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(54) **Flexible hair-curler and process for working hair, in particular to obtain the so-called "permanent" effect, through such hair-curler**

(57) A flexible hair-curler (1) is described, comprising at least one containing means (2), at least one metallic core (3), and at least one closing element (4) adapted to close an end of the containing means (2), wherein the

metallic core (3) is immersed inside the containing means (2). A process is further described for working hair, to obtain the so-called "permanent" effect, using the above flexible hair-curler (1).

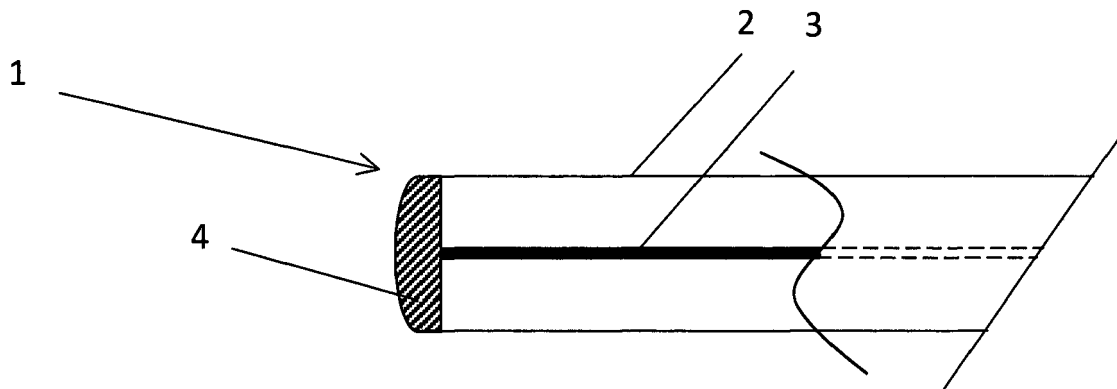


FIG. 11

Description

[0001] The present invention refers to a flexible hair-curler and to a process for working hair, in particular to obtain the so-called "permanent" effect on hairs through a series of steps, using such hair-curler and with manually-actuated instruments for hairs used in an innovative way.

[0002] In the field of hair aesthetics, currently there are no process that allow obtaining the curl effect on hairs by using roller, soft hair-curlers in combination with an accurate series of workings on the hair as described.

[0003] In fact, processes are known to obtain the permanent effect through the use of hair-curlers with elastics or hair-curlers 1 with holes that are closed with suitable stiffs.

[0004] For such purpose, flexible hair-curlers are known in the art which are useful for performing hair-style techniques; such known hair-curlers have a cylindrical or helical shape, are made of plastic material, generally coated with rubbery material or sponge rubber, and characterised by an iron wire inserted inside the plastic material, and by two small removable covers at their ends.

[0005] The iron wire, contained inside such not airtight-closed hair-curler, is repeatedly subjected to an oxidising process when performing hair-style techniques (of the "permanent" type) which provide for the contact between acid materials and the hair-curler itself, also generating rust.

[0006] Moreover, known flexible hair-curlers favour the adaptability of hair-curlers to the hairs, but do not guarantee their resistance and endurance, following the stresses to which they are repeatedly subjected when performing the hair-style techniques.

[0007] Therefore, object of the present invention is solving the above prior art problems by providing an airtight, flexible hair-curler with an integrated metallic core, such as to make a single body with the hair-curler, and with such structure and materials as to provide a more resistance, durable and airtight hair-curler.

[0008] A further object of the present invention is providing a process to obtain the permanent effect through a specific sequence of steps to obtain a more efficient, soft and elegant end result, above all due to the use of the above rubbery and flexible hair-curler, which is bent at its two ends and on which the previously washed and combed hair is wound, with a "conditioner" shampoo or balsam or, alternatively to this latter one, a mask, without rubbing or scoring it. Through the choice of the diameter of the soft hair-curler, a different waviness (more or less narrow) type can be chosen.

[0009] This working method, in fact, allows obtaining an end result complying with the specific customer needs, choosing various sizes of soft hair-curlers in order to model the end result at will.

[0010] By actuating the process of the invention, a surprising end effect is obtained in terms of softness and aesthetic taste, since soft hair-curlers can be mutually

spaced, using their different sizes.

[0011] The above and other objects and advantages of the invention, as will result from the following description, are reached with a flexible hair-curler and a process to obtain the permanent effect using such hair-curler as claimed in their respective independent claims. Preferred embodiments and non-trivial variations of the present invention are the subject matter of the dependent claims.

[0012] It is intended that all enclosed claims are an integral part of the present description.

