

Dec. 15, 1936.

O. F. RITTERBUSCH

2,064,357

DISPENSER FOR TOOTHPASTE

Filed June 15, 1934

4 Sheets-Sheet 1

Fig. 1.

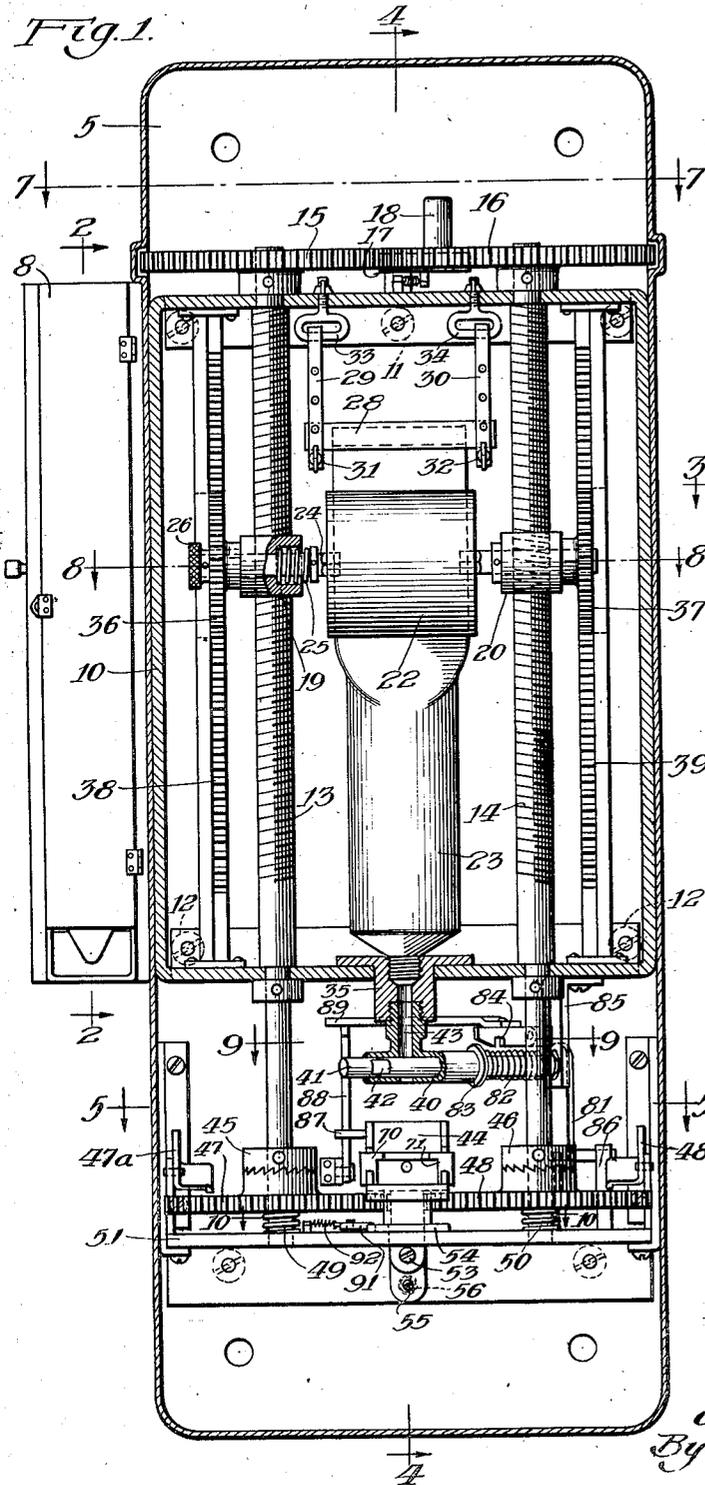


Fig. 2.

