

Jan. 16, 1940.

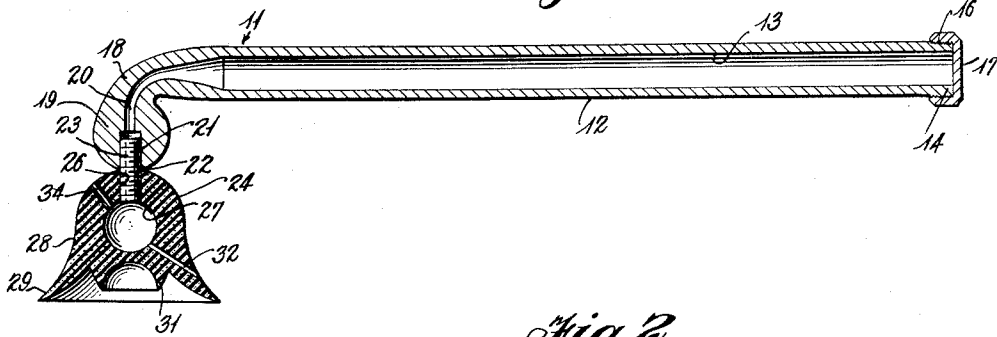
T. J. REILLY

2,187,560

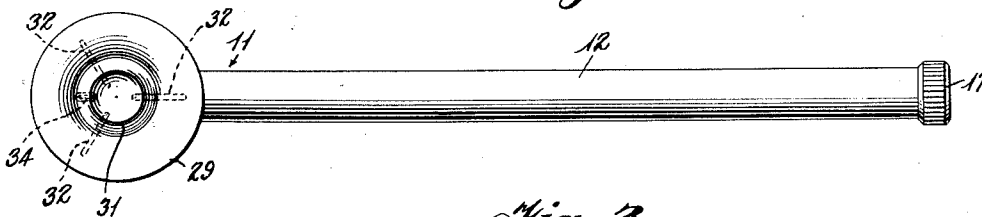
MASSAGE IMPLEMENT

Filed April 5, 1938

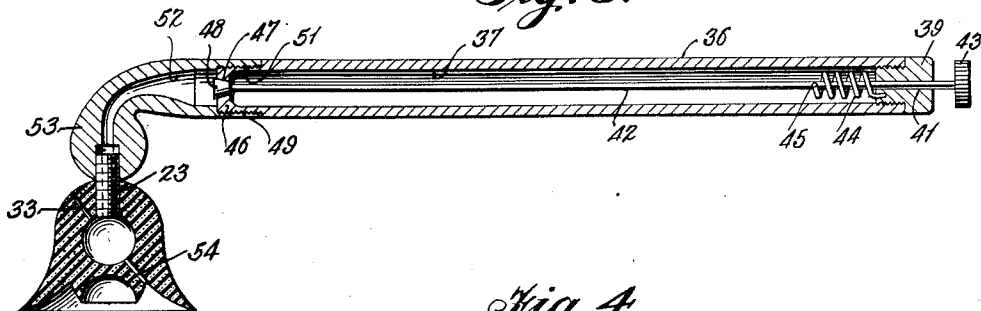
*Fig. 1.*



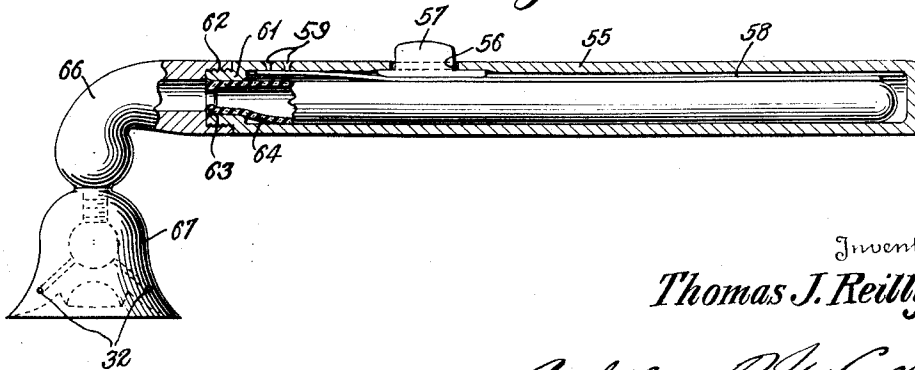
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Inventor

*Thomas J. Reilly*

By

*Archibald R. McCallum*

Attorney

## UNITED STATES PATENT OFFICE

2,187,560

## MESSAGE IMPLEMENT

Thomas J. Reilly, Houston, Tex.

Application April 5, 1938, Serial No. 200,212

3 Claims. (Cl. 128—62)

This invention relates to a dental massage implement, and more particularly to a dental massage implement of the cupping type.

