June 12, 1951 R. F. RAEDECKE 2,556,980

HOUSING ENCLOSING PASTE CONTAINER, HAVING CONTAINER-PUNCTURING AND -DESTROYING MEANS, AND PASTE EXTRUDER AND OUTLET CONTROLLER WITH COMMON ACTUATOR

Filed May 18, 1948

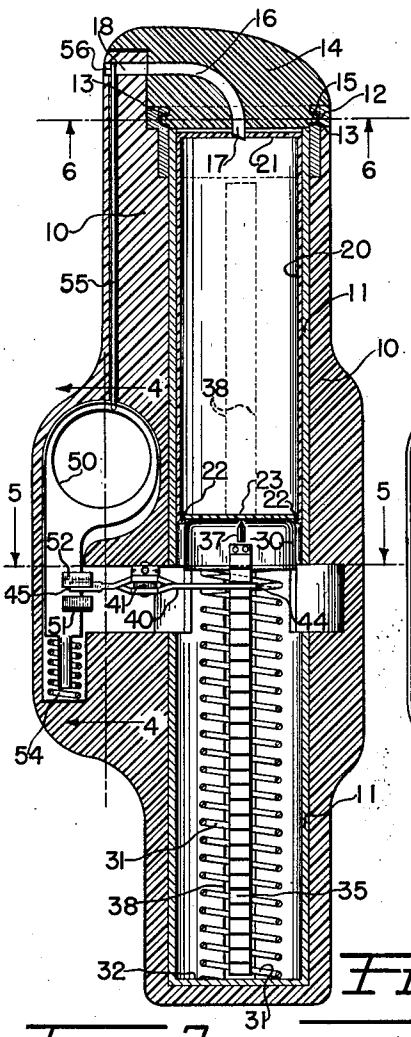


Fig. 2.

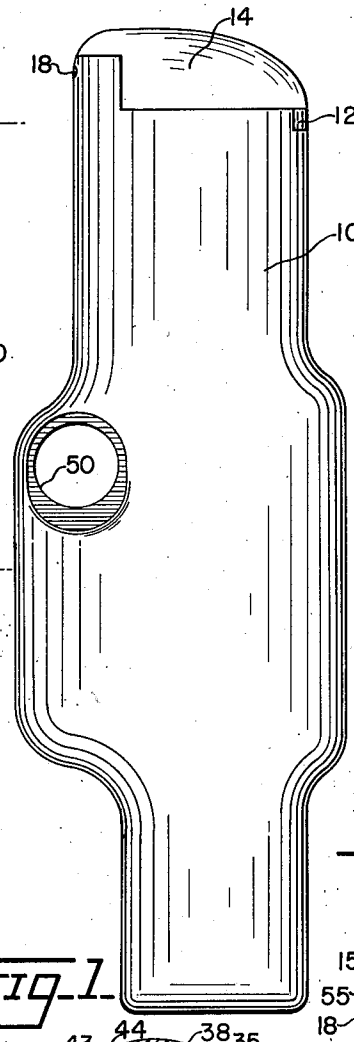


Fig. 1.

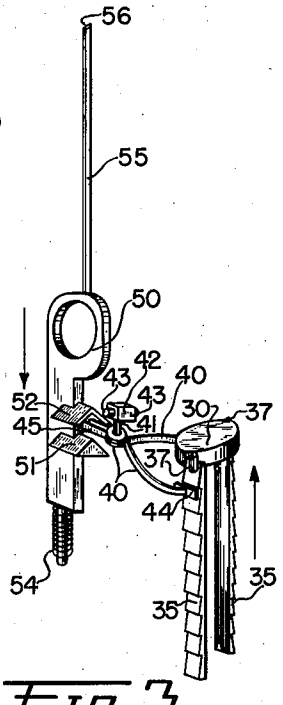


Fig. 3.

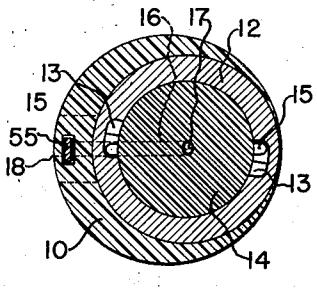


Fig. 6.

