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DENTAL CAVITY LINING DEVICE

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FIG. 1.

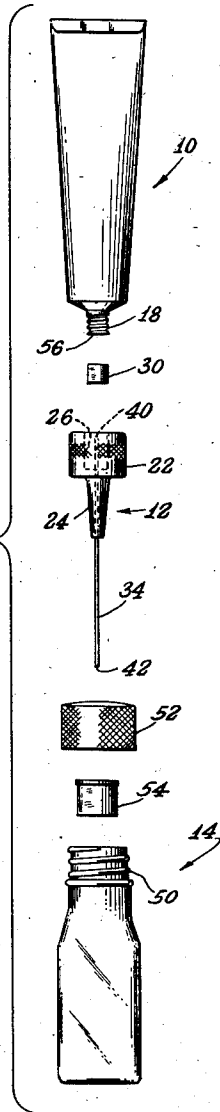


FIG. 2.

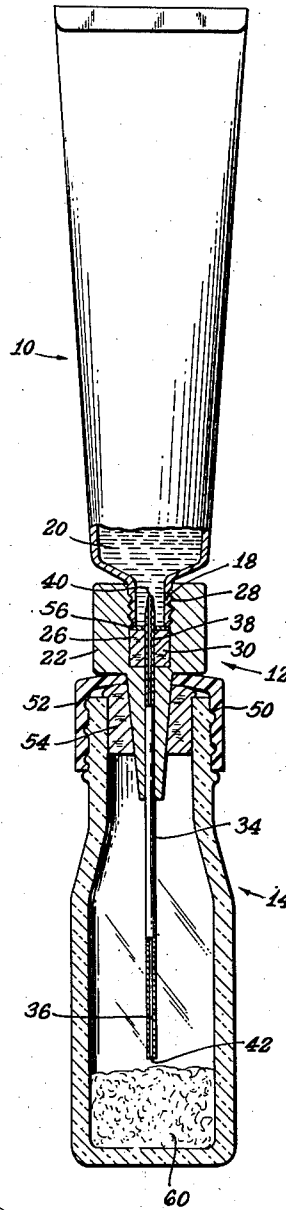
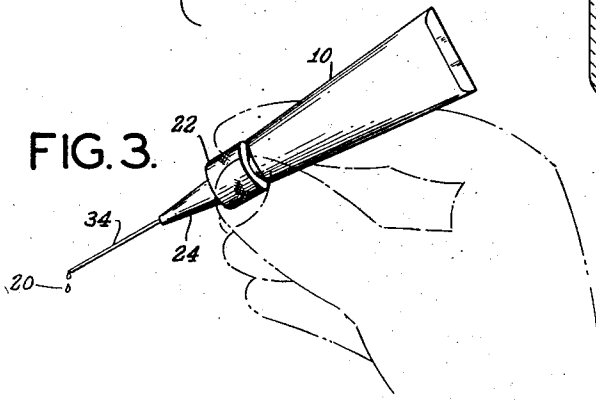


FIG. 3.



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DENTAL CAVITY LINING DEVICE

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6 Claims. (Cl. 32—1)

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This invention relates to devices for dispensing dental varnishes; and in particular is directed to novel improvements in such structures, whereby the dispenser of dental varnishes for cavity lining may be utilized as the instrument for carrying out the cavity lining operation.

It is the practice in dentistry, after a cavity of a tooth has been opened and treated preparatory to being filled, to coat the cavity with an appropriate varnish or liner. The function of the varnish coating is to provide a protective seal against penetration of materials which will injuriously affect the tooth and to act as a barrier between the filling and the body of the tooth. In general, the varnish is applied to the cavity by means of an applicator or pledget of cotton. Dental varnishes are liquids containing highly volatile solvents so that they dry as rapidly as possible. However, these volatile solvents present marked disadvantages and inconveniences in that the rapid volatilization of the solvent seriously impairs the requisite fluidity of the varnish and thus makes it difficult properly to manipulate the same. Since the varnish is transferred from the container thereof to the cavity in tiny droplets or globules of large surface areas, the volatilization of the solvent is exceedingly rapid, and the varnish quickly loses the manipulability required to achieve a proper coating of appropriate thinness and even distribution.

It has been proposed, heretofore, to employ a device whereby the varnish could be discharged through a delivery tip directly into the cavity to be lined. It has also been proposed to provide such a device with a means for maintaining the discharge orifice thereof under conditions which inhibit the drying out of the varnish at such place. However, such structures have failed to overcome the disadvantages of the general practice in that the lapse of time between the delivery of the varnish to the cavity and the actual manipulation thereof by the dentist using an appropriate applicator results in the thickening of the varnish.

It is accordingly among the principal objects of this invention to provide a device that maintains a dental varnish in flowable condition which may be delivered by a member of the device in a minute globule or droplet to the dental cavity, there to be spread on the surface to be lined by the said varnish delivery member.

