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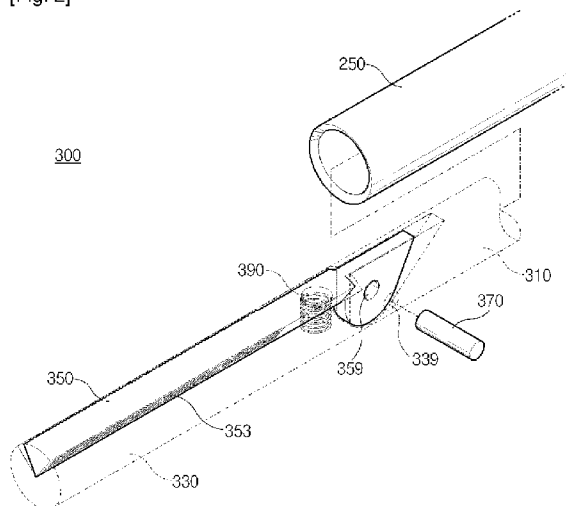
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(54) Title: CURLING MASCARA

[Fig. 2]



(57) Abstract: A curling mascara apparatus is disclosed. The curling mascara apparatus has a barrel for holding mascara liquid therein, a cover coupled to a mouth of the barrel, a makeup unit provided on an end of a support cylinder which extends inside the cover along a central axis thereof, and a button manipulating part for manipulating the makeup unit. The makeup unit includes a slide bar which is slidably inserted into the support cylinder and operated in conjunction with the button manipulating part, a lower tong which is integrally provided at an end of the slide bar, an upper tong which is hinged at an end thereof to the lower tong so as to perform a clamping operation, and an elastic member which provides elastic force such that the lower and upper tongs are rotated around a hinge axis to be opened.

Description

CURLING MASCARA

Technical Field

- [1] The present invention relates, in general, to mascara and, more particularly, to a curling mascara apparatus, which is intended to apply liquid mascara makeup to the eyelashes or to curl the eyelashes at a predetermined curvature.

Background Art

- [2] Generally, mascara is a cosmetic which is used by women to improve the appearance of their eyes. To this end, mascara is used to apply mascara liquids of various colors to the eyelashes. The mascara includes a barrel for holding mascara liquid therein, a handle for opening or closing the barrel and holding the barrel, a rod-shaped stem extending downwards from the handle, and an application part provided on the lower portion of the stem. By connecting or disconnecting the handle to or from the barrel, the application part is covered with the mascara liquid. A user applies makeup to the eyelashes with the application part covered with the mascara liquid.
- [3] Here, according to the length and shape of the brush of the application part which is the means for applying mascara liquid to eyelashes, various functions, for example, the volumizing function (the effect of making eyelashes look thick), the curling function (the effect of curling up the ends of the eyelashes), the function of making eyelashes look long (the long lash effect), and the cleaning function (the effect of preventing eyelashes from becoming tangled up with each other) are achieved. Therefore, the application part has been manufactured in various shapes.
- [4] However, it is complicated and difficult for a user, who is unaccustomed to using the mascara, to apply mascara liquid to the application part and create a desired eyelash effect, and in addition, it takes a long time to apply makeup to the eyelashes.
- [5] Thus, recently, an eyelash curler has been used as the means for solving the above-mentioned problems and for allowing for applying makeup to the eyelashes to be finished within a short period of time.
- [6] That is, after the eyelashes are previously assembled into a desired shape using the eyelash curler, the mascara liquid is applied to the eyelashes. Thereby, it is possible to rapidly apply makeup to the eyelashes such that the eyelashes have a desired shape.
- [7] However, the eyelash curler is not provided with mascara which is required to apply makeup to the eyelashes, so that a user must carry both the eyelash curler and the mascara when the user goes out or travels, and thus the volume of articles to be carried is increased.

Disclosure of Invention

Technical Problem

- [8] Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a curling mascara apparatus, which is constructed so that the functions of a curler and mascara are incorporated into one makeup tool, thus allowing a user to easily and conveniently apply makeup.

