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TEETH CLEANING UNIT
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2,601,244

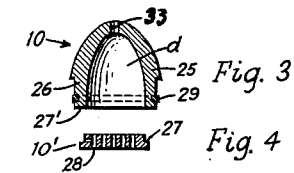


Fig. 3

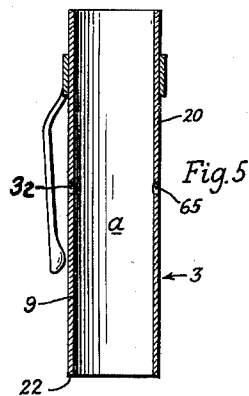


Fig. 4

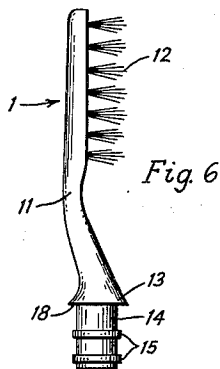


Fig. 5

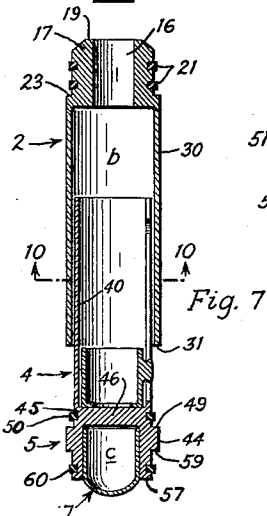


Fig. 6

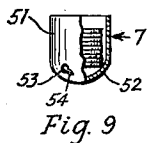


Fig. 7

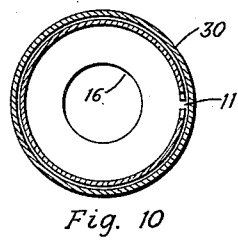


Fig. 8

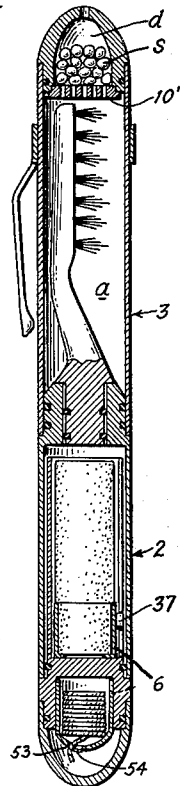


Fig. 9

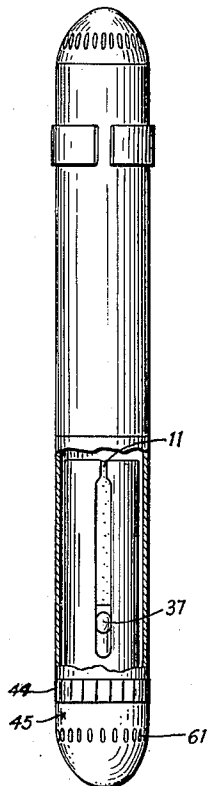


Fig. 10

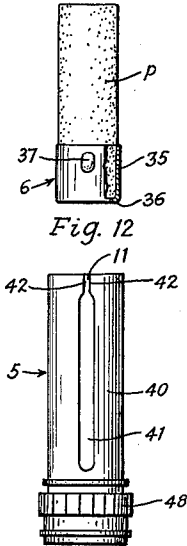


Fig. 11



Fig. 12

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TEETH CLEANING UNIT

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5 Claims. (Cl. 132-84)

1

This invention relates to an improved teeth cleaning unit, and more particularly to a teeth cleaning assembly wherein the tooth brush and all accessories necessary for the proper care of the teeth are assembled together in a compact and attractive unit which may be conveniently carried in the pocket or purse. This application is a continuation-in-part of my copending application Serial No. 612,763, filed August 27, 1945, now Patent No. 2,468,732, dated May 3, 1949.

Proper care of the teeth requires daily brushing and cleaning of the teeth which should be done after each meal. Such preferential care cannot be given to the teeth by most individuals since the necessary implements, such as the toothbrush and accessories used by such individual, are not ordinarily carried by the individual or otherwise are not conveniently available or accessible throughout the day.

In accordance with this invention, a teeth cleaning assembly is provided which presents in one compact, convenient and attractive unit, a replaceable toothbrush with the necessary complement of dentifrice supported by a dentifrice carrier sanitarly housed within a sealed compartment in the handle section of the unit. The dentifrice carrier includes a dental floss compartment from which dental floss may be conveniently dispensed. A tubular cover section detachably secured to one end of the handle section, provides a sanitary and dustproof compartment for housing and containing the brush bristles.

