Jan. 3, 1939. R. L. FORTNEY 2,142,780

METHOD OF MAINTAINING A DENTAL VARNISH DISPENSER IN USABLE CONDITION

Filed April 23, 1936

Fig. 1.

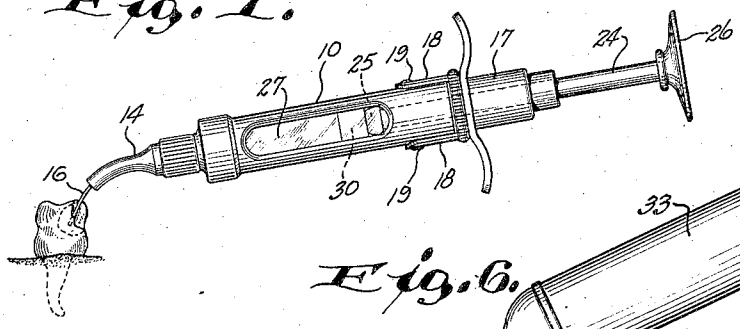
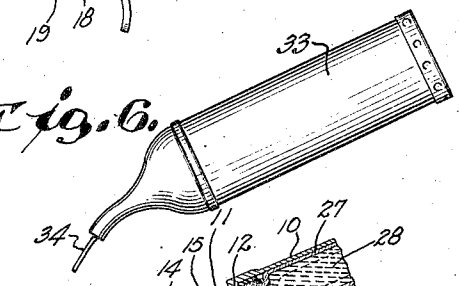


Fig. 6.



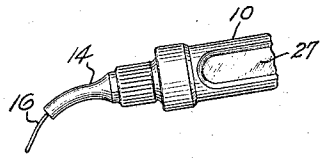


Fig. 2.



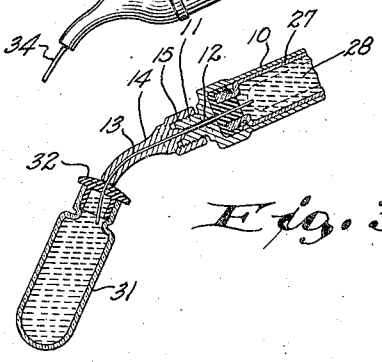


Fig. 3.

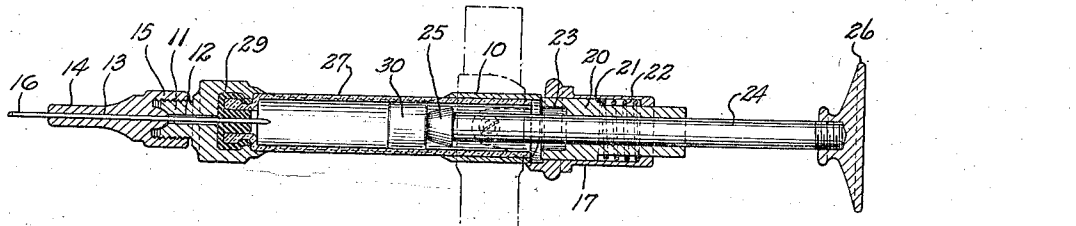


Fig. 4.

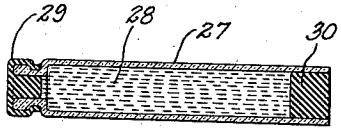


Fig. 5.

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METHOD OF MAINTAINING A DENTAL VARNISH DISPENSER IN USABLE CONDITION

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Application April 23, 1936, Serial No. 75,959

1 Claim. (Cl. 32—1)

This invention relates to improvements in the art of using dental varnish or the like.

In the filling of teeth, after the dentist has drilled out the cavity and before inserting the filling therein, it is necessary to coat the interior of the cavity with a lining of varnish. This dental varnish is now purchased in small bottles and is applied to the cavity either by dipping a small wire loop into the varnish or by immersing cotton in the varnish and applying the cotton to the cavity. These methods are unsatisfactory as the varnish hardens on the instruments and renders cleaning difficult. Furthermore, because of frequency of use, the bottle containing the varnish has to be kept open most of the time and a large percentage of the liquid evaporates or gums up before it can be used so that only a relatively small part of the bottle is actually employed in the dental work.

