Dec. 4, 1934. S. G. JOHNSON 1,983,462

EJECTOR FOR THE CONTENTS OF COLLAPSIBLE TUBES

Filed July 25, 1932

Fig. 1.

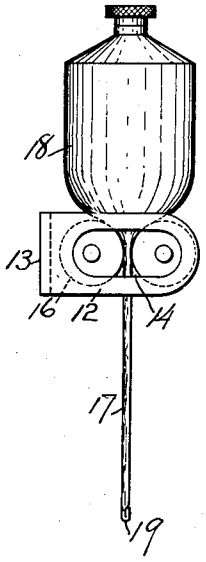


Fig. 2.

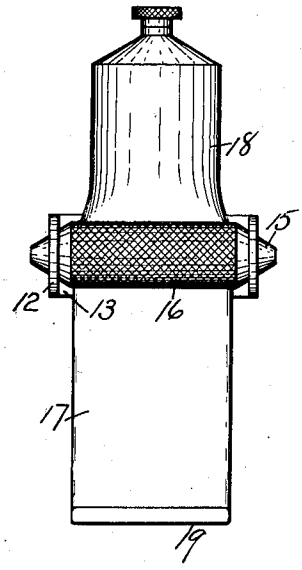


Fig. 4.

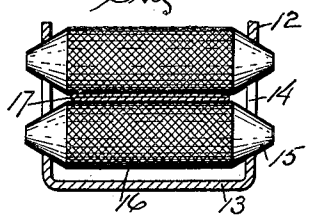


Fig. 5.

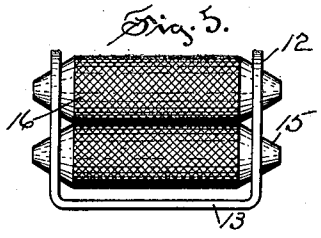


Fig. 3.

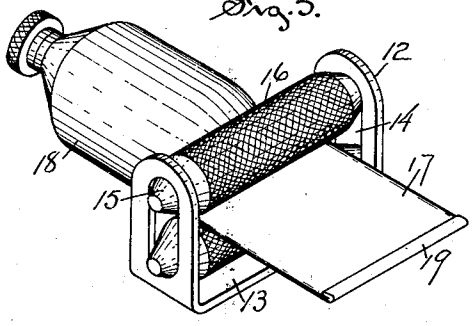


Fig. 6.

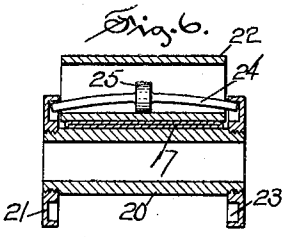


Fig. 7.

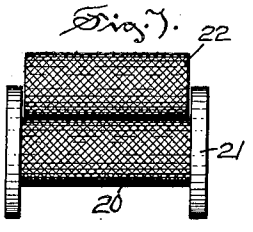


Fig. 8.

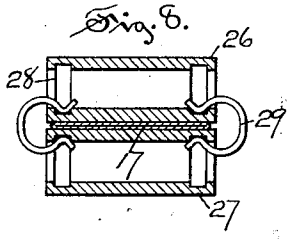


Fig. 10.

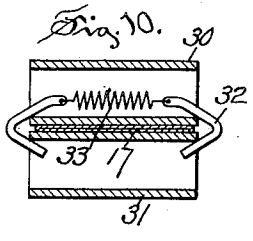


Fig. 11.

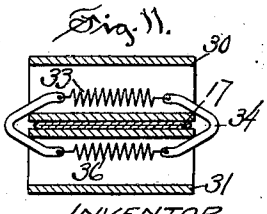
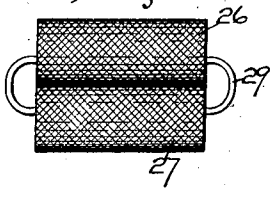


Fig. 9.



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Patented Dec. 4, 1934 1,983,462

UNITED STATES PATENT OFFICE

1,983,462

EJECTOR FOR THE CONTENTS OF COLLAPSIBLE TUBES

Stanley G. Johnson, Hartford, Conn.

Application July 25, 1932, Serial No. 624,387

6 Claims. (Cl. 221—60)

My invention relates to the class of devices for pressing the walls of collapsible tubes into close contact for the purpose of expressing the contents of said tubes, and an object of my invention, among others, is the production of a device of this class that shall be simple in construction, thereby enabling production at a minimum cost and ensuring efficiency of the device in operation.

Different forms of ejectors embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained are illustrated in the accompanying drawing, in which—

Figure 1 is an end view of my improved ejector shown as applied to a collapsible tube from which the contents have been partially removed.

Figure 2 is a front view of the same.

Figure 3 is an isometric view.

Figure 4 is a view in section through the ejector on a plane passing through the axes of the ejecting rolls.

Figure 5 is a front view of the ejector with the tube removed.

Figure 6 is a view in section showing a modified form of the ejector.

Figure 7 is a front view of the device shown in Figure 6.

Figure 8 is a sectional view showing another modification.

Figure 9 is a front view of the same.

Figure 10 is a view in section through another modified form of the device, and

Figure 11 is a similar view of still another modification.

