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(54) **Correction fluid applicator with foam tip**

Korrekturflüssigkeitsapplikator mit Schaumspitze

Applicateur de fluide de correction doté d'une pointe en mousse

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WO-A-97/21554 **US-A1- 2003 103 794**

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Description

FIELD OF THE INVENTION

[0001] This invention relates to a foam tip for a correction fluid applicator.

BACKGROUND OF THE INVENTION

[0002] Correction fluid applicators are used for covering handwritten, typewritten or photocopied markings with a layer of fluid. This layer of fluid then dries and hardens to a film that effectively covers the said markings. This film can usually be written over with ball-point pens or the like. Correction fluids typically contain a resin that provides the base for the film, and some type of pigmentation that has opaque properties, dispersed in water or an organic solvent.

[0003] The correction fluid is usually stored in a small container with some type of applicator attached to the cap via a stem. During use, the cap is removed from the container along with the applicator containing an amount of correction fluid. The markings that are intended for correction are then painted over with the applicator. Drying of the correction fluid into a film then occurs by natural convection or other means.

[0004] What is present in prior art related to this type of correction fluid applicator is the brush type applicator which suffers from a lack of precision in applying the correction fluid. This was replaced by a foam-type applicator. The travel of the applicator tip for foam-type applicators is much less than that of the brush-type, resulting in much higher precision.

[0005] However, another disadvantage of both brush- and foam-type applicators is the limited amount of correction fluid that the applicator can store during the fluid transfer from container to the application surface, necessitating more frequent refilling of the applicator tip from the container.

[0006] Such a correction fluid applicator is the subject, for example, of International patent application having publication no. WO 97/21554 that describes an applicator for applying a fluid to a surface comprising an applicator tip element connected to the end of a substantiality rigid stem by a part capable of flexing resiliently as the applicator tip element is stroked across a surface. The application element is conveniently formed as a pad or a moulded member of porous material, e.g. foam, which can be attached in various ways, e.g. by means of adhesive, heat welding or mechanical fixing, to the resiliently flexible connection part.

[0007] Such a correction fluid applicator is also the subject of U.S. patent application having publication no. US 2003/0103794 A1 that describes an applicator for a correction fluid including a stem, an applicator tip including foam, and a flexor within the foam portion.

[0008] The applicator preferably has a flexibility of at least 0.0127 mm (0.005 inch) of deflection per gram of force.

[0009] What is needed in the art is a correction fluid applicator with both a high degree of precision and an ability to store more correction fluid.

SUMMARY OF THE INVENTION

[0010] This invention relates to a correction fluid applicator attached to the cap of a container containing correction fluid. The applicator tip slides into a foam sleeve at one end of a stem. This stem provides a small degree of flexibility for effective and comfortable operation, but not too much so that precision is maintained. The foam sleeve may be made from soft polyurethane or polyester foam. This foam sleeve is slid over and fixed to an applicator tip at one end of a specially designed stem. The other end of the stem is attached to the cap of the container where the correction fluid is stored. The foam sleeve has absorbent qualities that enhance the storage of correction fluid during the transfer from container to the application surface. The applicator can be inserted into the container so that the foam sleeve is touching or almost touching the bottom of the container, and deep enough so that the foam sleeve is at least partially immersed in correction fluid even when the quantity of fluid is low. The applicator provides a means of applying correction fluid onto a substrate such as paper, in an even layer resulting in a dry film with a substantially smooth surface that allows for future marking with several types of writing implements.

[0011] One aspect of this invention relates to a correction fluid applicator comprising a grip designed to be held by a user, a foam sleeve made from a flexible material, and a stem attached at a proximal end to the grip, and a distal end having an applicator tip adapted to slide into and be so fixed to the foam sleeve.

[0012] Yet another aspect to this invention relates to a correction fluid application system comprising a container with an opening, the container able to store a quantity of correction fluid; an applicator comprising a foam sleeve made from a flexible material and a stem with a distal end adapted to slide into the foam sleeve; and a cap fixed to a proximal end of the stem such that when the cap is placed over the said opening of the container, the stem extends through said opening and substantially into the container.

