

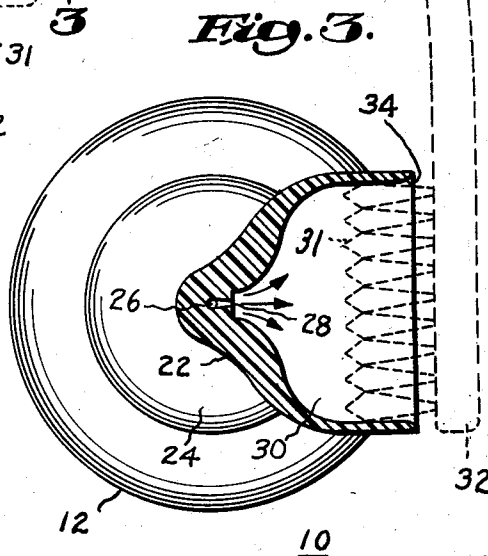
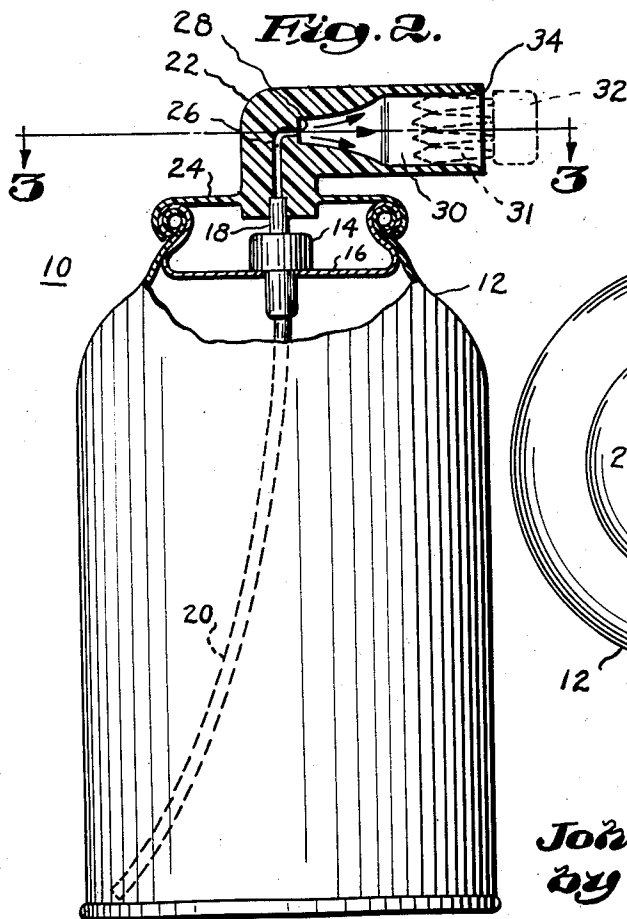
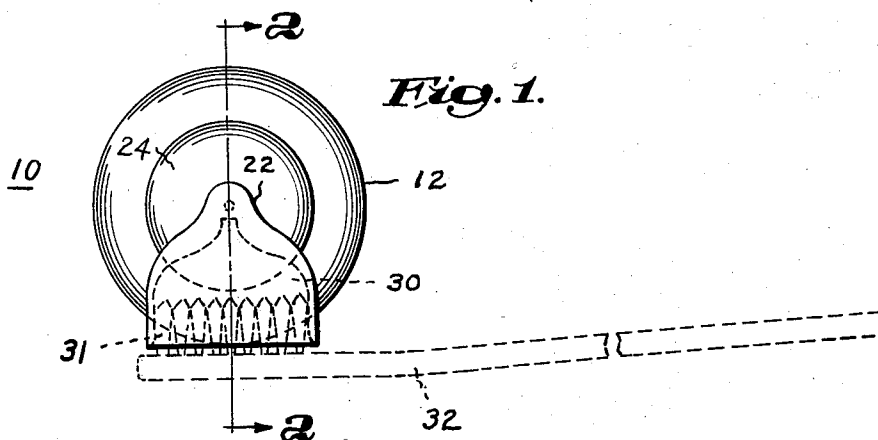
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J. C. ARMSTRONG
TOOTH POWDER CONTAINERS

2,907,358

Filed April 11, 1955

2 Sheets-Sheet 1



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Fig. 4.

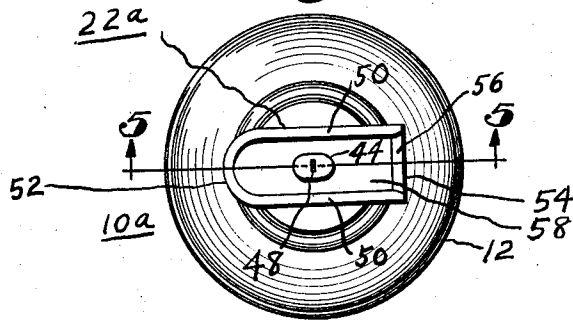


Fig. 5.

