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(54) **Cosmetic Pen**

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Stylo cosmétique

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(56) References cited:  
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## Description

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

**[0001]** The present invention relates to a cosmetic pen and, more particularly, to a cosmetic pen with an applicator which can let the cosmetic liquid stored inside the cosmetic pen to flow out smoothly and to be smeared evenly.

#### 2. Description of the Related Art

**[0002]** FIG. 1 shows a conventional cosmetic pen 10 including a pen tube 12, a liquid storage core 14 received in the pen tube 12, an applicator 16 disposed inside the pen tube 12 and engaged to a front end of the liquid storage core 14, a front cylinder 18 connected to a front end of the pen tube 12, and a cover 20 mounted on a rear end of pen tube 12. The liquid storage core 14 contains cosmetic liquid such as cosmetic water, essential oil, lip gloss, etc. The applicator 16 includes a brush 22 made of fibers and two plastic layers 24 and 26 enclosing the brush 22. The brush 22 includes a tip 28 on a front end thereof. A rear end of the applicator 16 is in contact with the liquid storage core 14 so that the cosmetic liquid stored inside the liquid storage core 14 can be delivered to the tip 28 of the brush 22 by means of capillarity. As a result, the usage for smearing can be achieved. However, the manufacture of the applicator 16 of the conventional cosmetic pen 10 is inconvenient and costly. More specifically, cosmetic liquid contains powder in particle form which is the cause for clogging during the delivery and flowage of the cosmetic liquid through the brush 22. Consequently, for the cosmetic liquid to flow out smoothly from the applicator 16, the brush 22 of the applicator 16 needs to be enclosed with the plastic layers 24 and 26 which are two respective manufacturing procedures. Furthermore, the two plastic layers 24 and 26 need to be processed with cutting to form air slots, and the front end of the brush 22 needs processing to form the tip 28. The processing procedures are troublesome.

### BRIEF SUMMARY OF THE INVENTION

**[0003]** Thus, it is an objective of the present invention to overcome the aforementioned shortcoming and deficiency of the prior art by providing a cosmetic pen with an applicator specially designed for the smooth flow out of cosmetic liquid while allowing easy assembly and manufacturing of the applicator of the cosmetic pen.

**[0004]** To achieve the foregoing objective, a cosmetic pen of the present invention includes a pen tube, a liquid storage core received in the pen tube, and an applicator. The pen tube includes front and rear portion spaced in an axial direction. A front cylinder is mounted to the front portion of the pen tube and includes a through-hole and

a ventilation slot in communication with the through-hole. The liquid storage core is received inside the pen tube and contains cosmetic liquid. The applicator is received in the front portion of the pen tube and extends through the through-hole of the front cylinder. The applicator includes a brush and a sleeve. The brush includes front and rear ends spaced in the axial direction. The sleeve includes upper and lower ends spaced in the axial direction and a receiving hole extending from the upper end through the lower end of the sleeve and receiving the brush. The front end of the brush projects out of the lower end of the sleeve, and the upper end of the sleeve is engaged in the liquid storage core. The sleeve further includes an air slot in communication with the receiving hole of the sleeve. The air slot includes front and rear sections spaced in the axial direction. The rear section of the air slot of the sleeve is disposed inside the liquid storage core, and the front section of the air slot of the sleeve is located outside the liquid storage core and in communication with the ventilation slot of the front cylinder.

**[0005]** In a preferred form, the brush is made of a bundle of fibers, and the sleeve is made of metal. A diameter of the rear end of the brush is larger than a diameter of the receiving hole of the sleeve so that the rear end of the brush is positioned on the upper end of the sleeve. A cover portion extends upward from the upper end of the sleeve and is bent downward to cover the rear end of the brush.

**[0006]** Preferably, the air slot extends in the axial direction and has an axial length of 15%-35% of an overall length of the sleeve in the axial direction.

**[0007]** Preferably, the rear end of the brush is connected together and has an enlarged diameter, and the front end of the brush is formed in a tip shape.

**[0008]** The present invention will become clearer in light of the following detailed description of an illustrative embodiment of this invention described in connection with the drawings.

### DESCRIPTION OF THE DRAWINGS

**[0009]** The illustrative embodiment may best be described by reference to the accompanying drawings where:

FIG. 1 shows a cross-sectional view of a conventional cosmetic pen;

FIG. 2 shows an exploded, perspective view of a cosmetic pen according to the preferred teachings of the present invention.

