

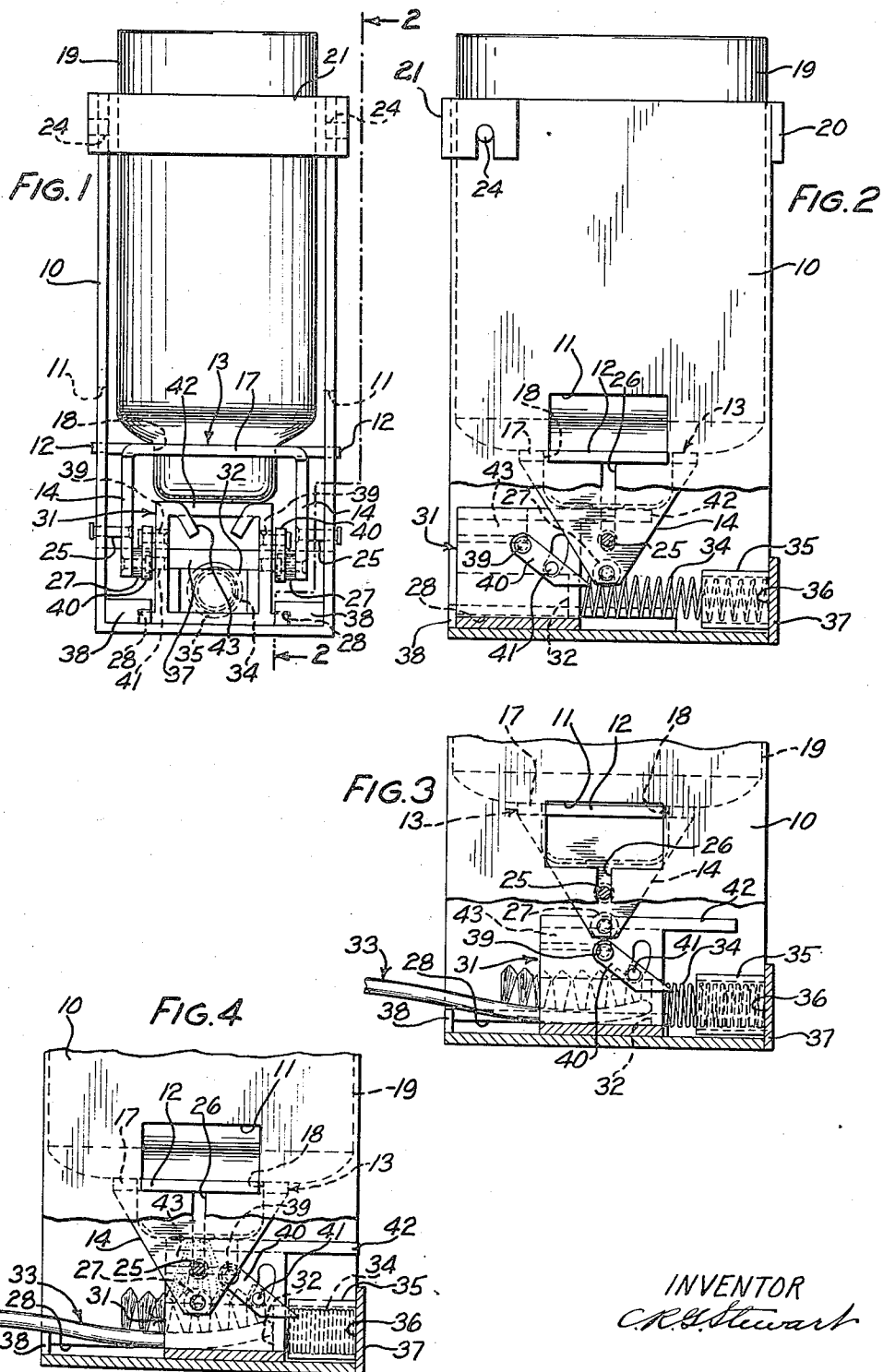
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DISPENSING DEVICE

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DISPENSING DEVICE

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8 Claims. (Cl. 221-66)

This invention relates to dispensing devices, and more particularly to devices for dispensing granular or pulverized materials.

An object of this invention is the provision of a simple and efficient device for automatically dispensing granular or pulverized materials from a container directly onto a receiving article manually moved into actuating relation therewith.

With the above and other objects of the invention in view, one embodiment thereof, as applied to the dispensing of tooth powder directly onto a tooth brush, contemplates the provision of a device which includes a vertically slidable support for holding a container for tooth powder in an inverted position, an open spout of the container being normally sealed by a plate attached to a horizontally slidable spring pressed brush supporting frame against which the brush while inverted is thrust to receive a charge of powder. As the frame moves horizontally due to the thrust of the brush thereagainst pivotal cam members carried thereby engage cam followers on the vertically slidable container holder and raise the latter a suitable distance and at the termination of the horizontal movement of the frame the followers ride off the cam members and the holder with the container drops abruptly, due to gravity and upon coming to a halt the impact produced by the inertia of the container and contents causes powder to be dispensed therefrom onto the brush, the container spout sealing plate being moved from under the spout during the raising of the container. Upon withdrawing the brush the elements of the device automatically return to their normal positions.