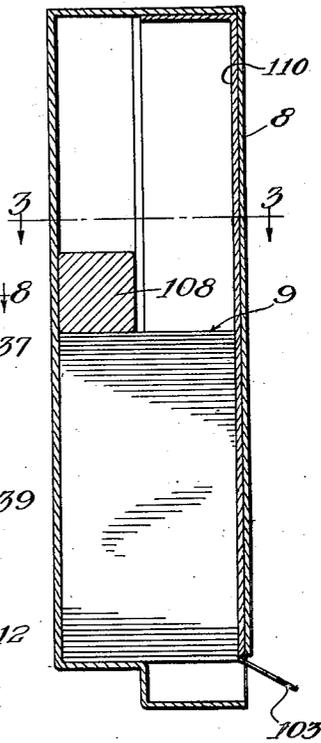
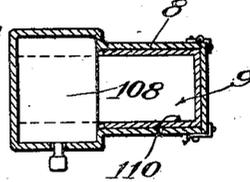


Fig. 3.



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4 Sheets-Sheet 2

Fig. 4.

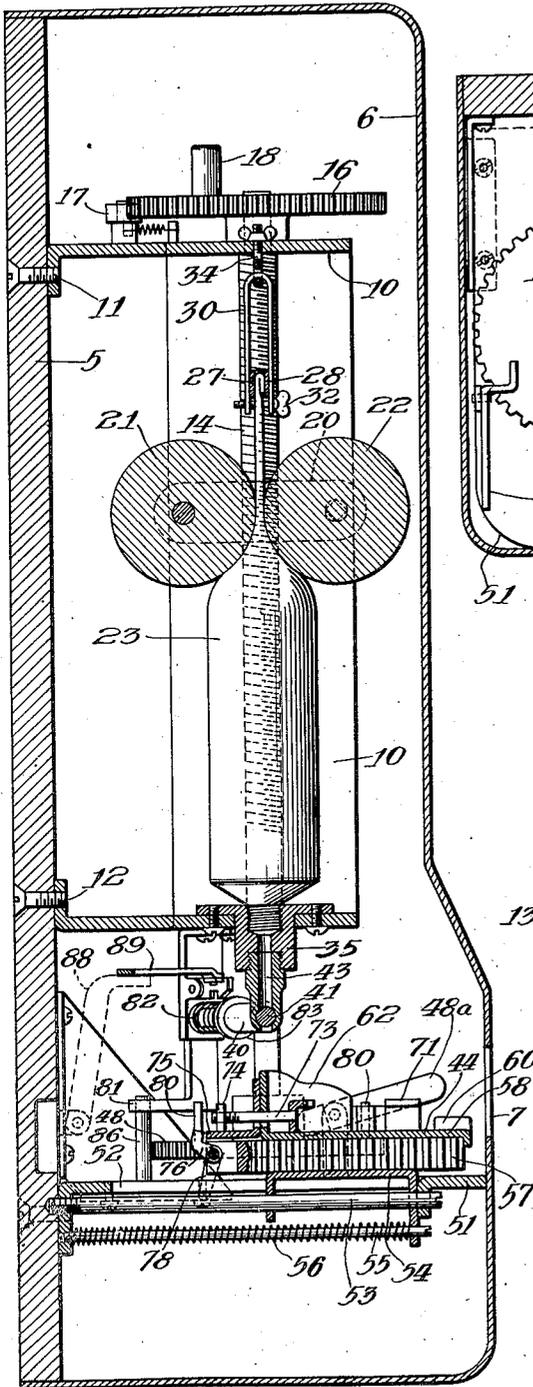


Fig. 5.

