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## (54) Dispensing toilet brush

(57) A toilet brush (10) comprising a cleaning head (12) fitted at a proximal end of an elongate handle (14). The handle (14) comprises a liquid-tight reservoir (28) fitted with a liquid dispensing port (30) at the proximal end, and the liquid dispensing port (30) is normally sealed by a sealing plug (38). A push-button (58) is fitted at a distal end of the handle (14) for manipulating the sealing plug (38) to unseal the dispensing port (30) only upon depressing of the push-button (58). Manipulating the sealing plug (38) is carried out by a manipulating rod (40) extending thorough the handle (14) and being axially displaceable there within.

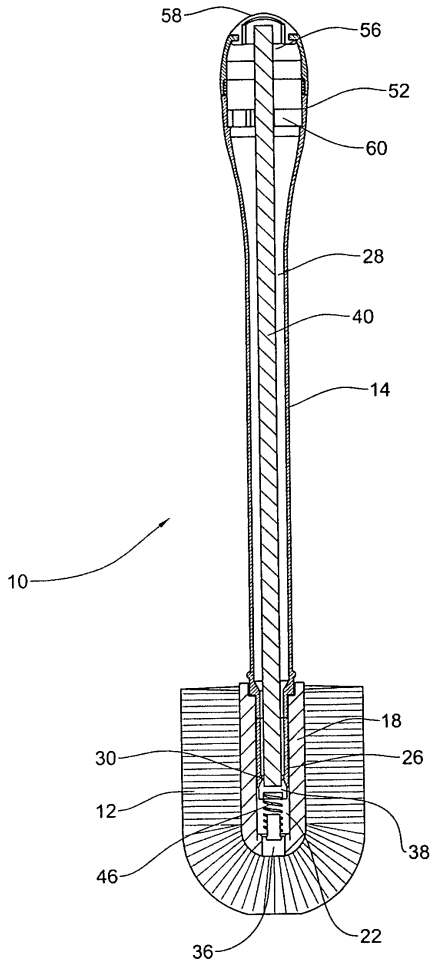


FIG. 2

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## Description

### FIELD OF THE INVENTION

**[0001]** This invention relates to toilet brushes of the type used for cleaning toilet bowls, urinals, and other sanitary equipment e.g. sinks, bath tubs, shower and the like. In particular, the invention is concerned with brush of the kind suited for dispensing a liquid.

**[0002]** Hereinafter in the specification and claims brushes of all types and for all purposes are collectively referred to as *toilet brushes.*

### BACKGROUND OF THE INVENTION

**[0003]** A wide variety of toilet brushes is known in the art for cleaning toilets, urinals, bath tubs, showers and other sanitary equipment, weather for domestic use or institutional (i.e. industrial or commercial cleaning personnel who are engaged in cleaning large numbers of toilets and urinals on an essentially constant or continuing basis throughout a workday.

**[0004]** Typically, different detergents are used for cleaning sanitary equipment, often combined with additives such as disinfectant agents, odor dispersing agents, color pigments, anti calc agents, etc. Such materials are usually in liquid form and are stored in separate containers. These agents are known to be irritating to the skin if not hazardous to the human body.

**[0005]** US Patent Serial No. 6,966,720 discloses a toilet cleaning apparatus comprising a toilet brush head; a toilet brush handle separated from the brush head by a brush shaft; a portion of the brush handle being adapted to contain a cleaning fluid and being in fluid communication with the brush head by a conduit; the handle being adapted to be reciprocally displaced along the conduit between a first position remote from the brush head and a second position proximate to the brush head so urging cleaning fluid from the handle to the brush head; and, a non return valve within the conduit adapted to allow the flow of fluid from handle to brush but to prevent the flow of fluid from brush to handle.

