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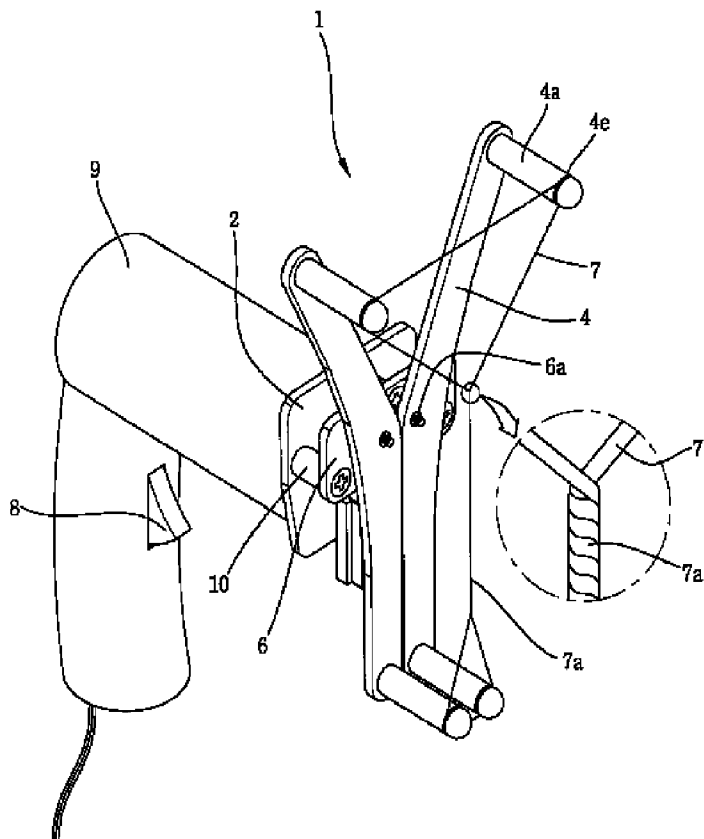
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HAIR REMOVING DEVICE



(57) Abstract: Disclosed is a hair removing device (1) including a base plate (2); a motor (3) fixed to the plate (2) and having a rotatable shaft (3a); a pair of levers (4), both ends of which are repeatedly spread out and closed up alternately, when the shaft (3a) is rotated; a power transmission unit (5) causing the both ends of the pair of the levers (4) to be repeatedly spread out and closed up; a support plate (6) detachably assembled with the plate (2) and having an outer surface, to which the levers (4) are hinged; and a thread (7) installed on fingers (4a) protruded from both ends of the levers (4) and having a twisted part (7a), both ends of which are repeatedly twisted and untwisted for removing downy hairs when both ends of the pair of the levers (4) are repeatedly spread out and closing up alternately.

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Description

HAIR REMOVING DEVICE

Technical Field

- [1] The present invention relates to a hair removing device for plucking various downy hairs and warts from the skin, and more particularly to a hair removing device, in which when a pair of levers is alternately spread out and closed up repeatedly by the operation of a motor in cooperation with each other, both ends of a twisted part of a thread mounted on fingers of the levers are repeatedly twisted and untwisted so as to simply pluck downy hairs inserted into the twisted part.

Background Art

- [2] In general, many downy hairs on the exposed skin, such as the face, spoil the beauty of the skin. Further, downy hairs are covered with dust, and thus the skin gets easily dirty, thereby being insanitary and providing hatred to an opponent, if severe.
- [3] A small wart generated on the skin, which is small and longish extra flesh having a nipple shape, is a kind of skin tag. The wart is generated on a portion of the skin, thus spoiling the beauty of the skin.
- [4] Accordingly, women having many downy hairs and warts pluck their downy hairs and warts for the purpose of skin beauty and appearance management.
- [5] Conventionally, since there is no specific device for removing downy hairs and warts, downy hairs and warts were manually removed. That is, after both tips of a thread are connected by a knot, the thread is folded and the central portion of the thread is twisted. Both ends of the twisted part are respectively held by thumbs and forefingers of both of user's hands. Thereafter, when the thread slowly moves in the longitudinal direction while alternately repeating the spreading out of the thumb and the forefinger of one user's hand and the closing up of the thumb and the forefinger of the other user's hand, both ends of the twisted part of the thread are repeatedly twisted and untwisted, and thus downy hairs are inserted into the twisted part in the proceeding direction and are removed.
- [6] In order to pluck downy hairs using the above conventional hair removing method, both ends of the thread are tightly hung on thumbs and forefingers of both of user's hands, and then the thumbs and the forefingers are repeatedly spread out and closed up. Thus, the user feels a pain in his/her thumbs and forefingers. Further, when the thumbs and the forefingers are continuously used, the user feels tired in his/her thumbs and forefingers and thus cannot remove downy hairs. When this hair removing method is used for a long time, joints of the user's fingers are injured, and thus may be bad for the user's health.

[7]

Disclosure of Invention**Technical Problem**

[8]

[9] Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a hair removing device, in which when a pair of levers is alternately spread out and closed up repeatedly by the operation of a motor in cooperation with each other, both ends of a twisted part of a thread mounted on fingers of the levers are repeatedly twisted and untwisted so as to simply pluck downy hairs inserted into the twisted part.

[10]

Technical Solution

[11]

[12] In accordance with an aspect of the present invention, the above and other objects can be accomplished by the provision of a hair removing device comprising a base plate; a motor fixed to the base plate, and provided with a shaft rotated by power supply; a pair of levers, interlocked with the shaft of the motor, both ends of which are provided with fingers protruded therefrom, and are repeatedly spread out and closed up alternately in cooperation with each other, when the shaft is rotated; a power transmission unit, installed between the shaft of the motor and the levers, both bodies of a second link of which perform rectilinear reciprocating motion and rotary reciprocating motion, when the shaft is rotated, so as to cause pair of the levers, connected to the power transmission unit, to be repeatedly spread out and closed up alternately; a support plate detachably assembled with the base plate, and provided with an outer surface, to which the levers are hinged so as to allow the levers to be repeatedly spread out and closed up; and a thread installed on the fingers protruded from both ends of the corresponding levers and provided with a twisted part, formed at the central portion thereof, both ends of which are repeatedly twisted and untwisted for removing downy hairs inserted into the twisted part when the spreading out of one end of the pair of the levers and the closing up of the other end of the pair of the levers are repeated alternately.

[13]

Advantageous Effects

[14]

[15] When power is supplied to the motor of the hair removing device of the present invention, both ends of the twisted part of the thread mounted on the levers are repeatedly twisted and untwisted by means of the operation of the motor, thus plucking

downy hairs or warts from the skin.

