United States Patent [19]

Bragg

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[45] **Mar. 26, 1974**

[54] **TOOL FOR MANIPULATING DENTAL FLOSS**

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

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

[58] **Field of Search** 132/91, 92, 89; 32/40

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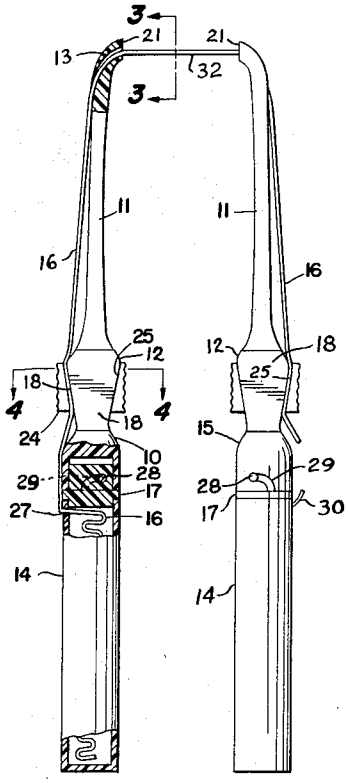
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Primary Examiner—Robert Peshock
Attorney, Agent, or Firm—John N. Wolfram

[57] **ABSTRACT**

A tool for use in cleaning teeth with dental floss. Among other features, the tool includes means for making the floss either slack or taut, means for reciprocating the floss axially, means for flattening the floss to ribbon shape, means to utilize a floss container as a tool handle, and means to facilitate clamping and release of the floss with respect to the tool.