Such principal object is achieved by a combination or assemblage of a collapsible tube, containing the varnish, to the delivery end of which

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tube there is appropriately attached a flexible needle having a capillary bore through which the varnish may be discharged drop-wise as desired, the needle being used as the instrument for spreading the varnish, and the needle being provided with a removable housing containing a vapor which prevents the solvent in the varnish from volatilizing while the combination is not being used.

Another object of this invention is to provide an assemblage as above described, wherein the union between the needle and the collapsible tube is achieved by means of a relatively large hub that provides means for holding the assemblage between the fingers and thus to prevent the heat of the hand from reaching the varnish contained in the tube.

Further objects and advantages of this invention will become more apparent from the following detailed description of the invention taken in connection with the accompanying drawings wherein:

Fig. 1 is an exploded view illustrating the members of an assemblage comprising a collapsible tube containing a dental varnish, a needle that may be attached to said tube, and a container having means for maintaining the delivery end of the needle in condition to prevent drying out of the varnish.

Fig. 2 is a view showing the structural elements of the combination illustrated in Fig. 1 in assembled relationship, a part thereof being shown in vertical section.

Fig. 3 is a perspective view of the assemblage of the collapsible tube and the needle combined therewith as such assemblage is held by the dentist, and showing droplets of varnish emerging from the end of the needle.

Referring more particularly to the drawings: the numeral 10 designates a collapsible tube provided with threaded delivery tip or end, the numeral 12 designates a needle assemblage having a hub at the base thereof, and the numeral 14 designates a container adapted to house the discharge tip of the needle when the same is not being used. The collapsible tube 10 may be made of flexible metal or any other appropriate material, and is filled with a dental varnish 20. The needle assemblage 12 comprises the hub 22 and the hub shank 24. The hub is provided with an axially disposed partial bore 26, threaded at 28 and having an inner liner or bushing 30. Set within the hub shank 24 is a flexible needle 34 provided with a capillary bore 36. The inner end 38 of the needle, which may

be pointed as at 40, extends beyond the bushing 30 into the bore 26. The delivery end 42 of the needle is blunt.

The bottle 14 is provided with a threaded neck 50 adapted to receive a closure 52. The neck of the bottle is provided with a stopper 54, and both said stopper 54 and the closure 52 are provided with axially disposed bores adapted to receive the hub shank 24. The bottom of the bottle may be provided with a wad of glass wool 60 or any other appropriate material saturated with an appropriate solvent such as that used in the formulation of the varnish.

The assemblage of the tube and the needle may be achieved as follows: the tube 10, as it comes from the supplier, is provided with an appropriate sealing layer 56 at the end of the threaded discharge tip 18. The hub of the needle is screwed on to such discharge tip so that the pointed end 40 of the needle punctures the seal and passes into the tip of the tube. When the dentist is ready to apply the varnish to the cavity, undergoing preparation for the filling, the dentist grasps the assemblage of the tube and the needle, affixed thereto by the hub 22, as shown in Fig. 3. He then positions the needle in the situs of application, and squeezes a droplet of the varnish out of the tube through the end 42 of the needle and proceeds forthwith to spread the droplet on the surface of the cavity in accordance with his practice. He may then squeeze another droplet out of the tube and proceed to distribute the same on the surface of the cavity. The flexibility of the needle permits the same to be bent so that the dentist can reach any desired situs of application.

After finishing the cavity lining operation the assemblage of the collapsible tube and the needle may then be inserted in the bottle 14 as shown in Fig. 2. The hub shank is snugly engaged by the stopper 54 so that evaporation of the solvent in the bottle 14 is prevented. At the same time the solvent varnish in the needle is prevented from volatilizing, and the varnish thereby is maintained in fluid condition. The assemblage is thus ready for instant use on the next occasion when the dentist has to perform a cavity lining operation.

It will be observed that the structure above described provides means by which (a) it is possible with great precision to control the amount of the varnish being delivered to the situs of application, (b) immediately to "work" the varnish as thus delivered, and (c) while performing the cavity lining operation to prevent the heat of the hand from reaching the body of the varnish within the tube. Additionally the said structure provides means for constantly keeping the varnish in the needle in flowable condition.

This novel combination presents marked advantages over any of the structures heretofore proposed in eliminating the need for auxiliary equipment in carrying out a cavity lining operation. It will be noted that the hub of the needle provides the dentist with means for holding the assemblage with fingers so as to insulate the varnish from the heat of the hand, and thus prevent it from expanding either before it is ready for, or while it is in, use. The structure provides great ease of application of dental varnish in sharp contrast to all the methods heretofore used. The external diameter of the needle is so small that the needle can be inserted into the tiniest cavities, and its flexibility provides means for bending the same into any desired con-

figuration with resultant increase in facility in carrying out the cavity lining operation. It is possible, precisely, to regulate the amount of the varnish being delivered to a particular situs of application by the positioning of the needle in the exact spot where the varnish is desired prior to the expression of the droplet from the tube.

