Feb. 8, 1949. J. M. GUTHRIE 2,461,211

DISPENSING CONTAINER

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Fig. IV.

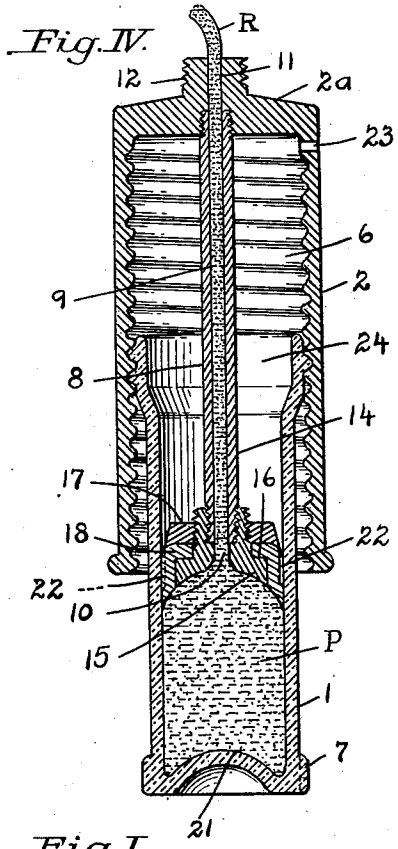


Fig. III.

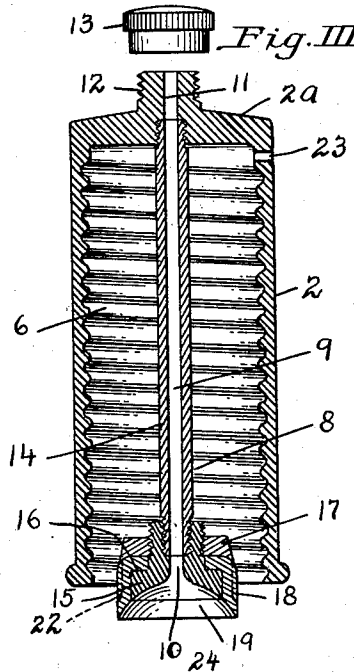


Fig. II.

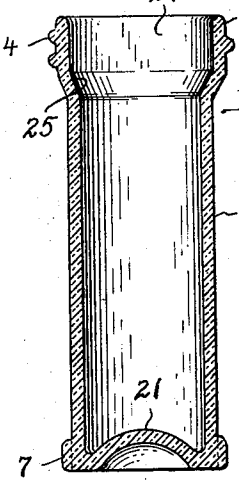
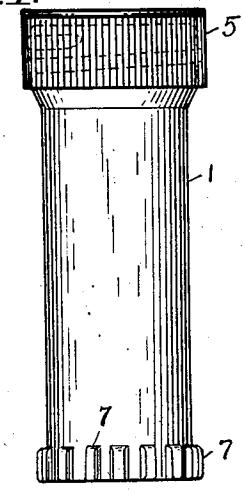


Fig. I.



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Fig. V.

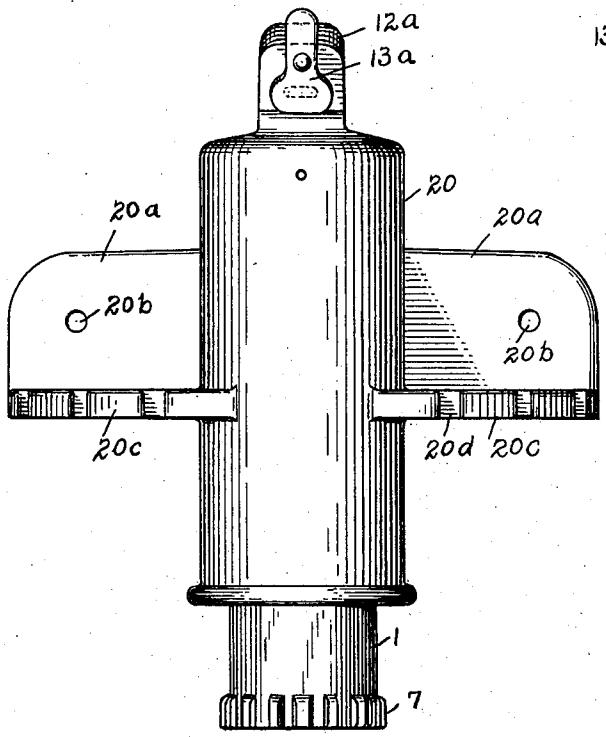


Fig. VI.