[0013] A further aspect of this invention relates to a correction fluid application system whereby the cap can be screwed onto an outer surface of the container, thus blocking the said opening and providing substantial water-tightness within the container.

[0014] The present invention is defined according to accompanying claim 1.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

Figure 1 shows an overall view of the correction fluid application system in an embodiment of this invention.

Figure 2 shows an exploded perspective view of the applicator in an embodiment of this invention.

Figure 3a shows a side view of the applicator in an embodiment of this invention.

Figure 3b shows a front view of the applicator in an embodiment of this invention.

Figure 3c shows a side cross-sectional view with an enlarged area of the applicator in an embodiment of this invention.

Figure 4a shows a front view of the stem in an embodiment of this invention.

Figure 4b shows a side cross-sectional view of the stem in an embodiment of this invention.

Figure 5a shows a perspective view of the foam sleeve in an embodiment of this invention.

Figure 5b shows a side view of the foam sleeve in an embodiment of this invention.

Figure 5c shows a front cross-sectional view of the foam sleeve in an embodiment of this invention.

Figure 5d shows a side cross-sectional view of the foam sleeve in an embodiment of this invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0016] Referring to Figure 1, there can be seen a correction fluid application system with a container (40) having a reservoir for storage of a correction fluid. The container has a neck (42) at the top end which has a smaller diameter than the diameter of the container body. This neck (42) has an opening at the top. A cap (30) has a threaded section on an inner surface so as to engage a matching threaded section (44) on the neck (42) of the container (40). The cap (30) also acts as a grip designed to be held by a user. Attached to the cap (30) is a proximal end of a stem (20), with a distal end of the stem (20) attached to a foam sleeve (10), said foam sleeve (10) sliding over and covering the distal end of the stem (20). An insert (60) adapted to slide into the neck (42) prevents spillage of correction fluid when the applicator is inserted and taken out of the container (40) by removing excess fluid before the foam leaves the container (40).

[0017] In Figure 2, the applicator includes a stem (20) having at the proximal end a hollow cylinder (24) for attachment with a cap (30). At the distal end of the stem (20) is the applicator tip (22) which is tapered from the substantially cylindrical shape of the middle portion of the stem (20) into a substantially flat tip with a width enlarged from the diameter of an adjoining portion of the stem (20). This is to enhance the attachment of the applicator tip (22) with the foam sleeve (10). The substantially flat shape of the applicator tip (22) also makes easier the application of correction fluid onto flat surfaces.

[0018] Figures 3a through 3c show the stem (20) assembled with the cap (30), the hollow cylinder (24) of the stem (20) attached securely to the inside of the cap (30). The foam sleeve (10) slides over the applicator tip (22) at a distal end of the stem (20), completely covering the applicator tip (22) and past the point where the applicator tip (22) joins the cylindrical portion of the stem (20).

[0019] In Figure 3c the enlargement of the distal end of the stem (20) shows a small gap between the end of the applicator tip (22) and the cup of the foam sleeve (10). This gap provides for more flexibility and storage of correction fluid.

[0020] The stem (20) is flexible to a certain degree, this flexibility necessary for a more effective fluid applicator and comfort during use. The flexibility of the stem depends on a few factors including material composition, diameter and length of the stem. A softer material used to make the stem will result in a more flexible applicator, and vice versa. A stem with a thicker diameter will result in a less flexible applicator, and vice versa. A longer stem will result in a more flexible stem, and vice versa. Stems may be made of polymeric materials such as a low density or high density polyethylene or polypropylene.

[0021] Besides stem flexibility, other factors that affect the flexibility of the applicator as a whole include the composition and thickness of the foam portion. Generally, the softer the foam the greater the flexibility of the foam applicator. A thicker foam portion results in a less flexible applicator tip. The foam may be a soft open cell foam such as, for example, a polyether/polyurethane, polyester/polyurethane, polyether, or polyester foam.