Technical Solution

- [9] In order to accomplish the above object, the present invention provides a curling mascara apparatus, having a barrel for holding mascara liquid therein, a cover coupled to a mouth of the barrel, a makeup unit provided on an end of a support cylinder which extends inside the cover along a central axis thereof, and a button manipulating part for manipulating the makeup unit, wherein the makeup unit includes a slide bar slidably inserted into the support cylinder and operated in conjunction with the button manipulating part; a lower tong integrally provided at an end of the slide bar; an upper tong hinged at an end thereof to the lower tong so as to perform a clamping operation; and an elastic member for providing elastic force such that the lower and upper tongs are rotated around a hinge axis to be opened.
- [10] The lower tong includes a pressurizing base part having a V-shaped groove; a shaft coupling guide groove extending from an inside end of the pressurizing base part; and an elastic-member mounting hole formed in a bottom of the pressurizing base part in such a way as to be located in front of the shaft coupling guide groove.
- [11] Combs having a plurality of teeth are provided on both inclined surfaces on an inner portion of the pressurizing base part.
- [12] Further, an elastic pad is provided in the bottom of the pressurizing base part.
- [13] An inner surface of the shaft coupling guide groove which is adjacent to the slide bar comprises an inclined surface.
- [14] A pinhole is formed to pass transversely through a center of the shaft coupling guide groove.
- [15] The upper tong includes a pressure wing for linearly pressurizing the bottom of the pressurizing base part of the lower tong; a shaft coupling plate extending from an end of the pressure wing, and engaged with the shaft coupling guide groove of the lower tong; and an elastic-member mounting hole formed in the pressure wing in such a way as to be located in front of the shaft coupling plate.
- [16] Combs having a plurality of teeth are provided on both inclined surfaces on an outer portion of the pressure wing.
- [17] An outer surface of the shaft coupling plate which is adjacent to the slide bar comprises an inclined surface.

- [18] A pinhole is formed to pass transversely through a center of the shaft coupling plate.
- [19] A cross section of the pressure wing has an acute angle of 45° or less.
- [20] The V-shaped groove of the pressurizing base part makes an angle from 45° to 180°.
- [21] Further, each of the lower and upper tongs is formed to be bent at a predetermined curvature.

Advantageous Effects

- [22] As described above, the present invention provides a curling mascara apparatus, which allows the operation of applying mascara liquid to the eyelashes and the operation of curling the eyelashes to be simultaneously performed with a single action of picking up and curling the eyelashes using a tong-shaped unit, thus allowing a user to easily and conveniently apply makeup, in addition to reducing the time spent on applying makeup.

Brief Description of the Drawings

- [23] Fig. 1 is an exploded perspective view illustrating the schematic construction of a curling mascara apparatus according to one embodiment of the present invention;
- [24] Fig. 2 is a perspective view illustrating a makeup unit of the curling mascara apparatus according to one embodiment of the present invention;
- [25] Fig. 3 is an exploded perspective view illustrating the makeup unit of the curling mascara apparatus according to one embodiment of the present invention;
- [26] Figs. 4 and 5 are sectional views illustrating the assembled state of the makeup unit of the curling mascara apparatus according to one embodiment of the present invention;
- [27] Figs. 6 and 7 are views illustrating the operation of the makeup unit of the curling mascara apparatus according to one embodiment of the present invention; and
- [28] Figs. 8 and 9 are views illustrating the operation of a makeup unit of a curling mascara apparatus according to another embodiment of the present invention.
- [29] <Description of reference characters of important parts>
- [30] 100: barrel 200: cover
- [31] 250: support cylinder 300: makeup unit
- [32] 310: slide bar 330: lower tong
- [33] 331: pressurizing base part 332: elastic pad
- [34] 333, 353: comb
- [35] 335, 355: elastic-member mounting hole
- [36] 337, 357: shaft coupling guide groove
- [37] 339, 359: pinhole
- [38] 350: upper tong 351: pressure wing
- [39] 357: shaft coupling plate 370: pin

[40] 390: elastic member 400: button manipulating part

Best Mode for Carrying Out the Invention

[41] The preferred embodiments of the present invention will be described below in detail with reference to the accompanying drawings.

[42] Fig. 1 is an exploded perspective view illustrating the schematic construction of a curling mascara apparatus according to one embodiment of the present invention.

[43] As shown in the drawing, the curling mascara apparatus according to the present invention includes a barrel 100 which holds mascara liquid therein, a cover 200 which is coupled to a mouth of the barrel 100, a makeup unit 300 which is provided on an end of a support cylinder 250 extending inside the cover 200 along the central axis thereof, and a button manipulating part 400 which is used to manipulate the makeup unit 300.

[44] The button manipulating part 400 is provided on the outer circumference of the cover 200 in such a way as to protrude outwards, so that the makeup unit is operated by pushing the button manipulating part. Alternatively, the makeup unit is operated by sliding the button manipulating part.

