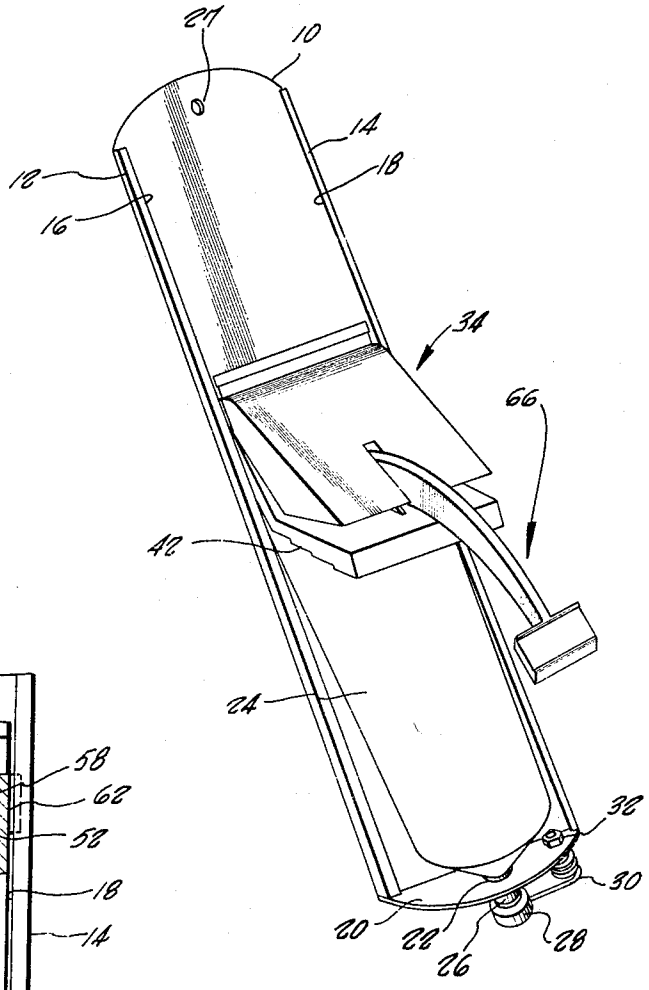
Feb. 11, 1964 G. C. SMITH 3,120,905

MECHANICAL DISPENSER

Filed Feb. 6, 1962 2 Sheets-Sheet 1

FIG. 1.



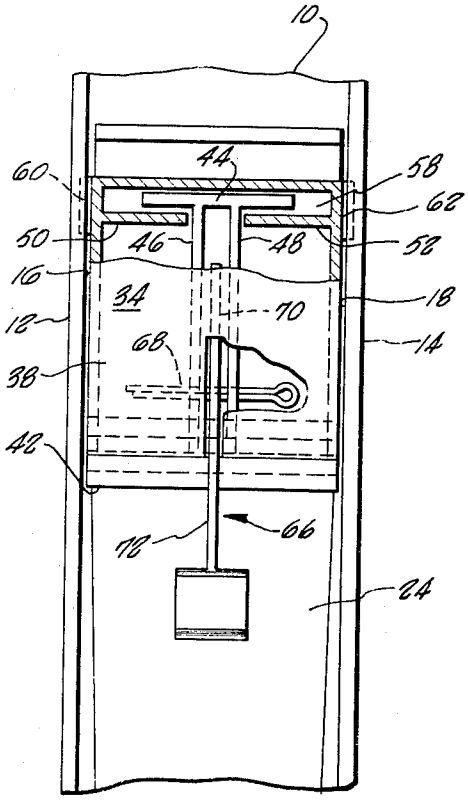


FIG. 4.

INVENTOR.
GROVER C. SMITH
BY
Christie, Parker & Hale
ATTORNEYS.

Feb. 11, 1964 G. C. SMITH 3,120,905

MECHANICAL DISPENSER

Filed Feb. 6, 1962 2 Sheets-Sheet 2

FIG. 2.

