

[54] **DEVICE FOR THE RINSING OF BODY CAVITIES**
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[51] Int. Cl.A61h 9/00
[58] Field of Search128/66, 62 A, 224, 229
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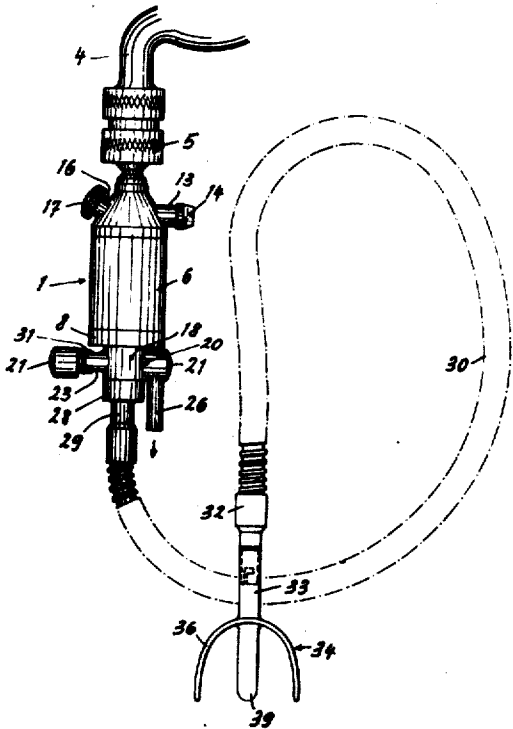
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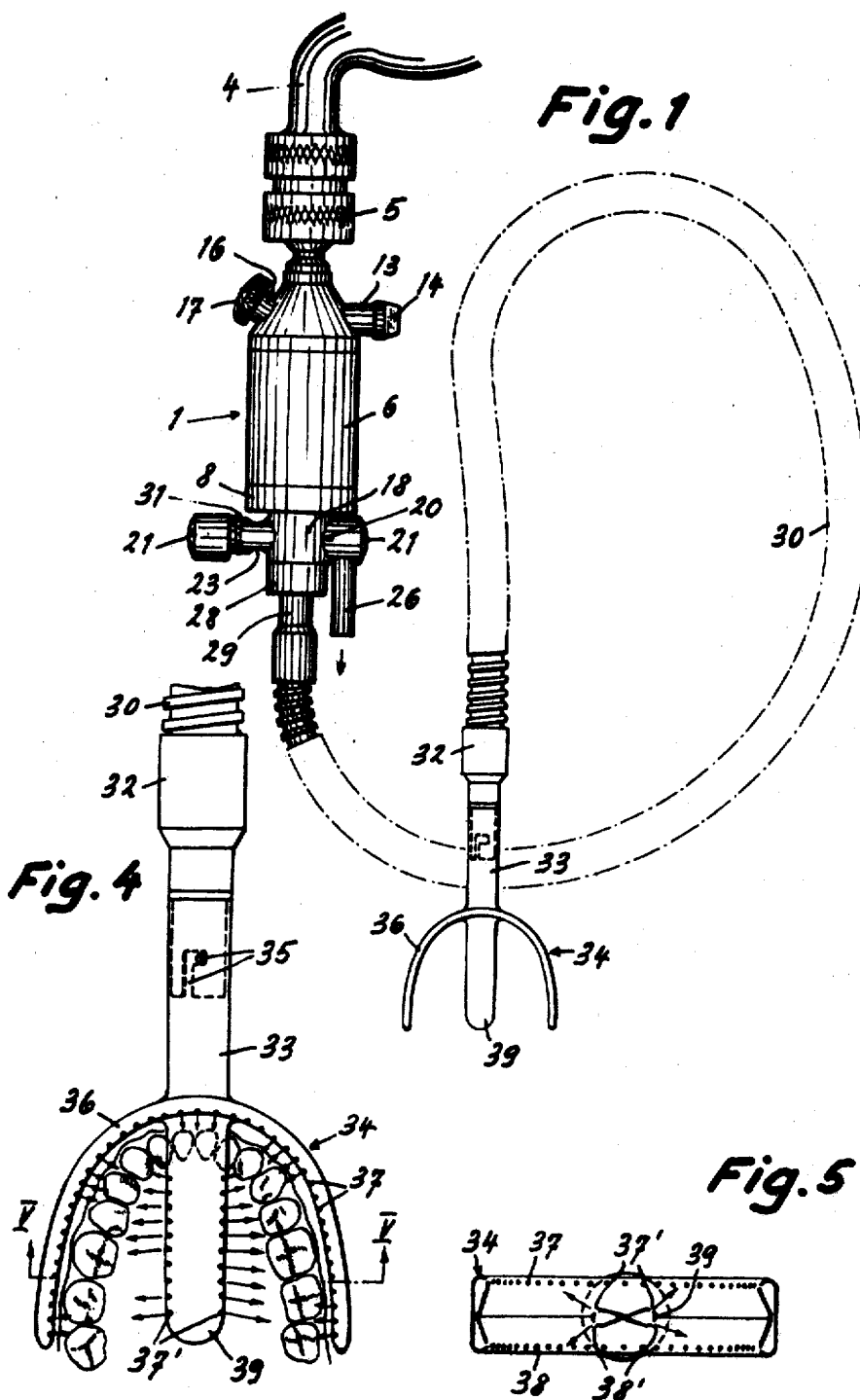
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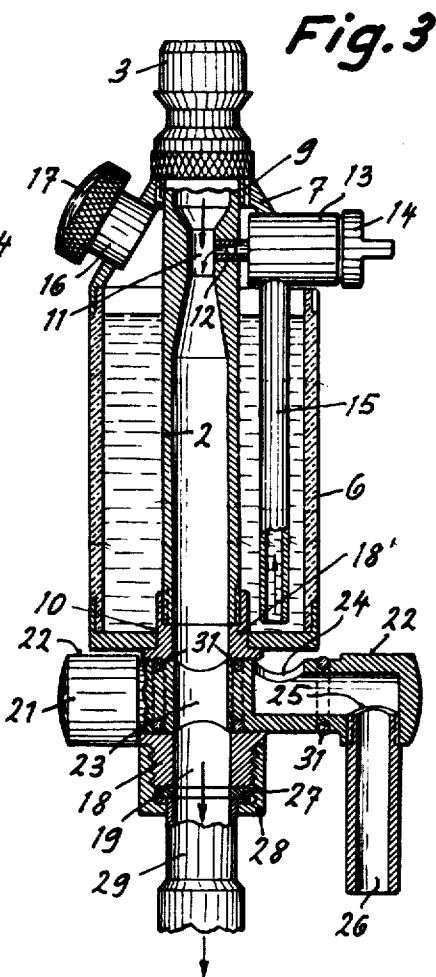
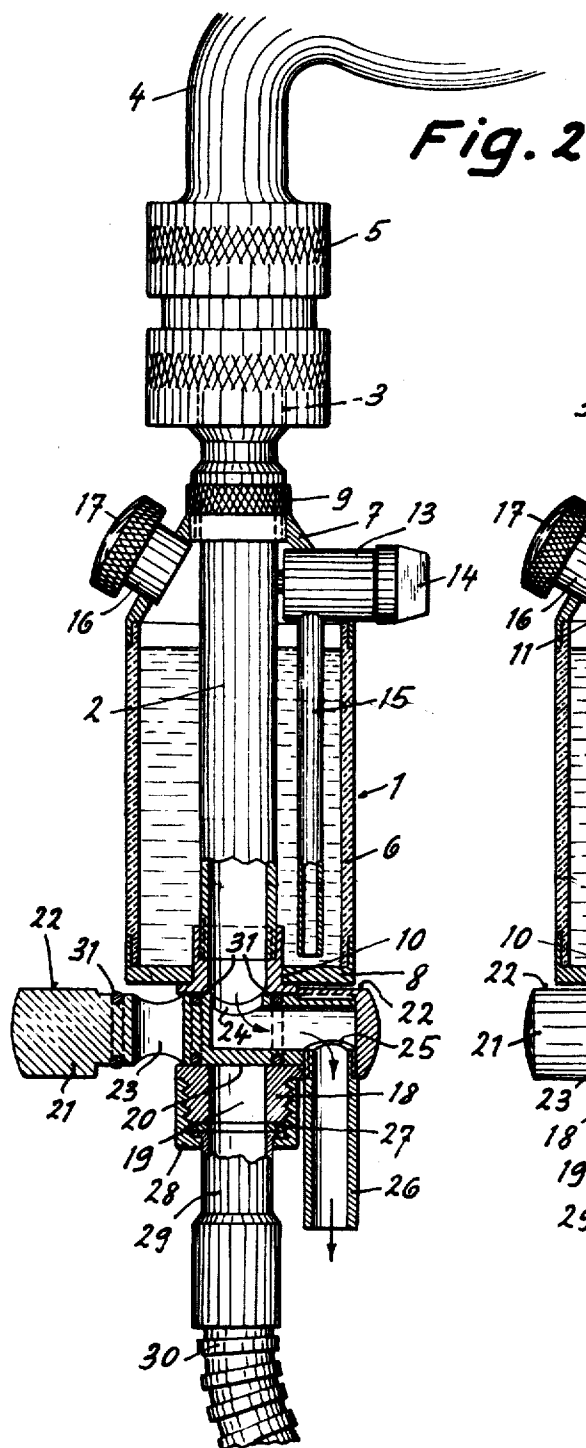
[57] **ABSTRACT**