Other objects and features of the invention will appear from the following detailed description taken in connection with the accompanying drawing, in which

Fig. 1 is a front elevation of a tooth powder dispensing device embodying the features of the invention with the elements thereof in a normal or position of rest;

Fig. 2 is a side view, partly in section, taken on the line 2-2 of Fig. 1, and

Figs. 3 and 4 are fragmentary side views, partly in section, similar to Fig. 2, showing the powder container after it has been elevated by the movement of a tooth brush into actuating relation with the device and after the container has dropped to dispense powder onto the brush, respectively.

Referring now to the drawing, particularly Figs. 1 and 2, the numeral 10 indicates a vertical U-shaped frame which may be of such dimen-

sions that it may be conveniently positioned ready for use within a medicine cabinet of a bathroom. Opposite parallel side walls of the frame 10 are provided with aligned slots 11 which freely receive horizontal arms 12 of a tooth powder container cradle 13 arranged intermediate the frame side walls, the arms 12 in the normal position of the cradle resting on the bottom walls of the slots, as shown in Figs. 1 and 2. The cradle 13 is in general of U-shaped formation and is inverted with its parallel side arms 14 which are of triangular shape pointing downwardly. A horizontal portion 17 of the cradle 13 from which the arms 12 extend has formed therein a central opening 18 for freely receiving a neck portion of an inverted tooth powder container 19, which is supported on the shoulder of the container formed by the junction between the neck portion and the body of the container.

The frame 10 at its upper end is provided with a back brace 20 (Fig. 2) and a removable front clip 21 which cooperate to support and guide the container 19 resting in the cradle 13 during reciprocal movements imparted to the cradle, in a manner to be presently described, for the purpose of dispensing powder from the container. For removably mounting the clip 21, pins 24 fixed to the side walls of the frame 10, are provided which are entered in slots in the clip. This arrangement facilitates the removal of an empty container 19 from the device and the mounting therein of a loaded container and is particularly useful in the case where, due to lack of space, for example, the device is positioned in a medicine cabinet.

Fixed to the side arms 14 of the reciprocatory cradle 13 are guide pins 25 which extend outwardly and into vertical slots 26 formed in the side arms of the frame 10, the slots 26 communicating at their upper ends with the slots 11 of the frame side walls. Carried on the lower ends of the cradle side arms 14 upon their inner faces are rollers or cam followers 27. Slidably mounted on the base portion of the U-shaped frame 10 and guided in opposite slide-ways 28 fixed thereto, is an irregularly shaped spring pressed frame 31. The frame 31 at its right end (Figs. 2, 3 and 4) has a vertically extending partial end wall 32 which serves as a stop member for a tooth brush 33 (Figs. 3 and 4) and also as a wall against which one end of a compression spring 34 abuts, the opposite end of the spring extending into a spring cup 35 and abutting an end wall 36 of the cup, the cup being fixed to a plate 37 secured to the

frame 10. Normally the spring 34 acts to maintain the frame 31 in the position shown in Fig. 2 with its left end abutting stop members 38 fixed to the frame 10. In the extreme right hand position of the frame 31, as shown in Fig. 4, the right end thereof abuts the left end of the spring cup 35 which serves as a stop member for the frame.

Pivoted to opposite side walls of the frame 31, as indicated at 39, are cam members 40 which normally lie in the path of the cam followers 27 carried by the powder container cradle 13. The movement of the cam members 40 is limited, as shown in Fig. 2, by pins 41 carried thereby which project into slots formed in the side walls of the frame 31, the pins resting normally at the lower ends of the slots due to the action of gravity, or spring pressure may be employed.

Extending from the right end of the frame 31 as viewed in Figs. 2, 3 and 4 is a horizontal arm or sealing plate 42 having its upper surface normally spaced from the lower surface of the inverted neck portion of the powder container 19 with just sufficient clearance to permit the frame 31 to freely slide thereunder, the spout or opening in the neck portion being open. In the idle position of the device (Figs. 1 and 2) the plate 42 serves to prevent the powder in the container 19 from passing therefrom until the device is actuated during which the tooth brush 33 is moved into position to receive the powder. As clearly shown in Fig. 1 the upper wall of the frame 31 forward of the sealing plate 42 is shaped to provide a chute 43 effective in the actuated position of the device as shown in Fig. 4 to direct the discharged powder onto the brush 33.

The operation of the described powder dispensing device is as follows: Assuming the parts to be in the relative positions illustrated in Figs. 1 and 2, the tooth brush 33, while inverted is thrust forward with one stroke into the spring pressed frame 31 between the side walls and against the end wall or stop member 32 thereof, as shown in Figs. 3 and 4. By continuing to thrust the tooth brush 33 forward, the frame 31 moves to the right, as viewed in Figs. 2, 3 and 4, against the action of the spring 34 which is compressed and the horizontally moving cam members 40 engaging the followers 27 carried by the vertically slidable powder container cradle 13 cause the cradle to move upwardly. The cradle 13 and the container 19 in the continued horizontal movement of the frame 31 are raised to the position shown in Fig. 3 wherein the followers 27 have ridden up to the high points of the cam members 40. The thrust on the tooth brush 33 is continued until the frame 31 comes to a stop against the left end of the spring cap 35 (Fig. 4) during which movement the followers 27 ride off the high points of the cam members 40 at which instant the sealing plate 42 has traveled from under the open spout of the container 19 and the chute 43 is positioned thereunder.