31 Claims, 18 Drawing Figures



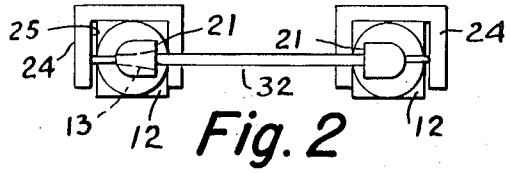


Fig. 2

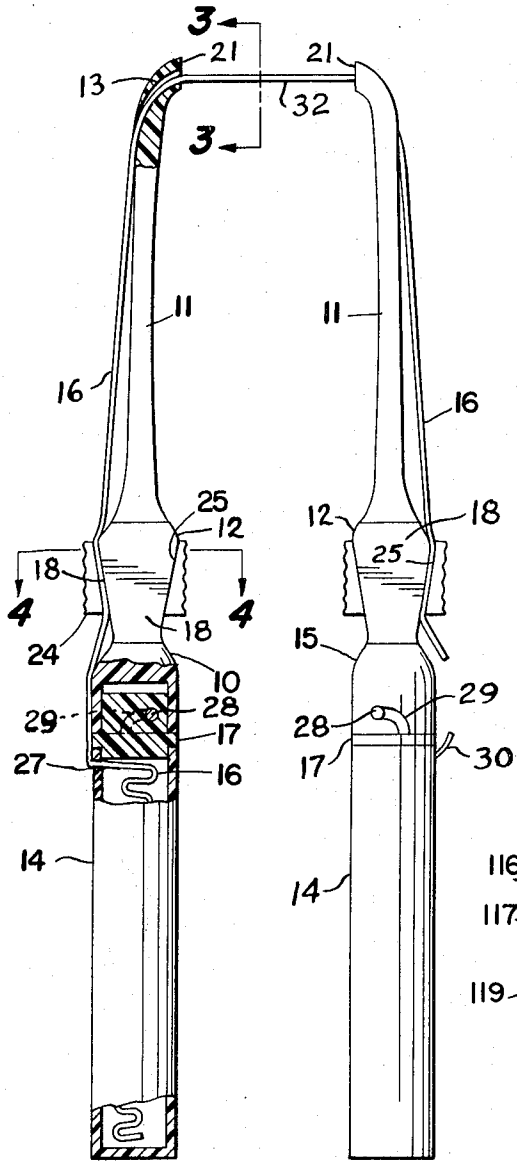


Fig. 1

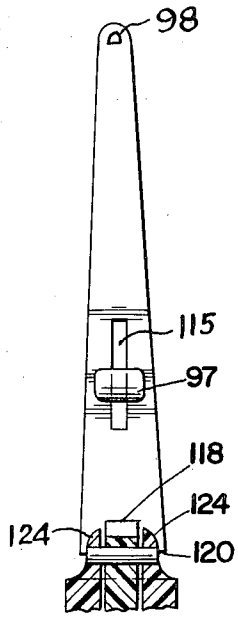


Fig. 16

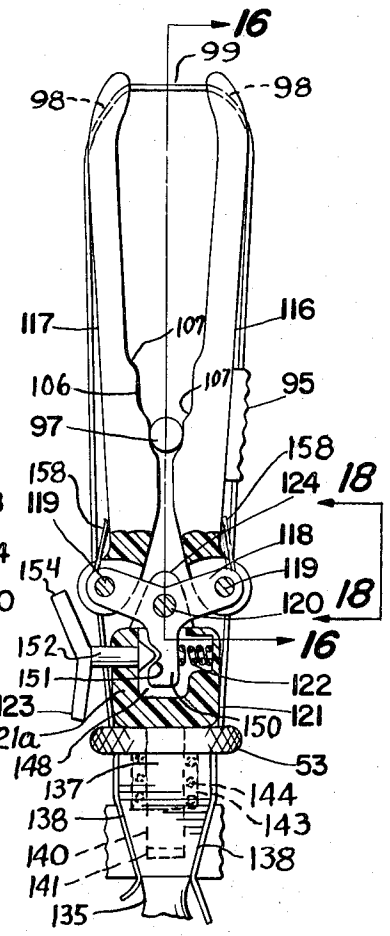


Fig. 15

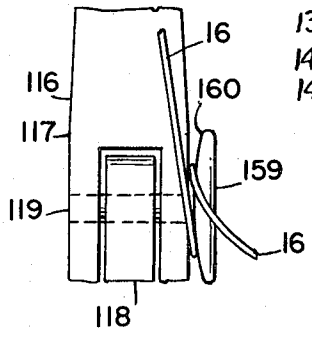


Fig. 18

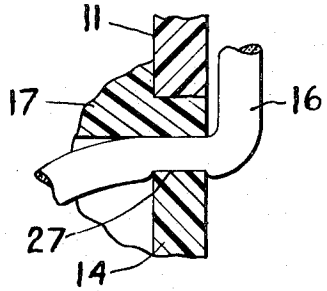


Fig. 6

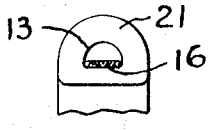


Fig. 3

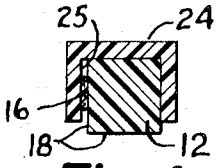


Fig. 4

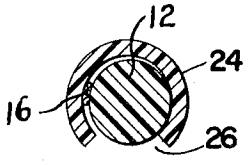


Fig. 5

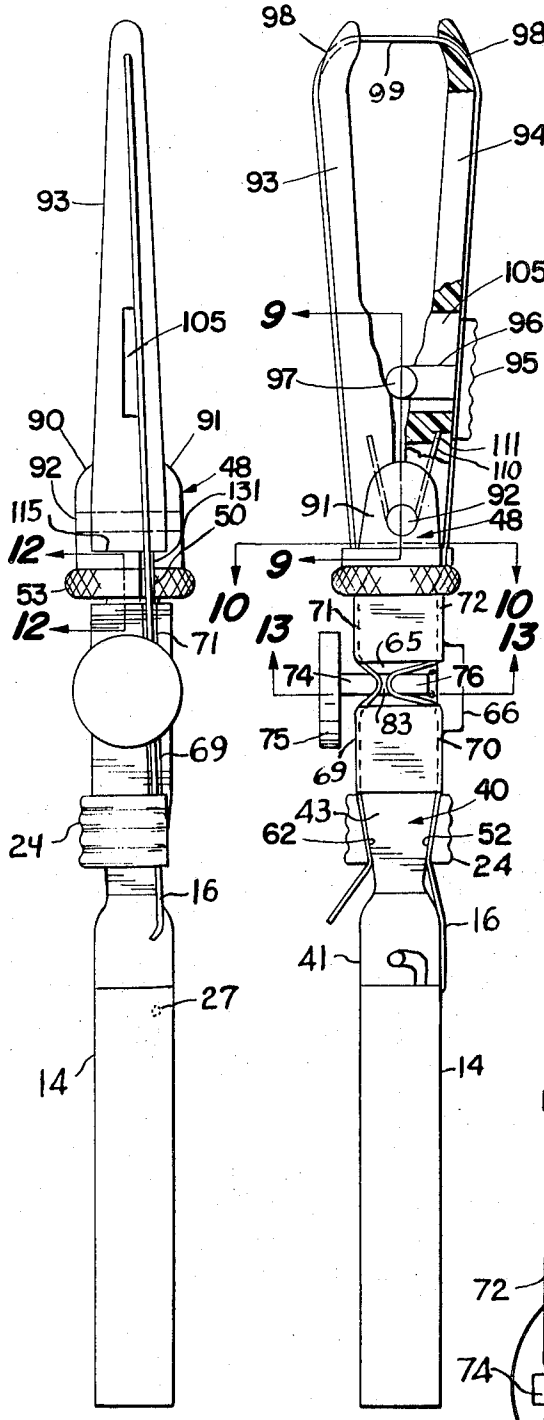


Fig. 7

Fig. 8

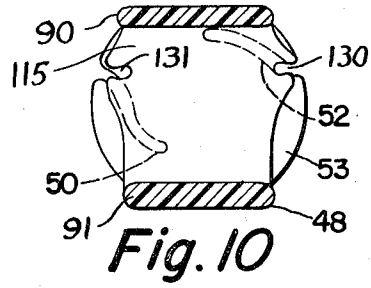


Fig. 10

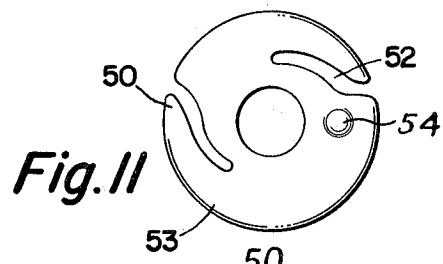


Fig. 11

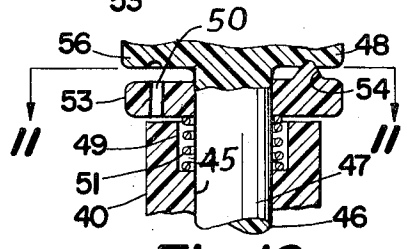


Fig. 12

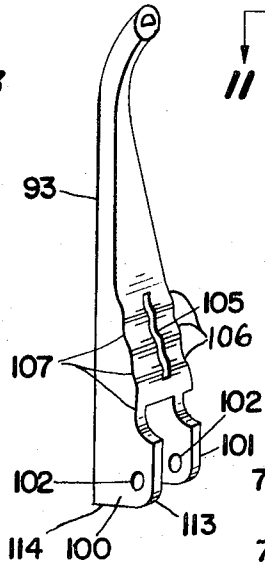


Fig. 14

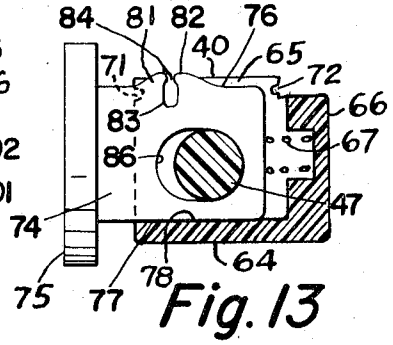


Fig. 13

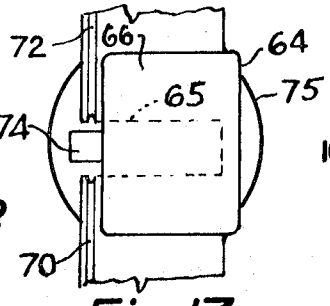


Fig. 17

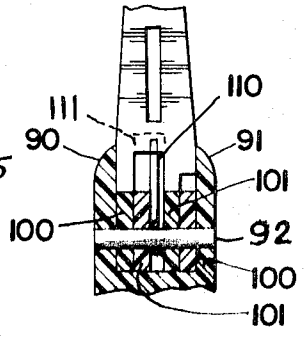


Fig. 9

TOOL FOR MANIPULATING DENTAL FLOSS

BACKGROUND OF THE INVENTION

It has been found that scrubbing the teeth with dental floss on all sides, and particularly below the gum line and between the teeth, is important in the control and prevention of pyorrhea and tooth decay. The recommended procedure is to slip the floss between two teeth, hold the floss in a taut loop around about half of the side of a tooth, and reciprocate the floss in a seesaw manner across the tooth while at the same time moving the floss from the bottom of the tooth to the top. This procedure is repeated for the front and back of each tooth so that scrubbing is accomplished from bottom to top all the way around the tooth.

At the present time such flossing is accomplished by holding the floss with the fingers. This requires considerable dexterity and time. Moreover, it is necessary to insert one and sometimes at least two fingers in the mouth in order to accomplish the proper movement on all the teeth. This is quite difficult to accomplish and moreover the fingers obstruct vision so that flossing is not always accomplished in the desired manner.

Tools have been provided in the past for using floss to remove food particles from between the teeth. Because the above described technique for flossing the teeth is a recent development, tools heretofore provided are not suitable for accomplishing all the desired movements of the floss.