[45] Fig. 2 is a perspective view illustrating the makeup unit of the curling mascara apparatus according to one embodiment of the present invention, Fig. 3 is an exploded perspective view illustrating the makeup unit of the curling mascara apparatus according to one embodiment of the present invention, and Figs. 4 and 5 are sectional views illustrating the assembled state of the makeup unit of the curling mascara apparatus according to one embodiment of the present invention.

[46] As shown in the drawings, the makeup unit 300 is constructed so that a slide bar 310 is inserted into the tubular support cylinder 250, and slides forwards and backwards in conjunction with the button manipulating part 400. Upper and lower tongs 350 and 330 are provided on an end of the slide bar 310, and are opened or closed by the forward and backward sliding motion of the slide bar.

[47] The lower tong 330 includes a pressurizing base part 331 and a shaft coupling guide groove 337. A V-shaped groove is formed in the upper surface of a cylindrical body, which extends integrally from the slide bar 310, thus forming the pressurizing base part. The shaft coupling guide groove is provided at the inside end of the pressurizing base part 331. Here, the shaft coupling guide groove 337 is manufactured to have a flat planar shape, so that a plate having a predetermined thickness is inserted into the groove.

[48] Combs 333, having a plurality of teeth, are provided on both inclined surfaces on the inner portion of the pressurizing base part 331. Each comb 333 comprises valleys and crests which are repeatedly formed. By passing the eyelashes through the valleys, the eyelashes are combed.

- [49] Preferably, the inner surface of the shaft coupling guide groove 337, which is adjacent to the slide bar, comprises an inclined surface 337a. When the inclined surface 337a engages with the upper tong 350 to perform a clamping operation, the inclined surface functions to limit the opening angle of the upper tong 350.
- [50] A pinhole 339 is formed in the transverse direction of the shaft coupling guide groove, so that a pin 370 may be inserted into the pinhole.
- [51] Further, an elastic-member mounting hole 335 is formed in the bottom of the pressurizing base part 331 in such a way as to be located in front of the shaft coupling guide groove 337, so that an elastic member 390 is seated in the elastic-member mounting hole. The elastic-member mounting hole 335 prevents the elastic member 390 from being removed from the elastic-member mounting hole.
- [52] The upper tong 350 is hinged at one end thereof to the lower tong 330 to substantially perform clamping operation. The upper tong includes a pressure wing 351 which is in line contact with the bottom of the pressurizing base part 331 of the lower tong 330.
- [53] One side of the pressure wing 351 has the interior angle of 180° or less. More preferably, the pressure wing has the acute angle of 45° or less. Such a pressure wing 351 pressurizes the pressurizing base part 331, thus curling the eyelashes, which are interposed between the pressure wing and the pressurizing base part, at a predetermined curvature.
- [54] At this time, the curvature of the curled eyelashes can be determined according to the pressurizing force and the angle of the pressure wing 351.
- [55] The angle of the pressurizing base part 331 may be determined depending on the angle of the pressure wing 351. As shown in Figs. 4 and 5, the pressurizing base part may comprise a V-shaped groove having the angle from 45° to 180°. Mascara liquid is gathered in the V-shaped groove which is formed in this way. Thus, a user finishes putting on makeup at one time without dipping the makeup unit 300 into the barrel 100, thus leading to convenience of use.
- [56] As shown in Fig. 5, an elastic pad 332 may be provided in the bottom of the pressurizing base part 331. The elastic pad 332 absorbs the pressurizing force of the pressure wing 351, thus preventing the eyelashes from being pulled out by excessive pressure.
- [57] Further, combs 353 having a plurality of teeth are provided on both inclined surfaces on the outer portion of the pressure wing 351, thus combing the eyelashes.
- [58] A shaft coupling plate 357 is provided at one end of the pressure wing 351 in such a way as to be hinged to the shaft coupling guide groove 337 of the lower tong 330, and a pinhole 359 is formed to pass transversely through the center of the shaft coupling plate 357.