The cover section is provided with a compartment designed to contain moisture absorbent and disinfectant material which serves to attract and extract the moisture carried on the used brush housed therein in a manner to maintain the brush bristles in dry and disinfected condition. The complete unit, including the toothbrush and teeth-cleaning accessories, is constructed and assembled in such compact size and form that it may be conveniently carried in the pocket or purse at all times.

This improved unit is particularly designed for low cost manufacture and assembly from relatively few parts from plastic materials molded into exterior shapes to provide a unit of highly attractive appearance. The detachable sections and parts are connected together by sealing rings in a manner to prevent the escape of moisture from the brush bristles to the exterior of the unit, assuring a dry and sanitary environment. The parts of the unit are so constructed as to permit convenient separation and attachment of the component parts both in assembly and in use.

2

This improved unit satisfies the most critical requirements of sanitation and provides a personal implement which encourages and makes convenient the proper cleaning and care of the teeth.

In order that a clear understanding of this invention may be had, reference is made to the accompanying drawing in which:

Fig. 1 is an elevational view of the fully assembled teeth cleaning unit showing parts broken away to reveal certain structural details thereof.

Fig. 2 is a longitudinal cross sectional view of the teeth cleaning unit showing all the parts thereof in assembled position.

Figs. 3 to 8 inclusive disclose the series of parts from which the teeth cleaning unit is assembled; Fig. 3 more particularly showing the dome shaped cap forming a part of the hollow cover section; Fig. 4 showing the perforated cover member for closing the open end of the dome shaped cap; Fig. 5 showing the tubular body of the cover section; Fig. 6 showing the brush section; Fig. 7 showing the hollow handle section and associated dentifrice dispenser; and Fig. 8 showing the cap closure for the exposed end of the dentifrice dispenser.

Fig. 9 is an elevational view, partly in section, of the dental floss receiving cup inserted into the end of the dentifrice dispenser.

Fig. 10 is an enlarged cross sectional view of the handle section as the same would appear when viewed along the line 10-10 of Fig. 7.

Fig. 11 is an elevational view showing the tubular body and head portion of the dentifrice dispenser; and

Fig. 12 is an elevational view of the dentifrice supporting sleeve designed to slidably telescope within the tubular body of the dentifrice dispenser shown in Fig. 11.

Similar reference characters refer to similar parts throughout the several views of the drawing and specification.

The improved teeth cleaning unit forming the subject matter of this invention generally comprises a one piece brush section 1 designed to be detachably secured to one end of a one piece hollow handle section 2. A hollow cover section 3 contains a brush compartment *a* designed to receive and enclose the brush section 1. The lower end of the cover section 3 is designed to be detachably secured to the handle section at a point adjacent the base of the brush section 1 in a manner to provide a sealed connection. The hollow handle section 2 contains a compartment *b* designed to receive the tubular body of a dentifrice dispenser 4.

3

The dentifrice dispenser is formed from a one piece main section 5 presenting a tubular body portion 40 designed to slidably receive a removable dentifrice supporting sleeve 6. The tubular body 40 merges into a head portion 45 designed to be detachably secured to the lower end of the hollow handle section 2 in a manner to provide a leakproof closure therefor. The head portion 45 of the dentifrice dispenser has a hollow interior providing a compartment c for dental floss. The dental floss is retained in compartment c by a one piece floss receiving cup 7. The floss cup 7 is fully enclosed by a one piece closure cup 8 designed to be detachably secured to the head portion 45 in a manner to provide a sealing connection.

The closure section 3, as shown in Figs. 3, 4 and 5, is formed in three parts, comprising a tubular brush container part 9, the upper end being closed by a dome shaped cap 10 having a compartment d designed to contain an agent s for drying and sterilizing the brush bristles. The drying agent s is retained within the compartment d of cap 10 by a perforated insert member 10' which may be inserted into the open end of the dome shaped cap 10.

