June 4, 1940. R. ISIDORE ET AL 2,203,629

TOOTH PASTE DISPENSER

Filed Aug. 22, 1939

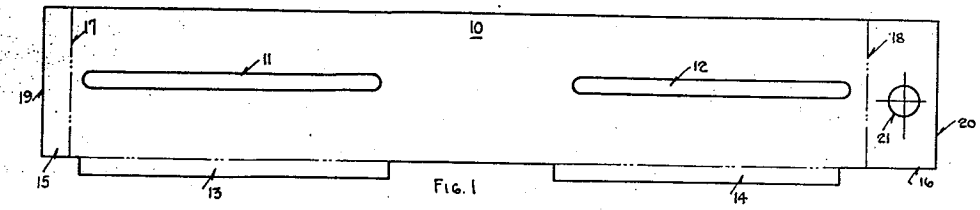


FIG. 1

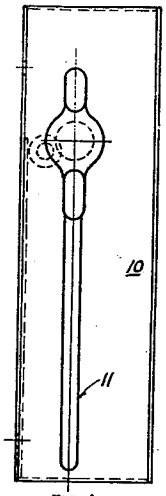


FIG. 4

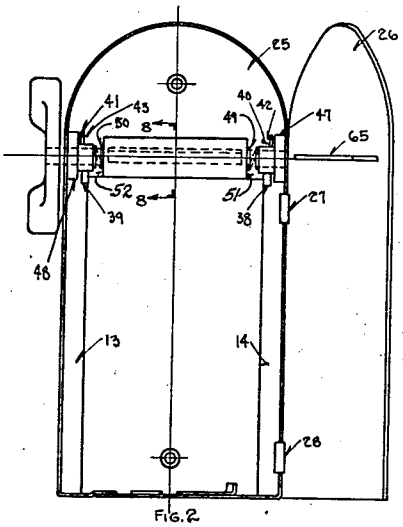


FIG. 2

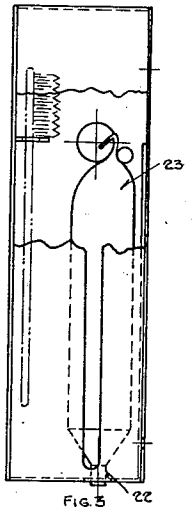


FIG. 3

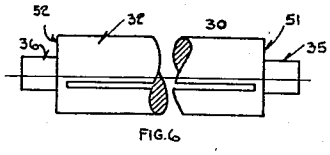


FIG. 6

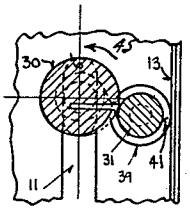


FIG. 8
SECTION 8-8

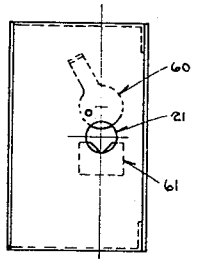


FIG. 5

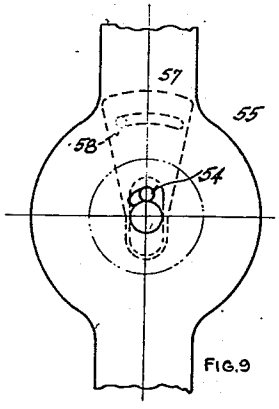


FIG. 9

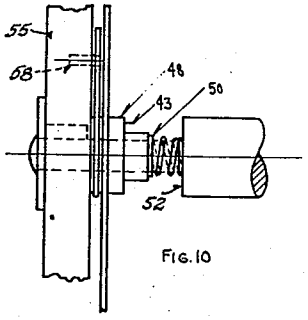


FIG. 10

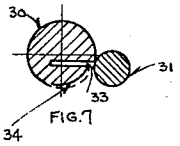


FIG. 7

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TOOTH PASTE DISPENSER

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Application August 22, 1939, Serial No. 291,397

4 Claims. (Cl. 221—60)

Our invention relates to toothpaste dispensers.

One object of our invention is to provide a simple dispenser for manipulating a collapsible tube to dispense measured amounts of toothpaste or other similar products that are sold in collapsible tubes.

Another object of our invention is to provide a simple cabinet structure within which the collapsible tube and the dispensing mechanism may be enclosed.

Another object of our invention is to provide a winding mechanism to compress the collapsible tube and to feed a measured quantity at each operation.

Our invention generally contemplates means for supporting a collapsible tube with its flattened end anchored in a winding pressure mechanism which may be operated with a step by step movement to progressively compress and flatten the tube and wind it upon a compressing and winding roller mechanism.

The winding roller mechanism is so constructed as to constitute a floating assembly of a winding roller and a cooperating pressure roller between which the tube is progressively flattened to express the material from the mouth of the tube. A suitable ratchet mechanism is operated by a handle to impart rotary movement to the winding roller, and as the winding roller and its co-operating pressure roller progressively compress and flatten the tube the floating assembly of the two rollers moves along the body of the tube towards the neck.

The winding mechanism is supported between two side walls of a cabinet which serves both as a guide for the winding mechanism and as an enclosure for the mechanism end of the tube.