[16] Accordingly, the hair removing device of the present invention simply and effectively removes downy hairs or warts from the skin, thus solving problems caused by the conventional manual hair removing work.

[17]

Brief Description of the Drawings

[18]

[19] The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[20] FIG. 1 is a perspective view of a hair removing device in accordance with an embodiment of the present invention;

[21] FIG. 2 is an exploded perspective view illustrating the internal structure of the hair removing device of the present invention;

[22] FIG. 3 is a perspective view of the hair removing device of the present invention, in which a power transmission unit is assembled;

[23] FIG. 4 is a side view of the hair removing device of the present invention;

[24] FIG. 5 is a front view of the hair removing device of the present invention, in an operating state in which a first link is located at the lower part of a rotary plate;

[25] FIG. 6 is a front view of the hair removing device of the present invention, in an operating state in which the first link is located at the upper part of the rotary plate;

[26] FIG. 7 is a perspective view of the hair removing device of the present invention in a used state;

[27] FIG. 8 is a front view illustrating a pair of levers of the hair removing device of the present invention, in a state in which upper parts of the levers are spread out;

[28] FIG. 9 is a front view illustrating the pair of levers of the hair removing device of the present invention, in a state in which lower parts of the levers of the lever are spread out; and

[29] FIG. 10 is a schematic view illustrating a twisted part of a thread of the hair removing device of the present invention, in a state in which downy hairs are plucked and collected.

[30]

Best Mode for Carrying Out the Invention

[31]

[32] Now, a preferred embodiment of the present invention will be described in detail with reference to the annexed drawings.

[33] FIG. 1 is a perspective view of a hair removing device in accordance with an

embodiment of the present invention, FIG. 2 is an exploded perspective view illustrating the internal structure of the hair removing device of the present invention, FIG. 3 is a perspective view of the hair removing device of the present invention, in which a power transmission unit is assembled, and FIG. 4 is a side view of the hair removing device of the present invention.

[34] As shown in FIGS. 1 to 4, a hair removing device 1 of the present invention includes a base plate 2, a motor 3 fixed to the base plate 2 and provided with a shaft 3a rotated by power supply, a pair of levers 4, both ends of which are repeatedly spread out and closed up in cooperation with each other, when the shaft 3a of the motor 3 is rotated, a power transmission unit 5 receiving the rotary power from the shaft 3a of the motor 3 and causing the both ends of the pair of the levers 4 to be repeatedly spread out and closed up, a support plate 6, to which the pair of the levers 4 is hinged, and a thread 7 installed on the levers 4 for removing downy hairs inserted into a twisted part 7a when ends of the levers 4 are spread out and the other ends of the levers 4 are closed up repeatedly. The hair removing device 1 further includes a housing 9 provided with a switch 8 for switching on and off the motor 3. Here, the housing 9 is assembled with the base plate 2 such that the motor 3 is accommodated in the housing 9.

[35] The base plate 2, on which various components of the hair removing device 1 of the present invention are mounted, has a thin plate shape.

[36] The motor 3 causes upper ends of the levers 4 to be repeatedly spread out and closed up by means of the shaft 3a, which is rotated by supplied power. The motor 3 is fixed to one surface of the base plate 2, and the shaft 3a of the motor 3 passes through the base plate 2 and transmits the rotary power to the power transmission unit 5.

[37] The motor 3 is switched on and off using the switch 8 of the housing 9, which will be described later, and it is generally known in electric and electronic products and is apparent to those skilled in the art.

[38] The pair of the levers 4 is an essential part of the hair removing device 1 of the present invention, and corresponds to thumbs and forefingers in the conventional hair removing method. Both ends of the levers 4, which are prepared in a pair, are repeatedly spread out and closed up in cooperation with each other by the power transmitted from the motor 3, thus twisting and untwisting the twisted part 7a of the thread 7 installed thereon.

[39] That is, the pair of the levers 4 includes a pair of the bodies having a small thickness, and fingers 4a are respectively protruded from both ends of the bodies so that the thread 7 used to remove downy hairs H can be hung on the fingers 4a. Surfaces of the bodies of the levers 4, which face each other, are inclined or bent in directions going away from each other so that the levers 4 can be spread out and closed up in cooperation with each other, and thus a space part 4b is formed between the surfaces of

the bodies.

[40] Hinge holes 4c are respectively formed through the approximately central portions of the levers 4 so as to be hinged to the support plate 6, and hinge pins 4d are respectively protruded from surfaces of the levers 4 close to the hinge holes 4c so as to receive the power transmitted from the power transmission unit 5.

[41] The fingers 4a are respectively protruded from both ends of the levers 4 in the longitudinal direction. That is, the total number of the fingers 4a is four. A receiving groove 4e is formed in the outer circumferential surface of the tip of each of the fingers 4a in the transversal direction so that the thread 7 is firmly wound on the outer circumferential surfaces of the fingers 4a.

[42] As shown in FIGS. 1 to 3, the hinge holes 4 of the pair of the levers 4 are engaged with assembly pins 6a of the support plate 6. Thereby, both ends of the levers 4 facing each other moves in opposite directions by means of the operation of the motor 3, thus being repeatedly spread out and closed up.

[43] The power transmission unit 5 converts the rotary power, transmitted from the motor 3, into rotary reciprocating motion so that the levers 4 can reciprocate and rotate on the hinge holes 4c.

[44] The power transmission unit 5 includes a rotary plate 51, a first link 52, a second link 53, and a rail 54.

[45] The rotary plate 51 is fixed to the shaft 3a of the motor 3a, and is rotated together with the rotation of the shaft 3a, thus achieving rectilinear reciprocating motion and rotary reciprocating motion of the first link 52 connected thereto. A hole 51a, into which the shaft 3a is inserted, is formed through the center of the rotary plate 51, and a hinge hole 51b, through which the first link 52 is connected to the rotary plate 51, is formed through a designated position of the rotary plate 51.

[46] A pin 52a, which is inserted into the hinge hole 51b of the rotary plate 51 so as to connect the first link 52 to the rotary plate 51, is protruded from one end of the first link 52, and a through hole 52b is formed through the other end of the first link 52. When the rotary plate 51 is rotated, the first link 52 rectilinearly reciprocates and one end of the first link 52 connected to the rotary plate 51 rotatively reciprocates at a designate angle centering on the through hole 52b formed through the other end of the first link 52.

[47] The second link 53 includes a pair of bodies, ends of which are assembled with each other by a hinge pin 53a, which passes through the through hole 52b of the first link 52 and is inserted into a groove 54a of the rail 54, thus performing rectilinear reciprocating motion and rotary reciprocating motion. Hinge holes 53b are respectively formed through the other ends of the bodies of the second link 53, and are assembled with the hinge pins 4d of the corresponding levers 4 by fit.

