Aug. 17, 1954 T. GERESSY ET AL 2,686,614

DISPENSER FOR PASTE IN COLLAPSIBLE TUBES

Filed March 13, 1950

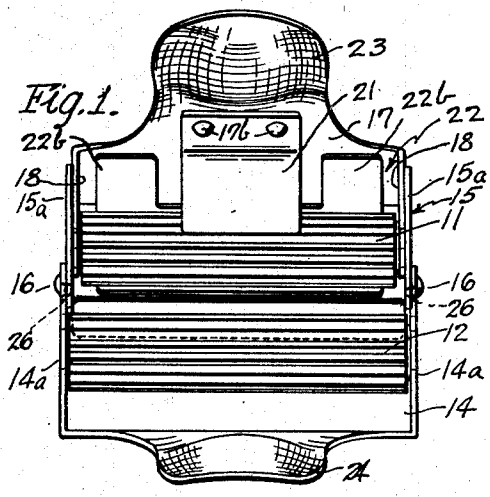


Fig. 1.

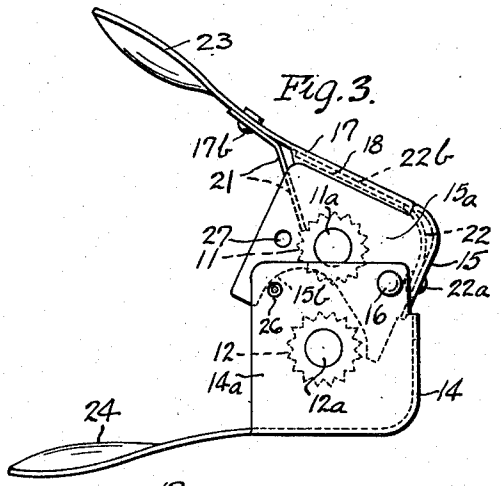


Fig. 3.

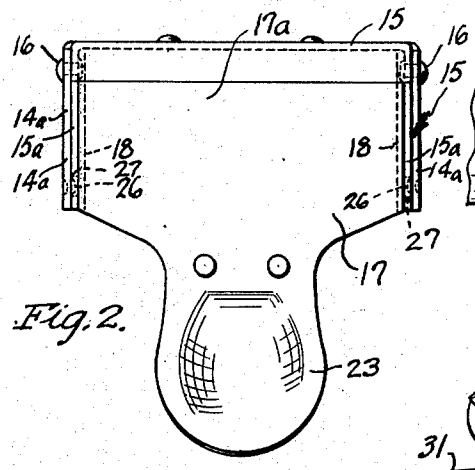


Fig. 2.

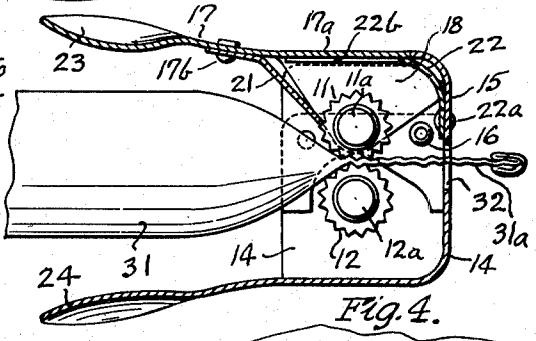
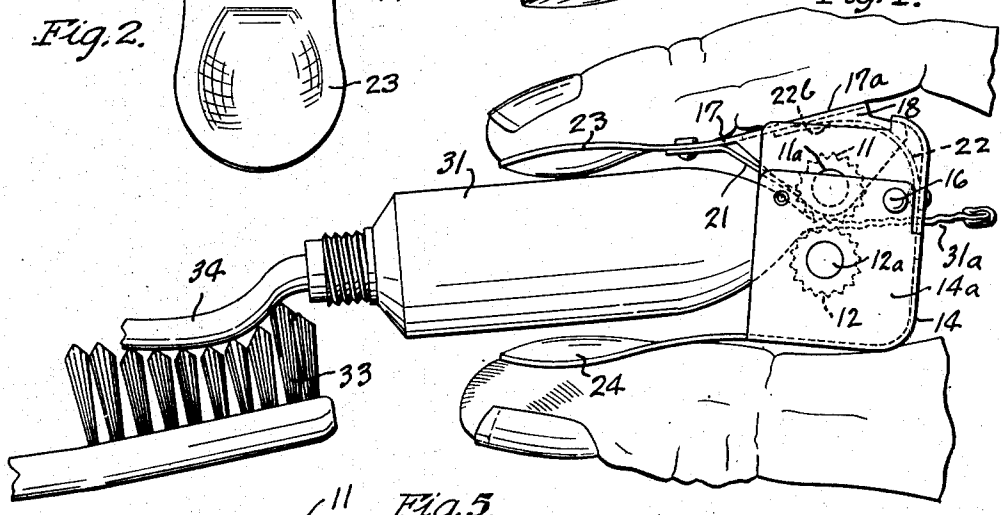


