(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 165 620 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
24.03.2010 Bulletin 2010/12

(51) Int Cl.:
A45D 1/14 *(2006.01)* ***A45D 1/04*** *(2006.01)*

(21) Application number: **08016348.8**

(22) Date of filing: **17.09.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

(71) Applicant: **Futek, Inc.**
Minato-ku
Tokyo 107-0062 (JP)

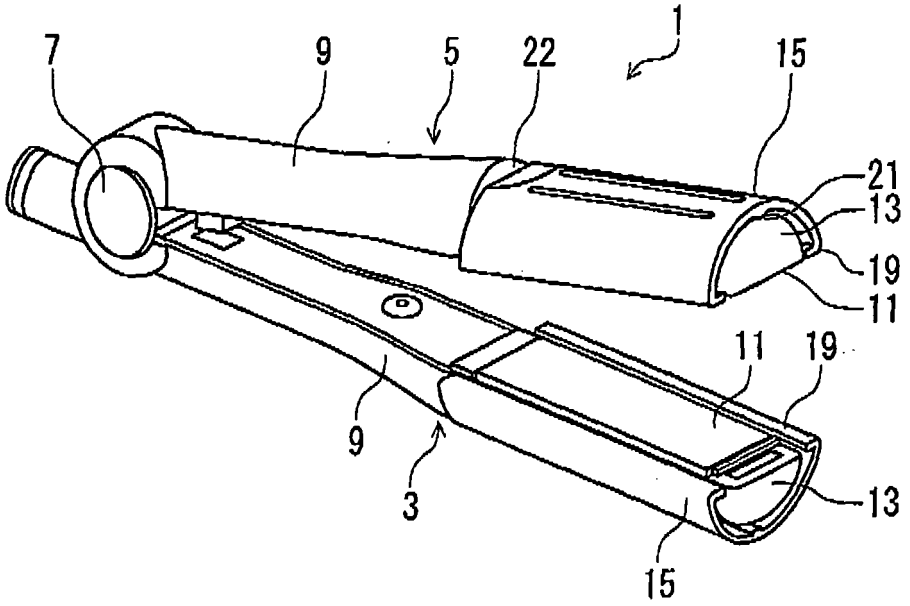
(72) Inventors:
- **Suzuki, Shuhei**
  c/o Futek, Inc.
  Minato-ku, Tokyo 107-0062 (JP)
- **Kanaya, Kaoru**
  c/o Futek, Inc.
  Minato-ku, Tokyo 107-0062 (JP)

(74) Representative: **Gesthuysen, von Rohr & Eggert**
Patentanwälte
Postfach 10 13 54
45013 Essen (DE)

(54) Hair iron

(57) A hair iron (1) includes a pair of grips (9) being rotatably connected to a base end so as to be openable and closable; and a heating part (11) being provided to be ops posed to a tip end side of each grip (9) wherein each heating part (11) has a flat opposing surface, a rear surface side of the heating part (11) has a curved curling part (13), and at least one curling part (13) has an auxiliary case (15) with a curved surface having a different curvature from that of the curling part (13), which is attachable and detachable thereto and therefrom.

FIG. 2



EP 2 165 620 A1

Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a hair iron that curls hair.

Description of the Related Art

[0002] Japanese Utility Model Registration No. 3117886 (patent document 1) discloses that a cloth sack, which covers each of heating parts provided to be opposed to each other, is attachably and detachably installed on each heating part, and the cloth sack is attached thereto so as to prevent each heating part from being directly put on hair.

[0003] Moreover, it is known that in curling hair, the hair is sandwiched between heating parts and rolled up directly using a curved surface of each curved rear surface part to thereby curing hair.

[0004] However, the hair iron disclosed in patent document 1 is structured such that the opposed surface portions of the pair of heating parts are covered to suppress heat. If the hair is curled by the hair iron disclosed in patent document 1, the hair is pressed by both sides of each cover so as to wind the hair around the hair iron, causing a problem that the use of the hair iron is limited to curling with a high degree of curvature.

[0005] Furthermore, the use of the conventional hair iron, having a structure in which the rear surface portion is curved, will be limited to curling with a fixed degree of curvature.

[0006] On the other hand, it has been demanded that the degree (curvature) of curl of hair is increased or decreased according to various hair styles and tastes in hair when the hair is cured using the hair iron.

SUMMARY OF THE INVENTION

[0007] In view of the aforementioned circumstances, it is an object of the present invention is to provide a hair iron capable of changing degree of curvature when hair is curled by one hair iron.

[0008] The above object is achieved by a hair iron according to claim 1. Preferred embodiments are subject of the subclaims.