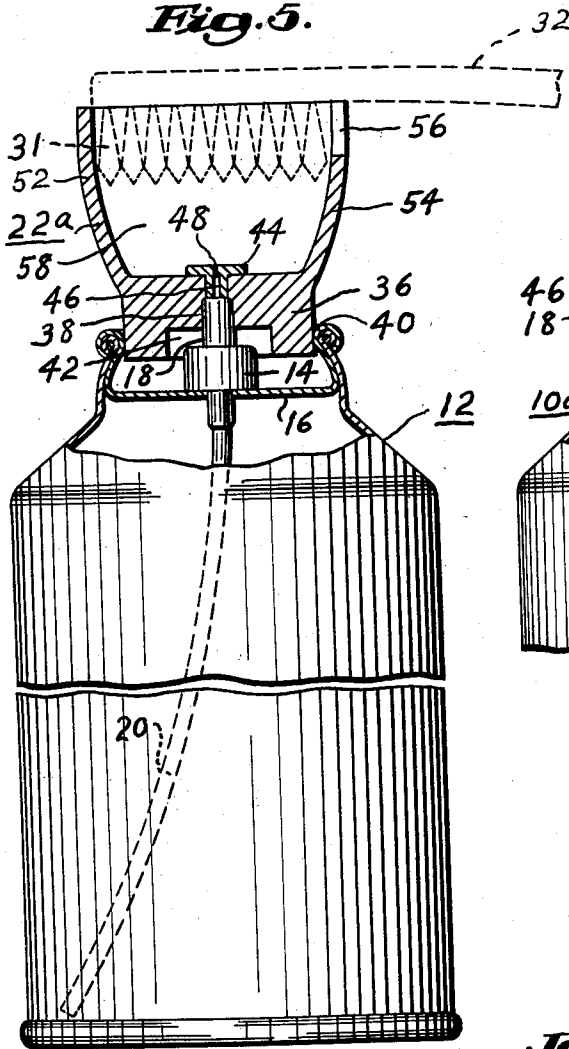
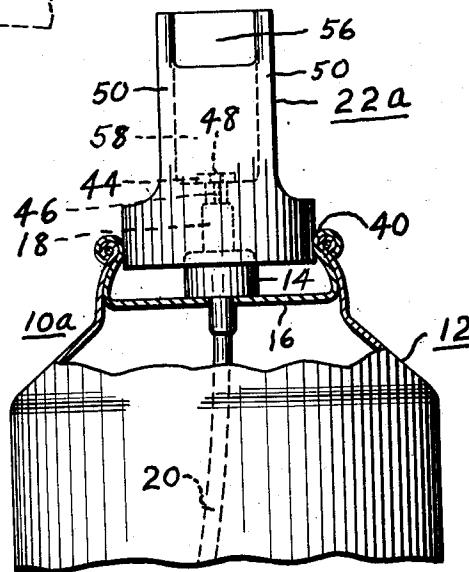


Fig. 6.



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1

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TOOTH POWDER CONTAINERS

John C. Armstrong, Salem, Mass.

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4 Claims. (Cl. 141—360)

This invention relates to tooth powder containers, and more particularly to dispensing heads for use with such containers.

This is a continuation-in-part of my co-pending application Serial No. 452,129, filed August 25, 1954, now abandoned.

Objects of the invention are to provide tooth powder containers of improved character from which tooth powder may be dispensed effectively, efficiently, and economically.

In the practice of this invention there is employed a tooth powder container from which the powder may be expelled by internal pressure. Such container may be of the aerosol type, in which case a valve of conventional construction will be employed. Internal pressure within the container may also be developed from a carbon dioxide pellet. Furthermore, pressure within the container may be developed by using a squeeze bottle of the polyethylene type, in which case it is not necessary to employ a valve.

In carrying out the invention, there is provided a dispensing head by means of which tooth powder may be propelled directly from the container to the bristles of a tooth brush in an economical and efficient manner. The dispensing head has a discharge chamber, the outer portion of which is shaped to receive and enclose the bristles of a tooth brush, and the inner portion of which is provided with a passage from the container body through which tooth powder may be propelled into the chamber.

The invention will be specifically disclosed in connection with a container of the aerosol type.

In the drawings:

Figure 1 is a top plan view of a tooth powder container and dispensing head according to this invention, and showing a tooth brush in cooperative relationship therewith;

Fig. 2 is an elevation, partly in vertical section taken on line 2—2 of Fig. 1, of the tooth powder container and dispensing head shown in Fig. 1;

Fig. 3 is a top plan view of the container assembly showing the dispensing head in horizontal section taken on line 3—3 of Fig. 2;

Fig. 4 is a top plan view of a tooth powder container with a modified form of dispensing head according to this invention;

Fig. 5 is an elevation, partly in vertical section taken on line 5—5 of Fig. 4, and showing a tooth brush in cooperative relationship with the container assembly; and

Fig. 6 is a fragmentary elevation of the container showing the modified form of dispensing head in end view.