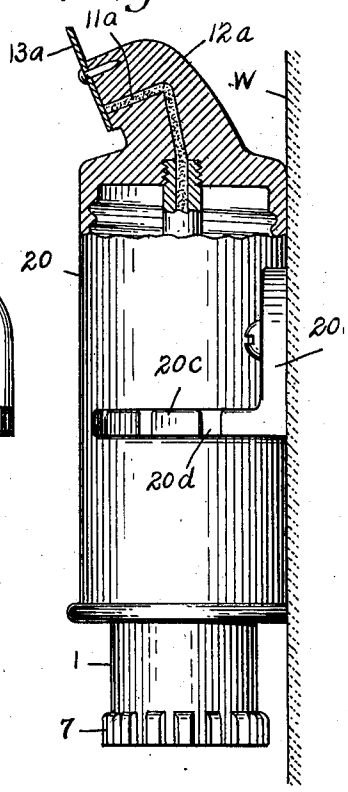
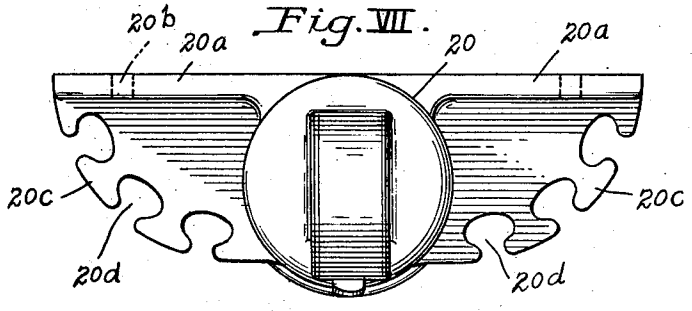


Fig. VII.



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Fig. VIII.

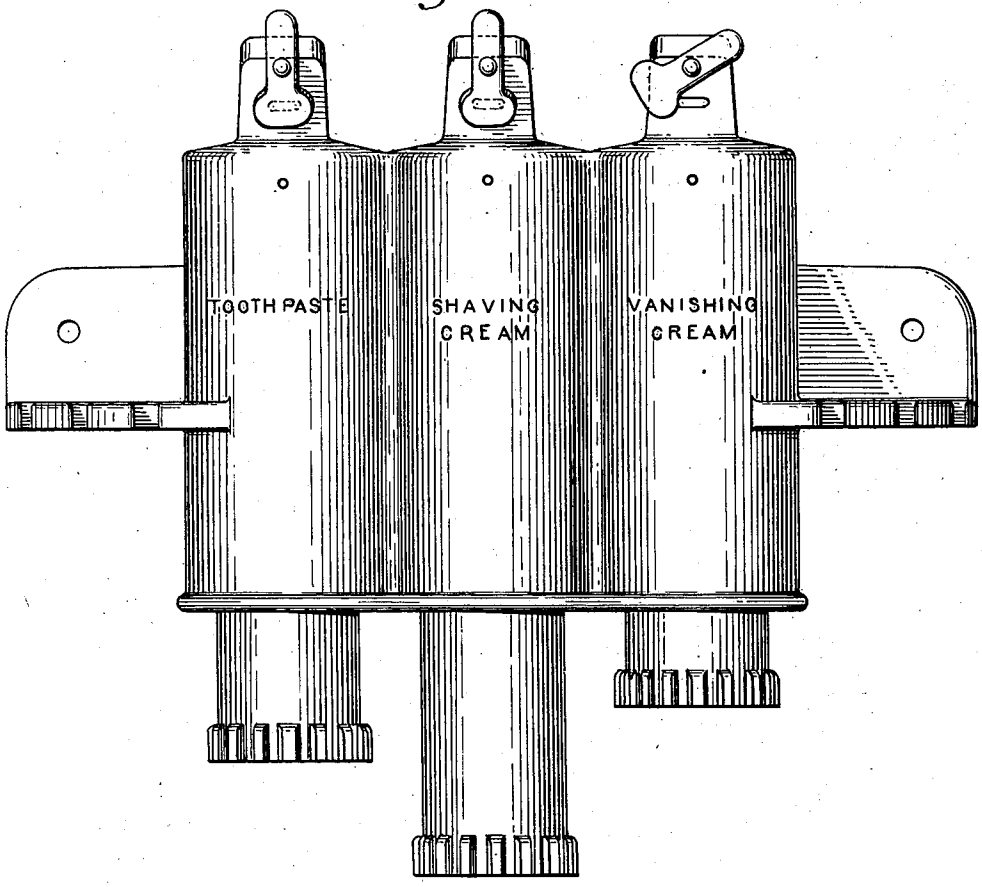
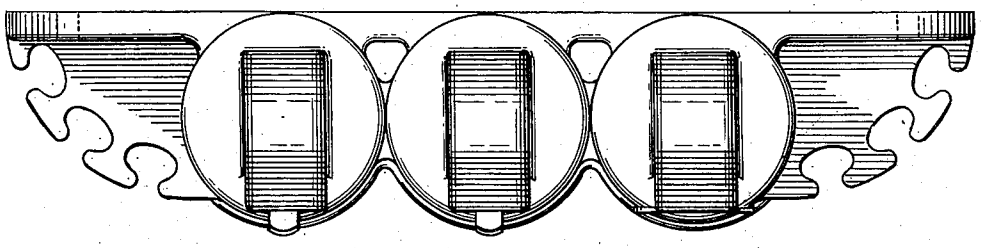


