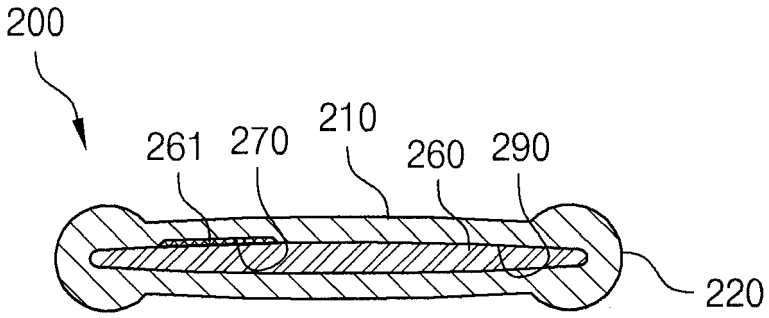



FIG. 6B

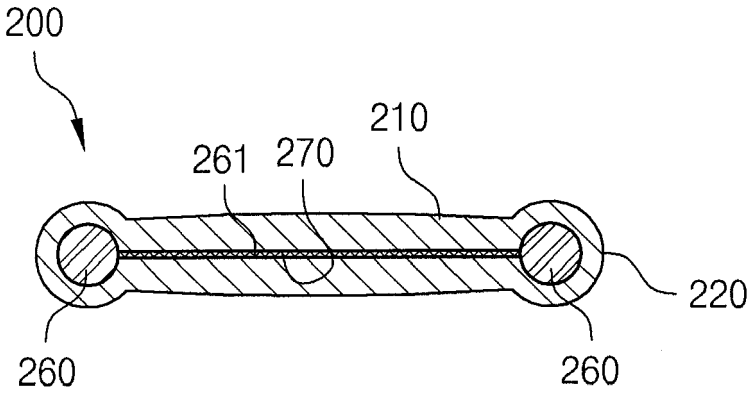


FIG. 7A

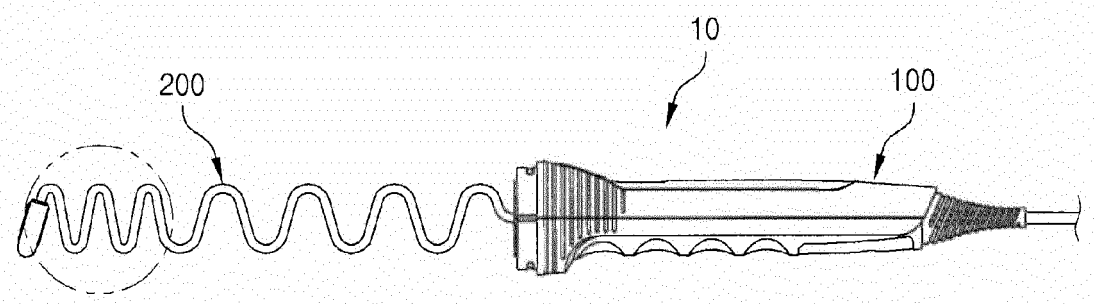



FIG. 7B

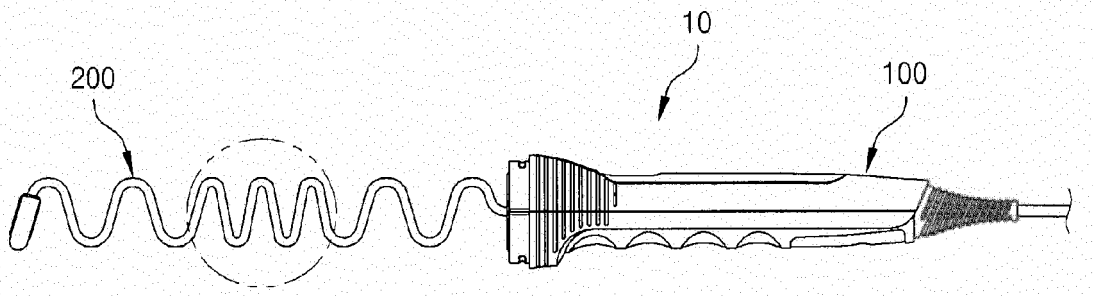



FIG. 7C

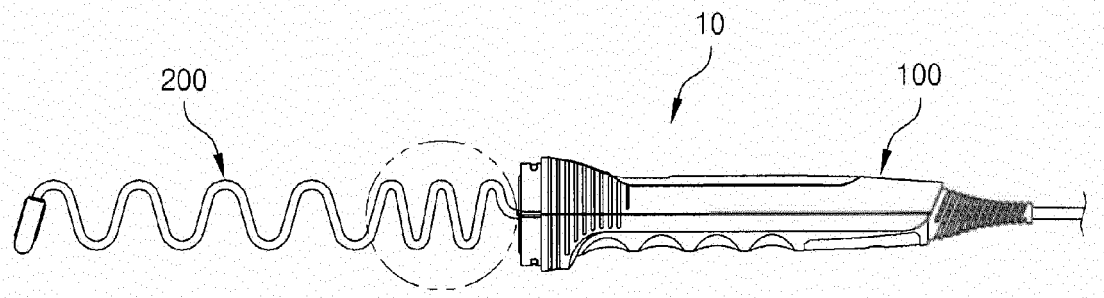


FIG. 8

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# EUROPEAN SEARCH REPORT

Application Number
EP 15 17 1086

## 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 | GB 2 485 431 A (MCCAULEY EDWARD [GB])<br>16 May 2012 (2012-05-16)<br>* page 2, line 11 - page 8, line 5; figures 1-3 *<br>----- | 1-16 | INV.<br>A45D1/04<br>A45D1/16 |

TECHNICAL FIELDS SEARCHED (IPC)

A45D

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 29 July 2016 | Hinrichs, Wiebke |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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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

EPO FORM 1503 03.82 (P04C01)

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 15 17 1086

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
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29-07-2016

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| GB 2485431 A | 16-05-2012 | NONE | |

EPO FORM P0459

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

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


- KR 1020100124044 **[0013]**
- KR 100954210 **[0013]**