SUMMARY OF THE INVENTION

The present invention provides tools for manipulating dental floss wherein a pair of elongated slender members adaptable for entering the mouth support a section of floss between spaced ends of the members and with means for making the floss taut between such ends whereby the floss may be slipped between two teeth. The tools may then be manipulated for loosening the floss between such ends so that it may be wrapped partially around the tooth, and for reciprocating the floss across the side of the tooth and for moving it upwards and downwards on the tooth.

In one form of the invention the two members that support the floss are separate of each other and each member is held and manipulated by a separate hand of the user. In another form of the invention the two members are supported on a common tool body and there are means provided on the tool for making the floss either taut or loose and for reciprocating the floss crosswise of the tooth.

In still another form of the invention the two members are supported on a rocker that is pivotally mounted on a tool body and there is a means for moving the two members by reciprocating the rocker and thereby reciprocating the floss crosswise of the tooth.

All forms provide a tubular container for the floss that is attachable to the tool body to serve as a handle, means for flattening the floss to have it assume a ribbon shape, a simple form of clamping device for securing the floss to the tool, as well as other features hereinafter described.

DETAILED DESCRIPTION

FIG. 1 is a side view, partly in section, showing one form of the tool in which the floss supporting members are separate of each other.

FIG. 2 is a top view of FIG. 1.

FIG. 3 is a side view of one end of the members of FIG. 1.

FIG. 4 is a section on lines 4—4 of FIG. 1.

FIG. 5 is a section corresponding to FIG. 4 of a modified form of tool.

FIG. 6 is an enlarged partial section from a modified form of tool.

FIG. 7 is a side view of a modified form of the tool.

FIG. 8 is a front view, partly in section of the tool of FIG. 7.

FIG. 9 is a section along the lines 9—9 of FIG. 8.

FIG. 10 is a section along the lines 10—10 of FIG. 8.

FIG. 11 is a section along the lines 11—11 of FIG. 12.

FIG. 12 is a section along the lines 12—12 of FIG. 7.

FIG. 13 is a section along the lines 13—13 of FIG. 8.

FIG. 14 is a perspective view of a floss supporting finger member from FIG. 8.

FIG. 15 is a front fragmentary view, partly in section, of still another modified form.

FIG. 16 is a view on the lines 16—16 of FIG. 15.

FIG. 17 is a side view of part of the tool of FIG. 8.

FIG. 18 is a side view along the lines 18—18 of FIG. 15 showing a further modification.

The tool as shown in FIG. 1 includes two identical pick-like members 10, 15 each of which includes a thin elongated member 11 having an enlarged portion 12 as its lower end and having a passage or opening 13 formed at its upper end. Enlarged portion 12 is preferably square in cross section, as shown in FIG. 4, with tapering sides 18 as shown in FIG. 1. Alternatively, portion 12 may be frusto-conical with a circular cross section, as shown in FIG. 5. Below portion 12 is a hollow handle 14 having a chamber for receiving a supply of dental floss 16. Handle 14 includes a lower or cup shaped portion closed at its upper open end by a cap 17 permanently cemented thereto.

Passage 13 is circular in cross section except where it opens into a side face 21 of member 11. At this location, opening 13 is flared outwardly in its width as shown in FIG. 2. The lower side of opening 13 adjacent face 21 is flat as shown in FIG. 3 which permits the floss to flatten into ribbon shape when it is made taut between the two faces 21.

Mounted on portion 12 is a U-shaped wedge member 24 that preferably has internal surfaces 25 coinciding in taper with sides 18. The floss may be passed laterally through the open side of U-shaped member 24 to facilitate insertion of the floss between member 24 and portion 12.

In the FIG. 5 form, member 24 is circular and has a longitudinal slot 26 through which the floss may be passed laterally.

Handle 14 has a hole 27 connected to its interior and through which the floss is passed.

A pin 28 passes through cap 17 to project from both sides thereof. Such projecting portions cooperate with

slots 29 on opposite sides of the lower ends of members 11 to provide a bayonet type connection between members 11 and handles 14 and also to orient the rotative position of handle 14 relative to member 11 whereby opening 27 is on the side of member 11 opposite to the side on which face 21 is located so that the floss will be in proper position for entering the lower end of opening 13 without being wrapped around member 11.

Preferably, hole 27 is slightly smaller than the normal unrestrained cross section diameter of the floss strand so that the strand is compressed in diameter slightly whereby to substantially seal the interior of the handle to keep the floss in a sanitary condition.

