Oct. 17, 1967 H. T. RUTHERFORD 3,347,288

PASTE CONTAINER AND DISPENSER

Filed Jan. 18, 1965 3 Sheets-Sheet 1

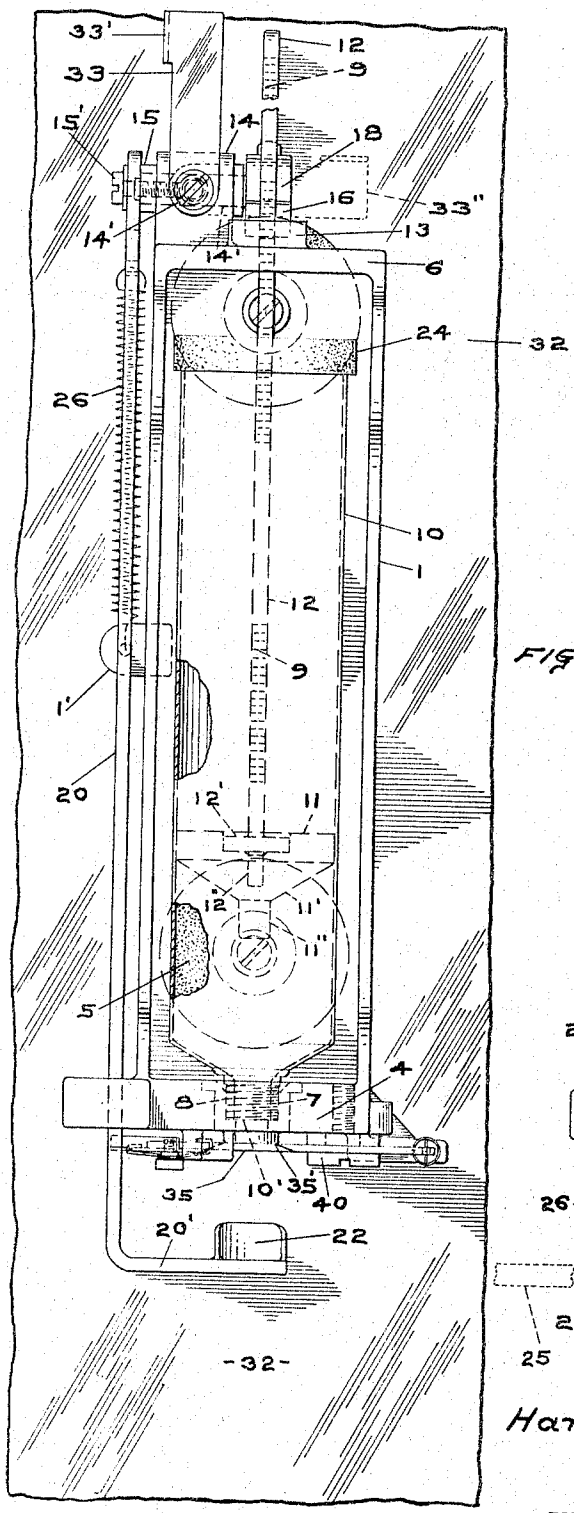


FIG. 1.

