Feb. 20, 1951 R. R. RAKESTRAW 2,542,571

TUBE HOLDER AND SQUEEZER WITH INTERMITTENT ACTUATOR FOR WINDING ROLLERS

Filed Nov. 15, 1945

Fig. 1

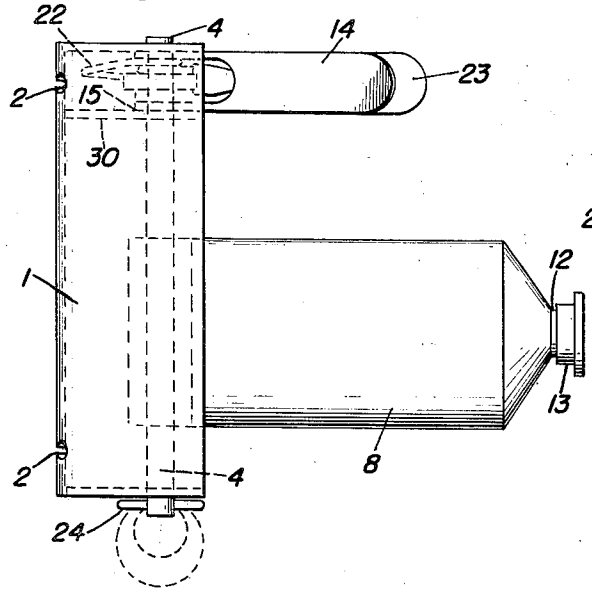


Fig. 2

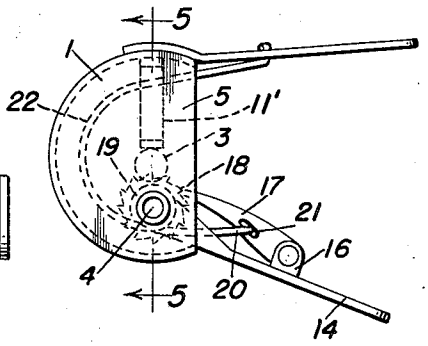
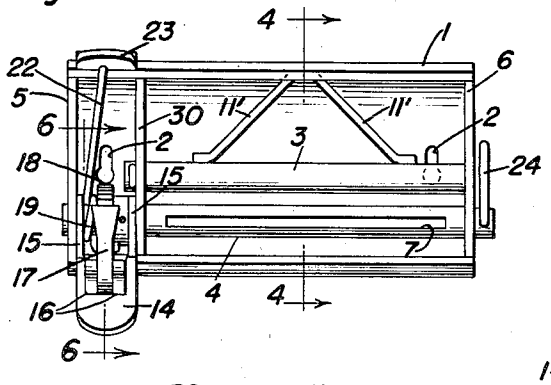


Fig. 3



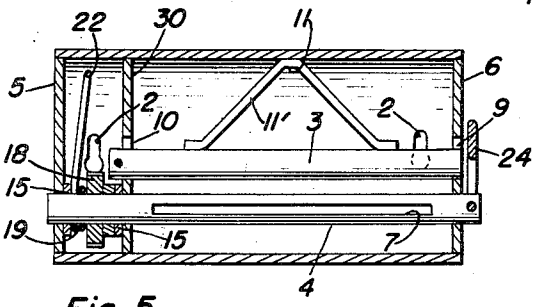


Fig. 5

Fig. 4

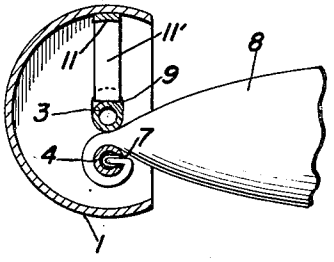
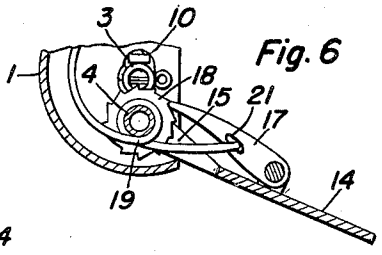


Fig. 6



Roy R. Rakestraw

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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TUBE HOLDER AND SQUEEZER WITH INTERMITTENT ACTUATOR FOR WINDING ROLLERS

Roy R. Rakestraw, Lamar, Mo.

