

[72] Inventor **Terrell D. Lewis**
 Rte. 2, Box 38, Sebring, Fla. 33870
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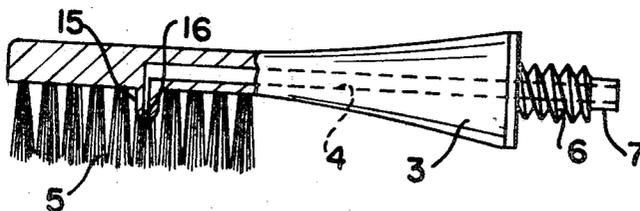
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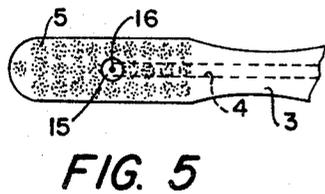
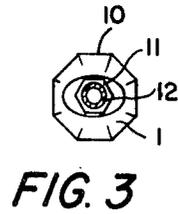
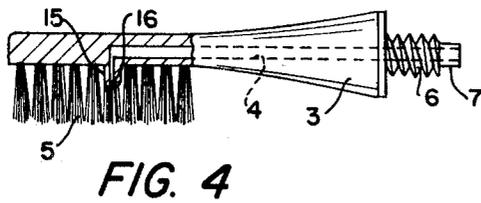
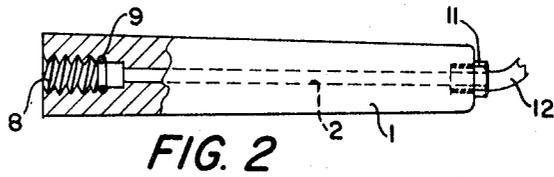
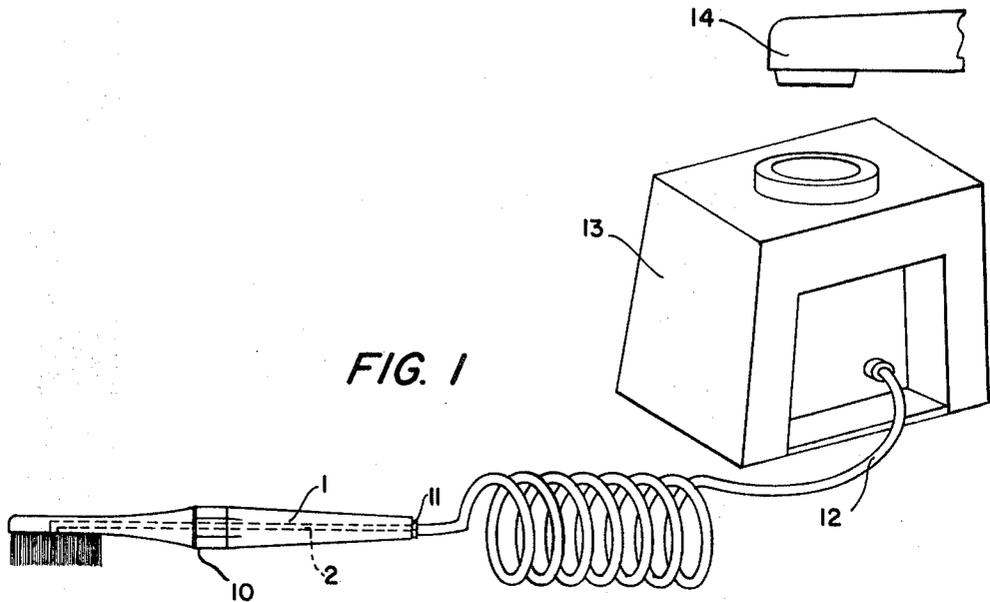
Primary Examiner—L. W. Trapp
 Attorneys—Munson H. Lane and Munson H. Lane, Jr.

