

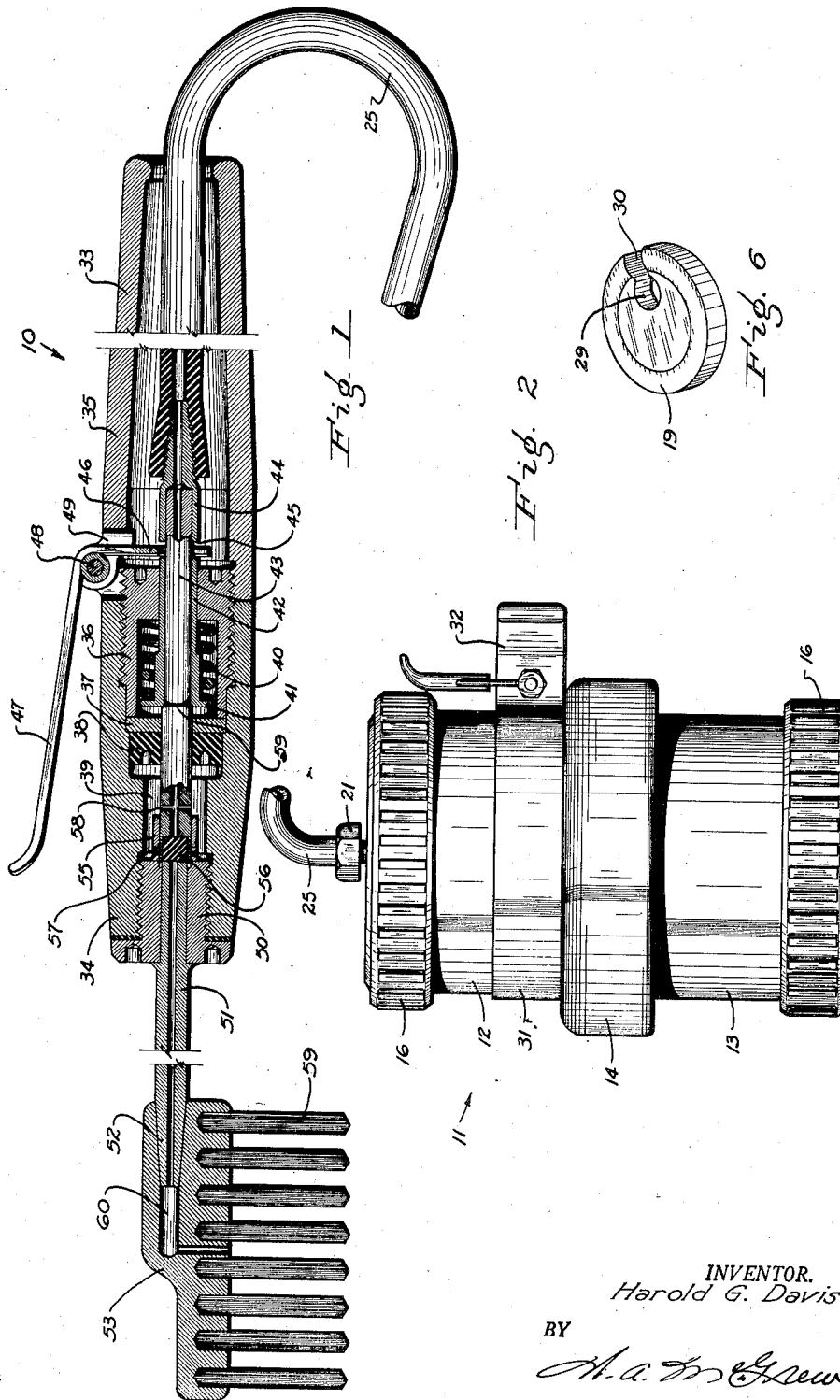
April 15, 1958

H. G. DAVIS
HYGIENE DISPENSER

2,830,588

Filed Feb. 24, 1953

3 Sheets-Sheet 1



INVENTOR.
Harold G. Davis

BY

H. A. McEwen
ATTORNEY

April 15, 1958

H. G. DAVIS
HYGIENE DISPENSER

2,830,588

Filed Feb. 24, 1953

3 Sheets Sheet 2

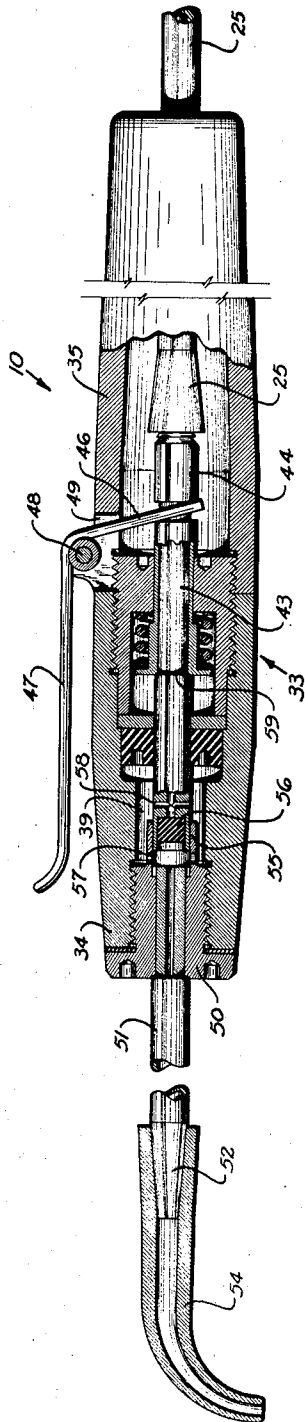


Fig. 3

INVENTOR.
Harold G Davis

BY

H. A. McGraw

ATTORNEY

April 15, 1958

H. G. DAVIS
HYGIENE DISPENSER

2,830,588

Filed Feb. 24, 1953

3 Sheets-Sheet 3

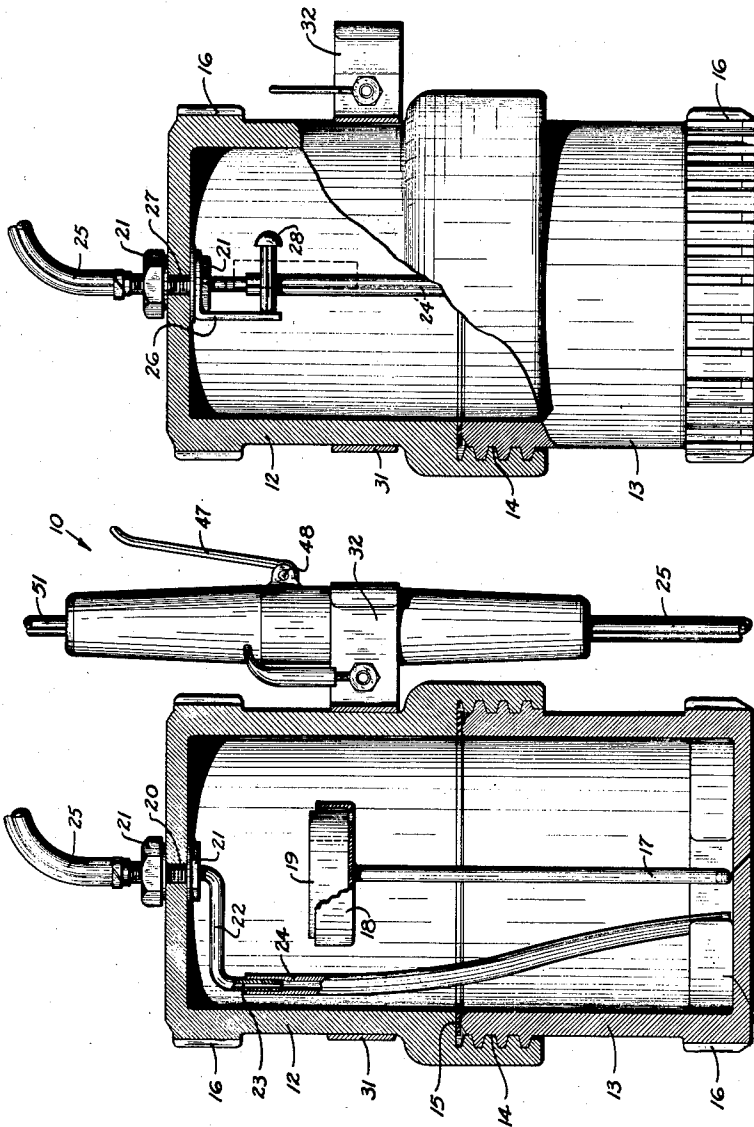


Fig. 5

Fig. 4

INVENTOR.
Harold G. Davis
BY
H. a. m. c. raw
ATTORNEY

1

2,830,588

HYGIENE DISPENSER

Harold G. Davis, Denver, Colo.

Application February 24, 1953, Serial No. 338,281

10 Claims. (Cl. 128—225)

This invention relates to new and useful improvements in body hygiene and an important object of the invention is to provide apparatus by which mixed liquid dentifrices and chemicals can be freshly made in situ and used immediately while fully potent and most effective for their intended uses. The invention contemplates the use of a chemical or dentifrice in dosage form, in conjunction with liquid within a container to form therein a frothy foamy medicament under pressure in a manner similar to that disclosed in my copending application Serial Number 282,099, filed April 14, 1952, now Patent No. 2,716,984.

