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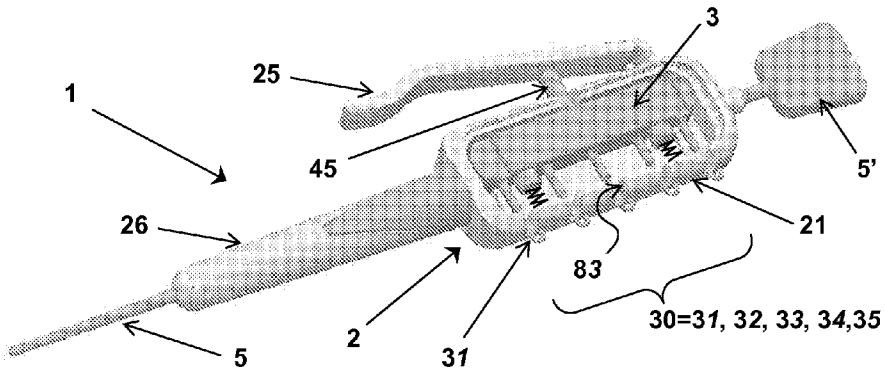
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(54) Title: DEVICE FOR MAKING HAIR STREAKS, NUANCES AND LUMINOSITIES



(57) Abstract: Device (1) for making hair streaks, nuances and/or luminosities, comprising a set (30) of arcuated needles (3i) (i = 1,2,3,4,5..,) operated simultaneously, each one of them being responsible for entrapping a distinct strand of hair, characterised in that it comprises a box (2) in which may translate a slide element (3) that operates as a single support of a set of needles that translate between two limiting positions, one of them where is defined a closed confined zone between an external surface (21) of said box and each one of the needles {31) and the other one in which the needles assume a position further apart from said surface, without the existence of any closed confined zone, being possible for the hairs to enter/exit freely into/from the zone defined by the arcuated part of the needles. A lever (25) operates a pin (45) of the slide element, and there is a handle (26). There are removable accessories, such as a comb, further handles or broad brushes (5, 5').

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DESCRIPTION

"DEVICE FOR MAKING HAIR STREAKS, *NUANCES* AND *LUMINOSITIES*"

Domain of the invention

[1] The present invention concerns a device for making streaks, *nuances* and/or *luminosities*.

State of the art

[2] The more usual system in the market is the technique of the cap that is made of a material of rubber perforated with holes, through which are pulled the filaments of hair, with a knitting needle. It is also used a comb of long handle.

[3] In the description of the state of the art appearing in the document US 3786819, published in 1974, the mentioned system is described in detail, as well as its main inconvenients.

[4] About certain specific problems resulting from the use of knitting needles one may see the described in the document US 4961439, published in 1990. The correspondent device aims at diminishing/avoiding the pain provoked either by the hitting of the scalp by the needle, or by the effect of pulling the hair.

[5] In the document US 3786819, previously mentioned, is described a device alternative to the use of the perforated caps.

[6] The other known and largely disclosed system is the one of the use of aluminium foils.

[7] With the help of a knitting needle or with the long handle of a comb, is separated a set of selected strands which are isolated from the rest of the hair, placing an aluminium foil underneath said strands. Said strands are then treated (for example dyed) while they are over the aluminium foil. Once that operation is completed the treated strands are involved by the correspondent aluminium foil, folding this one over those. It may then be continued the creation of more streaks, placed at the side or above the previous based on a new aluminium foil and so on successively. At the end, after the applied product actuates, all the aluminium foils are removed and the hair is washed and combed in a desired way.

[8] In WO 01/06887 this system is described and commented, in the discussion of the state of the art. In this last one and in other documents is described a series of devices that, serving also to make, with greater or lesser easiness, streaks, aim at comprising a deposit or container for the liquid to apply, in order to facilitate the said application. Examples of other of those devices may be found in the documents EP 1264559 A1, published in 2002, and FR 2589337 A1, made known in 1987.

[9] These devices, besides in many cases being complex, have the problem of not being practical for the application

of distinct colours, being intended for one single colour. The change of the colour is impossible or difficult, and may lead to an undesired mixture of colours, the colour intended for a new application getting mixed with the rests of the colours previously used in the device. Thus, they imply to resort to several distinct devices, accordingly to the colours that one intends to apply, which is not practical.