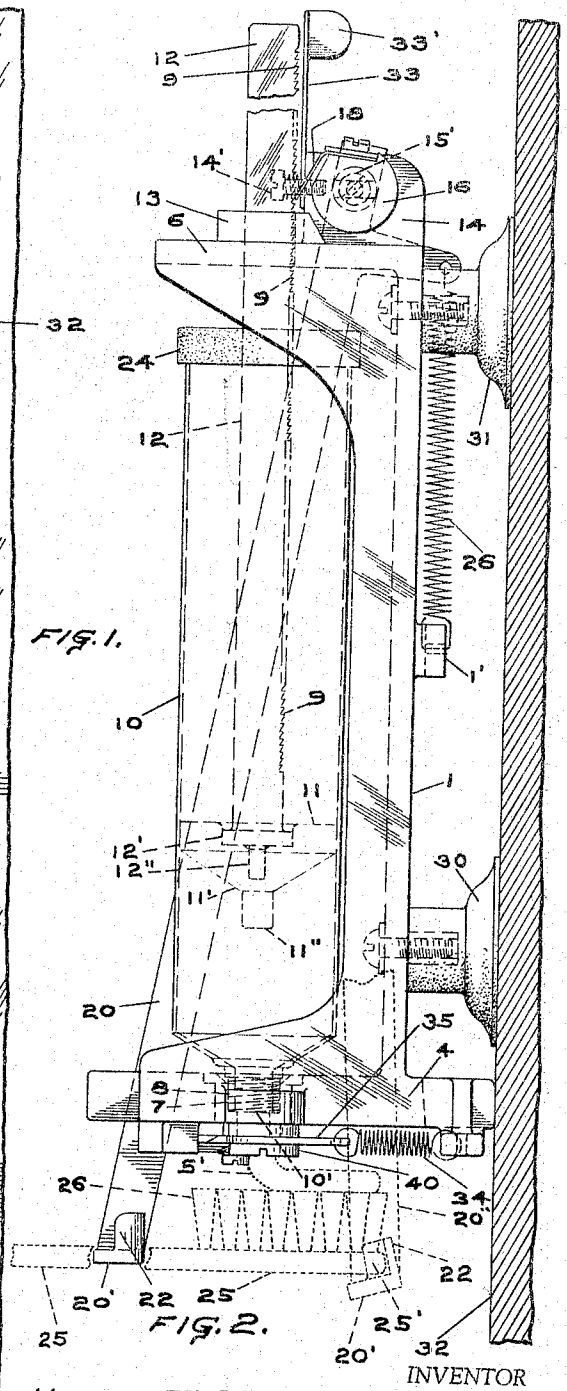


FIG. 2.

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PASTE CONTAINER AND DISPENSER

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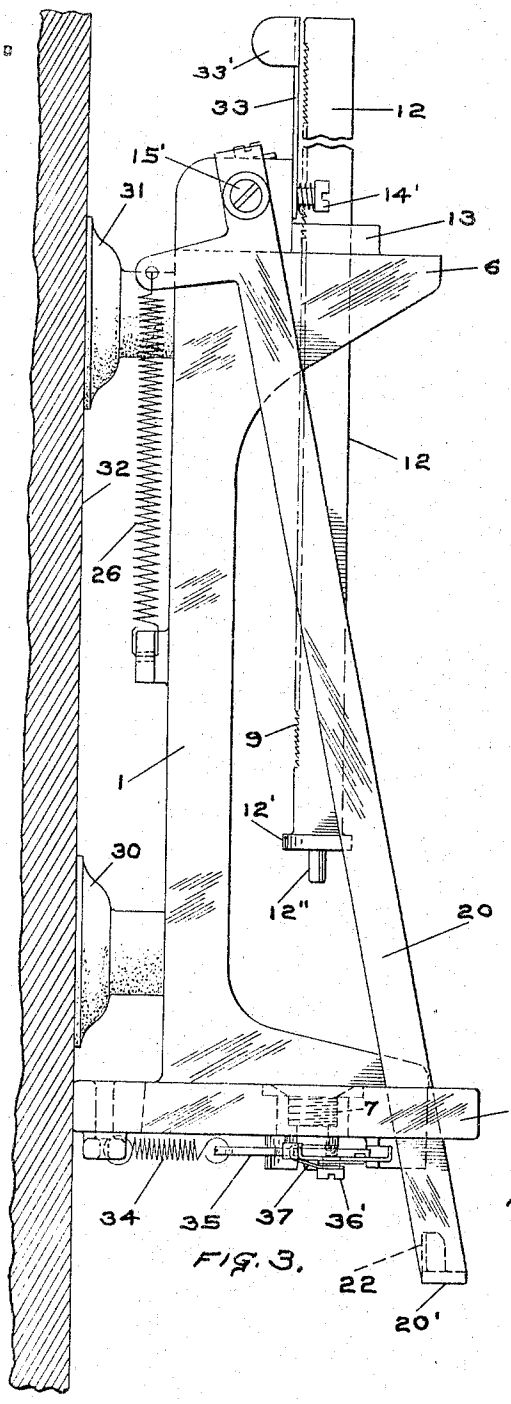


FIG. 3.