An alternate method of constructing handle 14 for sealing the interior is illustrated in FIG. 6. Thus the lower or cup shaped portion of handle 14 has a slot or opening 27 of substantially U-shaped cross section intersecting its upper end. A cap 17 is cemented to the upper end of the cup shaped portion to close the same and to squeeze the floss strand 16 so as to fill the U-shaped slot. Both in FIG. 1 and in FIG. 6 the squeeze on the floss in the slot or opening 27 is enough to substantially seal the opening but not enough to prevent the floss from being pulled through the opening.

As shown in FIG. 1 each of the handles 14 may initially carry a supply of floss 16 with a small portion projecting therefrom as indicated at 30.

OPERATION OF THE TOOL OF FIG. 1

To use the tool of FIG. 1, a length of floss is pulled from one of the handles 14, in this instance from the handle 14 on member 10 of FIG. 1. Wedge ring 24 is moved downward out of engagement with portion 12 and the floss is then passed laterally through the open side of member 24 to a position between a side surface 25 of member 24 and an opposed side 18 of member 11.

The free end of the floss strand is then threaded through passage 13 to face 21 of member 10 and through the corresponding passage 13 of the other pick-like member 15. The strand is then slipped through the open side of the other wedge member 24 between it and an opposed side 18 of enlargement 12 of member 15. Member 24 on member 10 is then moved upwardly to tightly clamp the strand of floss against the corresponding enlargement 12. The free end of the floss is then pulled down along member 15 until the section of floss 32 between faces 21 of the two members 10, 15 is of the desired length. Wedge member 24 on member 15 is then moved upward to clamp the floss tightly thereon. The tool is now ready for use.

Member 10 is held in one hand by handle 14 and the other member 15 is similarly held in the other hand. To insert the floss between two teeth, the two members 10, 15 are held apart to make the floss taut between faces 21. After the floss is between the teeth, the faces 21 are brought together somewhat so that floss section 32 between faces 21 is sufficiently loose so that it can be wrapped partially around the tooth. The members 10 and 15 are then alternately pulled with the hands to cause floss section 32 to reciprocate in the direction of its length across the back and sides of the tooth. At the same time, the two members 10, 15 are manipulated so that the floss will move up and down on the tooth between the top and bottom thereof. In this manner the tooth is scrubbed as the floss moves simultaneously back and forth crosswise of the tooth and upwardly and downwardly of the tooth.

Obviously, to scrub either the back or front side of the tooth the floss must be inserted first on one side of the tooth and then on the other so that there is a loop of floss lying on either the front or the back side of the tooth. The crosswise and up and down motions can then be applied. It is also obvious that the extremities of the fingers 11 having the faces 21 are slender enough so that either or both are receivable in a person's mouth during a flossing operation on the teeth.

DESCRIPTION OF FIG. 8 FORM

The tool of FIG. 8 includes a main body member 40 having a lower end 41 to which a hollow handle 14 corresponding to that of FIG. 1 is attached.

At its upper end body 40 has a cylindrical bore 45 within which is cemented or otherwise fixedly attached a cylindrical extension 47 on a yoke 48. The upper end of body 40 also has a counterbore 49 that receives a spring 51 that bears upwardly against a ring 53 rotatably mounted on cylindrical portion 47 and which has a projection 54 to provide locking engagement in any of a series of circumferentially spaced depressions 56 in a lower annular face of yoke member 48. Ring 53 has a pair of spiral slots 50, 52 whose inner ends are on a smaller diameter than their outer ends, the latter opening into the peripheral surface of ring 53.

Body 40 is preferably square in cross section except for its lowermost portion, such square cross section portion including a tapered section 43 corresponding to tapered section 18 of FIG. 1 and upon which is mounted a U-shaped wedge ring 24, also as in FIG. 1.

Body 40 has a generally rectangular slot 65 therein transverse to the longitudinal axis of body 40 that is open to two adjacent sides of body 40 and that is closed on two sides by projections 64 and 66 on the other two sides of body 40. Projection 66 has a recess 67 that receives a spring 67. Shallow grooves 69, 70, 71, 72 are formed in two opposite faces of body 40 both above and below slot 65 and near the side of body 40 opposite projection 64.

Mounted in slot 65 is a slide 74 having a round button portion 75 and a flat tongue 76. One side 77 of tongue 76 has a close slide fit with a side 78 of slot 65. The other side of tongue 76 has a pair of laterally extending lips 81, 82 having a slot 83 therebetween, the slot 83 having a restricted mouth 84. An elongated opening 86 in tongue 76 receives cylindrical portion 47 of yoke 48 with a sliding fit.

