Oct. 27, 1964 R. L. HOLLAND 3,153,855

DENTURE DISPENSERS

Filed Jan. 12, 1962

Fig. 1

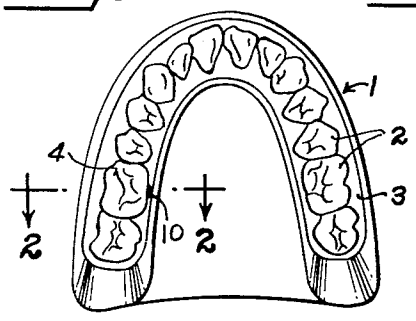


Fig. 2

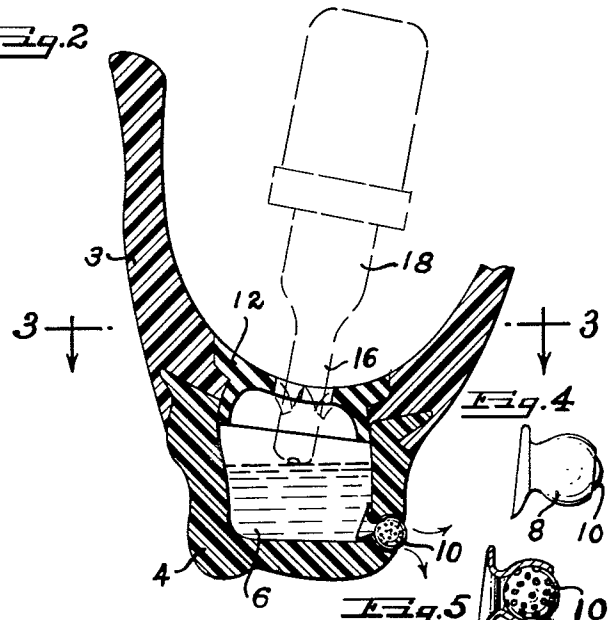


Fig. 3

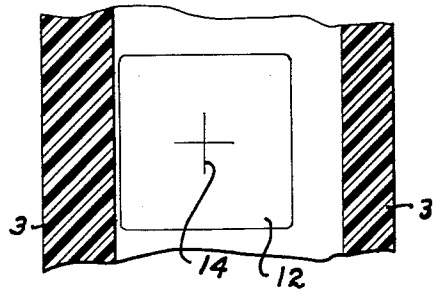


Fig. 4

Fig. 5

Fig. 8

Fig. 6

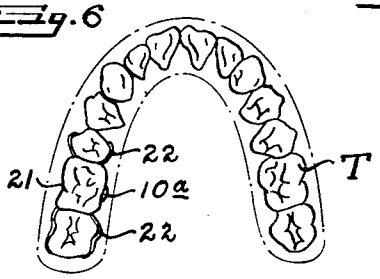


Fig. 7

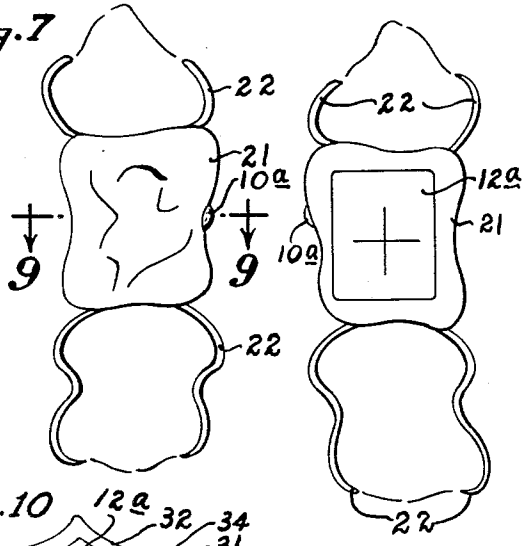


Fig. 9

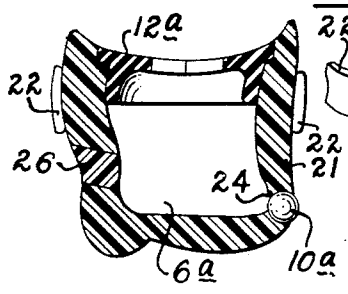
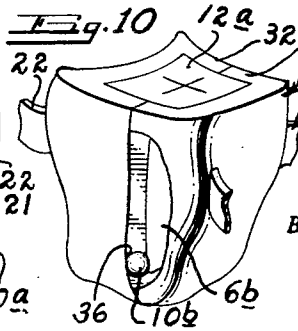


Fig. 10



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DENTURE DISPENSERS

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This invention relates to dispensers and more particularly to dispensers for use in connection with dentures, such as complete or partial dentures whereby a deodorant or germicidal solution may be dispensed into the mouth at will, so as to nullify halitosis and to reduce the bacteriological count which is ever present in the mouth.