FIG. 3 shows a side plan view of the cosmetic pen of FIG. 2.

FIG. 4 shows a cross-sectional view of the cosmetic pen of FIG. 3 and an enlarged view of a circled portion of the cosmetic pen of FIG. 4; and

FIG. 5 shows three schematic views illustrating the assembly of an applicator of the cosmetic pen of FIG.

2.

## DETAILED DESCRIPTION OF THE INVENTION

**[0010]** A cosmetic pen according to the preferred teachings of the present invention is shown in FIGS. 2 through 4 of the drawings and generally designated 30. The cosmetic pen 30 includes a pen tube 34, a liquid storage core 36 received inside the pen tube 34, a front cylinder 40 connected to a front portion 38 of the pen tube 34, a cover 44 mounted on a rear portion 42 of the pen tube 34, and an applicator 32. The pen tube 34 is in the form of a hollow tube body. The liquid storage core 36 contains cosmetic liquid such as cosmetic water, essential oil, lip gloss, etc. The front cylinder 40 includes a through-hole 46 extending in an axial direction of the pen tube 34 and a ventilation slot 48 in communication with the through-hole 46. The applicator 32 is received in the front portion 38 of the pen tube 34 and extends through the through-hole 46 of the front cylinder 40.

**[0011]** The present invention relates more particularly to the structure of the applicator 32. The applicator 32 includes a brush 50 made of a bundle of fibers, and a sleeve 52 made of metal. The fibers for the brush 50 can be of such as cotton, linen, silk, etc., and long and fine woolen fibers would be preferable. The brush 50 includes front and rear ends 56 and 54 spaced in the axial direction. The rear end 54 of the brush 50 is connected together and has an enlarged diameter, while the front end 56 of the brush 50 is formed in a tip shape. The sleeve 52 includes upper and lower ends 58 and 60 spaced in the axial direction and a receiving hole 62 extending from the upper end 58 through the lower end 60 of the sleeve 52. The sleeve 52 further includes an air slot 64 in communication with the receiving hole 62 and extending in the axial direction. The air slot 64 includes front and rear sections 68 and 70 spaced in the axial direction (FIG. 4).

**[0012]** Referring to FIGS. 5(a) and 5(b), the brush 50 is inserted inside the receiving hole 62 from the upper end 58 of the sleeve 52. The diameter of the rear end 54 of the brush 50 is a bit larger than a hole diameter of the receiving hole 62 such that the rear end 54 is positioned on the upper end 58 of the sleeve 52 after the brush 50 is inserted in the sleeve 52. Further, a circle shaped cover portion 66 extends upward from the upper end 58 of the sleeve 52 and is bent downward to cover the rear end 54 of the brush 50 after brush 50 is received in the receiving hole 62 of the sleeve 52, as shown in FIG. 5(c). Consequently, the brush 50 is positioned in place and can not be moved upward relative to the brush 50. Furthermore, the cover portion 66 in FIG. 5(a) provides a guide for the brush 50 to abut against so that the brush 50 can be smoothly inserted into the receiving hole 62 of the sleeve 52. Moreover, the sleeve 52 can be pressed inward to clamp the brush 50 more tightly after the brush 50 is received in the sleeve 52.

**[0013]** Referring to FIG. 4, the upper end 58 of the sleeve 52 of the applicator 32 is engaged in the front end

of the liquid storage core 36 with the rear section 70 of the air slot 64 of the sleeve 52 disposed inside the liquid storage core 36 and with the front section 68 of the air slot 64 of the sleeve 52 located outside the liquid storage core 36. As the rear section 70 of the air slot 64 is disposed inside the liquid storage core 36, the cosmetic liquid stored inside the liquid storage core 36 can be penetrated through the air slot 64 into the brush 50 and can be further delivered to the front end 56 of the brush 50 by means of capillarity for smearing. On the other hand, the front section 68 of the air slot 64 is located outside the liquid storage core 36 and is in communication with the ventilation slot 48 of the front cylinder 40 for introducing air, allowing the cosmetic liquid soaked in the brush 50 to flow out smoothly and to be smeared evenly.

**[0014]** Preferably, the air slot 64 extends in the axial direction and has an axial length of 15%-35% of an overall length of the sleeve 52 in the axial direction. It may not be smooth for the cosmetic liquid to flow out from the applicator 32 if the axial length ratio of the air slot 64 to the sleeve 52 is less than 15%. The amount of cosmetic liquid soaked in the brush 50 may be too much if the axial length ratio of the air slot 64 to the sleeve 52 is more than 35%.

