

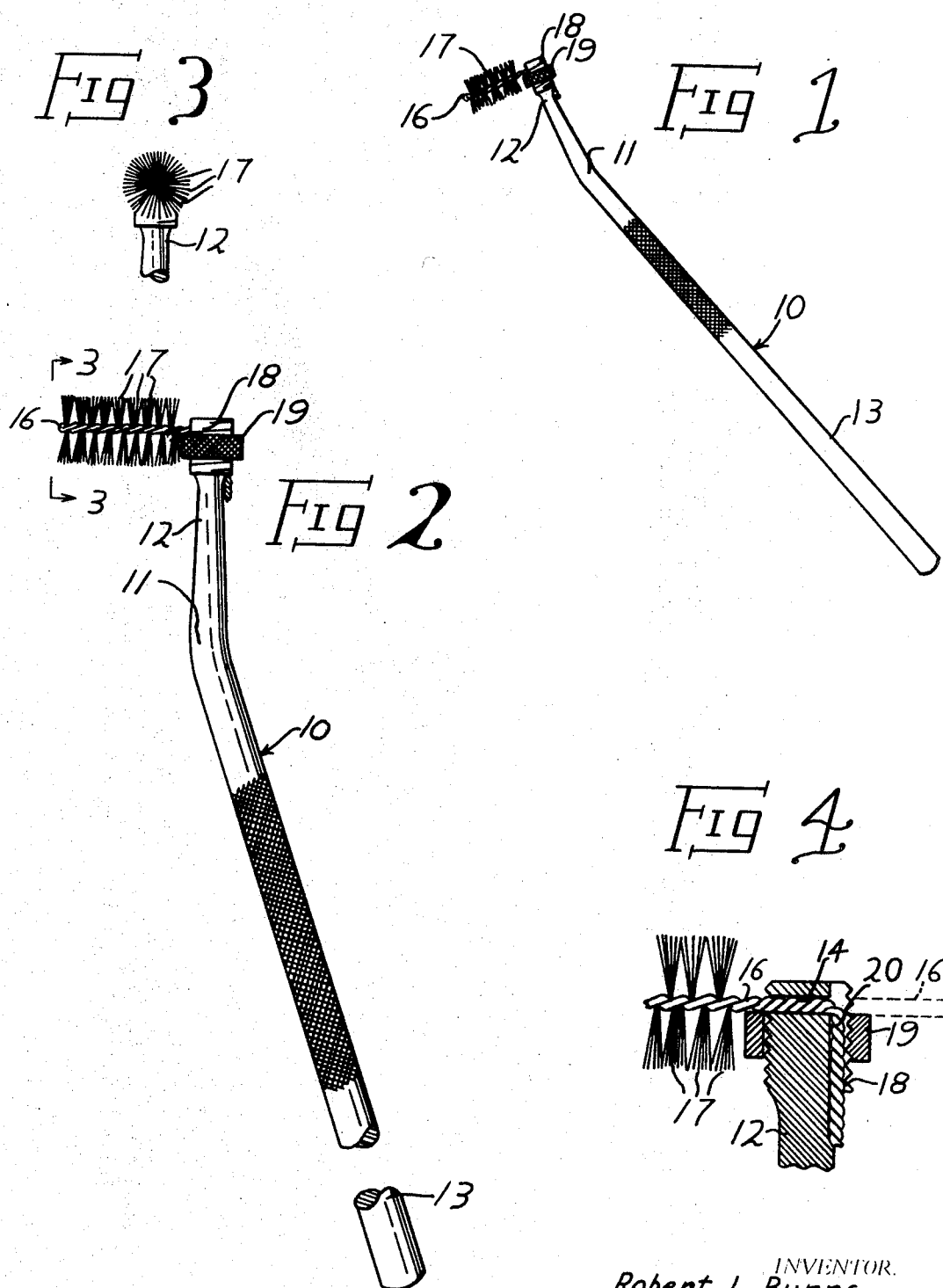
Feb. 2, 1971

R. L. BURNS

3,559,226

TOOTH BRUSH FOR INTERPROXIMAL AREAS

Filed May 31, 1968



INVENTOR.
Robert L. Burns

BY
Jennings, Carter & Thompson
Attorneys

1

3,559,226

TOOTH BRUSH FOR INTERPROXIMAL AREAS
Robert L. Burns, Lexington, Ky., assignor to The University of Alabama Medical Center Foundation, a corporation of Alabama

