

Aug. 9, 1960

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2,948,308

DISPENSING OF PRESSURIZED MATERIAL

Filed Aug. 25, 1958

2 Sheets-Sheet 1

FIG. 1.

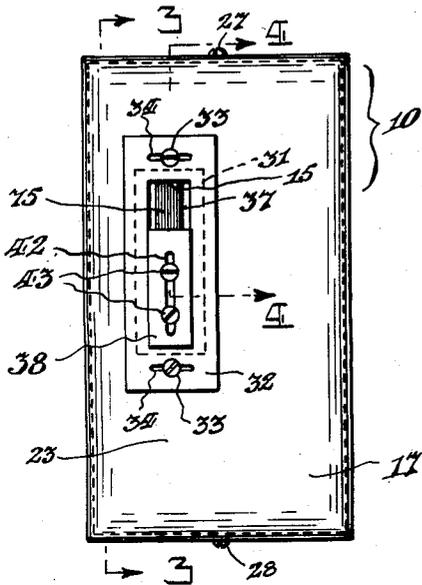


FIG. 2.

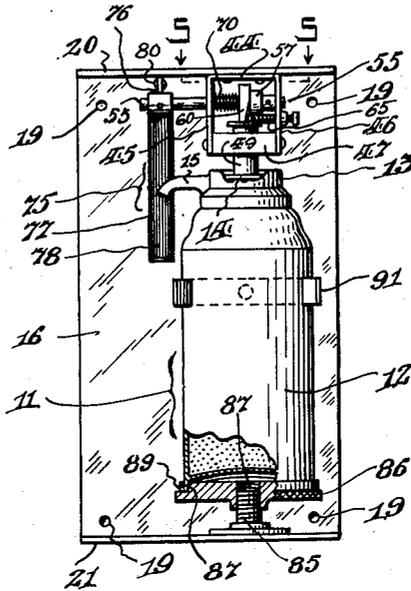


FIG. 3.

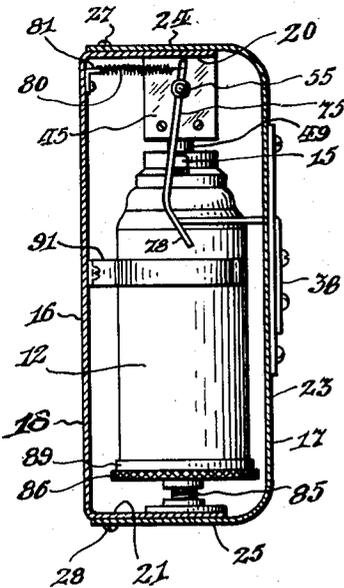
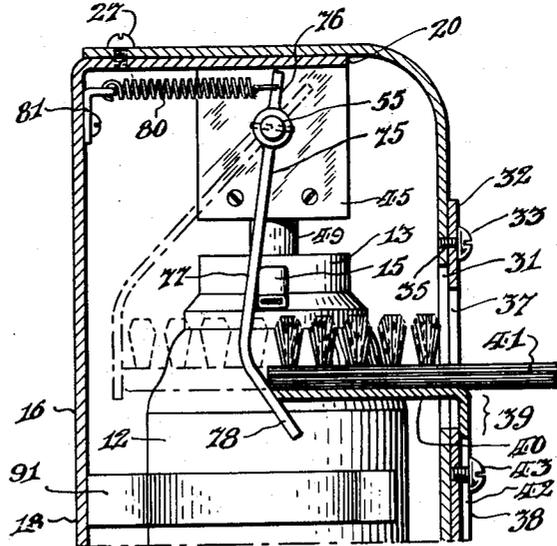


FIG. 4.



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FIG. 5.

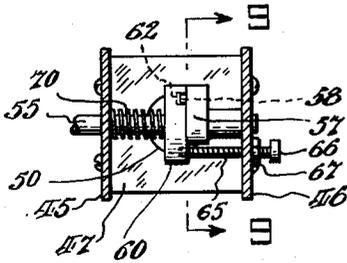


FIG. 7.