Fig. IX.



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UNITED STATES PATENT OFFICE

2,461,211

DISPENSING CONTAINER

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Application July 13, 1943, Serial No. 494,508

3 Claims. (Cl. 222—390)

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The invention relates to dispensing containers for fluid material, particularly pastes or creams, such as tooth paste, vanishing cream, shaving cream, and the like, and consists in a jar or bottle and means cooperating therewith to dispense in desired quantity the material contained therein.

In recent years there has been a great deal of effort expended, especially in the glass industry, to devise a glass container that is commercially practical for tooth paste. Of course, there is no difficulty in providing a jar or bottle that may be readily filled, closed and packaged for the distribution and sale of tooth paste, but so far as I am aware, completely satisfactory means for dispensing the tooth paste from such a container have not been devised.

An exemplary embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. I is a view in side elevation of the jar or bottle element of the invention;

Fig. II is a view in axial section of the jar or bottle element, with the closure removed and the jar or bottle element ready for assembly with the dispensing element;

Fig. III is a view in axial section of the dispensing element;

Fig. IV is a view in axial section of the jar and dispensing elements assembled;

Fig. V is a view in front elevation of a dispensing element of elaborated and preferred form, the jar element appearing in side elevation in assembly therewith;

Fig. VI is a view of the structure of Fig. V, partly in side elevation and partly in medial, vertical section;

Fig. VII is a view in top plan of the same;

Fig. VIII is a view comparable with Fig. V, illustrating a still more elaborated form of the dispensing element;

And Fig. IX is a view in top plan of the structure of Fig. VIII.

Referring to Figs. I–IV of the drawings, the dispensing container of the invention comprises a jar or bottle element 1 and a dispensing element 2. The jar or bottle may be formed of glass in known types of automatic glass blowing or molding machinery, or it may be formed of ceramic material, or plastic, or other sorts of material that may be readily fashioned into the form of the jar. A feature of the dispensing container of this invention lies in the fact that the jar 1 is adapted to serve both as a container in which tooth paste, or other fluid or semi-fluid material, may be distributed and sold to the

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public, and as an essential self-sustaining element of the dispensing apparatus in the hands of the purchaser. When the contents of the jar element 1 have been used, the jar is removed from the dispensing element 2 and discarded, and a new, full jar is substituted. As in the case of many other materials sold in bottles, the jar 1 is provided on its neck 3 with a screw thread 4 that receives a screw cap 5 of any suitable form, to close and seal the contents within the jar, and, when the consumer desires to use the contents of the jar, he removes the cap 5 and discards it, and assembles the uncovered jar with the dispensing element 2.