[10] On the other hand, when the treatment implies the use of more than one distinct product to make each streak, for example a product to bleach followed by a second one to colour, there are difficulties in guaranteeing that the hairs comprising the streaks are exactly the same during the various distinct steps of the treatment.

[11] Moreover, the majority of the devices of the state of the art do not reveal practical for the making of streaks regular but relatively spaced apart from each other.

[12] In the document US 4108184, of 1978, is described a device like a holding hair clamp, provided with spaced recesses to separate a portion of hair in various strands. As results apparent from the analysis of such document, there is foreseen no way that allows to automatically exclude from the grip, by the fixation clamp, the hairs that are placed in the alignment of the clamp zones where no recesses are defined. Thus, there is the tendency to have all the hairs of the portion initially introduced in the clamp (in its open position) imprisoned in the said clamp (once it is closed), even if they are distributed in apparently autonomous strands correspondent to the several

recesses. By opening the clamp again, the release hairs reassume their initial position, being defined a continuous strand and not several autonomous and regularly spaced strands. To avoid this from happening it would be necessary to, when closing the clamp, manually exclude from the imprisonment the hairs corresponding to the segments not provided with recess, which would imply a lot of work and would be impossible to make with one single hand. Moreover, the mentioned device, by its construction, does not allow the imprisonment of the hairs to be made close to the scalp or in its immediate proximity. Thus, the application of colour is anaesthetically made distant from the root of the hair.

[13] In the document US 4325393, of 1982, is described an implement that facilitates the separation of a group of spaced hair strands in order to allow the application of a treatment to those strands, implement that aims to overcome the inconvenients already described before of the techniques (i) of the cap and (ii) of the aluminium foil and of the comb with long handle, techniques whose main inconvenients are also described in that document. The mentioned implement is provided with a set of rotatable hook members that may be simultaneously actuated and moved from an open position to a "*closed*" position so that when the implement is place against the scalp and actuated to move the hook members from the open position to the "*closed*" position they will hookingly engage the hair in order to form spaced groups of hair strands which may then be separated from the rest of the hair and isolated from it for application of the desired treatment. The mentioned implement presents, however, three main inconvenients: (i) it is of relatively complex construction, having an

assembly that demands a lot of work, which makes difficult and more expensive the respective manufacture; (ii) it does not allow to regulate the spacing between the streaks of each group of strands that allows to separate from the rest of the hair; and (iii) the "*closed*" position does not guarantee in absolute that hairs won't get released from the separated strands, namely when these are isolated from the rest of the hair - due to the advanced position of the hook members relatively to the body of the implement, as may be visualised in the figure 3 of the respective document - which may originate an undesirable lack of uniformity of the streaks.

[14] Finally, in the document US 4732170, of 1988, is described an implement that basically combines a classic comb with an implement of the type described in the previous paragraph. However, the three main inconvenients cited maintain.

Objects of the invention

[15] The present invention aims a device that allows to face several of the inconvenients of the devices of the state of the art previously indicated and, in particular, aims a device that allies the simplicity of manufacture to the easiness of handling, namely one able to be used without difficulty with one single hand, and which allows to imprison effectively and simultaneously and in a single operation a series of strands spaced between themselves in a predefined way, with more than one possibility of spacing, said strands being maintained imprisoned (with the same hairs) until the end of the operation of separation of

said streaks from the rest of the hair, enabling the ulterior application of a treatment to the hairs that are part of those same strands, treatment that may comprise the application of one or more products, simultaneously, sequentially or intermittently.

[16] In particular, it is intended that the device is a manual apparatus that allows, in a practical and productive way, to select and imprison, without hairs escaping from the recently formed strands, a predefined number of spaced strands, in a single attempt and in a practically immediate way. In particular, it is intended that the predefined number of strands may be, at least, 5, 3 or 2 strands at a time.

[17] Other objectives of the invention will be apparent from the reading of this description.