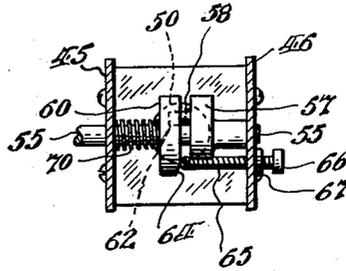


FIG. 6.

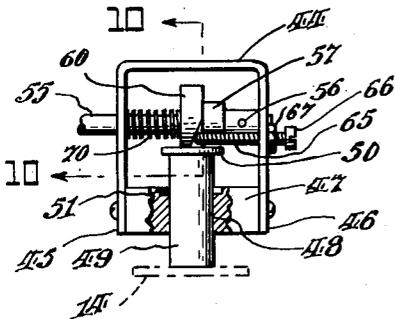


FIG. 8.

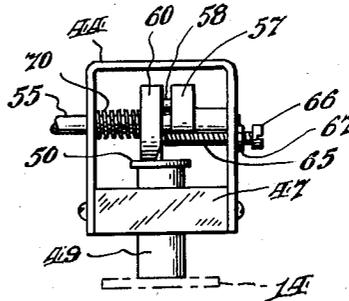


FIG. 10

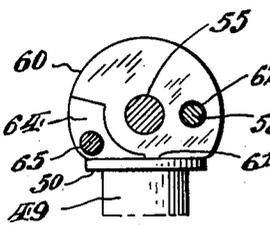


FIG. 11.

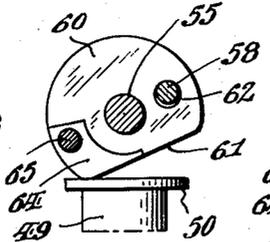


FIG. 12.

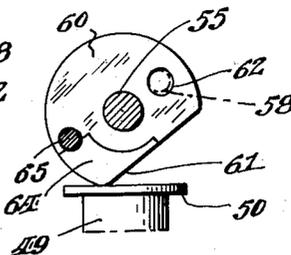
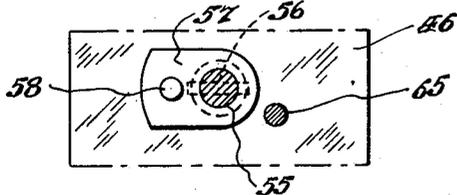


FIG. 9.



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2,948,308

DISPENSING OF PRESSURIZED MATERIAL

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4 Claims. (Cl. 141—362)

This invention relates to dispensing devices and more specifically to improvements particularly applicable to the type of dispensing devices adapted to control the discharge of paste materials in predetermined amounts from containers, such as aerosol bombs and the like.

With the advent of the packaging of paste materials, such as toothpaste and the like in containers of the nature of aerosol bombs, wherein the paste material is held under pressure and released by the action of a spring-controlled or similar valved nozzle, an outstanding disadvantage arose in that children and others were able to actuate the devices at inopportune times and spread the contents of the containers over objects not intended to be covered thereby.

In order to prevent such undesirable acts, and also in order to provide a safe and fixed place in which the containers for the paste material could be kept, various receptacles have been provided for such containers, and such receptacles are usually constructed with means by which the contents of the containers can be dispensed therefrom.

Many of the conventional types of dispensing devices for paste materials have been objectionable in that the quantity of the material discharged during operation of the devices could not be definitely controlled. While attempts have been made to overcome these disadvantages, these attempts have not generally met with success and in most instances have resulted in very complicated and expensive constructions.

One object of my invention is to provide a novel dispensing device of the type indicated which has certain structural and functional features of advantages over similar dispensing devices of the prior art.

Another object of the invention is to provide such a dispensing device having novel means for actuating the conventional spring-controlled valved nozzle of a container, by which the discharge of the paste material under pressure from the container is positively controlled.

A further object of the invention is to provide an improved wall receptacle for dispensing devices of the above type, which may be secured in a desired place, the receptacle being so constructed that a container of the class described will be securely held therein against accidental displacement and be inaccessible to mischievous children.

A still further object of the invention is to provide an improved dispensing device of the above type, in which the spring-controlled valved nozzle of the paste container is adapted to be actuated by means operable when a toothbrush is inserted into the device and rendered inoperable when the toothbrush is withdrawn from the device.