**[0006]** W00165969A1 is concerned with a brush fitted with means for dispensing cleaning liquid that comprises a cleaning liquid reservoir and can be set to at least one non-dispensing mode and one dispensing mode. At least in the non-dispensing mode, the dispensing means can be locked up in such a way that for unlocking an unlocking operation is required in addition to the operation required for changing the setting. Since this combined operation is of a certain complexity it prevents a discharge of cleaning liquid when it is handled by unauthorized users, e.g. children, or an unintended change of the dispensing rate during its use in the dispensing mode.

**[0007]** US Patent Serial No. 5984555 discloses a dual toilet brush comprising an elongate handle. A first brush head is connected to a first end of the elongate handle for cleaning an interior surface of a bowl of a toilet. A second brush head is connected to and extends outwardly from the first end of the elongate handle above the first brush head, for cleaning an overhanging rim of the toilet.

**[0008]** EP1625820 discloses a toilet brush has a hollow handle containing a reservoir for disinfectant or cleaning fluid which can be dispensed through the bristles. The handle has a socket at its base, in which a spiral spring is mounted. This fits over a rod attached to the brush head.

### SUMMARY OF THE INVENTION

**[0009]** It is an object of the present invention to provide a toilet brush integrated with a liquid reservoir and a dispensing mechanism for readily dispensing liquid into a cleaning head of the brush, where only a single hand is required for manipulating the brush and activating the dispensing mechanism.

**[0010]** It is a further object of the present invention that the liquid dispensing mechanism is normally closed and is hermetically sealed such that liquid does not leak there from, but substantially only upon activation of the dispensing mechanism.

**[0011]** According to the present invention there is provided a toilet brush comprising a cleaning head fitted at a proximal end of an elongate handle, said handle comprising a liquid-tight reservoir fitted with a liquid dispensing port at said proximal end; said liquid dispensing port being normally sealed by a sealing plug; and a push-button at a distal end of the handle for manipulating the sealing plug to unseal the dispensing port only upon depressing of said push-button; and wherein manipulating the sealing plug is carried out by a manipulating rod extending thorough the handle and being axially displaceable there within.

**[0012]** The cleaning head comprises an array of bristle tufts extending from a central core formed with a liquid duct being in flow communication with the dispensing port of the handle; said cleaning head comprises one or more liquid dispensing apertures being in flow communication with the liquid duct. Alternatively the cleaning head is formed with sponge-like material or with rubber bristles, etc. Still, the cleaning head may be detachably attached to the proximal end of the handle.

**[0013]** Any one or more of the following embodiments and modifications of the present invention may be applied to the invention:

- The reservoir may be refillable, via a re-sealable opening formed either at a proximal end or at a distal end of the handle. If the latter, the liquid reservoir comprises a sealingly attachable filling cap at the distal end;
- The handle is made of, or comprises at least a portion, being translucent or transparent;
- The handle is formed with indicia representative of liquid level within the reservoir;
- A grip portion at the distal end is ergonomically

formed and suited for gripping and manipulating of the push-button using one hand only;

- The push-button is a resilient, deformable portion engageable with a distal end of the manipulating rod; optionally the resilient push-button is be-molded in a substantially solid sealingly attachable filling cap at the distal end. Alternatively, the resilient push-button is sealingly integrated in a substantially solid sealingly attachable filling cap at the distal end;
- The push-button may be depressible substantially axially about the longitudinal axis of the brush. Alternatively, the push-button is depressible about an axis transversing the longitudinal axis, whereby a motion-converting element is fitted for converting linear motion along one axis into linear motion about an axis parallel to the longitudinal axis of the manipulating rod;
- The manipulating rod is coaxially retained within the handle;
- The sealing plug is biased into its normally sealed position by a compression spring. Alternatively, the sealing plug is biased into its normally sealed position by a compressible portion integrated therewith;
- Preferably, at least the liquid reservoir is made of or coated with a material durable to corrosive agents
- The sealing plug may be integrated at the proximal end of the manipulating rod.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0014]** In order to understand the invention and to see how it may be carried out in practice, an embodiment will now be described, by way of non-limiting examples only, with reference to the accompanying drawings, in which:

**Fig. 1** is a planner view of the toilet brush according to the present invention;

**Fig. 2** is a longitudinal sectioned view through the toilet brush of Fig. 1, according to a first embodiment thereof;

**Fig. 3** is an enlargement of the distal end of the toilet brush according to the embodiment of Fig. 2;

**Fig. 4** is an enlargement of the proximal end of the toilet brush according to the embodiment of Fig. 2;

**Fig. 5** is an enlargement of the distal end of the toilet brush according to a different embodiment of the invention; and

**Fig. 6** is an enlargement of the proximal end of the toilet brush according to a different embodiment of the invention.

## DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

**[0015]** Attention is first directed to Figures 1 and 2 illustrating a toilet brush in accordance with the present invention generally designated **10** and comprising a cleaning head **12** and an elongate handle **14.**

**[0016]** The cleaning head **12** is either a sponge-like member or an array of bristle tufts extending from a central core member **18** formed with a liquid duct **22.** The central core **18** is fixedly mounted over a proximal end **26** of the elongate handle **14** e.g. by screw coupling, snap fitting, etc.

**[0017]** The elongate handle **14** is a hollow liquid-tight reservoir **28** fitted at its proximal end **26** with a liquid dispensing port **30** (seen in enlarged scale in Figs. 4 and 6) being in flow communication with the liquid duct **22** of the cleaning head **12** such that a liquid dispensed into the liquid duct **22** flows through one or more liquid-dispensing apertures **36** into the cleaning head **12.** Typically, at least inner walls of the liquid reservoir are made of or coated with a material durable to corrosive agents.

**[0018]** The liquid dispensing port **30** is normally sealed by a sealing plug **38** typically made of resilient material e.g. silicon rubber fixedly extending at a proximal end of a manipulating rod **40.** The sealing plug **38** is normally biased into sealing engagement of the dispensing port **30** by means of a coiled compression spring **46** bearing at one end against the sealing plug 38 and at an opposite plug against a wall portion **48** of the central core **18,** supported over a central stud **50.**

**[0019]** At a distal end **52** of the elongate handle **14** there is a sealing cap **56,** which in the present example is screw coupled to the distal end of the elongate handle **14** in the sealingly-tight manner.

**[0020]** The manipulating rod **40** spans substantially the entire length of the elongate handle **14,** terminating at a push-button **58** formed in the sealing cap **56.** Referring now to Figs. 3 and 4, whereby depression of the resilient push-button **58** entails corresponding axial displacement of the manipulating rod **40,** to thereby disengage the sealing plug **36** from the dispensing port **30,** giving rise to fluid flow communication between the reservoir **28,** via the dispensing port **30** and then through the liquid duct **22** out to the one or more liquid dispensing apertures **36.**

**[0021]** It is further noticed that the manipulating rod **40** is coaxially retained within the elongate rod by a rod retention member **60** supporting the rod **40** though not interfering with its axial displacement.

**[0022]** In the embodiment of Figures 1, 2 and 3, the push-button **58** is in the form of a resilient member sealingly attached to the filling cap **56.** However, in accordance with other embodiments the resilient push-button may be molded into the filling cap.

**[0023]** It is appreciated that the liquid reservoir **28** may be easily replenished with a suitable liquid, e.g. a disinfectant liquid, a deodorizing liquid, a color agent, etc., through the opening at the distal end of the elongate handle **14** whereby the device may be re-used many times and further, wherein the active liquid agent may be refilled at user's choice.

**[0024]** The arrangement is such that liquid will discharge through the dispensing port **30** and out through the one or more liquid dispensing apertures **36** only upon manipulating of the manipulating rod **40,** namely by de-

pressing the push-button. This arrangement offers a leak-tight solution and a substantially drip-free arrangement owing to the fact that the sealing plug 36 extends at the very end, namely the proximal end **26** of the reservoir integrated within the elongate handle **14.** The fluid flow path at the open position of the device is illustrated in Fig. 4 and is represented by arrows.