In the treatment of pyorrhea and kindred dental diseases, it is recognized that stimulation of blood circulation in the gums is a most effective agency for correction. Heretofore, it has been a practice in some instances to bring about the stimulation of blood circulation by massaging the gums periodically. There are many types of implements known for massaging the gums, the most practical probably consisting of an elongated handle having projecting at an angle at one end a small rubber suction cup which the dentist applies to the gums with a cupping or rubbing movement, accompanied by the necessary pressure. Cleanliness and sanitation are essential in applying massage treatments of the type described, and it is common for the dentist to have conveniently at hand a beaker of mercurochrome or other suitable antiseptic into which, at frequent intervals, he dips the cupper. The cupper is not only cleansed in the mercurochrome bath but functions as an applicator for the mercurochrome by depositing a quantity thereof along the gums during the massaging operation. Efficacious gum massage requires the careful treatment of successive small areas of the gums, and the small areas being treated require close attention of the operator and careful adjustment of the patient's position to insure proper angle of approach. The repeated applications of mercurochrome from the adjacent bath requires the frequent distention of the patient's jaws and consequent discomfort for him. In addition, the operator is required repeatedly to inspect in order to insure that upon resumption the treatment is given to all desired areas of the gums. In order to avoid this loss of time and to enable the dentist to perform the massaging continuously, it is a primary object of the present invention to provide a cupping tool which will include a reservoir adapted to be filled at the beginning of the massage treatment, to contain a quantity of antiseptic sufficient to last during the entire massaging operation.

It is a further object of the invention to provide a cupping tool of the reservoir type which will be efficient in operation and economical to manufacture.

Another object of the invention is the provision of a reservoir type dental cupper characterized by an arrangement of fluid passageways enabling the antiseptic automatically to be

pumped to the gums in accordance with the rate of massaging, thereby insuring full flexibility of use.

It is a further object of the invention to provide, in a modified construction, for the mechanical release from the reservoir of a portion of the antiseptic for delivery to the cupper, thereby enabling the operator to control the supplying of medicament irrespective of the rate of massaging.

It is another object of the invention to provide, in a further embodiment, for a flexible reservoir, so designed that the flow of medicament therefrom is entirely under the control of the operator, thereby enabling control without regard to atmospheric pressure.

With these and other objects in view, the invention consists of certain novel features and constructional improvements, and combination and arrangement of parts as will be more fully described in the specification and comprehended in the accompanying claims.

Referring to the specification and the drawing forming part thereof, the latter contains:

Fig. 1, showing a longitudinal section of a reservoir type cupper constituting one form of the invention;

Fig. 2, a plan view of the reservoir cupper shown in Fig. 1;

Fig. 3, a sectional view showing another embodiment of my invention; and

Fig. 4, a view partly in section showing still another form of the invention.

Referring to the drawing wherein similar parts are indicated by identical reference numerals throughout the several views, a dental cupper generally designated by the numeral 11, Fig. 1, consists of a tubular handle portion 12 having an inner bore or recess 13 constituting the reservoir for an antiseptic, germicide, or other suitable liquid. One end 14 of the reservoir tube is externally threaded at 15 to receive a threaded closure cap 17. It will be observed that the reservoir may be filled after removing the cap 17 by pouring therein the desired quantity of medicament, after which the reservoir is sealed by replacing the screw cap 17. The opposite end of the tubular handle is turned down at 18 and formed with a nipple 19. The nipple 19 is bored to provide a feed canal 20 preferably extending at right angles with respect to the axis of the reservoir and in alignment therewith and has a countersunk recess 21. The recess 21 is internally threaded to receive one end of a connecting tube 22. The tube 22 is ex-

ternally threaded as shown at 23. The handle 12 is preferably rigid.

The massaging feature of the device consists of a preferably bell-shaped suction cup 24 having a recess 26 which may be screwed over the projecting tube 22 with a sealing fit. In the center of the suction cup and communicating with the tube 22 is provided a spherical well 27 adapted to contain an immediate supply of medicament. It will be understood that the suction cup is composed of rubber or other suitable flexible non-corrosive material, and the upper walls 28 thereof are relatively thick so as to avoid collapse during the massage operation. The cup terminates in an outer circular lip 29 which is relatively thin and highly flexible so as to form a suction seal with the tissue being massaged. Concentric with the lip 29 is an inner circular lip 31 which, being shorter, is less flexible to transmit some of the massaging pressure through the body of the cup.