It will be understood that the foregoing description of the invention and the embodiment illustrated is merely illustrative of its principles; and accordingly the appended claims are to be construed as defining the invention within the whole spirit and scope thereof.

Claims:

1. In a combination for dispensing a dental varnish and as an operating instrument for lining a dental cavity with such varnish, a collapsible tube containing a dental varnish, a needle assemblage adapted for affixation to said collapsible tube comprising a hub, a hub shank and a needle extending through said hub shank, the needle having a longitudinally extending bore that communicates with the interior of the collapsible tube, a container having a closure provided with an opening adapted to engage the aforesaid hub shank in removable sealed relationship, said container having means for filling the interior thereof with vapors of a solvent whereby the varnish in the needle is maintained in flowable condition.
2. In a combination for dispensing a dental varnish and as an operating instrument for lining a dental cavity with such varnish, a collapsible tube containing a dental varnish, said collapsible tube having a tip adapted to engage a needle assemblage, a needle assemblage comprising a hub, a hub shank and a needle having a longitudinal bore extending through said hub shank into the hub, said hub having means for engaging the tip of the collapsible tube thereby to provide for communication of the needle with the interior of the said tube, a housing for the aforesaid hub shank and the delivery end of the needle, said housing comprising a container, a closure, open means in the closure for engaging the hub shank in removable sealed relationship, and means for keeping the interior of the container filled with vapors to prevent the solvent of the varnish from volatilizing whereby the varnish in the needle is maintained in flowable condition.
3. In a combination for dispensing a dental varnish and as an operating instrument for lining a dental cavity with such varnish, a collapsible tube containing a dental varnish, said collapsible tube having a threaded tip adapted to engage a needle assemblage, a needle assemblage comprising a hub, a hub shank and a needle having a longitudinal bore extending through said hub shank into the hub, said hub having threads for engaging the tip of the collapsible tube thereby to provide for communication of the needle with the interior of the said tube, a housing for the aforesaid hub shank and the delivery end of the needle, said housing comprising a container, a closure, open means in the closure for engaging the hub shank in removable sealed relationship, and a wad and a solvent that provides the interior of the container filled with vapors to prevent the solvent of the varnish from volatilizing whereby the varnish in the needle is maintained in flowable condition.
4. In a combination for dispensing a dental varnish and as an operating instrument for lining a dental cavity with such varnish, a collapsible

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ible tube containing a dental varnish, said collapsible tube having a tip adapted to engage a needle assemblage, a flexible needle assemblage comprising a hub, a shank and a needle having a longitudinal bore, extending through said shank into the hub, said hub having means engaging the tip of the collapsible tube thereby to provide for communication of the needle with the interior of said tube, a housing for the aforesaid shank and the delivery end of the needle, said housing comprising a container, a closure, open means in the closure for engaging the shank in removable sealed relationship, and means for keeping the interior of the container filled with vapors to prevent the solvent of the varnish from volatilizing whereby the varnish in the needle is maintained in flowable condition.

5. In a combination for dispensing a dental varnish and as an operating instrument for lining a dental cavity with such varnish, a collapsible tube containing a dental varnish, said collapsible tube having a threaded tip adapted to engage a needle assemblage, a needle assemblage comprising a hub, a tapered shank and a needle having a longitudinal bore, extending through said shank into the hub, said hub having threads for engaging the tip of the collapsible tube thereby to provide for communication of the needle with the interior of the said tube, a housing for the aforesaid shank and the delivery end of the needle, said housing comprising a container, a closure, open means in the closure for engaging the shank in removable sealed relationship, and a wad and a solvent that provides the interior of the container filled with vapors to prevent the solvent of the varnish from volatilizing whereby the varnish in the needle is maintained in flowable condition.

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6. In a combination for dispensing a dental varnish and as an operating instrument for lining dental cavity with such varnish, a collapsible tube containing a dental varnish, said collapsible tube having a threaded tip adapted to engage a needle assemblage, a needle assemblage comprising a hub, a shank and a flexible needle, having a longitudinal bore, extending through said shank into the hub, said hub having threads for engaging the tip of the collapsible tube thereby to provide for communication of the needle with the interior of the said tube, a housing for the aforesaid shank and the delivery end of the needle said housing comprising a container, a closure comprising a cap, provided with a hole, a stopper provided with an open orifice adapted snugly to engage the said shank, and means for keeping the interior of the container filled with varnish to prevent the solvent of the varnish from volatilizing whereby the solvent of the needle is maintained in flowable condition.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,676,881	Anthony	July 10, 1928
2,142,780	Fortney	Jan. 3, 1939
2,199,817	Flosdorf	May 7, 1940
2,276,421	Ross	Mar. 17, 1942
2,494,456	Still	Jan. 10, 1950

FOREIGN PATENTS

Number	Country	Date
28,009	Switzerland	Mar. 11, 1903
546,444	Great Britain	July 14, 1942
587,280	Great Britain	Apr. 21, 1947