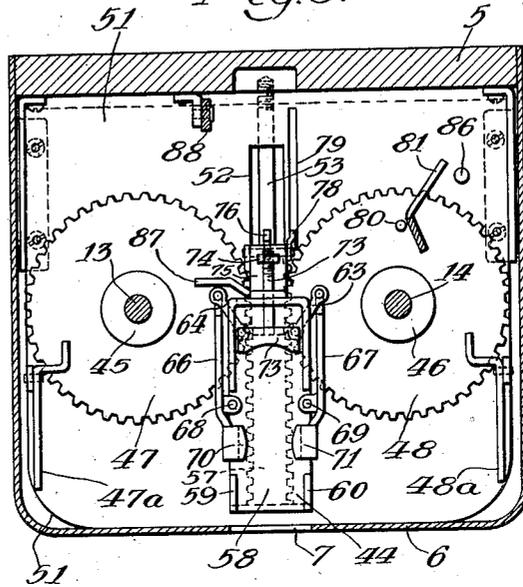
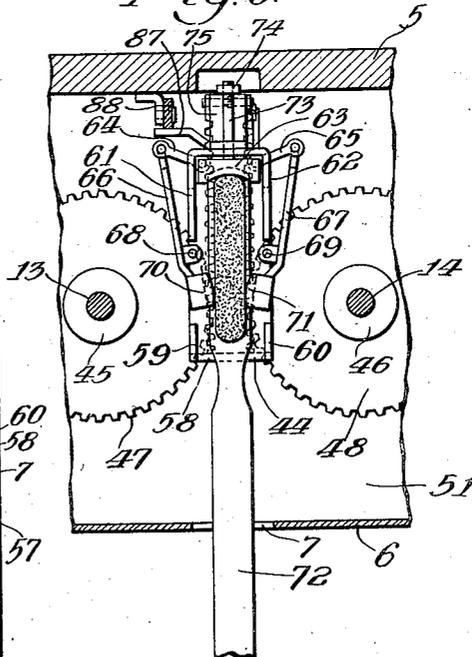


Fig. 6.



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4 Sheets-Sheet 3

Fig. 7.

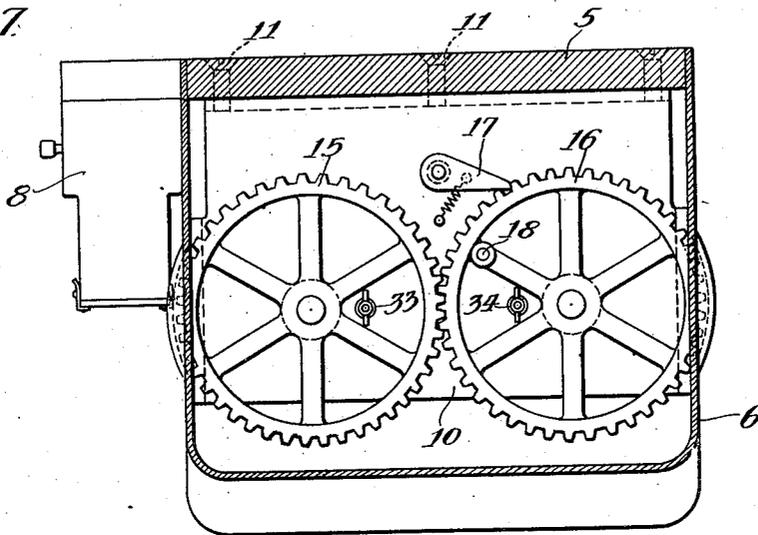
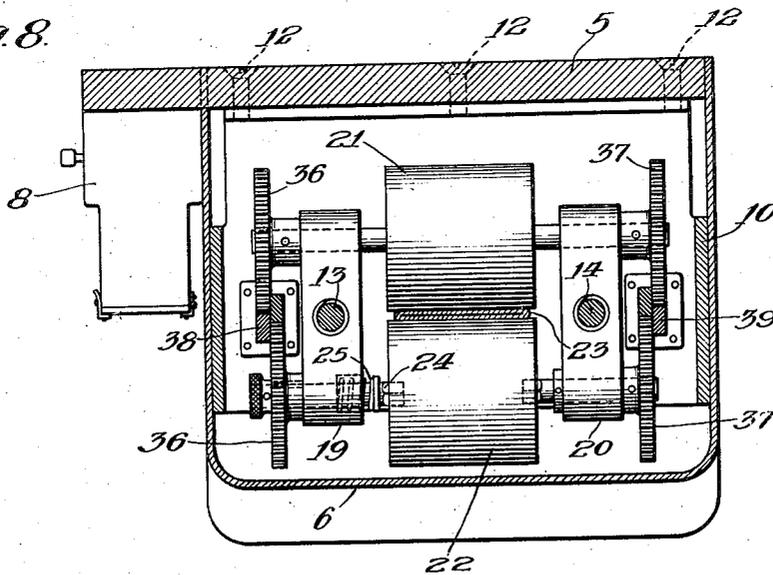


Fig. 8.