[54] **ORAL HYGIENE DEVICE**
 7 Claims, 5 Drawing Figs.
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 401/207
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 [50] Field of Search..... 128/62, 66,
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ABSTRACT: An oral hygiene device comprising a brush having a tubular handle with rows of bristles extending laterally from one end and a discharge nozzle positioned between the outside rows of bristles substantially contacting the adjacent bristle tufts to brace such tufts and provide a clear discharge space for liquid issuing from the nozzle so the liquid will directly contact the teeth and gums and means are provided to produce a pulsating action on the liquid to increase the stimulation of circulation and to flush the loosened particles and also dilute the mouth acids. The handle is made in two parts with the bristle-carrying portion removable for replacement.





TERRELL D. LEWIS
INVENTOR.

BY *Munson H. Lane*

ORAL HYGIENE DEVICE

The present invention relates to oral hygiene and more particularly to brushing of the teeth, stimulating the flow of blood in the gums and the surrounding area and flushing away the foreign particles.

Heretofore it has been conventional practice to brush the teeth with hand-operated tooth brushes and recently many mechanical types of vibrators have been added in an effort to increase the effectiveness of the brushing action without requiring as much physical effort, also various washing and pulsating devices have been provided to additionally assist in the oral hygiene operation. However, none of these have been entirely satisfactory because it has frequently required several independent means to accomplish the final end result of preserving the teeth against decay and pyorrhea. Although a conventional tooth brush will produce satisfactory results in combination with some of the other available devices, the amount of time required and the effort involved has prevented satisfactory cleaning of the teeth even with the many dentifrices which are available.

An object of the present invention is to provide an oral hygiene device which overcomes the objections of the prior art and provides for effectively cleaning the teeth, stimulating the circulation and the health of the adjacent tissue and diluting the acids in the mouth.

Another object is to provide a tooth brush with means to produce a liquid-pulsating action which accomplishes the effective cleaning and preserving of the teeth.

Other and further objects will be apparent as the description proceeds and upon reference to the accompanying drawing, wherein:

FIG. 1 is a plan view of the brush in assembled relation showing the hollow handle connected to a source of pulsating water;

FIG. 2 shows the handle;

FIG. 3 is an end view of the tooth brush;

FIG. 4 is an elevation of the brush showing the threaded connection for attachment to the handle; and

FIG. 5 is a bottom view showing the rows of bristle tufts and the liquid discharge nozzle in the center.

Briefly, the invention includes a brush having a tubular handle with the bristle section of the brush removable from the handle for replacement and to permit the handle to be used by different members of the family and the handle is connected by a flexible tube to a source of pulsating water while the bristle-carrying section of the handle is provided with a nozzle to carry the liquid which normally is water in a direction parallel with the bristle tufts against the teeth and the gums while the tooth brush is used in the conventional manner of brushing the teeth, the flushing water serving to stimulate the circulation and also carrying away the loosened particles.

Referring specifically to the drawing the tooth brush includes a handle having a handle grip 1 with a passage 2 therethrough for water and a brush shank 3 also has a longitudinally extending passage 4 which terminates in the mid portion of the rows of bristles 5 and the brush shank 3 is provided with a threaded nipple end 6 having a cylindrical portion 7 at the free end thereof and the nipple portion 6 is threaded into the female threaded socket 8 in the adjacent end of the handle section while the cylindrical portion 7 extends further into the socket and engages an O-ring 9 to assure sealing relation. It will be noted that the handle section 1 and the shank section 3 can be connected together by the screwing action and to facilitate this operation the adjacent end of the handle is made of a polygonal configuration 10 with the handle section 1 tapering from the polygonal portion 10 toward the free end of the handle. Connected to the free end of the handle by any suitable means such as a coupling 11 is a coiled flexible tube 12 which is connected to a source of pulsating water 13 which may be of the type shown in Mattingly U.S. Pat. No. 3,393,673 issued July 23, 1968 and a suitable supply of water from a valve controlled source 14 is connected in any suitable manner to the supply of pulsating water 13 to assure continuous operation.

When the handle sections are connected together as shown in FIG. 1 liquid is supplied to the section within the rows of bristle tufts by means of a nozzle 15 having an orifice 16 therethrough, the nozzle being secured to the brush section 3 by any suitable means and the orifice 16 being relatively small so that the pulsating flow of water through the nozzle against the teeth and other parts of the mouth will produce the healthful pulsating action to remove plaques of decay and pyorrhea from the teeth and flush the mouth simultaneously while stimulating the circulation.