A device for rinsing the bucal cavity which comprises a mouthpiece adapted to be fitted into the mouth and provided with discharge ports trained upon the teeth and gums of the user, a connection fitting adapted to be placed upon a faucet spigot, a line connecting the mouthpiece with this fitting, and a control valve along the line for selectively connecting the mouthpiece via a venturi to a dispenser for a mouth-treating liquid, to a discharge port opening into the wash basin, and to the mouthpiece.

7 Claims, 14 Drawing Figures







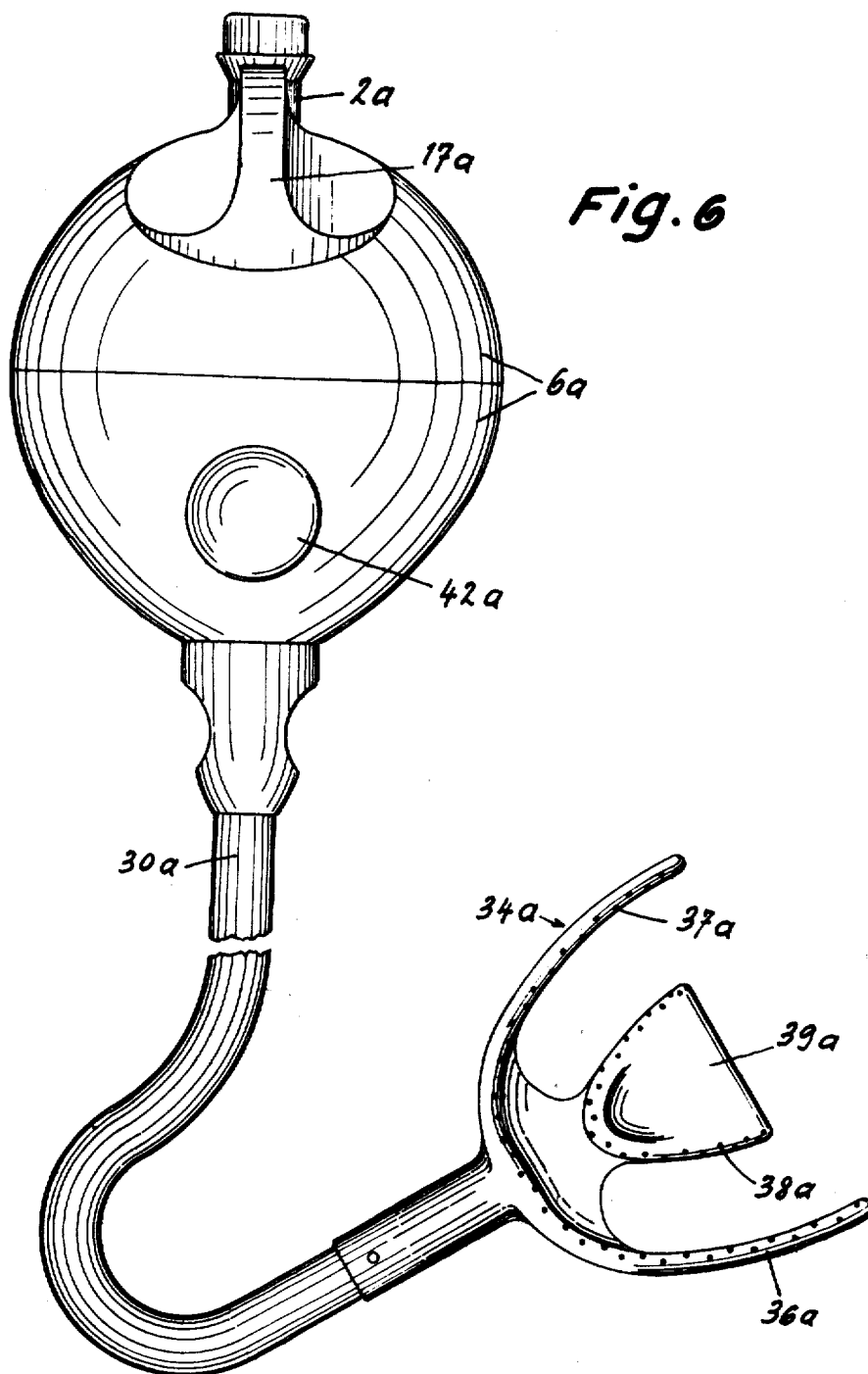
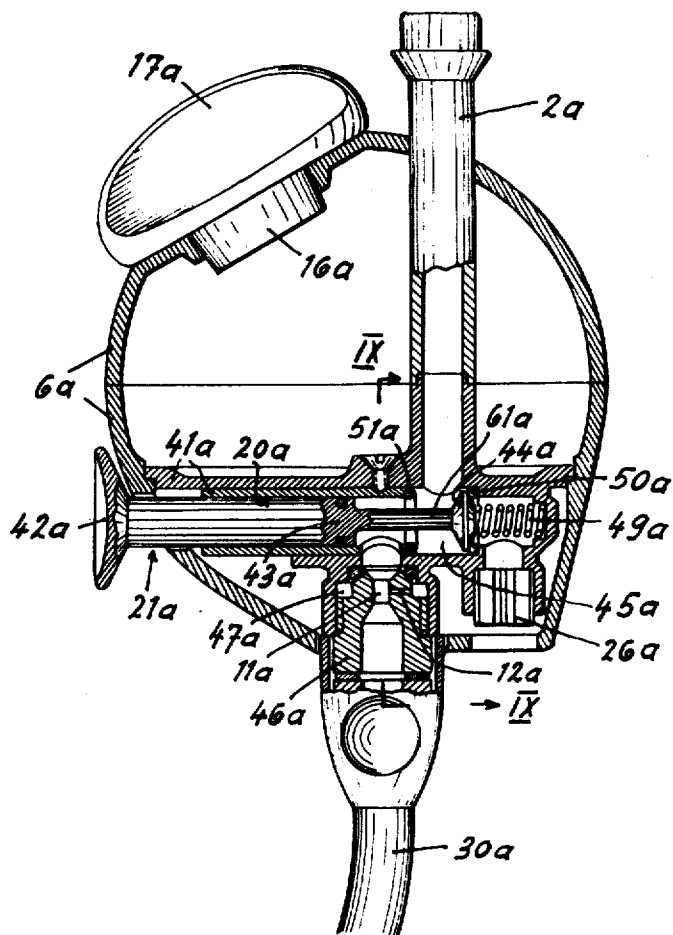


