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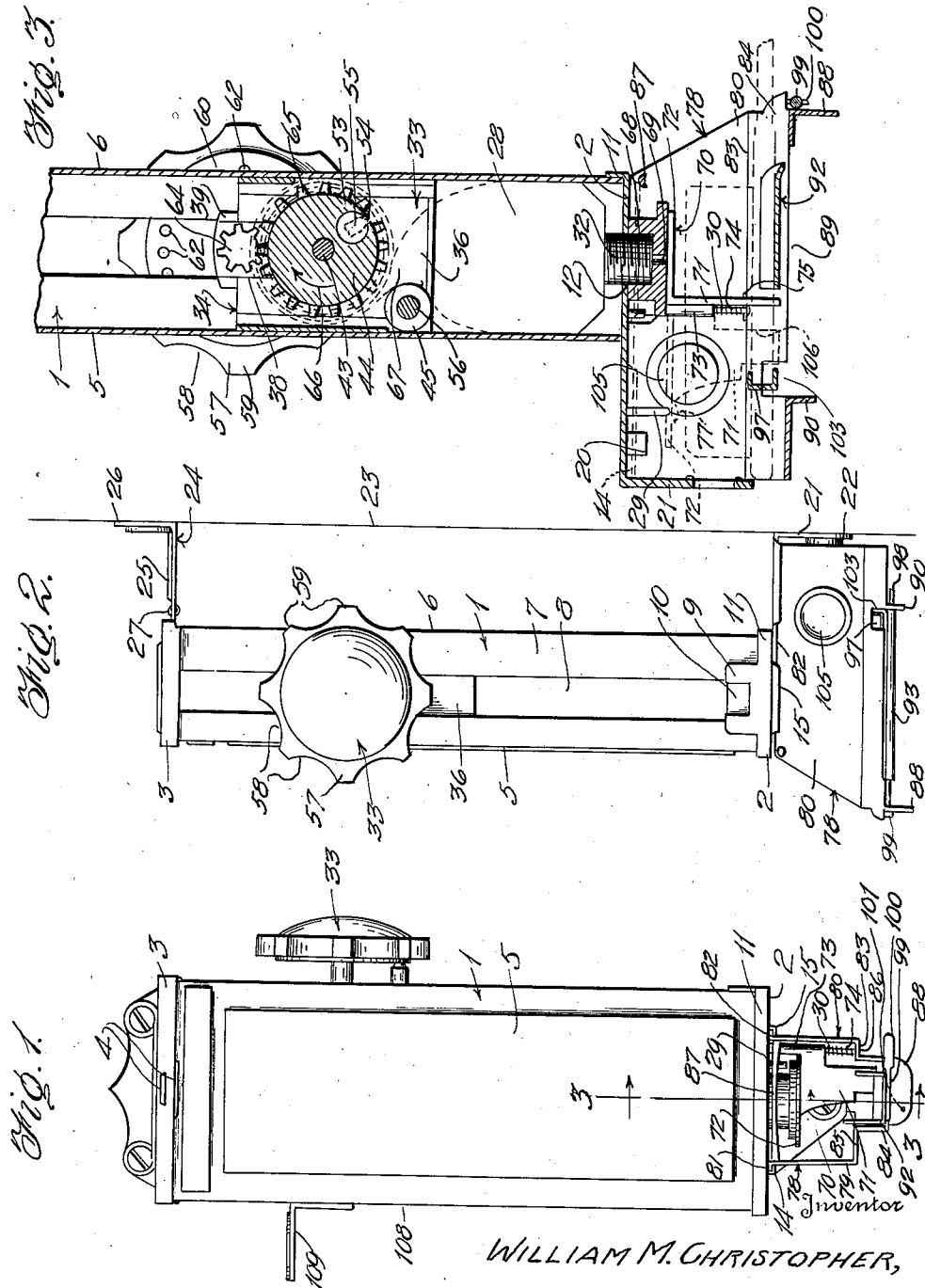
W. M. CHRISTOPHER

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DISPENSING DEVICE

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WILLIAM M. CHRISTOPHER,

By

Kimmel & Crowell,

Attorneys

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DISPENSING DEVICE

William M. Christopher, Tonawanda, N. Y.