- [59] Further, a surface of the shaft coupling plate 357, which is adjacent to the slide bar, comprises an inclined surface 357a. When the upper tong 350 is rotated beyond a pre-determined angle, the inclined surface 357a comes into contact with the inclined surface 337a of the lower tong 330, thus preventing the upper tong 350 from opening any more.
- [60] Another elastic-member mounting hole 355 is formed at a position in front of the shaft coupling plate 357 in such a way as to be opposite the elastic-member mounting hole 335 of the lower tong 330.
- [61] As described above, the shaft coupling guide groove 337 of the lower tong 330 and the shaft coupling plate 357 of the upper tong 350 are arranged in such a way that their pinholes 339 and 359 are aligned with each other. In such a state, the pin 370 is inserted into the pinholes, so that the upper and lower tongs are coupled to each other.
- [62] Here, the operation of opening the upper and lower tongs 350 and 330 is performed by the elastic operation of the elastic member 390 which is inserted between the elastic-member mounting holes 355 and 333.
- [63] Hereinafter, the operation of the curling mascara apparatus according to the present invention will be described with reference to the accompanying drawings.
- [64] Figs. 6 and 7 are views illustrating the operation of the makeup unit of the curling mascara apparatus according to one embodiment of the present invention, in which Fig. 6 illustrates the state in which the upper and lower tongs 350 and 330 of the makeup unit 300 are closed, and Fig. 7 illustrates the state in which the upper and lower tongs 350 and 330 of the makeup unit 300 are opened.
- [65] First, a user separates the cover 200 from the barrel 100, and then places the makeup unit 300 near to the eyelashes. In such a state, the user manipulates the button manipulating part 400 to operate the slide bar 310.
- [66] At this time, the slide bar 310 is inserted into the support cylinder 250, and is connected at one end thereof to the button manipulating part 400 to be operated in conjunction with the button manipulating part. By pushing or pulling the button manipulating part 400, the slide bar moves horizontally, the makeup unit 300, extending from the other end of the slide bar, moves forwards.
- [67] The construction of the portion which joins the slide bar 310 with the button manipulating part 400 may be embodied in various ways. A link may be connected between the slide bar 310 and the button manipulating part 400 so that the slide bar is operated in conjunction with the button manipulating part.
- [68] Further, the button manipulating part 400 reciprocates in the vertical direction of the cover 200, and the vertical force is converted into horizontal force, so that the horizontal force is transmitted to the slide bar 310, and thus the slide bar 310 moves in a horizontal direction.

- [69] In this case, contact surfaces of the button manipulating part 400 and the slide bar 310 comprise facing inclined surfaces, so that the conversion of direction is done by the sliding motion.
- [70] At this time, the makeup unit 300 is covered with the mascara liquid.
- [71] Here, referring to Fig. 6, the hinge axis of the makeup unit 300, that is, the coupled position of the pin 370 is located in the support cylinder 250.
- [72] That is, part of the upper and lower tongs 350 and 330 is trapped by the support cylinder 250. The upper and lower tongs 350 and 330 are not rotated around the pin 370 but are closed. When the pin 370 is moved to an end of the support cylinder 250, the upper and lower tongs 350 and 330 protruding out of the support cylinder 250 are ready to rotate around the pin 370. The upper and lower tongs 350 and 330 are opened by the elastic operation of the elastic member 390, as shown in Fig. 7.
- [73] Thereafter, a user places the eyelashes between the open upper and lower tongs 350 and 330. In order to grip the eyelashes, the button manipulating part 400 is manipulated so that the slide bar 310 is retracted into the support cylinder 250.
- [74] At this time, the outer circumferences of the upper and lower tongs 350 and 330 are in contact with the inner circumference of the support cylinder 250. Thereby, the upper and lower tongs 350 and 330 are closed, so that the eyelashes are evenly arranged between the pressure wing 351 and the pressurizing base part 331 and are compressed.
- [75] As such, in the state where the eyelashes are compressed, the user holds the cover 200 and causes the eyelashes to curl upwards.
- [76] Through the curling operation, the mascara liquid is applied to the eyelashes, and simultaneously, the eyelashes are curled at a predetermined curvature.
- [77] The makeup operation may be performed in reverse order by changing the design of the button manipulating part 400.
- [78] That is, the upper and lower tongs 350 and 330 may be always in an open state as shown in Fig. 7. In such a state, the user manipulates the button manipulating part 400. Thereby, as shown in Fig. 6, the slide bar 310 is retracted into the support cylinder 250, so that the upper and lower tongs are closed.
- [79] Figs. 8 and 9 are views illustrating the operation of a makeup unit of the curling mascara apparatus according to another embodiment of the present invention. As shown in the drawings, a lower tong 330 and an upper tong 350 of the makeup unit 300 may be curved at a predetermined curvature.
- [80] The reason is because the eyelid of a human has a predetermined curvature. When the upper and lower tongs 350 and 330 are manufactured such that the curvature thereof approximates the shape of the eyelid, a user can more easily and conveniently apply makeup on the eyelashes.

