

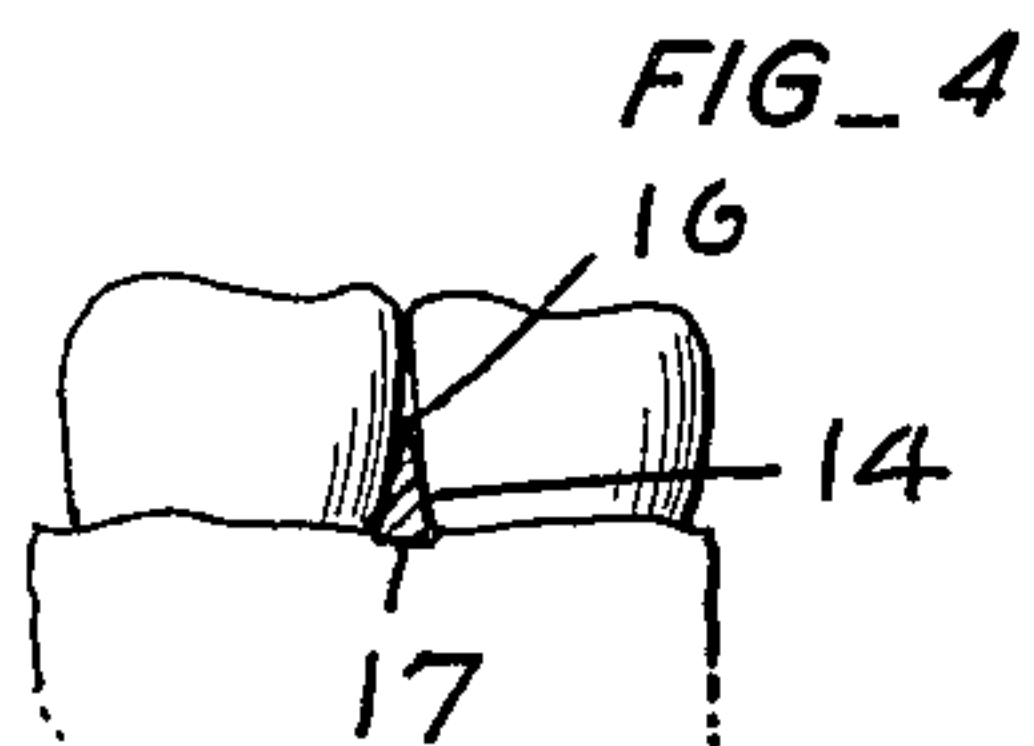
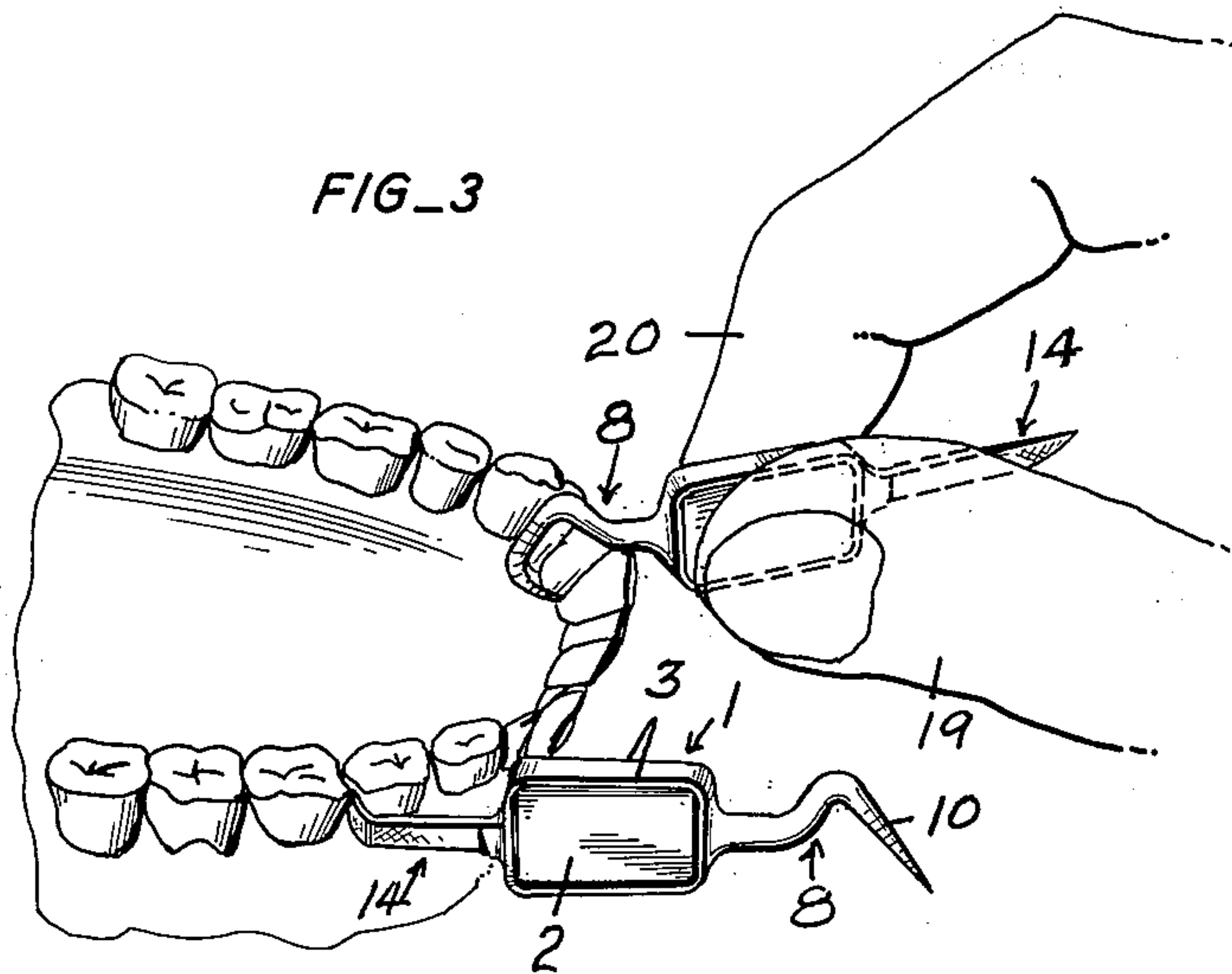
