Sept. 15, 1925. 1,553,818

F. T. HOPE

TEETH CLEANING DEVICE

Filed Sept. 26, 1923

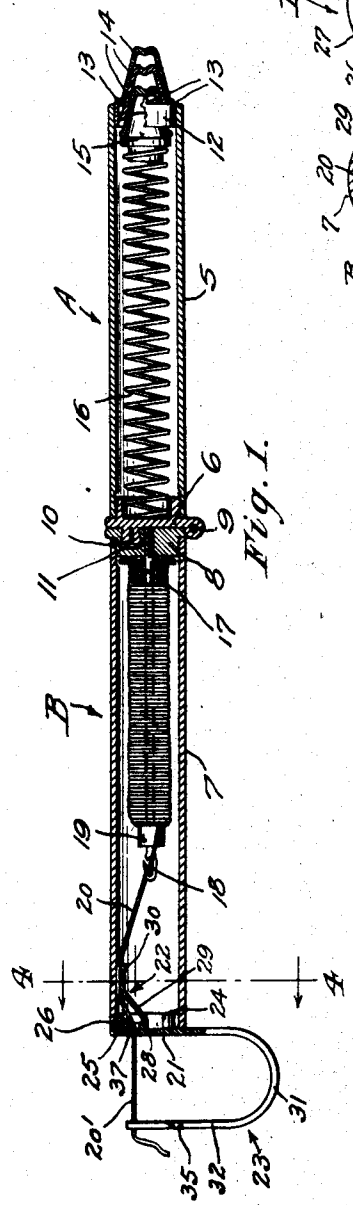


Fig. 1.

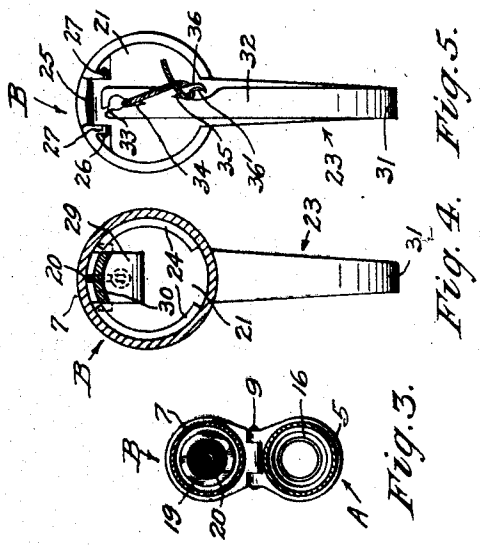


Fig. 4. Fig. 5.

Fig. 3.

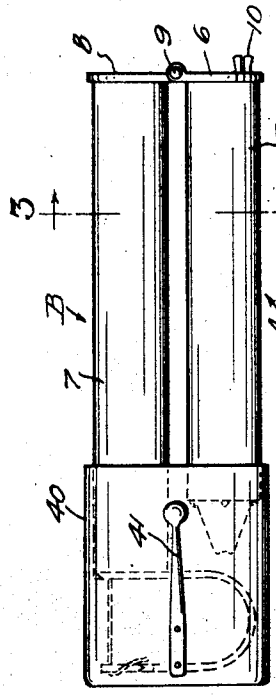


Fig. 2.

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UNITED STATES PATENT OFFICE.

FREDERICK T. HOPE, OF SEATTLE, WASHINGTON.

TEETH-CLEANING DEVICE.

Application filed September 26, 1923. Serial No. 664,812.

To all whom it may concern:

Be it known that I, FREDERICK T. HOPE, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Teeth-Cleaning Devices, of which the following is a specification.

This invention relates to dental devices and, more especially, for teeth cleaning devices.

The object of my invention, generally, is to provide devices of this character which will be more efficient and convenient to employ than other teeth cleaning devices hitherto in use.

More specific objects and advantages of the invention will appear in the following specification.

The invention consists in the novel construction, arrangement and adaptation of devices hereinafter described and claimed.