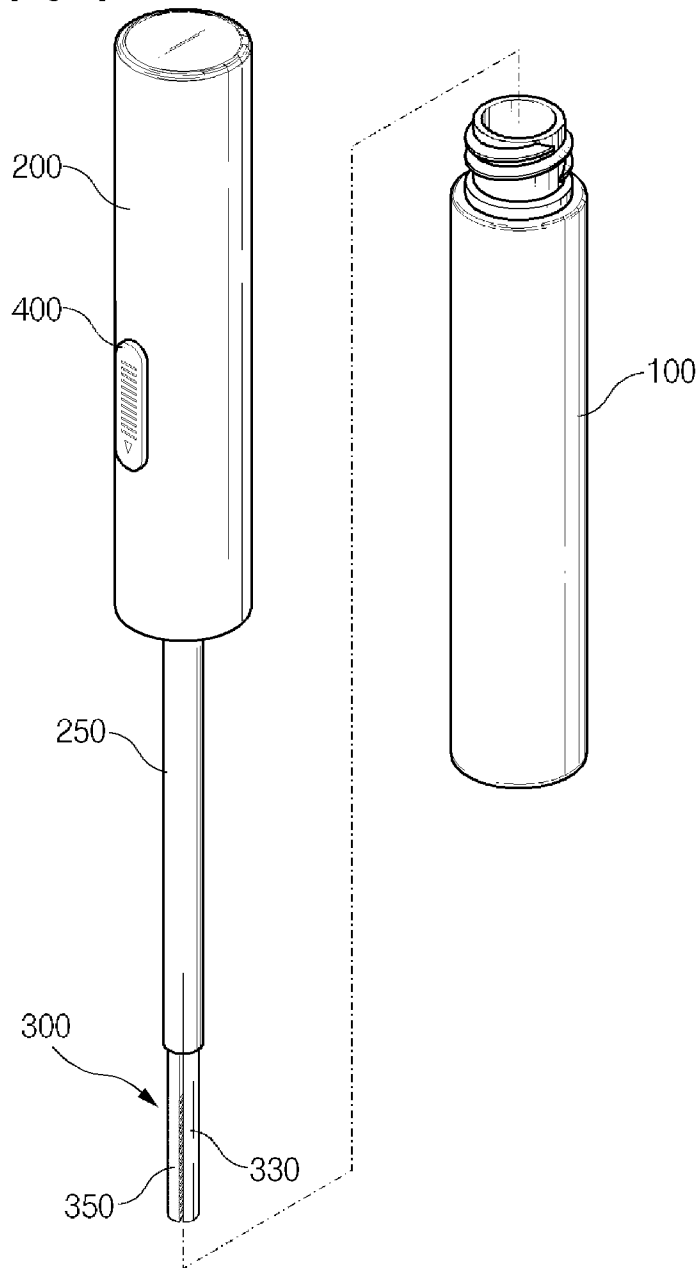
Claims

- [1] A curling mascara apparatus, having a barrel for holding mascara liquid therein, a cover coupled to a mouth of the barrel, a makeup unit provided on an end of a support cylinder which extends inside the cover along a central axis thereof, and a button manipulating part for manipulating the makeup unit, wherein the makeup unit comprises:
- a slide bar slidably inserted into the support cylinder and operated in conjunction with the button manipulating part;
 - a lower tong integrally provided at an end of the slide bar;
 - an upper tong hinged at an end thereof to the lower tong so as to perform a clamping operation; and
 - an elastic member for providing elastic force such that the lower and upper tongs are rotated around a hinge axis to be opened.
- [2] The curling mascara apparatus according to claim 1, wherein the lower tong comprises:
- a pressurizing base part having a V-shaped groove;
 - a shaft coupling guide groove extending from an inside end of the pressurizing base part; and
 - an elastic-member mounting hole formed in a bottom of the pressurizing base part in such a way as to be located in front of the shaft coupling guide groove.
- [3] The curling mascara apparatus according to claim 2, wherein combs having a plurality of teeth are provided on both inclined surfaces on an inner portion of the pressurizing base part.
- [4] The curling mascara apparatus according to claim 2, wherein an elastic pad is provided in the bottom of the pressurizing base part.
- [5] The curling mascara apparatus according to claim 2, wherein an inner surface of the shaft coupling guide groove which is adjacent to the slide bar comprises an inclined surface.
- [6] The curling mascara apparatus according to claim 2, wherein a pinhole is formed to pass transversely through a center of the shaft coupling guide groove.
- [7] The curling mascara apparatus according to claim 1, wherein the upper tong comprises:
- a pressure wing for linearly pressurizing the bottom of the pressurizing base part of the lower tong;
 - a shaft coupling plate extending from an end of the pressure wing, and engaged with the shaft coupling guide groove of the lower tong; and
 - an elastic-member mounting hole formed in the pressure wing in such a way as