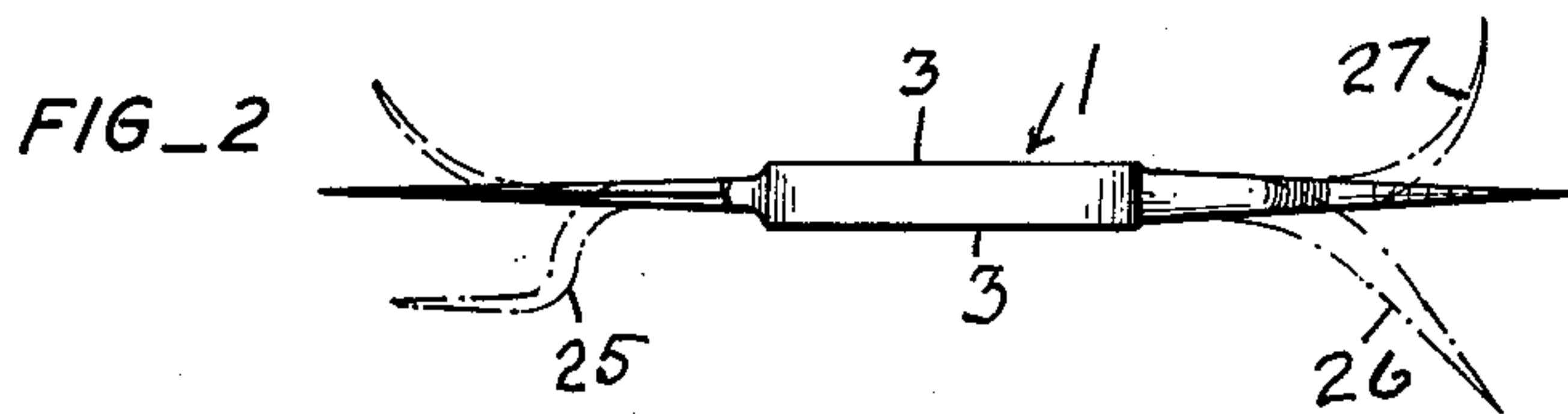
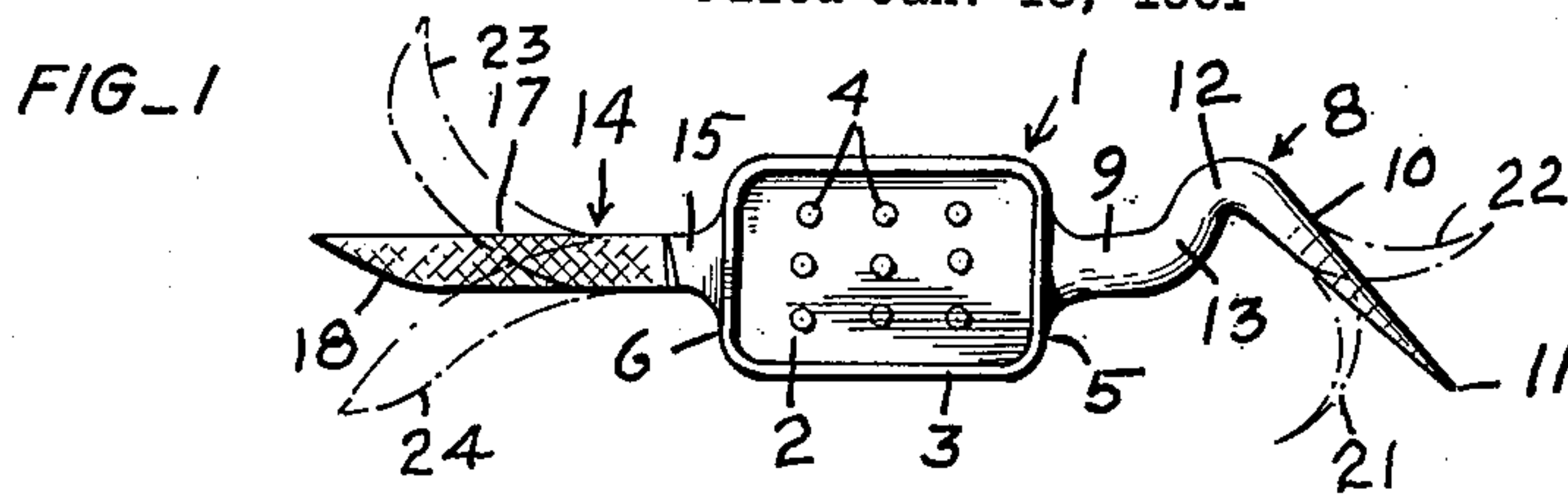
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A. D. WISEMAN