Various mouth washes and dentrifices have been proposed heretofore in an effort to relieve the mouth of bad odors and free the mouth of germs; and while these are effective while being used, the continued use thereof is quite inconvenient, especially while in the presence of other people. However, with the present device installed within a denture or partial denture, a concentrated germicidal preparation or mouth deodorant capable of performing both functions may be placed therein and dispensed in minute quantities by the normal action of the tongue to keep the breath free from odor and reduce the bacteriological count in the mouth to a minimum.

The present invention may be carried out in several different forms, three of which are illustrated.

An object of this invention is to provide a reservoir within a denture element to receive a solution thereinto, whereby the solution may be dispensed into the mouth selectively in minute quantities to perform a medicinal function.

Another object of the invention is to provide a denture having a reservoir therein in which a solution may be deposited and stored, to be dispensed into the oral cavity to nullify mouth odors and to reduce the bacteriological count within the oral cavity.

Still another object of the invention is to provide a reservoir for dispensing a germicidal solution into the mouth which reservoir may be readily removed, cleansed, and replaced without special tools or equipment.

Still another object of the invention is to provide a dispenser for an oral cavity solution which is simple in construction, low in cost of manufacture, and easy to install and remove.

With these objects in mind and others which will become manifest as the description proceeds, reference is to be had to the accompanying drawing in which like characters designate like parts in the several views thereof, in which:

FIG. 1 is a plan view of an upper denture removed from the mouth and showing a tooth thereof having a dispensing element therein for dispensing a solution into the oral cavity;

FIG. 2 is a greatly enlarged section taken on line 2—2 of FIG. 1, looking in the direction indicated by the arrows and showing a syringe, in dashed outline, for inserting the desired solution into the reservoir formed therein, and showing a ball dispenser valve in the lower portion thereof;

FIG. 3 is a fragmentary view of the device taken on line 3—3 of FIG. 2, looking in the direction indicated by the arrows, with the syringe removed therefrom;

FIG. 4 is an elevational view of the ball valve and retainer casing removed from the device, but on a still more enlarged scale, to show the details of construction;

FIG. 5 is a view similar to FIG. 4, but showing a sectional view through the casing, with the ball of the ball valve being in full outline;

FIG. 6 is a plan view of the arrangement of the teeth in the mouth, showing a bridge inserted between two of the teeth, the tooth of which bridge has a dispensing ball valve therein;

FIG. 7 shows a greatly enlarged bridge arrangement with clasps thereon and showing the lower face side of the tooth with a ball dispenser valve therein;

FIG. 8 shows the upper side of the same tooth as shown in FIG. 7 and also an elastomer sealing plug therein so as to exclude foreign matter from the reservoir within the tooth of the bridge;

FIG. 9 is a sectional view taken on line 9—9 of FIG. 7, looking in the direction indicated by the arrows, showing a plastic tooth with a ball valve fitted therein and showing the elastomer cap forming a seal for the reservoir; and

FIG. 10 is a fragmentary view of a bridge, showing the tooth portion only thereof, wherein the tooth is formed by a pair of complemental members jointed together as by cementing and showing the ball valve fitted in a socket formed between said members.

With more detailed reference to the drawing, the numeral 1 generally designates an artificial denture having teeth 2 therein. One of the teeth, as indicated at 4, has a reservoir 6 therein, as will best be seen in FIG. 2, and while the tooth is shown to be plastic which readily molds around the ball socket 8 which holds a ball valve 10, having minute recesses formed in the surface thereof, it is to be understood that other materials suitable for making teeth, such as porcelain and the like, may be used so long as a ball fitted therein is free to turn and dispense a liquid from the reservoir 6 to a point exterior of the surface of the tooth 4.

The tooth 4, having the reservoir 6 formed therein has a spherical opening formed in the lower portion, preferably at the lower inner edge of said tooth, which opening is of suitable size to receive a ball 10 therein, which socket and ball form a valve, the ball of which valve is in communication both with the reservoir 6 and the exterior of tooth 4, so movement of the tongue will roll the ball 10 within socket 8 and dispense the material within the reservoir into the oral cavity.

The tooth 4 is an artificial tooth, which tooth may be part of a denture or a bridge, and may be anchored to the adjoining teeth, whether they be natural or artificial, in a conventional manner, which is well known in the art of removable bridge work, and it is to be understood that one or more "bridged-in" teeth may be equipped with the present dispensing arrangement. The upper portion of the tooth 4 has an opening formed therein. An elastomer plug 12 is provided for said opening, which plug is contoured to conform to the contour of the tooth. The elastomer plug 12 is preferably slitted, as indicated at 14, so the neck 16 of a small syringe 18 may be inserted thereinto to discharge a liquid or other material, such as a mouth deodorant, germicide or antiseptic, from the syringe 18 into the reservoir 6. The syringe 18 may be in the form of the so-called hypodermic needle, and be utilized to pierce the elastomer cap 12, if slits 14 are not formed therein. The slits 14 however, are desirable as they permit the pressure in chamber 6 to become equalized, therefore, rolling the ball valve 10, as by movement of the tongue thereagainst will cause the material within chamber 6, which adheres to the surface of the ball and within minute recesses 11 to be rolled to the outside, that is, into the oral cavity. While a single tooth has been shown as hollowed out to form a recess, several teeth or the entire denture base 3 may be formed with a hollowed recess therein, if it is desired to have recesses to carry a larger quantity of material to be dispensed into the mouth. The ball 10 may be made of any suitable material, such as gold, plastic, or the like.