Still another object of the invention is to provide an improved device of the above type having a more positive controlled action for dispensing paste material over similar devices of the prior art.

An additional object of the invention is to provide a dispensing device of an improved construction which

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can be inexpensively constructed with readily produced standard parts simply and economically assembled.

With these and other objects in view, which will become readily apparent from the following detailed description of the various unique, practical and illustrative improvements shown in the accompanying drawings, the present invention comprises the novel elements, features of construction and arrangement of parts in cooperative relationship, as more particularly indicated and defined by the hereto appended claims.

In the accompanying drawings:

Figure 1 is a front elevation of a dispensing device constructed in accordance with a preferred embodiment of the present invention, showing the removable front cover in place;

Fig. 2 is a view similar to Fig. 1, with the front cover removed and parts broken away and in section;

Fig. 3 is a vertical transverse section taken along the line 3—3 of Fig. 1;

Fig. 4 is an enlarged vertical transverse section taken along the line 4—4 of Fig. 1;

Fig. 5 is a detail horizontal section taken along the line 5—5 of Fig. 2, the means for actuating the valve plunger being shown in inoperative position;

Fig. 6 is a detail front elevation, partly in section, of the structure shown in Fig. 5;

Fig. 7 is a detail horizontal section similar to Fig. 5, showing the means for actuating the valve plunger in an operative position;

Fig. 8 is a detail front elevation of the structure shown in Fig. 7;

Fig. 9 is a detail vertical section taken along the line 9—9 of Fig. 5;

Fig. 10 is a vertical section taken along the line 10—10 of Fig. 6, showing the means for actuating the valve plunger in inoperative position; and

Figs. 11 and 12 are detail vertical sections similar to Fig. 10 illustrating the valve plunger actuating means in different operative positions.

Having reference now to the drawings in detail, there is generally indicated at 10, the improved dispensing device of the present invention which is adapted for dispensing the contents of a container 11 in predetermined amounts in the manner to be hereinafter more fully described.

The container 11 is of the nature of an aerosol bomb and is charged with a paste material, such as a dentifrice or the like having a creamy or semisolid consistency and commonly known as toothpaste and dental cream.

The container 11 is in the form of a can having a main cylindrical body portion 12 and a neck portion 13 at the upper end of said body provided with a substantially flat flexible top wall 14, Fig. 2.

Projecting laterally from the neck portion 13 of the container 11 is the usual spout or nozzle 15 having a downwardly extending mouth arranged to discharge paste material from the container in a downward direction at a suitable distance outwardly from the exterior of the container, the discharge of the paste material under pressure through the spout or nozzle 15 being under the control of a spring-controlled valve not shown, which is arranged within the container to be actuated when the top wall 14 is flexed downwardly in the usual manner.

The improved dispensing device 10 comprises a receptacle or casing composed of a back member 16 and a front member 17, both of said members being adapted preferably to be formed of suitable sheet material.

The back member 16 of the receptacle comprises a substantially rectangular rear wall 18 having holes 19 formed therein for the reception of screws or other suitable fastening elements (not shown), by means of which the receptacle may be fixedly mounted in a substantially

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vertical position on the wall of a room or other structure. Also forming part of the back member 16 and preferably constructed as an integral part of the rear wall 18, are upper and lower flange plates 20 and 21, which project forwardly from said rear wall a suitable distance and have a width substantially equal to the width of the rear wall 18.

The front member 17 comprises a housing including a front wall 23, a top wall 24, a bottom wall 25, and side walls 26, all of which walls are preferably formed as an integral part of a single sheet metal stamping having a size adapted to be mounted on the back member 16 with the top and bottom walls 24 and 25, respectively, enclosing the upper and lower flange plates 20 and 21, and tightly or frictionally engaged therewith. The front member 17 may be detachably secured to the rear member 16 by means of screws 27 and 28, or other suitable securing elements, which are mounted in the parts 20, 24 and 21, 25, respectively, as shown in Figs. 3 and 4.