Referring to the embodiment of the invention illustrated in Figs. 1, 2 and 3 of the drawings, the tooth powder container 10 embodies a container body 12 of the conventional aerosol type and within which tooth powder is to be contained under pressure. An aerosol valve 14 of conventional type is fixed in the valve cup or container top 16 and is opened by downward movement of the valve stem 18. Tube 20, through which tooth powder is propelled out of the container body, extends

2

downwardly from the hollow valve body 14 toward the bottom of the container.

Dispensing head 22 is shown as seated on valve stem 18, and also on the upper margins of container top 16. The flange 24 may be of sufficiently flexible plastic material to permit limited downward movement of the dispensing head to actuate the valve stem 18 and open valve 14.

The central portion of the dispensing head is provided with a passage 26 which communicates with the interior of container body 12 through valve 14. At the outer or upper end of passage 26 is the orifice 28 which communicates with the discharge chamber 30. The outer portion of chamber 30 is shaped to receive and enclose the bristles 31 of tooth brush 32. Chamber 30 tapers outwardly from its inner portion adjacent to orifice 28 toward the outer portion thereof. The outer marginal portions 34 of the dispensing head at the outer portions of chamber 30 are beveled outwardly sufficiently to admit the bristles of the tooth brush 32 easily and without bending.

In use, the tooth brush 32 is positioned with the bristles extending into the outer portion of chamber 30. The central portion of dispensing head 22 is then depressed to open valve 14 and cause tooth powder to be propelled through orifice 28 into chamber 30 and onto the bristles 31. Within the chamber 30, the tooth powder is propelled or directed onto the bristles 31 in effective manner without leakage from the dispensing head. The application of the tooth powder to the bristles is in measured and controlled amount.

It should be noted that the dispensing head encloses the tooth brush bristles reasonably snugly, and that the orifice 28 is relatively small as compared to the top receiving surface of the bristles. In actual measurement, the diameter of orifice 28 may be in the neighborhood of $\frac{1}{32}$ inch. Furthermore the orifice 28, while spaced from, is relatively close to the receiving surface of the bristles. It is of course the internal pressure from the container 10 which forces the tooth powder through orifice 28 against the bristles 31, and since the tooth powder is blown onto the bristles only when the valve 14 is open, the application of powder in excess quantity is avoided.

It will be understood that the dispensing head 22 need not enclose the bristles of a tooth brush with great accuracy. This is because the spray pattern of the tooth powder is relatively small near orifice 28, so that with the orifice 28 centered with respect to the bristles, the tooth powder is satisfactorily deposited on the bristles without leakage of the powder from the dispensing head.

As the pattern or cross-section of the spray in the chamber 30 increases progressively from the orifice 28 to the powder-receiving surfaces of the bristles, the velocity of the propellant and tooth powder are progressively reduced, so that the tooth powder deposits readily on the bristles and is not driven beyond the bristles or out of the chamber to any consequential extent.

In Figs. 1, 2 and 3 of the drawings, the portion of the dispensing head enclosing the chamber 30 is shown as extending laterally from the container body 12, but it will be understood that the dispensing head 22 may extend outwardly in any direction from the container body.

In Figs. 4, 5 and 6 is shown a modification of the invention wherein a tooth brush may be inserted endwise into the dispensing head and wherein the spray is of approximately the generally rectangular cross-sectional shape and area of the bristles at the receiving surface of the bristles.

In Figs. 4, 5 and 6, the tooth powder container as a

whole is designated at 10a. Since the container body is the same as that shown in Figs. 1, 2 and 3, said container body and its component parts are designated by the same numerals, namely, container body 12, aerosol valve 14, valve cup or container top 16, valve stem 18, and tube 20.

Dispensing head 22a extends upwardly from the container body, and is seated on valve stem 18, the cylindrical base 36 being secured to valve stem 18 by press fit at the lower portion of central aperture 38. The outer periphery of base 36 has a running fit within the inner diametrical surfaces of the crimped edges 40 of the valve cup or container top 16. Base 36 is recessed at 42 to preclude contact of the base with valve 14 below stem 18.

Nozzle piece 44 as shown is disposed with press fit in base 36 at the upper portion of aperture 38. Nozzle piece 44 is centrally apertured, with a passage 46 of circular cross-section communicating with an orifice 48 of rectangular cross-section with dimensions, for example, of approximately $\frac{1}{16}$ inch by $\frac{1}{4}$ inch.

