

DISPENSING DEVICE FOR VISCOUS MATERIALS

BACKGROUND OF THE INVENTION

The present invention may be used for dispensing viscous materials such as paste-like extrudable materials, extrudable foams, or the like. One area where the invention has particular application is the food industry. In the food industry, icing or pre-whipped toppings are typically applied manually by means of a cone shaped flexible package containing the substance to be dispensed. As an example, pre-whipped topping is typically supplied in a sealed bag having a conical shape with the product being dispensed from the narrower end where an outlet portion is formed. The outlet portion is typically opened by cutting with a pair of scissors. Other methods for opening the bag are also suitable. Once the flexible packaging is opened at the outlet, the product is dispensed by squeezing the sides of the packaging to force the product to exit through the opening. Manual dispensing of the pre-whipped topping or icing in this manner can cause muscle fatigue in the workers which can negatively impact productivity.

There is a need for a dispensing device that is easier to operate, that can be operated with one hand, that can be stored in a limited space, and that provides cooling properties for maintaining a safe temperature for the topping. In order to maintain the physical characteristics of the dispensed product, the dispenser should not provide any force to the pre-whipped topping or icing when the unit is not dispensing.

SUMMARY OF THE INVENTION

The present invention meets the above-described need by providing a dispensing device having a housing capable of receiving a pre-packaged charge of pre-whipped topping or
5 icing. The housing has an inner wall with a slot formed therein for receiving a rod. The rod engages with a pawl mechanism to move a piston in the axial direction to force the pre-whipped topping or icing through the outlet in its packaging. The pawl engages with the rod when it moves in a
10 first direction and the pawl disengages with the rod when it is moved in a second direction opposite the first direction.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated in the drawings in which like reference characters designate the same or similar
15 parts throughout the figures of which:

Figure 1 is a perspective view of the dispensing device of the present invention;

Figure 2 is an exploded perspective view of the dispensing device of the present invention;

20 Figure 3 is an end elevational view of the dispensing device;

Figure 4 is an end elevational view of the dispensing device;

25 Figure 5 is a cross-sectional view taken along lines 5-5 of Fig. 3;

Figure 6 is a cross-sectional view taken along lines 6-6 of Fig. 4;

Figure 7 is a schematic diagram showing the operation of the pawl mechanism of the present invention.

5 DETAILED DESCRIPTION OF THE INVENTION

Referring initially to Fig. 1, the dispensing device 10 of the present invention includes a body 13 having a first portion 16 with a round profile and a first diameter 19. The body 13 has a second portion 22 with a smaller diameter. 10 The first portion 16 extends to a base portion 25 having a larger diameter. Although, the embodiment of the dispensing device 10 is described in connection with a round profile other shapes may be suitable as will be evident to those of ordinary skill in the art based on this disclosure. The 15 body 13 may be provided with a hook 28 for hanging the device 10 when not in use.

The device 10 includes a cover 31 that may be removably attached to the front of the body 13. As shown the cover 31 may be provided with an opening 32 that frictionally engages 20 with a protrusion 34 extending from the outside of the body 13. A tab 35 may be provided for removing the cover 31. The cover 31 has an outlet opening 37 at its center where a tip cover 40 is provided to cover the outlet opening 37 when the device 10 is not in use.

25 A handle 43 may be provided with a trigger 46 that is attached at pivot point 49. The trigger 46 is biased by a spring 52 (Fig. 2) in the open position. The trigger 46 operates a reciprocating rod that drives a piston as will be described in greater detail below.

Turning to Fig. 2, the device 10 may receive a cylindrical shaped flexible package 55 with a built-in dispensing tip 58. The construction of the built-in dispensing tip 58 will be evident to those of ordinary skill in the art and therefore will not be discussed in detail herein. A piston 61 provides the force for causing a viscous material such as a pre-whipped topping to exit from the package 55. The piston 61 is mechanically coupled to a reciprocating rod 64. The rod 64 is moved back and forth in the axial direction indicated by arrow 67 by means of the spring biased trigger 46.