[0009] In order to solve the aforementioned problem, a first aspect of the present invention provides a pair of grips being rotatably connected to a base end so as to be openable and closable; and a heating part being provided to be opposed to a tip end side of each grip, wherein each heating part has a flat opposing surface, a rear surface side of the heating part has a curved curling part, and at least one curling part has an auxiliary case with a curved surface having a different curvature from that of the curling part so as to be attachable and detachable thereto and therefrom.

[0010] A second aspect of the present invention is that an engaging part is formed on each of both sides of each curling part along a base end side from a tip end side, an engaged part is formed on each of both sides of an auxiliary case, the auxiliary case is inserted from the tip end side of the curling part to the base end side, and the auxiliary case is pullable from the base end side to the tip end side.

[0011] A third aspect of the present invention is that the engaging part formed on the curling part is a plurality of projections projecting from the tip end side to the base end side with a distance, and the engaged part formed on the auxiliary case is a projection having a linear shape continuous from the base end side to the tip end side and projecting to an inner side of curvature.

[0012] A fourth aspect of the present invention is that the tip end side of the grip has a step with an outer periphery projected outside an outer surface of the curling part, and when the auxiliary case is inserted from the tip end side, an insertion side end of the auxiliary case abuts against the step of the grip to position the auxiliary case.

[0013] A fifth aspect of the present invention is that an outer peripheral surface of the curling part has a plurality of protrusions arranged along a circumferential direction with a distance.

[0014] The outer peripheral surface of the curling part has protrusions arranged along the circumferential direction.

[0015] A sixth aspect of the present invention is that an outer peripheral surface of the auxiliary case has a plurality of protrusions arranged along a circumferential direction with a distance.

[0016] According to the first aspect of the present invention, in the case of curling hair, when the heating parts are pulled down along hair so as to sandwich the hair between the heating parts, the grips are rotated to roll up the hair and to press the hair sandwiched between the heating parts on the curling parts and to thereby form a curling habit due to heat.

[0017] In the case of reducing degree of cutl(curvature), each auxiliary case is attached to the curling part to thereby reduce curvature of a curl surface. By this means, the hair is pressed on the curl surface of the auxiliary case to form the curling habit due to heat, thereby making it possible to provide small curls each having a small degree of curvature.

[0018] According to the present invention, attachment or detachment of the auxiliary cases makes it possible to change the curvature in curling hair by one hair iron.

[0019] Since attachment or detachment of the auxiliary cases makes it possible to change the degree of curl, it is possible to easily change the degree of curl and achieve a simple structure.

[0020] According to the second aspect of the present invention, the same effect as that of the invention according to the first aspect of the present invention is obtained. Moreover, the auxiliary case is attached by insertion from

the tip end sides of the grips. Therefore, it is possible to easily attach and detach the auxiliary case and achieve good operability.

[0021] According to the third aspect of the present invention, the same effect as that of the invention according to the second aspect of the present invention is obtained. Moreover, when no auxiliary case is attached, hair can be dividedly placed between the projections in the curling part. When the auxiliary case is attached, the entire outer surface of the auxiliary case can be used as the curl surface. Therefore, the engaging part and the engaged part do not obstruct the curling part and the curl surface of the auxiliary case.

[0022] According to the fourth aspect of the present invention, the same effect as that of the invention according to the first aspect of the present invention is obtained. Moreover, it is possible to achieve positioning with a simple structure when the auxiliary case is attached.

[0023] According to the fifth aspect of the present invention, the same effect as that of the invention according to the first aspect of the present invention is obtained. Moreover, each of bundles of hair is rolled up with each of bundles of hair placed between the adjacent protrusions of the curling part, and therefore it is possible to prevent hair from being rolled up in a deviated manner. Accordingly, it is possible to smoothly roll up hair and uniformly curl hair.

[0024] According to the sixth aspect of the present invention, the same effect as that of the invention according to the first aspect of the present invention is obtained. Moreover, each of bundles of hair is rolled up with each of the bundles of hair placed between the adjacent protrusions of the auxiliary case, and therefore it is possible to prevent hair from being rolled up in a deviated manner. Accordingly, it is possible to smoothly roll up hair and uniformly curl hair.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025]

Fig. 1 is a perspective view of a hair iron according to a first embodiment of the present invention;

Fig. 2 is a perspective view of the hair iron shown in Fig. 1, seen from an- other direction;

Fig. 3 is a perspective view showing a state that an auxiliary case is de- tached in the hair iron shown in Fig. 2;

Fig. 4 is a front view of one arm part, seen from a tip end side;

Fig. 5 is a front view explaining a using method of the hair iron according to the first embodiment of the present invention;

Fig. 6 is a perspective view of a hair iron according to a second embodi- ment of the present invention;

Fig. 7 is a perspective view showing a state that an auxiliary case is de- tached in the hair iron shown in Fig. 6;

Fig. 8 is a plane view showing a state that a curling part of the hair iron according to the second embodiment of the present invention is detached; and

Fig. 9 is a plane view showing a state that a curling part of the hair iron according to a modification of the second embodiment of the pre- sent invention is detached.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0026] The following will explain a first embodiment of the present invention with reference to Figs. 1 to 5.

