

May 1, 1962

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3,032,081

DISPENSING APPARATUS

Filed Sept. 24, 1959

2 Sheets-Sheet 1

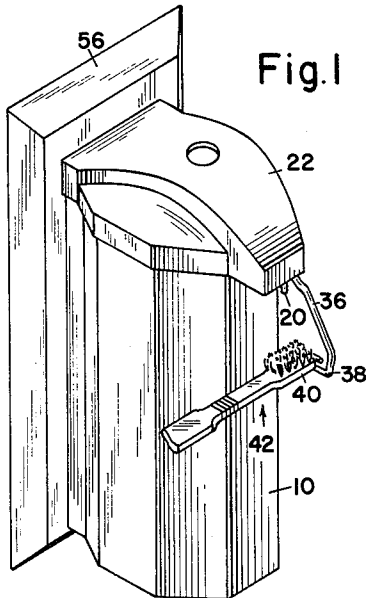


Fig. 1

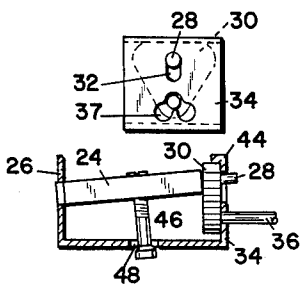


Fig. 3

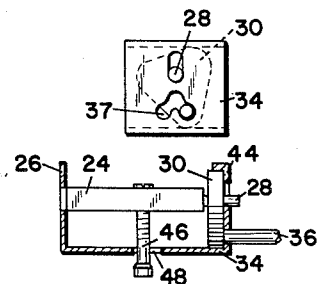


Fig. 4

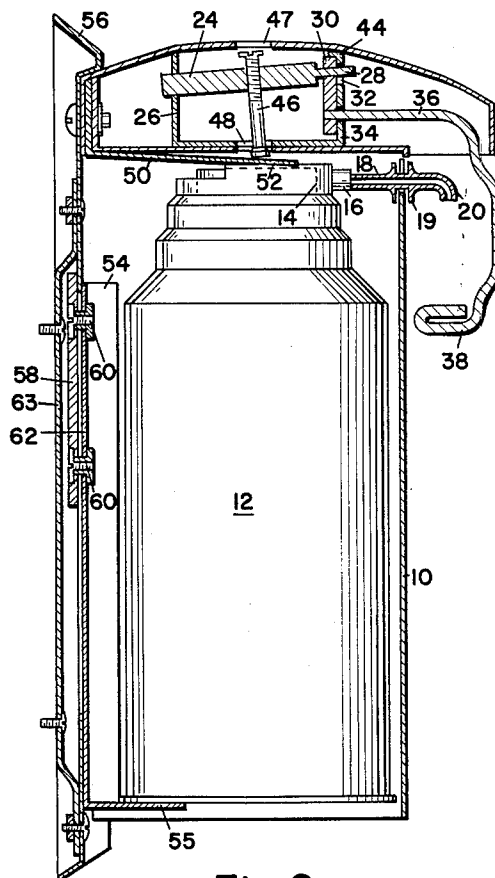


Fig. 2

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2 Sheets-Sheet 2

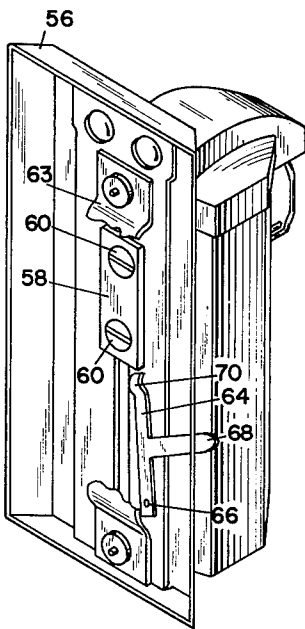


Fig. 5

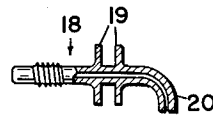


Fig. 7

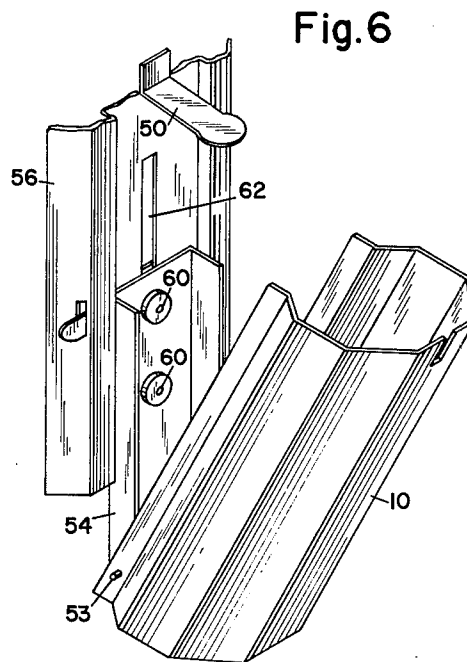


Fig. 6

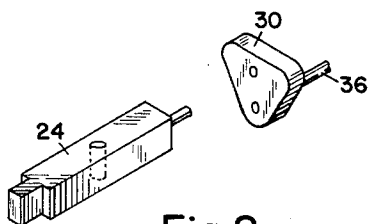


Fig. 8

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DISPENSING APPARATUS

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13 Claims. (Cl. 141-362)

This invention relates to apparatus of the type adapted to dispense toothpaste. More in particular, this invention relates to such apparatus that is arranged to be mounted fixedly on a wall or the like, and that includes means automatically operable to apply toothpaste to a toothbrush brought into contact therewith.

During recent years there has been a considerable trend toward the use of pressurized toothpaste dispensers for applying the paste to the brush. These dispensers typically comprise a hermetically-sealed metal can formed at the top with a small plastic outlet spout and a manually-operable valve bottom to control the flow of toothpaste through the spout. Such dispensers have a number of advantages as compared to the earlier deformable toothpaste tubes, e.g. the cans are not easily broken, and can store a substantial quantity of toothpaste without any significant risk of spoilage.

However, the pressurized dispensers now used suffer from several defects. In particular, the container normally is held with one hand while a finger or thumb of that hand operates the valve button to apply toothpaste to a toothbrush held in the other hand. This operation not only is awkward and difficult to perform, especially because the flow valves require substantial pressure to operate, but in addition if the user's hands are slightly moist there is a tendency for the container to slip out of his grasp. Moreover, the "two-handed" operation required with present dispensers makes them unsatisfactory for crippled persons having the use of only one arm or hand.