**[0025]** It is further noticed that the distal end **56** of the elongate handle **14,** together with the filling cap **56** form an ergonomic grip portion suited for one-handed gripping thereof and easy manipulation of the push-button **58,** using one finger.

**[0026]** According to an embodiment of the invention, the elongate handle **14** is formed with a translucent portion **66** (Fig. 1) marked with in representative of the liquid level within the reservoir **28.** It is appreciated that the elongate handle **14** may be entirely transparent or translucent or may comprise transparent or translucent portions, as described.

**[0027]** In a further embodiment of the invention illustrated in Fig. 5, the toilet brush as principally similar to that disclosed in connection with the previous embodiments, however, formed with a somewhat different manipulating arrangement wherein the manipulating push-button **70** projects from a side wall portion of the handle **14'** with a filling cap **72** sealingly screw coupled at a distal end of the elongate handle **14'.**

**[0028]** In accordance with the embodiment of Fig. 5, distal end of the manipulating rod **40'** is formed with an inclined surface **74** bearing against a correspondingly inclined sliding surface **78** formed at a rear end of push-button **70.** Push-button **70** is spring biased by coiled spring **82** so as to project from the elongate handle **14'** and the arrangement is such that depressing the push-button **70** against the biasing effect of spring **82** in direction of arrow **84** entails corresponding axial displacement of the manipulating rod **40'** about an axis substantially perpendicular to axis of displacement of push-button **70,** however coaxial with the longitudinal axis of the elongate handle **14'.**

**[0029]** The embodiment of Fig. 6 differs from the previous embodiment in that the sealing plug **88** is integrally formed with a biasing portion **90** in the form of an integrated bellow-type spring portion bearing at its proximal end against a shoulder **92** of the central core **18,** whereby the sealing plug **88** is normally biased into sealing engagement of the dispensing port **30.**

**[0030]** Those skilled in the art to which this invention pertains will readily appreciate that numerous changes, variations and modifications can be made without departing from the scope of the invention *mutatis mutandis.*

## Claims

1. A toilet brush comprising a cleaning head fitted at a proximal end of an elongate handle, said handle comprising a liquid-tight reservoir fitted with a liquid dispensing port at said proximal end; said liquid dispensing port being normally sealed by a sealing plug; and a push-button at a distal end of the handle for manipulating the sealing plug to unseal the dispensing port only upon depressing of said push-button; and wherein manipulating the sealing plug is carried out by a manipulating rod extending thorough the handle and being axially displaceable there within.

2. A toilet brush according to claim 1, wherein the reservoir is refillable.

3. A toilet brush according to claim 2, wherein the reservoir comprises a sealingly attachable filling cap at the distal end.

4. A toilet brush according to claim 1, wherein the cleaning head comprises an array of bristle tufts extending from a central core formed with a liquid duct being in flow communication with the dispensing port of the handle; said cleaning head comprises one or more liquid dispensing apertures being in flow communication with the liquid duct.

5. A toilet brush according to claim 1, wherein the handle is made of, or comprises at least a portion, being translucent or transparent.

6. A toilet brush according to claim 5, wherein the handle is formed with indicia representative of liquid level within the reservoir.

7. A toilet brush according to claim 1, wherein a grip portion at the distal end is ergonomically formed and suited for gripping and manipulating of the push-button using one hand only.

8. A toilet brush according to claim 1, wherein the push-button is a resilient, deformable portion engageable with a distal end of the manipulating rod.

9. A toilet brush according to claim 8, wherein the resilient push-button is be-molded in a substantially solid sealingly attachable filling cap at the distal end.

10. A toilet brush according to claim 8, wherein the resilient push-button is sealingly integrated in a substantially solid sealingly attachable filling cap at the distal end.

11. A toilet brush according to claim 1, wherein push-button is depressible substantially axially about the longitudinal axis of the brush.