Yoke 48 at its upper end has a pair of upwardly extending sides 90, 91 with a pin 92 extending therebetween. Pivotally mounted on pin 92 are a pair of slender elongated fingers 93, 94 that are identical and each of which has a narrow slot 105 therethrough. Finger 94 has a slide 95 mounted thereon. Slide 95 is attached by a flat tongue 96 that projects through slot 105 to a cylindrical pin 97 that projects to either side of tongue 96. Each finger 93, 94 has a pair of side flanges 100, 101 that interfit as shown in FIG. 9 and which have holes 102 therethrough for reception of a pivot pin 92. Slot 105 traverses a series of steps formed in members 93, 94, such steps comprising ramp portions 106 and flat portions 107. Flat portions 107 are substantially parallel to the vertical axis of the tool when the fingers 93,

94 are in the position shown in FIG. 8. A torsion spring 110 supported on pin 92 bears against ribs 111 in fingers 93, 94 urging the latter toward each other. The lower end of each finger 93, 94 is rounded as at 113 to permit the fingers to pivot toward each other and has a flat portion 114 engageable with upper face 115 of yoke 48 to limit pivoting motion of the fingers away from each other. Also, body 40 can extend at an angle relative to yoke 48.

OPERATION OF FIG. 8 FORM

After a handle 14 containing floss 16 has been assembled to body 40 in the manner described in connection with FIG. 1, a length of floss is pulled out of the cartridge through opening 27 and is inserted through the open side of U-shaped wedge ring 24 while the latter is in a loose or lower position on body tapered section 43. The floss is then inserted in groove 70, slot 83, groove 72, slot 52 and slot 130 in yoke 48. From there it is inserted through openings 98 in members 94 and 93, then into slots 131 and 50, groove 71, slot 83, groove 69 and through wedge member 24. At this time slide 95 is a selected position with pin 97 bearing on a selected flat portion 107 of member 93 for holding members 93, 94 in the spread apart position shown in FIG. 8.

The free end of the floss below wedge member 24 is now pulled to draw the floss tight through the tool. Wedge member 24 is then moved upwardly to tightly wedge the floss against opposite sides 43 of body 40.

With the floss taut between openings 98 of members 93, 94, the upper end of the tool is now placed in the person's mouth and the floss portion 99 between members 93, 94 is inserted between two teeth and down to the gum line. Slide 95 is now moved upwardly so that button 97 rides off of the selected flat 107 to permit spring 110 to move the upper ends of members 93, 94 toward each other so that floss portion 99 becomes slack whereby it may be partially wrapped around a tooth by a slight pull upon the tool. In addition, the amount of slack may be adjusted by turning ring 53. Turning the ring in one direction causes the floss to move radially inwardly in slots 50, 52 for taking up slack at 99 and movement in the other direction increases the slack.

To scrub the tooth, the person moves the tool so that the floss portion 99 moves up and down between the top and bottom of the tooth while at the same time he manipulates slide 74. Pushing slide 74 inwardly causes slot 83 to move the floss therebetween to the right, as viewed in FIG. 8. This pulls the floss portion 99 leftwardly from opening 98 in member 94 toward and into opening 98 of member 93. Upon release of slide 75, spring 68 returns it leftwardly and slot 83 now moves the floss therebetween to the left and causing the floss at 99 to move from member 93 toward member 94. Thus an axial reciprocating action of the floss crosswise of the tooth is achieved by such manipulation of slide 74.

CONSTRUCTION OF FIG. 15 FORM

In the modification of FIG. 15, body 135 has a lower end, not shown, the same as the lower end of members 11 of FIG. 1 and to which a handle 14 is attached by a bayonet connection such as at 28, 29 also of FIG. 1. Body 135 also has an intermediate portion 137 square in cross section and with a part thereof tapered as at 138 to cooperate with U-shaped wedge member 24, all in the same manner and construction similar to FIG. 1.

A yoke 121 has a generally cylindrical portion 121*a* with a cylindrical shaft 140 depending therefrom that fits into a bore 141 in body 135 and cemented or otherwise rigidly attached to body 135. Body 135 also has a counterbore 143 with a spring 144 therein that bears against a ring 53 that is identical to ring 53 of FIG. 7 and which has a projection 54 engageable in circumferentially spaced depressions 56 on the lower side of yoke 121. Projection 54 and depressions 56 are not shown in FIG. 15 but are located and function in the same manner as in the tool of FIG. 8.