An important object of the present invention is to provide applicators which when used, can be operated, at will, to feed liquid or foamy medicament in the desired amounts to cavities being cleansed.

Another important object of the invention is to provide a container in which the medicament is mixed in situ under controlled pressure and strength of solution and which forms a holder for the applicator when the latter is not in use, said container having various means for supporting a soluble effervescent medicated tablet or wafer.

A further object of the invention is to provide an applicator which is provided with a handle and a control valve through which the medicament is fed under pressure from the mixing container to point of application of such medicament; the applicator being in the form of a fountain tooth brush or nozzle to inject the medicament forcibly into a cavity.

Other objects and advantages will become apparent during the course of the following description.

In the accompanying drawings forming a part of the description and wherein like numerals are employed to designate like parts throughout the several views,

Fig. 1 is a longitudinal section through one applicator hand piece in the form of a removable fountain toothbrush,

Fig. 2 is a side elevation of the mixing chamber forming part of the apparatus,

Fig. 3 is a longitudinal section of another applicator hand piece in the form of a removable injection nozzle,

Fig. 4 is a vertical section of the mixing chamber showing one form of tablet support and showing an applicator out of use and supported upon the exterior of the container,

Fig. 5 is a similar view of a modified form of mixing chamber with a modified form of tablet support therein, and

Fig. 6 is a perspective view of my improved form of medicated soluble tablet.

Referring now more particularly to the drawings wherein are shown, for the purpose of illustration and not for limitation, several forms of the invention, Fig. 1 shows an applicator 10 and Fig. 2 shows the mixing container, reservoir, or generator 11 and applicator holder, both of which may be considered a kit or set. The mixing chamber 11 is composed of two almost identical and sep-