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TOOTH CLEANING DEVICE

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INVENTOR.
ADOLPH D. WISEMAN
BY
Boyle, Mohler & Wood
ATTORNEYS

1

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TOOTH CLEANING DEVICE

Adolph D. Wiseman, 1075 Baker St.,
San Francisco, Calif.

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2 Claims. (Cl. 132-93)

This invention relates to a tooth cleaning device, and is a continuation in part of application for United States Letters Patent, Serial No. 803,735, filed April 2, 1959, and now abandoned.

One of the objects of the invention is the provision of a tooth cleaning device that is adapted to meet any interdental cleaning requirement for entire dentition.

Another object of the invention is the provision of a tooth cleaning device having a pair of picks stationarily and integrally connected with a supporting body adapted to be firmly gripped between the thumb and forefinger of a hand of a user, and which body is formed to properly position the device between said fingers for proper use of the device.

A still further object of the invention is the provision of a one piece, integral device that includes a pair of toothpicks respectively adapted to be safely used by a layman for efficient interdental cleaning, and for entering and cleaning exposed bifurcations and trifurcations and atypical areas anywhere in the mouth from the outer as well as the palatal and lingual aspects of the upper and lower teeth, all of which operations may be accomplished while holding the device in convenient positions from the front of the mouth, and without uncomfortable distortion of the mouth.

Another object of the invention is the provision of a one-piece cleaning device that includes picks adapted to be bent and twisted to any desired shape for reaching any desired point within the mouth and which picks will be in the most efficient shape for cleaning at said point when they are used, and which device includes a finger grippable body adapted for holding the picks and for manipulating them when they are used in a cleaning operation.

The toothpick of this invention is particularly designed for use by the layman who, in virtually all instances, makes no attempt to see, through the use of a mirror, the area or points where the pick is to be used and who would not be able to efficiently manipulate the pick through observing the image on the mirror even if the point or points could be observed in that manner, which is not always possible.

The professional metal scalers and probes used by the dentist, such as shown in U.S. Patent No. 1,446,906, of February 27, 1923, to W. A. Kelsey, and others known to the dental profession, would be dangerous in the hands of a layman and would be likely to cause more injury to the teeth and gums than any benefit.

Few attempts have been made to provide the layman with a toothpick that is safe, sanitary and unbreakable, and that is adapted to conveniently reach points heretofore deemed to be substantially inaccessible to any but a dentist, or by use of the ordinary toothpick. Such attempts as have been made are toothpicks of metal or other hard material slidable within a handle much longer than the pick or hingedly connected with a handle for jack knife folding and which handles not only act as collectors for dust and dirt into which the pick is seated when not in use, but the picks are limited to use in certain areas due to their permanent shapes and to the character of handles connected therewith.

The tooth cleaning device of the present invention overcomes all of the objections to prior devices intended for similar purposes and provides a tooth cleaning device

2

that is non-metallic, efficient, safe, indestructible, yet bendable to enable convenient reaching of any point along either side of all teeth including the interdental spaces, bifurcations, trifurcations and atypical areas, and which device is adapted to massage the gums, when used, and will not cause injury to fillings or nerve shocks due to electrolytic action resulting from engagement of a metallic pick with the metals of fillings.

Other objects and advantages will appear in the drawings.

In the drawings,

FIG. 1 is a side elevational view of the tooth cleaning device; the dot-dash lines indicating some of the positions to which the picks may be bent for use.

FIG. 2 is a top plan view of the pick of FIG. 1; the dot-dash lines indicating other possible deformations of the picks.

FIG. 3 is a perspective view of teeth of the lower jaw with the picks of FIG. 1 shown in two positions in which said picks have been distorted for more efficiently reaching certain points, one device of the two illustrated being shown held between the digital pulps of the thumb and forefinger of a hand and which pulps would normally cover the finger gripping portion of the device illustrated.

FIG. 4 is an enlarged fragmentary elevational view showing, in section, the left-hand pick of FIG. 1 between a pair of teeth.

In detail, the toothpick comprises a central, generally oblong, disc-like body 1 having flattened opposite sides 2 and relatively narrow flanges 3 projecting oppositely outwardly from said sides around the edges of said body whereby said body will have oppositely outwardly facing recesses at opposite sides thereof in which the thumb and forefinger of the user are adapted to seat. This substantially precludes accidental rotation of the device in a plane perpendicular to that of the disc. Slight protuberances 4 of any design may be formed on the bottom of said recesses which will also contribute to the degree of firmness with which the device may be gripped. While it is to be understood that the invention is not to be restricted to any particular dimensions, it has been found that a body approximately three quarters of an inch in length and approximately one-half of an inch in width, with a thickness of about one-eighth of an inch between the outer edges of the flanges, has been satisfactory. These dimensions provide a firm finger gripping portion within the outlines of the flanges at opposite sides of the body for using the picks that are integral therewith and that project from the aids of the body, as will later be explained.