[0022] Figures 4a and 4b show a stem (20) in an embodiment of this invention with the hollow cylinder (24) at the proximal end and the applicator tip (22) at the distal end of the stem (20).

[0023] In figures 5a through 5d, there is shown a foam sleeve (10) in an embodiment of this invention.

[0024] The correction fluid being applied in this embodiment may be either an organic solvent- or water-based correction fluid. The correction fluid includes an additional material to produce opaqueness in the fluid.

[0025] It will be appreciated that it is not intended to limit the present invention to the above specific embodiments only. Many variants will be readily apparent to one of ordinary skill in the art without departing from the scope of the appended claims.

Claims

1. A correction fluid applicator comprising:

   a grip (30), the grip (30) designed to be held by a user;
   a stem (20) attached at a proximal end to the grip (30);
   a sleeve (10) made from a flexible material, the sleeve (10) being mounted onto a distal end of the stem (20); the distal end of the stem being adapted to slide into and be so fixed to the sleeve,
   characterized by a gap being formed between an end surface of the stem (20) and an inner surface of the sleeve (10) facing the said end surface of the stem (20).

2. A correction fluid applicator according to claim 1, wherein the sleeve (10) is made from soft polyurethane foam.

3. A correction fluid applicator according to claim 1, wherein the sleeve (10) is made from soft polyester foam.

4. A correction fluid applicator according to claim 1, wherein the sleeve (10) is made from any one of polyether/polyurethane, polyester/polyurethane, or polyether foam.

5. A correction fluid applicator according to claim 1, wherein the sleeve (10) is made from a combination of any one of polyether/polyurethane, polyester/polyurethane, or polyether foam.

6. A correction fluid applicator according to any one of claims 2 to 5, wherein the foam is stable to organic solvents.

7. A correction fluid applicator according to any one of claims 2 to 6, wherein the foam is able to absorb and store a quantity of corrective fluid for subsequent dispensation.

8. A correction fluid applicator according to any of the preceding claims, wherein the stem (20) comprises a hollow cylinder (24) at its proximal end for attachment with the grip (30), and an applicator tip (22) at its distal end.

9. A correction fluid applicator according to claim 8, wherein the applicator tip (22) is tapered

10. A correction fluid applicator according to claim 9, wherein the applicator tip (22) is substantially flat at its tip, with a width enlarged from the diameter of the adjoining portion of the stem (20).

11. A correction fluid applicator according to any of claims 8 to 10, wherein the foam sleeve (10) completely covers the applicator tip (22), extending past the point where the applicator tip (22) joins the stem (20).

12. A correction fluid application system comprising:

    a container (40) with an opening, the container (40) being able to store a quantity of fluid within;
    an applicator according to any of claims 1 to 11; and
    such that when the grip(30) is placed over the said opening of the container (40) thereby forming a cap (30), the stem (20) extends through said opening and substantially into the container (40).

13. A correction fluid application system according to claim 12, wherein the opening is located on the top of the container (40), and when the cap (30) is placed over the said opening, the sleeve (10) reaches close to the bottom of the container.

14. A correction fluid application system according to claim 12 wherein the cap (30) can be screwed onto an outer surface of the container (40), thus blocking the said opening and providing substantial watertightness within the container (90).

15. A correction fluid application system according to claim 14, wherein the container (40) has a neck (42) and an insert (60) is adapted to slide into the neck (42) to prevent spillage of correction fluid when the applicator is inserted and taken out of the container (40) by removing excess fluid before the foam leaves the container (40).

Patentansprüche

1. Korrekturflüssigkeitsspender, umfassend:

   einen Griff (30), wobei der Griff (30) dafür ausgelegt ist, durch einen Benutzer gehalten zu werden;
   einen Schaft (20), der an einem körpernahen Ende am Griff (30) befestigt ist;
   eine aus einem flexiblen Material hergestellte Manschette (10), wobei die Manschette (10) an einem körperfernen Ende des Schaftes (20) angebracht ist, wobei das körperferne Ende des Schaftes dafür eingerichtet ist, in die Manschette zu gleiten und so an ihr befestigt zu werden,
   gekennzeichnet durch eine Lücke, die zwischen einer Endfläche des Schaftes (20) und einer der Endfläche des Schaftes (20) zugewandten Innenfläche der Manschette (10) aus-

gebildet ist.