[0027] As shown in Fig. 3, a hair iron 1 of the present embodiment includes a pair of arm parts 3 and 5 provided to be opposed to each other. One arm part 3 has the other arm part 5 to be rotatable, and one arm part 3 and the other arm part 5 are urged toward each other in an opening direction by an urging force of a spring (not shown) provided on a rotation shaft 7.

[0028] Each of one and other arm parts 3 and 5 has a grip 9 on its base end side (rotation shaft side), and a tip end of the grip 9 has a heating part 11.

[0029] Each heating part 11 has a flat opposing surface, and a semicircular cylindrical curling part 13 is provided on a rear surface side of the heating part 11. The curling part 13 is made of a heat-resistant resin material. The curling part 13 has an outer periphery whose cross section is a nearly semicircular arch. As shown in Figs. 1 and 2, a later-described auxiliary case 15 is formed on each curling part 13 so as to be attachable and detachable thereto and therefrom.

[0030] As shown in Fig. 3, on both sides of each curling part 13 in its extending direction (a direction along the tip end of the arm part from the base end thereof), there are formed engaging parts 17 along the extending direction. The engaging parts 17 formed on the curling part 13 are projections 17a projecting in a row with a distance, and hair can be placed between the projections 17a in curling the hair.

[0031] As shown in Fig. 2 and Fig. 4, each auxiliary case 15 has a cross section whose shape is nearly semicircular, and a curved outer peripheral surface 15a is used as a curl surface. On each semicircular end portion, the auxiliary case 15 has an engaged part 19 projecting to an inner circumference, and the engaged parts 19 form a continuous linear shape in a longitudinal direction (from the base end side to the tip end side) and are engaged

with the engaging parts 17 from the tip end of the curling part 13 to thereby achieve insertion.

[0032] Moreover, each auxiliary case 15 has an abutting part 21 abutting against a substantially central portion of the semicircle of the curling part 13 to support a substantially central portion of the semicircle of the auxiliary case 15 when being attached to the curling part 13.

[0033] The tip end of each grip 9 has a step 22 whose outer periphery is projected outside the outer surface of the curling part 13. When the auxiliary case 15 is inserted from the tip end side of the curling part 13, an insertion side end of the auxiliary case 15 abuts against the step 22 of the grip 9 to thereby position the auxiliary case 15. It should be noted that one that is provided on a base end sides of the grips 9 is an inserting part 23 of a power cord.

[0034] An explanation will be next given of a using method, a function, and an effect in connection with the hair iron 1 according to the present embodiment.

[0035] In the case of straightening hair, the hair iron 1 is used in such a manner that hair is sandwiched between the heating parts 11 to extend hair by the hair iron 1 and pull down the hair iron 1 straightly with respect to the hair. In this case, since only the heating parts 11 are used, the auxiliary cases 15 may be detached or attached as they are.

[0036] In the case of curling hair, each auxiliary case 15 is attached to the curling part 13 in a state shown in Fig. 3 in reducing degree of curl (curvature). Attachment of each auxiliary case 15 is made in such a manner that the auxiliary case 15 is inserted from its end from the tip end of the curling part 13 to engage the engaged parts 19 of the auxiliary case 15 with the engaging parts 17 formed on both sides of the curling part 13 to make insertion in a pushing manner. The auxiliary case 15 is pushed when the engaged parts 19 are guided and moved along the engaging parts 17 arranged linearly and until the insertion side end of the auxiliary case 15 abuts against the step 22 of the grip 9. When the insertion side end of the auxiliary case 15 abuts against the step 22 of the grip 9, the auxiliary case 15 is positioned.

[0037] Namely, attachment of the auxiliary case 15 can be easy achieved by pushing the auxiliary case 15 from the tip end side of the curling part 13 and its positioning can be also achieved.

[0038] In the case of curling hair, as shown in Fig. 5, the grips 9, 9 are rotated in an arrow T direction while the heating parts 11, 11 are pulled down in an arrow S direction along the hair W so as to sandwich the hair W between the heating parts 11, 11, thereby rolling up hair W, Then, the hair W sandwiched between the heating parts 11, 11 is pressed on the outer peripheral surfaces 15a of the auxiliary cases 15 to thereby form a curling habit due to heat of the heating part 11.