Yoke 121 has side members 124 with a pin 120 extending therebetween and also has a recess 148. A rocker 118 is pivotally mounted on pin 120 and has an arm 150 extending into recess 148. Arm 150 has a notch 151 that receives the inner end of a pin 152 that is slidable in a side opening in yoke 121 and thereto. Rocker 118 has sidewardly extending arms respectively pivotally mounted on one of the two pins 119 carried by the lower ends of elongated slender members 116, 117. Members 116, 117 are identical and have slots 115, ramps 107 and flats 106, all in the same manner as the like numbered elements of FIG. 8. Also, member 116 carries a slide 95 attached to a pin 97 and mounted in the same manner as in FIG. 8. The upper ends of members 116, 117 have openings 98 identical to the corresponding openings of FIG. 8 and in which floss strand 16 is received. A pair of springs 158, each supported on a respective pin 119 has a free end that bears on members 116, 117 urging the same toward each other.

OPERATION OF FIG. 15 FORM

With a floss strand 16 carried by the tool as shown in FIG. 15, and with the floss portion 99 between the upper ends of members 116, 117 taut while slide 95 is in the position shown, floss portion 99 is inserted between two teeth. Slide 95 may then be moved upward between a different set of flats 106 to permit spring 158 to pull members 116, 117 toward each other, if it is desired to have slack in floss portion 99. The slack may be further adjusted by ring 53 in the same manner as in FIG. 8.

Cross bar 154 may now be manually moved to the right to cause rocker 150 to pivot counter clockwise, as viewed in FIG. 15. This causes member 116 to move upward and member 117 to move downward, thus generating relative motion between the upper ends of such members. Release of cross bar 154 permits spring 122 to pivot rocker 118 in the opposite direction and thereby cause members 116 and 117 to reverse their vertical motion. Movement of members 116, 117 in this manner imparts motion to the floss portion 99 therebetween, causing the floss to scrub the tooth. If desired, one of the members 116, 117 may be held firmly against the tooth during use of the FIG. 15 tool. The tools of FIGS. 1 and 8 could also be used in a corresponding manner.

An alternate method of the construction in FIG. 15 is to clamp the two ends of floss 16 to members 116 and 117 respectively so that the clamped ends of floss move with members 116 and 117. This is done by providing heads 159 on pins 119 with nearly flat conical undersurfaces 160.

Operation of this alternate is by pulling the floss from handle **14** then taking a turn or two around one of the pins **119** under the head so as to wedge the floss between the head and surface of member **117.** The floss is then threaded successively through openings **98** in members **116** and **117** and then making turns around the other pin **119** under its head to wedge the floss again between the head and rocker **118.**

It is preferable to make all forms of the tool of molded plastic. although other materials could be used.

I claim:

1. A flossing tool comprising first and second elongated fingers each having a slender extremity easily receivable in a person's mouth and each finger including a handle long enough so that each handle may be grasped by a hand of the person to insert the extremities into the person's mouth for manipulation therein without having the person's fingers within the mouth, each such extremity having retaining means for supporting a strand of floss extending between said extremities, and said extremities are connected to each other only by said floss, whereby said extremities are freely movable relative to each other in all directions, and means carried solely by said tool for adjusting the length of floss between said extremities.

2. A flossing tool comprising first and second elongated fingers each having a slender extremity easily receivable in a person's mouth and each finger including a handle long enough so that each handle may be grasped by the person's hands to insert the extremities into the person's mouth for manipulation therein without having the person's fingers within the mouth, each extremity having retaining means for supporting a strand of floss, said extremities being connected to each other by a connecting means that permits each extremity to be moved in all directions independently of the other extremity while said extremities of both fingers are in the person's mouth and the handle portions are outside the person's mouth.

3. The tool of claim **2** in which said connecting means is said floss.

4. A flossing tool comprising first and second fingers, each finger having retaining means at one of its ends for supporting a strand of floss, said fingers being connected to each other by a connecting means that permits each finger to be moved independently of the other finger without bending of the finger, said connecting means includes a common body member and each finger is movable relative to the body member without bending, and another means movable to selected positions in one of which positions said another means engages said fingers to fix a minimum distance between said ends and in another of which positions said another means permits said distance to be smaller than said minimum.

5. The tool of claim **4** in which there is a spring engaging the two fingers pressing the said ends toward each other.

6. The tool of claim **4** in which both of said fingers are pivotally mounted on said body member.

7. The tool of claim **6** in which there is a means associated with each finger engageable by said body to limit the pivoting motion of such finger in a direction away from the other finger.

8. A flossing tool comprising a member having means at one end for supporting a strand of floss, said member having a detachable handle, said handle being hollow to receive a supply of strand floss and having a side opening through which the strand can be fed from the handle to said member, and said hollow being completely closed except for said opening, and non-threaded positive abutment means for locating the handle with the opening in a predetermined rotative position relative to said member in its final position of attachment thereto.