[0013] The present invention will be better described by some preferred embodiments thereof, provided as a non-limiting example, with reference to the enclosed drawings, in which:

- Figure 1 is a perspective view of the head which, after the first initial steps, is partitioned into more or less extended areas according to the result that has to be obtained;
- Figure 2 is a perspective view of the head (with viewer/operator in the back of the subject) that is partitioned into four areas. The number of areas changes depending on the desired result;
- Figure 3 is a view of the net-type paper into which the hair tip is protected before being wound around the soft hair-curler;
- Figure 4 is a front view of the hair-curler before being blocked and bent at its two ends;
- Figure 5 is a front view of the hair-curler after having been blocked. The central dashed part of the hair-curler 1 comprises the wounded tuft of hairs;
- Figure 6 is a front view of the head assembled with hair-curlers 1 and partitioned into areas;
- Figure 7 is the side view of the laying of soft hair-curlers in area 2;
- Figure 8 shows the rear side of the head with assembling of the hair-curler from top to bottom, curving the two ends thereof;
- Figure 9 is a side view of the head partitioned into four areas with assembled hair-curlers;
- Figure 10 is a rear view of the head partitioned into four areas; and
- Figure 11 is a side, partially sectioned view of a preferred embodiment of the flexible hair-curler of the present invention.

[0014] With reference to the Figures, a preferred embodiment of the flexible hair-curler and the process to obtain a permanent effect according to the present invention is shown and described. It will be immediately obvious that numerous variations and modifications (for example related to the number of areas dividing the head, sizes of soft hair-curlers, arrangements and parts with equivalent functionality) can be made to what is described, without departing from the scope of the invention as appears in the enclosed claims.

[0015] With reference to Figure 1, in a first preferred, but not limiting, embodiment, the partition of the head to

be treated is provided in six areas; the process comprises assembling flexible soft hair-curlers 1 by closing at their two ends.

[0016] In a second preferred embodiment, with reference to Figure 2, the partition of the head to apply the hair-curlers 1, vice versa, comprises four areas, but it is necessary to specify that the embodiments are numerous, depending on the number of areas that have to be treated, with more or less extended sizes.

[0017] The permanent effect that has to be obtained is made according to a process that is different only due to the number of partitions made on the head and due to the sizes of flexible hair-curlers 1. It is obvious that the number of partitions and the sizes of the hair-curler 1 can change at will according to the desired application.

[0018] According to the first process to obtain the permanent effect, the following steps are provided:

- washing the hairs with two shampoo applications, applying the conditioner balsam or the mask to make the hairs softer, rinsing and buffering the head;
- proceeding to partition the head into six ordered and progressive sections, namely front central, front left, front right, rear central, rear left and rear right (Figure 1): upon partitioning, the working operator is at the back of his customer;
- after having partitioned the head in many areas to which a tuft corresponds, combing the tuft itself for all its length;
- for protecting the tips, applying a net-type paper on the tuft tips, see Figure 3;
- assembling the soft hair-curler 1, winding onto the hair-curler 1 itself the tuft being taken, starting from the tip, previously protected with the net, till the head is reached, leaving only the first part of hair junction free and isolated, as can be seen in Figure 6 with a front view. Between an hair-curler 1 and the other there is no need to leave room;
- blocking the flexible hair-curler 1 without elastics, only through a slight pressure of the two ends, as shown in Figures 4-5;
- going on partitioning and winding the tufts in the soft hair-curler 1 till the barycentre;
- applying and blocking the hair-curler 1 for the whole head roundness, always following the progressive numbering shown in Figure 1 (as appears in Figure 6);
- for the side, assembling the hair-curlers 1 from top to bottom till the ear is reached, partitioning the hair tufts, as shown in Figure 7;
- for the rear side, assembling the hair-curlers 1 from top to bottom, closing the soft hair-curler 1 as shown in Figure 5;
- after having covered all areas shown in Figure 1, inserting rope-type cotton along the head perimeter to protect the eyes;
- applying the lotion on the whole head, leaving operate from 10 to 15 minutes, according to what is pro-

vided by instructions of use of the company manufacturing the lotion for permanent, rinsing, buffering without disassembling the hair-curlers 1, applying the fixing product, leaving it rest from 10 to 15 minutes according to what is provided by instructions of use of the company manufacturing the lotion for permanent, then rinsing, and buffering, and only after that, removing the flexible hair-curlers 1;

- drying by using a pre-wave-set product and the diffuser.

[0019] According to the second process (shown in Figure 2) to obtain a different waviness level modulated according to specific customer's needs, the following steps are provided:

- washing the hairs with two shampoo applications, applying the conditioner balsam or the mask to make the hairs softer, rinsing and buffering the head;
- proceeding to partition the head into four ordered and progressive sections, namely front left, front right, rear left and rear right (see Figure e): upon partitioning, the working operator is at the back of his customer;
- after having partitioned the head in many areas to which a tuft corresponds, combing the tuft itself for all its length;
- for protecting the tips, applying a net-type paper on the tuft tips see Figure 3;
- assembling the soft hair-curler 1, winding onto the hair-curler 1 itself the tuft being taken, starting from the tip, till the head is reached;
- blocking the flexible hair-curler 1 without elastics, only through a slight pressure of the two ends, according to the movement shown in Figures 4 - 5;
- going on partitioning and winding the tufts in the soft hair-curler 1 till the barycentre;
- applying and blocking the hair-curler 1 for the whole head roundness, always following the progressive numbering shown in Figure 2;
- for the side, assembling the hair-curlers 1 from top to bottom till the barycentre is reached, partitioning the hair tufts, as shown in Figure 9;
- for the rear side, assembling the hair-curlers 1 from top to bottom, see Figure 10, closing the soft hair-curler 1 as shown in Figure 5;
- after having covered all areas shown in Figure 2, inserting rope-type cotton along the head perimeter to protect the eyes;
- applying the lotion on the whole head, leaving operate from 10 to 15 minutes, according to what is provided by instructions of use of the company manufacturing the lotion for permanent, rinsing, buffering without disassembling the hair-curlers 1, applying the fixing product, leaving it rest from 10 to 15 minutes according to what is provided by instructions of use of the company manufacturing the lotion for permanent, then rinsing, and buffering, and only after

that, removing the flexible hair-curlers 1;

- drying by using a pre-wave-set product and the diffuser.

[0020] As regards the types of soft hair-curlers 1 to be assembled and their possible couplings, as first preferred, but obviously not limiting, alternative of the present invention, an hair-curler 1 is chosen whose diameter is equal to 12 mm and whose length is equal to about 20 cm.

[0021] As second preferred, but obviously not limiting, alternative of the present invention, the flexible hair-curler 1 can have a diameter of 12 mm and a length of 15 cm. The choice in the taken hair section is directly proportional to the section in the hair-curler 1.

[0022] With reference to Figure 11, the flexible hair-curler 1 according to the present invention comprises at least one containing means 2, preferably of a cylindrical shape: such means 2 are composed of at least one core made of foamed elastomer, specifically like thermoplastic rubber such as SEBS, TPE, TPEV or also silicone.

[0023] The flexible hair-curler 1 further comprises at least one metallic core 3, like a wire made of zinc-coated metal or other suitable one, and such core 3 is immersed inside the containing means 2 along the internal median line of such means 2.

[0024] The flexible hair-curler 1 is obtained through a co-extrusion process between the containing means 2 and the metallic core 3, favouring the integration of such means 2 and of such core 3 in a single block, which is the flexible hair-curler 1 itself, obviously having suitable section, length, and thickness.

[0025] Finally, the flexible hair-curler 1 comprises at least one closing element 4, preferably of a plate or even semi-circular shape, made of sealing plastic material. Every closing element 4 is suitable to seal one of the ends of such containing means 2, favouring the air-tightness of the innovative hair-curler 1.

[0026] The invention has the following advantages:

- guarantees a long endurance of the hair-curler, optimising its performances;
- removes the oxidising phenomenon of the iron wire contained inside the hair-curler, ensuring its air-tightness;
- ensures a greater resistance to wear, since the hair-curler is obtained by co-extrusion.

Claims

1. Flexible hair-curler (1) **characterised in that** it comprises at least one containing means (2), at least one metallic core (3), and at least one closing element (4) adapted to close an end of said containing means (2), said metallic core (3) being immersed inside said containing means (2).

2. Flexible hair-curler (1) according to claim 1, **characterised in that** said hair-curler (1) is adapted to be obtained by means of a co-extrusion process between said containing means (2) and said metallic core (3).

3. Flexible hair-curler (1) according to claim 1 or 2, **characterised in that** said containing means (2) are composed of at least one core made of foamed material.

4. Flexible hair-curler (1) according to any one of the previous claims, **characterised in that** said containing means (2) has a cylindrical shape.

5. Flexible hair-curler (1) according to claim 4, **characterised in that** said metallic core (3) is placed along an internal median line of said cylindrical containing means (2).

6. Flexible hair-curler (1) according to claim 1, **characterised in that** said at least one closing element (4) has a substantially semi-circular shape and is adapted to seal a respective end of said containing means (2).

7. Process for working hair, in particular to obtain the so-called "permanent" effect, comprising the steps of:

- preparing the hairs;
- proceeding to partition the head into six ordered and progressive sections, namely front central, front left, front right, rear central, rear left and rear right;
- after having partitioned the head in many areas to which a tuft corresponds, combing the tuft itself for all its length;
- assembling the soft hair-curler (1), winding on to the hair-curler (1) itself the tuft being taken, starting from the tip, previously protected with the net, till the head is reached, said flexible hair-curler (1) comprising at least one containing means (2), at least one metallic core (3), and at least one closing element (4) adapted to close an end of said containing means (2), said metallic core (3) being immersed inside said containing means (2);
- blocking the flexible hair-curler (1) without elastics, only through a slight pressure of the two ends of the hair-curler (1) from top to bottom;
- going on partitioning and winding the tufts in the soft hair-curler (1) till the barycentre;
- applying and blocking the hair-curler 1 for the whole head roundness, always following the established partitioning into sections with the above mentioned order;
- for the side, assembling the hair-curlers (1)