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4 Sheets-Sheet 4

Fig. 9

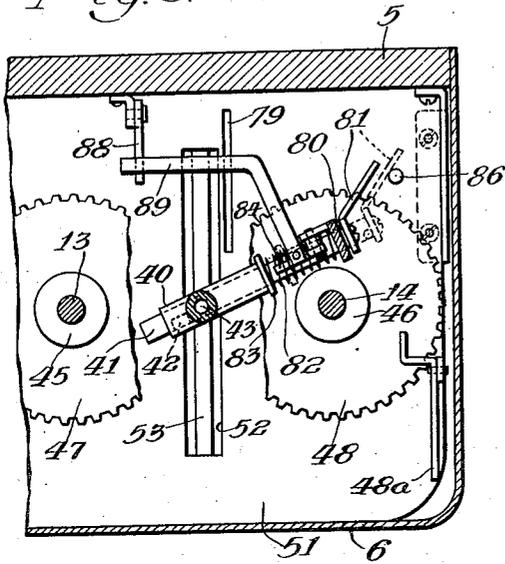


Fig. 10

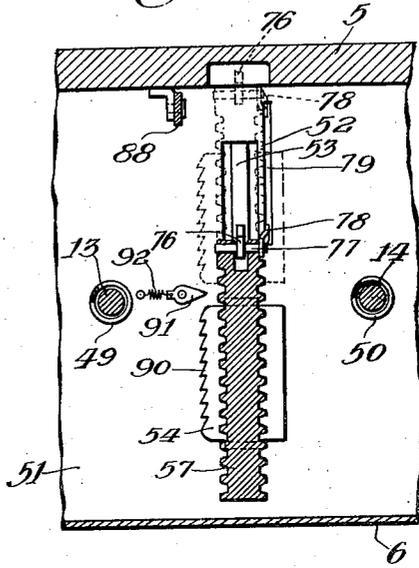


Fig. 11

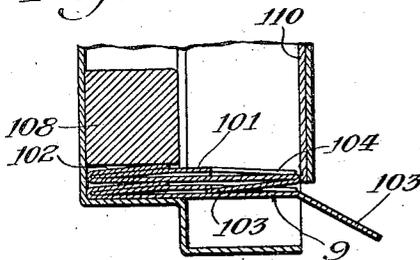


Fig. 13

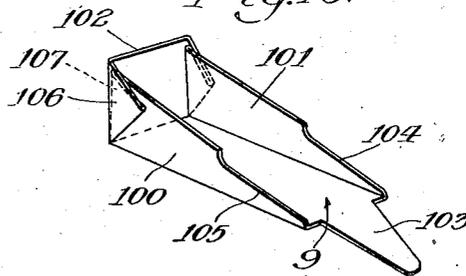


Fig. 12

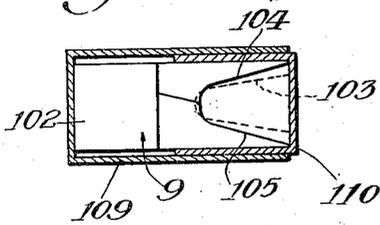
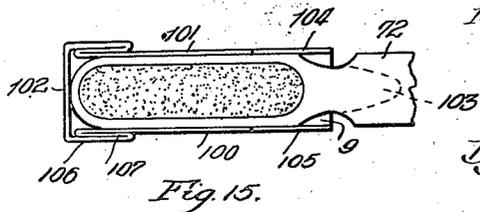
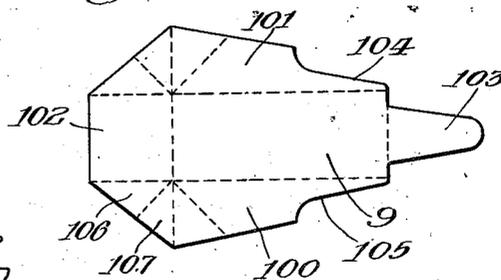


Fig. 14



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UNITED STATES PATENT OFFICE

2,064,357

DISPENSER FOR TOOTHPASTE

Oscar F. Ritterbusch, Chicago, Ill.