Side walls 50, and end walls 52 and 54, extend upwardly from base 36. Side walls 50 are substantially parallel, and end walls 52 and 54 flare outwardly and upwardly. End wall 52 is shown as somewhat rounded. End wall 54 stops short of the upper edges of the adjacent walls to provide end passage 56. Chamber 58 is defined by base 36 and walls 50, 52 and 54. The upper or outer portion of chamber 58 is shaped to receive and enclose the bristles of a tooth brush, and the upper edges of walls 50, 52 and 54 are arranged to permit seating thereon by peripheral portions of a tooth brush handle or back adjacent to the bristles.

The dimensions of orifice 48, the height of chamber 58, and the cross-sectional area of the chamber at the outer or upper end thereof are desirably proportioned that the spray emanating from the orifice will have a cross-section conforming closely to that of the chamber when said spray reaches the upper or outer end of the chamber.

It will be noted that rectangular orifice 48 has its longer dimension at right angles to the longer dimension of rectangular chamber 58. When a propellant of the aerosol type, for example, a fluorinated methane or ethane, is employed at conventional pressures, for example, 34 p.s.i. gauge, the spray emanating from rectangular orifice 48 is turned through an angle of 90 degrees to exhibit a rectangular pattern with the longer dimension conforming to the longer horizontal dimension of chamber 58.

In use, a tooth brush 32 is inserted endwise through passage 56 with bristles 31 extending downwardly into chamber 58 and the marginal portions of the brush handle adjacent to the bristles seated on the upper edges of walls 50 and 52. By pressing down on the brush, the dispensing head 22a is depressed, opening valve 14 and causing tooth powder to be propelled through orifice 48 into chamber 58 and onto bristles 31.

In carrying out the invention with aerosol devices as illustrated in the drawings, the tooth powder is deposited on the bristles in the form of a caky, adherent deposit, and this result is independent of any previous moistening of the bristles.

It will be understood that if the aerosol containers as illustrated in the drawings are to be used in inverted position, the tube 20 preferably will be omitted. The practice of the invention, of course, is not limited to any particular position of the container.

As has previously been pointed out, the invention is applicable to containers of the squeeze-bottle type, wherein pressure for propelling the tooth powder is developed by squeezing the bottle, as well as to pressure containers of the aerosol or carbon dioxide pellet types.

In the practice of the invention, the containers and dispensing heads may be made of any suitable material known in the art. Conveniently, however, the dispensing

head may be made of commercial molded plastic material.

It will be seen that there is provided by this invention an advantageous construction for the effective and economical application of tooth powder from a container directly to a tooth brush.

It will be understood that various changes may be made without departing from the invention as herein disclosed.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A dispensing tooth powder container comprising, in combination, a pressurized container body and a dispensing head carried by said container body, said dispensing head having a discharge chamber the outer portion of which is substantially rectangularly shaped to receive and enclose reasonably snugly the bristles of a tooth brush in spaced relation to the inner portion of said chamber, said container being provided with a passage from the interior of the container body to the inner portion of said chamber through an orifice, and valve means actuated by said dispensing head for spraying tooth powder from said container body through said orifice and applying said tooth powder simultaneously to the entire bristle area of said brush.

2. A dispensing tooth powder container comprising, in combination, a container body and a dispensing head secured to said container body, said dispensing head having a discharge chamber the outer portion of which is substantially rectangularly shaped to receive and enclose reasonably snugly the bristles of a tooth brush in spaced relation to the inner portion of said chamber, said container being provided with a passage from the interior of the container body to the inner portion of said chamber through an orifice dimensioned to spray tooth powder simultaneously over the entire bristle area of said brush, an aerosol valve in said passage, and means forming part of said dispensing head for actuating said valve.

3. A dispensing tooth powder container comprising, in combination, a container body and a dispensing head extending upwardly from said container body, said dispensing head having a discharge chamber the upper portion of which is substantially rectangularly shaped to receive the bristles of a tooth brush by endwise introduction of the tooth brush and reasonably snugly to enclose said bristles in spaced relation to the inner portion of said chamber, said container being provided with a passage from the interior of the container body to the inner portion of said chamber through an orifice dimensioned to spray tooth powder simultaneously over the entire bristle area of said brush, an aerosol valve in said passage, said valve being actuable by downward movement of said dispensing head.

4. A dispensing tooth powder container comprising, in combination, a container body and a dispensing head secured to said container body, said dispensing head having a discharge chamber the outer portion of which is rectangularly shaped to receive and enclose reasonably snugly the bristles of a tooth brush in spaced relation to the inner portion of said chamber, said container being provided with a passage from the interior of the container body to the inner portion of said chamber through an orifice, said orifice being shaped to provide a spray of generally rectangular shape conforming approximately to the rectangular shape of the outer portion of said discharge chamber, an aerosol valve in said passage, and means forming part of said dispensing head for actuating said valve.

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