- from top to bottom till the barycentre is reached,
partitioning the hair tufts;
- for the rear side, assembling the hair-curlers
(1) from top to bottom, closing the soft hair-curler
(1); and 5
- covering all originally established areas for the
head.
8. Process for working hair, in particular to obtain the
so-called "permanent" effect, comprising the steps
of: 10
- preparing the hairs;
 - proceeding to partition the head into four or-
dered and progressive sections, namely front 15
left, front right, rear left and rear right;
 - after having partitioned the head in many areas
to which a tuft corresponds, combing the tuft it-
self for all its length;
 - assembling the soft hair-curler (1), winding on-
to the hair-curler (1) itself the tuft being taken,
starting from the tip, previously protected with
the net, till the head is reached, said flexible hair-
curler (1) comprising at least one containing 20
means (2), at least one metallic core (3), and at
least one closing element (4) adapted to close 25
an end of said containing means (2), said me-
tallic core (3) being immersed inside said con-
taining means (2);
 - blocking the flexible hair-curler (1) without elas-
tics, only through a slight pressure of the two
ends of the hair-curler (1); 30
 - going on partitioning and winding the tufts in
the soft hair-curler (1) till the barycentre;
 - applying and blocking the hair-curler 1 for the 35
whole head roundness, always following the es-
tablished partitioning into sections with the
above mentioned order;
 - for the side, assembling the hair-curlers (1)
from top to bottom till the barycentre is reached,
partitioning the hair tufts; 40
 - for the rear side, assembling the hair-curlers
(1) from top to bottom, closing the soft hair-curler
(1); and
 - covering all originally established areas for the 45
head.
9. Process according to claim 7 or 8, comprising, for
obtaining a better permanent effect, the further step,
after the step of blocking the flexible hair-curler 1 50
without elastics, of applying a net-type paper on the
tuft tips.
10. Process according to claim 7, 8 or 9, further com-
prising, after the step of covering all established ar- 55
eas in the head, the further steps of:
- inserting rope-type cotton along the head pe-
- rimeter in order to protect the eyes;
- applying the lotion on the whole head, leaving
operate from 10 to 15 minutes, according to what
is provided by instructions of use of the company
manufacturing the lotion for permanent, rinsing,
buffering without disassembling the hair-curlers
1, applying the fixing product, leaving it rest from
10 to 15 minutes according to what is provided
by instructions of use of the company manufac-
turing the lotion for permanent, then rinsing, and
buffering, and only after that, removing the flex-
ible hair-curlers 1;
- drying by using a pre-wave-set product and the
diffuser.
11. Process according to any one of the previous claims
7 to 10, wherein the step of preparing the hairs com-
prises the steps of washing the hairs with two sham-
poo applications, applying the conditioner balsam or
the mask to make the hairs softer, rinsing and buff-
ering the head.