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8 Claims. (Cl. 221—60)

This invention relates to a dispensing device designed primarily as a toilet appliance for dispensing tooth paste from collapsible tubes, but it is to be understood that the device, in accordance with this invention, is for use in any connection for which it may be found applicable, such as for dispensing shaving cream, glue, paint, and the like from collapsible tubes.

The invention has for its object to provide, in a manner as hereinafter set forth, a device of the class referred to with means for conveniently and expeditiously dispensing when desired and in a sanitary manner, tooth paste from a collapsible tube upon the bristles of the head of a tooth brush.

The invention has for its further object, to provide a device of the class referred to with latchable indicating means to enable the user to regulate the amount of paste he desires expelled from the tube.

A further object of the invention is to provide a device of the class referred to with means for selectively supporting and retaining tooth brush heads of various sizes in position to receive thereon, a quantity of paste from the tube.

A further object of the invention is to provide, in a manner as hereinafter set forth, a normally closed paste cut-off and with the latter shiftable to open position by a brush head whereby on partly collapsing of the tube, a quantity of paste will be deposited on the bristles of the brush head.

A further object of the invention is to provide in a manner as hereinafter set forth, a device of the class referred to including means for collapsing successive portions of the paste tube at a point offset with respect to the longitudinal median for the purpose of expelling successive uniform quantities of paste.

A further object of the invention is to provide in a manner as hereinafter set forth, a device for the purpose referred to including means acting on a tube of paste for expelling the contents of the latter and with said means so arranged and constructed to provide for the complete collapsed portion of the tube winding thereon and to form between the non-collapsed portion of the tube and the completely collapsed portion of the tube a permanent angularly disposed tapered portion acted upon by the expelling means to gradually decrease it in cross-sectional area to cause the expelling of the paste.

Further objects of the invention are to provide a device for the purpose referred to which is simple in its construction and arrangement, strong, durable, compact, thoroughly efficient in

its use, conveniently and expeditiously operated, readily assembled, pleasing in appearance, having means to permit it to be readily secured in an upstanding position relative to a support, capable of suspending tooth brushes, and comparatively inexpensive to manufacture.

To the above ends essentially, and to others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts to be more specifically referred to and as illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:—

Figure 1 is a front elevation of the device.

Figure 2 is a side elevation of the device,

Figure 3 is a section on line 3—3, Figure 1, upon an enlarged scale,

Figure 4 is a top plan view of the brush head holder,

Figure 5 is a section on line 5—5, Figure 4, showing the holder structure adjusted for supporting small brush heads,

Figure 6 is a section on line 5—5, Figure 4, but showing the holder structure adjusted for supporting large brush heads,

Figure 7 is a bottom plan of the housing of the device and showing the paste cut-off in closed position,

Figure 8 is a view similar to Figure 7 showing the paste cut-off in open position,

Figure 9 is a horizontal sectional view on line 9—9, Figure 11,

Figure 10 is an elevation looking towards one end of the roll carrying shaft of the combined tube collapsing and paste expelling mechanism,

Figure 11 is a fragmentary view in top plan of the mechanism shown in Figures 9, 10, and,

Figure 12 is a section on line 12—12, Figure 11.

The device includes a house, container or receptacle indicated generally at 1, and which will be hereinafter termed housing. Preferably the latter will be of rectangular contour and disposed on its bottom 2. The top of the body of the housing 1 is open and to the upper end of the latter is hinged a flanged closure 3, for closing the open top of the housing body. The latter and the closure 3 have coacting means at the front thereof for latching the closure in closing position. The housing 1 includes a front wall 5, a rear wall 6, and a pair of side walls. The walls 5, 6, are imperforate. One of the side walls

is imperforated and the other, which is indicated at 7, is formed with a cut-out or opening 8 disposed lengthwise thereof and extending from the top edge of wall 7 to an upstanding extension 9, formed on the bottom 2. The extension 9 has a portion thereof, as at 10, offset to project into the opening 8. The bottom wall 3 at its sides and front is formed with an upstanding flange 11. The extension 10 is an integral part of a side portion of the flange 11.