Fig. 7



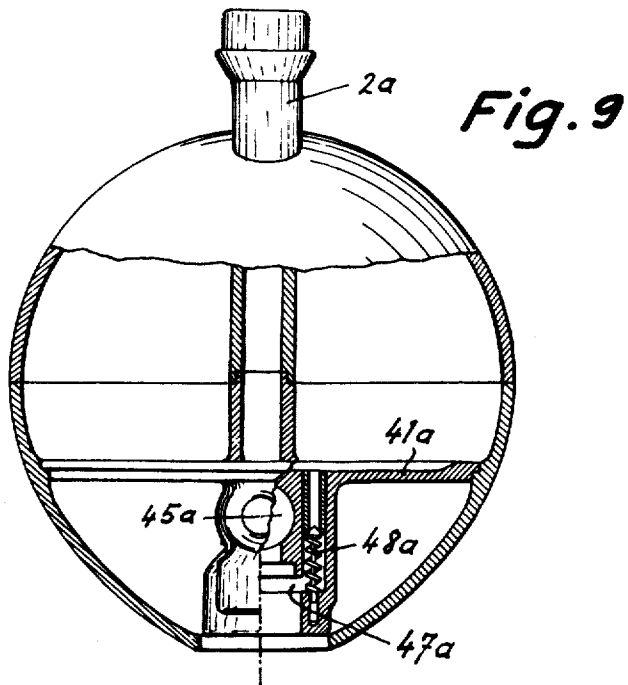
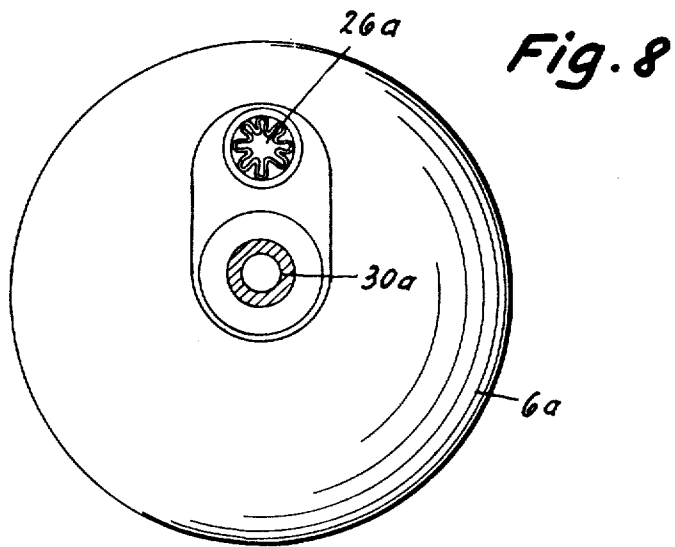


Fig. 10

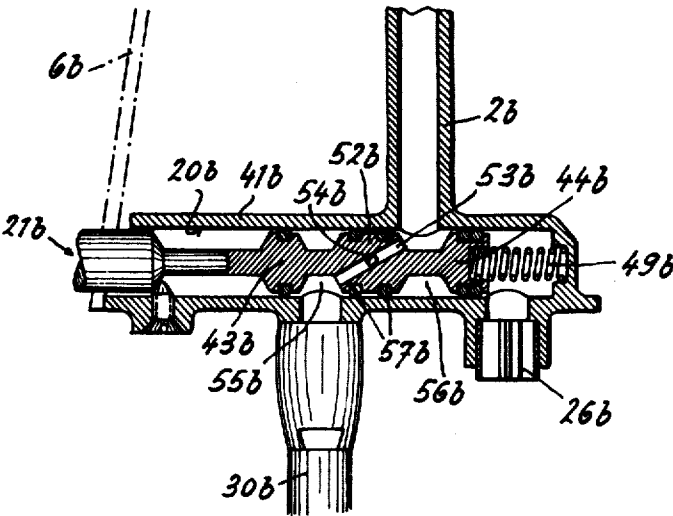
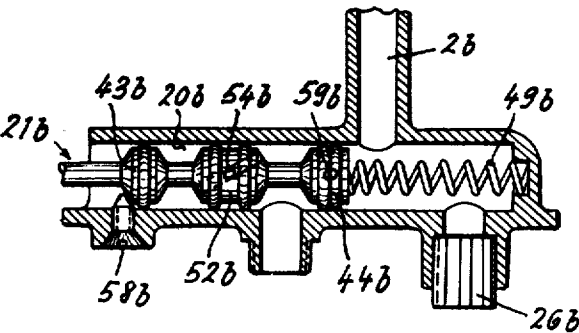