[0039] On the other hand, in the case of increasing degree of hair curl (curvature), the auxiliary cases 15 are detached. The auxiliary cases 15 can be easily detached by pulling them from the tip end sides of the arm parts. After detaching the auxiliary cases 15, that is, in a state shown in Fig. 3, similar to the case shown in Fig. 5, the hair is sandwiched between the heating parts 11, 11 and the hair is pressed on the outer peripheral surfaces of the curling parts 13 to form a curling habit with the curl surfaces each having a high curvature.

[0040] In this case, the engaging parts 17 are formed of the plurality of projections 17a arranged with a distance along the longitudinal direction of the curling part 13, and therefore the hair can be dividedly placed between the projections 17a, 17a and the engaging parts 17 do not obstruct curling.

[0041] According to the present embodiment, attachment or detachment of the auxiliary cases 15 makes it possible to change the degree of curvature, which is used in curing hair by one hair iron 1, to a higher or lower one.

[0042] Attachment or detachment of the auxiliary cases 15 makes it possible to provide the plurality of degrees of curl, and therefore the change in degree of curl can be easily achieved and a simple structure can be also achieved.

[0043] The engaged parts 19 of each auxiliary case 15 are projected to the inner circumferential side, and therefore when the auxiliary case 15 is attached, the entire outer peripheral surface can be used as the curl surface and the engaged parts 19 does not become obstacles.

[0044] Furthermore, the present embodiment can be used in either case of straightening hair or curling hair.

[0045] The following will explain another embodiment of the present invention. In the following explanation, the same reference numerals as those of the first embodiment are added to the parts that have the same function and effect as those of the first embodiment and the explanation of these parts will be omitted, and the following will explain only the difference between the first embodiment and the second embodiment. A second embodiment will be explained with reference to Figs. 6 to 8.

[0046] In the present embodiment, as shown in Figs. 7 and 8, multiple protrusions 20, which are arranged along a circumferential direction, are formed on the outer peripheral surface of the curling part 13 at equal distances to be parallel to one another along the longitudinal direction of the curling part 13. Each protrusion 20 is formed in a direction perpendicular to the longitudinal direction of the curling part 13 as shown in Fig. 8. Furthermore, as shown in Fig. 6, similar protrusions 24 are formed on the outer peripheral surface of the auxiliary case 15.

[0047] In the present embodiment, as shown in Fig. 7, no projection (engaging part) 17a is formed on the curling part 13, and each of the engaged parts 19 of the auxiliary case 15 and each of edge portions 26 of curling part 13 are engaged with each other, so that the auxiliary case 15 slides with respect to the curling part 13 to be attachable and detachable thereto and therefrom.

[0048] According to the present embodiment, each of bundles of hair is rolled up with each of bundles of hair placed between the adjacent protrusions 20 of the curling

part 13, and therefore it is possible to prevent hair from being rolled up in a deviated manner. Accordingly, it is possible to smoothly roll up the hair and uniformly curl the hair.

[0049] Each of bundles of hair is rolled up with each of the bundles of hair, placed between the adjacent protrusions 24 of the auxiliary case 15, and therefore it is possible to prevent the hair from being rolled up in a deviated manner. Accordingly, it is possible to smoothly roll up the hair and uniformly curl the hair.

[0050] The present invention is not limited to the aforementioned embodiments, but various variations and modifications may be made without departing from the scope of the present invention.

[0051] For example, a plurality of auxiliary cases 15 each having a different curvature of an outer peripheral surface and a different shape may be provided so as to make hair correspond to various degrees of curl and various shapes.

[0052] The auxiliary case 15 may be provided on only one of the arm parts 3 and 5 without being limited to each of the one and other arm parts 3 and 5 opposed to each other.

[0053] The protrusions 20 formed along the outer peripheral surface of the curling part 13 may be formed with an angle with respect to the longitudinal direction of the curling part 13 as shown in Fig. 9. Even when hair is rolled up with the grips 9 positioned obliquely, it is possible to smoothly place each of the bundles of hair between the adjacent protrusions 20. Likewise, the protrusions 24 formed on the outer peripheral surface of the auxiliary case 15 may be formed with an angle with respect to the longitudinal direction of the.auxiliary case 15.

[0054] It is possible to provide a plurality of auxiliary cases 15 each having the different number of protrusions 20 formed on the outer peripheral surface and a different shape so as to adjust an amount of each of bundles of hair to be placed between the adjacent protrusions 24 according to an amount of rolled up hair.

[0055] Preferably, the auxiliary case(s) 15 may be attached by clamping, by clicking, by a press fit, by a snap fit or in any other suitable manner to the respective curling part 13.