2

arable cup-shaped shells or cups 12 and 13 having their open ends screwed together as at 14 with a gasket 15 clamped between the two halves to seal the joint when they are screwed together as shown in Figs. 4 and 5. Each of these cups is provided with an enlarged exterior knurled collar 16 to facilitate relative turning thereof to connect or disconnect them. The collars 16 for the two cups are positioned adjacent their closed ends. The lower cup or section 13 is provided with a preferably removable pedestal 17 arising from the center of its closed bottom and extending beyond its open end to there support a platform or tray 18 for holding one or more soluble medicated tablets 19 such as shown in Fig. 6. As seen in Fig. 4, the lower end portion of pedestal 17 is turned at a right angle and its outer end 17a is attached, as by welding, to the central portion of a split preferably spring metal band or ring 17b which, because of its tendency to spread, frictionally engages the wall of shell 13 to hold the pedestal 17 in upright position. The center of the closed top of the upper cup 12 has a threaded discharge fitting 20 extending therethrough and nuts 21 and gaskets are positioned thereon on the inner and outer faces of this closed top to hold the fitting in place. This fitting has a radially projecting extension 22 terminating in a downwardly projecting end 23 upon which is sleeved the upper end of a discharge tube 24. This tube 24 extends downwardly to a point near the closed bottom of the lower cup 13 so that when a gaseous pressure is generated in the mixing container, liquid in the same will be forced upwardly through the tube 24 and through a length of flexible tubing 25 which is connected with an applicator 10 as will be more fully described hereinafter. The lower half 13 of the mixing chamber is adapted to contain a predetermined quantity of water or other liquid, which when shaken when the cups 12 and 13 are screwed together, will dislodge a medicated tablet 19 from its platform 18 and cause it to be dissolved in the liquid to create gaseous pressure and a medicated frothy foam substance in the chamber 11 which is caused to be discharged through the tube 24 and tubing 25. Each time the apparatus is to be used, a sufficient quantity of liquid is placed in the lower cup to form a single dose or application when combined with the medication in the tablet or tablets, whereby the medication is mixed in situ and its potency is assured, being freshly mixed as needed for use. When the two sections of the container 11 are screwed together, the platform 18 and tablet thereon will be disposed within the upper section or cup 12 well above the liquid level in the lower cup 13, whereby the container can be prematurely loaded with the tablet and liquid and maintained in this position until the use of the medicament is desired; at which time the container can be operated or shaken to cause the tablet to dissolve in the liquid.

In Fig. 5, a modified tablet holder is shown as an angle clip 26 held under the inner nut 21 on a fitting 27 like the fitting 20 of Fig. 4 and which fitting terminates in a discharge tube 24' extending down centrally within the container to a point adjacent the bottom thereof. The vertical arm of the clip 26 is provided with a horizontally extending headed stud 28 which is adapted to be threaded through the opening 29 in the tablet 19 to support the same in the upper part of the upper section or cup 12 above the liquid level in the lower cup 13. The medicated gas forming tablet 19 is provided with a radial slot 30 extending from the opening 29 out through the thickened rim and periphery of the tablet, so that the sides of this slot will be rapidly dissolved or disintegrated by contact with the liquid to quickly release the tablet from the stud 28 thereby enabling it to fall down into the liquid when the mixing container is shaken. This action and the chemical composition of one form of tablet is fully described in my aforesaid copending application

for patent. Thus, a foamy medicated mixture will be forced by the gas pressure created in the container 11 to pass up the tube 24' and out through the flexible tubing 25 to the applicator hand piece 10.

In order to form a kit or set and to releasably hold the applicator compactly upon the container or reservoir when not in use, a band 31 encircles the upper section 12 just above the shoulder containing the threads 14, and has a U-shaped spring clip 32 extending therefrom so that the handle of the applicator can be forced between and removed from between the two spring arms of the clip to lie alongside of the reservoir as illustrated in Fig. 4.

As best seen in Fig. 1, the applicator or hand piece 10 consists of an elongated tubular handle 33 tapering off at both ends and composed of forward and rear sections 34 and 35 respectively. These sections have their inner ends interiorly threaded to receive and be fastened together in axial alignment by a packing gland sleeve 36. This sleeve forms an abutment for a washer 37 pressed against a shoulder by the sleeve 36. A skirted rubber washer 38 is backed up by the washer 37 and closes the inner end of a reduced bore in the section 34 to form a pressure chamber 39. The sleeve 36 has its forward end recessed to house a compression spring 40 which is confined between the bottom of this recess and the forward flanged end 41 of a sleeve 42 slidable axially through the inner end of the nut sleeve 36. A hollow valve rod or stem 43 is fixed in the sleeve 42 to move therewith. A hose attachment nipple 44 is fastened on the inner end of the valve rod 43 and serves to attach the flexible hose 25 thereto, as well as to form a shoulder 45 on the rod. The inner end of the sleeve 42 terminates short of the shoulder 45 to provide a second shoulder or stop. Between these two shoulders, the angular end 46 of a valve operating handle or trigger 47 operates to move the valve rod 43 axially to an open position by abutting the shoulder 45 and compressing the spring 40. When the handle 47 is released, the spring 40 moves the valve rod 43 axially forward to close the control valve and return the handle 47 to normal closed position. This operating handle is pivoted at 48 to a slotted portion 49 of the inner section 35 and the angular end 46 of the handle extends into the interior of this section to cooperate with the valve rod 43 as described above. As the valve rod 43 is moved axially within the handle 33, the end of the flexible tubing 25 within the handle, is moved therewith.