Fig. 11



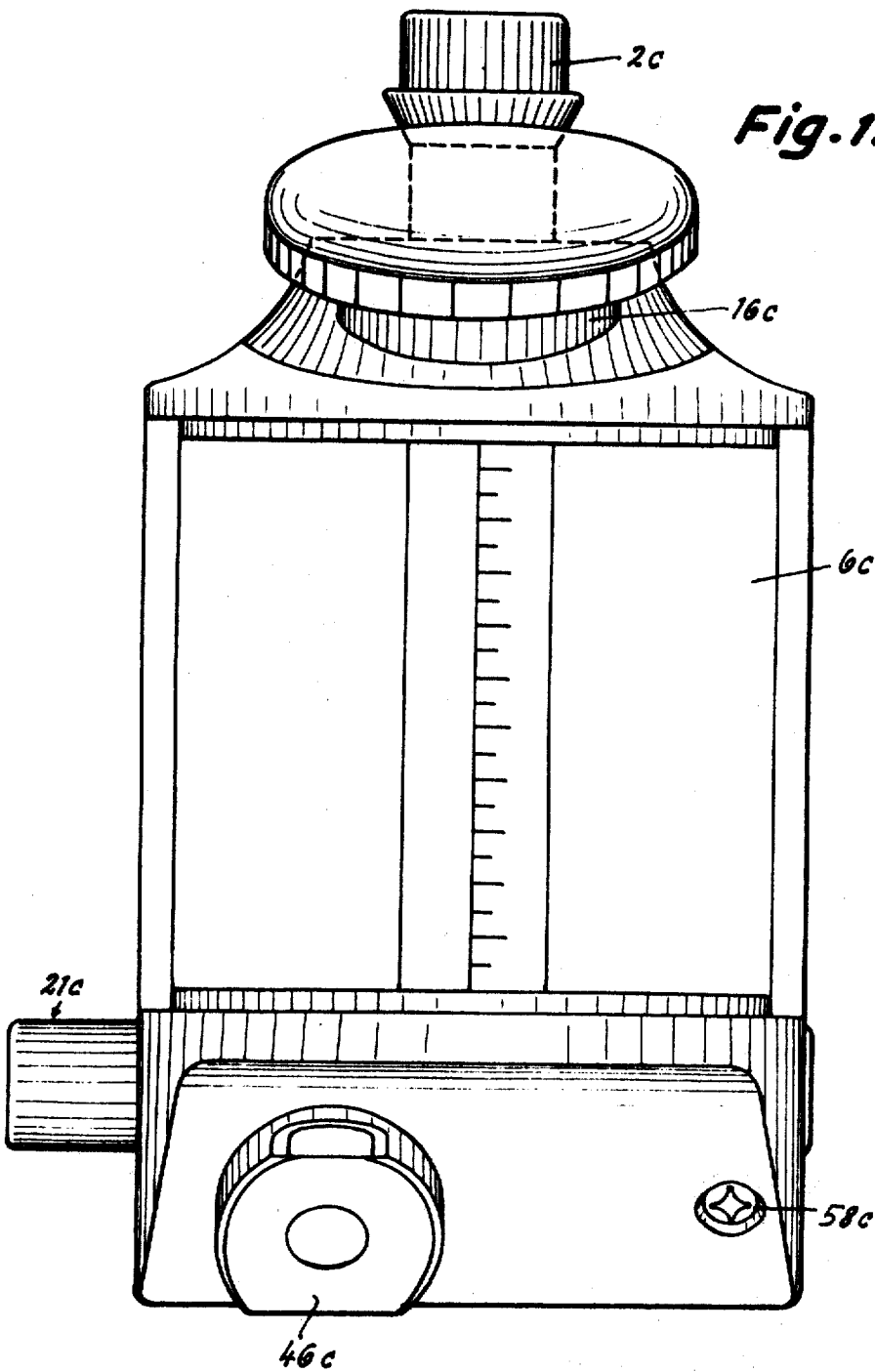


Fig. 13