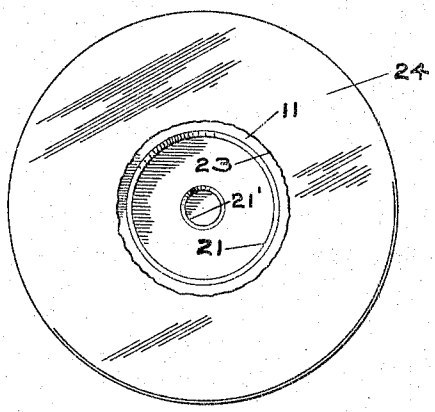


FIG. 8.

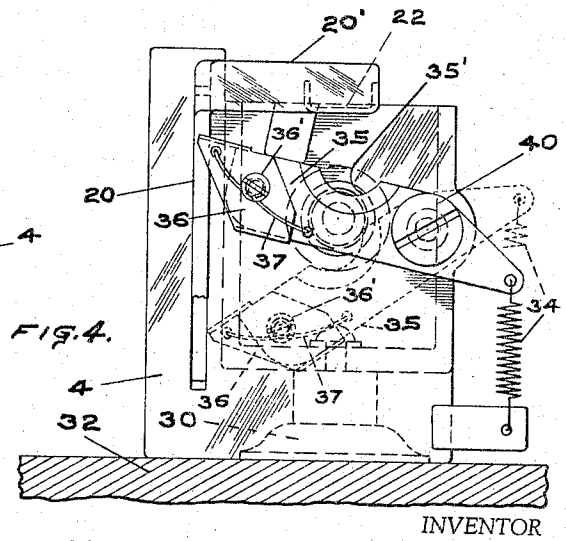


FIG. 4.

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PASTE CONTAINER AND DISPENSER

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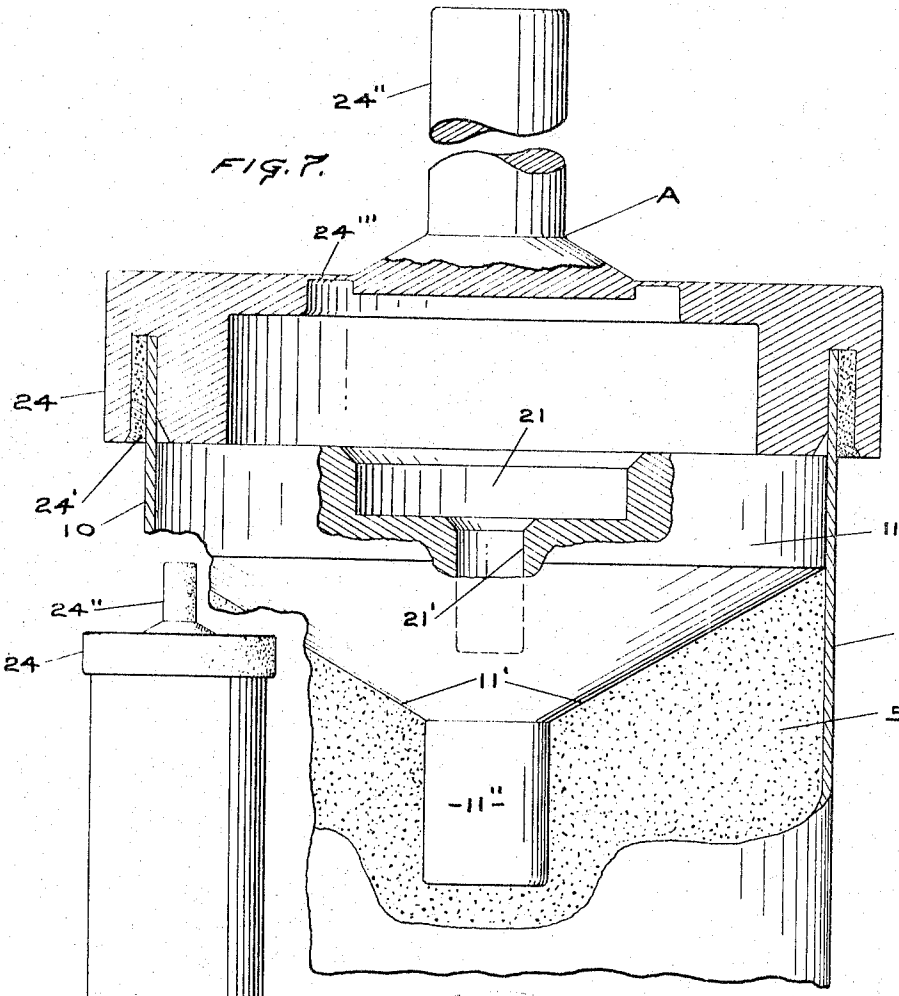