It is pertinent to note that the flattened body is of generally the same area and shape of the digital pulp or pad of the thumb and forefinger of a hand, thereby substantially insuring against accidental slippage and movement or dropping of the device when the body is properly held between the thumb and forefinger. This form and dimension of the body 1 also enables the user to quickly rotate the body to change the end to end relation thereof, thus changing the positions of picks that project from its ends, without accidentally dropping the device. When it is considered that a dropped tooth cleaning device is not, or should not be used thereafter unless sterilized, the importance of a structure that minimizes the chance of its being accidentally dropped, is quite important.

The opposite ends of the body 1 are designated 5 and 6, these being defined by the edges of shortest length.

Projecting from end edge 5 centrally between the ends thereof, is one toothpick generally designated 8. This pick is integral with the body 1 and comprises an inner end portion 9 that is preferably cylindrical, and of a

3

diameter that is approximately equal to the thickness of body 1. This portion 9 is coaxial with the longitudinal axis of body 1.

The outer end portion 10 of the toothpick is elongated with inclined sides terminating in a point 11. This outer end portion is cylindrical in cross sectional contour and is connected with the inner end portion 9 by an intermediate goose-neck portion 12, also cylindrical in cross sectional contour, and in a manner so that the longitudinal axis of the outer end portion 10 intersects the longitudinal axis of body 1 and portion 9 at an angle which may be approximately thirty to forty-five degrees at the same side of axis 9 as the goose neck portion 12, and the point 11 is directed generally outwardly of the body 1 as seen in FIG. 1. The upper end of portion 10 forms part of the goose neck 12, and the other part of the goose neck, designated 13, extends from said upper end to the inner end portion 9 with which it is connected.

Preferably substantially the entire pick 8 is disposed between parallel lines in extension of the upper and lower edges of the body 1, which are the longest edges, and the corners of the body are rounded.

The overall length of the pick 8 as seen in FIG. 1, is only slightly longer than the length of the body.

At the other end of body 1 that is opposite to pick 8, is a second toothpick generally designated 14. This pick 14 is generally in the form of a straight knife blade having a reinforcing fillet 15 at the juncture between the pick and body 1.

The cross sectional contour of blade 14 is seen in FIG. 4 and generally conforms to the outline of the interdental spaces with the sharp edge 16 of the blade directed away from the gum, so that the flat back edge 17 will massage the gum, rather than tend to cut into it, when the blade is inserted between the teeth.

The back edge 17 of the blade 14 is straight, and the outer end portion of sharp edge 18 curve to meet the straight back edge.

The length of pick 14 is substantially the same as the length of pick 8 and is coaxial with the portion 9 of pick 8 and with the longitudinal axis of the body, hence the device as a whole is substantially balanced when the body 1 is properly gripped between the thumb and forefinger of a hand. When said body portion is gripped between the thumb 19 and forefinger 20 of a hand, one of the picks will normally project outwardly of the hand generally in a direction in outwardly extension of the thumb 19, while the other pick will project toward the hand, but said other pick will not under any condition of use engage the hand.

Thus, while the dimensions already given by way of an example are not intended to be restrictive, the overall maximum length of the device should be such that the device can be freely rotated through 360° without having either of the picks engage the hand when the pulps of the thumb and forefinger engage the opposite sides of the body 1 on the central transverse axis of the body.

