PUMP-TYPE TOOTHPASTE DISPENSER

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The present invention relates to a manually controllable material dispenser which is primarily designed and adapted to handle pastes and creams and which has to do with a simple and practical mechanical dispenser and which is thought to be novel in that it embodies and conveniently utilizes a pump which dispenses a measured amount of toothpaste at each operation.

Measuring-type material dispensers are well known. It is also common in the art to provide, in certain prior art constructions a toothbrush operated member which controls a valve for opening and closing the source of supply of powder or paste, as the case may be. In order to categorize the instant subject matter of the invention and to comprehend, generally, the state of the art to which it relates, the reader may refer to the dispensing apparatus of Noel R. Kirk; namely, Patent No. 1,920,867 of August 1, 1933. By way of analogy, this patented construction also introduces a gun-type pump which is characterized by a cylinder provided with a discharge opening, a piston mounted for reciprocation in the cylinder, piston operating means, a spring for urging said operating means in one direction, and connections between the piston and operating means adapted to move the piston to perform automatically both in its discharge stroke and part of the succeeding return stroke during the movement of the operating means and under the urge of the spring means.

An obvious objective of the instant matter is to structurally, functionally and otherwise improve upon the Kirk patent and any other similarly constructed and performing dispensers. For example, instead of employing a reservoir for the material and a follower which assists in expressing the material, the instant invention proposes the use of a conventional-type collapsible toothpaste filled tube which is connected with the pump means in a novel and satisfactorily operating manner.

In carrying out the preferred embodiment of the invention under advisement, a simple and expedient mechanical-type pump is built into a handy cover-closed cabinet or the like. The latter is bracketed or otherwise hung on a wall or suitable stationary support. The pump is characterized by a cylinder and a piston with the cylinder provided at its lower end with a discharge nozzle and provided on one side and above the plane of the nozzle with an intake neck. Using a suitable adapter, a conventional-type toothpaste filled tube is communicatively attached to the intake neck. After the lower portion of the cylinder just above the discharge and intake portion is primed or charged with paste from the tube, it will be seen that the downward compression stroke of the piston in the cylinder forcibly ejects a measured amount of paste through the discharge nozzle onto a brush in a holder, for example, a slide, which locates itself beneath the nozzle. At the same time the plunger functions as a cut-off valve during this compression and dispensing stroke. On its upward or return stroke, a predetermined action in the cylinder and opens the intake neck during which time a predetermined amount of toothpaste is sucked into the cylinder and the pump is then readied for the next measured dispensing operation.

In reducing to practice the over-all concept, a novel tray-type slide is employed to accommodate the manually actuable brush and this has operating connection by way of a flexible element with means which depresses the piston to accomplish its down stroke, spring means being employed to raise the piston and to normally maintain it in its up or ready-to-use position.

Other objects, features and advantages will become more readily apparent from the following description and the accompanying drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a perspective view of a measuring-type pump-equipped toothpaste dispenser constructed in accordance with the principles of this invention;

Figure 2 is an enlarged view taken on the plane of the vertical line 2—2 of Figure 1 and with parts appearing in section and also in elevation;

Figure 3 is a section on the vertical line 3—3 of Figure 2;

Figure 4 is a horizontal or cross-sectional view on the line 4—4 of Figure 2;

Figures 5 and 6 are detail sections taken on the lines 5—5 and 6—6 of Figures 3 and 2, respectively;

Figure 7 is a perspective view of the aforementioned adapter;

Figure 8 is a fragmentary detail view on the plane of the line 8—8 of Figure 4; and

Figure 9 is a fragmentary sectional view on the line 9—9 of Figure 8.