Accordingly, it is an object of this invention to provide dispensing apparatus of the type described that is superior to such apparatus provided heretofore. It is a further object of this invention to provide a dispensing device operable to apply toothpaste to a brush when the brush is moved into engagement with a part of the dispensing device. It is a still further object of this invention to provide such a device that is simple in construction, reliable in operation, and economical to manufacture. Other objects, aspects and advantages of this invention will in part be pointed out in, and in part apparent from, the following description considered together with the accompanying drawings, in which:

FIGURE 1 is a perspective view of a toothpaste dispensing device constructed in accordance with this invention, and shown in toothpaste dispensing condition;

FIGURE 2 is a vertical section of the device shown in FIGURE 1, but with various operating parts in normal position;

FIGURES 3 and 4 show different positions of the valve-camming mechanism;

FIGURE 5 is a rear perspective view of the toothpaste dispenser, particularly showing the slide-locking arrangement;

FIGURE 6 is a perspective view of the dispenser housing in loading position, ready to receive a pressurized toothpaste container;

FIGURE 7 is a detail view, partly in section, of the spout extension tube; and

FIGURE 8 is a perspective detail of elements of the valve-camming mechanism.

Referring now to FIGURES 1 and 2, the dispensing device comprises an octagonal housing 10 within which is mounted a conventional pressurized toothpaste container 12 of cylindrical shape. Container 12 holds a supply of toothpaste together with a pressurized propel-

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lant, and at its top is provided with a vertically-depressible pushbutton 14 for operating the usual internal valve for controlling the flow of toothpaste out of the container. To the right of the pushbutton 14 is a soft plastic outlet spout 16 into which is screwed a metal extension tube 18 which passes through a slot in housing 10. Tube 18 is provided with stop members 19 (see also FIGURE 7) which engage the housing wall and assure that the container 12 is maintained in operative position with respect thereto. Tube 18 also is formed with a down-turned end tip 20 through which toothpaste flows when pushbutton 14 is depressed.