Description of the invention

[18] For that effect, the device of the invention comprises a set of arcuated needles operated simultaneously, each one of them being responsible for entrapping a distinct strand of hair, and is characterised in that it comprises a box in which may translate a slide element that operates as a single support of a set of needles that translate with said slide element, between two limiting positions, one of them where is defined a closed confined zone between an external surface of said box and each one of the needles and the other one in which the needles assume a position further apart from said surface, without the existence of any closed confined zone, so that the hairs may freely enter into the zone defined by the

arcuated part of the needles or come out of it.

[19] Preferentially the first position indicated before is the equilibrium position, that is, the position adopted when the lever is not being operated.

[20] According to an embodiment of the invention, the direction of the movement of the slide element is substantially parallel to the direction of the body of the needles.

[21] With this invention the professionals of the hairdressing area, in particular, will have more profit and perfection in their technical work.

Brief description of the drawings

[22] Figure 1 shows, in a perspective view, an example of embodiment of the device according to the invention.

[23] Figures 2 to 4 show, also in a perspective view, the operation sequence of the said device, in three distinct phases starting from the phase represented in figure 1.

[24] Figures 5 and 6 show other examples of embodiment, represented, in each one of them, in four views (a, b, c, d). In the case of figure 5 was suppressed the representation of the springs (or equivalent elastic elements) for the benefit of the clarity.

[25] For better visualisation, in all the said figures was removed the box's closing lid.

Detailed description of a preferential embodiment

[26] Based on the particular embodiment represented, as a non limiting example, in the enclosed drawings, is described the operation of the device according to the invention.

[27] In what follows, the references used in correspondence with the drawings are the following:

[28]
- 1 - device
- 2 - box
  - 21 - external surface of the box
  - 22 - guide
  - 23 - guide
  - 25 - lever
  - 26 - handle
  - 27 - groove for comb
- 3 - slide element
  - 30 - set of arcuated needles
    - 3*i* - individual needle (*i*= 1, 2...)
      - 3*i*1 - arcuated part of the needle *i* (*i* = 1, 2...)
  - 42 - guide
  - 43 - guide
  - 45 - pin
- 5 - further handle or broad brush (or spatula)
- 5' - broad brush (or spatula)
- 6 - comb
- 7 - springs
- 80 - set of slots in the box

- 8*j* - individual slot (*j* = 1, 2...)
- 9i - individual strand (*i* = 1, 2...)

[29] Holding the handle (26) with a hand and pressuring the lever (25) (figures 1 to 4 and figure 5) or button (25') lateral (figure 6) or placed on the top, the slide element (3) - also named needle pallet - that is supported against two or more springs (7) - schematically represented - gets moving forward, from the initial position (figures 1, 6a and 6c), and compressing said springs, dragging with it the respective set (30) of needles (3*i*) - for example with 5, 3 or 2 needles, accordingly to the slide element used - (figure 2). When it reaches a second position (figures 3 and 6d) in which the tips of the needles are sufficiently apart from the external surface (21) of the box (2) of support of the slide element (3), the hairs get inserted in the valley of the arcuated end (3*i*1) of each needle, forming the separated strands (9*i*) (figure 3). By freeing the lever (or button), the needles (3*i*) retract, by the action of the springs (7) on the slide element, and the strands (9*i*) are imprisoned when the tips of the needles stand against the external surface of the box (figure 4). It may then be applied the product in the strands, according to one the classic methods, for example using an aluminium foil underneath the strands.

[30] The release of the streaks, once concluded the application of the product(s) is made in analogous way.

[31] In the case of the example of figure 5, the initial position of the needles relatively to the box is inverse to the one previously described. Thus, when the lever (25) is in the resting position (figure 5a and 5c) the set of

needles (30) is apart from the external surface (21) of the box, the hairs being able to enter in the valleys of the arcuated ends of the needles. When the lever (25) (figure 5d) is operated in the direction of the arrow, the needles retract, by action of the slide element, inside of the box, the arcuated ends staying on the outside, but standing against the external surface of the box, defining a confined closed space that may imprison effectively and simultaneously as many strands as the number of needles.

[32] As is apparent for one skilled in the art, the system of lever foreseen, namely in figures 1 to 4, may be substituted by a button, namely on the top, connected to the slide element (3).