Referring more particularly to Figs. 2 and 6, the brush section 1 comprises a stem portion 11 which may be formed of suitable plastic, to which two or more rows of brush bristles 12 are firmly secured. The lower end of the stem portion 11 is designed to taper in graceful curves to a flared skirt 13, and terminates in a plug portion 14 of generally cylindrical form. The plug portion 14 may be embraced by one or more rubber sealing rings 15, each of which may be inset into a circumferentially extending groove formed in the outer periphery of the plug portion. The plug portion 14 is designed to be removably inserted in the bore 16 formed in the end portion 17 of the handle section 2. The rubber sealing gaskets 15 are designed to frictionally fit within the bore 16 in a manner to prevent the escape of moisture from the brush compartment a to the dentifrice compartment b of the handle section. The brush section 1 can nevertheless be removed when the bristles 12 are worn, and a new brush section substituted. The flared skirt 13, which caps the plug portion 14, presents a shoulder 18 which fits neatly against the end 19 of the hollow handle section 2. The brush stem 11 is of such length to permit convenient cleaning of the teeth without requiring insertion into the mouth of any appreciable part of the handle section 2.

The three parts which form the hollow closure section 3, as shown in Figs. 3, 4 and 5, are desirably formed of suitable plastic materials. The interior of the tubular body part 9 desirably presents a smooth interior surface which may be substantially uniform in diameter. The lower end of the body part 9 is designed to snugly telescope over the exterior end portion 17 of the handle section 2 in a manner to provide a snug fit. One or more sealing gaskets 21 may be circumferentially mounted on the end portion 17 of the handle section to provide a frictional fit for the lower end of the body part 9 of the closure section 3, and in addition to seal the joint so that any moisture deposited in the tubular body part 9 by the moistened brush bristles 12 will not escape to the exterior of the teeth cleaning unit. The tubular body part 9 is of sufficient length and interior diameter to snugly receive the brush bristles 12, the stem portion 11, the flared skirt portion 13 and the end portion

4

17 of the handle section, as shown more particularly in Fig. 2. The lower edge 22 of the tubular body part 9 of the closure section 3 is designed to snugly seat against an exterior shoulder 23 formed at the base of the end portion 17 of the handle section.

The opposite upper ends of the tubular body part 9 is closed by the dome shaped closure cap 10 having a hollow dome shaped portion 25 and a depending flange 26 shaped to be snugly inserted into the upper end of the tubular body 9 of the brush containing closure member 3. The dome shaped portion 25 of the closure cap 9 provides a compartment d adapted to contain a drying and disinfecting agent s. The lower end of the dome shaped portion 25 is closed by a detachable closure plate 10' having a peripheral lip 27 which seats against the exterior edge 27' of the flange portion 26, the closure plate 10' being frictionally retained in position by the surrounding depending flange 26. The closure plate 10' is provided with a series of axial holes or perforations 28 providing communicating passageways between the drying and disinfecting compartment d and the brush compartment a. The flange portion 26 is designed to snugly telescope into the upper end of the tubular body part 9 and is desirably frictionally retained in position by a rubber sealing gasket 29 which may be partially inset into a shallow groove extending circumferentially around the outer periphery of the flange portion 26. Thus the dome shaped closure cap 10 may be detached, the closure plate 10' removed, and the drying and disinfecting agent s contained in the disinfecting compartment d removed and replenished. The sealing gasket 29 prevents the escape of moisture from the compartments a and d to the exterior of the teeth cleaning unit.

As shown more particularly in Figs. 1, 2 and 7, the one piece handle section 2 may be desirably formed of suitable plastic material and presents a tubular body 30 having a bore of uniform diameter which defines the dentifrice compartment b therein. The upper end of the tubular body 30 terminates in the end portion 17 over which the lower end of the tubular closure member 3 telescopes. The handle section 2 is open at its lower end and closed at its upper end when the plug portion 14 of the brush section 1 is inserted into the bore 16 thereof.

The dentifrice dispenser 4, as shown more particularly in Figs. 1, 2, 7 and 11 is desirably of the ejector type, adapted to house the dentifrice stick p. The one piece receiving sleeve 6 is designed to receive the lower end of the dentifrice stick p, and may be desirably formed from suitable plastic material. The receiving sleeve 6 presents a tubular wall 35 which may have an inturned circumferentially extending lip 36 against which the end of the dentifrice stick p may seat. A stud 37 projects from the tubular wall of the receiver 6 to provide a projection for manipulating the receiver. The receiver 6 may be so inexpensively made as to be advantageously supplied as a component part of the dentifrice stick p, to be thrown away when the dentifrice stick has been consumed.