Immediately above housing 10 is a cap 22 which contains a mechanism for depressing pushbutton 14. This mechanism includes a cam bar 24 pivoted at its left-hand end in an aperture in a fixed plate 26. This bar is formed at its right-hand end with a stud 28 which is fitted into a rotary cam plate 30 and passes through a vertical slot 32 in a second fixed plate 34 integral with the first plate 26. The lower part of cam plate 30 is fastened to an operating lever 36 which consists of a rod arranged to extend through an inverted V-slot 37 (see FIGURE 3) in fixed plate 34 and to pass downwardly around the extension tube 18 to a level beneath end tip 20 of this tube. At its lower end, lever 36 is bent back on itself to form a toothbrush-receiving portion 38. The upper and lower parts of this portion 38 are spaced close together to form a recess to receive the solid body 40 of the toothbrush 42 without, for hygienic reasons, permitting the bristles of the brush to touch the operating lever.

When the toothbrush 42 is pressed longitudinally against lever portion 38, this portion will rotate lever 36 from its normal position shown in FIGURE 2 to the operating position of FIGURE 1, and this movement of lever 36 will correspondingly rotate cam plate 30. This cam plate (FIGURES 3 and 8) is of triangular shape, and its upper edge is in contact with a horizontal lip 44 on the top of fixed plate 34. Thus, as the cam plate rotates from its normal position shown in FIGURE 3, it shifts stud 28 and cam bar 24 down in a pivotal movement about the first fixed plate 26, to the toothpaste expelling position shown in FIGURE 4. During this movement, operating lever 36 is correspondingly shifted down into one of the two lower legs of the V-slot 37 in plate 34. It will be apparent, of course, that if lever 36 had been rotated in the opposite direction, it would have been shifted down into the other of these two legs, but in either event the cam bar 24 moves in a downward direction.

Threaded in the cam bar 24, approximately at its midpoint, is a control element comprising a push rod 46 which extends down through a hole 48 to engage a stiffly-flexible metal tongue 50. This tongue (see FIGURE 6) is held firmly at its left end, and has a flared-out tip 52 adapted to seat against pushbutton 14. When cam bar 24 is shifted downwards by the camming action described above, the resultant motion of push rod 46 presses tongue 50 against pushbutton 14 to operate the valve in container 12 and cause toothpaste to flow through extension tube 18 onto toothbrush 42.

Push rod 46 is slotted at its upper end to permit a screw-driver adjustment of the vertical positioning of this rod, so as to control the amount of toothpaste dispensed for a given displacement of the operating lever 36. The cap 22 is formed with a hole 47 through which a screw-driver may be inserted to make this adjustment. The flared-out end 52 of tongue 50 is adapted to spread the force of push rod 46 over a relatively wide area of pushbutton 14, and thereby prevent damage to the pushbutton which conventionally is made of soft plastic.

It should particularly be noted that operating lever 36 swings in an arc defining a vertical plane which passes

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through end tip 20 of extension tube 18. Thus, as the lever portion 38 is shifted laterally by the toothbrush 42 away from its normal position, the bristles of the brush move directly beneath the end tip 20 so that the dispensed toothpaste may be applied evenly along the length of the bristles.

Referring now also to FIGURES 5 and 6, it will be seen that the octagonal housing 10 is pivotally pinned at its lower edge 53 to a channel member 54. As shown in FIGURE 2, this channel member 54 is formed at its bottom with a horizontal shelf 55 on which container 12 is seated. This channel member is slidably fastened to a frame plate 56 by means of a back-up plate 58 and bolts 60 which extend through a vertical slot 62 in the frame plate. Frame plate 56 is adapted to be firmly secured to the wall of a bathroom by means of the usual bracket strip 63.

A locking lever 64 is pivoted on the frame plate 56 by a rivet 66, and is movable by a finger tab 68 into and out of a position (shown in FIGURE 5) where its spring-curved end 70 engages the back-up plate 58 to hold channel member 54 in its upper position. By manually operating tab 68, this locking lever may be pivotally shifted to an unlocking position to free the back-up plate 58 for downward movement, and the housing can then be slid down and tilted out to the loading position as shown in FIGURE 7. In this position, an emptied container of toothpaste can be replaced by a fresh container, and the housing again slid up into operative position as shown in FIGURES 1 and 2.