The nozzle is made of a size to substantially fill the space between the bristle tufts on the adjacent outside rows of tufts and the nozzle extends in the direction of the bristle tufts a sufficient distance to brace the adjacent tufts for a distance of approximately one-third the length of the bristles so that a clear space is provided for the discharge of liquid from the nozzle to the teeth of the user and for this purpose the sides of the nozzle are substantially straight for this distance.

The bristles of the brush can be of any type including hard, soft or medium and may have different arrangements of rows of bristles, but the arrangement with three rows of bristles is particularly desirable since one bristle tuft may be omitted at the center of the brush and the nozzle positioned at such location.

The pulsation produced by the source of pulsating liquid produces a stimulating action in contrast to a steady stream or a steady pressure in a manner similar to a steady pressure on the arm where the steady pressure produces white indicating that the blood is not circulating while the alternating pressure produces pink or red as the blood is made to circulate and the present invention makes use of this advantage in addition to the rubbing action with the brush thereby producing a healthful stimulation of the gums.

Heretofore there have been steady streams issuing from nozzles arranged as pics but there has not been the pulsating forceful stimulating jet in combination with a brush which is directed on the gums and the teeth as targets so that the stimulation of the oral cavity and the gums is greatly increased in the simple operation of brushing with the brush connected to the course of pulsating liquid.

The pressures used may be from the city water supply which may vary from 15 to 100 p.s.i. and the invention operates satisfactorily at pressures of this order and such pressures are contemplated within the scope of the invention.

From the above description the advantages of the brush attached to a source of pulsating jet flow of water is believed to be obvious since the brush can be used in the usual manner while the jet flow action takes place to enhance the cleaning action and obtain the numerous advantages of flushing away the particles including plaques, pyorrhea and decay and simultaneously stimulating the circulation of blood and there is no danger of the brush clogging up since the passages 2 and 4 in the brush sections are larger than the discharge opening in the nozzle.

It will be apparent that changes may be made within the spirit of the invention as defined by the valid scope of the claims.

What is claimed is:

1. An oral hygiene device comprising a handle having a passage for liquid therethrough, a brush at one end of the handle having a base, rows of tufts of bristles extending outwardly from the base, a single outwardly projecting nozzle having an outer discharge orifice within said rows of bristle tufts and extending a substantial distance outwardly in a direction normal to the base for directing fluid substantially parallel to the bristle tufts intermediate the outer rows of bristle tufts thereby providing a clear discharge space between the adjacent tufts so the emerging liquid can directly contact the area to be cleaned, massaged and stimulated, said discharge orifice communicating with the passage in said handle whereby pulsating liquid under pressure can be forced through the passage in the handle and discharged from said orifice adjacent the teeth to provide an effective flushing action while the teeth are being

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brushed, wherein the brush includes two outer rows of bristles and an intermediate row of bristles, and the discharge orifice is located at approximately the center of the intermediate row of bristles and the nozzle extends outwardly in the direction of the bristles at least approximately one-third of their length and is of sufficient diameter so that the nozzle prevents the adjacent bristles from interfering with the liquid impinging on the areas to be cleaned.

2. The invention according to claim 1 in which a supply of pulsating water is connected to the handle and communicates with the passage therethrough.

3. The invention according to claim 1 in which the handle includes a handgrip which is removable from the bristle section of the device to provide for replacement of the bristle section so the handgrip portion may be used by others without danger of contamination.

4. The invention according to claim 3 in which a threaded

nipple is provided on one section and a threaded socket on the other section with an O-ring to seal the connection.

5. The invention according to claim 1 in which the handle is connected to a source of pulsating liquid under a pressure of from approximately 15 to in the order of 100 p.s.i.

6. The invention according to claim 1 in which the passage in the handle extends substantially the length thereof and the hand-engaging section of the handle is removably connected to the bristle-carrying section by an axial threaded connection and the outer end of the handle is connected to a source of pulsating-water jet supply of at least 15 p.s.i. pressure.

7. The invention according to claim 1 in which the passage in the handle is connected to a source of pulsating liquid under a pressure of from approximately 15 to in the order of 100 p.s.i.

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