United States Patent

Greenacre

[15] **3,672,377**

[45] **June 27, 1972**

[54] DENTAL CARE APPLIANCE

[72] Inventor: **Paul G. Greenacre,** 330 Driveway, Apt. 505, Ottawa, Ontario, Canada

[22] Filed: **Jan. 5, 1971**

[21] Appl. No.: **104,014**

[52] **U.S. Cl.** ..... **132/92 R**

[51] **Int. Cl.** **A61c 15/00**

[58] **Field of Search** ..... 132/89, 90, 92 R; 32/40

[56] **References Cited**

UNITED STATES PATENTS

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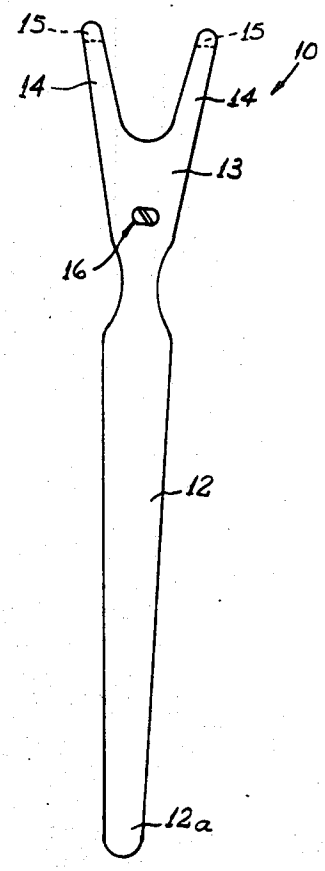
Primary Examiner—Robert Peshock
Attorney—Fetherstonhaugh & Co.

[57] **ABSTRACT**

An elongated handle is provided at one end with a bifurcated head including a pair of spaced arms having notched extremities to receive a length of dental floss. A floss anchoring button is slidable in an opening in the head and has passages in which floss may be inserted and tensioned, so that when the button is slid in one direction in the opening, the floss is anchored in its tensioned condition. Auxiliary dental care attachments such as a brush, mirror, et cetera, are removably applicable to the outer end of the handle.

1 Claim, 25 Drawing Figures



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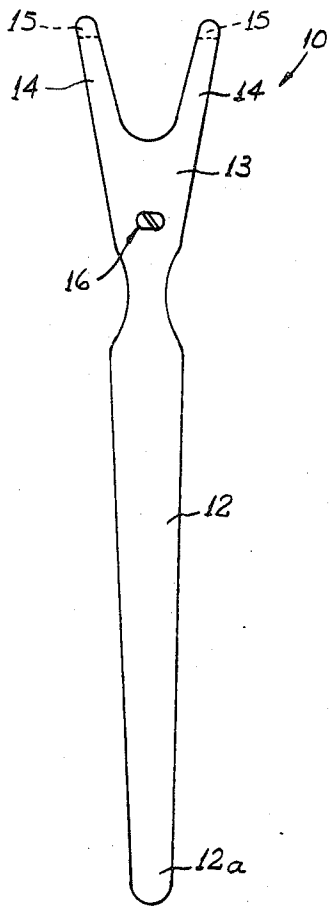

FIG. 1

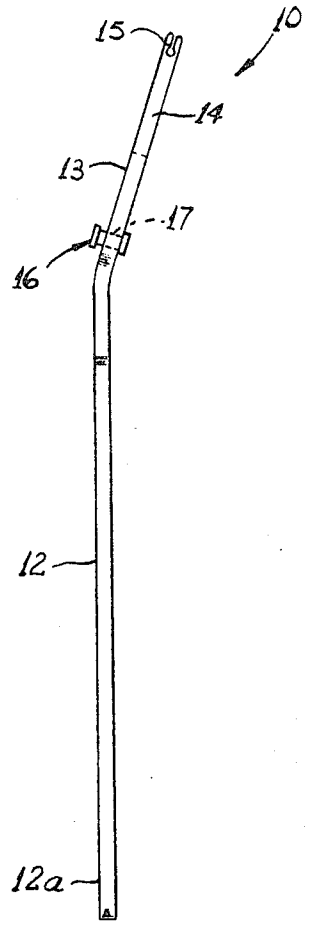

FIG. 2

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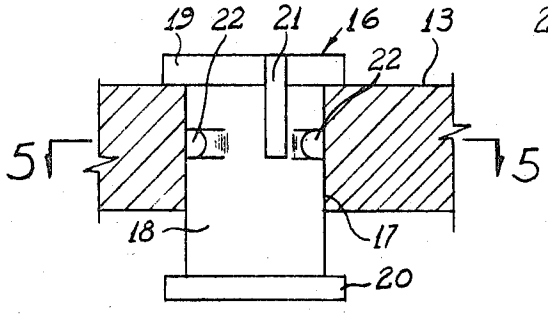