2. Korrekturflüssigkeitsspender nach Anspruch 1, worin die Manschette (10) aus Polyurethan-Weichschaum hergestellt ist.

3. Korrekturflüssigkeitsspender nach Anspruch 1, worin die Manschette (10) aus Polyester-Weichschaum hergestellt ist.

4. Korrekturflüssigkeitsspender nach Anspruch 1, worin die Manschette (10) aus einem von Folgendem hergestellt ist: Polyether-/Polyurethan-, Polyester-/Polyurethan- oder Polyetherschaum.

5. Korrekturflüssigkeitsspender nach Anspruch 1, worin die Manschette (10) aus einer Kombination von beliebigen der Folgenden hergestellt ist: Polyether-/Polyurethan-, Polyester-/Polyurethan- oder Polyetherschaum.

6. Korrekturflüssigkeitsspender nach einem der Ansprüche 2 bis 5, worin der Schaum gegenüber organischen Lösungsmitteln stabil ist.

7. Korrekturflüssigkeitsspender nach einem der Ansprüche 2 bis 6, worin der Schaum imstande ist, eine Korrekturflüssigkeitsmenge zu absorbieren und zur anschließenden Abgabe zu speichern.

8. Korrekturflüssigkeitsspender nach einem der vorhergehenden Ansprüche, worin der Schaft (20) an seinem körpernahen Ende einen Hohlzylinder (24) zur Verbindung mit dem Griff (30) und an seinem körperfernen Ende eine Spenderspitze (22) umfasst.

9. Korrekturflüssigkeitsspender nach Anspruch 8, worin die Spenderspitze (22) verjüngt ist.

10. Korrekturflüssigkeitsspender nach Anspruch 9, worin die Spenderspitze (22) an ihrer Spitze weitgehend flach ist, und zwar mit einer gegenüber dem Durchmesser des anschließenden Abschnitts des Schaftes (20) vergrößerten Breite.

11. Korrekturflüssigkeitsspender nach einem der Ansprüche 8 bis 10, worin die Schaummanschette (10) die Spenderspitze (22) vollständig bedeckt, wobei sie sich über den Punkt hinaus erstreckt, wo die Spenderspitze (22) an den Schaft (20) anschließt.

12. Korrekturflüssigkeitsspendersystem, umfassend:

einen Behälter (40) mit einer Öffnung, wobei der Behälter (40) imstande ist, darin eine Flüssigkeitsmenge zu speichern; und
einen Spender nach einem der Ansprüche 1 bis 11;

so dass, wenn der Griff (30) über der Öffnung des Behälters (40) platziert wird, wodurch er eine Kappe (30) bildet, der Schaft (20) sich durch die Öffnung hindurch und weitgehend in den Behälter (40) hinein erstreckt.

13. Korrekturflüssigkeitsspendersystem nach Anspruch 12, worin die Öffnung am oberen Ende des Behälters (40) angeordnet ist und, wenn die Kappe (30) über der Öffnung platziert wird, die Manschette (10) fast bis zum Boden des Behälters reicht.

14. Korrekturflüssigkeitsspendersystem nach Anspruch 12, worin die Kappe (30) auf eine Außenfläche des Behälters (40) geschraubt werden kann, wodurch sie die Öffnung blockiert und für weitgehende Wasserdichtheit innerhalb des Behälters (40) sorgt.

15. Korrekturflüssigkeitsspendersystem nach Anspruch 14, worin der Behälter (40) einen Hals (42) hat und ein Einsatzstück (60) dafür eingerichtet ist, in den Hals (42) zu gleiten, um ein Verschütten der Korrekturflüssigkeit zu verhindern, wenn der Spender in den Behälter (40) eingesetzt und herausgenommen wird, indem überschüssige Flüssigkeit entfernt wird, bevor der Schaum den Behälter (40) verlässt.