[33] Alternatively, and as is represented in figure 6, the embodiment of the invention may be made resorting to a lateral button (25') that defines with the slide element a system of sliding wedges, this last one in itself already known. May be foreseen a spring or additional elastic element (not represented in the figure) destined to facilitate the return of the button to the initial position.

[34] As is also apparent, in the majority of the examples presented, where are mentioned springs (that alternatively may be equivalent elastic elements) that work by compression, could be mentioned identical components that work by traction, being enough for that to position such elements on the opposite side of the slide element (3).

[35] The slide elements (3) have needles (3*i*) - for example 5, 3 or 2 needles - for strands with different

thicknesses - for example two or more - and also different spacing among them (for example 3).

[36] In an embodiment, there is a set of slide elements (3), each one of them provided with a set (30) of needles (3*i*), needles that are in different number (*i*) and/or position, the slide elements being interchangeable with each other, and able to be freely removed or placed in the box (2) through an opening existent in said box - opening that is susceptible of being covered/uncovered by a lid - the *i* needles being simultaneously inserted in correspondent slots (8*j*).

[37] In another embodiment, the needles (3*i*) are able to be removably fastened to the slide element (3) - their number and/or positioning being able to vary - and they are able to be inserted in the slide element (3), even when this is already assembled in the interior of the box (2), inserting them through the slots (8*j*) correspondent to the intended position.

[38] As results from the aforementioned, the number (*i*) of needles (3*i*) will always be the same or inferior to the number (*j*) of slots (8*j*). Varying *i* (for a given *j*) one can regulate the spacing between the streaks. Varying the size of the arcuated zone (3*i*1) of the needles (3*i*) one regulates the thickness of the streaks individually considered.

[39] The distance between the needles determines the spacing between the streaks, while the size of the arcuated zone of the needles determines the wideness of each streak, individually considered. May be easily obtained uniform and

evenly distributed streaks which valorises the final aesthetic effect.

[40] The device according to the invention allows to work very thin strands in a painless fashion, as the tearing effect associated to the perforated caps is completely eliminated and, on the other hand, the needles do not penetrate the scalp, both due to its shape, and because of the fact that the pressure is not distributed only at one point, since there are always two or more needles operating simultaneously.

[41] The broad brush or further handle (5) and the broad brush (5') are removable, being able to function as autonomous accessories. Instead of the broad brushes there may be spatulas. It may also be foreseen a comb (6), preferentially removable, for example, being able to slidingly fit (see the succession of arrows in the figures 5a and 6a) in a system of grooves (27) or an equivalent one.

CLAIMS

[1] Device for making hair streaks, *nuances* and/or *luminosities*, comprising a set (30) of arcuated needles (3*i*) operated simultaneously, each one of them being responsible for entrapping a distinct strand (9*i*) of hair, **characterised in that** it comprises a box (2) in which may translate a slide element (3) that operates as a single support of a set (30) of needles (3*i*) that translate with said slide element, between two limiting positions, one of them where is defined a closed confined zone between an external surface (21) of said box and each one of the needles (3*i*) and the other in which the needles (3*i*) assume a position further apart from the surface (21), without the existence of any closed confined zone, so that the hairs may freely enter into the zone defined by the arcuated part (3*i*1) of the needles (3*i*) or come out of it.

[2] Device according to claim no. 1, **characterised in that** there is a set of slide elements (3) each one of them provided with a set (30) of needles (3*i*), needles that are in different number (*i*) and/or position, **in that** the slide elements are interchangeable with each other, being able to be freely removed or placed in the box (2) through an opening existent in said box, **in that** such opening is susceptible of being covered/uncovered by a lid, and **in that** the *i* needles are simultaneously inserted in correspondent slots (8*j*).

[3] Device according to claim no. 1, **characterised in that** the needles (3*i*) are able to be removably fastened to the slide element (3), their number and/or positioning

being able to vary.

[4] Device according to any of the previous claims **characterised in that** the size of the arcuated zone (3*i*1) of the needles varies, the needles having, namely the ones of a set (30) connected to a single slide element (3), distinct size of the arcuated zone (3*i*1), relatively to other needles, namely relatively to the ones of another set (30) connected to another slide element (3), thus allowing to obtain streaks of different thickness.