Fig. 1

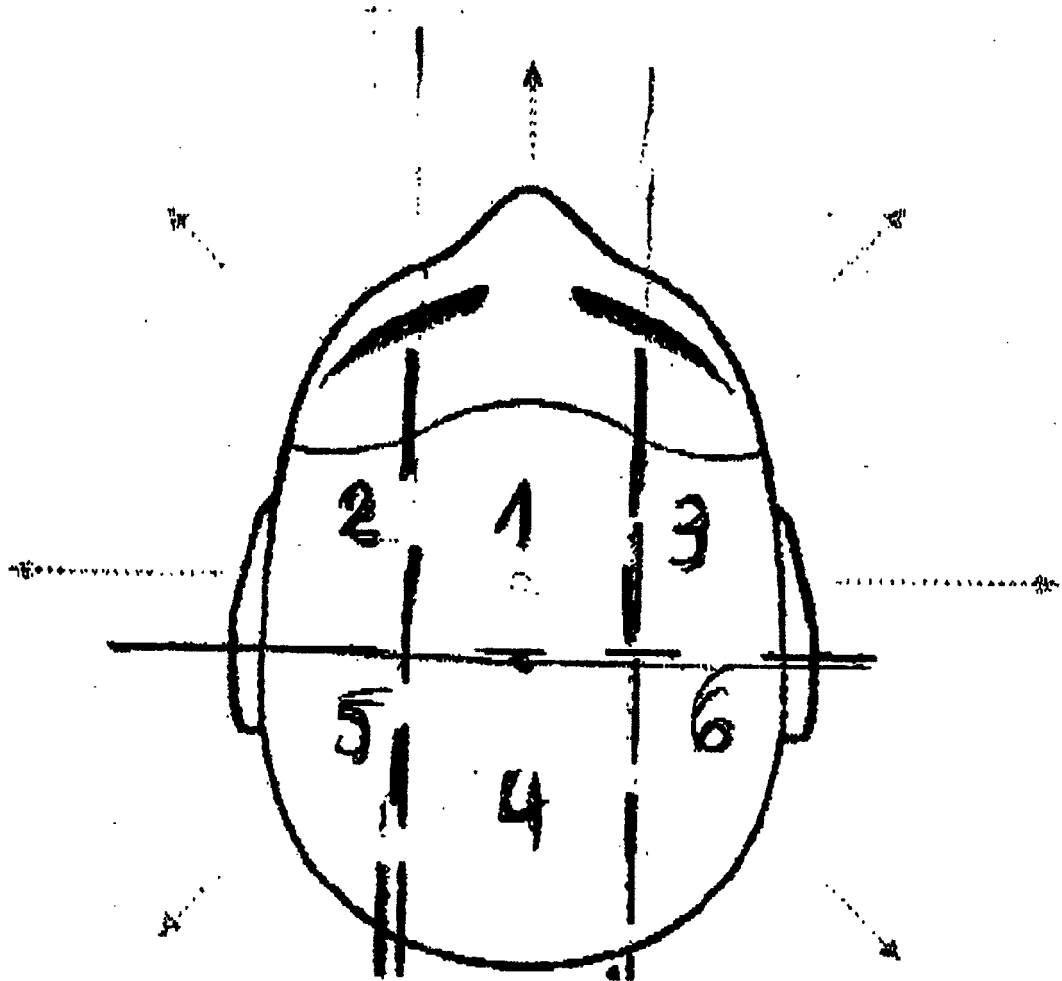


Fig. 2

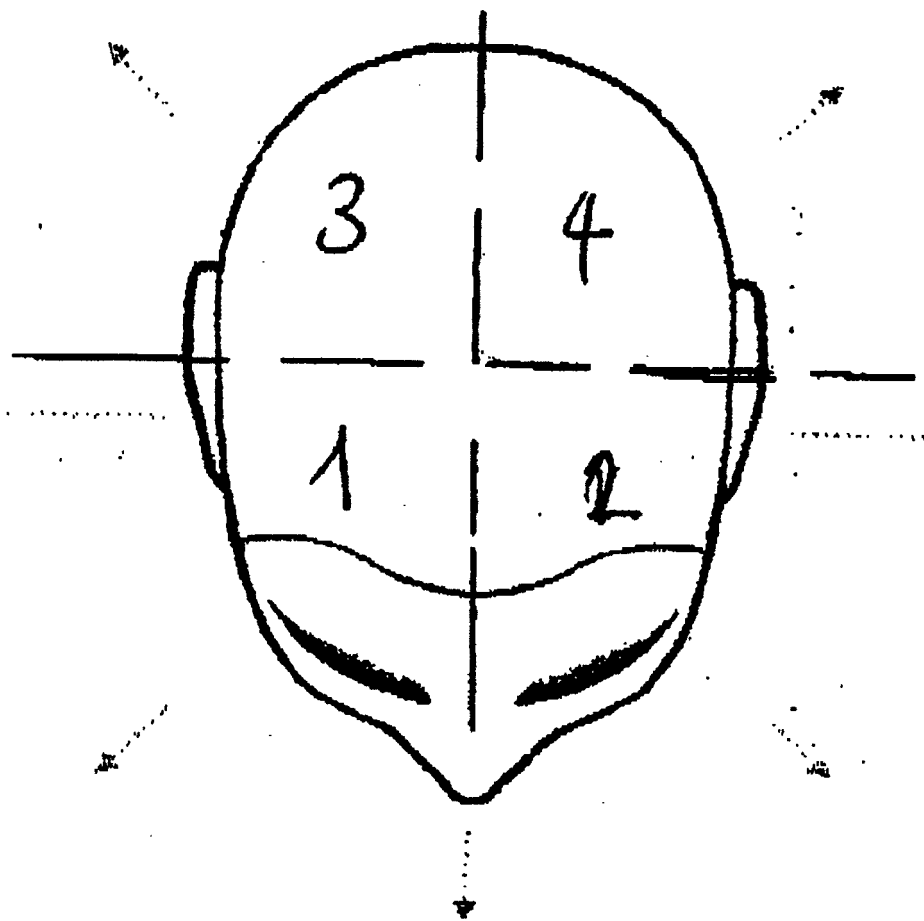


Fig. 3



Fig. 4