In the accompanying drawing,—

Figure 1 is a longitudinal vertical section of a device embodying my invention, and illustrated in its extended operative position. Fig. 2 is a side elevation of the same in its folded position including a cap member. Fig. 3 is a transverse section on line 3—3 of Fig. 2. Fig. 4 is a transverse section on line 4—4 of Fig. 1. Fig. 5 is an elevation of the left hand end of Fig. 1.

In said drawing, the reference numeral 5 represents a tubular element constituting the peripheral wall of a casing member A, one end of said tubular element being closed by a plug element 6. 7 represents a similar tubular element of a second casing member B which is closed at one end by means of a plug 8.

As shown, the respective end closures 6 and 8 are hingedly connected, as at 9, to enable said members to be relatively moved into axial alignment with each other, as illustrated in Fig. 1 or to be parallel with each other as shown in Fig. 2.

For releasably securing the two members A and B in their aligned relations (Fig. 1) with each other I provide a latch comprising, preferably, a slotted stud 10 of the end element 6 of the member A engageable in a recess 11 in the end element 8 of the other member B.

Provided within the opposite end of the member A from its end element 6 is a ring 12 having a plurality of inwardly directed prongs 13 which serve as stops with respect to the outermost of a series of caps 14 which are formed of stiff paper or other material suitable for cleaning the teeth, as will be explained hereinafter.

The caps 14 are each of a substantially truncated conical shape and are nested one within the other as shown in Fig. 1.

The innermost of said caps being supported upon a follower 15 which is urged toward the open end of the member A by means of a helical spring 16.

In practice, the operator with the device held in his hand employs the exposed or outermost of the caps 14 to scrape or abrade his teeth successively, by reciprocating the device in a general vertical direction, whereby food, tartar, etc., are removed in a most rapid and thorough manner. After being thus employed a used cap is grasped between the thumb and a finger of the operator to remove the cap by tearing away the same, which is facilitated by the prongs 13 ripping the material of the cap at its connection with said member.

The member B above referred to is provided interiorly with an axially disposed rod 17 extending from the end element 8 and terminating in a hook 18. The function of said rod is to provide a support for a spool 19 of linen thread 20, conventionally known as dental floss, or an equivalent. Provided for the outer end of the tube 7 is a lid consisting of a plate element 21 of substantially the transverse shape of the adjacent end of the tube 7 and having at diametrically opposite sides extensions 22 and 23, and intermediate thereof circumferentially disposed flanges 24 which frictionally engage against the inner peripheral surface of the tube. The lid extension 22 is looped as at 25 about a transversely disposed hinge pin 26, the ends of which being rigidly secured to inwardly directed lugs 27 of the tube 7. From said loop the extension 22 is directed toward the axis of the member to a bend 28 and thence returns, as at 29, to terminate in a finger 30 adapted to yieldingly bear against the inner surface of the tube 7.

The other extension 23 is formed to a bow shape by the provision of a bend 31 and terminates in an arm 32 which is parallel with the lid plate 21, or nearly so.

The arm 32 is provided in its extremity with a slot 33 which terminates in a V-shaped end 34. Said arm is desirably

provided in a side thereof with a notch 35, arranged as shown in Fig. 5, to afford a horn 36 whose inner side with respect to the notch 35 is formed as at 36^1 to provide a thread cutting edge. Thread or floss 20 is led through the eye of the hook 18 (Fig. 1) and thence between the lid finger 30 and the opposing surface of the tube 7 and then through an aperture 37 of the lid to be engaged in the V-shaped portion 34 of the arm notch 33, and finally engaged in the notch 35 as shown in Fig. 5.

The portion 20^1 of the thread 20 between the lid plate 21 and the arm 32 is intended to be used in the interstices between teeth to remove from the latter any food or other matter collected thereon.

Within the member B the thread is clamped between the tube wall and the finger 30 of the lid when the latter is in closed relation with the tube. When the lid is swung into its open relation with the tube 7, the thread is disengaged therefrom and the thread may then be pulled out freely and be unwound from the spool 19, whereupon the soiled or used portion of the thread may be conveniently severed by means of the cutting edge of the horn 36.