Application June 15, 1934, Serial No. 730,762

10 Claims. (Cl. 221-60)

My invention relates to dispensing devices and particularly to a dispenser for toothpaste. One of the purposes of the invention is to provide a device of this character in which the collapsible tube containing the toothpaste may be squeezed between a pair of rollers in such fashion as to prevent sliding of the rollers on the tube.

My invention contemplates also the provision of a novel means for supplying sanitary shields for the tooth brush in inserting it in the machine.

It is also an object of this invention to provide in a device of this character a novel valve operating mechanism for automatically opening the valve for discharging the tooth paste on to the brush at the proper time.

I will describe the preferred form of my invention by reference to the accompanying drawings, wherein—

Fig. 1 is a sectional view taken vertically through the device.

Fig. 2 is a vertical section on the line 2-2 of Fig. 1.

Fig. 3 is a section on the line 3-3 of Fig. 2.

Fig. 4 is a section on the line 4-4 of Fig. 1.

Fig. 5 is a section on the line 5-5 of Fig. 1.

Fig. 6 is a section similar to Fig. 5 showing the mechanism in a changed position.

Fig. 7 is a section on the line 7-7 of Fig. 1.

Fig. 8 is a section on the line 8-8 of Fig. 1.

Fig. 9 is a section on the line 9-9 of Fig. 1.

Fig. 10 is a section on the line 10-10 of Fig. 1.

Fig. 11 is an enlarged section through the lower end of the container for the sanitary covers.

Fig. 12 shows the sanitary cover folder in the case or box in which it is shipped or sold.

Fig. 13 is a perspective view of the sanitary cover, and

Fig. 14 is a plan view of the blank from which the sanitary cover is made.

Fig. 15 is a plan view of the sanitary cover with a brush seated therein.

Referring now in detail to the drawings, the device is mounted upon a base 5 which preferably is to be fastened upon a wall as shown in Figs. 1 and 4 and a suitable cover 6 fits on the base and encloses all of the mechanism. This cover is apertured at 7 to permit the insertion of the tooth brush, and at one side of the cover on the base there is mounted the auxiliary casing 8 for housing the sanitary tooth brush covers 9. The tube compressing mechanism is mounted in a frame 10 which is secured on the base, for example, by means of the screws indicated at 11 and 12 in Fig. 4. This frame is open at the front for the insertion of the collapsible tubes. Mounted with-

in the frame are the two feed screws 13 and 14 which are connected together at their upper ends outside of the frame by means of the gears 15 and 16. One of the screws has a right hand thread, and the other a left hand thread. These gears are held against rotation in one direction by means of the spring pressed pawl 17 shown most clearly in Fig. 7. A handle 18 is provided on the gear 16 for turning the feed screws by hand when desired. Threaded on the feed screws is a pair of blocks 19 and 20, which blocks carry a back roller 21 and a front roller 22 for engaging on the opposite sides of a collapsible tube 23. The front roller 22 is removably mounted by means of the spindle 24 which may be withdrawn against the tension of the spring 25 by pulling on the knurled head 26. This roller 22 can be readily taken out for the insertion of a fresh tube when the old one is empty. The upper end of the collapsible tube 23 is supported by means of the clamping jaws 27 and 28 which are held by the U-shaped clamps 29 and 30. Screws 31 and 32 are used to tighten the clamps 29 and 30, and these clamps are suspended in the eyes of the bolts 33 and 34, which bolts extend through the top of the frame 10. At the other end, the collapsible tube 23 is screw-threaded into the nozzle 35. In order to turn the rollers such as 21 and 22, gears 36 and 37 are connected on to the shafts of these rollers and these gears ride on the racks 38 and 39.