The bottom 2 (Figures 7, 8) is of rectangular contour and provided centrally with a circular opening 12, and between the latter and each end thereof, openings 13 are formed therein. The bottom 2 at the inner sides of the openings 13, is provided with a pair of oppositely extending retainers 14, 15, which oppose and are spaced from the lower face of bottom 2. The latter includes a rearward extending rectangular extension 17, spaced inwardly adjacent to the sides of bottom 2. The extension 17 is formed with a pair of opposite disposed retainers 18, 19, which oppose and are spaced from the lower face of the extensions 17. The retainers 14, 15 are disposed in inner endwise spaced alignment with the front ends of the retainers 18, 19 respectively.

The extension 17 adjacent its rear edge and between the rear ends of the retainers 18, 19, is formed with a pair of depending lugs 20 which are struck from the body of the extension. The latter has a depending apertured arm 21 at its rear end for the passage of a holdfast means 22 for the purpose of anchoring the lower end of the housing with an upstanding support 23.

The upper end of the body housing is provided with a rearwardly extending angle-shaped arm 24, having a horizontal and a vertical part 25, 26, respectively. The part 25 is integral with the housing body. The part 26 extends upwardly from the rear end of part 25 and is apertured for the passage of suitable holdfast means for securing housing 1 to the support 23. The closure 3 and part 25 have coacting means, as at 27 to provide the hinge between the closure and the housing. The hinge is disposed rearwardly of the housing body to enable the closure 3 to be completely opened for the purpose of positioning therein the collapsible tube 28 and the combined tube collapsing and paste expelling mechanism to be referred to.

The bottom 2, (Figures 3, 7, 8) of housing 1 is formed with a depending latching pin 29, a depending stationary shaft 30 non-aligning with but spaced from pin 29, and a depending pin 31 in proximation to opening 12 and shaft 30. The pin 29 is of greater length than pin 31. The shaft 30 is of greater length than pin 29. The opening 12 is for the passage of the neck 32 of the tube 28.

The tube collapsing and paste expelling mechanism generally indicated at 33 includes a horizontally disposed U-shaped frame 34, disposed on a lengthwise edge thereof. The frame 34 is open at its front and has its sides or cheeks indicated at 35, 36. Each side of frame 34 has its intermediate portion inset with respect to the front and rear portions and in this connection attention is directed to the showing Figures 10, 11. The side 35 of frame 34 is formed with an inclined slot 37 opening at the forward lower corner thereof. The side 36 of the frame 34 is formed with a vertically disposed slot 38 opening at the top edge thereof. Extending into the slot 38 and overlapping the outer face of the

inset intermediate section of the frame side 36 is a slide 39 formed with a pair of vertically aligned openings 40, 41, and a laterally disposed tubular bearing 42, forming an outward continuation of the opening 40.