As will be evident, the casing or cabinet is not an absolutely essential part but will more or less be desirable since the device will have to be of good general appearance insomuch as it is usually to be employed in one's bathroom. Considering, then, the cabinet this is denoted generally by the numeral 10. This is of any appropriate material and shape and size and includes a bottom wall 12, a top wall 14, vertical side walls 16, a full back wall 18 and front wall 20. The latter is constructed to accommodate an inseparable and removable cover or panel 22. As perhaps best shown in Figures 2 and 4, the upper portion of the front wall has a groove 24 to accommodate a keying tongue 26 on the upper end of the panel. The vertical or longitudinal edges are formed as shown in Figure 4 with lenghwise flanges 28 fitting into grooves provided therefor in the vertical front wall portions. At the lower portion the panel has bosses or similar nodule-like formations 30 which are removably snapped into place. The cooperating embossments 32 are shoulders or stops and assist in holding the cover in place. The lower portion of the front wall beneath the cover is provided with a suitable front opening which is generally denoted by the numeral 34. On the back wall there is a suitable embedded fixed attaching bracket 36 which is of the construction shown in Figure 4 and is removably or detachably mounted on the complementary wall fixture or supporting bracket 38. The materials from which these parts are made are thought to be immaterial, patentably speaking. On the interior of the cabinet or case in what may be called the compartment space 40 there is a vertical rib or equivalent formation 42. This is provided with a vertical bore 44 which constitutes the aforementioned cylinder for the toothpaste. At the lower end as brought out in Figure 2, there is a discharge for the toothpaste which may be treated as a discharge neck 46. This is screw threaded to accommodate a suitable discharge nozzle 48. On one side, that is the right in Figure 2 and above the discharge neck, there is an outstanding intake neck 50. This has a socket therein to accommodate the telescopically fitted lateral branch 52 of the elbow
like adapter 54. The vertical branch 56 is socketed and the socket serves to accommodate the usual screw thread-
nek 58 on the paste filled collapsible tube 60. This stands up vertically and in practice the adapter will be of rubber of an appropriate type so that it may be easily fitted to the part which it cooperates with. The adapter and neck provide a passage from the reservoir or source of supply, that is, the tube 60, to the lower portion of the cylinder. The piston which is reciprocable in the cylinder is a simple rod 62 which has a reduced central portion provided with a packing ring 64. The rod extends upwardly through the open upper end of the cylin-
der where it is provided with a head 66 suitably con-
ected with what may be described as an L-shaped me-
chanical actuator. This has its short arm 68 apertured and the headed end 66 is connected therewith. The short arm also provides a stop or abutment for a coiled spring 70. The coil spring surrounds the piston rod and is inter-
posed between the arm 68 and the upper end of the cy-
lander rib or block 42. This block is provided with a
suitable guiding channel 72 as brought out in Figure 4 which permits vertical sliding of the long arm of the L-
shaped actuator therein. This long arm is denoted at 74 and as best shown in Figure 2 there is a flexible element 76 having its upper end 78 connected to the actuator. The flexible element is driven to the other guiding pulleys 80 also 82 mounted in the lower wall portions. The wall portion is grooved as at 84 to accommodate the pulleys and the pulleys are mounted on shafts 86 which are suitably provided therefor. The aforementioned slide 88 takes the form of a miniature tray and the adjacent end por-
tion 90 of the flexible element is attached to a lug 92 on the bottom of the tray. The end portion 92 of the
tray is open to accommodate the bristled head 94 of the toothbrush. There are side flanges 96 and an end
flange 98 which serve as thrust members whereby mov-
ing the brush from right to left serves to slide the tray in the keying and guiding grooves 100. The tray has flanges 102 which operate in these grooves as shown in Figure 3. The device is shown set for operation in Fig-
ure 2. Here it is to be assumed that the toothpaste tube 60 has been mounted on the adapter and that the parts are in communicative operating relationship as brought out. When the tube is first attached the upper end may be squeezed to apply the desired amount of toothpaste A into the lower portion of the cylinder in readiness for dispensing. That is to say, the cylinder is primed to start with. The piston rod 62 which is held up by the spring 70, is now poised and ready to operate. It might be men-
tioned here that the numeral 104 seen, for example in Figure 2, is a stop or bumper for the upper headed end 66 of the piston rod. The spring 70 serves not only to hold the piston in its up or normal position but it also operates by way of the flexible element 76 and pulleys to hold the brush receiving tray in the full line position shown at the right in Figure 2. It will be evi-
dent therefore that by placing the headed end of the toothbrush in the manner shown in phantom lines in Figure 2, and exerting pressure on the handle B of the
brush, the slide 88 moves from the full line to the dotted line position as shown. This obviously exerts a stress or pull on the flexible element 76 and causes the L-shaped actuator, the parts 74 and 68, to ride down in the guide way 77. This compresses the spring 70 and also forces the piston down in the cylinder. It follows that the
charge A is compressed and is forced out through the nozzle 48 onto the bristles of the brush in an obvious manner. This down stroke of the piston also closes off the port intake of the neck 50 in an obvious manner. It is necessary, however, to replenish the amount of toothpaste which has been dispensed. Hence, when the user retracts the brush, spring means 70 comes into play and returns the parts to the position shown in Figure 2 and this is the return or suction stroke of the piston in the cylinder. The suction produced serves to suck out
toothpaste from the tube and to replenish or replace the initially discharged paste in a seemingly practical and obvious manner.