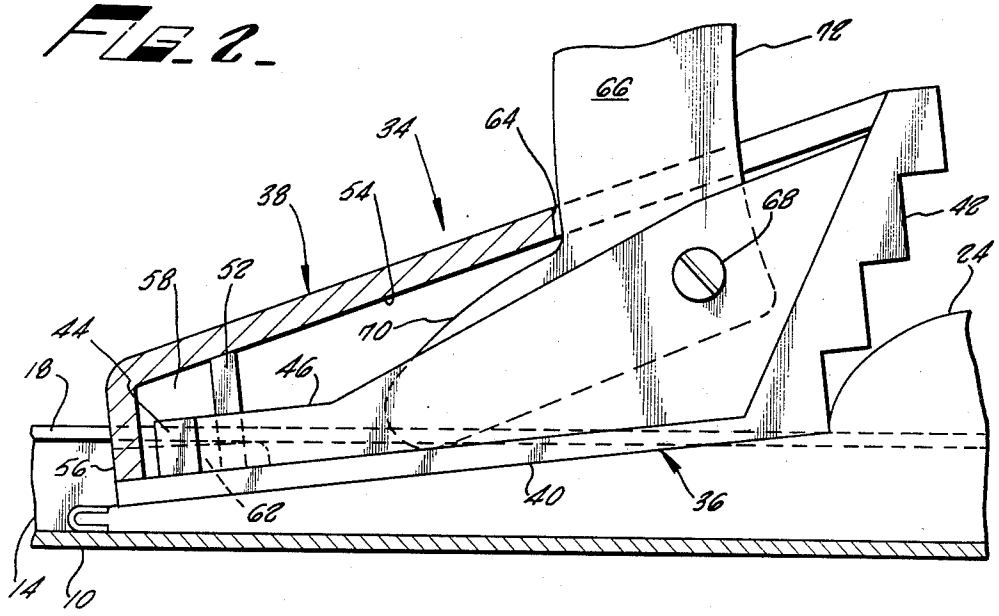
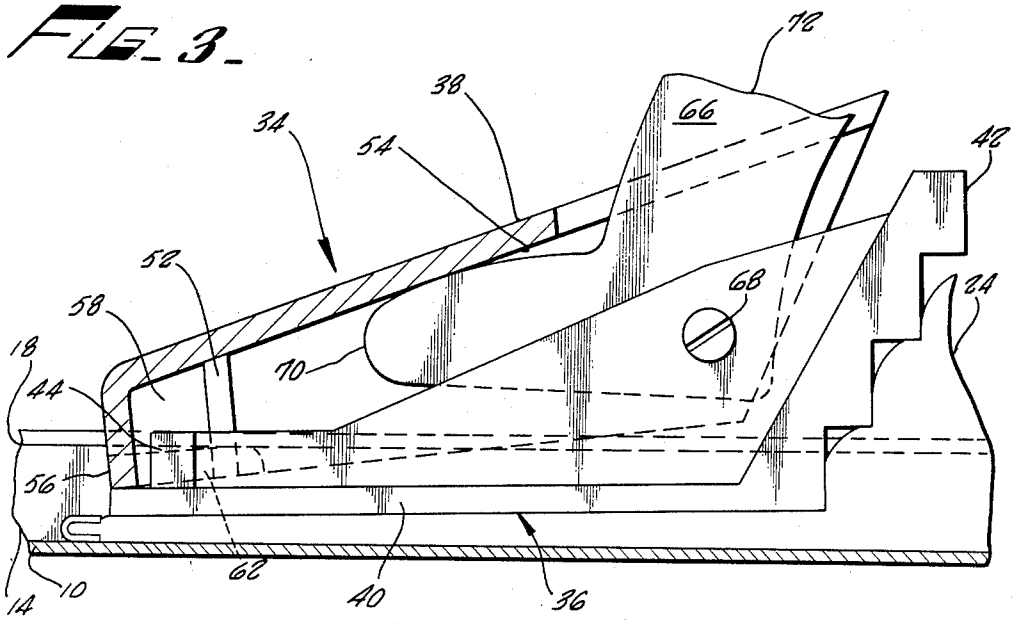


FIG. 3.