FIG. 3

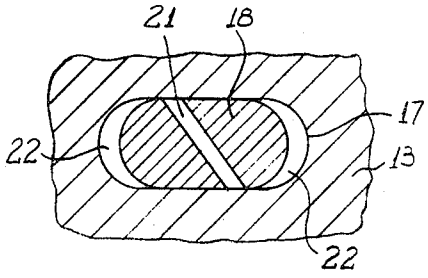

FIG. 5

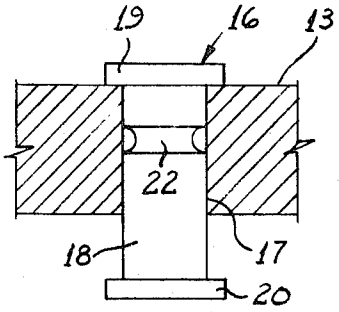

FIG. 4

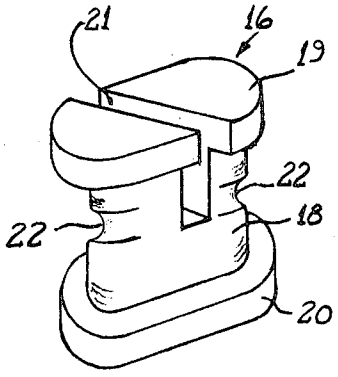

FIG. 6

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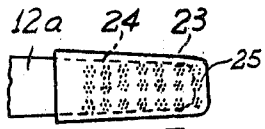

FIG. 7

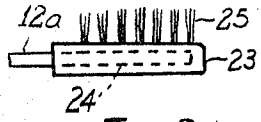

FIG. 8

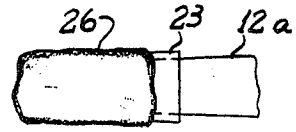

FIG. 9

FIG. 10

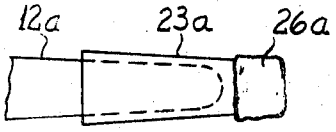

FIG. 11

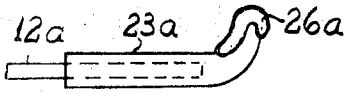

FIG. 12

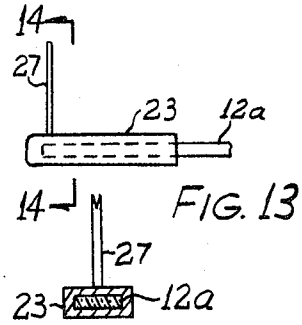

FIG. 13

FIG. 14

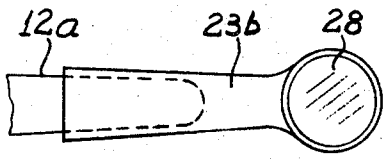

FIG. 15

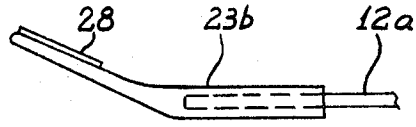

FIG. 16

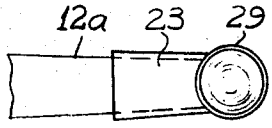

FIG. 17

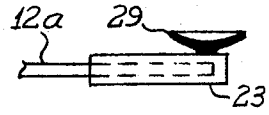

FIG. 18

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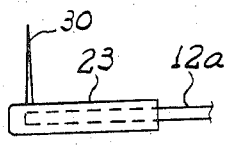

FIG. 19

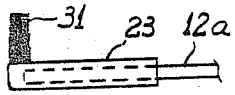

FIG. 20

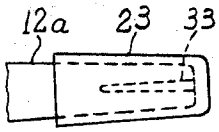

FIG. 21

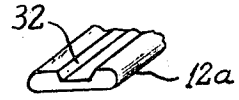

FIG. 22

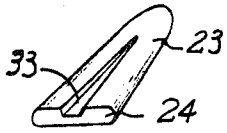

FIG. 23

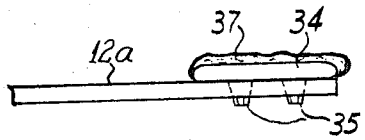

FIG. 24

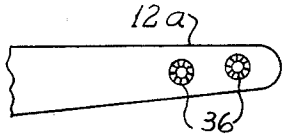

FIG. 25

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DENTAL CARE APPLIANCE

This invention relates to new and useful improvements in dental care appliances, and in particular the invention concerns itself with a tooth flosser of the general type which includes an elongated handle having a bifurcated head at one end thereof, the head including a pair of spaced arms provided in their extremities with notches so that a length of dental floss inserted in the notches and stretched between the arms may be used for cleaning spaces between teeth in a convenient and effective manner.