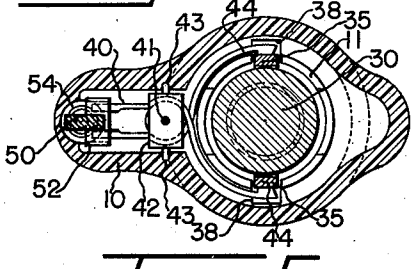


Fig. 5.

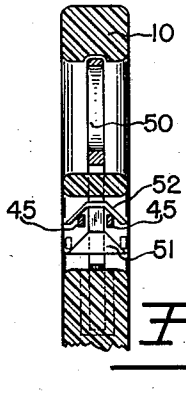


Fig. 4.

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HOUSING ENCLOSING PASTE CONTAINER, HAVING CONTAINER-PUNCTURING AND DESTROYING MEANS, AND PASTE EXTRUDER AND OUTLET CONTROLLER WITH COMMON ACTUATOR

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8 Claims. (Cl. 222—87)

1

This invention relates to a dispenser for all kinds of pastes or plastic materials, and more particularly to a dispenser having a chamber from which the plastic material is expelled through an opening in response to actuation of a trigger means.

It is common to supply plastic materials in collapsible tubes from which the material is squeezed for use. The dispensing of plastic materials in this manner is attendant with inconvenience, unpleasant spillage and smearing of the material, waste and the annoying necessity of replacing the cap after each use to prevent drying of the material in the tube. There is also a vexatious tendency for some of the material to become trapped in the end of the tube remote from the opening. It is, therefore, a general object of my invention to provide a device from which paste may be dispensed for use without the above-mentioned disadvantages and inconveniences.

It is also an object to provide a paste dispensing device which is neat and pleasing in appearance and which remains neat in use.

In pursuance of these and many other objects which will be apparent to those skilled in the art, I provide a moulded casing or body having a paste cylinder therein and a piston reciprocable in the cylinder. The paste leaves the cylinder through an opening or nozzle in response to movement of the piston. The piston is operated by means of a trigger acting through a force transmitting linkage. I also provide a valve in the opening or nozzle, which valve is opened by the trigger simultaneously with the operation of the piston.

It is within the contemplation of this invention that the paste used therewith be supplied in disposable cartridges conforming in size to the paste cylinder. The piston may act on the bottom of the cartridge causing the bottom and the piston to slide through the cylindrical wall of the cartridge in the process of expelling the paste. I also provide blades on the piston to cut the cylindrical wall of the cartridge as the piston moves therethrough. By this means, the cartridge is rendered easily removable from the dispenser cylinder after all the paste has been expelled from the cartridge.

The presently preferred form of the invention is shown in the appended drawings wherein:

Figure 1 is a side elevational view showing the appearance of the exterior of the invention;

Figure 2 is a sectional view taken on a vertical plane through the body or casing of the invention and showing the internal mechanism in elevation;

2

Figure 3 is a perspective view of the actuating mechanism removed from the body of the device and illustrating its construction and operation;

Figure 4 is a sectional view taken approximately on the line 4—4 of Figure 2 looking in the direction of the arrows showing how the cams on the trigger means act on the actuating tongs;

Figure 5 is a sectional view taken approximately on the line 5—5 of Figure 2 looking in the direction of the arrows showing the disposition of the tongs in the dispenser, and

Figure 6 is a sectional view taken approximately on the line 6—6 of Figure 2 looking in the direction of the arrows showing how the cap is related with the body of the dispenser.

Referring now in greater detail to the drawings, a casing or body 10 is preferably of moulded plastic and has a longitudinally-extending cylindrical cavity. The cavity is lined with a metallic cylinder 11 open at the top end. An annular cap seat 12 is embedded in the top of the body and is provided with L-shaped bayonet-type sockets 13. The cap seat 12 is receptive to a cap 14 having bayonet prongs 15 which engage the sockets 13. The cap 14 is provided with a conduit 16, part of which extends at 17 down into the cylinder 11. When the cap is in place, the conduit 16 is lined up with an opening or nozzle 18 in the body 10.