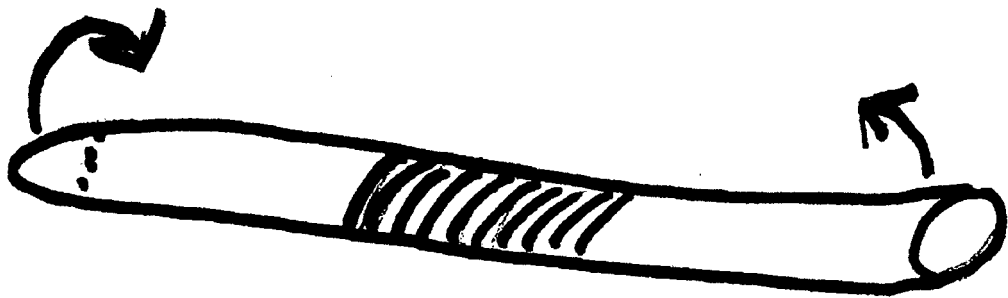


Fig. 5



Fig. 6

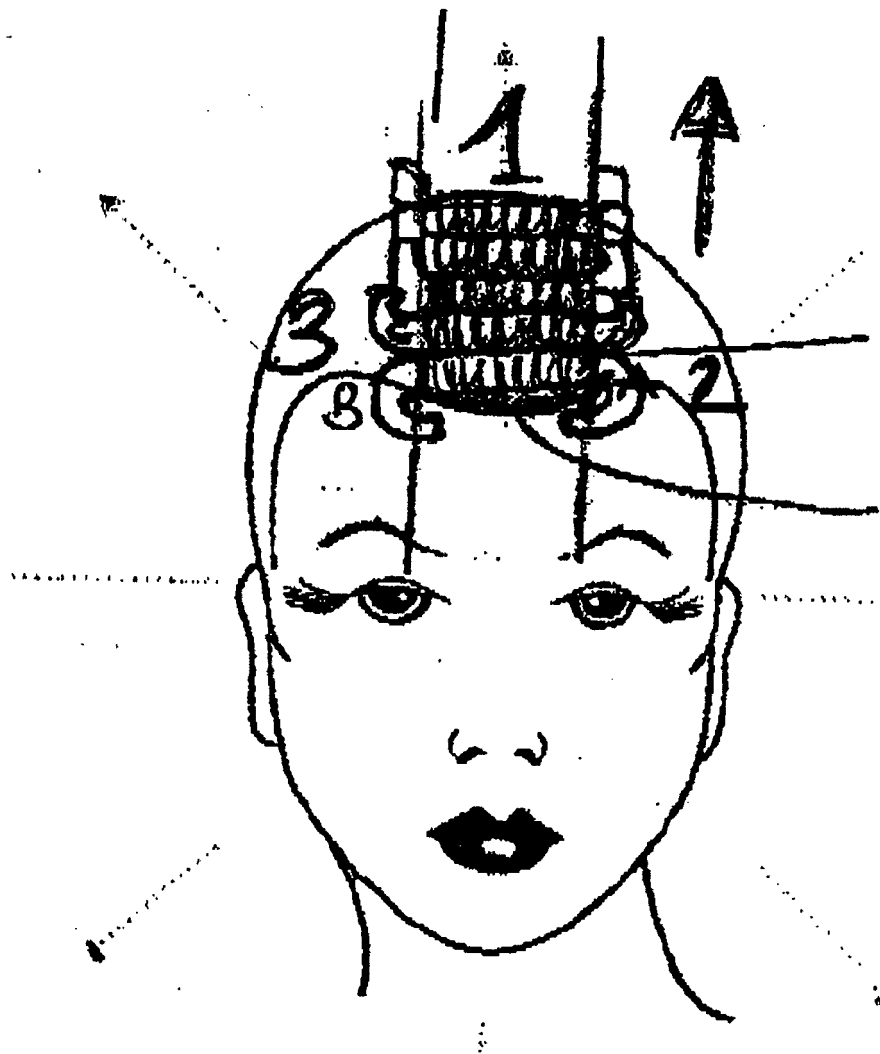


Fig. 7