The rod 64 is coupled to the piston 61 by means of a pawl mechanism. The piston 61 has an extended portion 68 with an opening 70 that receives the rod 64 therethrough. A pawl 73 is biased by a spring 76 in an angled position relative to the piston 61 (best shown in Fig. 7). When the rod 64 moves from right to left with respect to the orientation of Figs. 2 and 7, the frictional engagement between the rod 64 and the opening 79 in the pawl 73 causes the piston 61 to move forward in unison with the rod 64. The movement of the rod 64 caused by squeezing the trigger 46 causes the piston 61 to move from right to left with respect to the figure. This movement of the piston 61 compresses the flexible packaging 55 causing product to exit through the outlet opening 37. When the trigger 46 is released and the rod 64 moves in the opposite direction (from left to right with respect to the figure), the piston 61 moves from left to right slightly and decouples from the rod 64. As the rod 64 moves from left to right, the pawl 73 pivots away from the piston 61, and the rod 64 slides through the opening 79 in the pawl 73 into its spring-biased

default position. The piston 61 remains roughly in the same position until the trigger 46 is squeezed again.

When the flexible packaging 55 is empty and the piston 61 needs to be moved from left to right in order to load
5 another package of material, a reset rod 80 (best shown in Fig. 7) can be used. The reset rod 80 passes through the piston 61 and engages with the pawl 73 to cause it to pivot away from the piston 61 to allow the piston 61 to slide easily over the rod 64 back to its retracted position.

10 Turning to Figs. 3 and 4, an end view of the device 10 shows the handle 43 and trigger 46. The dispensing tip 58 is shown at the center of the figure and the tabs 35 for opening the cover 31 are also shown.

Fig. 5 shows the dispensing device 10 with the piston
15 61 advanced to the end of its travel and the built in tip 58 of the packaging 55 seated in the outlet of the device 10. The trigger 46 has been released and the pawl 73 is in the position where the rod 64 can slide from left to right without moving the piston 61. After dispensing is
20 completed, the cover 31 is removed and the pawl 73 is pivoted away from the piston 61 so that the piston 61 can be pushed back to the opposite end of the device 10 for loading a new package 55.

Fig. 6 shows the dispensing device 10 in a half full
25 condition with the trigger 46 depressed during dispensing.

Turning to Fig. 7, a schematic diagram shows the piston 61 with the pawl 73 biased by spring 76 at an angle. When the rod 64 is moved from right to left in the direction of arrow 88, the frictional force of the rod 64 on the pawl 73

causes the piston 61 to move. When the rod 64 moves from left to right, the friction causes the pawl 73 to pivot away from the piston 61 to a position where the rod 64 can overcome the friction caused by engagement with the edge of the pawl 73 around opening 79. In this position, the rod 64 slides freely through the opening 79 in the pawl 73 and the rod 64 decouples from the piston 61.

In order to move the piston 61 from left to right to reload the dispensing device 10, a reset rod 80 may be used to press against the pawl 73 to cause it to pivot into the perpendicular position so that the piston 61 can slide along the rod 64 from left to right in the direction of arrow 90 with respect to the orientation of the figure.

While the invention has been described in connection with certain embodiments, it is not intended to limit the scope of the invention to the particular forms set forth, but, on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

WHAT IS CLAIMED IS:

1. . A dispenser, comprising:

a housing having a cavity defined therein and having an outlet;

5 a piston disposed inside the housing;

a spring-biased pawl mechanism connected to the piston and having an opening defined therein;

an elongate member capable of translatory motion in a first direction and in a second direction opposite the first
10 direction, the elongate member capable of frictionally engaging with the pawl mechanism at an edge of the opening such that when the elongate member is moved in the first direction the pawl mechanism causes the piston to move in the first direction, the pawl mechanism capable of pivoting when
15 the elongate member is moved in the second direction such that the elongate member passes through the opening in the pawl mechanism and moves in the second direction independently of the piston;

a trigger in operative relation to the elongate member
20 such that actuation of the trigger causes the elongate member to move in the first direction and release of the trigger causes the elongate member to move in the second direction.

2. The dispenser of Claim 1, wherein the piston has an
25 elongate portion with an opening defined therein for receiving the elongate member.

3. The dispenser of Claim 1, wherein the trigger is
mechanically coupled to the elongate member by a rotating
30 link.

4. The dispenser of Claim 1, further comprising a cover capable of being removably attached to the housing at the outlet.

5 5. The dispenser of Claim 1, wherein the cover has an opening defined therein.

6. The dispenser of Claim 5, wherein the housing has a protrusion capable of engaging with the opening on the cover
10 to hold the cover in place.

7. The dispenser of Claim 1, wherein the housing has a hook disposed thereon.

15 8. The dispenser of Claim 1, further comprising a flexible, cylindrical shaped bag filled with a paste-like product, the bag sized to fit inside the cavity in the dispenser, the bag having an outlet at a first end.

20 9. The dispenser of Claim 1, wherein the housing has a first portion and a second portion, the second portion having a smaller cross-sectional area for receiving the elongate member.