Filed May 31, 1968, Ser. No. 734,191

Int. Cl. A46b 3/10, 9/04

U.S. Cl. 15—167

1 Claim

ABSTRACT OF THE DISCLOSURE

A tooth brush for interproximal areas having elongated wire members twisted on each other with radially extending bristles fixedly secured in place therebetween. A laterally opening passageway is provided in an elongated handle for receiving ends of the twisted wire members which are secured in place by an adjustable retaining member, the handle being bent to position the wire members at an obtuse angle relative to the remainder of the handle.

This invention relates to a tooth brush for interproximal areas and more particularly to a brush which is adapted for use in prevention and control of periodontal disease and prevention of dental caries, that may develop on the exposed root surface resulting from periodontal treatment. As is well known in the art to which my invention relates, the interproximal area is usually the first to show periodontal breakdown. It is also well established that the complete removal of plaque daily is imperative to prevent and arrest periodontal disease. Many interdental stimulating and cleansing aides have been proposed, such as floss, rubber tips, tooth picks of all shapes, yarn, gauze, irrigation devices, tufted interproximal brushes, pipe cleaners, stainless steel twisted brushes as well as the conventional tooth brush. Such stimulating and cleansing aides have been unsatisfactory due to the fact that the cleaning elements or bristles extend parallel to the surface between teeth rather than extending perpendicular to the tooth surface between teeth. Also, such aides are difficult to use and are not adapted for reuse.

In addition to providing a tooth brush which shall be adapted to remove plaque in the interproximal area in the treatment of periodontal disease, another object of my invention is to provide such a brush which may be designed for use with near-normal as well as the periodontally-treated mouth.

Another object of my invention is to provide a tooth brush of the character designated in which the bristles extend perpendicular to the tooth surface between teeth and which may be used from the lingual as well as the buccal side.

A further object of my invention is to provide a tooth brush of the character designated which is extremely simple of construction, economical of manufacture and one which may easily be used and then cleaned for reuse.

A tooth brush embodying features of my invention is illustrated in the accompanying drawing forming a part of this application, in which:

FIG. 1 is a side elevational view of the tooth brush;

FIG. 2 is an enlarged side elevational view thereof, partly broken away and in section;

FIG. 3 is a fragmental view taken generally along the line 3—3 of FIG. 2; and,

FIG. 4 is an enlarged, fragmental view showing the means for securing the elongated bristle supporting member to the handle of the brush.

Referring now to the drawing for a better understanding of my invention, I show an elongated handle 10 which is bent adjacent one end thereof as at 11 to define one

2

end 12 which is adapted to carry the brush element and another end portion 13 which defines the handle proper for the brush. A laterally opening passageway 14 is provided to the end portion 12 of the handle 10. The handle 10 is bent so that the passageway 14 extends in a substantially common plane with both end portions 12 and 13.

An elongated wire member 16 is bent on its self, as shown in FIGS. 1 and 2 to provide a pair of wire members which are twisted on each other with bristles 17 therebetween to define a relatively stiff elongated bristle supporting member. The bristles 17 extend radially from a common axis and are fixedly secured in place as the wire members are twisted relative to each other. Also, as shown in FIGS. 1 and 2, the bristles 17 are provided along a longitudinally extending portion of the supporting wire members so that a substantial portion of the twisted wire member 16 extends beyond the bristles 17 whereby this portion of the wire members 16 is adapted to be inserted through the passageway 14. The bristles 17 are formed of a suitable flexible material, such as nylon, and all of the bristles are of substantially the same length, as shown in FIG. 3.

The end portion 12 of the handle 10 is threaded as at 18 for receiving a nut 19 whereby the nut may be rotated into firm and locking engagement with the wire members 16 to thus firmly secure the bristle supporting wire members in place. With the wire members 16 thus secured in place by the nut 19, the wire members extend in a direction generally perpendicular to the end portion 12 and extend in a direction to define an obtuse angle relative to the handle portion 13 whereby the bristles 17 carried by the wire members 16 may be easily inserted into the interproximal spaces and then supported rigidly for back-and-forth motion interproximally and through bifurcations and trifurcations.