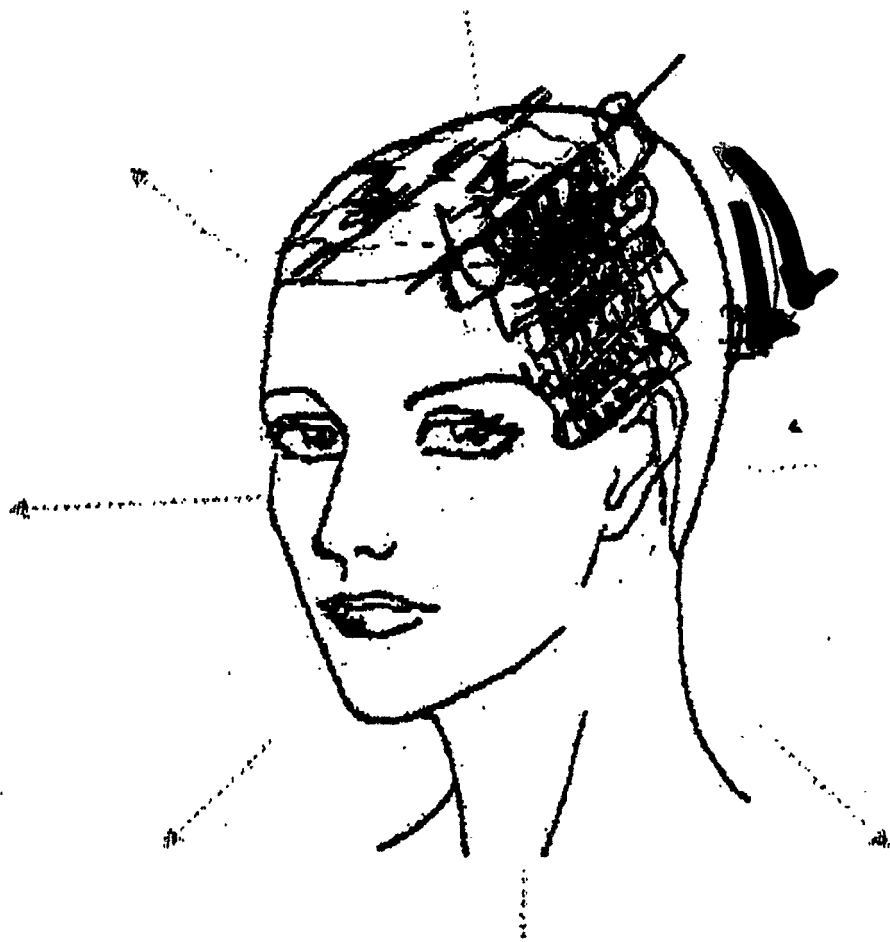


Fig. 8

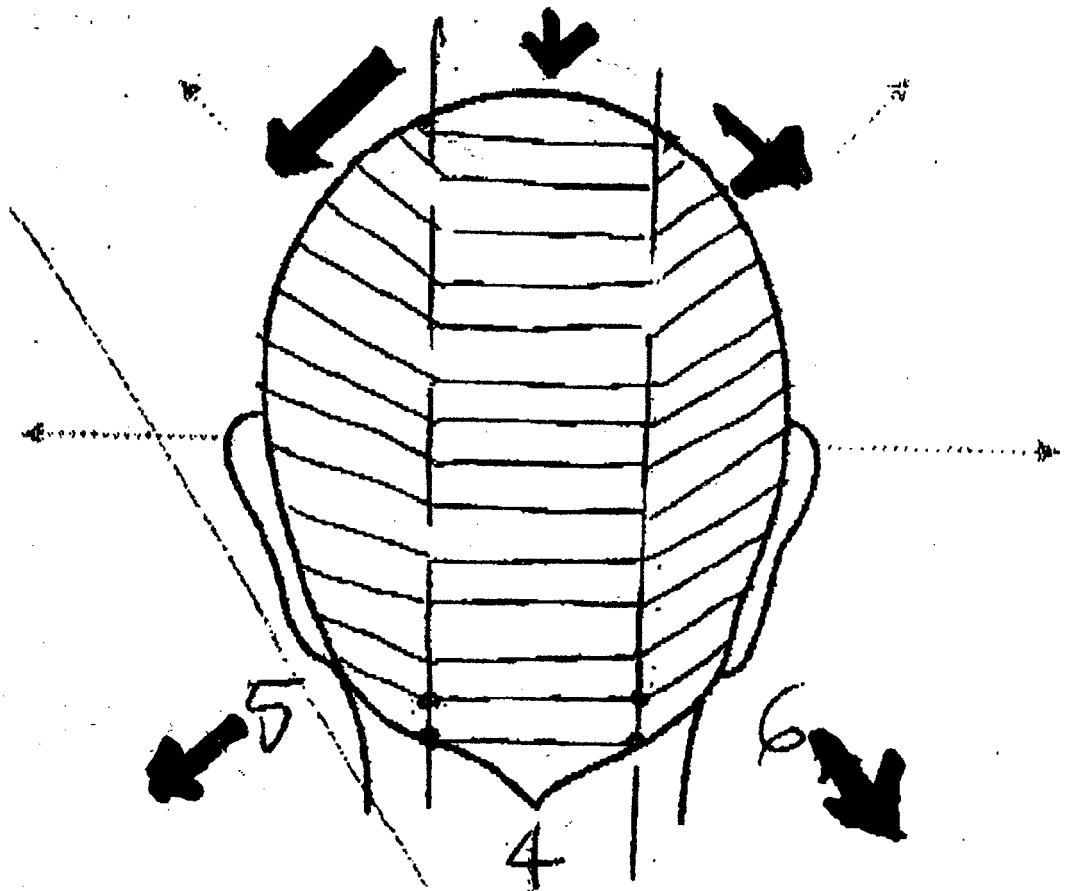
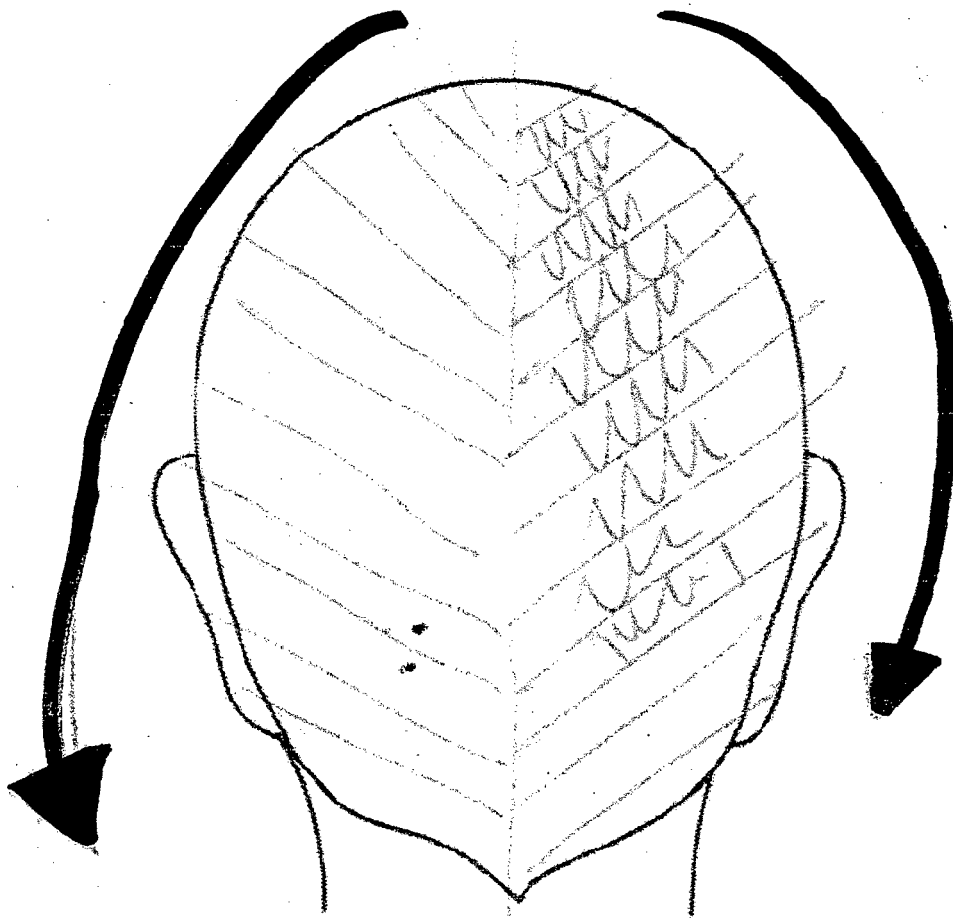


