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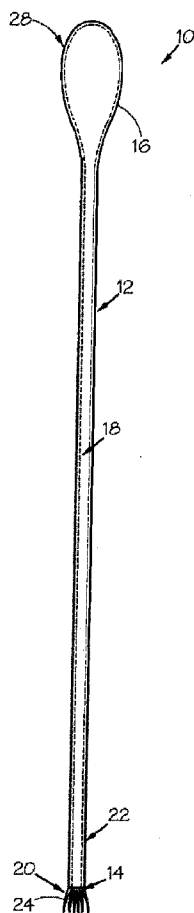
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(54) Title: A DISPENSER



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(57) Abstract: The invention provides a micro-dispenser for dispensing calibrated amounts of fluids and topically applying same to a working surface, typically for dental applications. The dispenser includes a body defining an inlet and having a compressible member for drawing up fluid through the inlet into at least part of the body, and an application implement, operatively in fluid connection with said drawn up fluid, via which said fluid is dispensed upon compression of the compressible member for application to the working surface.



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A DISPENSER

FIELD OF THE INVENTION

This invention relates to fluids handling. In particular, the invention relates to a micro-dispenser for dispensing calibrated amounts of fluids and topically applying same onto a working surface, preferably, in a health science application such as, for example, a medical, dental, or pharmaceutical application.

BACKGROUND TO THE INVENTION

Often a need exists in the medical or dental field to topically apply or daub a liquid or fluid substance onto a working surface. For example, in dentistry, a dental professional regularly employs an elongate micro-dispenser to dispense liquid cement and apply same onto, for example, a patient's tooth. Such a micro-dispenser generally comprises a small bristle coating head connected to an elongate handle. The head is normally from absorbent materials so as to absorb and hold a quantity of liquid once removed from contact with liquid in a container. In use, the head is dipped in the liquid that is to be applied onto the working surface, and thereafter daubed onto the working surface.

A problem associated with this micro-dispenser is that very little control is possible over the amount of liquid dispensed.

Another problem associated with this micro-dispenser, when used to dispense light curable dental materials, is that curing thereof occurs immediately after the bristle head is removed from the material in which it was dipped and consequently adequate functioning of these light curable dental materials at the tooth surface is negated if the dental professional takes too long to apply same.

Apart from the above problem, use of this micro-dispenser also regularly results in excess amounts of daubed materials being applied onto a patient's tooth, obviously with unwanted effects.

OBJECT OF THE INVENTION

It is an object of this invention to address, at least in part, some of the above mentioned problems.

SUMMARY OF THE INVENTION

In accordance with this invention there is provided a micro-dispenser for dispensing calibrated amounts of fluids and topically applying same to a working surface, said dispenser including a body defining an inlet and having a compressible member for drawing up fluid through the inlet into at least part of the body; and an application implement, operatively in fluid connection with said drawn up fluid, via which said fluid is dispensed upon compression of the compressible member for application to the working surface.

There is also provided for the application implement to be a coating implement adapted to coat the working surface upon compression of the compressible member.

The coating implement may preferably include a number of bristles, hair, or wire set into a first end of the body; or, alternatively, a sponge or a thick mass of absorbent threads or fabric strips connected to said first end, preferably, adjacent the inlet. An outlet, separate from the inlet may also form part of the body and said bristles, hair, wire, sponge or a thick mass of absorbent threads or fabric strips may, alternatively, be adjacent same.

The application implement may preferably include a needle.

The invention may also provide for the body to have calibration markings that allows a user to have volume control over the quantity of fluid drawn up or dispensed.

In addition, there may be provided for the body, or at least part thereof operatively holding the fluid, to be transparent; alternatively, translucent.

In another embodiment of the invention, the body, or at least part thereof operatively holding the fluid, is opaque, or alternatively manufactured to only let through a specific light frequency so as to prevent light curing of dental liquids used with the dispenser.

There may also be provided for the compressible member to be round or bulging in shape and to be formed anywhere along the length of the body.

In accordance with another aspect of the invention there is provided for a micro-dispenser, as described above, having at least one fluid substance pre-packed in a body thereof for dispensing and topical applying same onto a working surface.

According to the above aspect of the invention, there is provided for two or more fluid substances to be pre-packed in the body and, preferably, for the body to have mixing means for mixing the two or more liquid substances prior to dispensing.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention are now described, by way of example, with reference to the accompanying non-limiting diagrammatic drawings. In the drawings:

Figure 1 shows a side view of a micro-dispenser in accordance with a first embodiment of the invention;

Figure 2 shows a side view of a micro-dispenser in accordance with a second embodiment of the invention;

Figure 3 shows a side view of a micro-dispenser in accordance with a third embodiment of the invention; and

Figure 4 shows a side view of a micro-dispenser in accordance with a fourth embodiment of the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

In the drawings, like numerals generally indicate like components, unless otherwise indicated.