The dispensing element 2 may be cast of metal and provided with a bright chromium or nickel finish, or it may be formed of plastic of desired color or color combination. The body of element 2 is in this case of cylindrical external contour. The body includes a bore 6 whose wall is formed with, or lined with, a member including a screw thread whose convolutions are of proper form and material to receive the screw 4 on the neck of the jar 1 of glass or other suitable material, whereby the jar, with cap removed, may be screwed, open end first, into the bore 6. The jar is provided at or adjacent to its base with means providing a grip, to prevent the jar under manually applied rotative stress, from slipping in the hand. Such grip is provided, advantageously, by suitably forming the external surface of the jar—here a band of protuberances 7 is integrally formed on the body of the jar.

Extending axially of the bore 6 in the dispensing element 2 is a plunger 8 that enters the jar 1 as the jar is screwed into the dispensing element. The plunger includes a passage 9 having an inlet 10 that opens through the head end of the plunger, and an outlet 11 that opens through the body of the dispensing element, in this case through a threaded teat 12 formed integrally with the otherwise closed end 2a of the dispensing element. When the jar 1 is screwed into the dispensing element, the plunger displaces the fluid material in the jar and forces it through passage 9 to outlet 11, whence it emerges in the form of a column or ribbon R. Needless to say, by controlling the extent of the turning of the jar 1, the quantity of material ejected from the outlet 11 may be nicely controlled, and thus the desired amount of tooth paste, say, may be ejected upon the bristles of a tooth brush. When the dispensing device is not in use, the outlet 11 is protected by means of a screw cap 13.

The particular form of the plunger 8 is important from the standpoints of both economy and

utility. The body of the plunger comprises a simple length of tubing 14 of metal, plastic, or other suitable material, threaded and secured at one end in the head end 2a of the dispensing element 2, and threaded at opposite end to the head 15 of the plunger. The bore of the tubing 14 forms the passage 9, already mentioned, that communicates at its opposite ends with inlet 10 and outlet 11 formed in the head and teat portions 15 and 12, respectively. The plunger head is provided with a shoulder 16 between which and a nut 17 a piston cup 18 of rubber composition, or other suitable flexible material, is clamped. The skirt portion of the flexible piston cup extends over the periphery of the head 15 and engages the cylindrical wall of the jar 1. The peripheral edge of the piston cup 18 is internally chamfered in such manner that the pressure of the tooth paste P against the head end of the plunger (which pressure is produced when the jar 1 is being rotated with paste-dispensing effect) operates to spread the skirt of the piston cup tightly against the internal surface of the jar 1, and prevents leakage of paste around the plunger head.

The head end of the plunger is provided with a concave recess 19 (Fig. III), and the bottom of the jar 1 is complementarily formed, as indicated at 21, whereby, when the jar 1 is screwed into the position where the head of the plunger engages the bottom of the jar, the engagement is a snug surface-to-surface engagement, effecting the complete displacement of all tooth paste from the jar. When, in the daily use of the dispensing device, the contents of the jar 1 have been consumed, the cap 13 is screwed tightly upon the outlet 12, and the jar is unscrewed from the bore 6 of the dispensing element, and a new (full) jar substituted. The tooth paste remaining within the body of the plunger when the empty jar is removed will, of course, become in effect a part of the charge of the new jar that is substituted.

In order that a vacuum will not be created within the empty jar 1 when it is removed from the dispensing element 2, the outer surface of the flexible piston cup 18 is provided with a peripheral series of grooves 22, and these grooves serve to permit an infiltration of air into the space within the jar between the plunger head and the bottom of the jar. This infiltration of air breaks any vacuum tending to form in the jar, and thus facilitates the removal of the empty jar, and nullifies the tendency for the paste remaining in the plunger to be sucked out. Additionally, a vent 23 is provided at the top of the bore 6 in the dispensing element, to eliminate objectionable pneumatic conditions as the jar 1 is screwed into or out of the bore.