Second Form of the Invention

A second form of the invention is illustrated in FIGS. 6 to 9, inclusive, wherein a single tooth 21 has clasps

22 thereon to engage adjoining teeth so as to hold the tooth 21 securely in place. The ball valve 10*a* is shown to be inserted within a socket so the inside portion of the ball will be in communication with chamber 6*a* and the outside of the ball will be in communication with the oral cavity and in contact relation with the tongue.

The ball 10*a* may be molded within the tooth portion 21; however the tooth may be drilled from the opposite side and the end of the drill so formed as to be substantially the size of the ball so the ball will drop into the recess formed by the drill, but will not pass therethrough, whereupon a sealing tool such as a heated tubular element may be utilized to cause the surface 24 around the ball 10*a* to melt to retain the ball in place as shown in FIG. 9, whereupon the hole initially drilled in the tooth 21 is plugged by a plug 26, which leaves the ball in position to dispense liquid from reservoir 6*a*. An elastomer sealing cap 12*a* is provided in the upper end of reservoir 6*a*, which elastomer cap is similar to the elastomer cap 12 described above. The clasps 22 that are secured to tooth 21 are shown to be attachably secured to adjoining teeth T in FIG. 6.

Third Form of Invention

A third form of the invention is illustrated in FIG. 10. The tooth 31 is similar in construction to that shown in FIGS. 6 through 9, except, the tooth 31 is formed of a pair of molded complementary members 32 and 34, each of which members has a recess formed therein. Each of the members 32 and 34 has a semi-cylindrical socket 36 formed therein, so when the complementary tooth members are fitted together a ball retainer socket is formed to retain the ball 10*b* therein. A portion of the ball 10*b* is in communicaiton with the recess or reservoir 6*b* and the other side of the ball is exposed to the exterior of the tooth 31, the surface of which ball is roughened or textured, so upon contact with the tongue, the ball will be moved to dispense the contents of the reservoir into the oral cavity.

It is to be understood that the valve formed by the socket and ball is substantially fluid tight, but the ball is rolled within the socket to be in contact with the material, such as a deodorant, within the reservoir and further movement of the ball, the surface having been in contact with the material, will move the material to the oral cavity, thus the material is dispensed slowly and in minute quantities, and may be dispensed at will, or upon normal movement of the tongue during speaking or eating.

The complementary portions 32 and 34 of the tooth 31 may be cemented, vulcanized, or otherwise secured together to form a composite tooth member, substantially as shown in FIG. 10, but without a plug, such as shown at 26 in FIG. 9. Clasp members 22 are provided, which are of the same character as the clasps described above, and which are so contoured as to fit the adjoining teeth in a manner well understood in the art of replaceable bridges.

Having thus clearly shown and described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A dispenser for dispensing material into the oral cavity, comprising a tooth-like member formed of complementary portions, each of said portions having a semi-spherical recess formed therein to form a spherical recess when said portions are fitted together, a reservoir formed within said tooth-like member, said recess being in communication with said reservoir and the exterior of said tooth-like member, a ball rollably positioned within said recess to form a ball valve so upon rolling movement of said ball, material within said reservoir will be dispensed therefrom into said oral cavity.

2. A dispenser for dispensing treatment material into the oral cavity, which dispenser comprises; a tooth-like member, said tooth-like member having a reservoir formed wholly therein and being out of fluid communication with the gum ridge on which said tooth-like member is normally seated, said tooth-like member having an inlet opening formed therein in a side thereof, a plug normally closing said inlet opening, said reservoir being adapted to receive treatment material thereinto through said inlet opening, said tooth-like member having an outlet opening formed in a side thereof, which opening is in fluid communication with said reservoir, a valve member fitted within said outlet opening, said valve member adapted to dispose treatment material to the exterior of said tooth-like member from said reservoir upon movement of said valve member.

3. A dispenser for dispensing a treatment material into the oral cavity as defined in claim 2; wherein said valve in said outlet opening is a ball valve member so upon rolling movement of said ball valve said treatment material in said reservoir will be dispensed into said oral cavity.

4. A dispenser for dispensing treatment material into the oral cavity as defined in claim 3; wherein said ball valve member has minute recesses formed at spaced intervals over the greater portion of the surface area thereof, and wherein said outlet opening is formed in a side of said tooth-like member adjacent the tongue when said tooth-like member is fitted within said oral cavity.

5. A dispenser for dispensing treatment material into the oral cavity as defined in claim 2; wherein said inlet opening in said tooth-like member is formed near the gum line thereof, and wherein said plug closing said inlet opening is made of an elastomer material.

6. A dispenser for dispensing treatment material into the oral cavity as defined in claim 5; wherein said plug of elastomer material which closes said inlet opening is cross-slitted across a portion of the area thereof to enable the pressing of a tip of a syringe therethrough for filling said reservoir with treatment material.

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