- [48] When the first link 52 performs rectilinear reciprocating motion and rotary reciprocating motion, the hinge pin 53a of the second link 53 accommodated in the groove 54a of the rail 54 performs rectilinear reciprocating motion along the rail 54, and the bodies of the second link 53 perform rotary reciprocating motion and are repeatedly spread out and closed up centering on the hinge pins 4d due to the hinge holes 53b assembled with the hinge pins 4d of the levers 4, thus causing the levers 4 connected to the second link 53 to be rotatively reciprocated centering on the hinge holes 4c. Accordingly, the both ends of the pair of the levers 4 are repeatedly spread out and closed up.
- [49] The rail 54 is fixed to the base plate 2, and the groove 54a of the rail 54 accommodates the protruding portion of the hinge pin 53a of the second link 53, thus guiding the rectilinear reciprocating motion of the first link 52 when the rotary plate 51 is rotated.
- [50] The support plate 6, on which the levers 4 are mounted, is detachably assembled with the base plate 2, and is provided with assembly pins 6a, which are protruded from both sides of the outer surface of the support plate 6 and inserted into the hinge holes 4c of the levers 4. Thus, the levers 4, rotatably assembled with the support plate 6, are rotated on the assembly pins 6a, and are repeatedly spread out and closed up.
- [51] The support plate 6 is assembled with the base plate 2 under the condition that the support plate 6 is spaced from the base plate 2 at a designated interval by internal maintenance members 10. The power transmission unit 5 is installed between the base plate 2 and the support plate 6. The internal maintenance members 10 are respectively fixed to the base plate 2 by bolts B.
- [52] The thread 7 is wound on the fingers 4a of the levers 4, and serves to pluck downy hairs H and warts from the user's skin. Both tips of the thread 7 are connected, and the twisted part 7a is formed at the central portion of the thread 7.
- [53] Both ends of the thread are inserted into the receiving grooves 4e of the fingers 4a formed on both of the corresponding ends of the levers 4. When both ends of the pair of the levers 4 are repeatedly spread out and closed up alternately by operating the motor 3, both ends of the twisted part 7a are repeatedly twisted and untwisted. Thereby, the twisted part 7a plucks downy hairs H inserted thereinto. The thread 7 has the same function as that of a thread used in the conventional hair removing method.
- [54] The hair removing device 1 of the present invention, as shown in FIG. 1, further includes the housing 9 provided with the switch 8 for switching on and off the motor 3. Here, the housing 9 is assembled with the base plate 2 such that the motor 3 is accommodated in the housing 9.
- [55] Preferably, the housing 9 has the shape of a pistol so as to be conveniently used, and the switch 8 is located at a position corresponding to a user's forefinger when the

housing 9 is held by the user's hand.

[56] In the above-described hair removing device 1 of the present invention, when the motor 3 is switched on by pressing the switch 8 under the condition that a user holds the housing 9 by his/her hand, the rotary plate 51, rotated together with the rotation of the shaft 3a of the motor 3, causes the first link 52 to perform rectilinear reciprocating motion, and the second link 53 provided with the hinge pin 53a, inserted into the through hole 2b of the first link 52, moves upwardly and downwardly due to the rectilinear reciprocating motion of the hinge pin 53a along the groove 54a of the rail 54, as shown in FIGS. 5 and 6. Here, since the hinge holes 53b of the second link 53 are assembled with the hinge pins 4d of the levers 4, when the second link 53 moves upwardly and thus the space between both bodies is widened, a pair of the levers 4, assembled with the second link 53, is rotated together.

[57] Thus, ends of the levers 4 are spread out and the other ends of the levers 4 are closed up. Thereafter, when the motor 3 is continuously rotated, both ends of the levers 4 are repeatedly spread out and closed up alternately, as shown in FIGS. 8 and 9.

[58] Accordingly, both ends of the twisted part 7a of the thread 7 mounted on the fingers 4a of the levers 4 are repeatedly twisted and untwisted. When the user slowly moves the hair removing device 1 of the present invention in the longitudinal direction of the thread 7, downy hairs H inserted into the twisted part 7a are plucked, as shown in FIG. 10.

[59]

Industrial Applicability

[60]

[61] When power is supplied to the motor of the hair removing device of the present invention, both ends of the twisted part of the thread mounted on the levers are repeatedly twisted and untwisted by means of the operation of the motor, thus plucking downy hairs or warts from the skin.

[62] Accordingly, the hair removing device of the present invention simply and effectively removes downy hairs or warts from the skin, thus solving problems caused by the conventional manual hair removing work.

[63] Although the preferred embodiment of the present invention has been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