Revendications

1. Applicateur de fluide de correction comprenant:

un élément de préhension (30), l'élément de préhension (30) étant conçu pour être tenu par un utilisateur;
une tige (20) attachée à l'élément de préhension (30) au niveau d'une extrémité proximale;
un manchon (10) formé d'un matériau flexible, le manchon (10) étant monté sur une extrémité distale de la tige (20); l'extrémité distale de la tige étant adaptée pour glisser à l'intérieur du manchon et être ainsi fixée à celui-ci,
caractérisé par un espace formé entre une surface d'extrémité de la tige (20) et une surface intérieure du manchon (10) faisant face à ladite surface d'extrémité de la tige (20).

2. Applicateur de fluide de correction selon la revendication 1, dans lequel le manchon (10) est formé d'une mousse de polyuréthane souple.

3. Applicateur de fluide de correction selon la revendication 1, dans lequel le manchon (10) est formé d'une mousse de polyester souple.

4. Applicateur de fluide de correction selon la revendication 1, dans lequel le manchon (10) est formé de l'un quelconque des matériaux parmi une mousse

de polyéther-polyuréthane, une mousse de polyester-polyuréthane ou une mousse de polyéther.

5. Applicateur de fluide de correction selon la revendication 1, dans lequel le manchon (10) est formé d'une combinaison de l'un quelconque des matériaux parmi une mousse de polyéther-polyuréthane, une mousse de polyester-polyuréthane ou une mousse de polyéther.

6. Applicateur de fluide de correction selon l'une quelconque des revendications 2 à 5, dans lequel la mousse est stable vis-à-vis des solvants organiques.

7. Applicateur de fluide de correction selon l'une quelconque des revendications 2 à 6, dans lequel la mousse peut absorber et stocker une quantité de fluide de correction pour une distribution ultérieure.

8. Applicateur de fluide de correction selon l'une quelconque des revendications précédentes, dans lequel la tige (20) comprend un cylindre creux (24) au niveau de son extrémité proximale permettant sa fixation à l'élément de préhension (30) et une pointe d'application (22) au niveau de son extrémité distale.

9. Applicateur de fluide de correction selon la revendication 8, dans lequel la pointe d'application (22) est biseautée.

10. Applicateur de fluide de correction selon la revendication 9, dans laquelle la pointe d'application (22) est essentiellement plate au niveau de son extrémité, avec une largeur augmentée à partir du diamètre de la partie contiguë de la tige (20).

11. Applicateur de fluide de correction selon l'une quelconque des revendications 8 à 10, dans lequel le manchon en mousse (10) couvre complètement la pointe d'application (22), s'étendant au-delà du point de jonction de la pointe d'application (22) et de la tige (20).

12. Système d'application de fluide de correction comprenant:

un conteneur (40) pourvu d'une ouverture, l'intérieur du conteneur (40) pouvant stocker une quantité de fluide; et
un applicateur selon l'une quelconque des revendications 1 à 11;
tel que, lorsque l'élément de préhension (30) est placé sur ladite ouverture du conteneur (40), formant ainsi un bouchon (30), la tige (20) s'étend à travers ladite ouverture et essentiellement à l'intérieur du conteneur (40).

13. Système d'application de fluide de correction selon la revendication la revendication 12, dans lequel l'ouverture est située au sommet du conteneur (40) et, lorsque le bouchon (30) est placé sur ladite ouverture, le manchon (10) atteint presque le fond du conteneur.

14. Système d'application de fluide de correction selon la revendication la revendication 12, dans lequel le bouchon (30) peut être vissé sur une surface extérieure du conteneur (40), bloquant ainsi ladite ouverture et procurant une réelle étanchéité à l'eau de l'intérieur du conteneur (40).