Extending through the slot 38 and the opening 41 is the shaft 43 of a roll 44 employed for collapsing tube 28 and for winding thereon the collapsed portion of the tube. The roll 44 also coacts with a hollow revolvable compressing roll 45, the latter assisting in collapsing the tube. The collapsing of the tube provides for the expelling of the paste therefrom. The shaft 43 has mounted on one end thereof a split peripherally grooved collar 46 which has extended into the groove thereof the side edges of slot 38 whereby one end of shaft 43 is connected to frame side 35. The other end of shaft 43 is extended from opening 41 and formed with an axially arranged socket 47 in which is positioned a spring controlled headed latching member 48. A collar 49 is secured on shaft 43 for connecting it with the other frame side 36. The head of member 48 is indicated at 50 and is rounded. The controlling spring for member 48 is indicated at 51. The purpose of member 48 will be hereinafter referred to. The roll 44 at one end is formed with a recess 52 to provide a clearance for the inner end of collar 46. The roll 44 lengthwise thereof is provided with an opening 53 extending from one end to the other of substantially circular cross section and a passage 54 corresponding in length to that of the opening. The passage 54 extends from the periphery of the roll to the opening 53. The latter is for the purpose of receiving the overlapped closed end 55 of the tube 28 and the passage 54 receives that portion of the body of the tube bordering said end 55. The opening 53 and passage 54 coact to detachably connect the tube to roll 44. The opening 53 at one end aligns with the slot 37, which enables one to slide tube end 55 into and out of opening 53.

The compression roll 45 is arranged below, in proximity to and to one side of the axis of roll 44. The roll 45 is revolvably mounted between the frame sides 35, 36, on a stationary shaft 56 which extends through and is connected to the rear lower corners of said frame sides.

The mechanism 33 includes a revolvable disc 57 having its edge formed with spaced transverse concaved grooves 58 and spaced edge portions 59. The disc is to be grasped by the finger and thumb of a person to rotate it intermittently to operate mechanism 33 for the purpose of expelling successive portions of the paste from the tube. Secured to the inner face of disc 57 is a keeper member 60 for the latching member 48. The keeper member 60 is in the form of a disc provided with an axial opening at 61 and a circular row of spaced sockets 62 in proximity to its outer edge. The head of the latching member 48 rides against the inner face of member 60 for successively engaging in the sockets 62 for intermittently latching disc 57 after each impulse is given thereto by the operator, that is to say, when the disc 57 is moved for a certain distance it is automatically latched. The distance which the disc is to be intermittently moved corresponds to the distance between the axes of a pair of sockets to cause a portion of the paste to be expelled. When the disc 57 is successively moved the distance as stated, the expelled portions of the paste would be substantially of the same quantity. The op-

erator will be made aware as to when he should discontinue the impulse or shift of disc 57, as the latching member will engage in the sockets and arrest the turn of the disc. The operator will feel this latching effect through the disc 57. If the operator desires a quantity of paste greater than the normal quantity he will continue the shift after feeling each latching, to another latching or a further latching if desired.

Fixed to the disc 57 and extending through the axial opening 61 in the keeper member 60 is a rotatable shaft 63 which extends through the bearing 42 and the opening 40 in the slide. The inner end of shaft 63 carries a pinion 64 which meshes with the teeth of a gear 55 fixed to one end of the roll 44. The pinion 64 and gear 55 coast when disc 57 is rotated for revolving the roll 45 in the direction of the arrow 56, Figure 3. When the disc 57 is intermittently rotated the tube 28 will appear as shown in Figure 3 and the rolls 45, 46 will coast to provide portions of the tube 28 completely collapsed and wound on the roller 45, an angularly disposed tapered portion 67 disposed between the collapsed portion and the non-collapsed portion of the tube. The expelling action on the paste is had by the coaction of the rolls 45, 46 on the upper part of the tapered portion 67 of the tube 28.