The rollers and their associated gears are substantially the same in diameter. This is very important in preventing a tendency of the rollers to advance along the tube faster than the gears advance on their racks. If it were not for the fact that the tube stretches slightly as it is flattened, the gears and rollers should be matched so that the circumference of the rollers exactly equalled the gear circumference. Actually, the gears and rollers are so closely matched that there is a slight pulling tendency on the tube and not a crushing action.

As shown most clearly in Fig. 8, the gears 36 and 37 are slightly smaller than the rollers 21 and 22, and the pitch diameter of these gears is such that the rollers roll only a slight amount faster than the gears advance along the racks, this slight amount of advance being necessary to take up the stretch in the tube as it is flattened out. The racks 38 and 39 insure turning of the rolls at all times, and the interconnection of gears 15 and 16 makes sure that the rolls will be fed uniformly by the feed screws 13 and 14.

To move the rollers 21, 22 back to starting

position to begin on a fresh tube, the operation is as follows:

The pawl 17 is made inactive by moving it away from gear 16; the pivoted clutch disengaging arms 47a and 48a (see Fig. 5) are pressed against 47 and 48 to hold them free from the clutch members 45 and 46, then, by means of handle 18, the feed screws are turned backward.

Referring now to the valve structure and the means for operating it, the valve casing is indicated at 40 and the valve is of the plunger type having the stem 41 which is slotted at 42 so that if the valve is moved to the right from the position shown in Fig. 1, the slot at 42 will be aligned with the opening 43 to permit the tube contents to pass out on to a brush held in the support 44. This brush support is connected up to automatically operate the tube squeezing rolls in a manner which will now be described.

It will be noted that the shafts of the feed screws 13 and 14 extend beyond the frame 10 and are provided at a distance from the frame with the clutch members 45 and 46, which clutch members are keyed to the shafts and are adapted to mesh with similar clutch members on the hubs of the gears 47 and 48. These gears 47 and 48 are pressed towards the clutch members 45 and 46 by the springs 49 and 50 interposed between the frame piece 51 and the gears. The frame piece 51 is slotted as indicated at 52 (Fig. 4) and just outside the slot a guide rod 53 is mounted on the frame piece. The tooth brush support has a mounting bar 54 provided with turned out ends, the front one of which is slidable on the guide rod 53 and is also extended to fit over the rod 55 and be pressed outwardly by means of the spring 56 mounted on the rod 55. The bar 54 therefore can be pushed in toward the base 5 and will slide along the guide rod 53 but when the pressure pushing it in is released, the spring 56 will return the bar 54 to the position shown in Fig. 4 which is the normal resting position. Mounted on the bar 54 is a rack 57 which rack meshes with the gears 47 and 48 so that as this rack is pushed in, the gears 47 and 48 are turned in a direction to turn the feed screws and feed the rollers 21 and 22 downward on the collapsible tube. This rack carries a plate 58 which is adapted to receive a tooth brush, the plate having turned-up sides as indicated at 59 and 60 at the front end and at 61 and 62 near the back end. On the plate there is a sliding buffer 63 adapted to be engaged by the end of the tooth brush and this buffer 63 has links 64 and 65 pivoted thereto, these links being in turn connected to the gripping jaws 66 and 67 which are pivoted at 68 and 69 to the plate 58 and which carry the gripping portions 70 and 71 at their free ends. It is believed to be evident from an inspection of Figs. 5 and 6 that pushing of the tooth brush shown at 72 upwardly against the buffer 63 causes the gripping jaws to grip the tooth brush and hold it while the feeding operation is taking place.

The pin 73 which is also mounted on the buffer 63 has a square nut 74 on the end thereof which is adapted to drop down over the end of the extension 75 of the plate 58 and thus hold the buffer in position to cause gripping of the tooth brush during the final part of the advancing stroke and the initial part of the returning stroke. On the end of the rack 57 there is pivoted a trip arm 76 and this trip arm is connected by means of the pivot pin 77 to the little lever 78 that rides in the slot 79 alongside of the slot 52. As the rack

57 is pulled to the right, as shown in Fig. 4, this trip lever 78 reaches the end of its slot 79 and throws the trip arm 76 up to kick the nut 74 off the end of plate 75 and thus allow the tooth brush to be released.