12. A toilet brush according to claim 1, wherein push-button is depressible about an axis transversing the longitudinal axis, whereby a motion-converting element is fitted for converting linear motion along one

axis into linear motion about an axis parallel to the longitudinal axis of the manipulating rod.

**13.** A toilet brush according to claim 1, wherein manipulating rod is coaxially retained within the handle.

**14.** A toilet brush according to claim 1, wherein sealing plug is biased into its normally sealed position by a compression spring.

**15.** A toilet brush according to claim 1, wherein sealing plug is biased into its normally sealed position by a compressible portion integrated therewith.

**16.** A toilet brush according to claim 1, wherein at least the liquid reservoir is made of or coated with a material durable to corrosive agents.

**17.** A toilet brush according to claim 1, wherein the manipulating rod extends from the distal end to the proximal end of the liquid reservoir.

**18.** A toilet brush according to claim 1, wherein sealing plug may be integrated at the proximal end of the manipulating rod.

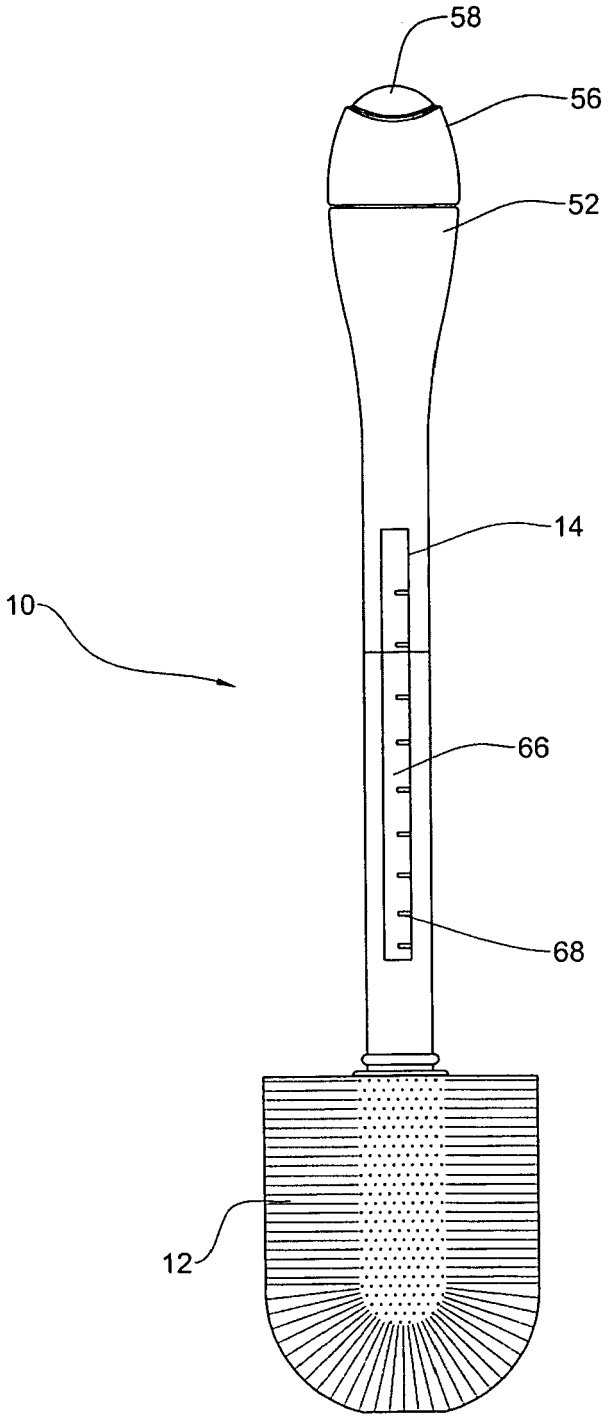


FIG. 1

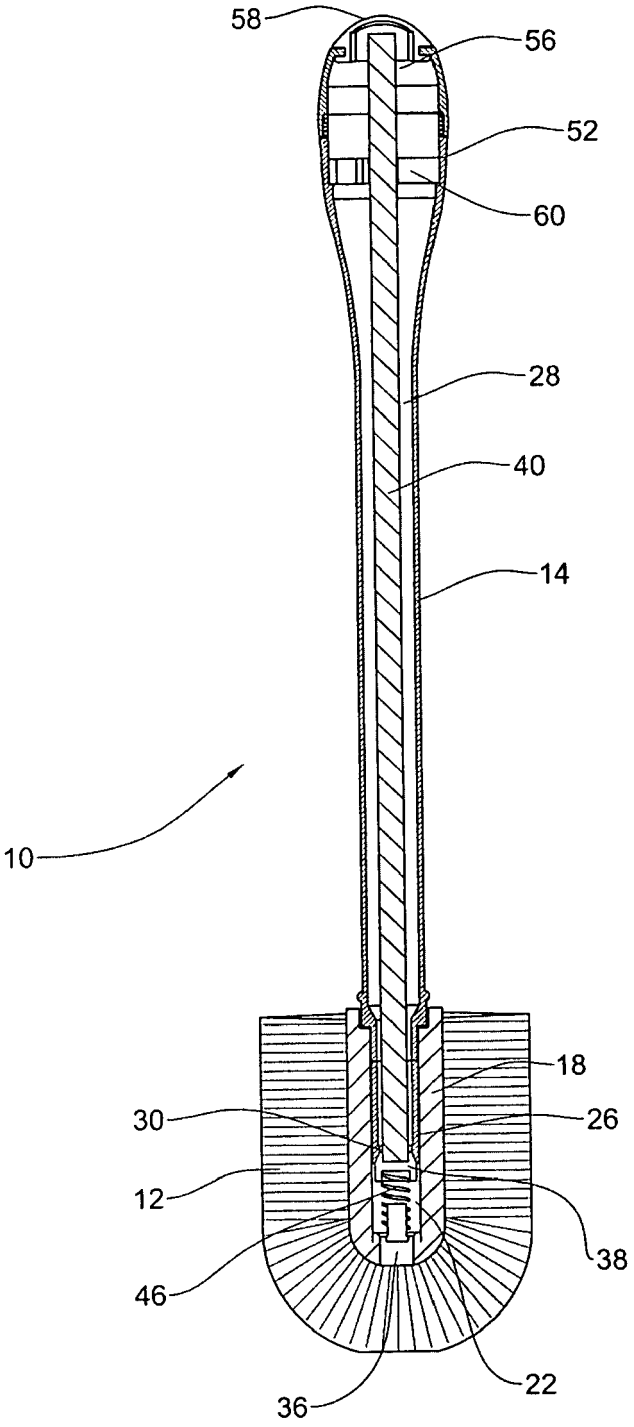


FIG. 2

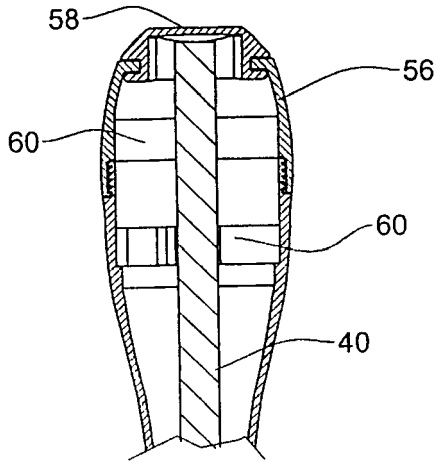


FIG. 3

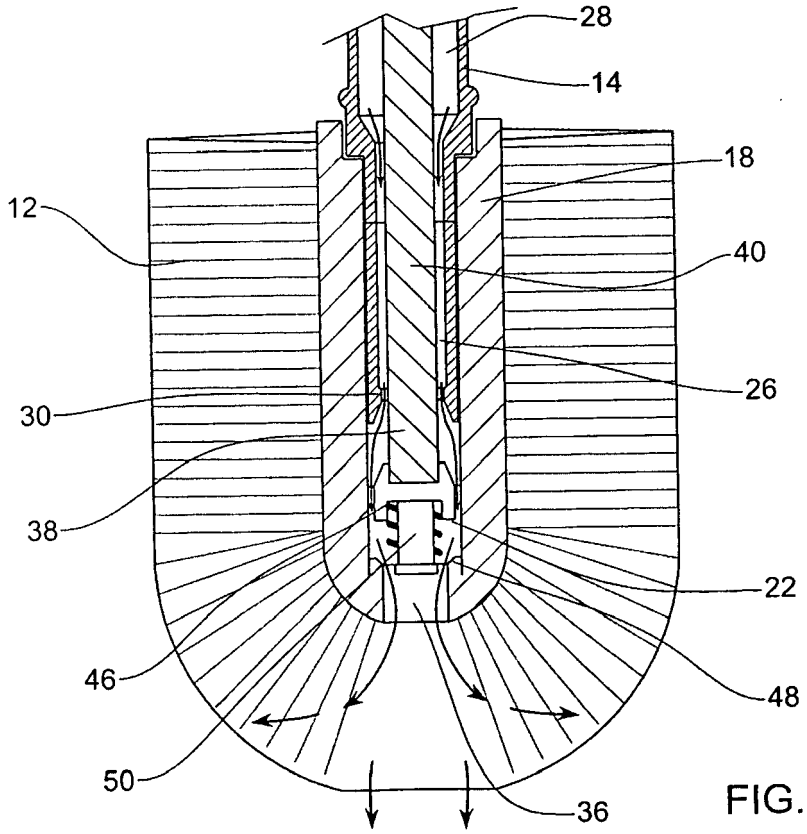


FIG. 4

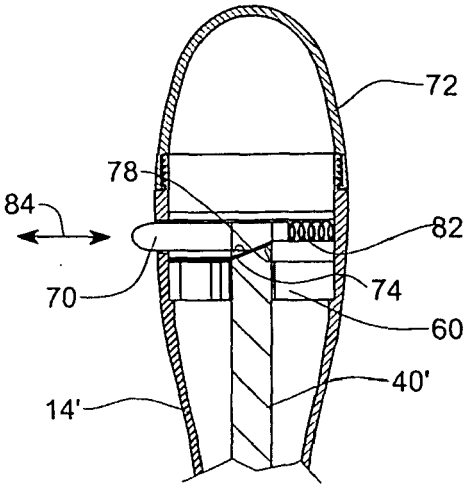


FIG. 5

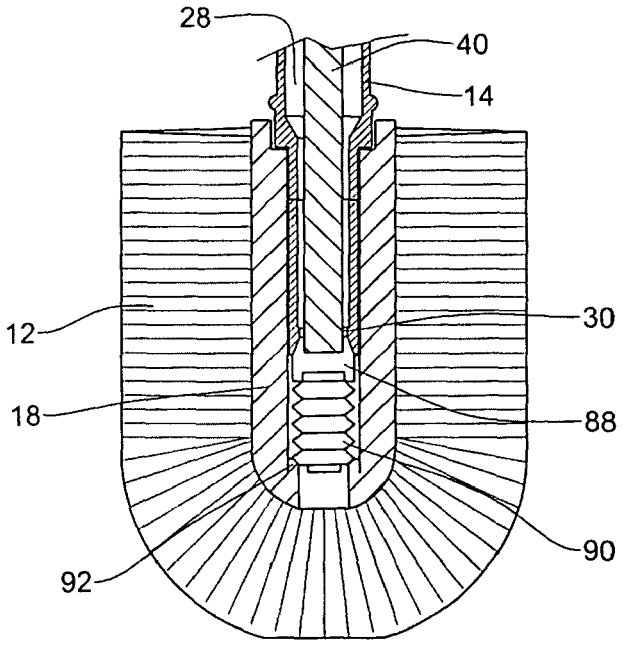


FIG. 6

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


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- WO 0165969 A1 **[0006]**
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