For the cap of the tube 28 a paste outlet member in the form of a flanged cap 68 is substituted. The cap 68 is connected to the neck of the tube and is completely arranged below the wall 2 of housing 1, Figure 3. The cap 68 is provided with an axially arranged outlet opening 69 for the discharge of the paste from the tube 28. The opening 69 is of materially less diameter than that of and aligns with the axis of the neck of the tube. The cap 68 couples the tube to the bottom 2 of the housing. The cut-off for the paste and which acts as a closure for the outlet opening 69 is generally indicated at 70, is vertically disposed and horizontally shiftable relative to cap 68. The cut-off 70 includes a flared vertical part 71 and a flared horizontal part 72, which extends at right angles to the upper end of the part 71. Formed integral with the rear edge of part 71 and extending above the part 72 is a barrel 73 which is loosely mounted on the shaft 30. The latter carries a controlling spring 74 (Figure 3) mounted on the lower portion of the shaft and upon which sits the lower end of barrel 73. One end of the spring 74 is connected to a pin 75 fixed to and extending diametrically through the lower end of shaft 30. The other end of spring 74 is connected with the barrel 73. The spring 74 normally functions to maintain the cut-off 70 in the position shown in Figure 3. The upper end of the barrel 73 is provided with an extension 76 which coacts with the pin 31 for limiting the closing movement of the cut-off 70. The part 72 of the cut-off 70 is formed with an indentation 77 which functions as a keeper for the latching pin or member 29 when the cut-off 70 is shifted horizontally to an extent from completely below the cap 68 to provide for the coaction of latching member 29 and the indentation 77 for the purpose of latching the cut-off 70 in such shifted position as shown in Figure 3, whereby cap 68 may be removed from the neck of the tube to uncouple the latter and the tube and mechanism 33 then removed from housing 1 to permit disconnecting the collapsed tube from mechanism 33.

The device includes a supporting structure for holding a brush head in position to receive a quantity of paste expelled from the tube 28.

The said structure is indicated at 78 and is so constructed that it will selectively support the backs of brush heads at different levels in position to have deposited thereon a quantity of paste through the outlet 69 of cap 68. The structure 78 is of channel shaped cross section and includes a pair of resilient sides 79, 80, formed at their upper ends with oppositely disposed outwardly directed flanges 81, 82 respectively. The outer end edges of the sides 79, 80 are inclined forwardly from their upper to their lower ends. The sides 79, 80 at their lower ends merge into the bottom 83 of the structure 78. The bottom 83 is formed of a U-shaped depending part 84 provided at its top with a pair of oppositely disposed lateral portions 85, 86 which merge into the lower ends of the walls 79, 80 respectively. The side walls of the structure 78 are connected together at the top by a brace piece 87 disposed at the forward ends of said sides. The part 84 of the bottom 83 is formed at its front with a depending flange 88 and rearwardly of the latter with a lengthwise extending cut-out 89 having depending from the rear end wall thereof a flange 90.

The structure 78 includes means for positioning the bristles of large and small size brush heads in proximity to the outlet 69 to receive a quantity of paste from outlet 69. The said means consist of a pair of holders 91, 92 disposed at right angles to each other (Figure 5). The holder 91 merges at one side into a barrel 93. The holder 92 is formed of an intermediate part 94 and a pair of side parts 95, 96, disposed in opposite relation and at right angles to the part 94. The part 96 merges into the barrel 93. The holder 91 is of rectangular contour. The part 94 of the holder 92 is of rectangular contour and provided with a stop 97 at its rear end. The width of holder 91 is greater than the intermediate part 94 of holder 92. The part 96 of holder 92 bears against the inner face of the holder 91 (Figure 5).

Journalled in the flanges 88, 89 is a shaft 98 which extends through and is fixed to the barrel 93. The shaft 98 extends beyond flange 88 and is formed with a right angular disposed handle part 99 (Figure 1) having a flattened portion 100. When the handle part is in the position shown in Figure 1 the holder member 92 will be in the position shown in Figure 5 and in such a position it is employed to hold the back of a small brush at the desired level to position the bristles of the head in proximity to outlet 69 to receive a quantity of paste. When the handle part 99 is shifted downwardly at right angles from the position shown in Figure 1 the holder 91 will be shifted to the position shown in Figure 6 carrying the holder 92 therewith, and when holder 91 is in the position shown in Figure 6 it is employed for supporting a large size brush head in proper position to receive a quantity of paste from outlet 69. The flange 89 is formed with protuberances 101 and 102 for holding the handle part 99 in selective positions and which in turn will maintain the holders 91, 92 in their selective positions.