FIG. 7.

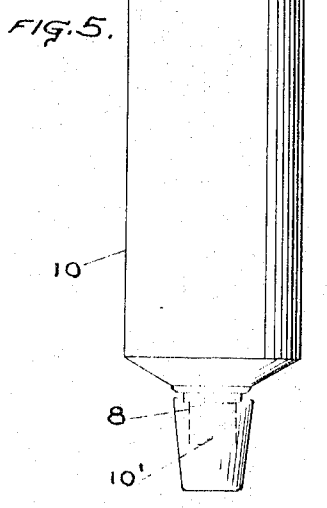


FIG. 5.

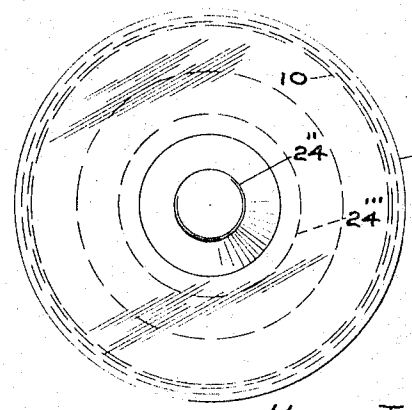


FIG. 6.

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3,347,288

PASTE CONTAINER AND DISPENSER

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4 Claims. (Cl. 141—362)

The present invention relates to an improved dispenser of the type used for dispensing tooth paste from a collapsible metal or plastic tube; however, the tube may not necessarily be collapsible, but may be rigid and of any suitable material.

One object of the invention is to provide a device that will deliver a certain measured amount of paste upon a single operation of the device.

Another object of the invention is to provide means that will distribute the prescribed amount of paste over a paste-receiving member, or over the bristles of a brush without any deviations which will enable the use of the device to determine, among other things, the number of applications in a single tube of paste.

A further object of the invention is to provide a mechanism that will be less likely to foul up and be easier to clean.

A still further object of the invention is to provide an improved means for extracting the paste from the tube.

Still another object of the invention is to provide a tube having a part of one end provided with a removable portion and a self-contained piston adjacent thereto for forcing the paste out of the tube.

A still further object of the invention is to provide means for sealing the opening through which the paste passes from the tube to the receiving member and for severing a strip of paste after the correct amount has been extruded.

Another object of the invention is to provide a conventional tube with means whereby it is readily adaptable to use in the improved dispenser.

Still another object of the invention is to provide an improved dispenser in combination with an entirely new concept in packaging products, particularly tooth paste, in collapsible, or rigid tubes, with a self-containing means for extruding all of the contents of the tube including that in the restricted neck portion of the tube.