The toothpaste tube may be easily put in position or removed by way of the insertable and removable cover panel 22. It is also easily accessible for checking should for some reason or other the pump means fail to operate effectively and a return suction stroke.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous mod-
fications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the inven-
tion as claimed.

What is claimed as new is as follows:

1. A measured amount toothpaste dispensor compris-
ing a stationary suction-loading, paste compressing and dispensing pump embodying a cylinder having a paste discharge neck and complementary nozzle at its lower end, a lateral intake neck on one side in a plane above said discharge nozzle, an elbow-type adapter having one branch communicatively connected with said intake neck, a collapsible tube of toothpaste having a neck connected to the other branch, an actuator, a piston reciprocable in said cylinder and progressively cooperable with said intake neck and discharge neck respectively in a man-
er to valve and temporarily close said intake neck while forcibly compressing and ejecting a measured amount of toothpaste by way of said discharge neck during the compressing and discharging strokes respectively of said piston, and again opening said intake neck and sucking in an amount of paste equivalent to the measured amount previously displaced on its returning suction stroke, spring biased plunger reciprocating means operatively connect-
ed with said piston for moving said pump reciprocating with its associated cylinder, and having its lower portion progressively and successively cooperable with said intake neck and discharge neck respectively in a man-
er to valve and temporarily close said intake neck while forcibly compressing and ejecting a measured amount of toothpaste by way of said discharge neck during the compressing and discharging strokes respectively of said piston, and again opening said intake neck and sucking in an amount of paste equivalent to the measured amount previously displaced on its returning suction stroke, spring biased plunger reciprocating means operatively connect-
ed to said cylinder and progressing cooperable with a

2. The structure defined in claim 1 and wherein said operating connection embodies a flexible element con-

3. A toothpaste dispenser comprising a casing embody-
ing a compartment having a front wall provided with a readily applicable and removable opening and closing panel, the lower portion of said front wall having an opening therein to permit access to be constantly had to the lower open portion of said compartment, a bored block fixedly mounted in said compartment with the bore opening through the upper and lower ends of the block, said bored defining a cylinder, the lower portion of said block having a discharged neck aligned with said cylinder and a complementary discharge nozzle, the portion of the block in a plane above said neck having an

4. The toothpaste tube may be easily put in position or removed by way of the insertable and removable cover panel 22. It is also easily accessible for checking should for some reason or other the pump means fail to operate effectively and a return suction stroke.
tray-like slide mounted operatively in the lower portion of said compartment, and a spring-biased operating connection between said tray-like slide and piston rod.

4. A toothpaste dispenser comprising a casing embodying top, bottom, side, rear and front walls cooperating and defining a compartment, said front wall having a readily applicable and removable opening and closing panel, the lower portion of said front wall having an opening therein to permit access to be constantly had to the lower open portion of said compartment, a bored block fixedly mounted in said compartment with the bore opening through the upper and lower ends of the block, said bore defining a cylinder, the lower portion of said block having a discharge neck and a complemental discharge nozzle, the portion of the block in a plane above said neck being provided with an outstanding bored neck providing an intake, an elbow-like adapter having one branch fitted telescopically into said intake neck and having a vertically disposed socketed branch to accommodate the usual screw threaded neck of a tube of toothpaste, a piston rod slidably mounted in said cylinder and having its lower portion progressively cooperable with said discharge neck and intake neck, a tray-like slide mounted operatively in the lower portion of said casing, and an operating connection between said tray-like slide and piston rod, said operating connection embodying an L-shaped slidably mounted piston rod actuator having a short arm connected to the upper end of said piston rod, having a long arm slidably mounted in said block, a coil spring encircling the upper end of said piston rod and interposed between said short arm and the upper end of said block, pulleys mounted for idling in the lower portion of said casing, and a flexible element connected at one end with said long arm, having its intermediate portion trained over said pulleys and having its other end portion connected with said slide.

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