Although a specific preferred embodiment of the invention has been set forth in detail, it is desired to emphasize that this is not intended to be exhaustive or necessarily limitative; on the contrary, the showing herein is for the purpose of illustrating the invention and thus to enable others skilled in the art to adapt the invention in such ways as meet the requirements of particular applications, it being understood that various modifications may be made without departing from the scope of the invention as limited by the prior art.

What is claimed is:

1. Toothpaste dispensing apparatus adapted to be mounted on a wall and to be operated by the movement of a toothbrush in contact therewith, said apparatus comprising, in combination: an hermetically-sealed container having a supply of toothpaste under pressure together with a propellant for expelling the toothpaste, a spout formed of soft material and secured to the top of said container for carrying the flow of toothpaste therefrom, an extension tube fastened to the end of said spout to carry the toothpaste substantially beyond the sides of said container, the open end of said extension being formed downwardly to cause the toothpaste to flow down along the side of said container, a depressable valve-operating button at the top of said container for controlling the flow of toothpaste through said spout and extension tube; a support structure including means engageable with said container to hold said container in operative position for dispensing toothpaste; a movable control element secured to said support structure and located immediately above said valve-operating button, said control element being shiftable vertically to press said valve-operating button down to cause toothpaste to be forced through said spout and extension tube; an operating member positioned alongside said container adjacent the open end of said extension tube and having a portion thereof formed to receive the end of a toothbrush and to be moved thereby; means interconnecting said operating member with said control element, the actuation of said operating member by the toothbrush being effective through said interconnecting means to depress said control element to cause toothpaste to be expelled through the open end of said extension tube; said operating member portion being located beneath the open end of said extension tube and shiftable by the toothbrush to a toothpaste expelling position that is laterally offset

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from the open end of said extension tube, said toothbrush being located directly under said open end when toothpaste is expelled from said extension tube whereby said toothpaste will fall on the bristles of the toothbrush.

2. Apparatus as claimed in claim 1, wherein said extension tube is screwed into said spout.

3. Apparatus as claimed in claim 1, wherein said support structure comprises a housing surrounding the sides of said container; said extension tube having stop means integral therewith and engageable with said housing to hold said container in correct position relative to said housing.

4. Toothpaste dispensing apparatus adapted to be mounted on a wall and to be operated by the movement of a toothbrush brought into contact therewith, said apparatus comprising, in combination: a container having a supply of toothpaste under pressure, an outlet secured to said container and adapted to guide the flow of toothpaste therefrom, depressable valve-operating means at the top of said container for controlling the flow of toothpaste through said outlet; a support structure including means engaged with said container to hold said container in operative position; a movable control element secured to said support structure and including a laterally-extending cam bar supported at one end for movement in a vertical plane immediately above said valve-operating means, a vertical push rod secured to said cam bar and extending down to said valve-operating means, said push rod being shiftable vertically by said cam bar to press said valve-operating means down to cause toothpaste to be expelled through said outlet; adjustment means for shifting said push rod vertically to fix it in proper operating position with respect to said valve-operating means; an operating member positioned adjacent the open end of said outlet and having a portion thereof formed to receive the end of a toothbrush and to be moved thereby; cam means interconnecting said operating member with said cam bar, the actuation of said operating member by the toothbrush being effective to depress said cam bar and said push rod to cause toothpaste to be expelled through said outlet; said operating member portion being located beneath the open end of said outlet and shiftable by the toothbrush to a toothpaste expelling position that is laterally offset from said outlet open end, said toothbrush being located directly under said outlet open end when toothpaste is expelled from said outlet whereby said toothpaste will fall on the bristles of the toothbrush.