From the foregoing it will be observed that the fluid from the reservoir 13 will flow through the feed canal 20 and tube 22 to the well 27. In order to distribute the medicament, the walls of the suction cup are pierced to provide one or more, but preferably three, spaced feed veins 32 which communicate with the exterior of the suction cup adjacent the lip 29. It will be understood from the above that in the massaging movement the pressure of the operator upon the handle will cause the suction cup to engage the tissue with a pulsating movement causing the medicament to "breathe" along the capillary veins 32. In order to permit unobstructed flow of medicament during the message operation, an air inlet tube 33 is provided in the upper portion of the cup to communicate with the well 27.

It will be understood that the air tube 33 will function to supply air, as for a fountain pen, to supplant the medicament flowing from the reservoir and maintain the proper air pressure balance upon it. In the present construction, the medicament accumulates in the well 27. From time to time a small bubble of air will pass from the tube 33 through tube 22 and upwardly through channel 20 into the reservoir. In the absence of admission of air to the reservoir, the flow of medicament therefrom by gravity and the flexing of the suction cup occasions a sub-atmospheric pressure within the reservoir which, as it gradually increases, progressively retards the flow of medicament from the reservoir and hence the extent to which the medicament will accumulate in the well 27. Medicament in the well 27 feeds, by gravity and by capillary adhesion, to the sealing lip 29 along the feed veins 32.

Where the material of the suction cup is relatively soft or highly flexible as to create a tendency for the air tube 33 to be choked by a collapsing of the material, the continuity of the air tube 33 may be preserved by inserting therein a light but rigid tubing member 34 composed of metal or other suitable material.

In the primary embodiment of the invention described above, flow of the medicament is directly in proportion to the massaging operation. At times it is desirable that the medicament be provided in smaller or larger quantities, and to facilitate such optional control regardless of the quantum of the massaging action, the construction shown in Fig. 3 may be employed. Therein it will be noted that the cupper handle consists of a tubular assembly including a cylindrical main section 36 having an axial bore 37 con-

stituting the reservoir for the cupper. At the far end the main section 36 is provided with internal threads 38 for the reception of a closure cap 39 which is externally threaded for securing within the end of the section 36. Slidable in an axial aperture 41 of the closure cap 39 is a relatively elongated valve stem 42 adapted to slide axially of the main section 36. The outer end of the valve stem protrudes beyond the closure cap 39 to receive a finger rest 43. The finger rest 43 is spaced from the closure cap 39 normally, in order to provide play for controlling the flow of medicament. A tension spring 44 coiled about the valve stem 42 is fixed immovably by one end in the closure cap 39 and at the other end is soldered or otherwise attached at 45 to the valve stem. At the opposite end of the main section there is an integral end wall 46 having an axial conical aperture 47 constituting a seat for a conical valve head 48 fixed on the end of valve stem 42 opposite the finger control 43.

It will be observed that the tension of the spring 44 is normally to urge the valve head 48 to the seat 47 thereby maintaining the valve closed and the finger control 43 spaced from the closure cap 39. Adjacent the valve 48 the main section is externally threaded at 49 to engage the internally threaded end section 51 for assembly therewith. The end section 51 is provided with a corresponding bore 52 and a nipple 53 corresponding in design with the nipple 19 of Fig. 1 and provided with a suction cup mounted and operating similar to the suction cup 24 of the first embodiment.

In some circumstances it is desirable to distribute the medicament along the inner surfaces of the suction cup rather than over the outer surfaces thereof as shown in Fig. 1. In such instances the suction cup may be designed as illustrated in Fig. 3, the one or more feed veins 54 extending from the well 27 to the juncture of the outer and inner suction lips 29 and 31 respectively. In this construction the feeding will be substantially as explained above in connection with Fig. 1, the alternate increase and decrease of pressure incident to the massaging cupping treatment resulting in a "breathing" action causing the medicament to flow from the well to the inner surfaces of the suction cup. As above, air is admitted through the tube 33 to the well 27 to replace the medicament obtained therefrom, the air finding its way as a small bubble along the tube 23 and into the bore 52 of the end section. If, for example, the operator desires to accomplish relatively dry massaging without normal quantity of medicament, the massaging may be continued until such time when the supply of medicament is required. Thereupon, by pressing the finger control 43, the operator will open the valve 48 against the tension of the spring 44 to permit the medicament to flow through bore 52 and canal 20 to fill the well 27. Upon release of the valve the spring will cause same to seat in the conical aperture 47 thereby limiting further flow from the reservoir until subsequent operation.

Another form of apparatus is illustrated in the embodiment presented in Fig. 4. In this instance the cupper reservoir handle consists of a hollow body 55 closed at one end and formed adjacent the other end with a longitudinal slot 56 upwardly through which projects a radial control lug or finger rest 57, soldered or otherwise affixed to one flat surface of a spring lever

58. The spring lever 58 extends longitudinally of the handle barrel 54 and is attached to the inner surface thereof adjacent the open end by suitable securing means such as rivets 59, 59.