Fig. 4.



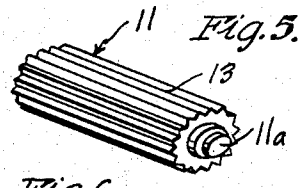


Fig. 5.

Fig. 6.

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DISPENSER FOR PASTE IN COLLAPSIBLE TUBES

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9 Claims. (Cl. 222—102)

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This invention relates to devices for expelling the contents of collapsible tubes such, for example, as those containing toothpaste, shaving cream, and other paste-like materials.

An object is to provide an improved dispensing device for collapsible tubes constructed and arranged to be held and operated by one hand, and to expel an easily regulated amount of the tube contents.

A further object is to provide a tube dispenser having tube collapsing rollers with a simplified, inexpensive and improved mechanism for operating such rollers and for so controlling their operation as to obtain only the desired amount of material from the tube.

With the foregoing and other objects in view, we have devised the construction illustrated in the accompanying drawing forming a part of this specification. It is, however, to be understood the invention is not limited to the specific details of construction and arrangement shown, but may embody various changes and modifications within the scope of the invention.

In this drawing:

Fig. 1 is a front view of a tube dispensing device constructed in accordance with one embodiment of the invention, showing the tube gripping members in open position;

Fig. 2 is a plan of the device shown in Fig. 1;

Fig. 3 is a side elevation thereof;

Fig. 4 is a section showing the parts in tube gripping and feeding position;

Fig. 5 is a side elevation of the device in operation, and

Fig. 6 is a perspective of one of the feeding rollers.

As illustrated in the accompanying drawing, the invention comprises a pair of gripping and feeding rollers 11, 12. Each roller preferably has a longitudinally ribbed surface 13 which is shown on an exaggerated scale in the drawing with relatively large ribs for the purposes of illustration. Actually it is preferred that the ribs be much smaller than shown, the number be increased and they be more closely spaced. The ribs are provided with relatively sharp free edges so as to effectively grip the tube to be collapsed, as will later be described. The rollers are supported for movement from open position illustrated in Figs. 1 and 3, to closed operative position shown in Figs. 4 and 5, in a housing formed of two sections 14, 15 pivoted together by pivots 16 for relative hinging movement, as indicated in Figs. 3 and 4. The lower roller 12 is mounted directly in the side walls 14a of the lower housing 14, the shaft 12a of the roller being rotatably