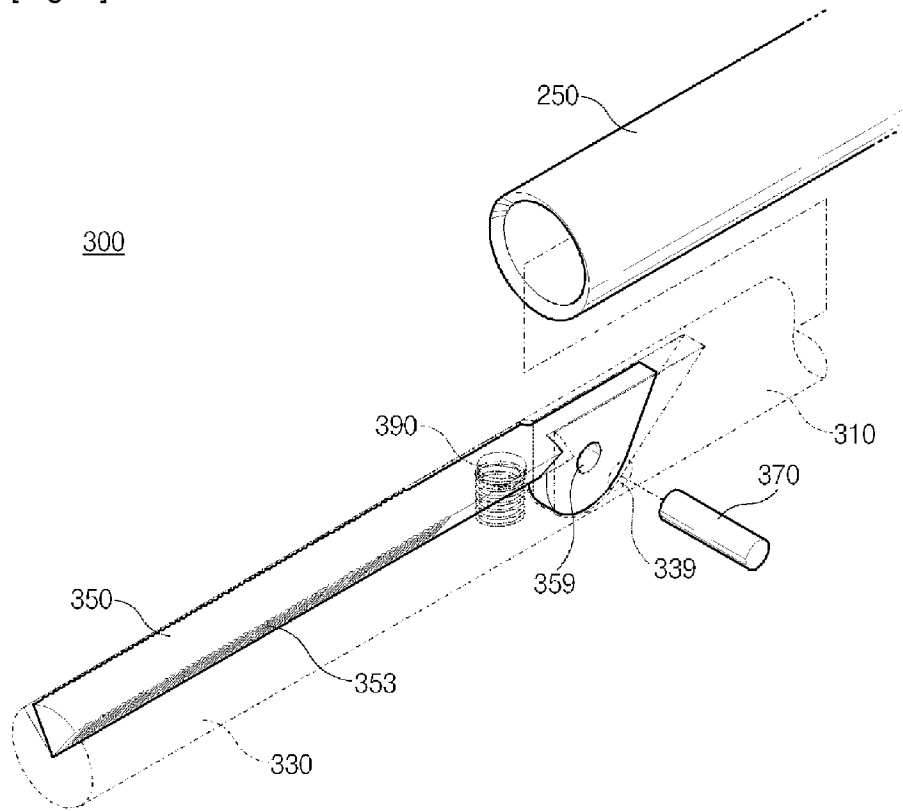
to be located in front of the shaft coupling plate.

- [8] The curling mascara apparatus according to claim 7, wherein combs having a plurality of teeth are provided on both inclined surfaces on an outer portion of the pressure wing.
- [9] The curling mascara apparatus according to claim 7, wherein an outer surface of the shaft coupling plate which is adjacent to the slide bar comprises an inclined surface.
- [10] The curling mascara apparatus according to claim 7, wherein a pinhole is formed to pass transversely through a center of the shaft coupling plate.
- [11] The curling mascara apparatus according to claim 7, wherein a cross section of the pressure wing has an acute angle of 45° or less.
- [12] The curling mascara apparatus according to claim 2, wherein the V-shaped groove of the pressurizing base part makes an angle from 45° to 180° .
- [13] The curling mascara apparatus according to claim 1, wherein each of the lower and upper tongs is formed to be bent at a predetermined curvature.