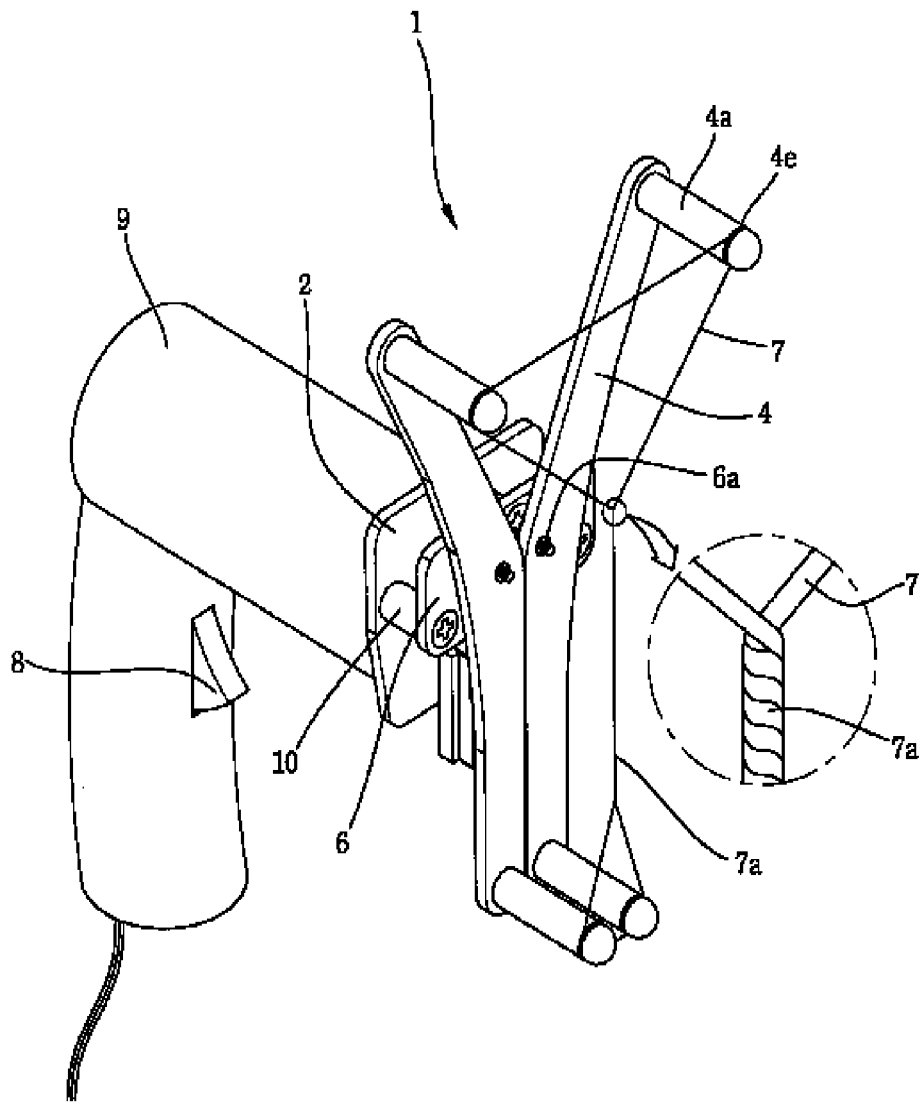
Claims

- [1] A hair removing device comprising:
a base plate;
a motor fixed to the base plate, and provided with a shaft rotated by power supply;
a pair of levers, interlocked with the shaft of the motor, both ends of which are provided with fingers protruded therefrom, and are repeatedly spread out and closed up alternately in cooperation with each other, when the shaft is rotated;
a power transmission unit, installed between the shaft of the motor and the levers, both bodies of a second link of which perform rectilinear reciprocating motion and rotary reciprocating motion, when the shaft is rotated, so as to cause both end of the pair of the levers, connected to the power transmission unit, to be repeatedly spread out and closed up alternately;
a support plate detachably assembled with the base plate, and provided with an outer surface, to which the levers are hinged so as to allow the levers to be repeatedly spread out and closed up; and
a thread installed on the fingers protruded from both ends of the corresponding levers and provided with a twisted part, formed at the central portion thereof, both ends of which are repeatedly twisted and untwisted for removing downy hairs inserted into the twisted part when the spreading out of one end of the pair of the levers and the closing up of the other end of the pair of the levers are repeated alternately.
- [2] The hair removing device as set forth in claim 1, wherein the central portion of the pair of the levers between the fingers protruded from both ends is hinged to the support plate and the power transmission unit so that both ends of the pair of the levers are spread out and closed up centering on the assembled portion of the pair of the levers.
- [3] The hair removing device as set forth in claim 1, wherein a receiving groove is formed in the outer circumferential surface of each of the fingers in the transversal direction so that the thread is firmly wound on the outer circumferential surfaces of the fingers.
- [4] The hair removing device as set forth in claim 1, wherein the power transmission unit includes:
a rotary plate fixed to the shaft of the motor and rotated together with the rotation of the shaft;
a first link provided with one end connected to the rotary plate, said end performing rotary reciprocating motion at a designated angle on a through hole

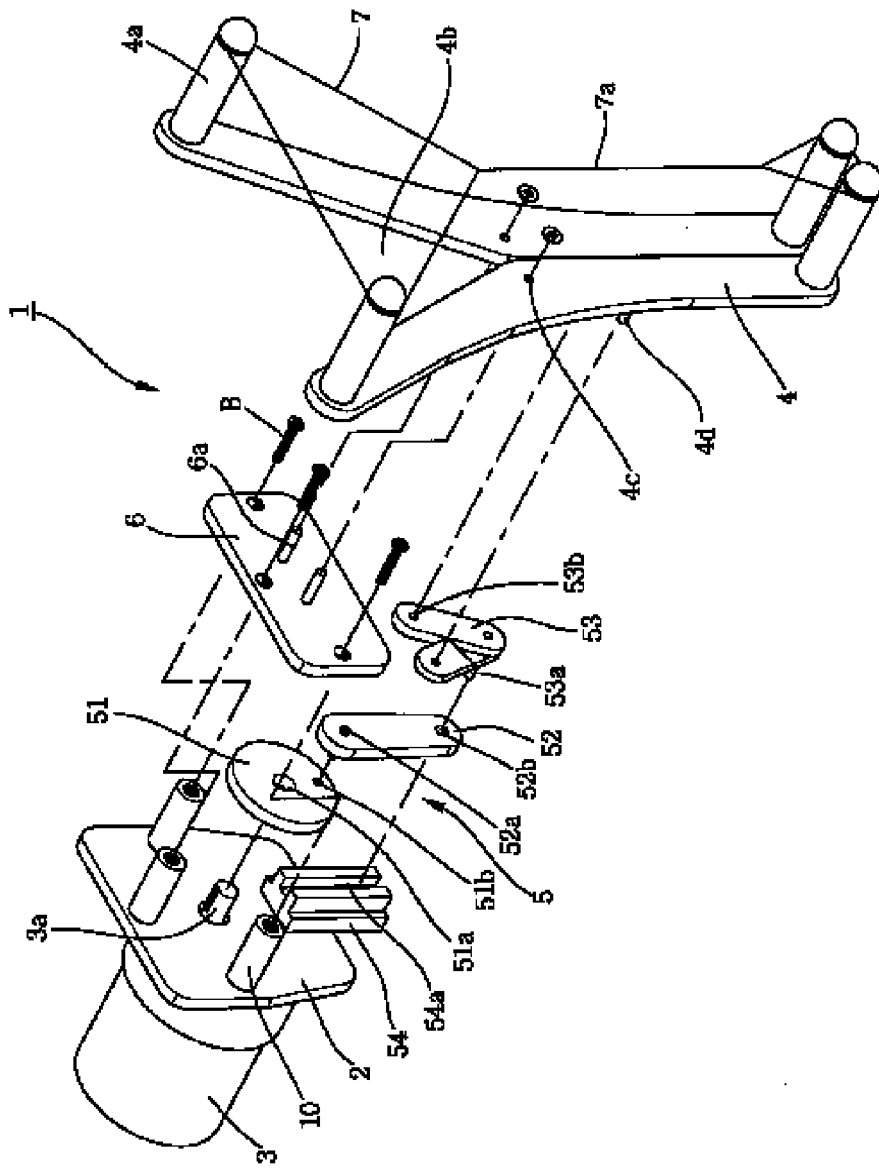
formed through the other end of the first link, while the first link performs rectilinear reciprocating motion, when the rotary plate is rotated;
the second link including a pair of bodies, provided with ends assembled with each other by a hinge pin, passing through the through hole, and the other ends hinged to the corresponding levers, and thus repeatedly spread out and closed up so as to cause both ends of the pair of the levers to be repeatedly spread out and closed up alternately when the first link performs rectilinear reciprocating motion; and
a rail fixed to the base plate, and accommodating the protruding portion of the hinge pin of the second link so as to guide the rectilinear reciprocating motion of the first link when the rotary plate is rotated.

