June 13, 1933. E. B. JACOBSON ET AL 1,913,759

DEVICE FOR EXPELLING CREAM LIKE SUBSTANCES FROM COLLAPSIBLE TUBES

Filed April 22, 1931 2 Sheets-Sheet 1

Fig. 1.

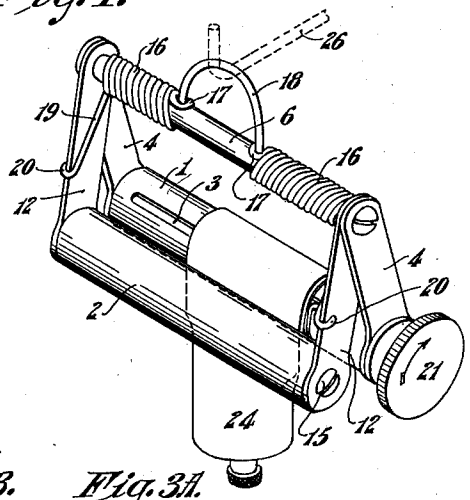


Fig. 2.

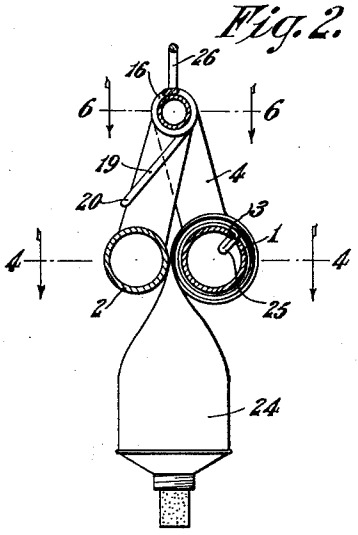


Fig. 3.

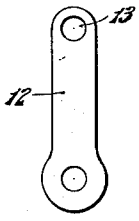


Fig. 3A.

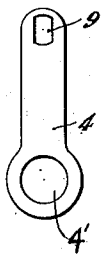


Fig. 4.

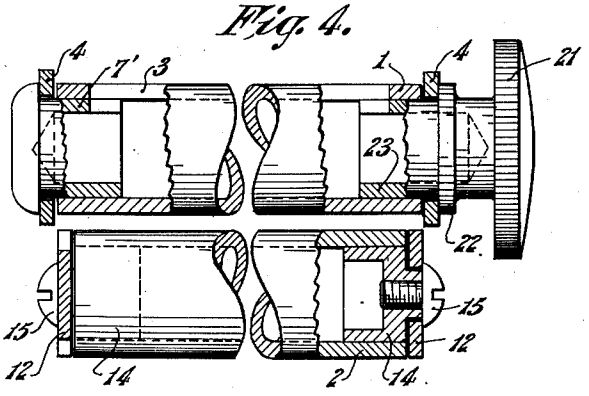


Fig. 5.

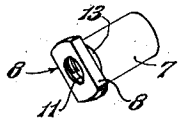


Fig. 6.

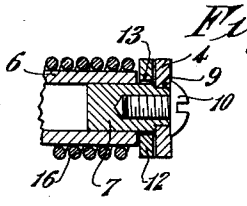
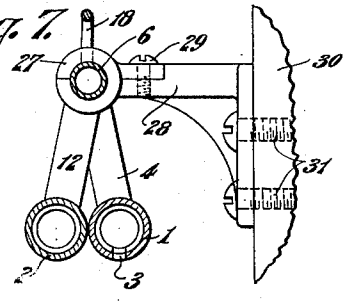


Fig. 7.



INVENTORS,
Edward B. Jacobson,
Nelson A. Foot,

BY

Harry W. Bowen.
ATTORNEY.

June 13, 1933. E. B. JACOBSON ET AL 1,913,759

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Filed April 22, 1931 2 Sheets-Sheet 2

Fig. 8.

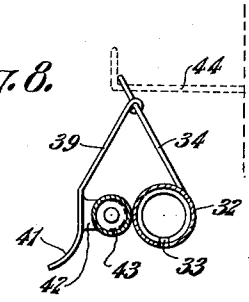


Fig. 9.

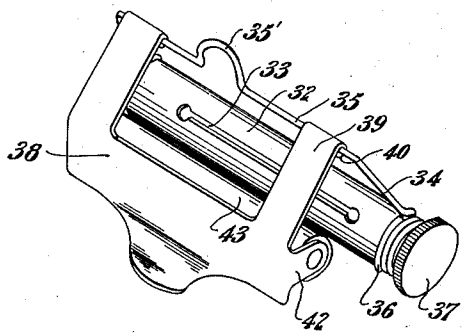
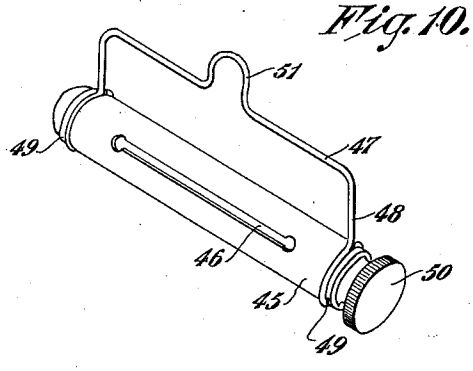


Fig. 10.