When unemployed, the device may be folded as shown in Fig. 2 and the outer ends of the two members engaged in a hollow cover 40 which not only couple the free ends of the members together but also serves to protect the thread and outer cap from becoming soiled.

A clip 41 provided on the cover 40 may advantageously be used to engage the edge of a person's pocket when it is desired to carry the device therein.

What I claim, is:—

1. Apparatus of the character described, consisting of a tubular casing member adapted to contain a plurality of tooth cleaning elements of substantially conical shapes, a second tubular casing member adapted to contain a supply of dental-floss thread, said second member being provided exteriorly thereof with means for holding a portion of said thread in operative position, said members being hingedly connected together adjacent to one end of each, and latch devices for releasably securing the members in their relatively extended positions.

2. Apparatus of the character described, comprising two tubular casing members hingedly connected together at one end of each so as to be arranged in axial alignment or in folded relation, one with the other, means for releasably securing said members in their aligned relation, means for releasably securing said members in their relatively folded positions, one of said members serving as a container for tooth cleaning elements of substantially conical shapes, means for protruding said elements from an end of the respective member, the other of said members serving as a container for dental-floss thread, means provided at one end of the last named member for holding a portion of said thread in tooth engaging relation, and thread gripping means provided within the member last referred to.

3. In apparatus of the character described, the combination with a tubular casing having an open end, an apertured lid provided for the open end of the casing, said lid being provided with an arm element disposed in substantially right angular relation with respect to the casing axis, said casing being adapted to contain a supply of dental-floss thread and have the same extend through the aperture of said lid to have the thread end attached to said arm, of a second tubular casing hingedly connected to the first named casing and having an open end, a spring-pressed follower provided in said second named casing and adapted to support a plurality of tooth cleaning elements and to protrude one of the latter from the open end of the second casing, means provided on the second named casing to limit the protrusion of a cleaning element therefrom, and a cap engageable over the open ends of both of said casings.

4. In apparatus of the character described the combination of a casing having an open end and adapted to serve as a container for dental-floss thread, a lid for said open end of the casing, thread clamping means depending from said lid, an arm connected to the lid and disposed substantially parallel therewith, said arm being provided with thread engaging means to cooperate with said clamping means for retaining the thread in operative position.

5. In a device of the character described, the combination with a tooth cleaning element having a substantially conical shape, of a tubular casing having an opening at one end thereof, a spring actuated follower provided in said casing to support said cleaning element and tending to push the same through the open end of the casing, and prongs provided on the casing and extending inwardly thereof to limit the protruding of said element from the casing, said prongs also serving to facilitate the tearing of said element when the latter is to be removed from the casing.

6. In a device of the character described, the combination with a tooth cleaning element having a substantially conical shape, of a tubular casing having an opening at one end thereof, a spring actuated follower provided in said casing to support said cleaning element and tending to push the same through the open end of the casing, and means provided in the open end of said casing to limit the outermost position of said element with respect to the casing.

7. In a device of the character described, the combination with tooth cleaning thread, of a casing for receiving the thread, a lid hingedly connected to said casing for closing an end thereof, said lid being provided with an aperture for said thread, an arm element of said lid extending into the casing to cooperate with the casing wall for frictionally engaging the thread therebetween, and an extension of said lid exteriorly of the casing, said extension terminating in a thread attaching arm disposed substantially parallel with the lid, the last named arm being provided with a sharp edge for cutting said thread.

8. In a device of the character described, a casing serving as a thread container, a lid for one end of the casing, said lid having two arms integral therewith, means provided on one of said arms to engage the thread for securing the same exteriorly of the casing, the other of said arms cooperating with the casing to engage the thread for securing the same interiorly of the latter.

9. In a device of the character described a cylindrical casing for thread, an apertured lid for one end of said casing, said lid being provided with an extension terminating in an arm arranged in substantially parallel relations with the lid and at right angles to the casing axis, said arm being provided with thread engaging means, and means provided within the casing for engaging the thread, the last named means coacting with said arm and the aperture of said lid for retaining the thread between the latter and the arm in substantially parallel relation with the casing axis.

Signed at Seattle, Washington, this 19th day of September, 1923.

FREDERICK T. HOPE.