Upon the followers 27 riding off the cam members 40 the cradle 13 carrying the powder container 19 is free to move downwardly and due to gravity it drops quickly and comes to an abrupt halt due to the horizontal arms 12 of the cradle riding in the slots 11 of the frame 10 coming to a sudden stop on the bottom walls of the slots, the inertia of the contents and holder producing an impact which effects a discharge of tooth powder from the open spout of the

container 19 into the chute 43 and thence onto the inverted bristles of the tooth brush 33 disposed thereunder. The user then immediately withdraws the charged tooth brush 33 and the frame 31 automatically returns under the action of the spring 34 to its normal or idle position (Figs. 1 and 2). In the return movement of the frame 31 the pivotal cam members 40 ride over the stationary followers 27 and are rotated counterclockwise about their pivots while passing thereover and upon passing to the left of the followers they drop to their normal positions as shown in Fig. 1 ready for the next actuation of the device.

From the foregoing description it will be apparent that a very simple and efficient device is provided for dispensing tooth powder in a sanitary manner onto a tooth brush from a container by a simple manipulation of a tooth brush into actuating relation with the device.

Although the invention as herein described and illustrated is particularly well adapted for dispensing tooth powder from a container, having a particular shape and dimensions onto a tooth brush, it will be understood that the embodiment hereinbefore set forth, or shown in the accompanying drawing, is to be interpreted as merely illustrative. Also that the invention is capable of other applications and that modifications can be made without departing from the spirit and scope of the appended claims.

What is claimed is:

1. A dispensing device comprising a holder for material to be dispensed, movable means including a cam for elevating the holder and effective at the termination of a predetermined movement of said means for dropping the holder, and means for stopping the downward movement of the holder abruptly to produce an impact for discharging material therefrom.
2. A dispensing device comprising a container for material to be dispensed having a downwardly extending discharge opening, a closure member for said opening, and means for causing simultaneous removal of said closure member and bodily movement of said container for effecting an impacting motion to said container to discharge material from said container opening.
3. A dispensing device comprising a container for material to be dispensed having a downwardly extending discharge opening, a horizontally movable member including a closure member for the container opening and a chute, and means for moving the container from said closure member and dropping it over said chute to cause an impact for discharging material from said container opening into said chute.
4. A dispensing device comprising a vertically reciprocable container for material to be dispensed having a downwardly extending discharge opening, a horizontally movable member, and means for elevating and dropping said vertically reciprocable container in response to a horizontal movement in one direction of said horizontally movable member whereby an impact is produced for discharging material from said container opening.
5. A dispensing device comprising a vertically reciprocable member for holding a container for material to be dispensed, the container having a downwardly extending discharge opening, means for guiding the container holding member in its movements and supporting it in a normal lowered position, a horizontally movable member arranged under the container opening ef-

fective in one position for closing the same and in another position to open the same, and co-operating means on the vertically reciprocable and horizontally movable members operative during a horizontal movement of said horizontally movable member in one direction to open the container opening for elevating and dropping said container holding member to its normal position whereby an impact is produced for discharging material from said container opening.

6. A dispensing device comprising a vertically reciprocable member for holding a container for material to be dispenser, the container having a downwardly extending discharge opening, means for guiding the container holding member in its movements and supporting it in a normal lowered position, a horizontally movable member disposed under said container holding member and between depending portions thereof, and pivotal members carried by said horizontally movable member operatively engageable with said container holder depending portions in response to a horizontal movement in one direction of said horizontally movable member for elevating and dropping said vertically reciprocable member to its normal lowered position whereby an impact is produced for discharging material from said container opening, said pivotal members being movable to a non-operative position during a return movement of said horizontally movable member and thereafter returning by gravity to their normal operative position.

7. A dispensing device comprising a vertically reciprocable container for material to be dispensed having a downwardly extending dis-

charge opening, a horizontally movable member including a closure member for said opening effective in its normal position for closing the same and in another position to open the same, yieldable means for normally positioning the closure member in its normal position, and means operative during a horizontal movement of said horizontally movable member in one direction to open the container opening for elevating and dropping said vertically reciprocable container whereby an impact is produced for discharging material from said container opening, said yieldable means thereafter being effective to return said horizontally movable member to its normal position wherein the closure member closes said container opening.

8. A tooth powder dispensing device comprising a vertically reciprocable member for holding a container for powder to be dispensed, the container having a downwardly extending discharge opening, a horizontally movable member including a closure member for said opening, said horizontally movable member adapted to receive a tooth brush moved into actuating relation therewith and movable thereby in one direction to move the closure member from said opening and position the tooth brush to receive powder, and means effective during said movement of said horizontally movable member for elevating and dropping said vertically reciprocable member whereby an impact is produced for discharging powder from said container opening onto the tooth brush.

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