The valve 41 is actuated by means of a pin 80 mounted on the gear 48 which pin is adapted to engage the arm 81 which is fixed on the valve 41. The pin 80, by engaging the member 81, moves it outwardly against the tension of the spring 82 to open the valve by aligning the slot 42 with the opening 43. In this position, the collar 83 on the valve 41 is adapted to engage in the latch 84 which is pivoted on the bracket 85 and thus holds the valve in open position during the remainder of the advancing stroke of the tooth brush. The stop pin 86 serves as a limit for the lever 81 and, of course, the pin 80 merely slides past the lever. The valve remains open until the tooth brush and its supporting carriage approaches the inner limit of its stroke, at which point a pin 87 which is mounted on the tooth brush support engages the trip lever 88 which is pivoted to the base 5 and pushes this trip lever against the arm 89 carried by the latch 84 to release the latch. The latch 84, of course, being pivoted, falls down into latching position by force of gravity. In order that the plate 58 cannot be retracted until it has reached the limit of the stroke as indicated in Fig. 6, the bar 54 is provided with ratchet teeth at 90 (Fig. 10), and a little pawl 91 controlled by spring 92 cooperates with the ratchet teeth 90 to prevent withdrawal of the tooth brush after it has been inserted and the support moved part way back. It is evident, of course, that, if this support is moved all the way in so that the pawl 91 passes off the end of the bar 54, then it will not interfere with the return of the bar 54.

Referring now to the sanitary cover for the tooth brush, this device is made preferably of paper or similar material and has side portions 100, 101, end portion 102 and a tab 103. The side portions are cut away as indicated at 104 and 105 for a purpose which will presently appear. The end portion and the side portions are connected by means of the sections 106 and 107 on each side which sections fold or overlap as shown in Fig. 13 when the end portion is moved into an upright or open position. Of course, when the side portions 100 and 101 are folded over one on top of the other, the end portion folds down over them as shown most clearly in Fig. 11. In stacking these covers in a container, folded flat in this fashion, the tab 103 of one fits just beneath one of the side portions such as 101 of the next adjacent one of the covers so that, as shown in Fig. 11, if the bottom cover is removed by pulling on the tab 103, the tab on the next cover will be pulled down into position to be taken hold of when a new cover is needed. Also, this tab will perform the function of opening up the sides 100 and 101 and pushing the end 102 up into proper position to receive the tooth brush head. A suitable weight, such as 108, is slidable vertically in the casing 8 which houses the covers. Preferably, these covers come packaged in a box having the top portion 109 and a bottom portion 110 so that all that is necessary to place them in the casing 8 is to remove the top portion 109 and slide the bottom portion 110 into the casing 8. The sanitary covers are used to prevent the sides and end of the tooth brush from directly contacting the mechanism of the dispenser when the tooth brush is inserted therein.

While I have shown and described certain embodiments of my invention, it is to be understood, that it is capable of many modifications. Changes, therefore in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims in which it is my intention to claim all novelty inherent in my invention as broadly as possible, in view of the prior art.

I claim:

1. A dispensing device comprising a frame having means to mount a collapsible tube therein, a discharge nozzle for receiving the discharge end of the tube, a pair of rollers one on each side of the tube, a pair of feed screws, one at each end of the rollers, blocks threaded on the screws and carrying the rollers, and means for turning the screws to move the rollers along the tube, said screws being interconnected so that both must advance their ends of the rollers at the same rate, a reciprocable tooth brush support on said frame in front of the nozzle and mechanism for connecting said support to the feed screws to turn the screws, said mechanism including a rack on said support, gears mounted on the frame and meshing with said rack, co-operating clutch members on said gears and screws, adapted to interlock and turn the screws with the gears upon advance of the support in one direction only, said device having means to prevent reversal of movement of the brush support during its screw turning movement until it reaches the end of its stroke.