The entire device is molded from a polyethylene plastic of the type in which the picks are adapted to be bent to any desired degree, twisted, or otherwise distorted to enable reaching any desired point along either side of any of the teeth and to perform the desired cleaning action at such point. Also, the plastic, while hard, is relatively soft compared to metal, and when the picks are bent or distorted to the desired degree, they will retain a bent or distorted shape during the cleaning operation instead of springing back to the original form, which is a highly desirable characteristic since a rapid recovery of a toothpick, after being bent, would be undesirable since it would not only defeat the result intended to be accomplished by bending or distorting the pick, but the pick could place an undesirable tension on teeth at opposite sides of the pick, when the latter was between them, if it were to rapidly return to its original

4

form after bending it to enable inserting it between the teeth.

In view of the foregoing description it is apparent that conventional tempered scalers and the like would be inoperative for accomplishing the results of the present invention, nor are such instruments intended or suitable for such use, and they are particularly unsuited for use by anyone but dentists.

In FIG. 1 the dot-dash lines 21, and the full line position of the upper device indicated in FIG. 3 show the pick 8 in a position to readily enter the interdental spaces at the lingual side.

Dot-dash line position 22 indicates the portion 10 bent to project generally in alignment with the longitudinal axis of the body 1, and blade 12 may be bent in the plane thereof above and below said axis as seen in dot-dash lines 23, 24 (FIG. 1) or to either side as seen in dot-dash line (FIG. 2) or either of the picks may be bent to the bayonet shape indicated by dot-dash lines 25 of FIG. 2. Dot-dash lines 26, 27 (FIG. 2) show pick 8 bent to either side of the longitudinal axis of the body 1, and blade 14 in full line in FIG. 3 is bent substantially at a right angle to the longitudinal axis of said body to enter the interdental space between posterior teeth. Either edge of blade 14 may be directed upwardly, and obviously the body 1 may be held in any desired position.

One pick will not normally perform a complete proper cleaning portion, and the provision of the recess opposite sides of body 1 enables quick and easy rotation of the body about its axis that is perpendicular to the longitudinally extending axis thereof without danger of dropping the pick as has heretofore been mentioned. For example, pick 8 will readily clean the interdental spaces between the upper anterior teeth at either side of the row of teeth, and then the body may be quickly rotated to swing pick 14 to position for cleaning the interdental spaces between the lower anterior teeth at the outer side of the row thereof.

In some instances the pick 8 or pick 14 may be twisted so that the points will readily reach certain points and areas that cannot otherwise be reached.

By bending the picks, as above noted, the pointed ends will not only reach areas that cannot otherwise be reached, but this can be accomplished without distorting the mouth uncomfortably, since the fingers will be in the anterior portion thereof, and the cleaning can be effected without likelihood of injury to the tissue within the mouth, such as frequently occurs where an entire rigid, elongated pick is inserted into the mouth in an attempt to obtain the desired angle essential to reaching a point that is relatively inaccessible to such pick. Near fatal serious accidents have occurred where accidental closing of the mouth has forced the pick into the palate or where an awkwardly positioned pick, due to its rigidity and length, has become lodged in the throat due to accidental dropping of the rigid pick through an insecure hold thereon when an attempt is made to manipulate it in an awkward position. The fact that the picks of the present invention are flexible; their points would tend to preclude any likelihood of serious injury were the picks to be stabbed into the tissue, but the main factor that makes them safe, is the fact that they are readily formed to be manipulated in relatively inaccessible places from positions of the fingers in the mouth or at the front of the mouth, where there is little if any chance of dropping the device and no chance of closing the mouth on the device or of having it lodge in the posterior portion thereof if dropped.

The central body portion 1 is solid and rigid relative to the toothpicks. There are no slides, hinges, pockets or moving parts to become unsanitary and to clog or gather dirt and the like.

By slightly roughening the surface of portion 10 of pick 8, and the sides of pick 14, the frictional resistance to movement of the picks against the teeth is increased, and some persons desire this structure. It is to be understood

5

that the grooves indicated in FIG. 1 on the point portion 10 and on the sides of pick 14 are not deep enough to retain foreign matter therein, nor do they noticeably weaken the picks, but they are not essential to a normal teeth cleaning operation. Where longitudinal movement of either pick when it is between adjacent teeth is caused, the roughened surfaces will have a slight abrasive effect, except there will be no injury to the teeth, and a more pronounced massaging of the gums by pick 8 will result.