The forward end of the handle section 34 is interiorly threaded to receive a threaded metal plug 50 which has an axial tube 51 fastened therein and projecting exteriorly beyond the plug to terminate at its outer end in a tapered portion 52 for association with a tooth brush head 53 or a curved nozzle 54 for oral cavities. The inner end of the plug 50 terminates in an axially extending guide member 55 which projects into the pressure chamber 39 and forms fixed guide means for the forward end of the valve rod 43. This end of the valve rod is recessed to receive a yieldable, resilient, or compressible plug valve member 56 adapted to seat upon the inner end of the tube 51 to seal the passage therethrough when the valve rod is in closed position. This plug valve is preferably formed from rubber. The guide sleeve 55 is perforated as at 57 near its juncture with the plug valve 56 and these perforations are closed by the recessed end of the valve rod when in a closed position to stop the flow from the pressure chamber 39 into the tube 51. The medication from the reservoir 11 and tubing 25 passes axially through the valve rod 43 and enters the pressure chamber 39 through radial ports 58 in the rod. This rod is provided with a shoulder 59 always in engagement with the flange 41 so that the spring 40 will normally urge the valve rod to its closed position shown in Fig. 1 with the yieldable plug valve 56 on its tube-like seat 51. Fig. 3 shows the operating handle 47 pressed toward the barrel handle 33 to retract the valve rod and uncover the perforations 57 of the sleeve valve 55 to open

the same for the medication to pass through the tube 51 to the brush or nozzle. The brush head is provided with bristles 59 and passages 60 extending from the end of the tube 51 to the bristle area to dispense medication or dentifrice thereto and thereby provide a fountain brush which is constantly fed with a dentifrice while the brush is being used to clean the teeth or massage the gums.

From the foregoing description it is believed that the construction and operation of the invention is clear. Various changes in the size, shape and relation of the various parts can be varied without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. In a dispensing apparatus for a gas-charged liquid under substantial pressure, the combination of a gas generator for the liquid sealed against the escape of pressure, a liquid conducting line including a discharge outlet connected to said generator, liquid flow diverting means in the line between the generator and outlet, a valve positioned at said diversion point having a surface of substantially greater diameter than the discharge passage through said line and in normally sealing relation thereto, and manually actuated means for moving said valve a substantial distance before permitting flow of the diverted fluid to said discharge outlet passage.

2. Structure according to claim 1, wherein said valve is formed from yieldable material.

3. In a dispensing apparatus for a gas-charged liquid under substantial pressure, the combination of a gas generator for the liquid sealed against the escape of pressure, a liquid conducting line including a discharge outlet connected to said generator, hand controlled gas pressure-sealed valve means located in the line between the generator and the outlet, and a tooth brush associated and in communication with the discharge outlet, said tooth brush comprising a head having bristles embedded therein with their free ends engageable with human teeth, said head having a passage connected with said liquid conducting line inclusive of an outlet portion for directing the gas-charged liquid outwardly from the tooth brush head in the direction of the free ends of said bristles.

4. In a dispensing apparatus for a CO₂ gas-charged liquid under substantial pressure, the combination of a gas generator for the liquid sealed against the escape of pressure, a liquid conducting line inclusive of a discharge outlet connected to said generator, liquid flow diverting means in the line between the generator and the discharge outlet, a valve positioned at said diversion point having a surface of substantially greater diameter than the diameter of the discharge outlet passage through said line and in normally sealing relation thereto, manually actuated means for moving said valve out of sealing relation for permitting the flow of the diverted gas-charged liquid to said discharge outlet passage, and a tooth brush associated and in communication with said discharge outlet and comprising a head having bristles embedded therein with their free ends engageable with human teeth, said head having a passage formed therein connected with said line inclusive of an outlet portion for directing the CO₂ gas-charged liquid outwardly from the head in the direction of the free ends of the bristles.