The construction of the dispensing device that embodies our invention is illustrated in the accompanying drawing in which:

Figure 1 is a plan view of a development of the side wall of the cabinet;

Figure 2 is a front elevational view of the cabinet and the dispensing roller assembly with the door of the cabinet shown open;

Figure 3 is a side view of the cabinet with part of the side wall broken away to show the winding and the pressure of rollers;

Figure 4 is a side elevational view of the other side of the cabinet at which the operating handle for the rollers is located;

Figure 5 is a bottom view of the cabinet showing the opening for the neck and the lock cam for the neck of the tube;

Figure 6 is an enlarged front elevational view of the winding roller showing the longitudinal eccentric slot;

Figure 7 is a schematic transverse view of the winding and the pressure rollers to illustrate the slot location in the winding roller and the normal relative location of the roller axes;

Figure 8 is a transverse sectional view through the rollers along the plane indicated by the line 8—8 in Figure 2;

Figure 9 is an enlarged front elevational view of the operating handle for the main winding roller;

Figure 10 is an enlarged side elevational view of the handle and ratchet operating device of the assembly in Figure 9 mounted on the outer end of the main winding roller on the outside of the cabinet.

As shown in Figure 1 of the drawing, the main body of the cabinet is formed from an oblong metal stamping 10 provided with two slots 11 and 12 to serve as guide slots in the side wall of the cabinet, and the stamping is further provided with two flange sections 13 and 14 to serve as tracks or reaction surfaces on the back wall of the cabinet, as will be subsequently explained. The two end sections 15 and 16 of the stamping 10 are arranged to be folded along the lines 17 and 18, and to be welded or otherwise suitably joined to each other along the extreme edges 19 and 20. An opening 21 in the end of the stamping 10 serves to receive the neck 22 of a tube 23 from which material is to be dispensed, as illustrated in Figure 3.

The stamping 10, when formed, constitutes the main body structure of the cabinet 25 in Figure 2. A door 26 is secured to the body of the cabinet by suitable hinges 27 and 28.

The mechanism for compressing the tube 23 to express the material from the neck comprises a main winding roller 30 and a co-operating roller 31.

The winding roller, as illustrated in Figures 6 and 7, has a main body portion 32 containing an eccentric slot 33 parallel to, but slightly displaced from a longitudinal axial plane. The portion 34 adjacent the lower side edge of slot 33 is slightly cammed to provide a slight depression to receive the first part of the end of the tube adjacent the flattened end which is to fit into the slot 33.

The winding roller 30 is further provided with two shafts 35 and 36, the latter being somewhat longer than the shaft 35 to provide space for supporting an operating handle for the roller.

The pressure roller 31 is longer than the main

body portion 32 of the winding roller 30. The ends of the pressure roller are supported in roll bearings 38 and 39 that are so spaced on the pressure roller 31 as to be located so the roll bearings will roll upon the tracks 13 and 14 at the back of the cabinet.

As shown in more detail in Figure 8, the pressure roller 31 is yieldingly supported at and by the lower end of two saddle springs 40 and 41, the upper ends of which are anchored on anchoring pins 42 and 43 on bearing supports for the winding roller 30.

The arrangement between the winding and the pressure rollers is illustrated in Figure 7, and is such that the axis of the pressure roller should always to be below the horizontal plane through the axis of the winding roller. The manner in which that relationship is maintained is more clearly illustrated in the view shown in Figure 8.

As shown in Figure 8, the roll bearings 38 and 39 rest against, and roll on, the track sections 13 and 14 in the back of the cabinet. At the same time, the yielding saddle springs tend to hold the pressure roller 31 in its uppermost possible position where it will be as close to the winding roller as conditions will permit, depending upon whether any part of the tube is already wound upon the winding roller, and also upon how much of the tube is wound upon the winding roller. The operating direction of rotation of the winding roller 30 is indicated by the arrow 45 above the winding roller in Figure 8. When the winding roller is operatively rotated counter-clockwise, as indicated in Figure 8, the reaction upon the pressure roller 31 is such as to rotate the pressure roller clockwise. The rotation of the pressure roller in a clockwise direction tends to move that roller upwards along the back tracks 13 and 14. At the same time, however, as the winding roller rotates counter-clockwise and winds part of the tube 23 upon the roller, the winding roller itself will move downward since the lower end of the tube 23 is anchored in the lower wall of the cabinet. As the winding roller 30 moves downward in the guide slots 11 and 12, the reaction pressure against the pressure roller 31 will cause the pressure roller to rotate in its roll bearings 38 and 39 and the entire assembly, including the guide roller and the pressure roller, will move downward.

The successful operation of this device depends upon the axis of the pressure roller being below the horizontal plane through the axis of the winding roller at all times.

The other mechanical and structural details for the winding mechanism may now be considered.