It is to be understood that the detailed description is not to be considered restrictive of the invention. For example, any plastic may be used that has the desired characteristics. It should be emphasized that while the invention may perform the functions of a toothpick it also will function to massage the gums, as illustrated in FIG. 4 in which the back of blade 14 may engage the gums, and the rounded surface of the pick 10 will massage the gums, even where slightly roughened since the plastic will not cut or injure the gums.

I claim:

1. A tooth cleaning device comprising:

- (a) a central, disc-like body having flattened opposite sides adapted to be gripped between the digital pulps of the thumb and forefinger of one hand of a user;
- (b) a pair of tooth picks integral with said body at one of their ends wholly disposed within the plane of said body and projecting oppositely outwardly of said body from two opposite edges thereof;
- (c) one pick of said pair having an inner end portion at said disc extending straight outwardly therefrom, an elongated, straight, outer end portion and an intermediate angular gooseneck portion between said inner end portion and said outer end portion integrally joining them and supporting said outer end portion with its longitudinal axis extending at an obtuse angle of approximately 30 to 45 degrees relative to said inner end portion and with the end of said outer end portion that is adjacent to said inner end portion offset to one side of said inner end portion;
- (d) the outer sides of said outer end portion tapering to a point from the end that is connected with said goose-neck portion;
- (e) said one pick being of cylindrical cross sectional contour from the end thereof adjacent to said body to the outer pointed end of said outer end portion;
- (f) the other pick of said pair being elongated and of generally blade-like form having flattened opposite sides, a pointed outer end remote from said body, a relatively sharpened edge and a blunt back edge with said sides extending divergently from said sharpened edge to said back edge;
- (g) the cross contour of said other pick generally conforming to the outline of the interdental spaces at the gums whereby said other pick will generally fit said spaces with said back edge against the gums to mas-

6

sage the latter upon longitudinal reciprocation of said other pick when it is in one of said spaces;

- (h) said pair of picks and said body being of plastic material having the characteristics of being readily bendable to any side without breakage thereof and of retaining substantially the bent shape thereof for a substantial length of time whereby said picks may be bent to any side at any point therealong relative to said body and generally toward the latter to enable the user to reach any point along and between the upper and lower teeth and at either side of either row thereof.

2. A tooth cleaning device comprising:

- (a) a disc-like body having flattened opposite sides adapted to be gripped between the digital pulps of the thumb and forefinger of one hand of the user;
- (b) a tooth pick integral with and projecting from one edge of said disc and wholly disposed within the plane of said disc;
- (c) said pick having an inner elongated end portion at said disc extending straight outwardly therefrom, an elongated straight outer end portion, and an intermediate goose-neck portion between said inner end portion and said outer end portion integrally joining them and supporting said outer end portion with its longitudinal axis extending at an obtuse angle of approximately 30 to 45 degrees relative to the longitudinal axis of said inner end portion and with the end of said outer end portion that is adjacent to said inner end portion offset to one side of said inner end portion;
- (d) the outer sides of said outer end portion tapering to a point from the end that is connected with said goose-neck portion;
- (e) said pick being of cylindrical cross-sectional contour from the end thereof adjacent to said body to the outer end of said outer end portion;
- (f) said pick and said body being of plastic material having the characteristic of being readily bendable to any position without breakage thereof and of retaining substantially the bent shape thereof for a substantial length of time whereby said pick may be bent to any side thereof at any point therealong from said body to the pointed outer end of said outer end portion to said body and toward the latter, to thereby enable the user to readily reach any point along the inner and outer sides of the upper and lower rows of teeth by the pointed outer end of said pick while holding said body between said thumb and forefinger.

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