It is a general object of the present invention to provide an improved method of using dental varnish or the like whereby said varnish may be discharged into a cavity or other location by a syringe or like instrumentality, and whereby the syringe needle is so protected after use as to prevent solidification of the varnish in and around the needle duct.

A more specific object of the invention is to provide a method of using dental varnish which includes the steps of discharging the varnish by a syringe, and the prevention of solidification of the varnish in the duct of the syringe needle by immersing the needle end in liquid which is capable of preventing solidification of the varnish, and by hermetically sealing said needle end and liquid from the atmosphere.

A further object of the invention is to provide improved apparatus for effecting commercial exploitation of the above method.

A more specific object of the invention is to provide a syringe having a chamber adapted to contain dental varnish or the like, having a tubular needle with its inner end communicating with said chamber and with its outer end projecting exteriorly thereof, and having means for ejecting varnish from said chamber through said needle, and to provide means for maintaining the varnish fluent in and around the duct of the needle when the device is not in use, comprising an auxiliary container having liquid therein which is capable of preventing solidification of the varnish, and a closure for said auxiliary container through which the outer end of the needle may be removably inserted, said closure being formed of material capable of forming a self-seal around the needle.

With the above and other objects in view, the invention consists of improvements in the art of using dental varnish or the like and all its parts and combinations as set forth in the claim and all equivalents thereof.

In the accompanying drawing in which the same reference numerals designate the same parts in all of the views:

Fig. 1 is a side view of a syringe showing how it may be used to discharge varnish into a drilled-out cavity;

Fig. 2 is a fragmentary side view of the syringe showing the needle end about to be inserted into the auxiliary container;

Fig. 3 is a longitudinal sectional view through the auxiliary container and the outer end of the syringe showing the manner of preventing solidification of the varnish in and around the syringe needle when the device is not in use;

Fig. 4 is a longitudinal sectional view through the syringe, the dot-and-dash lines indicating how the outer end of the syringe may be opened for the purpose of inserting a cartridge therein;

Fig. 5 is a longitudinal sectional view through one of the syringe cartridges; and

Fig. 6 is a side view of a modified form of syringe comprising a collapsible tube.

Referring more particularly to the drawing, the numeral 10 designates the tubular body portion of the syringe, said tubular body having its outer end provided with a projecting threaded stem 11 (see Fig. 3) through which a duct 12 extends. A tubular needle 13 extends through a coupling member 14, and said coupling member has an interiorly threaded part 15 which is cooperable with the threaded stem 11 of the syringe body 10 as shown in Fig. 3. When the coupling member is in position, the inner end of the needle 13 extends through the duct 12 and into the body portion 10 of the syringe. The outer end of the needle 16 projects exteriorly of the coupling member.

The other end of the tubular body 10 is adapted to be closed by a head 17, and said head has forwardly projecting spaced extensions 18 which are pivotally connected to the sides of the tubular body 10 as at 19. Within the head 17 is a tubular member 20 having an annular shoulder 21 engageable with a coil spring 22 (see Fig. 4), and the inner end of said tubular member is formed with an enlarged recess 23.

A plunger 24 is slidable through the tubular member 20 and has its inner end extending into

the syringe body portion **10** and formed with a head **25**. The outer end of the plunger may be fitted with a knob **26**. By pulling the plunger outwardly until its head **25** engages in the recess **23** to move the tubular member **20** against the tension of the spring **22**, the entire head and plunger may be pivoted to the dot-and-dash line position of Fig. 4 to open the barrel.

A cartridge **27** (see Fig. 5) is furnished with varnish **28** therein, and said cartridge has one end closed by a stopper **29** formed of rubber or other material capable of forming a self-seal around the inner end of the needle when said inner end of the needle extends there-through. The other end of the cartridge is closed by a resilient member **30** which forms a piston.