INVENTORS,
Edward B. Jacobson,
Nelson A. Foot,

BY

Harry W. Bourn.
ATTORNEY.

Patented June 13, 1933

1,913,759

UNITED STATES PATENT OFFICE

EDWARD B. JACOBSON AND NELSON A. FOOT, OF PITTSFIELD, MASSACHUSETTS

DEVICE FOR EXPELLING CREAM-LIKE SUBSTANCES FROM COLLAPSIBLE TUBES

Application filed April 22, 1931. Serial No. 531,938.

An object of the invention is to provide a device which will thoroughly expel all of the paste-like material from the tube, and at the same time, serve as a suitable holder for the tube.

Means is provided for actuating a pair of rollers which progressively pinches the tube at its closed or lower end towards the upper end as the rollers are actuated.

At the present time, the paste-like substance is usually expelled by pinching or pressing the opposite sides of the collapsible tube with the hand, and then rolling up or folding the closed end of the tube towards the expelling end. This operation presents an unsightly appearance and also wastes some of the contents of the tube.

Broadly, our invention comprises in one of its forms a pair of rollers which are automatically forced towards each other by spring means; one of the rollers having a longitudinal slit for receiving the closed end of the tube, whereby as the tube receiving roller is actuated, the tube is coiled around this roller and is at the same time automatically pinched by both rollers, as the contents of the tube are being expelled. As a modification, the spring is omitted and the two rollers are forced together by the pressure of the hand on a plate which carries one of the rollers.

As a further modification, we employ only one roller having a longitudinal slit therein to receive the closed end of the compressible paste tube. Pressure is applied to the tube with one hand for expelling the substance, while the other hand serves to revolve the roller for winding the compressible tube thereon.

Means is provided for supporting all of the different forms on a wall or other support by means of a bracket which may be attached to a fixed part, as the wall of the room.

Referring to the drawings:

Fig. 1 is a perspective view, showing one form with the spring actuated rollers and illustrating a collapsible tube, partially coiled onto the actuating roller.

Fig. 2 is a vertical, sectional view without passing through the compressible tube.

Figs. 3 and 3A are detail views of the two supporting arms for the two rollers.

Fig. 4 is a horizontal, sectional view considered through the axis of the two rollers on the line 4—4 of Fig. 2 showing the mounting of the presser rollers.

Fig. 5 is a detail end view of the means for preventing the rotation of the shaft on which the coiled spring is located and on which the roller supporting arms are mounted at their upper ends.

Fig. 6 is an enlarged, sectional view of one end of the shaft on which the coiled springs are located.

Fig. 7 is an end view of a bracket construction for supporting the device on a fixed support and showing the rollers in section.

Fig. 8 is a detail view of the supporting means for the construction shown in Fig. 9.

Fig. 9 is a perspective view of the modification in which pressure is applied to one of the rollers with the pressure plate attached to the slotted cylinder, and

Fig. 10 is a perspective view of the modification in which only one roller is provided for winding the collapsible tube thereon.

Referring to the drawings in detail:

1 designates the main or actuating tubular roller and 2 the driven co-operating tubular roller. 3 indicates a longitudinal slot in the roller 1 to receive the closed or pinched end of a collapsible tube. The roller 1 is rotatably supported in the arms 4 at its opposite ends. These arms 4 are attached to the fixed rod 6 and it will be noticed that the rod 6, as shown in Fig. 6, is provided with an insert piece 7 driven into the same, that is formed with the flattened sides 8 which enter the same shaped openings 9 in the arms 4, only one of which is shown in section. (See Fig. 6.) This construction prevents the rod 6 from rotating in the arms 4. The insert 7 is provided with a screw 10 which enters the threaded opening 11 for retaining the arms 4 in place. The opposite end of the rod 6 is understood to be secured in an opening in the other or left-hand arm 4. Movably supported on the fixed rod 6 are the two swinging arms 12, a detail of one of which is shown in Fig. 3, the upper ends of each

having an opening 13 which engages and turns on the insert pieces 7 and 7', as shown in Fig. 6. The lower ends of these arms rotatably support the co-operating roller 2 by means of the insert pieces 14, which are located in the ends of the roller 2, and secured in place with the screws 15, as shown in Fig. 4. Located on the opposite ends of the fixed rod 6 are the two coiled springs 16, one end 17 of each being hooked around the supporting bail 18. The opposite ends of these springs are each formed with a depending portion 19 having a hook 20 which engages the adjacent swinging arm 12, whereby the roller 2 is automatically forced towards and in contact with the main roller 1 with a constant pressure. The roller 1 is provided with an operating knob 21 having a flange 22, which engages the outer surface of the depending arm 4. This knob is secured to the roller 1 by means of the extension portion 23, which has a driven fit with the roller and which extension turns in the opening 4' of the right-hand arm 4.