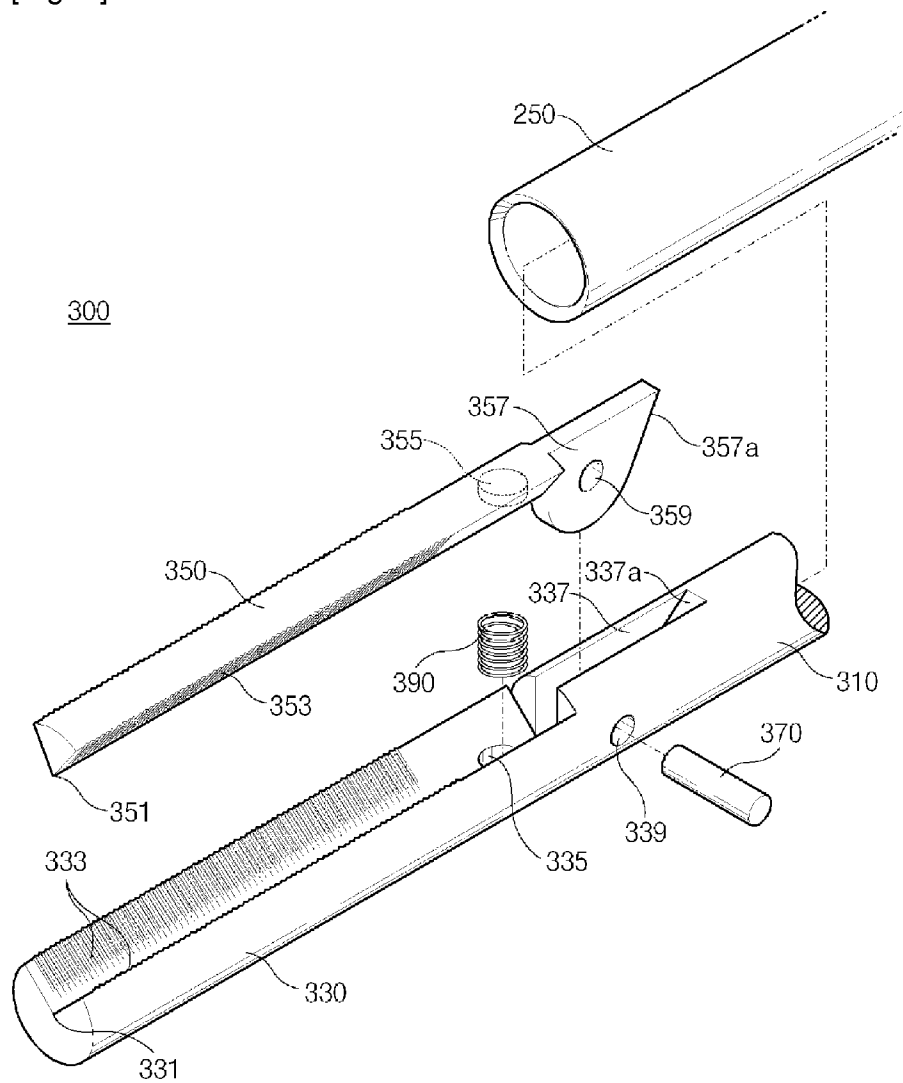
[Fig. 1]



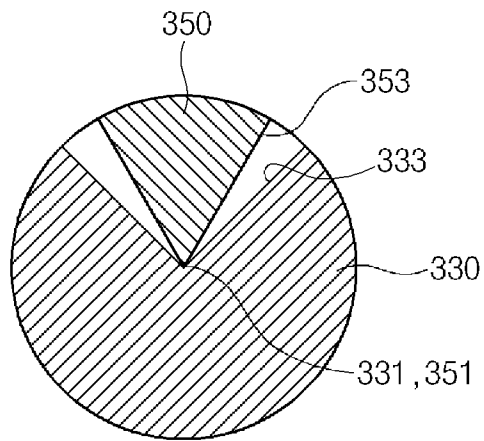
[Fig. 2]



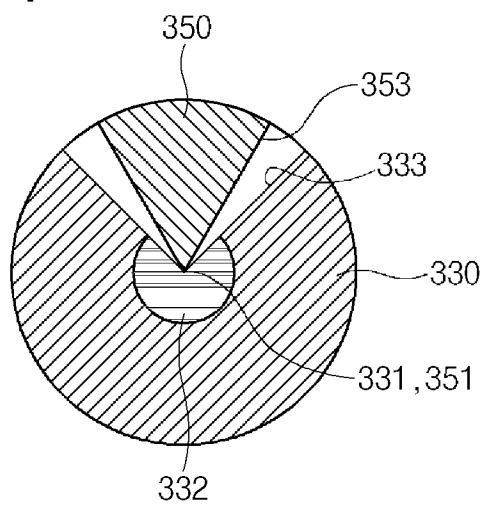
[Fig. 3]