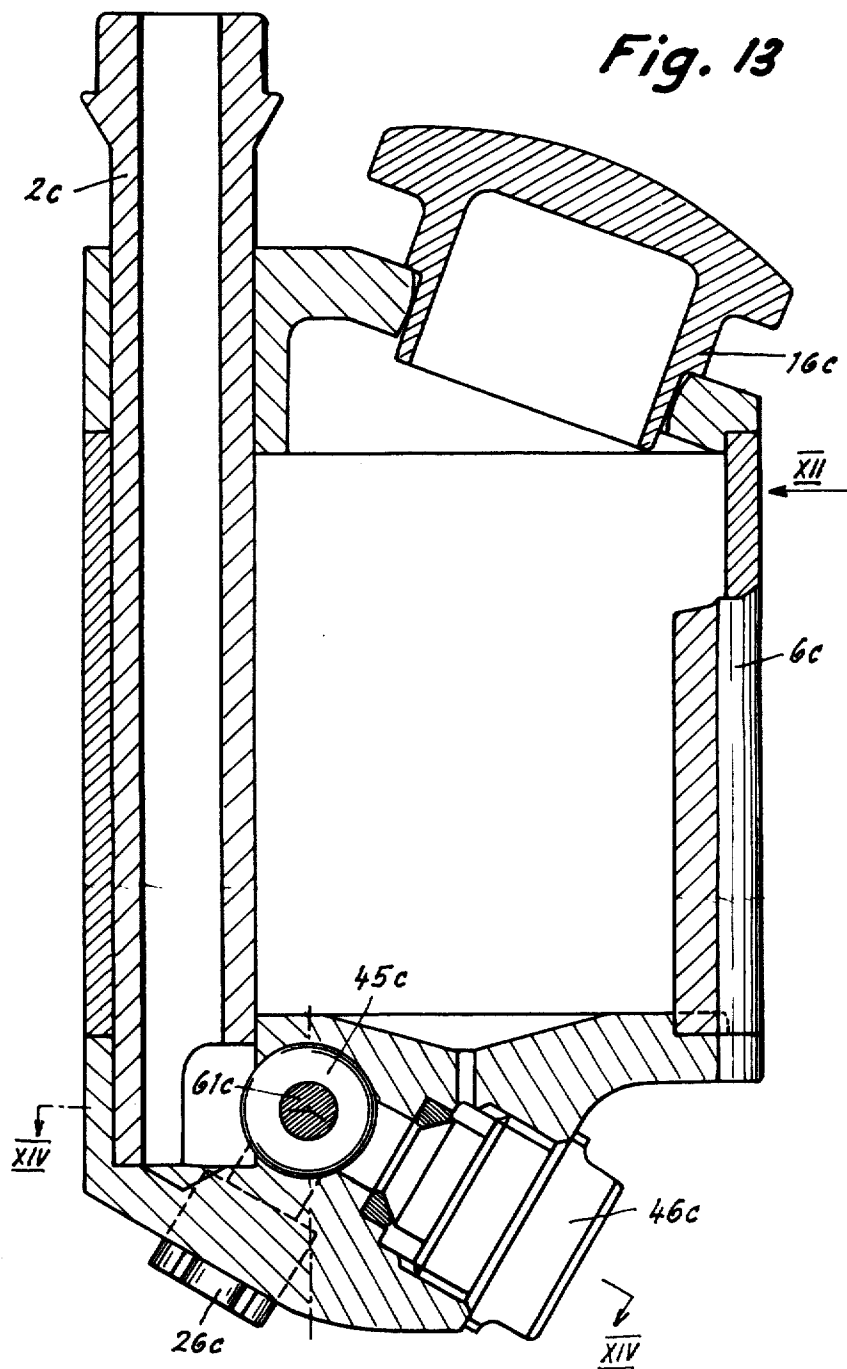
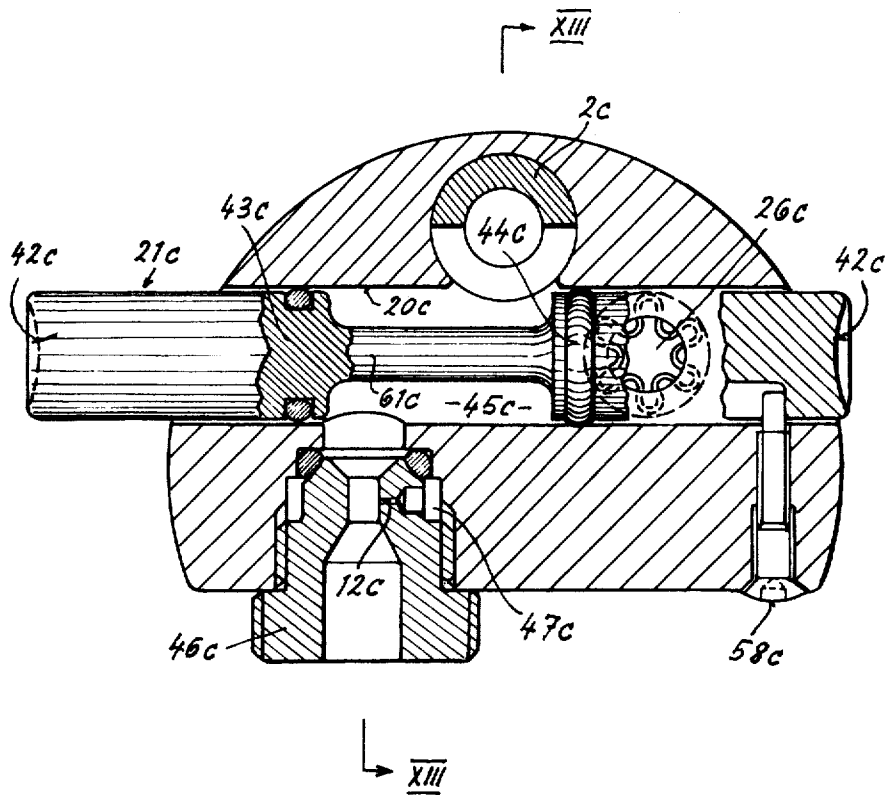