One side of the U-shaped part 84 of bottom 83 is formed with a cut-out 103 to provide a clearance for the stop 97. The latter is employed for limiting the inward movement of a brush head of small size when inserted in structure 78. The U-shaped part 84 of the bottom 83 of structure 78 is formed with a stop 104 for arresting the inward movement of the large brush head when inserted in the structure 78. The cut-out 89 75

provides a clearance for holder 92 when it is shifted to and from position for holding a small brush head. When the holder 92 is in active position it is arranged above the cut-out 89 in the U-shaped part 84 of the bottom 83. The holder 91 is always arranged in the U-shaped part 84 of bottom 83 whether the holder 91 be horizontally or vertically disposed, but when vertically disposed it is arranged along one side of the holder 92 and in this connection, see Figure 5.

The structure 78 is for removable connection to the bottom 2 of housing 1 and such connection is had by inserting the flanges 81, 82 respectively in the retainers 14, 18 and retainers 15, 19 respectively. The resiliency of the sides 79, 80 of the structure 78 tend to frictionally bind the latter in connected relation with regard to the housing. When it is desired to remove the structure 78 from its connected position, such as shown in Figures 1, 2, 3, the sides 79, 80 are moved toward each other to release them and then slid from bottom 2. The inward shifting of the sides 79, 80 is limited by the lugs 20 on extension 17. Inset portions 105 are provided in the sides 79, 80 to enable for the shifting of the sides 79, 80 of structure 78 inwardly toward each other.

When the structure 78 is connected to the bottom 2 of housing 1 provision is had for clearing part 71 of cut-off 70 when holder 91 is moved from vertical to horizontal position and from horizontal to vertical position and also when holder 92 is moved from vertical to horizontal position and from horizontal position to vertical, and such provision consists in providing holder 91 with a cut-out 106 and holder 92 with cut-out 107.

It will be assumed that the structure 78 is in the position shown in Figure 6 to allow the insertion of a large brush head therein to be supported on holder 91. The large brush head is inserted in structure 78 to an extent to move the cut-off 70 to a position to open the outlet 69 for the passage of paste onto the brush head. The inward movement of the brush head is arrested by the stop 104. The brush head does not shift the cut-off to an extent to move the part 72 to the position shown in Figure 8. The cut-off 70, when shifted to open outlet 69, bears on the side of the brush head and frictionally clamps it into position for receiving a quantity of paste from the tube. After the brush head has been arranged in the manner stated, the expelling mechanism is operated to the desired extent to cause a discharge of paste onto the brush head, due to the fact that part 72 of cut-off 70 has opened outlet 69. After the expelling mechanism has been operated to the desired extent the brush head is moved from structure 78 and the cut-off automatically returns to its normal or closed position relative to outlet 69. When a small brush head is inserted in the structure 78, the action as referred to in connection with the insertion of a large brush head is had, with this exception that the inward movement of the small brush is arrested by the stop 97 and holder 92 has been moved to a position to support such head.

The stop 104 is resilient and acts as a latch for holder 91 when the latter is in its inoperative position, that is to say, vertically disposed.

The part 25 may be formed with openings for the purpose of suspending tooth brushes at the rear of housing 1. The latter, however, is pro-

vided at its side 108 with a lateral suspension 109 for a tooth brush.

When outlet member 68 is to be removed for the purpose of uncoupling the neck of the tube relative to the housing, the structure 78 is slid from off of the bottom wall 2.

What I claim is:—

1. In a device for dispensing paste from a collapsible tube, a cap member for connection to the neck of the tube and formed with a paste outlet, a combined tube collapsing and paste expelling mechanism including a rotatable operating element therefor and a rotatable tube winding element, and said elements having intermittently operable coacting interengaging means for intermittently latching said operating element operating during the rotation of the latter.