As shown in FIG. 4, a longitudinally extending recess 20 is provided in the side of the handle portion 12 and extends through the adjacent end of passageway 14 so that the wire members 16 may be bent at a right angle and then lie within recess 20. The portions of the wire members 16 within recess 20 thus extend within the threaded opening in nut 19 so that the adjacent ends of the wire members 16 are held adjacent the handle portion 12 whereby the free ends of the wire members do not damage tissue adjacent thereto during use of the brush.

From the foregoing description, the assembly and operation of my improved tooth brush will be readily understood. The brush element comprising the elongated bristle supporting member 16 and the bristles 17 is attached to the handle portion 12 by inserting the projecting ends of the wire members 16 through the passageway 14, as shown in FIG. 4. The projecting ends of the wire members 16 are then bent from the dotted line position to the solid line position shown in FIG. 4, whereby the nut 19 is free to pass over the wire members 16 as they lie within recess 20. The nut 19 is then rotated in a direction to move into engagement with the sides of the wire members 16, as shown, whereby the wire members are secured rigidly to the handle. Since the nylon bristles 17 are held in the twisted wire member 16 whereby they project radially therefrom, the bristles 17 extend in a direction perpendicular to the surface to be cleaned between teeth rather than extending in a direction parallel to such surfaces. Preferably, the wire members 16 are formed of stainless steel wire and variations in wire size and bristle size may be made to adapt the brush for use with various oral conditions. That is, a finer size wire and bristle may be used in the normal or near-normal situation while the heavier wire core and bristle may be used in the periodontally treated mouth. After insertion of the brush element consisting of the wire members 16 and the bristles

3

17 between the teeth to be cleaned, the brush is moved back and forth whereby the elongated wire members 16 move longitudinally to remove plaque on the tooth surfaces in the interproximal area.

From the foregoing, it will be seen that I have devised an improved tooth brush for interproximal areas. By providing a tooth brush wherein the bristles extend perpendicular to the surfaces to be cleaned between teeth rather than extending parallel thereto, a more efficient cleaning action is obtained. Also, by providing a brush element which is detachably connected to a handle member, together with means securing the projecting or free ends of the twisted wire members in place, the brush elements may be readily removed from the handle for cleaning or replacement and at the same time the tissue of the mouth is not damaged by use of the brush. Furthermore, by providing a handle which supports the elongated brush element at an obtuse angle relative to the handle proper, the brush element may be readily inserted into the interproximal spaces for cleaning surfaces adjacent thereto.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications without departing from the spirit thereof.

What I claim is:

1. In a tooth brush for interproximal areas:

- (a) elongated wire members twisted on each other to define a relatively stiff, elongated bristle supporting member,
- (b) radially extending bristles radiating from a common axis and fixedly secured in place between the twisted wire members along a longitudinally extending portion of said supporting member in position to extend perpendicular to the opposed tooth surfaces of adjacent teeth while said bristle supporting member is between adjacent teeth with another longitudinally extending portion of said supporting member projecting beyond the bristles,

4

- (c) an elongated handle having a laterally opening passageway therein for receiving said another longitudinally extending portion of said supporting member with the end of said handle carrying said supporting member being bent in a common plane with said passageway and extending at an angle to the remainder of the handle so that said supporting member extends at an obtuse angle relative to the said remainder of the handle,
- (d) external threads on said handle adjacent said passageway,
- (e) a movable retaining member having a threaded opening therethrough engaging said external threads and disposed to secure said another longitudinally extending portion in place within said passageway, and
- (f) there being a longitudinally extending recess in said handle communicating with said laterally opening passageway for receiving said another longitudinally extending portion of said supporting member so that said another longitudinally extending portion passes inwardly of said threaded opening in said movable retaining member.

References Cited

UNITED STATES PATENTS

592,838	11/1897	Solem	15—146
1,296,067	3/1919	Fuller	15—206
2,573,201	10/1951	Kelley et al.	15—206X
3,204,275	9/1965	Baker	15—167X

WALTER A. SCHEEL, Primary Examiner

L. G. MACHLIN, Assistant Examiner

U.S. Cl. X.R.

15—206