Fig. 14



DEVICE FOR THE RINSING OF BODY CAVITIES

Known mouth-washing systems for connection to a controllable warm-water producer with a means for the addition of medicaments can only be reasonably afforded by dentists and dental institutes.

SUMMARY OF THE INVENTION

The present invention concerns a device for the rinsing of body cavities, as for daily mouth care and for the treatment of inflammatory mouth diseases and also for gum massage and the prevention of dental caries, in particular for household use, which device can be manufactured at low cost and therefore bought by the general public. Its simple construction and operation permit the user to intensify mouth care for the prevention of dental caries and diseases of the gums and the oral cavity. It permits water jet massage with and without the addition of medicaments.

The device of the invention comprises a mixing tube which can be removably connected to a water faucet and which is associated with a container for holding a fluid and whose bottom portion is provided with a change-over means permitting the user at will to direct the water or mixture flow to the mouthpiece or to an outlet leading directly into the washing basin.

DESCRIPTION OF THE DRAWING

Four embodiments of the present invention are illustrated by way of example in the accompanying drawing, in which

FIG. 1 is a side view of a first embodiment designed as a mouth rinser;

FIG. 2 shows the associated mixing unit; partly in section, with the water flow directed into the washing basin;

FIG. 3 shows the mixing unit in section, with the water flow directed into the mouthpiece;

FIG. 4 is a view of the removable mouthpiece on an enlarged scale;

FIG. 5 is a cross-section of the mouthpiece along line V—V in FIG. 4;

FIG. 6 is a general view of a second embodiment;

FIG. 7 is a vertical section through the container containing the change-over mechanism;

FIG. 8 is a cross-section of the device shown in FIG. 7;

FIG. 9 is a section along line IX—IX in FIG. 7;

FIG. 10 shows a third embodiment of the change-over means, in vertical section, wherein the change-over means, designed as a plunger valve, is in the operative position;

FIG. 11 shows the plunger valve of FIG. 10 in the inoperative position of the device;

FIG. 12 shows the container, containing the change-over means, of a fourth embodiment, viewed in the direction of the arrow XII appearing in FIG. 13;

FIG. 13 is a vertical section along line XIII—XIII in FIG. 14; and

FIG. 14 is a cross-section along line XIV—XIV in FIG. 13.

SPECIFIC DESCRIPTION

The mouth rinser shown in FIGS. 1 to 5 comprises a mixing unit 1 with a central mixing tube 2 (FIGS. 2 and 3) whose connection stub 3 ensures quick connection to a coupling piece 5 fitted to the water faucet 4, in a manner ensuring that the mixing unit 1 is always held in the position required. The mixing tube 2 extends axially through a cylindrical container 6 designed to hold a fluid, such as a liquid medicament or a mouth wash, the arrangement being such that the mixing tube 2 extends through the conical cover 7 and the flat cover 8 of the container 6 in central bearing apertures 9 and 10 respectively. The mixing tube 2 is designed as a Venturi tube into whose constricted portion 11 (FIG. 3) the mixing nozzle 12 of the mixture regulator 13 leads. The latter is provided with a setting means 14 and a riser 15 dipping into the fluid in the container 6. The fluid in the container 6 is drawn by the suction of the Venturi tube 11, 12 through the riser 15 into the water flow of the mixing tube 2, the arrangement being such

that the mixing ratio can be regulated by the setting means 14. The latter can be set in about four different positions: in the first position, it permits the flow of water without any addition of medicament; in the other three positions, it permits the flow of water with gradually increased addition of medicament.