- [5] The hair removing device as set forth in claim 1, wherein both tips of the thread is connected, and both outer sides of the twisted part of the thread are inserted into the receiving grooves of the fingers.
- [6] The hair removing device as set forth in claim 1, further comprising a housing provided with a switch for switching on and off the motor, and assembled with the base plate such that the motor is accommodated in the housing.

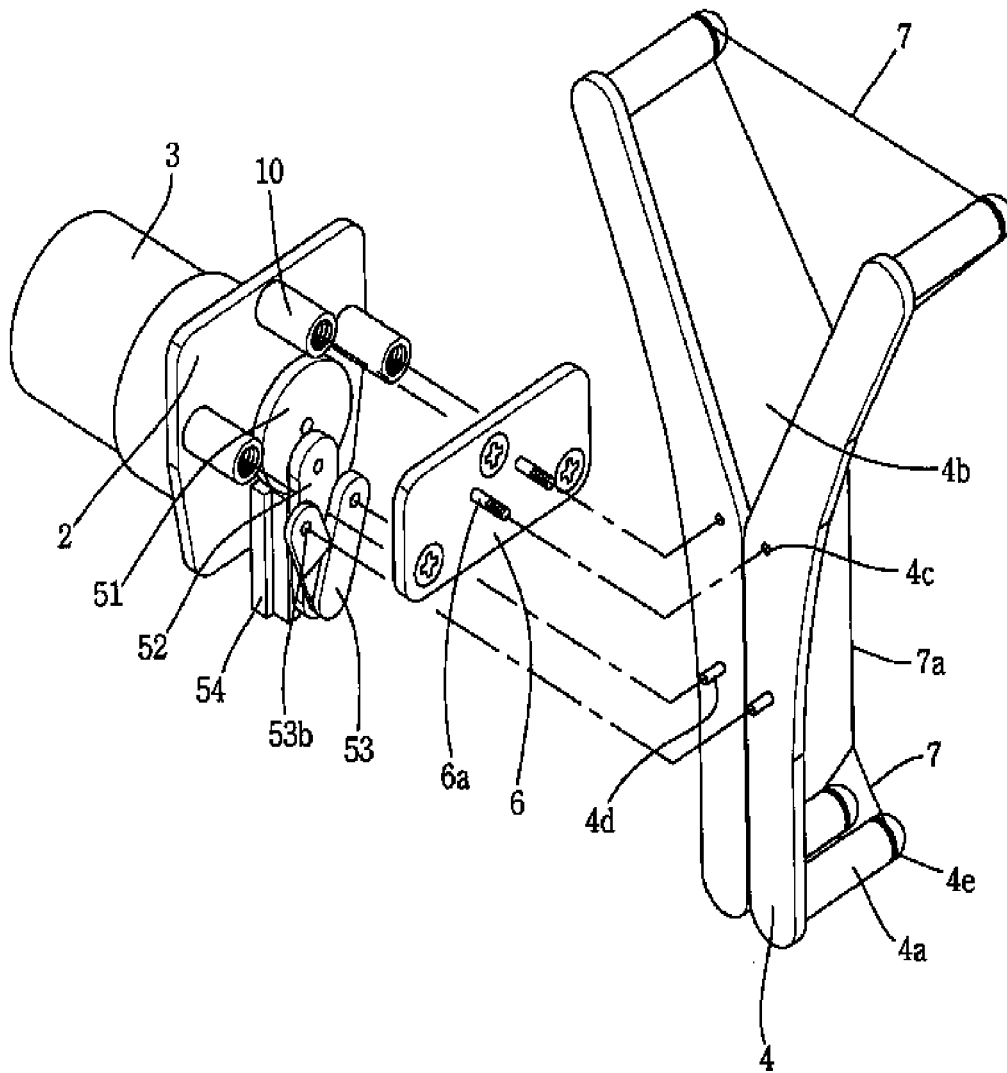
[Fig. 1]



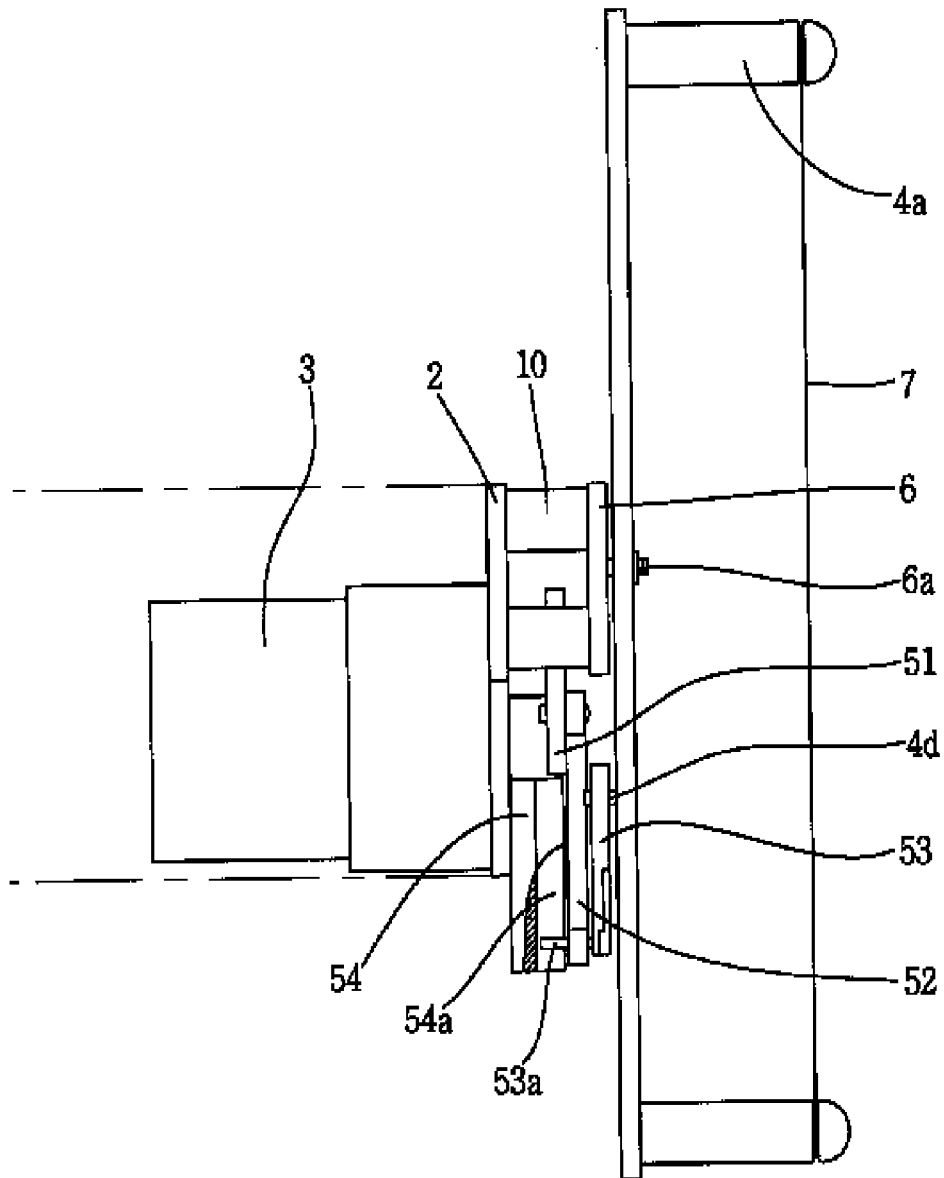
[Fig. 2]