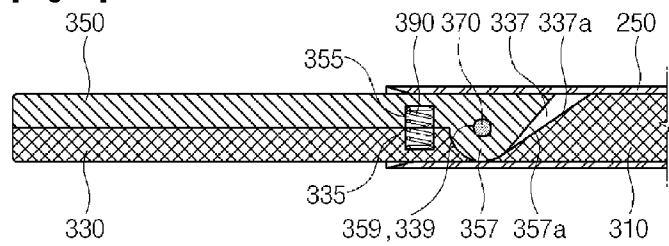
[Fig. 4]

300

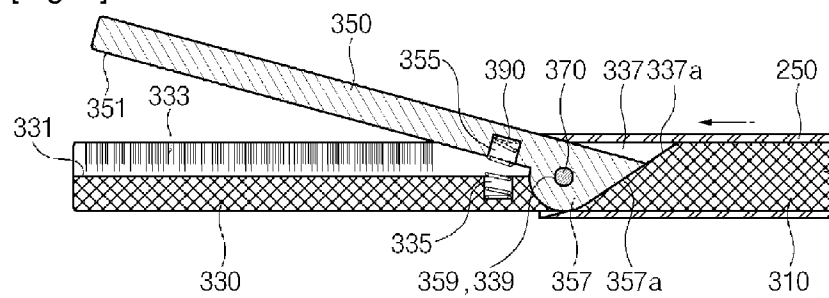
[Fig. 5]

300

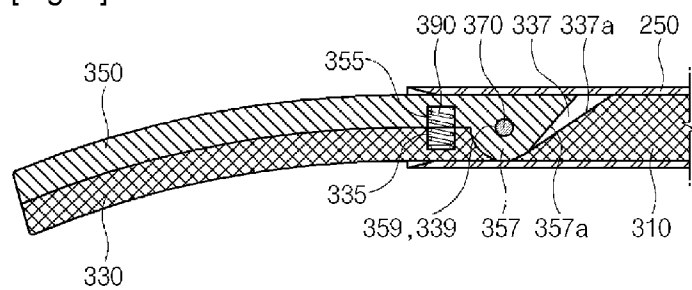
[Fig. 6]



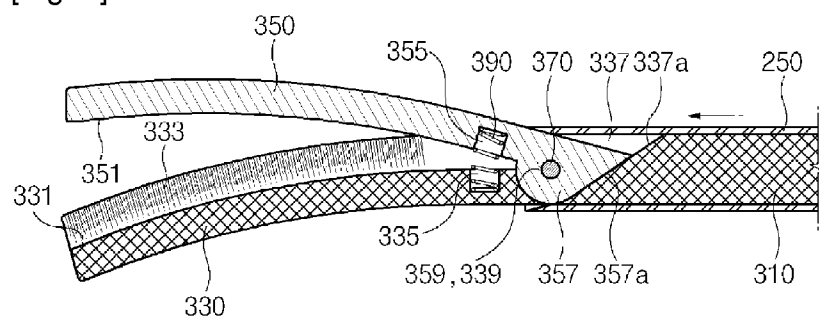
[Fig. 7]



[Fig. 8]



[Fig. 9]



A. CLASSIFICATION OF SUBJECT MATTER***A45D 34/04(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)

IPC 8 : A45D 34/04

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 since 1975

Japanese Utility models and applications for Utility models since 1975

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

eKIPASS(KIPO Internal) & Keywords: mascara, applicator, sliding, tongs

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 01-153115 U (AISHIN, INC.) 23 October 1989 see the claims and figures 1-11.	1, 7, 8, 10
Y	JP 2007-020793 A (MITSUBIHI PENCIL, INC.) 01 February 2007 see the abstract and figures 1-9.	1, 7, 8, 10
A	JP 57-057510 A (KANEBO, INC.; KATSUSHIKA, INC.) 06 April 1982 see the claims and figures 1-6.	1-13
A	JP 57-173604 U (KA YABA, INC.) 01 November 1982 see the claims and figures 1-2.	1-13



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

13 FEBRUARY 2008 (13.02.2008)

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2007/003940Patent document
cited in search reportPublication
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JP 01-153115 U

23. 10. 1989

NONE

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01.02.2007

NONE

JP 57-057510 A

06.04.1982

NONE

JP 57-173604 U

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NONE