2. In a device for dispensing paste from a collapsible tube, a paste outlet member for removable connection to the neck of the tube, a combined tube collapsing, winding and paste expelling mechanism including a rotatable operating element therefor formed with a circular row of spaced sockets and a rotatable tube winding element provided with a spring controlled latching member selectively engaging with said sockets on the rotation of the operating element for regulating discharge of the paste in substantial equal quantities.

3. In a device for dispensing paste from a collapsible tube, a paste outlet member for connection to the neck of the tube, and means disposed in relation to said member for the insertion therein of brush heads for receiving paste from said member, said means including an adjustable element for selectively supporting brush heads of different sizes below and at different levels relative to said member.

4. In a device for dispensing paste from a collapsible tube, a paste outlet member for connection to the neck of the tube, and means disposed in relation to said member for the insertion therein of brush heads for receiving paste from said member, said means including an adjustable element for selectively supporting brush heads of different sizes below and at different levels relative to said member, and a spring controlled cut-off normally closing said member, arranged in the path of and shiftable to open position by an inserted brush, said cut-off coacting with said means for detachably clamping the brush head stationary below said member.

5. In a device for dispensing paste from a collapsible tube, a paste outlet member for connection to the neck of the tube, and means disposed in relation to said member for the insertion therein of brush heads for receiving paste from said member, said means including an adjustable element for selectively supporting brush heads of different sizes below and at different levels relative to said member, said means and element provided with stops for limiting the extent of the insertion of the brush heads.

6. In a device for dispensing paste from an inverted collapsible upstanding tube, a housing structure formed of a vertically disposed hollow upper portion for removably receiving the tube and an open front hollow lower portion extended forwardly at right angles to the lower end of the upper portion for removably supporting therein a brush head to be supplied with paste, said lower portion including a horizontally disposed part providing the bottom of said upper portion and the top of said lower portion, said part supporting the breast of the tube and being formed ad-

5 jacent its rear end with an opening for the pas-
sage of the neck of the tube, a cap arranged with-
in said lower portion for connection to the tube
neck for coupling the tube to said part, and said
cap having an axially disposed paste discharge
passage opening into said lower portion.

10 7. In a device for dispensing paste from an
inverted collapsible upstanding tube, a housing
structure formed of a vertically disposed hollow
upper portion for removably receiving the tube
and an open front hollow lower portion extend-
ing forwardly at right angles to the lower end of
the upper portion for removably supporting a
brush head therein to be supplied with paste,
15 said lower portion including a horizontally dis-
posed part providing the bottom of said upper
portion and the top of said lower portion, said
part supporting the breast of the tube and being
formed adjacent its rear end with an opening for
20 the passage of the neck of the tube, a cap ar-
ranged in said lower portion for connection to
the tube neck for coupling the tube to said part,
said cap having an axially disposed paste dis-
charge passage opening into said lower portion,
25 and said lower portion having shiftable means
arranged therein for selectively supporting the
backs of brush heads of different heights at dif-
ferent levels within said portion.

8. In a device for dispensing paste from an
inverted collapsible tube, a housing structure
formed of a vertically disposed hollow upper por-
tion for removably receiving the tube and an
open front hollow lower portion disposed for-
wardly at right angles to the lower end of the
upper portion for removably supporting therein
a brush head to be supplied with paste, said lower
portion including a horizontally disposed part
providing the bottom of said upper portion and
10 the top of said lower portion, said part support-
ing the breast of the tube and being formed ad-
jacent its rear end with an opening for the pas-
sage of the neck of the tube, a cap arranged in
said lower portion for connection to the tube
15 neck for coupling the tube to said part, said cap
having an axially disposed paste discharge pas-
sage opening into said lower portion, and a spring
controlled pivotally mounted valve structure
within said lower portion including a horizon-
20 tally disposed cut-off normally closing said pas-
sage and rearwardly shiftable to open the pas-
sage by a brush head when inserted in said lower
portion, said cut-off including a vertical part for
bearing against one side of the inserted brush
25 head for retaining the cut-off in its rearwardly
shifted position to open said passage.

WILLIAM M. CHRISTOPHER.