Application November 15, 1945, Serial No. 628,681

1 Claim. (Cl. 222—98)

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This invention relates to an improved device for holding and actuating a tube of the type in which tooth paste is packed, and it is one object of the invention to provide a device adapted to be mounted against a wall, bench or shelf and of such construction that it may hold a tube and, when actuated, apply pressure to force contents of the tube outwardly through the neck thereof after a cap for closing the neck has been removed.

Another object of the invention is to provide a device of this character including rollers between which the rear end portion of a tube is engaged so that by rotating the rollers the tube may be drawn rearwardly between them and compressed so that tooth paste or other contents will be expelled from the tube.

Another object of the invention is to provide a device of this character wherein the rollers are rotatably mounted in a trough-shaped body, one roller being formed with a slot for receiving the rear end of a tube and having turning means associated with it, and the other roller being rotatably mounted and shiftable toward and away from the first roller, but urged toward the same by a spring so that the rollers will have very good gripping and pressing engagement with the portion of the tube passing between them.

Another object of the invention is to provide the slotted roller with turning means consisting of a ratchet lever pivotally mounted and engaging a ratchet wheel fixed to the roller so that by imparting rocking movement to the lever, step-by-step turning movement may be transmitted to the roller.

Another object of the invention is to provide a device of this character which is simple in construction and very easy to operate with one hand while holding a tooth brush with the other hand in position to receive tooth paste from the tube.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a view showing the improved tube holder in elevation and a tube engaged therewith,

Figure 2 is an end view of the tube holder,

Figure 3 is a front view of the tube holder,

Figure 4 is a sectional view taken along the line 4—4 of Figure 3,

Figure 5 is a sectional view taken along the line 5—5 of Figure 2, and

Figure 6 is a detail view showing the ratchet and pawl.

This improved tube holder has a trough-shaped hollow body 1 which may be formed of metal or any other suitable material. Adjacent its opposite ends the body is formed with slots 2 in order

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that it may be engaged with nails driven into a wall or shelf and thus detachably mount the device in position for use. Rollers 3 and 4 extend longitudinally in the hollow body, the roller 4 constituting a tube-carrying roller and the roller 3 constituting a pressure-applying roller. The roller 4 extends the full length of the body and has its end portions rotatably mounted through the end walls 5 and 6 and this roller, which is hollow, is formed with a longitudinally extending slot 7 in order that the sealed and flattened rear end portion of a tube 8 of tooth paste or the like may be thrust inwardly through the slot and anchor the tube to the roller 4. The roller 3 is shorter than the roller 4 and has one end portion mounted through the end wall 6 of the body 1 and its other end portion mounted through a plate or partition 30 which extends transversely of the body in spaced, parallel relation to the wall 5. Slots 9 and 10 are formed in the end wall 6 and the partition 30 transversely of the body to receive end portions of the roller 3 and therefore this roller 3 will not only be rotatably mounted, but also be shiftable transversely of the body toward and away from the roller 4. A leaf spring 11 formed from a strip of resilient metal is fixed to the body, as shown in Figure 3, and the arms 11' of this spring bear against the roller 3 and force it toward roller 4. It will thus be seen that the portion of the tube passing between the rollers will be firmly gripped and pressure applied by the two rollers in such manner that as the inner end portion of the tube is flattened and wound about the roller 4, paste or other contents of the tube will be forced out through the neck 12 from which the cap 13 will have been removed in order that the paste may be discharged from the tube when subjected to pressure.

In order that tooth paste may be discharged from the tube, it is necessary to rotate the roller 4 and this should be done in step-by-step movement and thus reduce likelihood of the roller being turned to such an extent that too much of the tooth paste will be discharged from the tube at one time. This step-by-step rotation of the shaft 4 is accomplished by means of a lever 14 which extends radially of the shaft and has its inner end portion formed with arms or forks 15 loosely engaged about the portion of the shaft 4 extending between the partition 8 and the end wall 5 of the body. This lever carries ears 16 between which a pawl 17 is pivotally mounted, the pawl having its free end engaging a ratchet wheel 18 rigidly fixed to the shaft and located