A cartridge 20 filled with paste or plastic material is shown in place in the cylinder 11. When the cartridge 20 is placed in the cylinder and the cap 14 is locked in place over it, the pointed part 17 of conduit 16 pierces the end 21 of the cartridge, thereby permitting the expulsion of paste out through the conduit 16 and nozzle 18. It will be noted that the lower cylindrical wall of the cartridge 20 is crimped over at 22 to retain the bottom member 23 of the cartridge. A piston 30 is freely reciprocable in the cylinder 11 and has an outside diameter which is less than the inside diameter of the cartridge 20. In the use of the invention, the piston 30 acts against the bottom 23 of cartridge 20, forcing the bottom 23 through the cartridge. The bottom 23 therefore acts as a tightly fitting piston in expelling paste from the cartridge.

It will be noted that a piston spring 31 is disposed in compression between the piston 30 and the bottom 32 of a cylindrical cavity. Two rack bars 35 are secured at one end to the sides of the piston 30. Cutting blades 37 are secured to,

and project from, the sides of piston 30. Complemental grooves 38 are disposed in the wall of the cylinder 11. A paste cartridge is inserted in the device by first removing cap 14, forcing the cartridge into the cylinder 20 against the action of piston spring 31 and then replacing the cap 14.

An actuating ratchet assembly employed for the purpose of forcing the piston 30 against the contents of the cartridge 20 consists of tongs 40 having two legs pivotally mounted on a pintle 41. Pintle 41 is an extension of a bearing block 42, having bearing pins 43 extending therefrom at right angles with the pintle 41. Bearing pins 43 are journaled in the body 10 as shown to advantage in Figure 5. It is thus far apparent that the tongs are so mounted as to be free to open and close and also to rock after the fashion of a seesaw. The work or pawl ends 44 of the tongs 40 are disposed to engage and act on the rack bar 35. The other ends 45 are disposed to be acted upon by sliding cams forming a part of the trigger member 50. One cam 51 is wedge-shaped and may be designated an opening cam because the wedge acts to open the tongs 40. A converging cam 52 has an inverted V-shaped notch which acts upon the ends 45 of the tongs causing them to converge.

Trigger member 50, carrying the opening and converging cams, is slidably mounted within a cavity in the body 10. A trigger spring 54 is under compression and tends to maintain the trigger in its normal position. An elongated slide 55 is secured to the trigger member 50 and is disposed in a slot in the body 10. The upper end 56 of the slide 55 is pointed and is normally positioned across the opening of nozzle 18. Slide 55 reciprocates with the trigger member 50 and is operative as a valve to open and close the nozzle 18. As shown in Figure 2, the slide valve is normally in the closed position.

The operation of the device will now be described: The piston dispenser is clasped in the hand and the trigger is engaged by the index finger. As the trigger member 50 is moved in a sliding motion from its normal position, the converging cam 52 engages the ends 45 of the tongs, forcing them together. The work or pawl ends 44 of the tongs are thereby urged together and into engagement with the teeth of the rack bars 35. The converging cam 52 then acts to rotate the tongs 40 about the axis of bearing pins 43. In other words, referring to the drawings, a downward movement of the trigger member 50 results in an upward movement of the work or pawl ends 44 of the tongs. This upward movement is transmitted through the rack bars to the piston 30. It is to be noted that downward movement of trigger member 50 also results in an opening of the slide valve 55 in nozzle 18.

When the trigger 50 is released, trigger spring 54 returns the trigger to its normal position. During the return stroke, the opening cam 51 opens the tongs 40, thereby disengaging the work or pawl ends 44 from the rack bars 35. The continued movement of the cam 51 causes the tongs 40 to rotate on the axis of bearing pins 43 so that the work or pawl ends 44 move down into position to engage the next pair of teeth on the rack bars 35. The piston spring 31 sustains the piston 30 in position and prevents its moving downwardly after the tongs have been disengaged from the ratches. It is thus apparent that each time the trigger member 50 is moved from its normal position and allowed to return to its normal position, a measured quantity of paste is expelled from the cartridge 20.

As the piston 30 moves through the cartridge 20, carrying the bottom 23 of the cartridge with it, the cutting blades 37 incise the cylindrical sides of the cartridge 20. When the piston 30 has moved to the top and all of the paste has been expelled from the cartridge, the cap 14 is removed. By reason of having been incised, the cylindrical walls of the cartridge 20 are readily removable from the cylinder 11. A new prefilled cartridge is inserted in the cylinder 11 and pressed in place against the action of the piston spring 31. The cap 14 is replaced in position and the piston dispenser is again ready for use.