15. Système d'application de fluide de correction selon la revendication la revendication 14, dans lequel le conteneur (40) est pourvu d'un col (42) et un élément rapporté (60) est adapté pour s'insérer dans le col (42) pour empêcher que le fluide de correction se répande lorsque l'applicateur est introduit et sorti du conteneur (40) en éliminant l'excédent de fluide avant que la mousse sorte du conteneur (40).

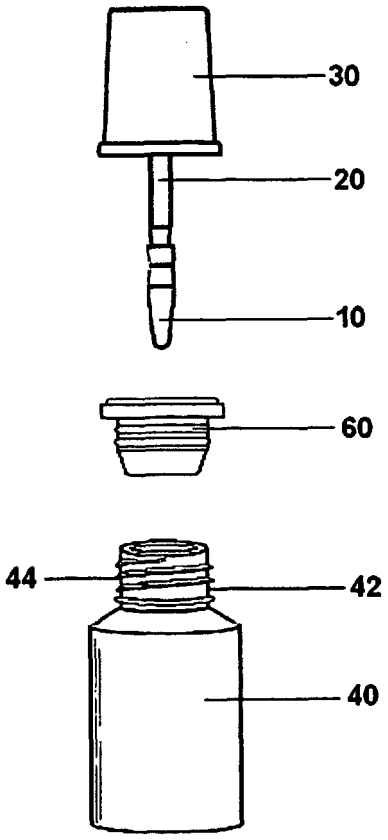


Figure 1

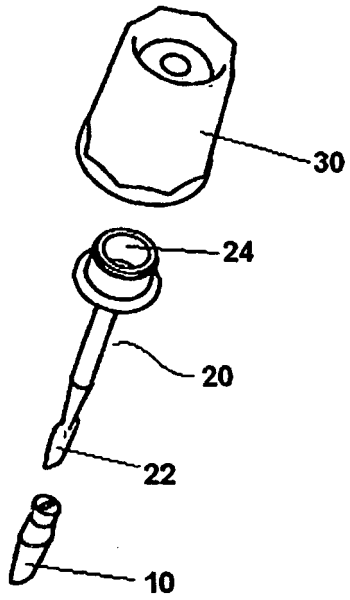


Figure 2