It will, therefore, be seen that when the knob 21 is rotated, the two rollers 1 and 2 will both be actuated and in opposite directions.

24 indicates a collapsible tube containing the paste material having the closed end portion 25 inserted in the slot, as shown in Fig. 2. When the roller 1 is rotated, the tube is collapsed or flattened out, as shown, and, at the same time, this end is coiled around the roller 1. It is forcibly pinched by the action of the springs 16 acting on the roller 2, whereby all of the material is thoroughly expelled, as the two rollers are actuated. The pressure on the tube 24 will be increased as the same is coiled around the roller 1, for the reason that the roller 2 is forced outward by the building up of the tube on the roller 1.

For the purpose of conveniently supporting the device shown in Fig. 1, the bail 18 is placed on the hook 26. Fig. 7 illustrates a modification of the supporting bracket or means having the cap plate 27, which is secured to the arm member 28 by means of the screw 29, whereby the rod 6 is rigidly secured to the fixed support 30 by means of the screws 31.

Referring to the construction shown in Fig. 9, 32 indicates a tubular roller having a slot 33. This roller is rotatably supported in the lower ends of the arms 34 of the bail member 35; arms 34 being coiled to form a loop 36 in which the roller 32 is mounted. 37 is the operating knob. Mounted on the bail 35, as shown, is a plate member 38 by means of the arm portions 39 which are coiled around the bail, as indicated at 40. The plate member 38 is formed with a curved portion 41 for receiving the thumb or finger of the hand for applying pressure to the plate. 42 indicates integral projections or ears which are a part of the plate member 38 and, located in these projections is the presser roller 43. The bend 35' of the bail 35 is suspended on the hook 44. In operation, the closed end of a collapsible tube is inserted in the slit 33, as described above. When the roller 32 is now actuated, and pressure is applied to the plate 38 by the user, the paste material will be expelled. At the same time, the paste-expelled portion of the tube is wound around the roller 32 in the same manner as is illustrated in Figs. 1 and 2.

Fig. 10 illustrates a further modification in which the tubular roller 45 is provided with a longitudinal slit 46 for receiving the closed end of a tube. This roller is rotatably mounted in the bail member 47 by means of the arm portions 48 which are coiled and enter the groove 49 of the roller. The operating knob 50 is provided.

In this construction, the hand of the operator serves to provide the necessary pressure on a tube for expelling the paste material. If desired, the bail 40 may be formed with a bent portion 51 for suspending the device on the hook 44.

From this description, it will be seen that we have provided a very efficient means for expelling all of the contents of a collapsible tube; one that is neat in appearance, and may be constructed at reasonable cost.

What we claim is:

1. In a paste-expelling device for collapsible tubes, a fixed rod, a pair of fixed links depending from the rod, a slotted roller rotatably mounted in the lower ends of the links, a second roller, a second pair of depending yieldable links removably mounted on said rod, tension devices on the rod for moving the second roller towards the slotted roller, and means for actuating the slotted roller, whereby when the closed end of a collapsible tube is inserted in the slot and the rollers actuated the contents of the tube will be expelled.

2. A device for the purpose described comprising in combination, a stationary supporting rod, a depending link fixedly secured at each end of said rod, a tubular member rotatably supported in the lower ends of the depending links and provided with a slot, means for rotating said tubular member, depending links pivotally secured at each end of said rod, a roller member rotatably supported in said pivotally secured links, and spring means mounted on said supporting rod and secured to said pivotally secured links for forcing the roller into contact with the tubular member.

3. In a device for expelling the contents of a collapsible tube comprising in combination, a stationary member, a tubular member formed with a longitudinal slot for receiving the upper closed end of a collapsible tube, a pair of depending arms, in which said tubular member is rotatably supported, said arms

being rigidly secured to said stationary member, a roller pivotally secured to said stationary member, and spring means on the stationary member for resiliently holding said roller in contact with the surface of said tubular member, the collapsible tube being supported between the tubular member and roller in a depending position with the expelling end unsupported.

EDWARD B. JACOBSON.
NELSON A. FOOT.