The front wall 23 of the member 17 is formed with an elongated opening 31 of predetermined area. Mounted on the exterior of the front wall 23 is a plate 32 which constitutes a cover for the opening 31. The cover plate 32 is detachably held in position by means of screws 33 or other suitable securing elements, each of which screws extending through a slot 34 formed horizontally in said cover plate and being mounted in a screw threaded hole 35 formed in the front wall 23. The construction and arrangement of the parts is such that the relative position of the cover plate 32 with respect to the front member 17 can be shifted laterally either in a right hand direction or in a left hand direction from the position illustrated in Fig. 1.

The cover plate 32 is also formed with an elongated opening 37 of a predetermined area, the area of said opening 37 being less than the area of the opening 31. The opening 37 is arranged to overlie the opening 31 in the manner shown in Figs. 1 and 4.

Mounted on the exterior of the cover plate 32 is the vertical leg 38 of an L-shaped bracket 39, said bracket having its other or horizontal leg 40 extending through the openings 37, 31 into the interior of the casing of the device and terminating a suitable distance inwardly from the front wall 23 thereof in the manner shown in Fig. 4.

The horizontal leg 40 of the bracket 39 provides a rest or support for an article, such as a toothbrush 41 or the like which is adapted to be inserted through the openings 37, 31 to receive a supply of the paste material from the container 11.

The vertical leg 38 of the bracket 39 is formed with a vertical slot 42. A pair of screws 43 having their shanks extending through the slot 42, are mounted in spaced apart relationship on the cover plate 32, so that the relative position of the horizontal leg 40 can be vertically adjusted with respect to the openings 37, 31 whereby the toothbrush 41 may be disposed in the desired position beneath the mouth of the discharge nozzle 15.

Fastened to the underside of the upper flange plate 20, is a bracket 44 in the form of an inverted U-shaped member. The bracket 44 has a pair of depending legs 45 and 46 suitably spaced apart and connected at their lower ends by means of a block 47. The block 47 has a vertical opening 48 formed therein for the reception of a plunger 49. The plunger 49 is freely slidable in the opening 48 for vertical rectilinear movements, and is provided at its upper end portion with an outwardly extending flange 50 which is arranged to seat in a recess 51 formed in the upper portion of the block 47 around the opening 48 in order to limit the downward sliding movement of the plunger 49 with respect to said block.

When the dentifrice container 11 is operatively positioned within the dispenser 10, in the manner shown in Figs. 2 and 4, the lower end of the plunger 49 rests upon the top wall 14 of said container, and in this position the

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plunger flange 50 is disposed in spaced relation a suitable distance above the top of the block 47.

At a suitable distance above the top of the block 47, the legs 45 and 46 of the bracket 44 are formed with aligned openings in which is rotatably mounted a shaft 55 which, as shown in Fig. 2, has a portion located between the spaced legs of the bracket and a second portion extending outwardly a suitable distance from the leg 45 at one side of said bracket.

Fixedly mounted on the shaft 55 by means of a pin 56, is a disk 57, which is arranged in the manner shown best in Fig. 6 between the legs 45 and 46 of the bracket 44.

Projecting outwardly from one face of the disk 57 is a stud 58.

Also mounted on the shaft 55 in side by side relationship with respect to the disk 57, is a second disk 60.

The disk 60 is formed with a peripheral cam surface 61 arranged to engage the top of the plunger 49 during operation of the device in order to impart movement of said plunger in a downward direction.

The disk 60 is provided with an opening 62 arranged to receive the stud 58 during operation of the device whereby the two disks 57 and 60 are interlocked together for a predetermined period in the manner to be herein- after more fully described.

A side portion 63 of the disk 60 is formed with a second cam surface 64 which is arranged to engage the extremity of a stud 65. The construction of the disk 60 is such that said disk provides a compound cam as constituted by the surfaces 61 and 64 thereof.

Preferably the stud 65 is adjustably mounted in the leg 46 of the bracket 44, and for this purpose said stud may be in the form of a bolt having an elongated screw threaded shank mounted in a screw threaded opening formed in the leg 46. The outer end of the stud 65 is formed with a head 66 adapted to be engaged by a suitable tool by which the stud can be turned to bring the extremity thereof into the desired position with respect to the cam surface 64 of the disk 60. The stud 65 may be retained in adjusted position by means of a lock nut 67 mounted on the threaded shank thereof between the head 66 and the leg 46 and arranged to be turned up tight against the outer face of said leg 46.