5. A dispensing apparatus including a reservoir adapted to contain gas-charged liquid under substantial pressure, said reservoir comprising upper and lower cup-shaped receptacles having open ends detachably connected together in gas tight manner and adapted to contain liquid, and a pedestal supported by and rising from said lower receptacle and having tablet supporting means arranged in the upper receptacle above the level of liquid in said reservoir.

6. A dispensing apparatus including a reservoir adapted to contain gas-charged liquid under substantial pressure, said reservoir comprising upper and lower cup-shaped receptacles of substantially equal height and capacity

5

having open ends detachably connected together in gas tight manner and adapted to contain liquid, and means within the upper receptacle for releasably suspending a tablet of effervescent gas-producing nature in upright position in said upper receptacle and above the level of liquid in said reservoir.

7. An applicator hand piece for a dispensing apparatus comprising a tubular handle, a fixed guide sleeve carried by said handle, a tubular valve rod spring-pressed to closed position axially on said handle and having one end connected with a length of flexible tubing within one end of said handle, its opposite end being slidable in said guide sleeve, said tubing leading from a source of fluid under pressure, a yieldable plug valve carried by the other end of said tubular valve rod, a tube extending into the handle at the opposite end thereof and providing a seat for the yieldable plug valve and an outlet passage for the fluid under pressure, and a valve rod operating trigger pivoted to said handle and having an end extending into the handle in operative engagement with said tubular valve rod to depress it to an open position and unseat the plug valve, said spring-pressed tubular valve rod returning said trigger to raised position to re-seat said plug valve when manual pressure thereon is released.

8. An applicator hand piece for a dispensing device comprising a handle composed of a pair of separable tubular sections connected end to end, a threaded gland within said sections for connecting them together and having a spring receiving recess, a spring in said recess, a tubular valve rod slidable axially through said gland and having a flange abutting said spring whereby said tubular rod is normally forced to a closed position, a yieldable plug valve carried by the inner end of the tubular valve rod, a tube extending into the handle in opposition to the plug valve and upon which the valve seats when in closed position, said tube providing a fluid outlet passageway for said applicator hand piece, means for supplying said tubular valve rod with a medium

6

under substantial pressure, said means forming an abutment on said rod, a hand operated trigger operating against said abutment to move said tubular valve rod to an open position to unseat the yieldable plug valve, and said handle having a ported guide sleeve in which slides the free end of said tubular valve rod and said plug valve to unseat and re-seat the valve.

9. An applicator hand piece comprising a handle having a pressure chamber in its forward end and provided with a fixed guide sleeve having an axial discharge opening and a peripheral inlet passage, a discharge tube in association with said discharge opening, a tubular valve stem having an outlet passage into said pressure chamber, a plug valve carried by the free end of the tubular valve stem and normally closing said axial discharge passage, said valve stem being reciprocally mounted in said handle to open and close said axial discharge passage, and flexible feed tubing extending into said handle and connected to the end of said tubular valve stem remote from the plug valve.

10. Structure according to claim 9, wherein a tooth brush is connected to the outer end of the discharge tube, said tooth brush having a head and bristles embedded therein with their free ends engageable with human teeth, said head also having a passage formed therein inclusive of an outlet portion for directing fluid outwardly from said head in the direction of the free ends of said bristles.

References Cited in the file of this patent

UNITED STATES PATENTS

2,195,554	Beardsley	Apr. 2, 1940
2,566,823	Cariffe	Sept. 4, 1951
2,627,271	Purser	Feb. 3, 1953
2,716,984	Davis	Sept. 6, 1955

FOREIGN PATENTS

846,802	France	June 19, 1939
936,591	France	Feb. 23, 1948