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supported in these side walls. The upper roller 11 has a shaft 11a rotatably mounted directly in the side walls 15a of the upper housing 15. A roller operating lever 17 has side wings or walls 18 pivoted on the reduced end bearings 11a formed at each end of the upper roller 11. As illustrated, the lever 17 has a top portion 17a forming part of the housing wall against which it abuts when in retracted position. A yieldable spring pawl 21 is riveted at one end to the lever 17, as shown at 17b, and at its other end engages the ribbed surface of the upper roller 11 which forms, in effect, a ratchet. A flat spring 22 is riveted to the wall of the upper housing 15, as shown at 22a, and has end portions 22b engaging under the top portion 17a of lever 17 so tensioned as to normally retain the lever 17 and pawl 21 in retracted position shown in Fig. 4, in which the edge of the top portion 17a abuts the adjacent edge of the housing wall to limit its retractive movement. The lever 17 has a thumb engaging extension 23 and the lower housing section 14 has a finger engaging surface formed on an extension 24 so that a user can easily grip the device and move the rollers from the open position shown in Fig. 3 to closed position shown in Fig. 4, and also operate the rollers to progressively compress a collapsible tube 31 when in closed tube-gripping position. A detent button 26 on either or both side walls 14a of one housing section 14 engages in a recess 27 in the adjacent side wall 15a of the other section to yieldingly retain the sections in closed position, see Fig. 3. As illustrated, when the sections are in open position the button 26 engages the edge 15b of the section 15 to retain them in such position. If desired, additional recesses (not shown) can be provided for engagement by the detent button or buttons 26 to hold the sections in open position. When open, the end of a tube 31 of toothpaste, for example, can be inserted into the bite of the rollers 11, 12, after which the thumb and finger extensions are pressed toward each other to move the rollers to tube-gripping and compressing position, as shown in Figs. 4 and 5, in which position they are held by the detent 26 engaging in the recess 27. The closing operation presses the rollers into gripping engagement with the end 31a of the tube 31. Thereafter any desired quantity of paste can be accurately expelled from the tube, by pressing the extensions 23, 24 toward each other to the necessary extent, by the thumb and finger, then releasing the lever so it is returned to the normal position by spring 22. This alternately depresses and retracts the lever 17, in turn causing the pawl 21

to rotate the upper roller 11 by engaging the ribbed surface of the roller 11, which functions as a ratchet to rotate this roller with a step-by-step movement. The ribbed surfaces of the rollers grip the tube and cause it to be drawn into the bite of the rollers to be progressively collapsed and the contents expelled, the lower roller 12 rotating with the upper roller as the collapsed tube passes between them.

The construction is such that the feeding of paste is accurately controlled, the required number of oscillating movements of the lever 17 being made by the user to feed only the desired amount. After each operation of the lever it is automatically returned to starting position by the spring 22 when pressure on it is released. The flattened part 31a of the tube passes through the housing 14 and out through an opening 32 in the rear wall. The entire tube can thus be easily and progressively collapsed and all waste is eliminated. Only one hand is required to operate the device, leaving the other hand free to hold another article, such, for example, as a toothbrush 33 to receive paste 34 from the tube 31.

Having thus set forth the nature of our invention, we claim:

1. A dispenser for collapsible tubes adapted to be held and operated by one hand comprising a pair of tube engaging and feeding rollers, a housing having separate sections pivoted together and respectively supporting said rollers for relative movement into open position to permit positioning a tube therebetween and into relatively closed position to grip and compress a tube so positioned, a thumb or finger engaging extension connected to one of said sections, a roller operating lever supported on the other of said sections, and means actuated by pressing said lever and extension toward each other to cause said rollers to feed a tube between them to progressively collapse the tube and expel the contents.

2. A dispenser for collapsible tubes adapted to be held and operated by one hand comprising a pair of tube engaging and feeding rollers, a housing having separate sections pivoted together and respectively supporting said rollers for relative movement into open position to permit positioning a tube therebetween and into relatively closed position to grip and compress a tube so positioned, a thumb or finger engaging extension connected to one of said sections, a roller operating lever supported on the other of said sections, and a pawl and ratchet mechanism actuated by pressing said lever toward said extension to cause said rollers to feed a tube between them to progressively collapse the tube and expel the contents.

3. A dispenser for collapsible tubes adapted to be held and operated by one hand comprising a pair of tube engaging and feeding rollers, at least one of said rollers having a ribbed surface, a housing having separate sections pivoted together and respectively supporting said rollers for relative movement into open position to permit positioning of a tube therebetween and into relatively closed position to grip and compress a tube so positioned, a thumb or finger engaging extension connected to one of said sections, a roller operating lever supported on the other of said sections, a pawl connected to said lever and engaging the ribbed surface of said roller whereby pressing said lever and extension toward each other rotates said roller to feed a tube between said rollers and expel the contents.

