J. E. HAWLEY AND A. W. CAPS.

DISPENSING DEVICE.

APPLICATION FILED MAR. 17, 1921.

1,421,777. Patented July 4, 1922.

Fig. 1.

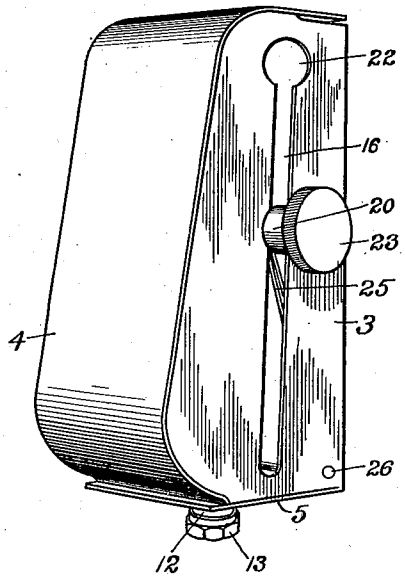


Fig. 2.

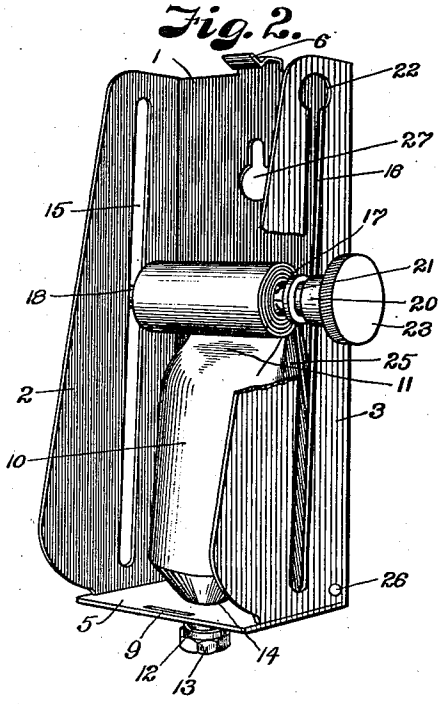


Fig. 3.

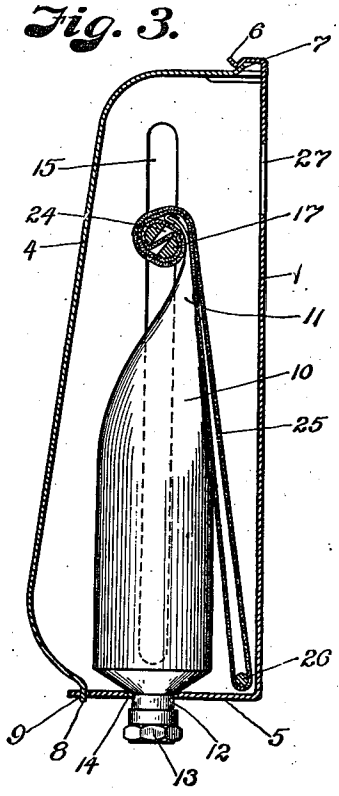
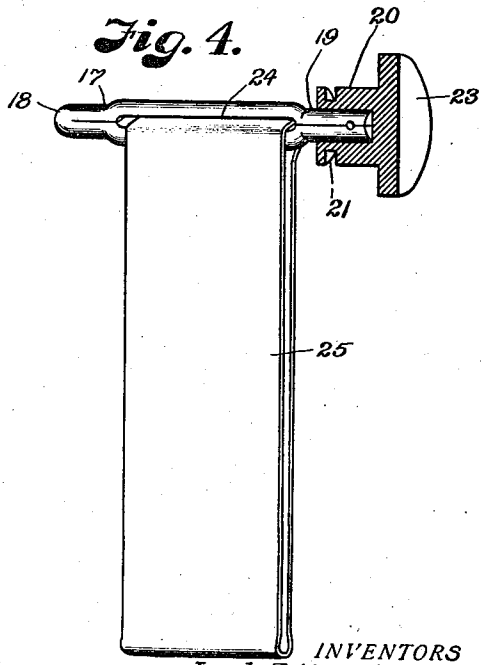


Fig. 4.



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DISPENSING DEVICE.

1,421,777. Specification of Letters Patent. Patented July 4, 1922.

Application filed March 17, 1921. Serial No. 453,090.

To all whom it may concern:

Be it known that we, JOEL E. HAWLEY and ARTHUR W. CAPS, citizens of the United States, residing at Kansas City and Topeka, in the counties of Jackson and Shawnee, and States of Missouri and Kansas, respectively, have invented certain new and useful Improvements in Dispensing Devices; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a device for dispensing a paste from flexible tubes.

The invention particularly contemplates the provision of means whereby the contents of flexible tubes, such as are commonly used as containers for tooth pastes, shaving paste and the like, may be mechanically expelled through the discharge orifice by progressively applying pressure from the closed end of the tube toward the discharge end thereof whereby the progressive advancement of the expelling means will insure the complete expulsion of the paste, cream or other plastic material from the tube.

We prefer to include as part of the invention a cabinet within which the filled tube may be placed in such a manner that, by manually operating a mechanical ejector to cause it to progressively advance from the closed end to the discharge end of the tube, the contents may be expelled at a rate under the absolute control of the operator. As one of the features of our invention we prefer to provide means whereby the retrograde movement of the ejector will be opposed, the opposing means preferably consisting of a tensioning anchor for serving a dual purpose in that it not only opposes the retrograde movement of the expelling means but also controls the compression of the tube exerted by the ejector so that all of the contents of the tube will be expelled by the time the ejector has moved to a point adjacent to the discharge opening in the tube.