Reference numerals 10, 100, 200, and 300 represent three different embodiments of the invention and generally refer to a micro-dispenser, which can be used for dispensing calibrated amounts of liquids or fluids and topically applying same onto a working surface.

It should be understood that the exemplary embodiments 10, 100, 200, and 300 described below are not intended to limit the invention in any way, but are only provided to describe preferred embodiments of the invention.

Referring to Figure 1, micro-dispenser 10 consists of an elongate body 12 having an inlet 14 and a compressible member 16 for drawing up liquid 18 through inlet 14 into at least part of body 12. Micro-dispenser 10 also includes an application implement, in particular, a coating implement 20 operable to be in fluid connection with the drawn up liquid 18 and via which liquid 18 is dispensed upon compression of compressible member 16 for application to a working surface such as, for example, a patient's tooth (not shown).

It will be appreciated that the coating implement may consist of a number of bristles 24 set into a first end 22 of body 12. It is also envisaged that hair or wire may function as a substitute to bristles 24. In other embodiments of the invention, the coating implement may consist of a sponge or a thick mass of absorbent threads or fabric strips, located, preferably, adjacent inlet 14, and connected to first end 22. In Figure 4, the application implement is shown to be a needle 320.

An outlet (not shown), separate from inlet 14 and through which drawn up liquid 18 can be dispensed, may also form part of body 12 and the bristles 24, hair, wire, sponge or a thick mass of absorbent threads or fabric strips may be located adjacent same.

As can be seen from Figure 2, body 112 has calibration markings 26 to allow a user to have volume control over the quantity of liquid 118 drawn up or dispensed.

Typically, body 12,112, or part thereof, includes a hollow passageway through which liquid 18,118 can pass or in which same can be housed. The passageway preferably, but not necessarily, extends from inlet 14,114 along the length of body 12,112 up to second end 28,228 thereof. To facilitate liquids handling and to enhance control over the amount of liquid dispensed and applied onto the working surface, it is foreseen that body 12,112, or part thereof in which liquid 18,118 is housed, will typically be manufactured from a transparent material such as low-density polyethylene (LDPE). A translucent material may also be used.

Alternatively, body 12, 112, or at least part thereof operatively holding liquid 18,118, is manufactured from an opaque material. Such material may be adapted to only let through a specific light frequency so that a dental professional's overhead light does not initialize curing of light curable dental fluids held within body 12,112 of dispenser 10,110 thereby eliminating problems

associated with untimely light curing during application of a light curable dental liquid.

As illustrated in Figures 1 and 2, the compressible member 16,116 typically has a round or bulging shape and is formed anywhere along the length of the body.

The invention is believed to further extend to a dispenser 200 as shown in Figure 3. Dispenser 300 is similar to micro-dispenser 10 and 100, but loaded or pre-packed with at least one liquid substance 218 in body 212, more particularly, in chamber 230 thereof, for dispensing and topically applying the at least one liquid substance via coating implement 220 onto a working surface upon compression and consequent breaking of seal 235 to allow substance 218 to flow towards bristles 224 of coating implement 220. Dispenser 300, shown in Figure 4 of the drawings, functions in a similar way to dispenser 200, but differs by having a needle arrangement 320 mounted thereto as an application device.

According to the latter two embodiments of the invention, two or more liquid substances 218, 318 may be pre-packed in chambers similar to 230 and 330. The substances 218, 318 may be blended with mixing means such as, for example, an air bubble 240, 340 prior to dispensing.

While preferred embodiments of the invention are shown and described, it will be understood that it is not intended to limit the extent of the invention, but rather it is intended to cover all modifications and alternate methods, including: methods, for manufacturing micro-dispenser 10, 100, 200, and 300 falling within the spirit and the scope of the invention.

The applicant believes that the Micro-dispenser 10, 100, 200, and 300 of the present invention, at least in part, addresses shortcomings in conventional micro-dispensers in that it provides more control over the amount of, and the way in which, liquid is dispensed at a certain time onto a working surface.