**[0015]** The cosmetic pen 30 of present invention includes a specially designed applicator 32 so that the cosmetic liquid soaked in the brush 50 can be delivered and flowed smoothly without clogging. Moreover, the assembly of the brush 50 and the sleeve 52 of the applicator 32 is convenient; therefore, the cosmetic pen 30 is easy to manufacture, and the cost for manufacturing, assembling, and labor are cut. Further, the powder of the cosmetic liquid does not adhere on the metal sleeve 52, thus, the nature of the cosmetic liquid flowed out from the applicator 32 will not become thin or be diluted after a certain period of usage of the cosmetic pen 30.

**[0016]** Thus since the invention disclosed herein may be embodied in other specific forms without departing from general characteristics thereof, some of which forms have been indicated, the embodiments described herein are to be considered in all respects illustrative and not restrictive. The scope of the invention is to be indicated by the appended claims, rather than by the foregoing description.

## Claims

1. A cosmetic pen (30) comprising:

a pen tube (34) including front (38) and rear portions spaced in an axial direction;  
a liquid storage core (36) received inside the pen tube (34) and containing cosmetic liquid;  
a front cylinder (40) mounted to the front portion (38) of the pen tube (34) and including a through-hole (46) and a ventilation slot (48) in communication with the through-hole (46), and

- an applicator (32) received in the front portion (38) of the pen tube (34) and extending through the through-hole (46) of the front cylinder (40), with the applicator (32) including a brush (50) and a sleeve (52), with the brush (50) including front (56) and rear (54) ends spaced in the axial direction, with the sleeve (52) including upper (58) and lower (60) ends spaced in the axial direction and a receiving hole (62) extending from the upper (58) end through the lower (60) end of the sleeve (52) and receiving the brush (50), with the front end (56) of the brush (50) projecting out of the lower end (60) of the sleeve (52), with the upper end (58) of the sleeve (52) engaged in the liquid storage core (36), with the sleeve (52) further including an air slot (64) in communication with the receiving hole (62) of the sleeve (52) with the air slot (64) including front (68) and rear (70) sections spaced in the axial direction, with the rear section (70) of the air slot (64) of the sleeve (52) disposed in the liquid storage core (36), and with the front section (68) of the air slot (64) of the sleeve (52) located outside the liquid storage core (36) and being in communication with the ventilation slot (48) of the front cylinder (40).
2. The cosmetic pen (30) according to claim 1, with the brush (50) made of a bundle of fibers, with a diameter of the rear end (54) of the brush (50) being larger than a diameter of the receiving hole of the sleeve (52) so that the rear end (54) of the brush (50) is positioned on the upper end (58) of the sleeve (52) with the sleeve (52) made of metal, and with a cover portion extending upward from the upper end (58) of the sleeve (52) and being bent downward to cover the rear end (54) of the brush (50).
  3. The cosmetic pen (30) according to claim 2, with the air slot (64) of the sleeve (52) extending in the axial direction and having an axial length of 15%-35% of an overall length of the sleeve (52) in the axial direction.
  4. The cosmetic pen (30) according to claim 2, with the rear end (54) of the brush (50) being connected together and having an enlarged diameter, and with the front end (56) of the brush (50) being formed in a tip shape.

## Patentansprüche

1. Kosmetikstift (30), umfassend:

ein Stiftrohr (34), das vordere (38) und hintere Abschnitte aufweist, die in axialer Richtung voneinander beabstandet sind;

einen Flüssigkeitsspeicherkern (36), der in dem Stiftrohr (34) aufgenommen ist und kosmetische Flüssigkeit enthält;

einen vorderen Zylinder (40), der an dem vorderen Abschnitt (38) des Stiftrohrs (34) befestigt ist und ein Durchgangsloch (46) und einen Entlüftungsschlitz (48) aufweist, der mit dem Durchgangsloch (46) in Verbindung steht; und

einen Applikator (32), der in dem vorderen Abschnitt (38) des Stiftrohrs (34) aufgenommen ist und sich durch das Durchgangsloch (46) des vorderen Zylinders (40) erstreckt,

wobei der Applikator (32) eine Bürste (50) und eine Kappe (52) aufweist, wobei die Bürste (50) ein vorderes (56) und ein hinteres Ende (54) aufweist, die in axialer Richtung voneinander beabstandet sind,