The one piece main part 5 of the dentifrice dispenser 4 presents a protective tube portion 40 which extends from the head portion 45. The protective tube portion 40 has a diameter and length designed to snugly telescope into the dentifrice compartment b of the handle section 2. The protective tube 40 has a slit 41 extend-

5

ing longitudinally thereof through which the stud 37 of the receiver 6 may extend. The upper end of the slit 41 may be slightly contracted by laterally extending lip portions 42 so as to prevent inadvertent removal of the receiver 6 as it slidably telescopes within the protective sleeve 40. The material from which the tubular protective sleeve 40 is made is sufficiently flexible to permit the projection 37 of the receiver 6 to be forced out of the upper end of the slit 41, as illustrated more particularly in Figs. 11 and 12, and thus remove the sleeve 6.

The hollow head portion 45 is formed as an integral part of the protective tube 40, and presents a closure wall 46 which closes the lower end of the protective tube 40. The head portion 45 presents an overhanging boss 44 which may be provided with suitable knurling 43 to provide a firm finger grasp. The boss 44 presents an inset shoulder 49 designed to snugly abut against the lower end 31 of the tubular handle section 2. The head portion 45, at a point adjacent the lower end of the protective tube portion 40, is embraced by a rubber gasket 50 which provides a seal between the lower end of the handle section 2 and the head portion 45 of the dentifrice dispenser, thereby preventing the escape of moisture from the dentifrice compartment *b* to the exterior of the teeth cleaning unit. In addition, the gasket 50 serves as a frictional means to positively retain the dentifrice dispenser releasably attached to the handle section 2.

The head portion 45 of the dentifrice dispenser is also provided with a compartment *c* for the reception of dental floss which is separated from the dentifrice containing tube portion 40 by the partition wall 46. The compartment *c* is designed to receive a floss cup 7 which may be inexpensively made from extruded metal, the cup 7 presenting a tubular side wall 51 designed to frictionally telescope into the compartment *c*. The floss containing cup 7 is provided with a rounded end wall 52 which has a suitable thread dispensing hole 53, and a thread cutting lip 54 formed by cutting an arcuate slit in the end wall portion 52 and bending the lip portion 54 slightly outward to present a relatively sharp arcuate cutting edge. The dental floss *f* may be wound on a small spool or rolled into a ball of a size to be snugly contained within the floss cup 7. The side wall 51 of the floss cup 7 is frictionally retained within the compartment *c*, with the rounded wall portion 52 thereof attractively projecting from the lower end of the head portion 45. Removal of the floss cup 7 for floss refilling purposes can thus be conveniently effected.

To prevent accidental removal of the floss cup 7, and to give the lower end of the teeth cleaning unit a finished appearance, a dome shaped closure cap 8 is provided, designed to telescope over the lower end of the head portion 45 as shown in Fig. 2. The closure cap 8 is provided with a flange portion 55 defined by an inset shoulder 56 designed to snugly abut against the lower edge 57 of the head portion 45, with the upper edge 58 of the flange portion 55 snugly abutting against the inset shoulder 59 which defines the lower edge of the boss 44. A rubber sealing gasket 60, circumferentially embracing the lower end of the head portion 45, serves to frictionally retain the closure cap 8 in detachably assembled position on the head portion 45. The closure cap 8 may nevertheless be easily

6

removed to provide convenient access to the dental floss thread extending from the floss cup 7. The outer circumference of the closure cap 8 may be provided with suitable knurling 61 to provide a convenient and decorative finger grasp to facilitate twisting removal and attachment of the closure cap 8 to the head portion 45.

This improved teeth cleaning unit can be made from relatively few parts designed for high speed, low cost manufacture and assembly. The brush section 1 can be economically manufactured by methods employed in the manufacture of tooth brushes, wherein the stem portion 11, flared skirt portion 13 and plug portion 14 are formed from molded plastic, suitable shallow grooves being molded in the plug portion 14 onto which the rubber sealing rings 15 may be sprung.

The one piece handle section 2 may be formed from plastic tubing shaped to provide the head portion 17 and the tubular body portion 30, with the bore 16 formed in the head portion and grooves molded in the circumference of the head portion upon which the rubber sealing rings 21 may be sprung. The stem section 11 is assembled to the handle section 2 by merely inserting the plug portion 14 into the bore 16.