INVENTOR.
GROVER C. SMITH
BY
Christie, Parker & Hale
ATTORNEYS

United States Patent Office

3,120,905
Patented Feb. 11, 1964

3,120,905

MECHANICAL DISPENSER

Grover C. Smith, 26310 Yale St., San Gabriel, Calif.

Filed Feb. 6, 1962, Ser. No. 171,517
5 Claims. (Cl. 222—103)

This invention is directed to improvements in mechanical dispensers for dispensing viscous substances from compressible containers of various sizes and more particularly to a novel mechanical dispenser which is particularly adapted to the dispensing of toothpaste.

In the mechanical dispensing of a viscous substance from a compressible container, such as toothpaste from a compressible tube, it is of prime economic importance to provide complete disbursing of the viscous material from the container. Also it is generally desired that the mechanical dispensing be selectively controllable to provide any desired amount of viscous material from the container.

To accomplish this the present invention provides a simple, compact and inexpensive hand-operated mechanical dispenser which basically includes means defining a uniform channel having inwardly extending lip members and means for mounting a compressible container within the channel. A slide having a base plate covered by a cover member is positionable for guided sliding movement within the channel. A pair of lugs, one located at either side of the cover member adjacent a first end of the slide, extend under the lip members to limit the movement of the slide away from the base of the channel. Pinned to the base plate and extending through the cover member over a second end of the slide is a hand-operated lever arm arrangement for raising and lowering the second end of the slide within the channel. In particular, the lever arm is constructed such that movement of the hand-operated end of the lever arm toward the base of the channel causes the other end of the arm to contact the inner surface of the cover member.

To dispense a viscous substance from a compressible container utilizing the above-described dispenser of the present invention, the dispenser is preferably mounted in a vertical position. By use of the lever arm the slide is then moved upward within the channel. This allows an open compressible container, such as a tube of toothpaste, to be inserted within the channel to rest on the mounting means with its open end extending in a downward direction. Movement of the hand-operated end of the lever away from the base of the channel then allows the second end of the slide to be positioned over a portion of the tube. Movement of the lever toward the channel causes the lever to contact the inner surface of the cover member tending to raise the cover member within the channel. This, in turn, presses the lugs tightly against the lip members causing the cover to pivot around the first end of the slide, thereby effectively locking the slide to the tube. The base member, in turn, pivots around the first end of the slide toward the base of the channel to compress the portion of the tube thereunder and dispense the paste contained therein.

By controlling the force applied to the lever the amount of viscous material dispensed from the tube may be selectively controlled.

Further, by forcing the slide toward the plate the tube may be completely compressed thus leaving it substantially clean of viscous material. This allows for maximum utilization of the entire contents of the tube.

The above, as well as other features of the present invention, may be more fully understood by reference to the following detailed description when considered with the drawings, in which:

FIGURE 1 is a perspective representation of the mechanical dispenser of the present invention;

FIGURE 2 is a sectional side view of the mechanical dispenser including a tube in an uncompressed state;

FIGURE 3 is a sectional side view of the mechanical dispenser with the tube in a compressed state; and

FIGURE 4 is a sectional top view of the mechanical dispenser.

As represented by the drawings, the mechanical dispenser of the present invention includes a support plate **10**. Coupled to the support plate **10** are first and second shoulder members **12** and **14** extending substantially parallel to each other. The shoulder members **12** and **14** each include a lip member **16** and **18**, respectively, which extends over the plate **10** toward a shoulder member. In this manner a uniform channel having inwardly extending lip members is defined.

Positioned at one end of the plate **10** substantially perpendicular to the shoulder members **12** and **14** is a shoulder member **20**. The shoulder member **20** has an opening **22** disposed therein and provides means for supporting an open tube **24** between the shoulder members **12** and **14**, the nipple **26** of the tube **24** extending through the opening **22**.

In practice the support plate **10** as well as the shoulder members **12**, **14** and **20** may be formed from a single piece of sheet metal in a well known manner.