4. A dispenser for collapsible tubes comprising a pair of rollers having longitudinally extending relatively sharp edged ribs adapted to engage and feed a tube between them when rotated to collapse a tube and expel the contents, a housing having separate sections pivotally connected together for hinging movement respectively supporting said rollers for relative movement into open position to permit positioning a tube between them and into relatively closed position to grip and compress a tube so positioned, a roller operating lever having a portion forming a part of the wall of one housing section, spring means yieldingly retracting said lever with said portion abutting said wall, a thumb or finger engaging extension connected to the other housing section, and a pawl connected to said lever and engaging the ribbed surface of the adjacent roller as a ratchet, whereby pressing said lever and said extension toward each other causes said rollers to rotate and feed a tube between them to expel the contents.

5. A dispenser for collapsible tubes adapted to be held and operated by the thumb and a finger of one hand, comprising a pair of tube engaging and feeding members, a housing comprising a pair of sections mounted for relative movement, means mounting said feeding members on said respective housing sections for movement therewith into a separated open position to permit positioning a tube therebetween and then moved substantially together into relatively closed position to grip and compress a tube so positioned, separate manually operable extensions adapted to be respectively engaged by said thumb and finger of one hand when the device is held between them and respectively connected to said relatively movable sections of the housing, and means actuated by pressing the extensions toward each other to cause said members to feed a tube between them to progressively collapse the tube and expel the contents.

6. A dispenser for collapsible tubes adapted to be held and operated by one hand comprising a pair of tube-engaging and feeding rollers having longitudinally ribbed surfaces, housing means supporting said rollers for relative movement into a separated open position to permit positioning a tube therebetween and then moved substantially together into relatively closed position to grip and compress a tube so positioned, a lever including a finger grip pivotally supported on said housing, a pawl connected to said lever and engaging the ribbed surface of one of said rollers as a ratchet, and a finger grip mounted on said housing and spaced from and opposed to the first grip whereby the dispenser can be held in one hand between the thumb and a finger and the finger grips pressed toward each other to cause said pawl to rotate said rollers to feed a tube between them and expel the contents.

7. A dispenser for collapsible tubes adapted to be held and operated by one hand comprising a pair of tube-engaging and feeding rollers having longitudinally ribbed surfaces, housing means comprising connected relatively movable sections supporting the respective rollers for relative movement into open position to permit positioning a tube therebetween and into relatively closed position to grip and compress a tube so positioned, a lever including a finger grip pivotally supported on one section of said housing, a pawl connected to said lever and engaging the ribbed surface of one of said rollers as a ratchet, and a finger mounted on the other section of said housing spaced from and opposed to the first grip whereby the dispenser can be held in one hand between the thumb and a finger and the grips

pressed toward each other to cause said pawl to rotate said rollers to feed a tube between them and expel the contents, and means for yieldingly returning said lever to starting position.

8. A dispenser for collapsible tubes adapted to be held and operated by one hand comprising tube compressing and feeding means including a roller having a surface comprising longitudinally extending ribs forming a combination tube-engaging and feeding surface and a ratchet, a housing supporting said roller, a lever pivoted to said housing, and a pawl comprising a spring plate connected at one end to said lever and having a free end engaging the ribbed ratchet forming surface of said roller, whereby operation of said lever rotates said roller to progressively collapse a tube and expel the contents.

9. A dispenser for collapsible tubes comprising a pair of spaced opposed finger grips adapted to be held between and operated by the thumb and a finger of one hand, tube compressing and feeding means including a roller having a surface comprising longitudinally extending ribs forming

a combination tube-engaging and feeding surface and a ratchet, a housing supporting the roller, a roller supporting shaft mounted in said housing, a lever pivotally supported on said shaft and including one of said finger grips, the second finger grip being mounted on the housing, and a pawl actuated by movement of said lever comprising a spring plate connected to the lever and having a free end engaging the ratchet surface of said roller to rotate said roller to progressively collapse a tube and expel the contents.

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