Reference 16 indicates the filling stub of the fluid container, permitting the latter to be refilled with fluid on removal of the cap 17. The bottom end of the mixing tube 2 is, directly over the bottom 8 of the said container, joined by a screw thread to the portion 18' of a connexion stub 18. The bore 19 of the latter communicates with a transverse bore 20 in which a valve serving as change-over means is received and secured against turning by guide surfaces 22 which are ground on the ends of the said valve and rest loosely against the flat bottom 8. The valve 21 has two vertical transverse bores 23, 24 which can be alternatively brought into a position coaxial with the bore 19 by moving the valve 21, as required. One of the two outer ends of the valve 21 carries an outlet stub which is secured to a vertical transverse bore 25 and through which the water flowing through the mixing tube 2 can flow off through the orifices 24, 25 and the stub 26 into the wash basin when the valve 21 is brought into the position shown in FIG. 2. When the valve 21 is brought into the position shown in FIG. 3, the transverse bore 23 is in a position coaxial with the mixing tube 2, so that the water flows through the connection stub 18. The coupling piece 29 of a flexible metal tube 30 is connected by a cap nut 28 and a ring seal 27 to the bottom end of the connection stub 18, provided with an external thread. The valve 21 is provided with three ring seals 31 ensuring hermetic sealing of the valve in the transverse bore 20 of the connection stub 18. As FIG. 1 shows, the free end of the flexible metal tube 30 is provided with a connection piece 32 which is removably coupled to sleeve piece 33 of the mouthpiece 34 by a bayonet catch 35 (FIG. 4), ensuring quick change of mouthpiece. The mouthpiece 34 presents a flat tubular bow 36 which is bent in horseshoe fashion and shaped after the human jaw and which is provided inside with an upper and a lower nozzle row 37 and 38. Connected to the tubular bow 36 on the outside of the arc is the sleeve piece 33, and connected to it on the inside of the arc is a flat hollow tongue 39 designed for insertion into the mouth cavity. The hollow tongue 39 is also provided with an upper and a lower row of nozzles 37' and 38' along each of its two longitudinal edges.

When the mouthpiece 34 is applied, the tubular bow 36 rests with a clearance against the outside of the upper and lower teeth or jaws inside the upper and lower lips. The flat hollow tongue 39 reaches into the mouth cavity through the gap formed between the upper and the lower teeth.

For rinsing teeth and for massaging gums with water only, the valve 21 must be brought into the position shown in FIG. 3. Moving the valve 21 into the position shown in FIGS. 1 and 2 puts the device out of operation. In this case, the water flows through the outlet 26 direct into the washing basin. For mouth care and the treatment of inflammatory mouth diseases, it is possible to add a mouth wash or a liquid medicament, which for this purpose is filled through the filling stub 16 into the container 6. By the setting means 14, it is possible to regulate the supply of fluid to the Venturi tube. Through the latter, the fluid is added to the water in the particular mixing ratio established.

When not in use, the device can easily be detached from the faucet 4.

The mouthpiece 34 is designed to be available in three or four sizes, so that every person using the device can choose and use a suitable mouthpiece. This is greatly facilitated by the bayonet catch ensuring easy changing. So each member of the family can use a separate mouthpiece.

In the embodiment shown in FIGS. 6 to 9, reference numeral 2a indicates the mixing tube line removably joinable to a water faucet. The said line extends in vertical direction through a spherical container 6a transversely divided into two sections for holding a fluid, such as a mouth wash or a liquid medicament. The filling aperture of the said container can be

closed by a plug 16a provided with a grip 17a. Fitted into a transverse bore 20a of an insert 41a communicating with the mixing tube line 2a is a plunger valve 21a which serves as a change-over means and which is axially slidable between two limit positions. The valve, which is provided at its outer end with a push member 42a, has two plungers 43a and 44a which enclose a space 45a between them. The bottom portion of the mixing tube line is designed as a stub 46a, which is removably inserted into the bottom portion of the container and in whose passage is arranged a mixing nozzle 11a which acts in the manner of a Venturi tube and which communicates through a narrow dosing bore 12a and a ring channel 47a with the inside of the container 6a, through a spring-loaded non-return valve 48a. Reference 26a indicates the outlet, reference 30a the flexible tube line leading to the mouthpiece 34a. In this embodiment again, the mouthpiece 34a presents a flat tubular bow 36a bent in horseshoe fashion and shaped after the human jaw and provided inside with a row of nozzles 37a. Connected to the tubular bow 36a on the inside of the arc is a flat hollow tongue 39a designed for insertion into the mouth cavity. This hollow tongue again is provided with an upper and a lower row of nozzles 38a along each of its longitudinal edges.

In FIG. 7, the plunger valve 21a is moved against the action of a compression spring 49a into the operative position in which the plunger 44a rests against a ring seal 50a fitted into the insert 41a and connects the mixing tube line 2a through the mixing nozzle 11a to the line 30a leading to the mouthpiece 34a. When the water jet passes through the mixing nozzle 11a, it produces in the latter a negative pressure which opens the non-return valve 48a of the line leading to the container 6a, so that liquid is drawn from the container 6a and mixed in the nozzle 11a with the water flowing through.

As soon as the push member 42a is released, the valve 21a, actuated by the compression spring 49a in FIG. 7, moves to the left until the plunger 44a comes to rest against the ring seal 51a of the container insert 41a. With the valve in this position, the passage from the mixing tube line 2a to the mixing nozzle 11a is closed, while the passage to the outlet 26a is open.