The support plate **10** and associated shoulder members may be coupled to a wall or other cabinet fixture by extending a screw (not shown) through an opening **27** in an end of the support plate **10** remote from the shoulder **20**. In this manner the tube **24**, when mounted between the shoulders **12** and **14**, lies in a substantially vertical plane. To seal the open nipple of the tube a "flip-over" rubber cover **28** is coupled to the shoulder member **20**. The cover member **28** is coupled to the shoulder **20** by a spring **30** which in turn is secured to the shoulder by a screw arrangement **32**.

To control the dispensing of viscous material from the tube **24** the mechanical dispenser of the present invention includes a slide arrangement represented generally at **34**. The slide **34** is positioned between the shoulders **12** and **14** for limited sliding movement over the plate **10** and includes a base plate **36** and a cover member **38**.

The base plate **36** has a flat portion **40** which extends over the plate **10** between the shoulder members **12** and **14** and a toothed portion **42** located at an end of the base adjacent the shoulder **20**. The toothed portion **42** is arranged at a predetermined acute angle relative to the flat portion **40** to enable the slide to advance in a step-by-step manner in compressing the tube **24**. The toothed portion **42** is particularly an aid in compressing the metal nozzle end of the tube of paste **24**.

The base plate **36** also includes a ridge **44** (see FIGURE 4) which extends across the upper surface of the flat portion **40** and a pair of parallel ridge members **46** and **48**. The ridge members **46** and **48** extend substantially parallel to the shoulder members **12** and **14** and are tapered from the ridge **44** away from the flat portion **40**

to contact the toothed portion 42 of the base member 36 as illustrated in FIGURES 2 and 3.

As represented most clearly in FIGURE 4, the cover 38 includes a pair of ridge members 50 and 52 aligned with each other and extending substantially normal to the shoulders 12 and 14. The ridge members 50 and 52 extend from an inner surface 54 of the cover 38 downward to contact the upper surface of the flat portion 40 of the base 36. Thus, the ridge members 50 and 52, together with an end 56 of the cover 38, form a slot 58 into which the ridge member 44 is positioned. The inner surface 54 of the cover 38 slopes upward from the surface of the flat portion 40 at the end 56 to engage the toothed portion 42 of the base 36 as illustrated in FIGURES 2 and 3. In this manner the cover 38 completely encloses the base 36.

The cover member 38 also includes a pair of lug members 60 and 62, one located along either side of the cover at the end 56. The lug members 60 and 62 have substantially flat upper surfaces which are tapered from the end 56 toward the flat portion 40 and extend under the lip members 16 and 18, respectively, to limit movement of the slide away from the plate 10. Since the lug members 60 and 62 are located at one end of the slide the other end of the slide possesses a greater freedom of movement away from the plate 10 than does the one end.

Coupled to the base member 36 and extending through a slot 64 in the cover member 38 is a bent arm 66. The bent arm 66 is pinned at 68 to pivot between the ridges 46 and 48 such that an end 70 of the arm 66 extends within the cover member 38 to contact the sloping inner surface 54 thereof. A second end 72 of the bent arm 66 extends through the opening 64 above the toothed portion 42 of the base plate 36 and over the support plate 10, as illustrated in FIGURES 1 and 4.

Due to this bent arm hinging arrangement, movement of the second end 72 of the arm away from the support plate 10 causes the end 70 of the arm 66 to be pivoted into contact with the upper surface of the flat portion 40 and raises the toothed portion 42 away from the plate 10. The slide 34 is then free to slide downward over a portion of the tube 24. In this position, as represented by FIGURE 2, the lug members 60 and 62 contact the lip members 16 and 18 and the flat portion 40 rests upon the surface of the tube 24.

To compress the tube 24 a force is exerted on the end 72 of the arm 66 toward the plate 10. Movement of the arm 66 toward the plate 10 moves the slide member to the position represented in FIGURE 3. In particular, the end 70 of the arm 66 is pivoted to contact the sloping inner surface 54 of the cover member 38. This causes the cover member 38 to pivot around the end 56 thereof and in turn urges the lugs 60 and 62 more tightly into contact with the lip members 16 and 18, respectively. Such movement, in effect, locks the slide 34 to the tube 24 at the end 56 to prevent sliding movement of the slide relative to the tube. Movement of the arm 66 in contact with the sloping inner surface of the cover member 38 also causes the base plate 36 to pivot about one end of the slide 34 to compress the tube 24 while the toothed portion 42 grips the tube 24 in a stepped manner as indicated in FIGURE 3.