One embodiment of our invention is illustrated in the accompanying drawings, in which—

Fig. 1 is a perspective view of a tube-containing cabinet constructed in accordance with our invention.

Fig. 2 is a perspective view of the cabinet, with the cover removed showing the ejector as applied.

Fig. 3 is a vertical, longitudinal, sectional view through the cabinet, showing the ejector, the tensioning anchor and the tube in operative position, and

Fig. 4 is a detail perspective view of the tensioning anchoring means and ejector.

The cabinet may be of any approved construction but we have shown it as consisting of a back plate 1, side plates 2 and 3 and a cover plate 4. The back plate 1, together with the side plates 2 and 3, the bottom plate 5 and the latch tongue 6 may all be formed from a single sheet of metal. The cover plate may be provided with a shoulder 7 to be engaged by the latch 6, the lower portion of the cover being provided with the tongue 8 to engage the opening 9 in the bottom plate 5. Such a construction of cabinet presents a symmetrical appearance and constitutes an appropriate casing or protector for the tube and its operating mechanism.

The cabinet is adapted to receive flexible tubes containing cream, paste or plastic material to be dispensed therefrom in an efficient manner, the advantage being that the contents of the tube are always accessible and liability of annoyance caused by misplacing of the tube is entirely eliminated.

The tube 10, selected for illustrative purposes, is shown as of the conventional metal construction with a closed end 11 and a constricted portion or discharge neck 12, adapted to be closed by a cap 13. The bottom plate 5 is provided with an opening 14 into which the neck 12 may be introduced so that it will extend below the bottom of the cabinet to render the contents accessible without necessarily having access to the cabinet. The side walls 2 and 3 of the cabinet are provided with longitudinal slots 15 and 16, which constitute guides for an ejector comprising a roller 17, the end 18 of which may ride in the slot 15 and the end 19 of which is provided with a collar 20, having a circumferential groove 21 to receive the edges of the slot 16, the collar being adapted to be inserted through the enlarged portion or opening 22 at the top slot 16. The collar 20 extends outside the cabinet and is pro-

vided with a knurled knob or disk 23, whereby the roller may be turned manually.

The roller is preferably provided with a longitudinal slot 24, to receive a tensioning and anchoring device, shown as consisting of an endless flexible web 25, which passes through the slot 24 and around an anchor bar or rod 26 connected to the sides 2 and 3 of the cabinet adjacent to the floor 5. The length of the web 25 will be at least equal to the length of the tube 10 so that when the tube 10 is inserted in the cabinet, as shown in Figs. 2 and 3, and the operator manually turns the knob 23 so as to rotate the roller in the slots 15 and 16, the closed end 11 of the tube will be pinched between the perimeter of the roller and the web so that equal pressure will be exerted throughout the width of the tube, the pressure being insured by the tension of the web on the roller as it is wound about the roller. It will be apparent that since the end of the tube at the initial operation of the ejector roller 17 will be between the surface of the roller and the taut or tensioned web 25, pressure will be equally distributed across the tube as it is pressed flat to force the material at that end of the tube toward the front or discharge end.

Assuming that the cap 13 is removed and the parts are in the position shown in Fig. 3, it will be apparent that when the operator turns the ejector roller 17, the plastic or pasty material in the tube will be forced through the discharge opening or neck 12 by progressively applied pressure from the closed end toward the discharge end of the tube 10 until all of the material has been expressed therefrom.

An important feature of the invention is the anchoring and tensioning device for the roller 17, it being apparent that as the web is wound upon the roller with the closed end of the tube winding on the roller with it, the roller will be held in intimate contact with the tube, expressing pressure against the tube upon a slight rotative movement of the roller and that any retrograde or unwinding movement of the roller will be eliminated on account of the tension created by the web 25 as it is wound together with the tube upon the roller 17.

A device constructed in accordance with our invention will provide an efficient means for mechanically discharging or expressing the contents of the tube in a convenient manner. The cabinet can be suspended from any suitable point, as for example, from a headed projection on the wall which may extend through the key hole slot 27.

What we claim and desire to secure by Letters-Patent is:

1. A material expressing device for flexible tubes comprising a cabinet, aligning, vertical grooves in the respective side walls thereof, means for supporting a paste containing tube having an open end and a closed end, a roller in the groove, means for rotating the roller to wind the closed end of the tube progressively about the roller to progressively apply pressure from the closed end of the tube toward the front end thereof, and an anchoring means for the roller comprising an anchor and a flexible connection adapted to wind upon the roller co-extensively with the winding of the tube thereabout.

2. A material expressing device for flexible tubes comprising a cabinet having means for supporting a flexible tube of paste, the tube having a closed end and an open end, means for expressing the contents from the tube, said means comprising a roller vertically guided in said cabinet, means for rotating the roller over the tube from the closed end toward the open end to progressively apply pressure from the closed end to the open end to express the material within the tube through the open end, and a tensioning and anchoring device for said roller comprising a fixed member connected to the cabinet and a flexible connection between the fixed member and the roller whereby the flexible connection will wind about the roller as it rotates so as to apply compression of the roller against the tube.

3. A material expressing device for flexible tubes comprising a cabinet having vertical roller guides therein, a paste tube-compressing roller rotatably and slidably secured in said guides, said roller having a longitudinal slot, an endless web passing through said slot, and an anchoring rod near the bottom of the cabinet to which the web is secured, extending between the folds of the web to anchor it to the cabinet.

In testimony whereof we affix our signatures.

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