What I claim is:

1. In a device for dispensing a plastic material, a cylinder and a piston reciprocable therein, a rack bar connected to the piston, a pawl-equipped tong pivotally mounted intermediate its ends on the cylinder, and a spring returned trigger member having a cam projection disposed to act on one end of the tong to impart swinging and rocking movement there to thereby causing the pawl end to engage the rack bar and move the piston.

2. In a device for dispensing a plastic material, a cylinder and a piston reciprocable therein, a pair of rack bars connected to the piston, tongs pivotally mounted on the cylinder and having pawl ends engageable with the rack bars, and a trigger member having a cam disposed to act on the tongs to cause the pawl ends thereof to engage and move the rack bar and piston.

3. In a device for dispensing a plastic material, a cylinder and a piston reciprocable therein, rack bars connected with the piston, tongs pivotally mounted on the cylinder and having pawl ends movable into and out of engagement with the rack bars, and a trigger member having cam means disposed to act on the tongs to cause them to engage and move the rack bars and piston.

4. In a device for dispensing a plastic material, a cylinder and a piston reciprocable therein, a rack bar connected with the piston, a pawl-equipped tong pivotally mounted on the cylinder, the pawl of the tong being engageable with the rack bar, and a trigger member including a cam assembly disposed to act on the tong to cause the pawl thereof to engage and move the rack bar and piston.

5. In a dispensing device, a casing for holding the commodity to be dispensed equipped with a discharge nozzle and a slide valve therefor; an ejector mechanism including a piston within the casing for forcing the commodity toward and through said nozzle, pawl and ratchet means connected with the piston for intermittently advancing the piston in the direction of the nozzle, a trigger slidably mounted on the casing directly connected with the slide valve and provided with cams operatively engageable with the pawl portion of said pawl and ratchet means for swinging the pawl portion of said means into and out of engagement with the ratchet portion of said pawl and means and also to rock the pawl portion of said means when the same is in engagement with the ratchet portion of said means whereby opening and closing of the valve and progressive movement of the piston within the casing in synchronism are effected in response to movement of said trigger.

6. In a dispensing device, a casing for holding the commodity to be dispensed, and ejector

mechanism including a piston within the casing, rack bars extending from the piston longitudinally of the casing, pivotally and rockably mounted pawls for successively engaging the teeth of the rack bars and imparting intermittent movement to the piston, and a trigger mounted on the casing and provided with cam means engageable with the pawls incidental to movement of the trigger for swinging the pawls into and out of engagement with the rack bars and to rock the pawls when the latter are engaged with the rack bars to advance the piston.

7. In a dispensing device, a casing for holding a cartridge containing the commodity to be dispensed, an ejector mechanism including a piston within the casing and reciprocable in the cartridge for expelling the contents thereof, knife blades on the piston operative to slit the cartridge as the piston moves therethrough, rack bars extending longitudinally from the piston, pivotally and rockably mounted tongs having pawls for successively engaging the teeth of the rack bars, and a trigger mounted on the casing and provided with cams engageable with the tongs for swinging the pawls thereof into and out of engagement with the rack bars and to rock the tongs when the pawls are in engagement with the rack bars to advance the piston through the cartridge.

8. In a dispensing device, a casing for holding a cartridge containing the commodity to be dispensed and equipped with a discharge nozzle and a slide valve therefor, ejector mechanism within the casing including a piston movable lengthwise through the cartridge for expelling the contents thereof and equiped with lateral knives for slitting the cartridge incidental to the dispensing action of the piston, and means connected with the piston and with the slide valve for controlling the opening and closing the latter in synchronism with the movement of the piston through the cartridge comprising rack bars extending from the piston, pivotally and rockably mounted pawls for successively engaging the teeth of the rack bars, and a trigger directly connected with the slide valve and provided with cam means engageable with the pawls for swinging the pawls into and out of engagement with the rack bars and to rock the pawls when the latter are engaged with the rack bars for advancing the piston as said trigger is actuated to effect a movement of the valve to open position.

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