While several objects of the invention have been pointed out, other objects, uses and advantages will become more apparent as the nature of the invention becomes more apparent, the same consisting in its novel construction, combination and arrangement of its several parts shown in the accompanying drawings forming a part of the specification, and in which:

FIGURE 1 is a view in front elevation of the paste-extracting device in which a tube of paste is shown positioned into the device.

FIGURE 2 is a view in side elevation of the same.

FIGURE 3 is a view in side elevation of the device without the tube.

FIGURE 4 is an inverted plan view of the device showing among other things the paste cut-off mechanism.

FIGURE 5 is a view in elevation of a paste tube.

FIGURE 6 is an enlarged plan view of the same.

FIGURE 7 is an enlarged fragmentary sectional view of the upper end of the tube.

FIGURE 8 is an enlarged plan view of the tube showing a portion of the cover broken away.

In describing the invention, like character references are used to point out like and similar parts throughout the several views.

The device comprises an elongated frame having a back portion 1, a bottom portion 4 and a top portion 6. The bottom 4 extends outwardly from the back 1 and is provided with an opening 7 for receiving a neck 8 of a paste container tube 10. The tube 10 is provided with an opening 10' extending through the neck 8 which is adapted to fit into the opening 7 in the bottom 4 of the frame portion. While the use of the device is shown with a tooth paste tube and a tooth brush, it is not limited thereto, as the paste may be of any type that would work in tubes and with the device where a definite amount of paste would be required, or desired, from a predetermined movement of an element of the device.

The top portion 6 of the frame extends outwardly from the back portion 1 in line with the bottom portion 4 and in a plane substantially parallel therewith and is provided with an opening for admitting a bar 12. The bar 12 is provided with ratchet teeth 9 along at least one side thereof and which is used to move the inner end 12' of the bar 12 downwardly through the tube 10 to force the paste out through the opening 10' in the neck 8 of the tube. The bar 12 is slidably mounted in a bearing 13 secured to the upper surface of the upper frame portion 6.

Also extending upwardly from the upper frame portion 6 is a bearing support 14 having a horizontal aperture therethrough perpendicular to the elongated axis of the frame. The aperture is adapted to rotatably support a shaft 15. Fixedly secured to one end of the shaft 15 is a pawl supporting element 16 for supporting a pawl 18 for engaging the ratchet teeth 9 carried by the bar 12. Also fixedly secured to the shaft 15 by the screw 15' is an arm 20. The arm 20 extends downwardly from the shaft 15 along the side of the tube 10 to a point below the bottom 4 of the frame and then at an angle at 20' under the opening 7 in the bottom of the frame bottom 4. On the portion 20' there is an upwardly extended lip 22 for receiving one end of a paste-receiving member, such as a tooth brush 25, having bristles 26. The outer end 25' of the member 25 is used to operate the arm 20 by moving it inwardly, or rearwardly, as shown in dotted lines in FIGURE 2 at 20''. The arm 20 is normally held in an outward position by the tension spring 26, that is, when the lower end of the arm 20' is released by the paste-receiving member 25, the lower end 20' of the arm moves again to an outwardly position, as shown in full lines in FIGURES 2 and 3. The arm 20 being fixed to the shaft 15 rotates the shaft as the arm 20 is moved through the arc from its forward position to the rearward position. This also rotates the member 16 and the ratchet engaging pawl 18. As the arm is moved rearwardly, the pawl 18 moves downwardly to engage one of the teeth 9 and moves the inner end 12' of the bar 12 downwardly against a piston 11 forcing a predetermined amount of paste out through the opening 10' in the neck 8 of the tube and through the opening 7 in the frame portion 4 to deposit the paste on the paste-receiving member 25.