5. Toothpaste dispensing apparatus adapted to be mounted on a wall and to be operated by the movement of a toothbrush brought into contact therewith, said apparatus comprising, in combination: a container having a supply of toothpaste under pressure, an outlet secured to said container and adapted to guide the flow of toothpaste therefrom, depressable valve-operating means at the top of said container for controlling the flow of toothpaste through said outlet; a support structure including means engaged with said container to hold said container in operative position; a movable control element secured to said support structure and located immediately above said valve-operating means, said control element being shiftable vertically to press said valve-operating means down to cause toothpaste to be expelled through said outlet; a lever extending down along the side of said container to a level beneath the open end of said outlet and having a portion thereof formed to receive the end of the toothbrush and to be moved thereby; means interconnecting said lever with said control element comprising a cam mechanism operable by rotational movement of said lever to shift said control element downwards against said valve-operating means, the actuation of said lever by the toothbrush being effective thereby to cause toothpaste to be expelled through said outlet; said lever portion being located beneath the open end of said outlet and shiftable by the toothbrush to a toothpaste expelling position that is laterally offset from

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said outlet open end, said toothbrush being located directly under said outlet open end when toothpaste is expelled from said outlet whereby said toothpaste will fall on the bristles of the toothbrush.

6. Toothpaste dispensing apparatus adapted to be mounted on a wall and to be operated by the movement of a toothbrush brought into contact therewith, said apparatus comprising, in combination: a container having a supply of toothpaste under pressure, an outlet secured to said container and adapted to guide the flow of toothpaste therefrom, depressable valve-operating means at the top of said container for controlling the flow of toothpaste through said outlet; a support structure including means engaged with said container to hold said container in operative position; said support structure comprising a housing supporting the sides of said container, a mounting plate for said housing, means for securing said housing to said mounting plate and arranged to permit relative movement therebetween, said housing being movable to a position permitting said container to be removed and replaced by another container; a movable control element secured to said support structure and located immediately above said valve-operating means, said control element being shiftable vertically to press said valve-operating means down to cause toothpaste to be expelled through said outlet; an operating member positioned adjacent the open end of said outlet and having a portion thereof formed to receive the end of a toothbrush and to be moved thereby; means interconnecting said operating member with said control element, the actuation of said operating member by the toothbrush being effective to depress said control element to cause toothpaste to be expelled through said outlet; said operating member portion being located beneath the open end of said outlet and shiftable by the toothbrush to a toothpaste expelling position that is laterally offset from said outlet open end, said toothbrush being located directly under said outlet open end when toothpaste is expelled from said outlet whereby said toothpaste will fall on the bristles of the toothbrush.

7. Toothpaste dispensing apparatus adapted to be mounted on a wall and to be operated by the movement of a toothbrush brought into contact therewith, said apparatus comprising, in combination: a container having a supply of toothpaste under pressure, outlet means secured to said container and adapted to guide the flow of toothpaste therefrom to an outlet opening beyond the side of said container, depressable valve-operating means at the top of said container for controlling the flow of toothpaste through said outlet; a support structure including means engaged with said container to hold said container in operative position; a movable control element secured to

said support structure and engageable with said valve-operating means, said control element being shiftable to move said valve-operating means to cause toothpaste to be expelled through said outlet means; lever means extending down along the side of said container to a level beneath said outlet opening and having a portion thereof formed to receive the end of the toothbrush and to be moved thereby; means interconnecting said lever means with said control element and operable by movement of said lever means to shift said control element and depress said valve-operating means, the actuation of said lever by the toothbrush being effective thereby to cause toothpaste to be expelled through said outlet opening; said lever portion being located beneath said outlet opening and shiftable by the toothbrush to a toothpaste expelling position that is laterally offset from said outlet opening, said toothbrush being located directly under said outlet opening when toothpaste is expelled therefrom whereby said toothpaste will fall on the bristles of the toothbrush.

8. Apparatus as claimed in claim 7, wherein said lever portion is provided with a recess shaped to receive the forward end of the toothbrush body, said recess being sufficiently small to prevent contact between said lever means and the toothbrush bristles when the toothbrush is operatively engaged therewith.

9. Apparatus as claimed in claim 5, wherein said cam mechanism includes means responsive to rotational movement of said lever in either direction away from its normal position.

10. Apparatus as claimed in claim 5, including means to constrain rotational movement of said lever to a vertical plane passing through the open end of said outlet.

11. Apparatus as claimed in claim 6, wherein said securing means comprises a part slidably fastened to said mounting plate to accommodate a vertical motion of said housing.

12. Apparatus as claimed in claim 11, including a manually-operable locking lever having means engageable with said slidable part to lock said housing in its normal position.

13. Apparatus as claimed in claim 6, wherein said housing is pivotally secured at one end thereof, said housing being tiltable out away from said mounting plate to accommodate replacement of the container.

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