The brush enclosing section 3 may be economically formed of three plastic parts. The tubular body part 9 can be cut in desired lengths from plastic tubing, the dome shaped cap 10 and closure plate 10' can be formed by simple molding operations. The rubber sealing ring 29 is sprung onto the flange portion 25 of the closure cap 10, drying pellets inserted into the cap, and the perforated closure plate 10' placed in position, whereupon the assembled closure acorn may be applied to the tubing portion 3.

The dentifrice dispenser 4 is formed of two pieces of plastic. The one piece main section 5 comprising the head portion 45 integrally formed with the protective tube portion 40, is designed for convenient low cost molding. The dentifrice stick receiving sleeve 6 may comprise a short section of plastic tubing having a manipulating projection 37 molded integral therewith. If desired, the receiving sleeve 6 may be provided with an inturned lip 36 at one end thereof to provide a support for the dentifrice stick *p*.

The floss cup 7 may be punch formed of light gauge metal, with the floss thread hole 53 and the cutting lip 54 formed therein in the same operation. The floss cup 7, loaded with a floss spool, may be quickly telescoped into the floss compartment *c* molded in the end of the head portion 45 of the dentifrice carrier 5. The dome shaped closure 8 is likewise adapted for economical molding and attachment to the head portion 45 of the dentifrice carrier.

When this improved teeth cleaning unit is to be used, the cover section 3 is removed from its telescoped position by exerting a twisting pull thereon in a manner to detach it from the end portion 17 of the handle section 2. The dentifrice carrier 4 is removed from the handle section 2 by exerting a twisting pull on the knurled head portion 45 so as to remove the dentifrice carrier 4 from the lower end of the handle section 2. The dentifrice supporting sleeve 6 can then be manipulated by the thumb applied to the projection 37 so as to project the end of the dentifrice stick *p* a sufficient extent to permit immediate application of the desired quantity of dentifrice upon the brush bristles 12 which may be stroked over the exposed end of the dentifrice stick. The protective portion 40 of the

dentifrice carrier may then be reinserted into the handle section 2 and the teeth conveniently brushed. When brushing of the teeth has been completed, the closure section 3 is telescoped over the brush section 1 and the cleaning unit put away in the pocket or purse.

Any moisture which may be carried by the brush bristles 12 is gradually withdrawn from the brush compartment *a* and the brush bristles 12 by the moisture attracting action of the drying granules *s* contained in the acorn head of the closure section. This moisture flows from the compartment *a* through the pin holes 28 in the closure plate 10' directly into the compartment *d* which contains the drying granules. The moisture drawing effect of the drying granules *s* may be facilitated by providing one or more small pin holes 32 in the tubular body portion 9 through which air may be drawn from the exterior. A vent hole 33 may also be provided in the closed end of the closure cap 10 through which air that has been subjected to the drying action of the drying granules may escape.

No moisture from the brush compartment *a* can enter the dentifrice containing compartment *b* as these compartments are sealed from one another by the plug 14. Nor can any moisture which may become deposited on the dentifrice stick *p* escape through to exterior of the unit since the dentifrice carrier 4 is fitted to the tubular portion 30 of the handle section 2. Numerous tests have demonstrated that, irrespective of the moisture which may be carried by the brush bristles 12, or may be deposited on the dentifrice stick *p*, this moisture does not noticeably escape to the exterior of the closed unit. Thus a high degree of sanitation and dryness is attained, without danger that undesirable moisture may become deposited on the exterior of the unit.

Should a section of dental floss be desired, the closure cap 8 may be quickly removed from the head portion 45 by a twisting pull, thereby making readily available the desired section length of floss, which can be readily withdrawn from the floss cup 7 and severed by the cutting lip 54. Except when a section of floss is desired, the closure cap 8 remains attached to the dentifrice carrier as a unitary part thereof.

The main parts of the unit above described are made, and can be economically and easily formed from metal and/or plastic resins into numerous and attractive streamlined shapes in selected colors as may be desired. The parts may be detachably connected by sealing gaskets, formed threads, or by snug telescoping interfits.

This hygienic instrument promotes and encourages frequent cleaning of the teeth, which is a necessary requisite to oral hygiene. All necessary implements for the proper care of the teeth are compacted within this attractive unit, and the implements are maintained in fresh and sterilized condition for individual and personal use. The dentifrice compartment *b* is of generous size and designed to contain a selected dentifrice sufficient for several days' use. The dentifrice sticks or cartridges may be supplied or sold in dozen lots, packed in a convenient carton, and from which supply the user may periodically replenish the dentifrice as his needs require.