[0056] Additionally or alternatively, the auxiliary case (s) 15 may have a high, regular or low thermal conductivity and/or thermal contact to the respective curling part 13. This may be achieved by using a respective material and/or by a suitable consttuction or form, i.e. depending on the size of the contact area to the respective curling part 13 or the like.

Claims

1. A hair iron comprising:

a pair of grips being rotatably connected to a base end so as to be openable and closable; and

a heating part being provided to be opposed to a tip end side of each grip,

wherein each heating part has a flat opposing surface, a rear surface side of the heating part has a curved curling part, and at least one curling part has an auxiliary case with a curved surface having a different curvature from that of the curling part so as to be attachable and detachable thereto and therefrom.

2. The hair iron according to claim 1, wherein an engaging part is formed on each of both sides of each curling part along a base end side from a tip end side, an engaged part is formed on each of both sides of an auxiliary case, preferably wherein the auxiliary case can be inserted from the tip end side of the curling part to the base end side, and the auxiliary case is pullable from the base end side to the tip end side.

3. The hair iron according to claim 2, wherein the engaging part formed on the curling part is a plurality of projections projecting from the tip end side to the base end side with a distance, and the engaged part formed on the auxiliary case is a projection having a linear shape continuous from the base end side to the tip end side and projecting to an inner side of curvature.

4. The hair iron according to any one of the preceding claims, wherein the tip end of the grip has a step with an outer periphery projected outside an outer surface of the curling part, and when the auxiliary case is inserted from the tip end side, an insertion side end of the auxiliary case abuts against the step of the grip to position the auxiliary case.

5. The hair iron according to any one of the preceding claims, wherein an outer peripheral surface of the curling part has a plurality of protrusions arranged along a circumferential direction with a distance.

6. The hair iron according to any one of the preceding claims, wherein an outer peripheral surface of the auxiliary case has a plurality of protrusions arranged along a circumferential direction with a distance.