My improved device illustrated and described herein is of the same general character as that covered by my Patent No. 1,773,104, dated August 19, 1930, the present invention embodying different forms of the ejector which have developed in exploiting the device. In the accompanying drawing the numeral 12 (see Figs. 1 to 5) denotes the ends of the frame of one form of my improved ejector and 13 the base of said frame that connects said ends, these ends thereby constituting a frame of U-shape when viewed from the front. A slot 14 is cut through each end of the frame to receive the conical shaped ends 15 of the ejector rollers 16 which are rotatably mounted in said slots. In this form of the device the tapered ends of the rollers, the width of the slots 14, and the distance between the ends 12 are so proportioned that the rollers 16 may be separated sufficiently to receive the collapsed walls 17 of a collapsible tube 18, and as shown in Figures 1 to 5 of the drawing. The frame is preferably constructed of metal having such resilient properties that some spring action will exist in the ends 12 the slots of which, acting in connection with the conical shaped ends of the rollers, will cause such rollers to be pressed with a resilient action toward each other.

In the use of the device the bottom end 19 having been inserted between the rollers the latter are rotated by means of the thumb and fingers to roll the tube inwardly, the rollers being preferably knurled or otherwise roughened to aid in this operation. The ejector may thus be progressively advanced along the tube until the contents are completely expelled therefrom.

It will thus be seen that the ends 12 not only serve to retain the rollers in resilient contact with each other but they also serve to maintain the alignment of the rollers.

In the form of the device shown in Figure 6 the rollers are of different form although acting in much the same way as the rollers just described. In this form of the device a supporting roll 20 has flanges 21 at its ends, and a compressing roll 22 is located between said flanges with its ends in close proximity thereto, said flanges serving as retainers to preserve the alignment of the two rollers. The flanges may be created in any desired manner, as shown herein interengaging screw threads between the roller 20 and the flanges being employed. Annular grooves 23 are formed in the facing sides of the flanges to receive the ends of a compressing spring 24 preferably of bowed form, as shown in Figure 6, said spring having a support 25 preferably midway between its ends. The roll 22 is hollow and the spring extends through the roll, projecting at opposite ends thereof into the annular grooves 23, and as shown in Figure 6 of the drawing. The support 25 retains the spring in form to press the roller 22 into close contact with the roller 20 thereby exerting a yielding pressure upon the collapsed walls 17 of a tube held between the rollers.

In the form of the device illustrated in Figures 8 and 9 the rollers 26 and 27 are of tubular shape, each roller having an annular groove 28 formed near each end thereof, said grooves being for the purpose of receiving the ends of U-shaped springs 29, as shown in Figure 8 of the drawing, the ends of said springs having a compressing action whereby the two rollers are forced into contact to resiliently support the collapsed walls 17 of a tube between them.

In that form of the device shown in Figure 10 the rollers 30 and 31 are hollow as just before de-

scribed and V-shaped retainers 32 are engaged with the walls of the rollers, as shown in Figure 10, to retain the latter against separation. A spring 33 is engaged at its opposite ends with one of the arms of each V-shaped retainer to draw the retainers toward each other and thereby hold the rollers in yielding contact with each other to resiliently clamp the collapsed walls 17 of the tube between them.

In that form of the device shown in Figure 11 the rolls are of the same shape as shown in Figure 10 and V-shaped retainers 34 are employed. In this form of the device, however, an added spring 36 is employed to connect the opposite arms of the retainers from that shown in Figure 10.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative, and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim:

1. An ejector for the contents of collapsible tubes, said ejector being mounted on and supported solely by the tube being emptied and including a pair of ejecting rolls and a U-shaped frame having slots in its opposite sides within which are rotatably engaged the opposite ends of each of said rolls thereby locating the outer one of said rolls in the open side of said frame for access thereto of the fingers to rotate the roll.

2. An ejector for the contents of collapsible tubes, said ejector being mounted on and supported solely by the tube being emptied and including a pair of ejecting rolls peripherally accessible to the fingers for promoting their travel along a tube, the ends of said rolls being tapered, and a U-shaped frame having resilient end parts with slots to receive said tapered ends to align the rolls endwise and to press them toward each other.

3. An ejector for the contents of collapsible tubes, said ejector being mounted on and supported solely by the tube being emptied and including a pair of ejecting rolls having tapered ends, a U-shaped frame having slots in its opposite sides within which the tapered ends of said rolls are rotatably engaged to present the outer roll peripherally accessible to the fingers for promoting their travel along a tube, and a single spring member having parts engageable with the ends of the rolls to preserve their lengthwise alignment and to force them together.

4. Means for ejecting the contents of collapsible tubes, comprising a pair of rolls having tapered ends, said rolls being peripherally accessible to the fingers of the user for promoting their travel along a tube, and a frame having slightly resilient end walls with slots which receive the tapered ends of the rolls, said end walls retaining the rolls in alignment and tending to force them toward each other.

5. Means for ejecting the contents of collapsible tubes, comprising a pair of rolls having tapered ends, said rolls being peripherally accessible to the fingers of the user for promoting their travel along a tube, and a frame having yielding end walls with slots which receive the tapered ends of the rolls, said end walls bearing against the ends of the rolls and tending to force the rolls toward each other.

6. Means for ejecting the contents of collapsible tubes, comprising a pair of rolls, and a U-shaped frame having end walls with slots which receive the ends of the rolls, one of which is located in the open side of said frame for access of the fingers to said roll to rotate it.

STANLEY G. JOHNSON.