The winding roller 30 is supported between two bearing supports 47 and 48 that fit over the end shafts 35 and 36 of the winding roller. Two springs 49 and 50 are disposed between the bearing supports 47 and 48 and the end faces 51 and 52 of the winding roller 30. The two springs 49 and 50 thus tend to maintain the winding roller substantially centralized between the bearing supports 47 and 48, and also serve to press the bearing supports against the inner surfaces of the side walls of the cabinet with a slight force that is sufficient to establish a light friction to hold the winding roller and its assembly in position against casual displacement by gravity.

The end of the shaft 35 extends through the bearing support 47 into the slot 12. The other shaft 36 extends through the bearing support 48 and through the slot 11 to provide a portion of sufficient length to support a cam clutch roller 54 and an operating handle 55.

Each bearing support 47 and 48 is provided with an oval boss 50 to fit into the associated slot, to keep the bearing from rotating while permitting translatory motion in the slot.

A bearing plate 56, to serve as a wearing strip and as a measuring stop for each handle operation, is disposed between the inner surface of the handle and the outer surface of the side wall of the cabinet. The lower end of the plate 56 is provided with an oval recess to permit a sliding fit over the oval boss on the bearing support 48. The bearing plate 56 is thus supported on, and moves with the bearing support 48.

The top part of the bearing plate 56 is provided with an arcuate slot 57 to receive a stop pin 58 mounted on the inner surface of the handle 55 to limit the extent of arcuate movement of the handle 55, and consequently the extent of rotation of the winding roller 30 in response to each movement of the handle 55.

A return biassing spring 59 is anchored at one end on the plate 56, and its other end is connected to, or pressed against the pin 58 in the handle to return it to its initial position after each operation.

Forward or clockwise rotation of the handle 55 will tighten the clutch roller 54 on the shaft 36, and will rotate the winding roller 30 forwardly through an angle corresponding to the angle subtended by the arc 57 in the bearing plate 56.

When the handle 55 is released, the biassing spring 59 returns the handle 55 to its initial or back position, with the stop pin 58 in the left end or back end of the arcuate slot 57. During such resetting movement of the handle 55, the ratchet roller 54 releases the shaft 36 and resumes its initial position without rotating the winding roller 30.

Thus, as forward actuation of the handle 55 imparts a short angular movement to the winding roller through the ratchet cam roller 54, and as the winding roller 30 rolls up the collapsible tube 23 on the winding roller, the entire structure, including the winding roller 30, the pressure roller 31 and the handle, moves downward between the two guide slots 11 and 12.

In Figure 5, we have illustrated one simple type of cam 60 to lock the neck 22 of the collapsible tube in position against a notched plate 61 adjacent the opening 21, through which the neck of the tube extends to permit the material in the tube to be dispensed without opening the cabinet.

A bracket 65 on the rear surface of the cabinet door 26 may be used as a support for the tooth brushes. Suitable openings in the back wall of the cabinet are provided for anchoring screws.

The cabinet thus serves not only as an enclosure for the collapsible tube from which the material is to be disposed, but also serves as part of the operating mechanism by means of which the tube may be progressively compressed to express the material from the tube.

Our invention is not limited to any specific details that are illustrated, since modifications might be made in the structural details thereof without departing from the scope of the invention as set forth in the appended claims.

We claim as our invention:

1. A tooth-paste dispenser comprising two floatingly mounted co-operating pressure rolls, one having a longitudinal eccentric slot therein, bearing wheels for the second roller to permit

relative rotary and joint translatory movement of the second roller, reaction track means for the second roller, and means for rotating the main slotted roller.

2. A tooth-paste dispenser comprising a cabinet having a vertical slot in each side wall to constitute co-operating guideways, a main roller in the cabinet and having end shafts extending out through the wide wall slots to guide the roller, floating bearings for the roller shafts and springs between the roller end faces and the bearings to press the bearings against the side-walls of the cabinet, a slot in the main roller to receive the flattened end of a collapsible tube, a pressure roller resiliently supported upon the main roller, and relatively rotatable bearing wheels on the ends of the pressure roller and beyond the ends of the body of the main roller to permit relatively rotary and joint translatory movement of the main roller and the pressure roller, and a uni-directional handle for the slotted main roller.

3. A dispenser of the characters described, comprising a cabinet to enclose a collapsible tube whose contents are to be dispensed, an opening in the bottom wall through which the tube neck may extend, gripping means on the wall and adjacent the opening to anchor the tube neck, a guide slot in each side wall of the cabinet, a winding roller for the tube and having a shaft at each end to extend into each guide slot, a slot in the winding roller to receive the flattened end of a collapsible tube, a pressure roller to co-operate with the winding roller, and a roll bearing for each end of the pressure roller, the roll bearings engaging and rolling on and against the back wall of the cabinet, and a one-way actuating handle for the winding roller.

4. In a dispenser of the character described, a cabinet with a back wall and with side walls provided with vertical guide slots, a winding roller with shafts in the guide slots, a pressure roller between the winding roller and the back wall, and roll bearings for the pressure roller, the roll bearings riding on the back wall which serves as a reaction surface, the dimensions of the winding roller, of the pressure roller and the roll bearings being so related, to the space between the guide slots and the back wall, that the axis of the pressure roller is always below the axis of the winding roller.

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