FIG. 1

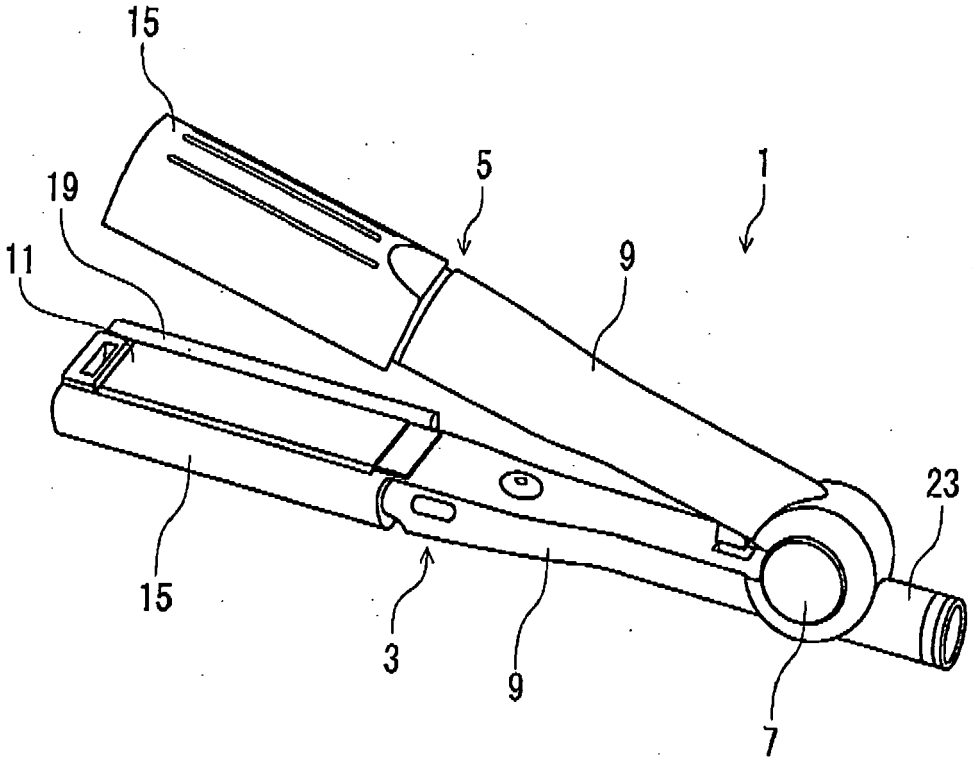


FIG. 2

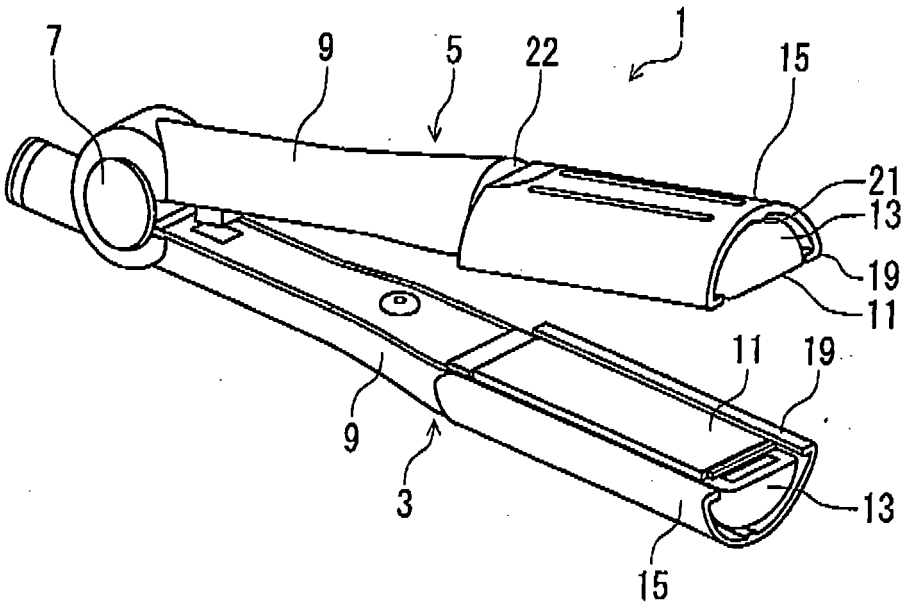


FIG. 3

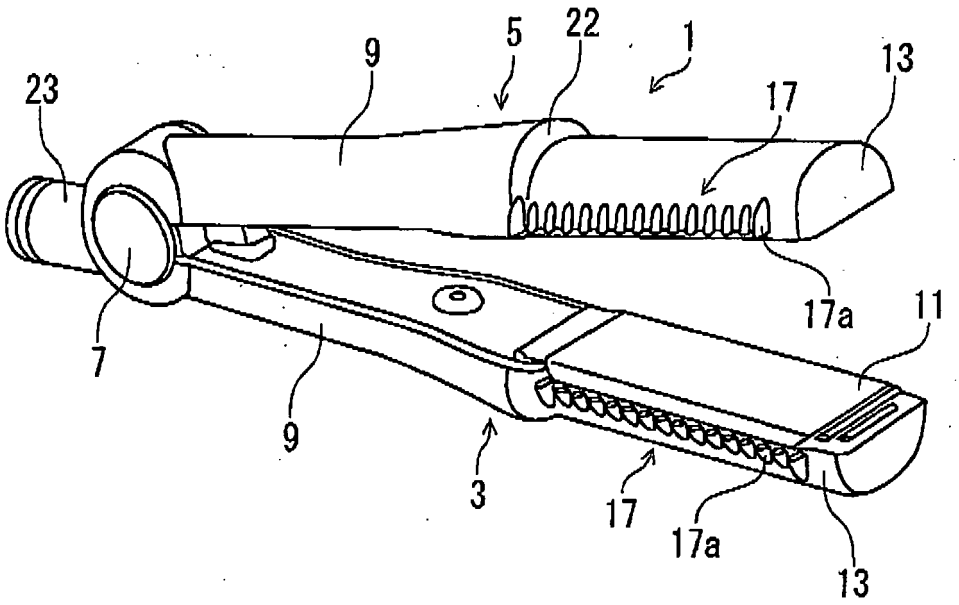


FIG. 4

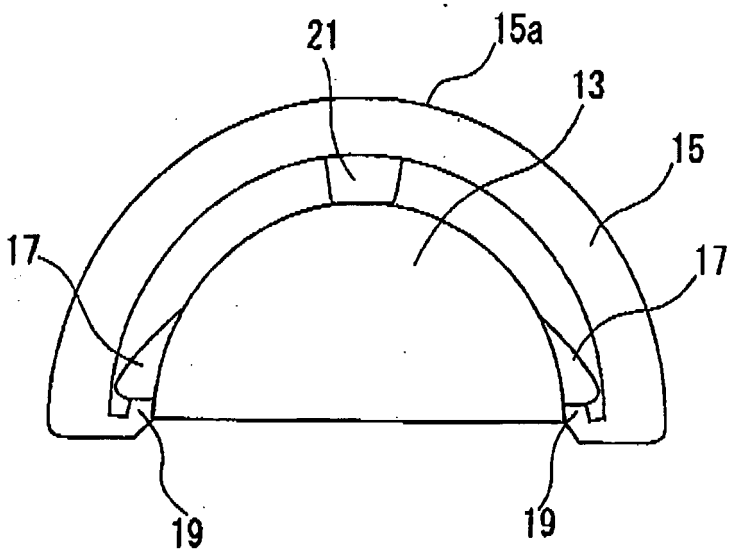


FIG. 5

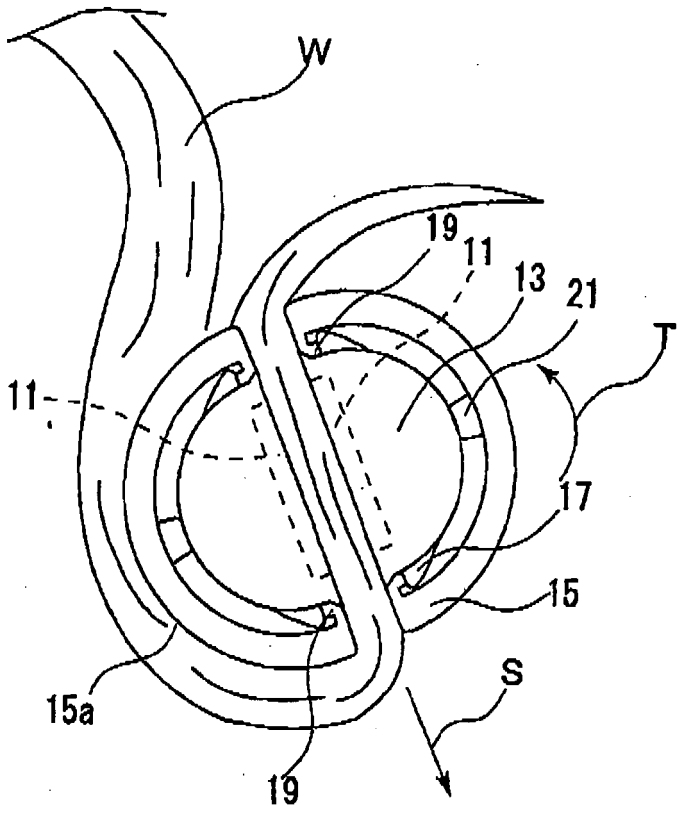

W
19
11
13
21
T
11
17
15
S
15a
19

FIG. 6

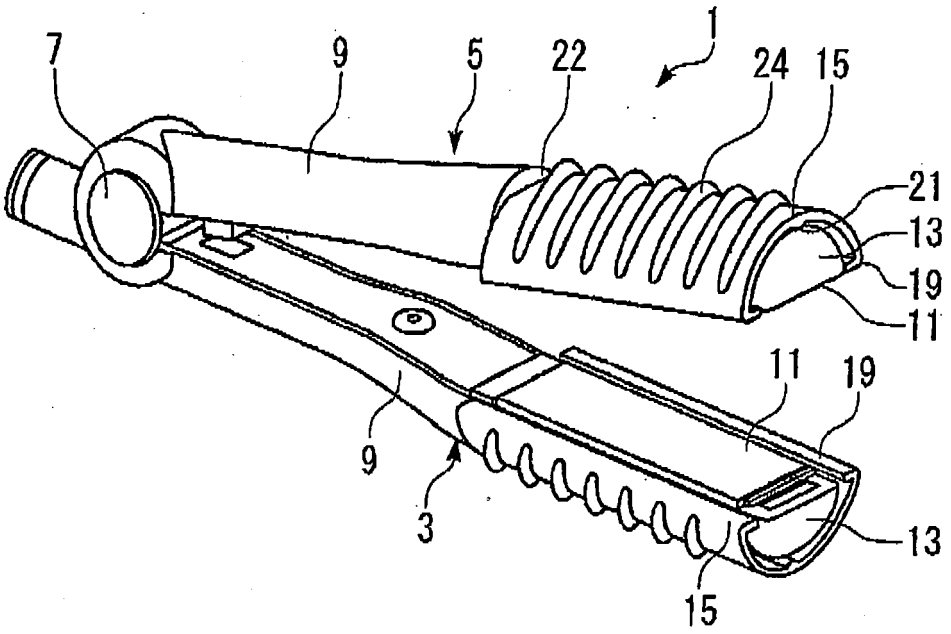

1
7
9
5
22
24
15
21
13
19
11
11
19
9
3
13
15

FIG. 7

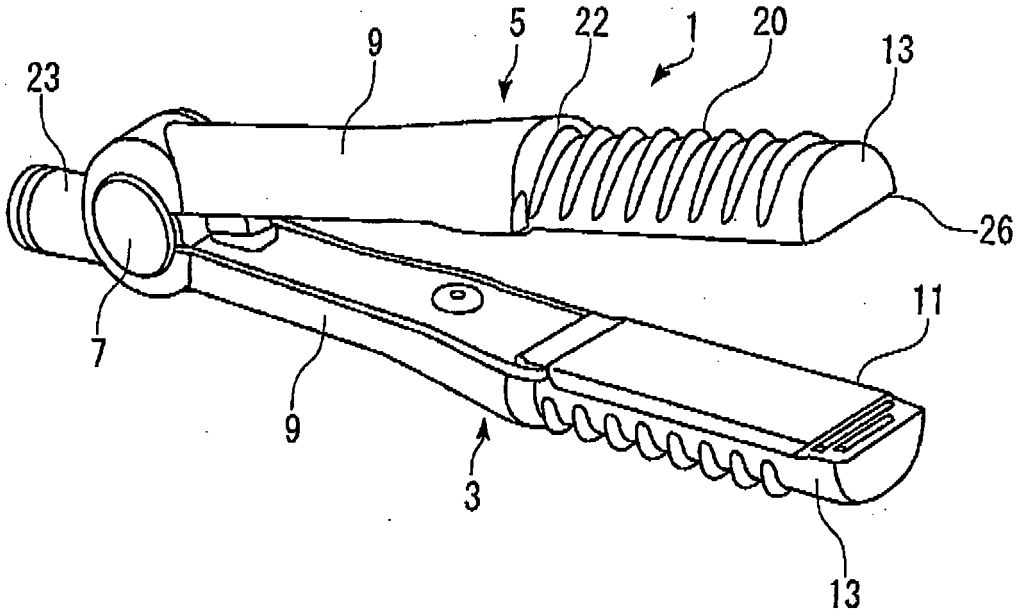


FIG. 8

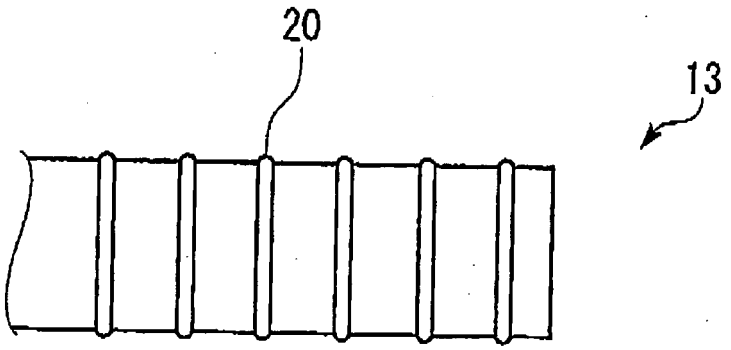
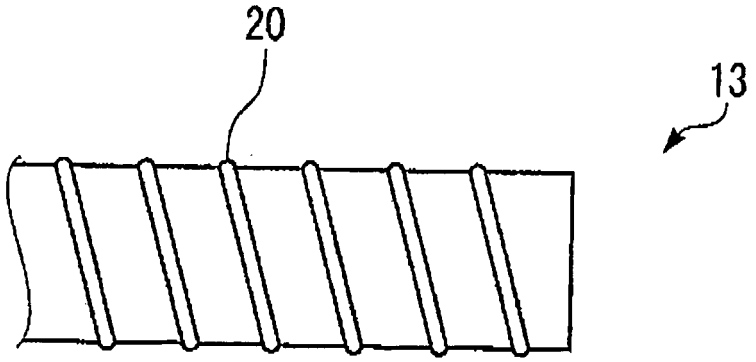


FIG. 9



Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 08 01 6348

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2007/094550 A1 (HAN NAM SU [KR]) 23 August 2007 (2007-08-23) * the whole document * -----	1-6	INV. A45D1/14 A45D1/04
A	US 6 627 852 B1 (SAVONE UMBERTO [US]) 30 September 2003 (2003-09-30) * abstract * -----	1-6	
A	US 2006/150996 A1 (LUN HERBERT [HK] ET AL) 13 July 2006 (2006-07-13) * abstract * -----	1-6	

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	14 August 2009	Nicolás, Carlos

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 01 6348

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

14-08-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007094550 A1	23-08-2007	AU 2006338361 A1	23-08-2007
		EP 1983858 A1	29-10-2008
US 6627852 B1	30-09-2003	AU 2003259048 A1	08-04-2004
		CA 2499432 A1	01-04-2004
		CN 1694631 A	09-11-2005
		EP 1545260 A1	29-06-2005
		JP 2005538797 T	22-12-2005
		KR 20050061474 A	22-06-2005
		TW 285090 B	11-08-2007
		WO 2004026070 A1	01-04-2004
US 2006150996 A1	13-07-2006	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

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 3117886 B **[0002]**