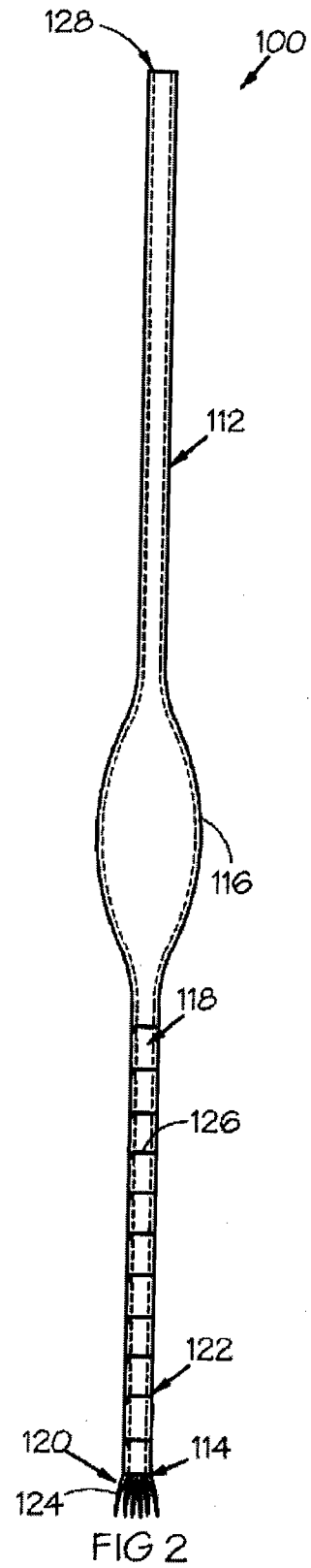
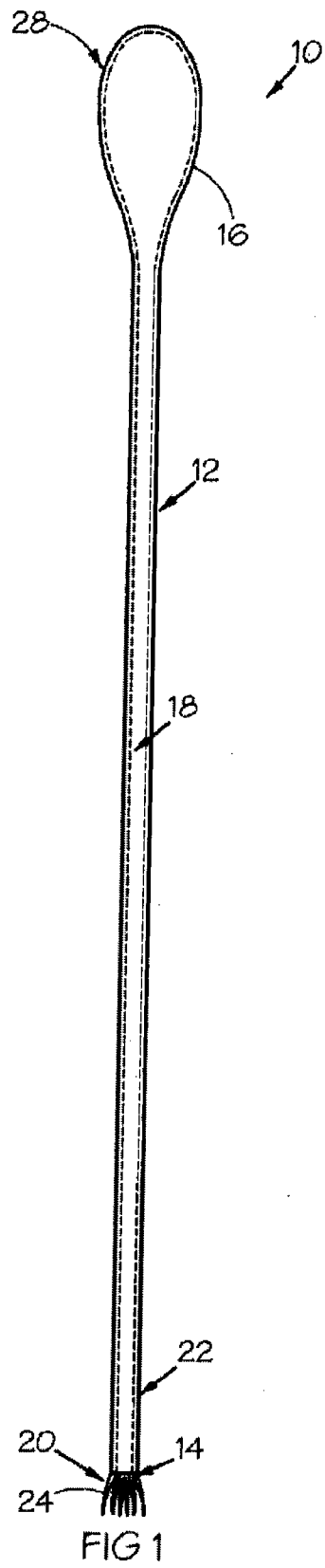
CLAIMS

1. A micro-dispenser for dispensing calibrated amounts of fluids and topically applying same to a working surface, said dispenser including:
 - a body defining an inlet and having a compressible member for drawing up fluid through the inlet into at least part of the body; and
 - an application implement, operatively in fluid connection with said drawn up fluid, via which said fluid is dispensed upon compression of the compressible member for application to the working surface.
2. A micro-dispenser as claimed in Claim 1, wherein the application implement is adapted to be a coating implement, which includes any one of a number of bristles, hair, wire set into a first end of the body, a sponge, mass of absorbent threads, and fabric strips connected to said first end.
3. A micro-dispenser as claimed in Claim 2, wherein the number of bristles, hair, wire set into a first end of the body, a sponge, mass of absorbent threads, or fabric strips is connected adjacent the inlet.
4. A micro-dispenser as claimed in Claim 2, which includes an outlet, separate from the inlet, and said bristles, hair, wire, sponge or a thick mass of absorbent threads or fabric strips is adjacent the outlet.
5. A micro-dispenser as claimed in any one of claims 1 to 4, wherein the application implement includes a needle.
6. A micro-dispenser as claimed in any one of claims 1 to 5, wherein the body is provided with calibration markings.
7. A micro-dispenser as claimed in any one of claims 1 to 6, wherein the body, or at least part thereof, operatively holding the fluid, is transparent or

translucent and manufactured to only let through a specific light frequency so as to prevent light curing of dental liquids used with the dispenser.

8. A micro-dispenser as claimed in any one of claims 1 to 7, which includes at least one fluid substance pre-packed in the body thereof for dispensing and topical applying same onto a working surface.