5 Beyond the rivets 59 the handle barrel or reservoir 55 projects a circular shoulder 61 which is externally threaded at 62. Cemented at 63 in the open end of the barrel is the open end of a resilient sack 64 for containing a supply of medicament. This sack may be of flexible elastic water-proof material such as rubber and lies free within the handle barrel 55 to assume its pre-molded shape of maximum capacity.

Assembled on the externally threaded shoulder 15 61 is an internally threaded nipple section 66 formed similar to the corresponding sections 19 and 53 described above, and assembled thereon is a suction cup 67 corresponding generally to the construction of the suction cups above. The 20 suction cup 67 distinguishes from the suction cups described previously specifically in that it does not require an air tube 33 to provide complete control for the operator. Eliminating such air tube, the operator may directly control the 25 flow of medicament while performing the massaging operation by controlling the pressure on the control lug 57. By reference to Fig. 4, it will be observed that depression of the lug 57 will cause the lever 58 to squeeze the resilient sack 64 causing the medicament to be ejected 30 through the open throat thereof at the shoulder 51. The medicament thus expelled will flow along the nipple feed canal and in the well of the suction cup, and flow therefrom along the 35 feed veins to distribute the medicament over the tissue being treated.

Although in filling the modifications of Figs. 1 and 3 it is most convenient to do so by first removing the end closure caps 17 and 39, respectively, such operation is not required for the 40 refilling of the embodiment of Fig. 4. This embodiment may be refilled by depressing the finger control lug 57 to its fullest extent thereby entirely collapsing the resilient sack 64. After 45 immersing the suction cup in a vessel of the medicament, the control lug 57 may be released, causing the reservoir to be filled by suction, the medicament flowing upwardly into the reservoir as the resilient sack resumes its molded con- 50 tours.

In the constructions described above, the parts are readily detachable, the manner and means for assembly being extremely simple. All affected portions of the construction are readily ac- 55 cessible for separate sterilizing. Particularly important is the factor that the suction cups are readily detachable and may be sterilized independently of the body portion of the implement. Moreover, because of the exceptional simplicity 60 of design, all portions of the apparatus are capable of being manufactured at such relatively small cost that with each implement it is practicable to have a number of suction cups. The suction cups are capable of being manufactured 65 and supplied at low cost and may be graded to correspond with the several requirements of the dentist's practice as, for example, in terms of

flexibility and/or sizes of the medicament feed veins.

A particularly advantageous feature of the invention is its ready adaptability to establish 5 methods; save for the minor attention requisite to filling the reservoir, the device may be utilized exactly as cuppers have been used heretofore, except that it is no longer necessary for the dentist continually to withdraw and reinsert his 10 hand into the patient's mouth during the massaging process. By use of the present apparatus, affording as it does a continual and easily controlled supply for medicament, the patient can readily and comfortably adjust himself to the 15 dentist's treatment with a minimum of discomfort, and the dentist's operations may proceed with much greater comfort and efficacy than heretofore.

Although in the above description reference 20 has been made to certain details of construction which have been found advantageous and specific details of method suggested for their employment, it will be understood that the invention is not limited thereby but only by the scope 25 of the appended claims.

What I claim is:

1. A suction type dental cupper including an elongated section to be held in the hand and a suction element at one end thereof having a sub- 30 stantially unbroken peripheral edge, reservoir means in the handle for retaining a supply of medicament, well in the suction element for the medicament, and means for feeding the medica- 35 ment from the well to the external surface of the suction member.

2. In a dental cupper, the combination of a substantially rigid reservoir handle element for cupping medicament and a hollow flexible suc- 40 tion element having a substantially continuous outwardly flaring contact lip at one end thereof for cupping application under the lip to the gum, a conduit in the suction element communi- 45 cating the suction element with the interior of the reservoir, a second conduit in the suction element communicating with the first conduit for dispensing medicament from the reservoir dur- 50 ing the cupping operation, and a valve at the end of the reservoir and controllable from the outside of the other end of the reservoir for controlling the flow of medicament therefrom.

3. In a dental cupper, the combination of a sub- 55 stantially rigid reservoir handle element for cupping medicament, a flexible reservoir in the handle element, a hollow flexible suction element having a substantially continuous outwardly 60 flaring contact lip at one end thereof for cupping application under the lip to the gum, a conduit in the suction element communicating the suction element with the interior of the reser- 65 voir, a second conduit in the suction element communicating with the first conduit for dispensing medicament from the reservoir during the cupping operation, and a leaf spring engaging said flexible reservoir for controlling the discharge of medicament therefrom.

THOMAS J. REILLY.