While certain novel features of the invention have been disclosed herein, it will be understood that various omissions, substitutions and changes

may be made by those skilled in the art without departing from the spirit of this invention.

What is claimed is:

1. A teeth cleaning unit including in combination, a brush section and a hollow handle section, said brush section comprising a brush stem supporting the brush bristles, said brush stem having a plug portion at one end thereof insertable into a bore formed in the end portion of said hollow handle section, a closure section having a compartment adapted to telescopically receive said brush section, means for detachably securing one end of said closure section to the end portion of said handle section, said means including a pair of spaced sealing gaskets extending circumferentially around said handle end portion designed to telescopically receive the open end of said hollow closure section and frictionally retain said closure section detachably secured to said handle section and hermetically seal the attached end thereof, and a pair of spaced sealing gaskets extending circumferentially around said plug portion frictionally retaining said brush section secured to the end portion of said hollow handle section and sealing said hollow handle section from the entry of moisture deposited on the brush section.

2. A teeth cleaning unit including in combination, a brush section and a handle section, a hollow closure section comprising a tubular part open at one end thereof and having a cap part removably secured to the other end thereof, said cap part having a removable dividing partition inset therein dividing said closure section into a brush receiving compartment and a drying compartment for a drying agent wholly contained in said cap part, said cap part being fillable with the drying agent upon removal of the cap part from said tubular part and removal of the dividing partition from said cap part, means for detachably securing the open end of said closure section to said handle section when said brush section is housed within the brush receiving compartment thereof, said dividing partition having perforations therein through which moisture in said brush compartment is drawn into said drying compartment, a pin hole in the wall of said tubular part through which air may enter said brush compartment, and a pin hole in the end wall of said cap part through which the dried air processed in said drying compartment may escape.

3. A teeth cleaning unit including in combination, a brush section and a handle section, a hollow closure section comprising a tubular part open at one end thereof and providing a brush receiving compartment, a cap part removably secured to the other end of said tubular part, said cap part having a removable dividing partition inset therein defining a drying compartment for a drying agent wholly contained in said cap part, said cap part being fillable with drying agent upon removal of the cap part from said tubular part and removal of the dividing partition from said cap part, means for detachably securing the open end of said tubular part to said handle section when said brush section is housed within the brush receiving compartment thereof, said dividing partition having perforations therein through which moisture in said brush compartment is drawn into said drying compartment, a pin hole in the tubular wall of said tubular part through which air may enter said brush compartment, and a pin hole in the end wall of said cap part through which the dried

air processed in said drying compartment may escape.

4. A teeth cleaning unit including in combination, a hollow handle section, a brush section attached to one end of the hollow handle section, said hollow handle section being open at the opposite end thereof and having a compartment for the reception of dentifrice, a removable dentifrice dispenser having a dentifrice receiving casing adapted to telescope into the dentifrice compartment of said hollow handle section, said dentifrice dispenser having a head portion presenting a transverse end wall as a part thereof providing a closure for the lower end of said handle section, said head portion having an outwardly open socket cavity therein, a removable floss receiving cup having a tubular side wall removably telescoped into said socket cavity to provide a floss compartment, said cup having a rounded end wall presenting a floss extracting opening therein, and a dome shaped closure cap detachably secured to said head portion and enclosing the exposed bottom wall of said cup.

5. A teeth cleaning unit including in combination, a hollow handle section, a brush section attached to one end of said hollow handle section, said hollow handle section being open at the opposite end thereof and having a compartment for the reception of dentifrice, a removable dentifrice dispenser having a dentifrice receiving casing adapted to telescope into the dentifrice compartment of said hollow handle section, said dentifrice dispenser having a head portion presenting a transverse end wall as a part thereof providing a closure for the lower end of the handle section, a dental stick supporting sleeve telescoping into the dentifrice receiving casing of said dentifrice dispenser, a guide and manipulating lug projecting from said sleeve through an elongated slot in the tubular wall of said dentifrice receiving casing, said slot being of con-

tracted width at the upper end thereof through which said projecting lug may be forced to remove said sleeve from said casing, said head portion having an outwardly open socket cavity therein providing a dental floss receiving compartment, a dental floss receiving cup removably seating within said compartment, a removable closure cap for enclosing said floss cup, and means associated with said head portion for removably securing said closure cap to said head portion.

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