9. A micro-dispenser as claimed in Claim 8, wherein there is provided for two or more fluid substances to be pre-packed in the body and for the body to have mixing means for mixing the two or more liquid substances prior to dispensing.



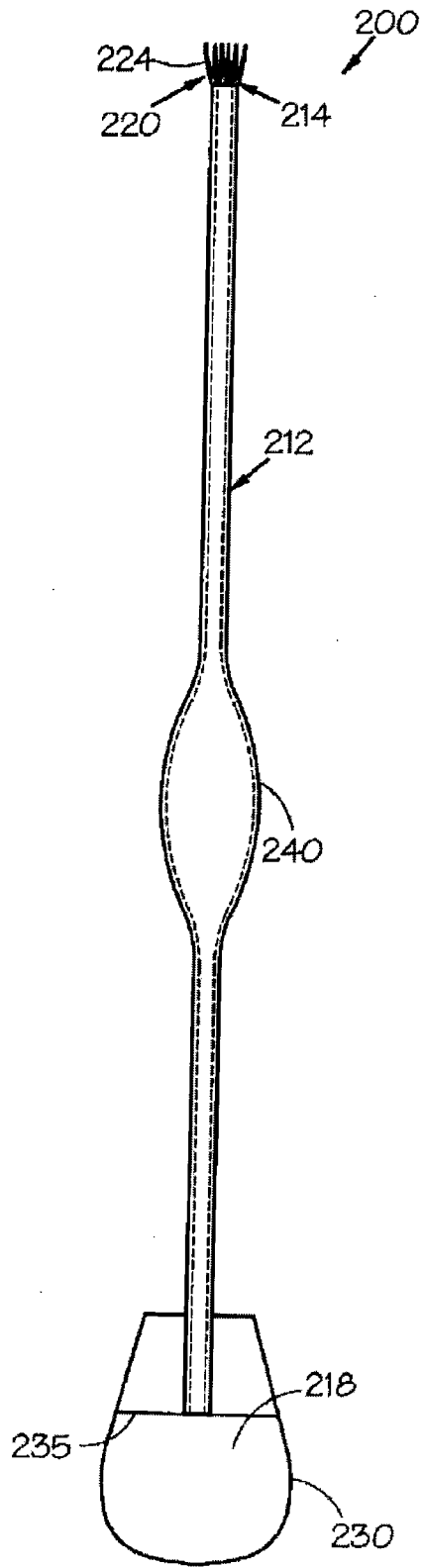


FIG 3

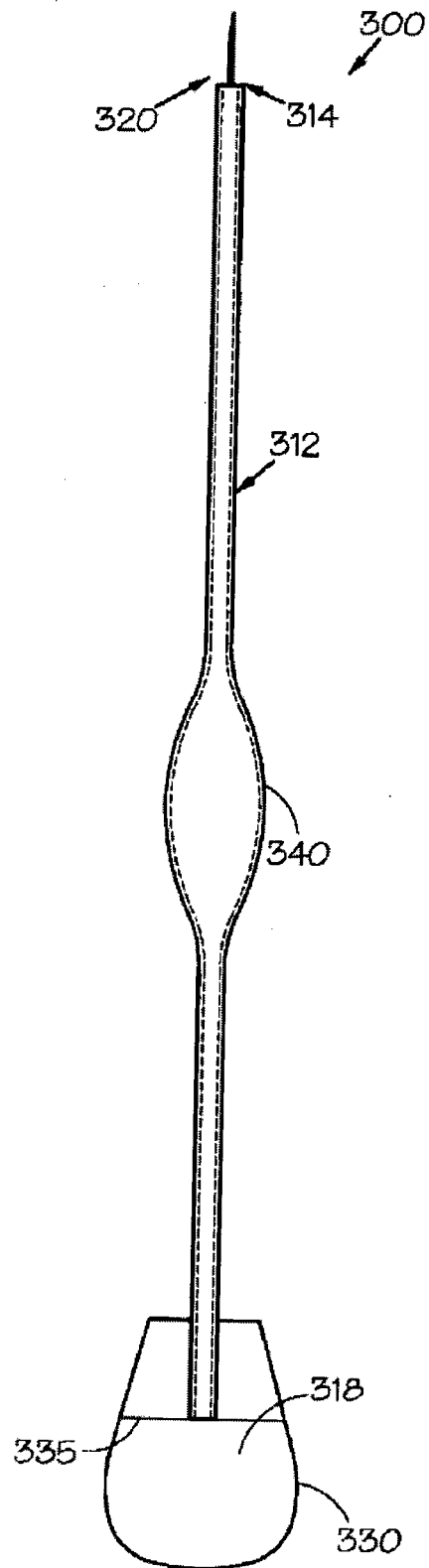


FIG 4