When the head of the syringe is moved to the dot-and-dash line position of Fig. 4, the cartridge may be inserted in the barrel of the syringe, and it is pushed against the inner end of the needle until the needle has passed through the rubber stopper **29** as shown in Fig. 4. The syringe head and plunger are then pivoted back to operative position, and movement of the plunger will act on the piston **30**, closing one end of the cartridge to force varnish **28** from the cartridge into the needle **13**.

While syringes of this type are well known, they have always been used for injecting liquids which do not gum up. To use a syringe of this type, however, as ordinarily furnished, for discharging varnish is entirely unsatisfactory as the varnish will gum up in the very small passage way of the needle **13** and prevent further use.

It is a part of the present invention, however, to make it entirely practical to utilize a syringe for injecting dental varnish, and accordingly there is provided an auxiliary container or vial **31** filled preferably with varnish. The material in the auxiliary container may, however, be a suitable solvent capable of preventing solidification of the varnish within the needle duct and around the end of the needle. The end of the vial is hermetically sealed by a stopper **32** of rubber or other pierceable material capable of forming a self-seal around the needle when the needle is inserted therein.

With this arrangement as soon as the dentist has finished using a syringe, the needle end is immediately inserted through the stopper **32** as shown in Fig. 3 so that it projects into the varnish or other liquid in the vial **31**. The rubber stopper **32** forms a tight seal around the needle and prevents any air from getting into the auxiliary container. Furthermore, the varnish or solvent in the auxiliary container prevents gumming up of the end of the needle and also keeps the duct within the needle in open condition. No matter how the device is laid down, the duct of the needle will always be kept clear, as varnish will either flow from the cartridge **27** of the syringe into the needle ducts or from the auxiliary container into the needle duct.

As shown in Fig. 6, a more simple type of syringe may be employed, and in this figure the syringe consists merely of a collapsible metal tube **33** containing the dental varnish, said tube being provided with a tubular needle **34** projecting from one end through which the varnish may be discharged by merely squeezing the tube. Whenever the syringe **33** is not in use, the needle **34** is inserted in the auxiliary container **31** in the same manner heretofore described and shown in Fig. 3, and it is therefore contemplated that the collapsible tube type of syringe be likewise equipped with an auxiliary container containing varnish or solvent therefor.

The form of invention shown in Fig. 6 would be well adapted for various other uses besides the discharging of dental varnish. It is particularly well adapted for use as a container for liquid glue, as one of the main difficulties in the merchandising of glue at the present time is the gumming up of the glue around the openings of the bottles or other containers. It is therefore contemplated that wherever the term "varnish" is used in the claim, that this term comprehends any other material which readily gums up when exposed to the air. It is further to be understood that the term "syringe" as used in the claim comprehends any instrumentality of the types shown in Fig. 1 or 6, or of any other type wherein material may be forcibly discharged through a tubular needle.

From the above it is apparent that the present invention discloses a very practical method of merchandising varnish or like material, and it is further apparent that the invention will readily appeal to any dentist, as he will no longer have to bother with cleaning the instruments used to apply varnish to a cavity, and will be able to use the varnish until it is entirely exhausted; whereas, heretofore, it was necessary to throw away a large part of each bottle of varnish due to the fact that it had solidified before it was used up.

Although only two forms of the invention have been shown and described, it is obvious that various other changes and modifications may be made without departing from the spirit of the invention, and all of such changes are contemplated as may come within the scope of the claim.

What I claim is:

The method of maintaining a dental varnish dispenser in usable condition, said dispenser being a syringe of a type having a tubular needle of minute bore through which varnish may be ejected without having the primary pressure applying means contact the varnish comprising pierceably inserting the syringe needle through the sealing means of an auxiliary container which is hermetically sealed by a pierceable resilient sealing means and which contains liquid capable of preventing solidification and gumming of the varnish in the syringe needle when the latter is immersed therein, whereby a syringe having a tubular needle of minute bore may be employed for injecting the varnish into a cavity and whereby the varnish may be prevented from solidifying in the needle and in the syringe for indefinite periods between successive uses of the syringe.

RUFUS L. FORTNEY.