wobei die Kappe (52) obere (58) und untere Enden (60), die in axialer Richtung voneinander beabstandet sind, und ein Aufnahmeloch (62) aufweist, das sich von dem oberen Ende (58) durch das untere Ende (60) der Kappe (52) erstreckt und die Bürste (50) aufnimmt,

wobei das vordere Ende (56) der Bürste (50) aus dem unteren Ende (60) der Kappe (52) herausragt,

wobei das obere Ende (58) der Kappe (52) in den Flüssigkeitsspeicherkern (36) eingreift,

wobei die Kappe (52) ferner einen Luftschlitz (64) aufweist, der mit dem Aufnahmeloch (62) der Kappe (52) in Verbindung steht,

wobei der Luftschlitz (64) vordere (68) und hintere Teilabschnitte (70) aufweist, die in axialer Richtung voneinander beabstandet sind, wobei der hintere Teilabschnitt (70) des Luftschlitzes (64) der Kappe (52) in dem Flüssigkeitsspeicherkern (36) angeordnet ist, und

wobei der vordere Teilabschnitt (68) des Luftschlitzes (64) der Kappe (52) außerhalb des Flüssigkeitsspeicherkerns (36) angeordnet ist und mit dem Entlüftungsschlitz (48) des vorderen Zylinders (40) in Verbindung steht.

2. Kosmetikstift (30) nach Anspruch 1, wobei die Bürste (50) aus einem Faserbündel hergestellt ist, wobei ein Durchmesser des hinteren Endes (54) der Bürste (50) größer ist als ein Durchmesser des Aufnahmelochs der Kappe (52), sodass das hintere Ende (54) der Bürste (50) auf dem oberen Ende (58) der Kappe (52) angeordnet ist, wobei die Kappe (52) aus Metall hergestellt ist, und wobei sich ein Deckelabschnitt nach oben von dem oberen Ende (58) der Kappe (52) erstreckt und nach unten zu dem Deckel des hinteren Endes (54) der Bürste (50) gekrümmt ist.

3. Kosmetikstift (30) nach Anspruch 2, wobei sich der

Luftschlitz (64) der Kappe (52) in axiale Richtung erstreckt und eine axiale Länge von 15 % bis 35 % einer Gesamtlänge der Kappe (52) in axialer Richtung aufweist.

4. Kosmetikstift (30) nach Anspruch 2, wobei das hintere Ende (54) der Bürste (50) miteinander verbunden ist und einen vergrößerten Durchmesser aufweist, und wobei das vordere Ende (56) der Bürste (50) in Form einer Spitze ausgebildet ist.

## Revendications

1. Stylo cosmétique (30) comprenant :

un tube de stylo (34) comportant des portions avant (38) et arrière espacées dans une direction axiale ;

un coeur (36) de stockage de liquide reçu à l'intérieur du tube de stylo (34) et contenant un liquide cosmétique ;

un cylindre avant (40) monté au niveau de la portion avant (38) du tube de stylo (34) et comportant un trou traversant (46) et une fente de ventilation (48) en communication avec le trou traversant (46) ; et

un applicateur (32) reçu dans la portion avant (38) du tube de stylo (34) et s'étendant à travers le trou traversant (46) du cylindre avant (40), l'applicateur (32) comportant une brosse (50) et un manchon (52), la brosse (50) comportant des extrémités avant (56) et arrière (54) espacées dans la direction axiale, le manchon (52) comportant des extrémités supérieure (58) et inférieure (60) espacées dans la direction axiale et un trou de réception (62) s'étendant depuis l'extrémité supérieure (58) à travers l'extrémité inférieure (60) du manchon (52) et recevant la brosse (50), l'extrémité avant (56) de la brosse (50) faisant saillie hors de l'extrémité inférieure (60) du manchon (52), l'extrémité supérieure (58) du manchon (52) étant engagée dans le coeur (36) de stockage de liquide, le manchon (52) comportant en outre une fente à air (64) en communication avec le trou de réception (62) du manchon (52), la fente à air (64) comportant des sections avant (68) et arrière (70) espacées dans la direction axiale, la section arrière (70) de la fente à air (64) du manchon (52) étant disposée dans le coeur (36) de stockage de liquide, et la section avant (68) de la fente à air (64) du manchon (52) étant située à l'extérieur du coeur (36) de stockage de liquide et étant en communication avec la fente de ventilation (48) du cylindre avant (40).