The wall of the jar 1, elsewhere of substantially uniform cross section, is widened at the threaded neck 3; the so widened mouth 24 of the jar is valuable, in that all difficulty in entering the plunger head into the jar is eliminated—it being merely necessary to press the open end of the jar into the open end of the bore 6 and screw it in. A tapered annular surface 25 between the mouth and the bore of the jar guides and compresses the periphery of the piston cup 18 into position of desired snug contact with the surface of the paste-containing bore or well of the jar.

Figs. V–VII illustrate an elaboration in the form of the dispensing element with which the paste-containing jar 1 cooperates. More particularly, the body of the dispensing element 20 is provided with two laterally extending wings or support portions 20a, perforated at 2b, by means of which the device may be rigidly secured to the wall W, or to a wall trim, of a bathroom or the like. From the wings 20a horizontal flange members or support portions 20c extend and provide reinforcement for the structure against the strain occasioned by rotation of the container or jar 1. The exposed edge of each of the flanges 20c may be notched, as at 20d, thus constituting a rack for the support of tooth brushes. Other than as described, the structure of Figs. V–VII may be substantially the same as that of Figs. I–IV, save that the outlet 11a through which the tooth paste or other contents of the jar is discharged is formed in a goose-neck portion 12a on the top of the body of the dispensing element. The mouth of the outlet is screened by means of a small pivotally mounted gate 13a that is swung aside when the dispensing of tooth paste is to be effected. The downward tilt of the discharge outlet of the device enables the user to hold his tooth brush in one hand, with the head of the brush in position below the outlet, while with his other hand he turns the jar 1 to the extent necessary to eject the desired quantity of paste upon the brush head.

In Figs. VIII and IX, a still further modification is illustrated. The dispensing device may embody a plurality of dispensing units, and herein three are shown. One unit may be used for tooth paste, a second for shaving cream, and a third for vanishing cream, etc. These different pastes and creams, common in the bathroom of today, will be supplied to the public in jars 1, and the jars may be selectively assembled in the units of the dispensing device, in accordance with the legends indicated in Fig. VIII. It will be noted that the jars 1 comprise commercial containers; that is, the containers in which the pastes, creams, or other products are packaged for sale.

While the dispensing devices are herein shown with their discharge outlets at the top, it will be readily understood that they may be arranged in inverted position, so that the tooth paste, or other material, shall be discharged downward. It will be further understood that within the scope of the appended claims many other variations and modifications are permissible.

I claim as my invention:

1. In a dispensing device including a body having a bore, a plunger extending axially of said bore, a head on said plunger, a passage extending from an inlet in said head and through said plunger to an outlet opening externally of said body, said bore being adapted to receive a container having a bore containing semi-solid material, with the plunger entered in the bore of the container and the plunger head engaging the wall of the container, whereby the advance of the container into the bore of the dispensing device displaces said semi-solid material in the bore of said container and forces it outward through said plunger, and means for breaking the vacuum between the plunger and the closed end of the jar when said plunger, by the removal of the container from the dispensing device, is withdrawn from said bore of said container and thereby inhibiting the sucking back of said material through said passage.

2. The structure of the next preceding claim,

said plunger head being concave, and said means comprising vacuum-breaking vents formed in the periphery of said plunger head.

3. In a dispensing device including a body having a bore, a plunger extending axially of said bore, a head on said plunger, a passage extending from an inlet in said head and through said plunger to an outlet opening externally of said body, said bore being adapted to receive a container having a bore containing semi-solid material, with the plunger entered in the bore of the container and the plunger head engaging the wall of the container, whereby the advance of the container into the bore of the dispensing device displaces said semi-solid material in the bore of said container and forces it outward through said plunger, and means for inhibiting the sucking back of said material through said passage when the container is withdrawn from the bore of said device, said last means comprising vacuum-breaking vents formed in the periphery of said plunger head.

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