Fig. 9



Fig. 10



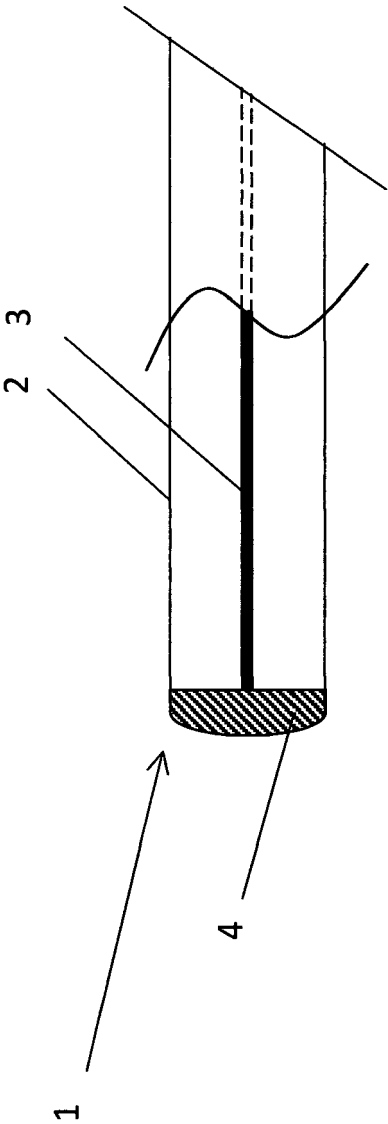


FIG. 11



EUROPEAN SEARCH REPORT

 Application Number
 EP 13 00 2817

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	US 4 648 414 A (FOX STEVE A [US] ET AL) 10 March 1987 (1987-03-10)	1-6	INV. A45D2/12 A45D2/18
Y	* abstract * * column 3, line 58 - column 4, line 42; figures 1,2,3 *	7-11	
Y	----- BeautyHealthTravel: "Real PERM PROCESSING; step-by-step", 28 March 2012 (2012-03-28), page 1, XP054975210, Retrieved from the Internet: URL:http://www.youtube.com/watch?v=MwjoHrz Iwgk [retrieved on 2013-09-19] * the whole document *	7-11	
X	----- US 4 540 006 A (COLLIS HARVEY E [GB]) 10 September 1985 (1985-09-10) * the whole document *	1,3-6	
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 September 2013	Examiner 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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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24-09-2013

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