2. Stylo cosmétique (30) selon la revendication 1, la

brosse (50) étant fabriquée à partir d'un faisceau de fibres, avec un diamètre de l'extrémité arrière (54) de la brosse (50) supérieur à un diamètre du trou de réception du manchon (52), de telle sorte que l'extrémité arrière (54) de la brosse (50) soit positionnée sur l'extrémité supérieure (58) du manchon (52), le manchon (52) étant fabriqué en métal, et avec une portion de recouvrement s'étendant vers le haut depuis l'extrémité supérieure (58) du manchon (52) et étant repliée vers le bas pour couvrir l'extrémité arrière (54) de la brosse (50).

3. Stylo cosmétique (30) selon la revendication 2, la fente à air (64) du manchon (52) s'étendant dans la direction axiale et ayant une longueur axiale correspondant à 15 % à 35 % d'une longueur globale du manchon (52) dans la direction axiale.

4. Stylo cosmétique (30) selon la revendication 2, l'extrémité arrière (54) de la brosse (50) étant connectée à celui-ci et ayant un diamètre agrandi, et l'extrémité avant (56) de la brosse (50) étant formée avec une forme pointue.

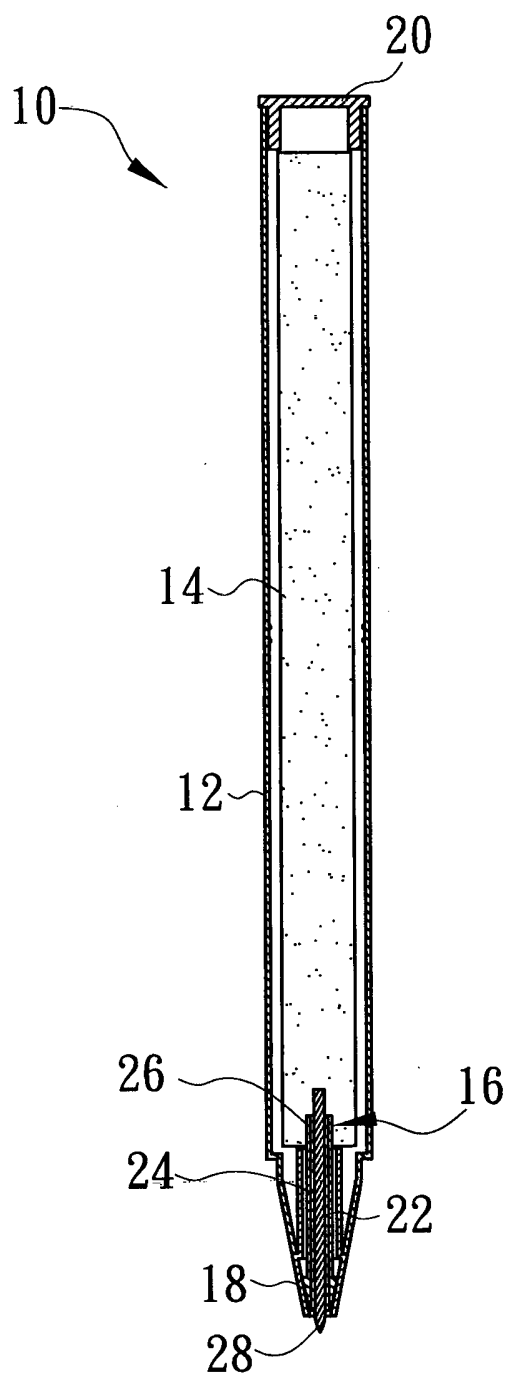


FIG.1

Prior Art

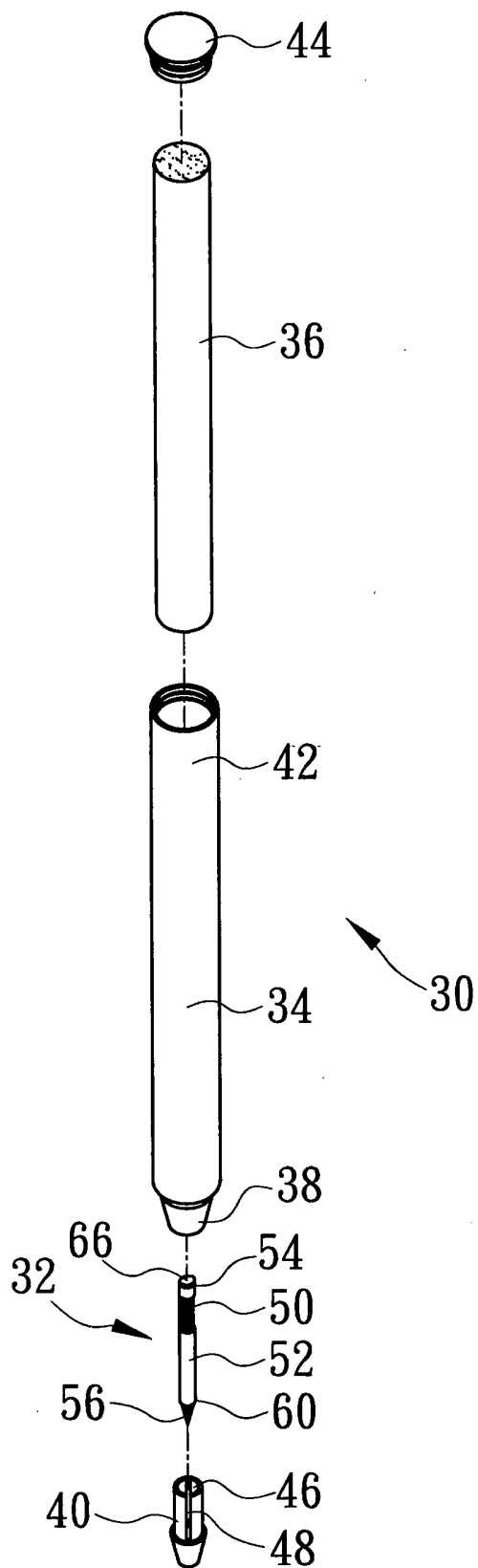


FIG.2

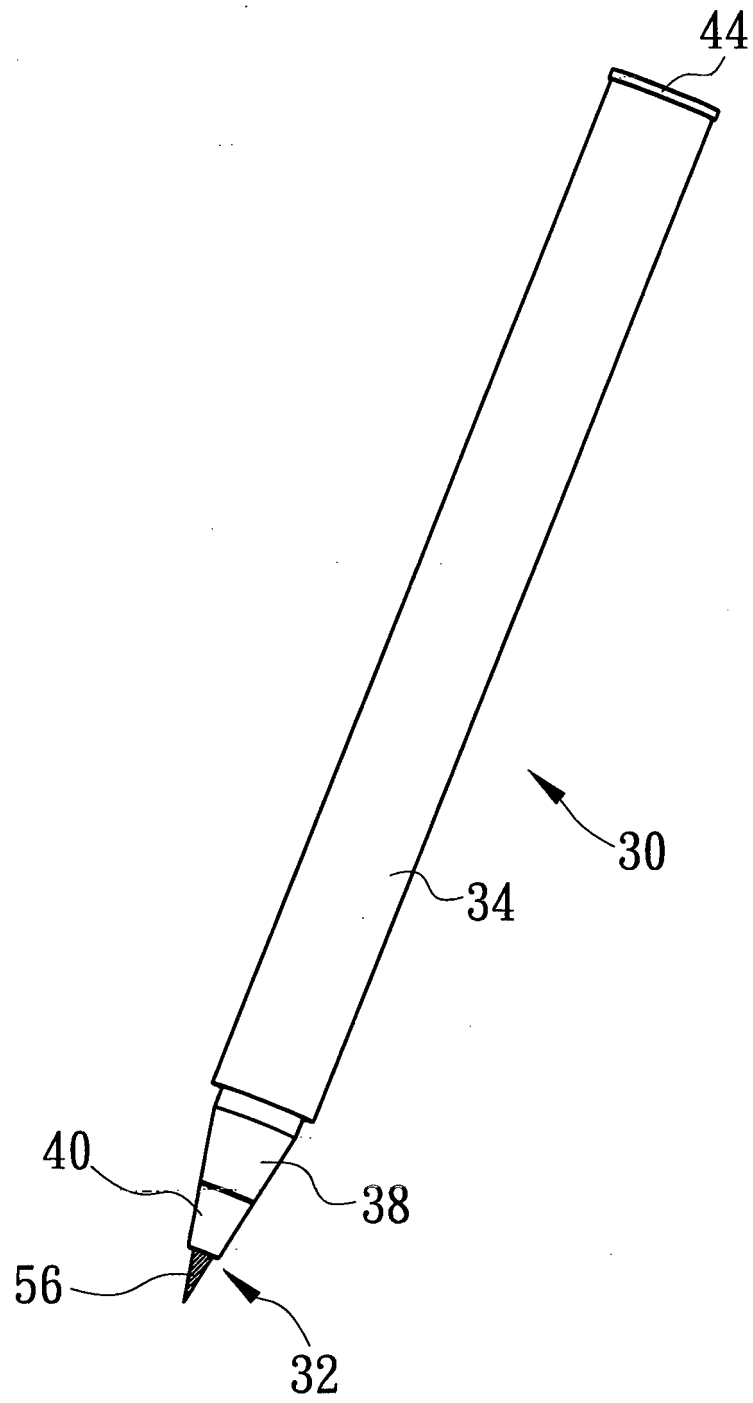
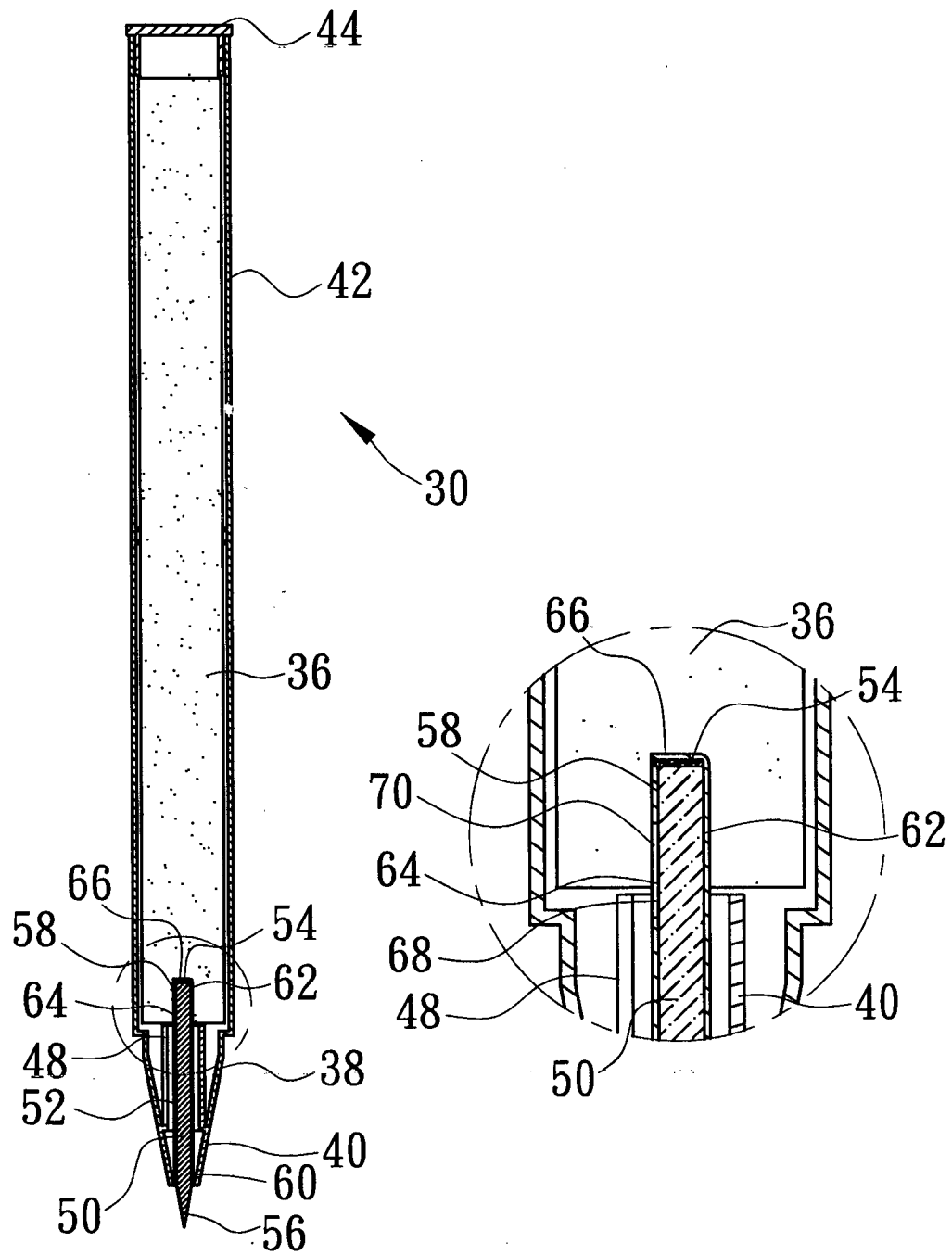