between the arms or forks of the lever. When the lever is swung in one direction, rotary motion will be imparted to the shaft 4 by engagement of the free end of the pawl with teeth of the ratchet wheel, but during movement of the lever in an opposite direction, the pawl will slip over teeth of the ratchet and the lever may thus return to its normal position without imparting retrograde rotation to the shaft. A coiled spring 19 formed from a strand of resilient wire is carried by the shaft 4 between the ratchet wheel and one fork of the lever and has one arm 20 bent at its end to form a hook engaged through an opening 21 formed in the pawl 17. The other arm 22 of the spring is curved longitudinally and has its end portion projecting from the hollow body and engaged through an opening formed in an arm 23 carried by the hollow body in opposed relation to the lever 14. The fact that the spring 19 is coiled about the shaft 4 and has one arm anchored to the arm 23 and its other arm connected with the pawl 17 causes this spring to yieldably hold the pawl in engagement with the ratchet wheel and also urge the lever 14 toward its neutral position shown in Figure 2. Therefore, the single spring serves very effectively to yieldably hold the pawl in engagement with the ratchet wheel and cause the lever to return to its normal position after it has been pressed toward arm 23 to impart a partial rotation to roller 4 and cause paste to be discharged from the tube.

When this device is in use, it is engaged with nails driven into a wall or shelf and the flattened and sealed rear end of a tube then thrust into the slot 7 of the shaft 4. After the sealed end of the tube has been engaged in the slot 7, the key 24 carried by the end of the shaft projecting from the wall 6 is turned to the position indicated by dotted lines in Figure 1 and turned to impart rotary movement to the shaft and wind the sealed end of the tube about the shaft 4. The shaft is, of course, turned in a direction which will cause the teeth of the ratchet wheel to slip past the free end of the pawl 17 and cause the engaged end of the tube to move between the two rollers. The cap 13 may now be removed from the neck of the tube and by engaging the arm 23 and the lever 14 with a thumb and finger on one hand, the lever may be swung toward the arm and a partial rotation imparted to the shaft 4 and thus wind a short length of the tube about the shaft 4 and cause the two rollers to apply pressure to the tube and expel paste from the neck 12 onto a tooth brush held in such position that the discharged paste will be caught by the brush. The lever 14 is then released and the spring returns it to the normal position, after which the cap 13 will be replaced so that the paste will not dry in the neck of the tube. In view of the fact that the roller 3 is slidably mounted as well as rotatably mounted, it may have movement toward and away from the roller 4 and as the tube is gradually wound about the roller 4, the roller will be shifted away from the roller 4, but the spring will still urge this roller 3 toward roller 4 and cause the rollers to have pressing engagement with the tube.

When the tube has been emptied, the pawl is shifted out of engagement with the ratchet wheel and the key 24 may then be grasped and roller 4 turned in a direction to unwind the tube from this roller, after which a new tube will be applied and a few turns imparted to the roller to wind the sealed end of the tube onto the roller. The pawl will be allowed to return into engagement with the ratchet wheel after the emptied tube has been removed, and after a new tube has been applied the key will be returned to a position close against the end wall of the hollow body.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in the shape, size and arrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

While it has been stated that the device is intended to hold a tube of tooth paste, it will be understood that the tube may contain other substances of a liquid or semiliquid nature which are customarily sold in tubes from which they are expelled by removing a cap and then applying pressure to the tube in order to force the contents of the tube through the neck thereof.

What is claimed is:

In apparatus for holding a collapsible tube and expelling the contents thereof, an elongated trough-shaped supporting body, a roller mounted in said body to rotate about its own axis which extends longitudinally of said body, said roller having an elongated longitudinal slot extending therethrough, a ratchet wheel mounted on the roller adjacent one end thereof to rotate therewith, a lever mounted on the roller adjacent the ratchet wheel to rock in an arc concentric with the axis of the roller, a pawl carried by the lever and engaging the ratchet wheel, an arm fixed to the body adjacent the end thereof nearest the lever, said arm projecting outwardly from the body in spaced relation to the lever, a torsion spring encircling the shaft adjacent the lever, a leg on said spring bearing on the arm, a second leg on the spring bearing on the lever yieldingly to hold the lever away from the arm, a compression roller mounted in the body in parallel relation to the slotted roller and a spring in the body bearing on the compression roller yieldingly to urge said compression roller toward the slotted roller.

ROY R. RAKESTRAW.

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