Encircling the shaft 55 and bearing at one end against the outer face 68 of the cam disk 60 and bearing at the other end against the inner face of the bracket leg 45, is a coil spring 70 which is arranged to urge the disk 60 toward the disk 57.

Fixed to the portion of the shaft 55 which extends outwardly from the leg 45 of the bracket 44, is a lever 75 having a relatively short arm 76 extending upwardly from the shaft 55, and having a second arm 77 extending downwardly from said shaft and provided at its lower portion with an actuating finger 78. The finger 78 is normally held against the inner end of the leg 40 of the bracket 39 by means of a coil spring 80 having one end connected to the arm 76 and its other end connected to a bracket 81 mounted on the rear wall 18 of the dispenser casing in the manner clearly shown in Fig. 4.

Mounted on the lower plate 21 of the back member 16 and projecting forwardly therefrom a suitable distance, is a screw threaded stud 85 on which is mounted a base 86 having a screw threaded opening 87 formed centrally thereof for the reception of the stud 85. The construction and arrangement of the parts is such that the base 86 may be arranged in any vertical position with respect to the lower flange 21, by rotating said base either in a clockwise or in a counterclockwise direction on the stud 85.

The base 86 may be in the form of a circular disk having a peripheral flange 88 for receiving the peripheral edge 89 of the container 11 in the manner shown in Fig. 2, whereby said container is prevented from shifting laterally on the base.

At a suitable distance above the base 86, a clamping

spring 91 is secured to the rear wall 18. This spring 91 yieldingly grips the portion 12 of the container 11, whereby said container is supported in the desired position within the receptacle with its discharge nozzle 15 disposed in spaced relation directly above the bristles of the toothbrush 41, as shown in Fig. 4.

With the front member 17 removed from the back member 16 of the dispensing receptacle, the container 11 is mounted on the support provided by the base 86 with the nozzle 15 thereof projecting laterally therefrom, whereby the discharge end of said nozzle is disposed substantially in alignment with the openings 37, 31 and the lever 75 heretofore referred to, as clearly shown in Figs. 1 and 2.

When an object, such as the toothbrush 41 is inserted through the openings 37, 31 and supported on the horizontal leg 40 of the bracket 39 in the manner shown in Fig. 4, the forward end of the toothbrush will engage the finger 78. Continued movement of the toothbrush inwardly of the receptacle actuates the lever 75 whereby the shaft 55 is rotated in a clockwise direction, Fig. 4.

During rotation of the shaft 55 in a clockwise direction, the cam surface 61 of the disk 60 bears against the upper end portion of the plunger 49 and forces said plunger downwardly against the flexible top wall 14 of the container 11 to effect the operation of the valved means heretofore referred to within said container whereby the valved means are opened and a predetermined quantity of the paste material is discharged through the nozzle 15 on to the toothbrush 41.

When the device is in an inoperative position, the two disks 57 and 60 will be held in face to face relationship on the shaft 55, with the stud 58 of the disk 57 disposed in the opening 62 of the disk 60. However, during rotation of the cam disk 60 in the above described manner, the cam surface 64 thereof is moved into contact with the extremity of the stud 65, with the result the cam disk 60 is caused to slide along the shaft 55 in a direction away from its face to face engagement with the disk 57, and during this movement of the cam disk 60, the stud 58 is withdrawn from the opening 62 (Fig. 12) thereby disconnecting the cam disk 60 from the disk 57. The construction of the cam surface 64 is such that the stud 58 is removed from the opening 62 when the toothbrush 41 has been inserted all the way into the receptacle and the lever 75 has been swung to the position indicated by broken lines in Fig. 4. As soon as the connection interlocking the cam disk 60 with the disk 57 which is fixed to the shaft 55, has been broken, the cam disk 60 will be freely mounted on the shaft, whereby the pressure within the container 11 acting against the top wall 14 will force the top wall to return to its normal or unflexed position, thereby closing the valve means within the container and cutting off further discharge of the material through the nozzle 15.