FIG.3



**FIG.4**

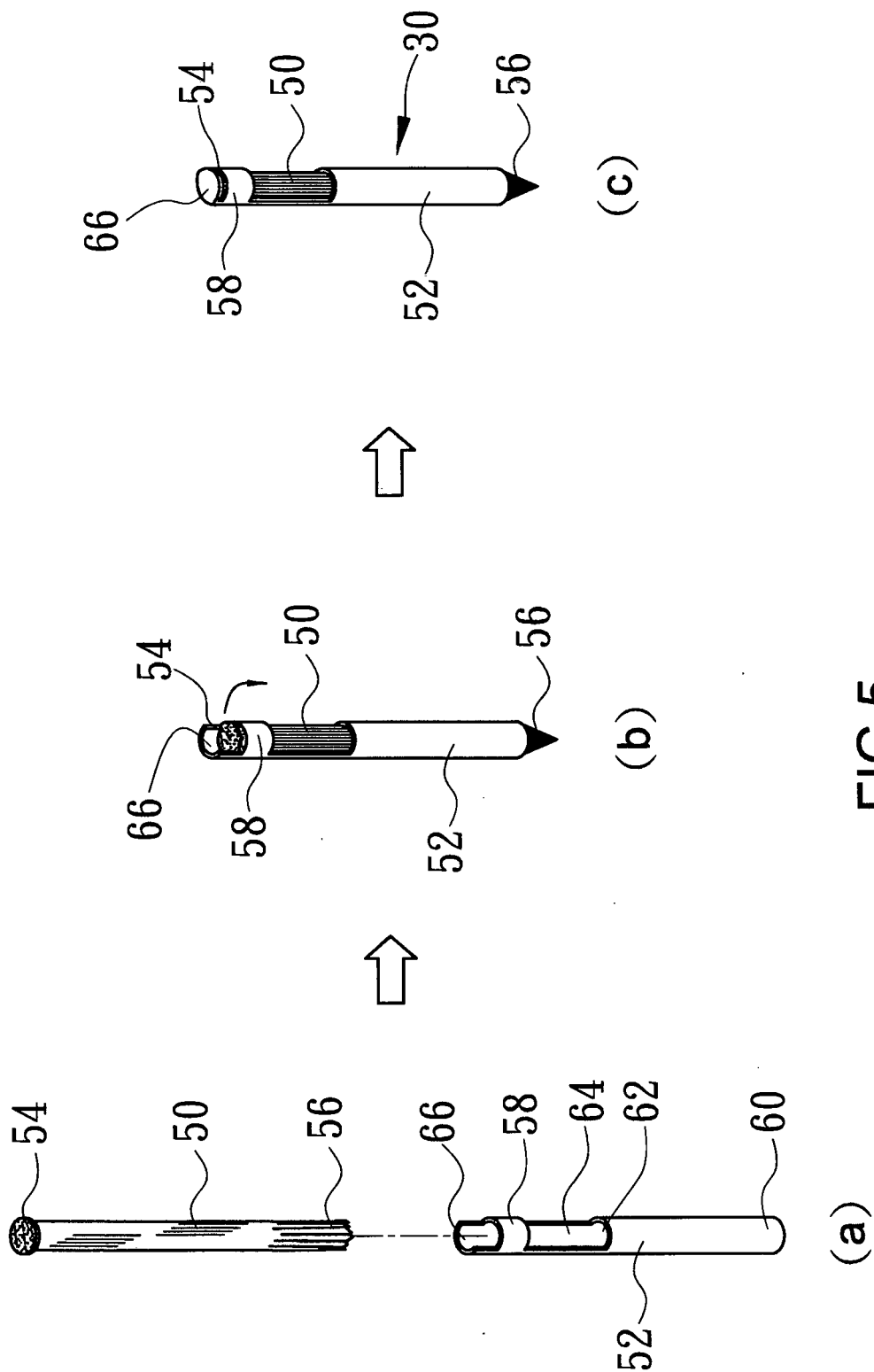


FIG.5