The end of the tube opposite the neck is preferably provided with a substantially rigid cover 24. The cover is fixed to the tube by a suitable adhesive 24'; however, the cover may be attached by any suitable method, such as clamping, heat sealing, etc. The cover 24 is provided adjacent its upper outer side with a break-off portion A having a short handle portion 24''. The break-off portion of the cover A is surrounded by a substantially thinner wall area 24''' than the remaining wall of the cover and is adapted to be broken off by moving the handle portion 24'' from side to side relative to the remaining portion of the cover 24 for removing the same to form an opening adjacent its center, as shown in FIGURE 8 at 23, through which the bar 12 may be operated.

The tube is initially filled with the paste 5 and is provided with a piston 11 adjacent the inner surface of the cover 24, and has an inner tapered portion 11' for fitting

into the neck of the tube for extruding all of the paste within the tube. The opposite or outer side of the piston **11** is provided with a compound recess having two steps **21** and **21'** for receiving the inner end of the portions **12'** and **12''** of the bar **12**, which will be more fully defined hereinafter.

Referring again in particular to the bar **12**, the inner end portions **12'** and **12''** of the bar **12** are adapted to slidably fit into the recesses **21** and **21'** of the piston **11** in order that the piston will be held in the proper position as it proceeds down the tube **10** in line with the central axis of the tube.

The frame is provided with holding elements **30** and **31**. These are preferably in the form of suction cups for attaching the device to a supporting surface **32**.

In order to manually move the bar **12** upwardly after the piston has been moved to the bottom of the tube **10** there is provided a pivotable member **33** having a finger piece **33'** which is connected to the shaft supporting member **14** by the screw **14'** (see FIGURES 1 and 2). This member is movable to a point where it will depress the pawl **18** as shown in dotted lines at **33''** in FIGURE 1. In this position the member **33** moves the pawl **18** out of contact with the teeth **9** and allows the bar **12** to be moved to a position where the inner end of the bar is adjacent the under surface of the upper frame portion **6** for removing the empty tube and inserting a full tube of paste.

Referring again to the lower portion **4** of the frame, there is provided a mechanism **35** adapted to operate below the opening **7** in the member **4** for normally keeping the opening closed and operatable to open the opening to allow a strip of paste **5'** to pass out through the opening **7** when the piston **11** is moved downwardly by operating the arm **20**. This mechanism also provides a cut-off for the paste strip **5'** after the mechanism has been moved a specified distance.

This mechanism **35** is pivotably positioned adjacent the under surface by a single screw **40** and is held in position over the opening by a tension spring **34** connected to one end thereof. The opposite end of the mechanism is provided with a pivotable latch **36** supported upon a screw **36'** having a spring **37** which keeps the latch in position in the path of the arm **20** when the arm is moved rearwardly, but is allowed to pivot out of the way of the arm when the arm moves outwardly to allow the arm to move past the mechanism for a successive operation. The mechanism **35** is provided with a knife edge **35'** for cutting off the strip of paste **5'**. The cutting is performed by a snap action created by the spring **34** when the latch **36** escapes past the arm **20**.

In operation, the frame is normally mounted to a support **32** by the elements **30** and **31**, the inner end of the bar **12** is raised to its highest point by moving the member **33** to the position to disengage the pawl **18** from the teeth **9** as previously described. The neck end of the tube is then inserted within the opening **7** in the bottom portion **4** of the frame and its opposite end is extended upwardly toward the upper portion **6** of the frame. If the outer break-off portion A of the cover **24** has not already been removed, it is broken off leaving an opening **23** in the end of the tube through which the inner end of the bar **12** is inserted. The member **33** is moved to its upright position and out of engagement with the pawl **18**. The bar is moved downwardly until the inner end portions **12'** and **12''** are in full engagement with the piston **11**. At this point the dispenser is ready to work. By moving the lower end **20'** of the arm **20** inwardly by pressing the paste receiving member **25** against the lip **22**, the arm **20** engages the latch **36** moving the closure and cut-off member from over the opening **7** in the base portion **4**. As the paste-receiving member **25** moves inwardly below the opening **7**, a strip of paste **5'**, as shown in FIGURE 2, is forced out through the opening **7** and deposited on the paste-receiving member, such as on the bristles **26** of a brush. When the arm has reached a predetermined point, the latch escapes past the arm **20**, and the paste cut-off portion **35'** and closing mechanism is snapped back to its normal resting place by the tension spring **34**, cutting off the strip **5'** of paste and reclosing the opening **7**. When the arm **20** is released by the paste-receiving member, the arm **20** will be returned to its normal resting place by the tension spring **26**, depressing the spring latch **36** on the closure and stop cut-off means **35** to take its position in front of the latch for a successive operation. In order to prevent the arm **20** from being moved too far rearwardly, there is a bracket **1'** which will engage the arm to prevent any further rearward movement.