9. The tool of claim **8** in which said opening has a snug sliding fit with said strand to substantially seal the interior of the handle from its exterior.

10. A flossing tool comprising a body with first and second elongated members extending therefrom, one end of the first member being laterally opposed from one end of the second member, said ends having means for supporting a strand of floss therebetween, first means solely on the body as a part thereof for fixing the floss on the tool at two locations, second means for fixing the spacing between said ends of the elongated members, and third means engaging the floss at two other locations on the body and operable for selectively rendering the strand loose and taut between said opposed ends when said spacing is fixed and said floss is fixed as aforesaid.

11. The tool of claim **10** in which said first means fixes the floss to the tool at a point spaced from at least one of said ends, and said rendering means is engageable with the strand between said one end and said point for moving the strand axially with respect to said one end for rendering the strand loose and taut as aforesaid.

12. The tool of claim **11** in which said rendering means deflects a portion of the strand laterally to cause said axial movement.

13. The tool of claim **10** in which said tool has means for fixing the strand to the tool at two points, one on either side of the space between said ends, and said rendering means engages and laterally moves the strand between each end and the respective fixation point.

14. The tool of claim **12** in which said rendering means comprises a rotatable member having a surface engageable with the strand to effect such lateral deflection upon rotation of the rotatable member.

15. The tool of claim **13** in said rendering means comprises a rotatable member having openings therein that receive and engage the strand for laterally moving the same upon rotation of said rotatable member.

16. The tool of claim **14** in which there is a means for fixing the rotatable member in a selective position of rotation.

17. A flossing tool comprising first and second elongated members, one end of one member being spaced from one end of the other member, means on each of said ends for supporting a strand of floss extending between said ends, and means for axially reciprocating said strand between said ends.

18. The tool of claim **17** in which said reciprocating means laterally deflects the strand at a location remote from said ends for causing said reciprocation.

19. The tool of claim **17** in which said tool has means for fixing the strand to the tool at two points one on either side of the space between said ends, and means for moving the strand laterally in one direction between one of said ends and a respective one of said fixation points in a manner to increase the strand length therebetween while simultaneously moving the strand later-

ally in said one direction between the other of said ends and the other of said fixation points in a manner to decrease the strand length therebetween, and means to move said strands in the opposite lateral direction to thereby achieve said reciprocation.

20. The tool of claim **19** in which the moving means comprises a member having an opening therein receiving said strand, the sides of said opening engaging the strand for moving the strand laterally as aforesaid.

21. The tool of claim **20** in which the moving means has a manually engageable portion for moving it in one direction and there is a spring for moving it in the opposite direction.

22. A flossing tool comprising a body with first and second fingers pivotally mounted thereon, one finger having one end opposed to one end of the other finger, said ends having means for supporting a strand of floss extending between said ends, and the tool including a manually operated cam means engaging both fingers for controlling the positions of said ends relative to each other for making the floss loose or taut.

23. The tool of claim **22** in which said body includes a rocker pivotally attached to another portion of said body and on which said fingers are each pivotally mounted, and means for oscillating said rocker.

24. The tool of claim **23** in which said oscillating means includes a manual means for moving the rocker in one direction, and a spring for moving the rocker in the opposite direction.

25. A flossing tool comprising first and second fingers, each finger having means at one of its ends for supporting a strand of floss extending between said ends, means for tightly clamping the floss to the tool at two locations on opposite sides of said ends, and means on the tool whereby the floss may be rendered loose or taut between said ends without loosening and moving the floss at such locations and without bending said fingers.

26. The tool of claim **25** in which there is a means whereby the floss between said two locations may be reciprocated along its lengthwise axis while it is loose between said ends and secured at said locations.

27. A flossing tool comprising first and second fingers each movably mounted on a body with one end of each finger generally laterally opposite a corresponding end of the other finger, said ends each having means for supporting a strand of floss extending between said ends, and means for reciprocating at least one finger in a path generally perpendicular to a straight line passing through both said supporting means.

28. The tool of claim **27** in which said reciprocating means also reciprocates the other finger in a path generally perpendicular to said line.

29. The tool of claim **27** in which there is a means for adjusting the lateral spacing of said ends.

30. The tool of claim **27** in which there are means for fixedly attaching said strand on either side of said ends so as to fix the length of floss between said ends independently of the spacing between said ends.

31. The tool of claim **2** in which each said retaining means includes an opening through which the floss passes, the opening being large enough in cross section to receive the strand with substantially no flattening thereof, and each opening having a substantially flat surface engaged by the floss where the floss leaves the respective finger in a direction toward the other finger whereby the floss may be flattened thereby into ribbon form.

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