It will be noted that the construction and arrangement of the parts is such that the device is adapted to be actuated so that material is delivered on to the toothbrush 41 only during the period the toothbrush is being inserted into the receptacle. When the toothbrush 41 is withdrawn from the receptacle after having received a charge of the material, the spring 80 returns the lever 75 to its normal inoperative position against the inner end of the bracket leg 40, as indicated by full lines in Figs. 3 and 4, and during such return movement of said lever the stud 58 will be brought into alignment with the opening 62 thereby interlocking the disk 57 with the cam disk 60.

From the foregoing description of the construction shown in the drawings, it is believed the nature of the new and improved dispensing receptacle may be readily apparent, as well as the advantages resulting therefrom of an assured efficiency, free of binding or clogging, and with a minimum of friction and wear. The particular construction shown and described may, of course, be

used with other types of containers than the pressurized container herein described.

It will also be understood that the dispensing device improvements specifically shown and described, can be changed and modified in various ways without departing from the invention herein disclosed, and more particularly defined by the hereto appended claims.

What is claimed is:

1. In a dispensing receptacle for containers of pressurized material of the type having a discharge nozzle projecting laterally and downwardly therefrom, valved means within the container for controlling the flow of material through said nozzle, a flexible top wall on said container for actuating said valved means, a slidable plunger mounted in the receptacle and movable toward and away from the flexible top wall of said container, a cam member mounted in the receptacle having the cam surface thereof bearing against the upper end of said slidable plunger for reciprocatory movement of the plunger against the flexible top wall of said container to effect the operation of said valved means, means carried by the receptacle for supporting an object on to which the material is to be dispensed, means for adjusting the position of said supporting means whereby the object supported thereby is positioned offset from the container and beneath the discharge end of the nozzle, and means engageable by the object on said supporting means for operating said cam member when the object is inserted into the receptacle to cause a quantity of the material to be discharged through said nozzle on to the object.

2. In a dispensing receptacle for containers of pressurized material of the type having a discharge nozzle projecting laterally and downwardly therefrom, valved means within the container for controlling the flow of material through said nozzle, a flexible top wall on said container for actuating said valved means, a slidable plunger mounted in the receptacle and movable toward and away from the flexible top wall of said container, a cam member mounted in the receptacle having the cam surface thereof bearing against the upper end of said slidable plunger for reciprocatory movement of the plunger against the flexible top wall of said container to effect the operation of said valved means, means carried by the receptacle for supporting an object on to which the material is to be dispensed, means for adjusting the position of said supporting means whereby the object supported thereby is positioned offset from the container and beneath the discharge end of the nozzle, means engageable by the object on said supporting means for operating said cam member when the object is inserted into the receptacle to cause a quantity of the material to be discharged through said nozzle on to the object, and means for rendering said cam member inoperative whereby the valved means will not be operated and no material will thereby be discharged from the nozzle when the object is being withdrawn from the receptacle.

3. In a dispensing receptacle for containers of pressurized material of the type having a discharge nozzle projecting laterally and downwardly therefrom; valved means within the container for controlling the flow of material through said nozzle; a flexible top wall on said container for actuating said valved means; a slidable plunger mounted in the receptacle and movable toward and away from the flexible top wall of said container; a dual movement cam member that is mounted in the receptacle for actuation from an initially inactive position through an active operating movement cycle and thereafter to its initial inactive position, which cam member is arranged to effect reciprocatory movement of the plunger against the flexible top wall of said container so as to cause opening and closing operation of said valved means; supporting means within the receptacle arranged to position an object on to which the material is to be dispensed beneath the discharge end of the

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nozzle; and means engageable by the object on said supporting means for causing the cam member to carry out its active operating movement cycle and then to return to its initial inactive position during the forward movement of the object into the receptacle, thereby to cause a measured quantity of the material to be discharged through said nozzle on to the object before the latter is moved in its withdrawing direction from the receptacle.

4. In a dispensing receptacle for containers of pressurized material in accordance with claim 3, wherein the dual movement cam member is mounted so as to be movable both rotatively and laterally.

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