[5] Device according to any of the previous claims **characterised in that** instead of a lever (25) it is possible to have a button (25').

[6] Device according to any of the previous claims **characterised in that** there is a set of removable accessories, such as a lateral comb (6) and one or more further handles, broad brushes or spatulas (5, 5').

[7] Device according to any of the previous claims **characterised in that** the equilibrium position, that is, the position adopted when the lever is not being operated, is the one that corresponds to the situation in which the needles define with the box a closed confined zone.

[8] Device according to any of the previous claims **characterised in that** the direction of the movement of the slide element is substantially parallel to the direction of the body of the needles.

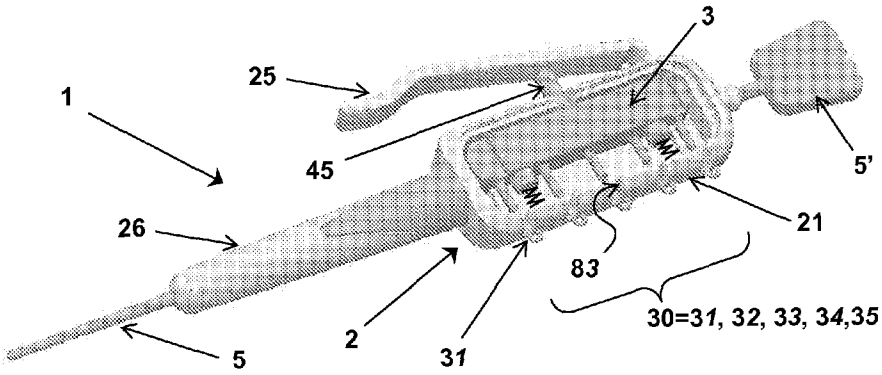


FIG. 1

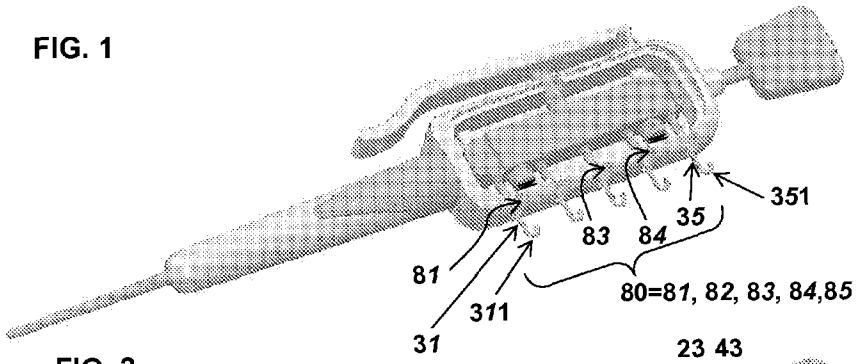


FIG. 2

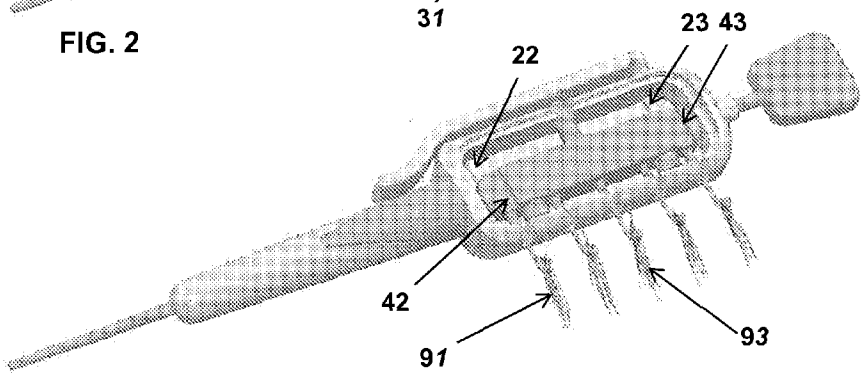


FIG. 3

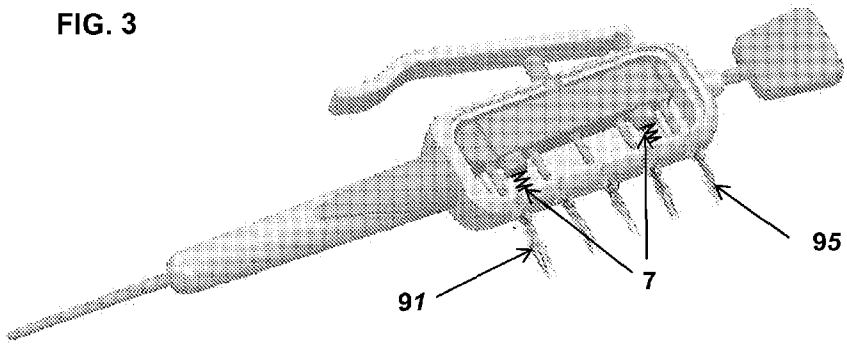


FIG. 4

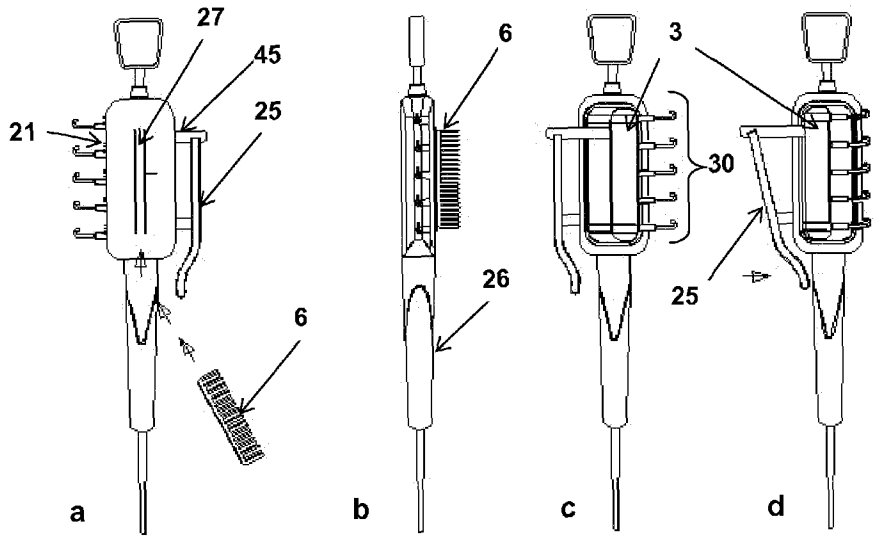


FIG. 5

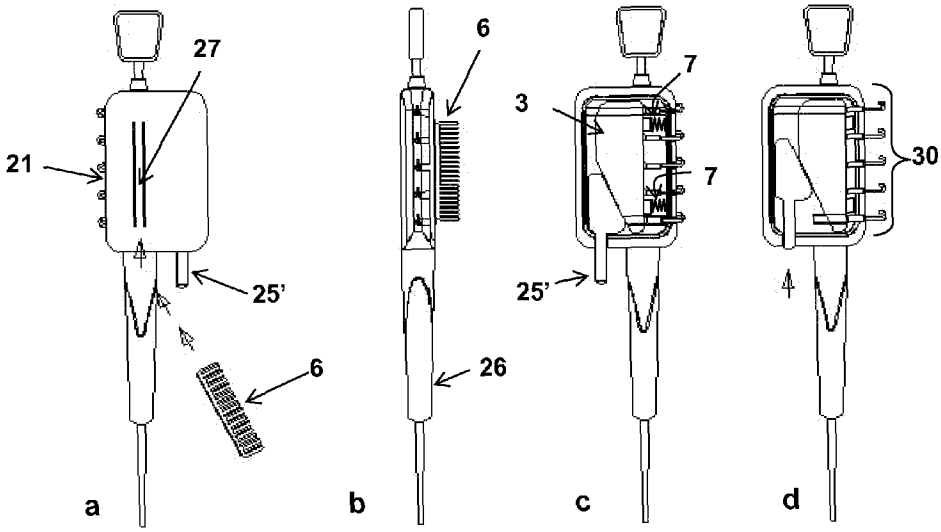


FIG. 6