When the portion of the tube over which the slide is positioned is substantially compressed the arm 66 may again be raised to reposition the slide over a new portion of the tube and the above repeated to compress the new portion of the tube.

In this manner the entire tube may be completely compressed to substantially clean the tube of its viscous material allowing all of the viscous material contained therein to be utilized.

Further, by selectively controlling the amount of pressure applied to the arm the amount of viscous material dispensed at any given time may be selectively controlled.

What is claimed is:

1. A mechanical apparatus for dispensing viscous substances disposed in compressible containers, comprising:
means defining a uniform channel having inwardly extending lip members and means for mounting a container within the channel;
a slide having a base plate and a movable cover member substantially covering the base plate, the slide being positionable for guided sliding movement within the channel, the cover member having a pair of lugs, one extending from either side thereof and under a lip member adjacent a first end of the slide;
and a hand-operated lever pivoted about the base plate and having one end positioned within the cover member to extend toward the first end of the slide and to contact an inner surface of the cover member and a second end positioned to extend through the cover member over a second end of the slide such that movement of the second end of the lever arm away from the channel raises the second end of the base plate away from a floor of the channel and over a portion of the compressible container and movement of the second end of the lever arm toward the floor of the channel moves the one end of the lever arm into contact with the cover member, locks the lugs against the lip members, and causes the cover member and base plate to pivot around the first end of the slide whereby the base plate compresses the container dispensing a viscous substance therefrom.

2. A mechanical apparatus for dispensing viscous substances disposed in compressible containers comprising:
means defining a uniform channel including a substantially flat support plate and
first and second shoulder members extending from the plate substantially parallel to each other, the shoulder members each including a lip member extending over the plate toward a shoulder member;
a slide positionable within the channel between the shoulder members for guided sliding movement along the channel over the plate, the slide including a base plate extending over the plate between the shoulder members and a cover member movably mounted over the base plate, the cover member having a pair of lugs, one located on either side of the cover at a first end of the slide and extending under the lip members to limit movement of the slide away from the plate, and an inner surface which slopes away from the base plate from the first to a second end of the slide member;
means for mounting a container within the channel and on the support plate to extend between the shoulder members with an end adjacent the second end of the slide;
a bent arm member;
means for coupling the arm member to the base plate to pivot about a point on the base plate with a first end of the arm within the cover and extending toward the first end of the slide to contact the sloping inner surface of the cover member and with a second end of the arm external to the cover and extending over the second end of the slide such that movement of the second end of the arm away from the plate pivots the slide about the first end to raise an end of the base plate away from the plate to allow the base plate to be positioned over a portion of the container and movement of the second end of the arm toward the plate causes the first end of the arm to contact and raise the cover member clamping the lugs against the lip members and forces the base plate to pivot about the first end of the slide toward the plate to compress the container.

3. The apparatus defined in claim 2 including a spring loaded flip-over cap coupled to the support plate for covering an open end of the container when not in use.

4. The apparatus defined in claim 2 wherein the base plate includes a toothed portion located at the second end of the slide and extending at an acute angle from the base to enclose an end of the sloping inner surface of the cover member and to enable the slide member to advance in a step-by-step manner in compressing the entire container.

5. The apparatus defined in claim 4 wherein the base includes a ridge member extending across the base at the first end of the slide and wherein the cover member includes a downwardly extending ridge member forming a slot with an end of the cover member at the first end

of the slide to mate with the ridge member of the base for securing the cover member to the base.

References Cited in the file of this patent

UNITED STATES PATENTS

1,979,105	Harnish	Oct. 30, 1934
2,231,889	Davis	Feb. 18, 1941
2,260,346	Spencer	Oct. 28, 1941

FOREIGN PATENTS

815,222	Great Britain	June 24, 1959