It is seen that the dispenser is simple in both its construction and operation. When necessary to clean the mechanism it is necessary only to remove the single screw **40**.

The device may be coin-operated, that is, for every back and forth movement of the arm **20**, a coin mechanism may be associated with the operation of the arm **20** to allow its operation.

While a specific structure has been shown and described, it is for illustration only, as those skilled in the art may make various changes and still use the principal ideas described herein; therefore, the scope of the invention is best defined in the appended claims:

I claim:

1. A paste dispensing device comprising in combination:

a supporting member having a back portion adapted to be mounted on a supporting wall,

a first outwardly extending portion adjacent the lower end of the back portion,

a second outwardly extending portion adjacent the upper end of the back portion, and overlying the first outwardly extending portion in spaced relation thereto,

an operating bar slidably supported in said second outwardly extending portion,

a lever arm pivotally mounted on said second outwardly extending portion and pivotable toward and away from said back portion and having means thereon engaging the said operating bar to propel the latter downwardly as the lever is pivoted toward said back portion, said lever arm extending downwardly from said second outwardly extending portion to a point below said first outwardly extending portion and having means at its lower end to be engaged by a paste receiver and be actuated thereby,

a paste container positioned between said first and second outwardly extending portions and supported thereby, said paste container having an outlet at its lower end and a piston therewithin operatively engaged by said operating bar and being propelled downwardly thereby as the lever is pivoted toward said back portion,

and a combined cut-off and closure element for said container outlet pivoted to said first outwardly extending portion and having means thereon engageable by said lever arm when the latter is pivoted toward said back portion to open the outlet and permit the paste to be deposited on the receiver, but release the cut-off and closure element before the lever arm reaches its rearmost position adjacent the back portion, and additional means on said cut-off and closure element to allow the lever arm to pass the lever arm engaging means on said cut-off and closure element as the lever arm is pivoted away from said back portion.

2. The structure defined in claim **1**, in which the paste container is provided with a closure at its end opposite the outlet therein and in which the piston within the container is positioned adjacent said closure, said closure having a break-off central area providing an opening for

said operating bar to pass therethrough and apply pressure to said piston.

3. The structure defined in claim 2, in which the break-off central area is formed by a circular groove in the end wall providing a weakened and readily breakable portion therein.

4. A paste container for use in a dispensing device comprising:

an elongated cylindrical side wall, a tapered neck portion at one end of the side wall and a restricted outlet opening in the neck portion,

a piston slidably positioned within the cylindrical side wall and having one side face provided with a tapered surface conforming with the taper of the neck portion and an extension conforming in size and shape with the restricted outlet opening in the container whereby to insure expelling substantially all of the paste from the container as the piston reaches the end of its travel adjacent the neck portion, the piston further having a recess and counter bore centrally located in its opposite side face,

a cover at the end of the side wall opposite the neck

portion, said cover having a break-off central area formed by an annular groove in the surface of the cover providing a weakened and readily breakable portion therein, the cover further having a projection extending from within the area defined by the annular groove and forming a handle whereby lateral pressure and manipulation of the handle will fracture the breakable portion and afford a means for its removal to provide an opening in the cover for entrance of an actuating bar to cooperate with recess and counterbore in the piston for propelling the same.

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