In the embodiment shown in FIGS. 10 and 11, reference 2b indicates the mixing tube line, 21b the plunger valve, 30b the flexible line leading to the mouthpiece, 26b the outlet and 41b the container insert with the bore 20b guiding the valve. Reference 49b indicates the compression spring holding the valve in the operative position.

Unlike the embodiment shown in FIGS. 6 to 9, the embodiment shown in FIGS. 10 and 11 has no stub 46a, and the valve is provided not with two plungers, but with three, viz. 43b, 44b, 52b. The middle plunger 52b has two intersecting bores 53b and 54b, of which one, 53b, interconnects the spaces 55b and 56b between the two outer plungers and the middle one, while the other bore 54b, located between two plunger ring seals 57b, communicates, in the operative position shown in FIG. 10, with a port leading to the fluid container 6b.

In the position shown in FIG. 10, the bore 53b in the middle plunger 52b acts as a Venturi tube, so that fluid is drawn from the container 6b through the bore 54b and added to the water flowing through. When the valve 21b is released, the spring 49b pushes it into the position shown in FIG. 11, in which the plunger 43b rests against the screw 58b serving as a stop, and the mixing tube line 2b is directly connected to the outlet 26b. In the inoperative position of the device shown in FIG. 11, the port leading into the container and passing at 59b into the bore 20b is covered by the ring seals of the plunger 44b, so that no fluid can flow out of the container 6b.

In the embodiment shown in FIGS. 12 to 14, reference 6c indicates the fluid container with the plug 16c serving to close the filling aperture, with the mixing tube line 2c. The latter communicates at its lower end with the transverse bore 20c, in which the valve 21c is axially slidable between two limits set by the stop screw 58c. Reference 46c indicates the stub which is screw-joined to the container 6c and which has a neck 11c serving as a Venturi tube; the said neck communicates through a narrow dosing bore 12c, a ring channel, 47c and a

bottom port 60c with the fluid container 6c. The valve 21c is provided at each end with a push surface 42c and presents two plungers 43c and 44c which are held apart at a specific distance by the valve portion 61c narrowed in its diameter. Reference 26c indicates the outlet.

FIG. 14 shows the valve in the operative position of the device, in which the mixing tube line 2c communicates through the free plunger space 45c with the stub 46c, so that, when the water faucet is opened, water flows through the mixing nozzle 11c, producing a suction which draws fluid from the container 6c.

The water-fluid mixture produced in the nozzle 11c then flows through the flexible line (not shown) to the mouthpiece. When the valve 21c is moved into the other limit position, i.e. to the right in FIG. 14, the connexion between mixing tube line 2c and stub 46c is interrupted while connexion is made between mixing tube line 2c and outlet 26c, so that the water flowing through the mixing tube line and the plunger space 45c can flow through the outlet 26c directly into the washing basin. As there is no negative pressure in the mixing nozzle 11c when the valve is in that position, no fluid can flow out, despite the direct connexion between the container 6c and the mixing nozzle, because the cap 16c ensures hermetic sealing and repeated use of the device reduces the liquid level in the container 6c, resulting in a vacuum which retains the fluid in the container. However, once a certain negative pressure arises in the mixing nozzle 11c which is greater than the vacuum in the container, fluid flows out through the dosing aperture 12c. If necessary, though, it is possible in this embodiment to fit a non-return valve into the line between mixing nozzle and fluid container, as shown in FIG. 4.

The use of the above-described device is not confined to mouth care; the device may conveniently also be used for intimate hygiene. For this, i.e. for vaginorectal use, the mouthpiece is given the size and shape of the mouthpiece tube of an irrigator.

What I claim is:

1. A device for rinsing the buccal cavity, comprising:
 - a fitting removably connectable to the spigot of a water faucet of a wash basin;
 - a control structure connected to and in fluid communication with said fitting, said control structure including:
 - a receptacle for a mouth-treating liquid and provided with a closable refilling opening,
 - means forming a main flow passage along said receptacle for conducting water from said fitting therealong,
 - a venturi dispenser along said passage having an intake communicating with said receptacle for drawing a treatment liquid therefrom into said passage,
 - an outlet opening into said wash basin,
 - a water-feed line extending from said structure, and
 - valve means between said line, said passage and said receptacle and formed with a manually operable valve member extending from said structure for selectively connecting said passage with said outlet, connecting said passage with said line and admitting treatment liquid from said receptacle into said line through said venturi; and
 - a mouthpiece connected to said line and provided with a plurality of discharge ports trained on the teeth and gums of a user upon his insertion of the mouthpiece into his mouth.

2. The device defined in claim 1 wherein said valve means includes a valve housing provided with a bore extending transversely to said line and said passage, and a pair of spaced-apart ports opening transversely to said bore and spaced apart along said member and shiftable into extreme positions wherein one of said bores of said valve member communicates between said passage and said line and wherein the other of said bores communicates between said passage and said outlet respectively.

3. The device defined in claim 1 wherein said mouthpiece is a hollow bow communicating with said line and provided with a central tongue projecting forwardly from said bow in the

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direction of concavity thereof, said tongue and the concave portions of said bow being provided with said ports, the ports of said bow being trained generally inwardly and the ports of said tongue being trained generally outwardly.

4. The device defined in claim 1 wherein said valve means includes a valve bore communicating with said passage, said line and said outlet, said valve member being formed as a plunger reciprocable in said bore, and spring means in said bore biasing said plunger into a position in which said passage is connected with said outlet.

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5. The device defined in claim 4 wherein said valve member forms a spool-type valve with three plungers, further comprising seal means surrounding each of said plungers.

6. The device defined in claim 1 wherein said receptacle is formed unilaterally with a valve body receiving said valve means.

7. The device defined in claim 6 wherein said receptacle has a generally spherical configuration.

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