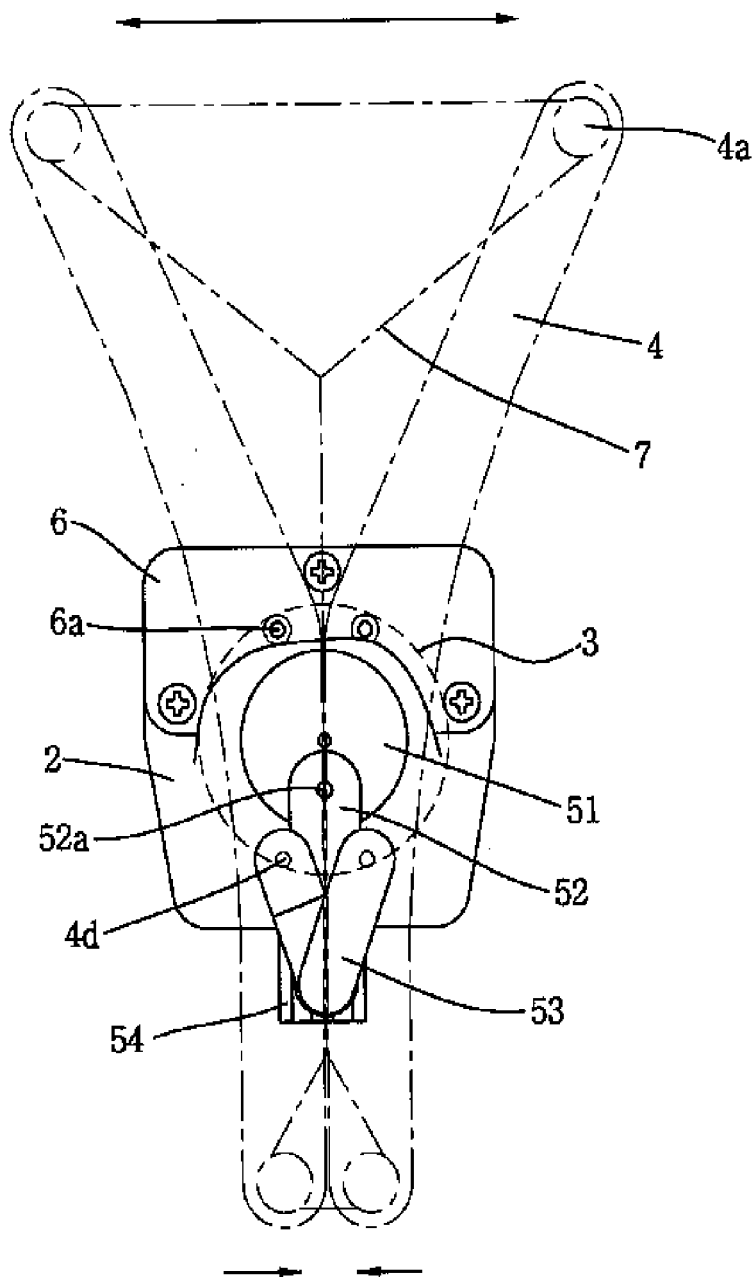
[Fig. 3]



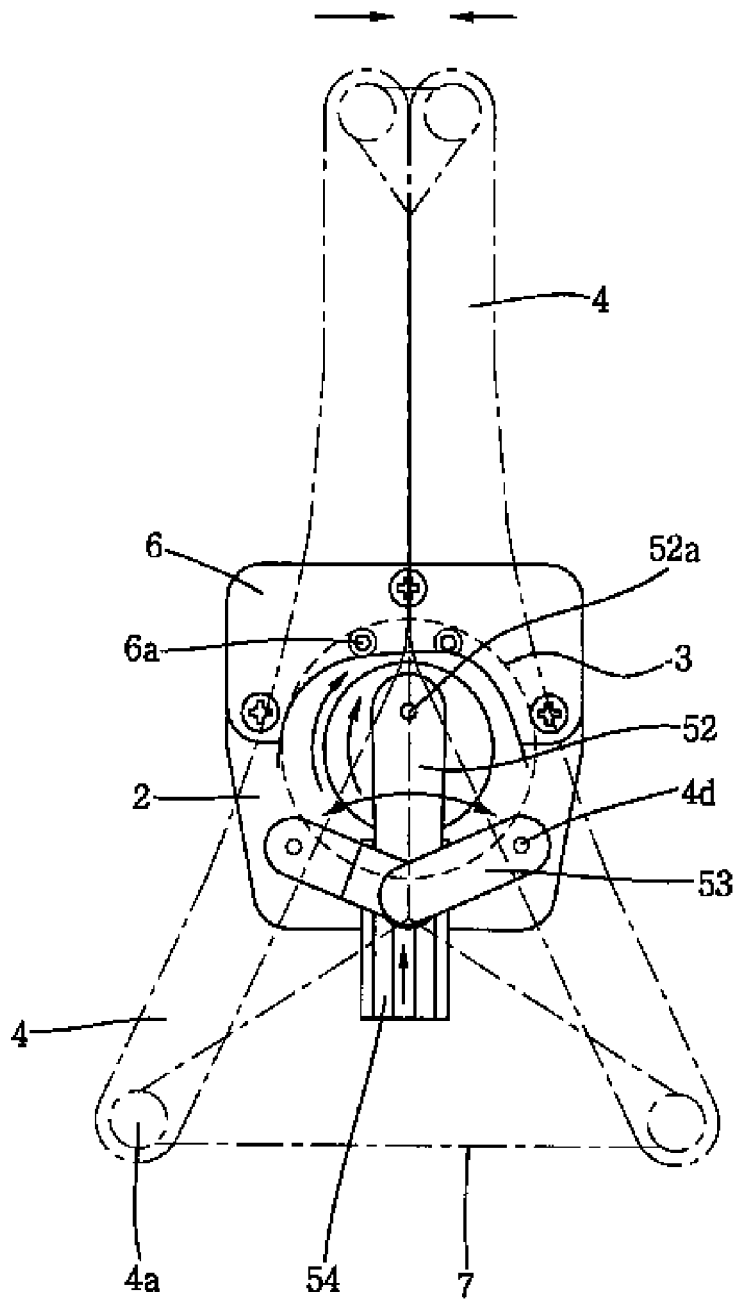
[Fig. 4]