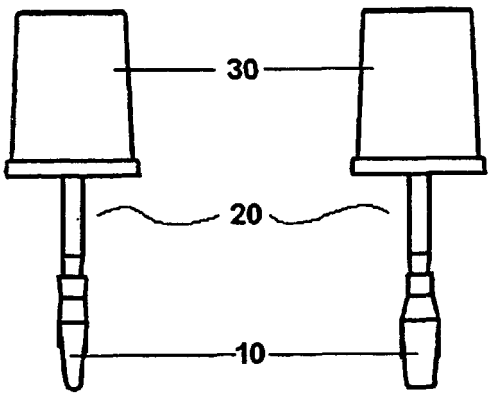


Figure 3a

Figure 3b

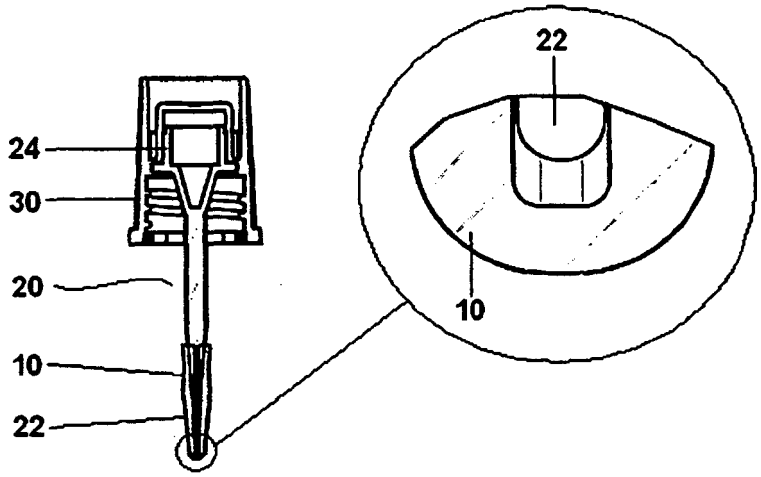


Figure 3c

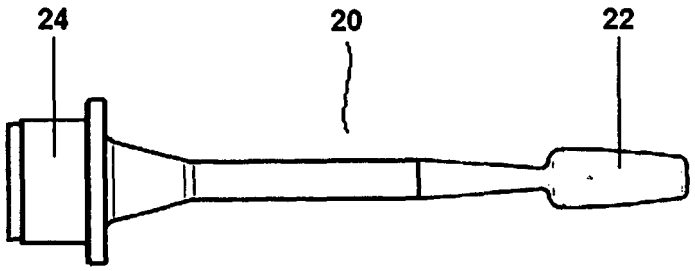


Figure 4a

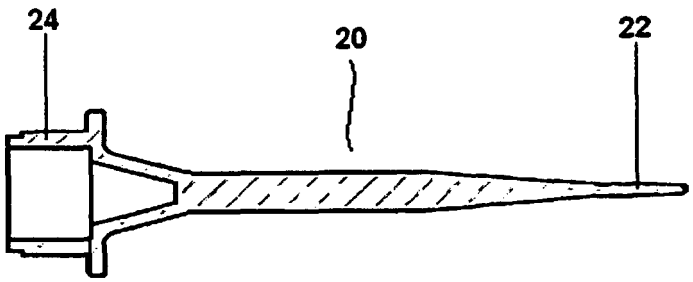


Figure 4b

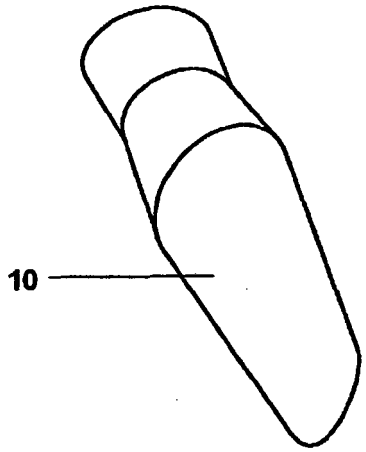


Figure 5a

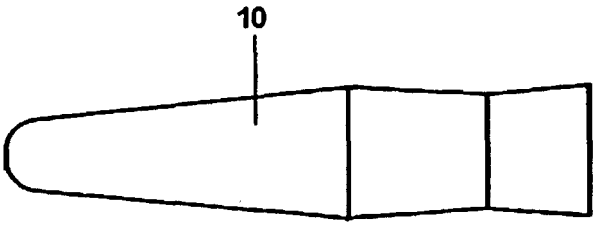


Figure 5b

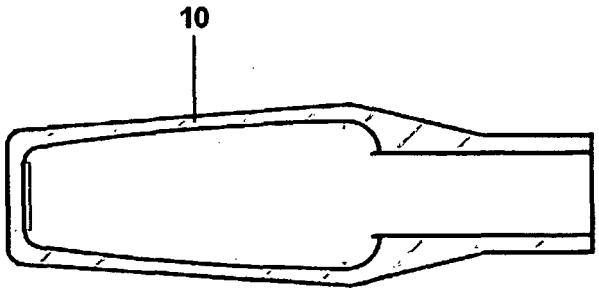


Figure 5c

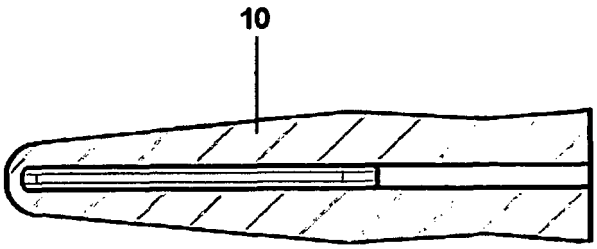


Figure 5d

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 9721554 A **[0006]**
- US 20030103794 A1 **[0007]**