The principal object of the invention is to provide a tooth flosser of this general type with novel and improved means for anchoring the length of floss when it is tensioned between the spaced arms of the head, the improved anchoring means consisting of a button which is slidably positioned in an opening in the head and is formed with passages to receive the floss so that when the button is slid in one direction in the opening, the floss is securely anchored in its tensioned condition.

Another important object of the invention is to provide a tooth flosser of the aforementioned type with a plurality of selectively usable attachments for auxiliary dental care, such as a brush, mirror, and the like, these various attachments being removably applicable to the outer end of the handle, remote from the flosser head, so that they are readily available for use.

Some of the advantages of the invention reside in its simplicity of construction, efficient operation, and in its adaptability to convenient and economical manufacture.

With the foregoing more important objects and features in view and such other objects and features which may become apparent as this specification proceeds, the invention will be understood from the following description taken in conjunction with the accompanying drawings, wherein like characters of reference designate like parts, and wherein:

FIG. 1 is a plan view of the dental flosser according to the invention;

FIG. 2 is a side edge view thereof;

FIG. 3 is an enlarged fragmentary sectional detail, taken substantially in the plane of the line 3–3 in FIG. 1;

FIG. 4 is a fragmentary sectional detail taken in a plane at right angles to FIG. 3;

FIG. 5 is a fragmentary sectional view, taken substantially in the plane of the line 5—5 in FIG. 3;

FIG. 6 is an enlarged perspective view of the floss anchoring button;

FIG. 7 is a fragmentary plan view showing one type of attachment on the handle of the flosser;

FIG. 8 is a fragmentary side view of FIG. 7;

FIG. 9 is a plan view of another attachment;

FIG. 10 is a side view of FIG. 9;

FIG. 11 is a plan view of another attachment;

FIG. 12 is a side view of FIG. 11;

FIG. 13 is a plan view of another attachment;

FIG. 14 is a sectional view in the plane of the line 14—14 in FIG. 13;

FIG. 15 is a plan view of another attachment;

FIG. 16 is a side view of FIG. 15;

FIG. 17 is a plan view of another attachment;

FIG. 18 is a side view of FIG. 17;

FIG. 19 is a side view of another attachment;

FIG. 20 is a side view of another attachment;

FIG. 21 is a fragmentary plan view showing modified means for retaining any of the attachments on the handle;

FIG. 22 is a fragmentary perspective view of the handle of FIG. 21;

FIG. 23 is a perspective view of the attachment body of FIG. 21;

FIG. 24 is a side view of another type of attachment, also showing another type of means for retaining the same on the handle; and

FIG. 25 is a plan view of the handle of FIG. 24.

Referring now to the accompanying drawings in detail, and more particularly to FIGS. 1–6 inclusive, the dental flosser of the invention is designated generally by the reference numeral 10 and comprises an elongated handle 12 which is provided integrally at one end thereof with a bifurcated head 13, including a pair of spaced divergent arms 14. Preferably, the head 13 is disposed in a plane which is offset by an acute angle from the plane of the handle, as shown in FIG. 2. The free extremities of the arms 14 are formed with notches 15 in which a length of dental floos may be inserted and stretched between the arms for convenient cleaning of spaces between teeth in the well known manner.

The invention primarily concerns itself with the provision of improved means for anchoring the floss in its stretched or tensioned condition. Such means comprise a floss anchoring button generally designated as 16 which is slidably disposed in an opening 17 formed in the head 13, as detailed in FIGS. 3–6.

The anchoring button 16 comprises a shank 18 provided at its opposite ends with enlarged knobs 19, 20. The shank 18 and the opening 17 in the head 13 are of a complemental, non-circular cross-section, in order to prevent rotation of the shank in the opening. As shown in FIG. 5, such a cross-section may be that of a flat-sided oval, although other configurations may be used. The heads 19, 20 may be shaped to correspond to the cross-section of the shank.

The length of the shank 18 is greater than the thickness of the head 13 so that the shank is slidable in the opening 17 within limits where either of the knobs 19, 20 engages the adjacent side surface of the head. In FIGS. 3 and 4 the button 16 is shown as being slid downwardly so that the upper knob 19 abuts the upper surface of the head 13, but the button may be slid upwardly so that the knob 20 abuts the underside of the head.

For purposes of receiving and anchoring the floss, the button 16 is provided with passages including a kerf 21 which extends through the knob 19 into the adjacent portion of the shank 18 and a pair of grooves 22 which are formed in the rounded ends of the flat-oval cross-section of the shank, as will be apparent from the drawings.