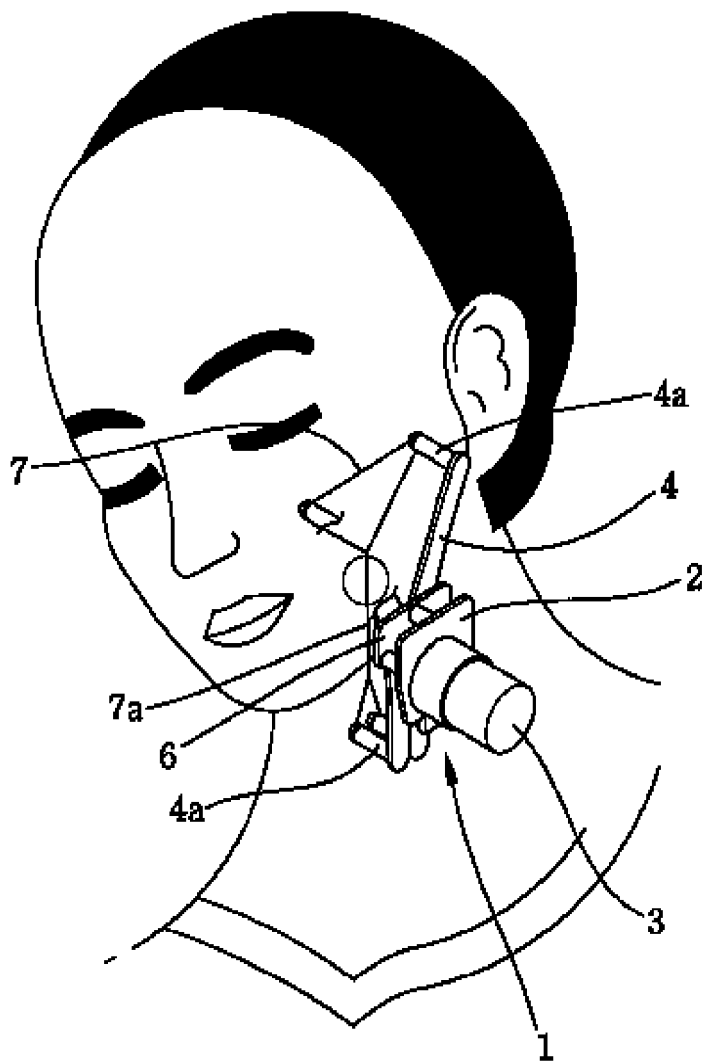
[Fig. 5]



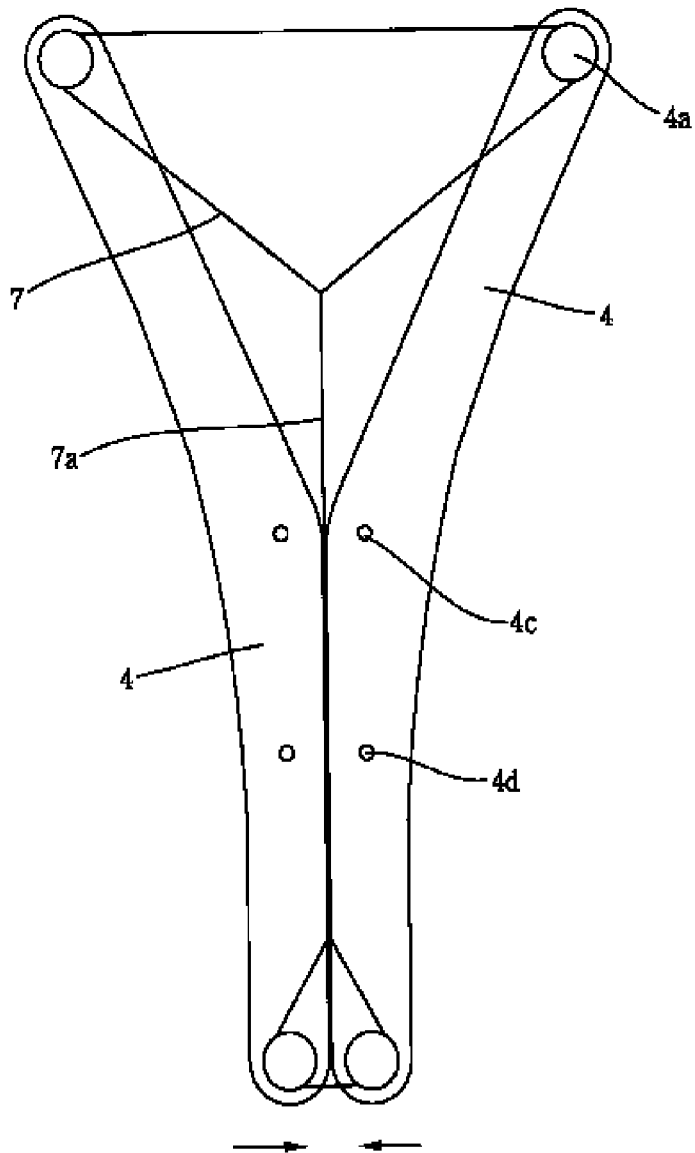
[Fig. 6]