2. A dispensing device comprising a frame having means to mount a collapsible tube therein, a pair of rollers one on each side of the tube, a pair of feed screws, one at each end of the rollers, blocks threaded on the screws and carrying the rollers, and means for turning the screws to move the rollers along the tube, said screws being interconnected so that both must advance their ends of the rollers at the same rate, a reciprocable tooth brush support on said frame in front of the nozzle and mechanism for connecting said support to the feed screws to turn the screws, said mechanism including a rack on said support, gears mounted on the frame and meshing with said rack, co-operating clutch members on said gears and screws, adapted to interlock and turn the screws with the gears upon advance of the support in one direction only, said device having means to prevent reversal of movement of the brush support during its screw turning movement until it reaches the end of its stroke, said brush support having jaws thereon for gripping the brush upon movement of the brush endwise to advance the support.

3. A dispensing device comprising a frame having means to mount a collapsible tube therein, a pair of rollers one on each side of the tube, a pair of feed screws, one at each end of the rollers, blocks threaded on the screws and carrying the rollers, and means for turning the screws to move the rollers along the tube, said screws being interconnected so that both must advance their ends of the rollers at the same rate, a reciprocable tooth brush support on said frame in front of the nozzle and mechanism for connecting said support to the feed screws to turn the screws, said mechanism including a rack on said support, gears mounted on the frame and meshing with said rack, co-operating clutch members on said gears and screws, adapted to interlock and turn the screws with the gears upon advance of the

support in one direction only, said device having means to prevent reversal of movement of the brush support during its screw turning movement until it reaches the end of its stroke, said brush support having jaws thereon for gripping the brush upon movement of the brush endwise to advance the support, and trip means operable upon the return movement of the support to release the jaws.

4. A protecting cover for tooth brush backs to be used in a dispensing device where the tooth brush is employed to actuate the dispensing mechanism, said cover having a base, side walls and an end wall together with a tab at the end opposite the end wall.

5. A protecting cover for tooth brush backs to be used in a dispensing device where the tooth brush is employed to actuate the dispensing mechanism, said cover having a base, side walls and an end wall together with a tab at the end opposite the end wall, said end wall and said side walls being interconnected by overlapping folding portions, and being foldable down flat on the base.

6. A dispensing device having means to hold a collapsible tube, mechanism for compressing the tube to discharge its contents, a control valve, a reciprocable brush support connected to the valve and mechanism for actuating them by movement of the support in one direction, and means to close said valve before movement of the support in the opposite direction.

7. A dispensing device having means to hold a collapsible tube, mechanism for compressing the tube to discharge its contents, a control valve, a reciprocable brush support connected to the valve and mechanism for actuating them by movement of the support, gripping jaws on said support for gripping a brush on advance movement of said support, and trip mechanism releasing said jaws, said trip mechanism being operated by return of the support to its starting position.

8. A dispensing device comprising a frame, means thereon to mount a collapsible tube of the type having a dispensing outlet at one end and sealed at the other end, means operable to progressively compress said tube from the sealed end, a reciprocable brush support on said frame adapted upon movement in one direction to operate said compressing means, means to prevent reversal of movement of the brush support during the above mentioned movement until the brush support reaches the end of its stroke.

9. A dispensing device comprising a frame, means thereon to mount a collapsible tube of the type having a dispensing outlet at one end and sealed at the other end, means operable to progressively compress said tube from the sealed end, a reciprocable brush support on said frame adapted upon movement in one direction to operate said compressing means, means to prevent reversal of movement of the brush support during the above mentioned movement until the brush support reaches the end of its stroke, a valve controlling the outlet from said tube, and means to open said valve and close it during said movement in one direction.

10. A dispensing device comprising a frame, means thereon to mount a collapsible tube of the type having a dispensing outlet at one end and sealed at the other end, means operable to progressively compress said tube from the sealed end, a reciprocable brush support on said frame adapt-

ed upon movement in one direction to operate said compressing means, means to prevent reversal of movement of the brush support during the above mentioned movement until the brush support reaches the end of its stroke, a valve controlling the outlet from said tube, and means to open said valve and close it during said movement in one direction, said brush support having jaws thereon for gripping a brush upon movement of the brush endwise to advance the support, and trip means operable upon the return movement of the support to release said jaws. 5

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