In use, a length of dental floss is placed in the notches 15 of the arms 14 and stretched between the arms, while the end portions of the floss are brought to the button 16. The button is slid upwardly in the head 13 (from the downwardly slid position of FIGS. 3 and 4) so that the portion of the button with the kerf 21 and grooves 22 is exposed above the head 13. The end portions of the floss are inserted in the kerf 21 and wound around the shank 18 in the grooves 22, and with the floss properly tensioned, the button 16 is pressed downwardly to the position shown in FIGS. 3 and 4 so that the floss is frictionally gripped between the flat sides of the shank 18 and the flat sides of the opening 17 in the head 13, thus securely anchoring the floss in its tensioned condition.

The handle 12 of the tooth flosser is longitudinally tapered and its outer end portion 12a is adapted to selectively accommodate a wide variety of auxiliary attachments for dental care, as presently described.

One of such attachments is a tooth brush shown in FIGS. 7 and 8. The same comprises an elongated body 23 provided with an elongated and longitudinally tapered socket 24, the major end of the socket being open so that the body 23 may be slidably applied to and frictionally held in position on the tapered end portion 12*a* of the handle. The body 23 carries tufts of bristles 25.

FIGS. 9 and 10 show another attachment in the form of a tooth wiper, wherein the body 23 is provided with a covering 26 of cloth or sponge. In FIGS. 11 and 12 the tooth wiper is modified for cleaning inner tooth surfaces, the body 23*a* in this instance having a curved end portion on which the sponge or cloth element 26*a* is mounted.

FIGS. 13 and 14 show a sub-bridge cleaning attachment in which the body 23 carries a prong 27 with a notched end for guiding floss underneath the pontic of a bridge.

FIGS. 15 and 16 show a mirror attachment in which the body 23*b* has an angularly offset portion carrying a mirror 28.

FIGS. 17 and 18 show another attachment wherein the body 23 is provided with a flexible rubber cup 29 for tooth cleaning purposes.

In FIG. 19 the body 23 carries a gingival crevice cleaning element 30 which may be either straight or longitudinally curved. In FIG. 20 the body 23 is equipped with an interproximal brush 31.

In all these various attachments the attachment body is frictionally held in position on the handle by insertion of the tapered handle end portion 12*a* into the socket 24 in the body, as already mentioned. If desired, such frictional mounting may be enhanced by forming the handle end portion 12*a* with a longitudinal channel 32 as shown in FIG. 22, and providing a longitudinal rib 33 in the socket 24 of the body 23 as shown in FIG. 23, so that the rib 33 is slidably but frictionally received in the channel 32 when the attachment body 23 is applied to the handle end portion 12*a* as in FIG. 21.

FIGS. 24 and 25 illustrate a modified arrangement for removably mounting the attachments on the handle. Here the attachment has an elongated body 34 which is adapted to be superposed on the handle end portion 12*a* and is provided at the underside thereof with a pair of tapered studs 35. The handle end portion 12*a* is formed with a pair of tapered apertures 36 in which the tapered studs 35 are frictionally received to removably hold the attachment on the handle. It will be understood that while the attachment body 34 in FIGS. 24 and 25 is shown as carrying a wiper element 37, the mounting means 35, 36 may be used in any or all of the various types of attachments as shown in FIGS. 7–20 inclusive.

While in the foregoing there have been described and shown the preferred embodiments of the invention, various modifications and equivalents may be resorted to within the spirit and scope of the invention as claimed.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A dental floss holder comprising in combination an elongated handle, a bifurcated head provided integrally at one end of said handle and including a pair of spaced arms formed in their extremities with notches for receiving a length of dental floss, and floss anchoring means comprising a button including a shank and a pair of enlarged knobs at the ends of said shank, said shank having an oval cross-section with flat sides and rounded ends, said head being provided with an opening having a shape complemental to the cross-section of said shank, the shank being axially slidable but non-rotatable in said opening, the length of the shank exceeding the thickness of said head so that the shank may slide in said opening within limits set by engagement of said knobs with opposite side surfaces of the head and separation of the button from the head is thereby prevented, said button being provided with passage means for receiving end portions of a length of floss stretched between said arms so that when the floss is inserted in said passage means it may be anchored in a tensioned condition by sliding the button in one direction in said opening, said passage means including a transverse kerf formed in one of said knobs and extending axially into said shank, said kerf being open-sided and also open at the outer surface of said one knob so that floss end portions may be inserted axially into the kerf, and a pair of grooves extending in a circumferential direction in the rounded ends of said shank substantially at the level of the inner end of said kerf, whereby floss end portions inserted in the kerf and into said grooves may stretch across the flat sides of the shank for frictional grip in said opening when said button is slid in said one direction.

* * * * *