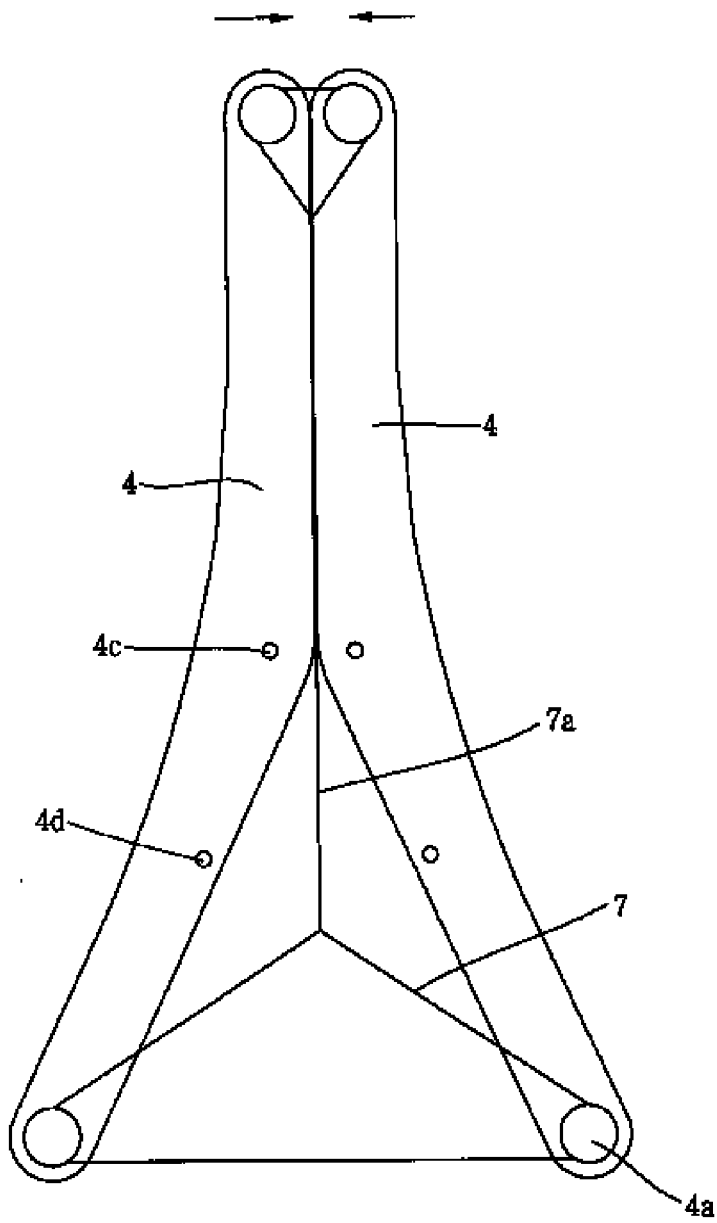
[Fig. 7]



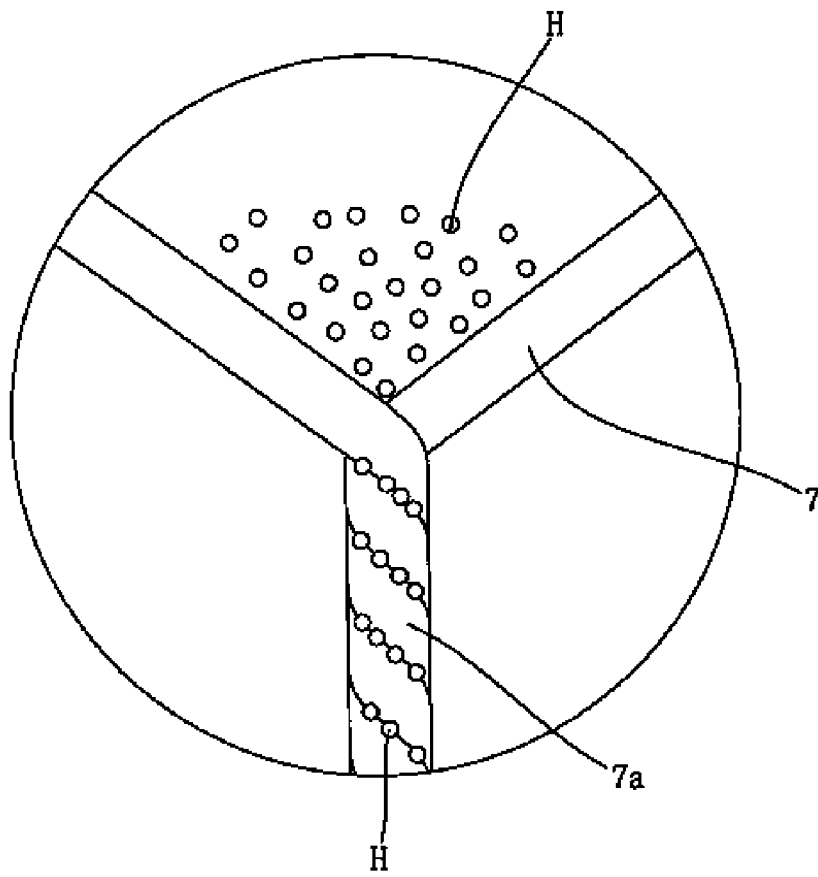
[Fig. 8]



[Fig. 9]



[Fig. 10]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2007/002990**A. CLASSIFICATION OF SUBJECT MATTER****A45D 26/00(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC8 A45D 26/00, A61B 17/36

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

Korean Utility models and applications for Utility Models: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

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

eKIPASS(KIPO internal) & keywords: "hair, removing, device, pluck, thread and similar terms"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2001-120341 A (SANYO ELECTRIC CO., LTD.) 08 May 2001 See the abstract, Claim 1, and Figures 1-4.	1-6
A	US 6,620,175 B1 (HIDEKAZU SUEYOSHI, KANZAKI) 16 September 2003 See column 8, line 56 - column 9, line 15, and Figures 1-10.	1-6
A	JP 2000-083723 A (HASHIMOTO KENJI) 28 March 2000 See the abstract, Claims 1-2, and Figures 1-5.	1-6
A	US 6,152,917 A (NIKOLAI I. TANKOVICH) 28 November 2000 See column 1, line 51 - column 2, line 9, and Figures 1-5.	1-6

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

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Date of the actual completion of the international search

06 SEPTEMBER 2007 (06.09.2007)

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2001-120341 A	08-05-2001	JP 3863692 B2	27-12-2006
US 6,620,175 B1	16-09-2003	EP 01103203 A2 EP 01103203 B1 EP 1103203 A3 ES 2257257 T3 JP 2001149135 A2 JP 3873550 B2 US 06620175 BA	30-05-2001 25-01-2006 02-05-2003 01-08-2006 05-06-2001 24-01-2007 16-09-2003
JP 2000-083723 A	28-03-2000	NONE	
US 6,152,917 A	28-11-2000	NONE	