Aug. 23, 1955 H. J. LEONARD, JR 2,715,979

DISPENSER FOR COLLAPSIBLE TUBES

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Fig. 1

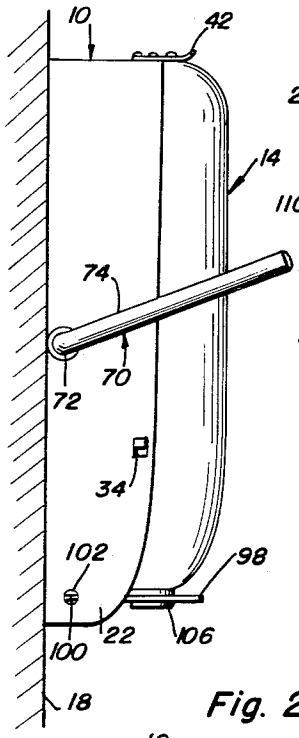


Fig. 8

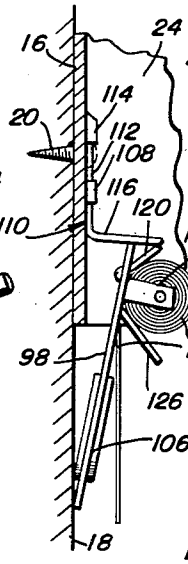


Fig. 3

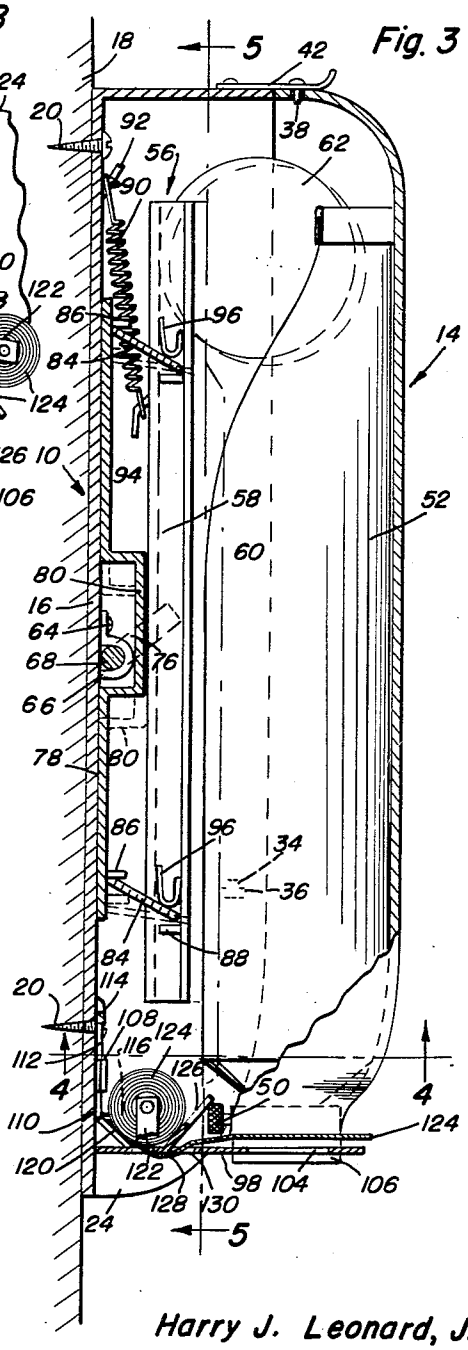
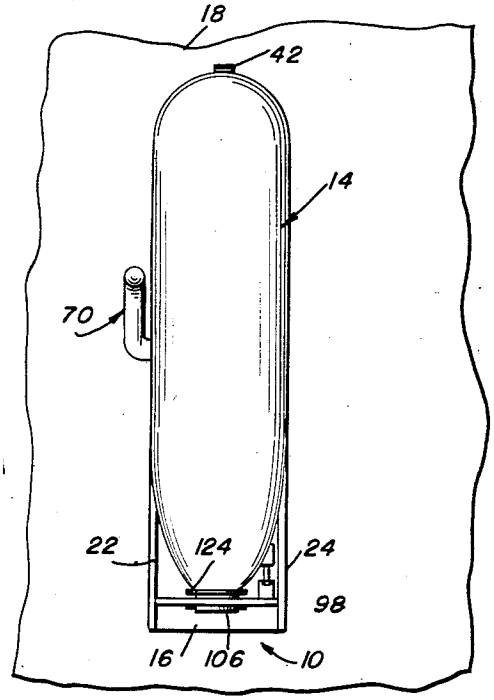


Fig. 2



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Fig. 4

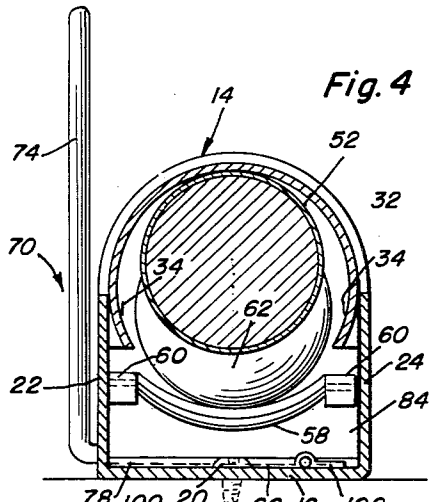


Fig. 7

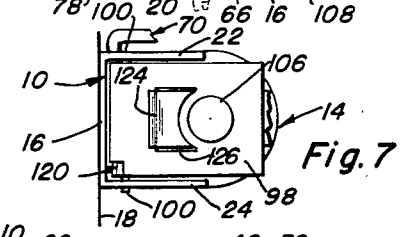


Fig. 6

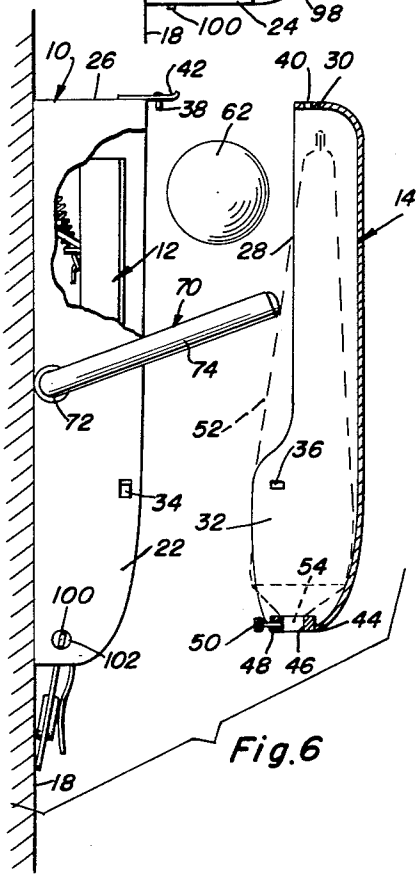
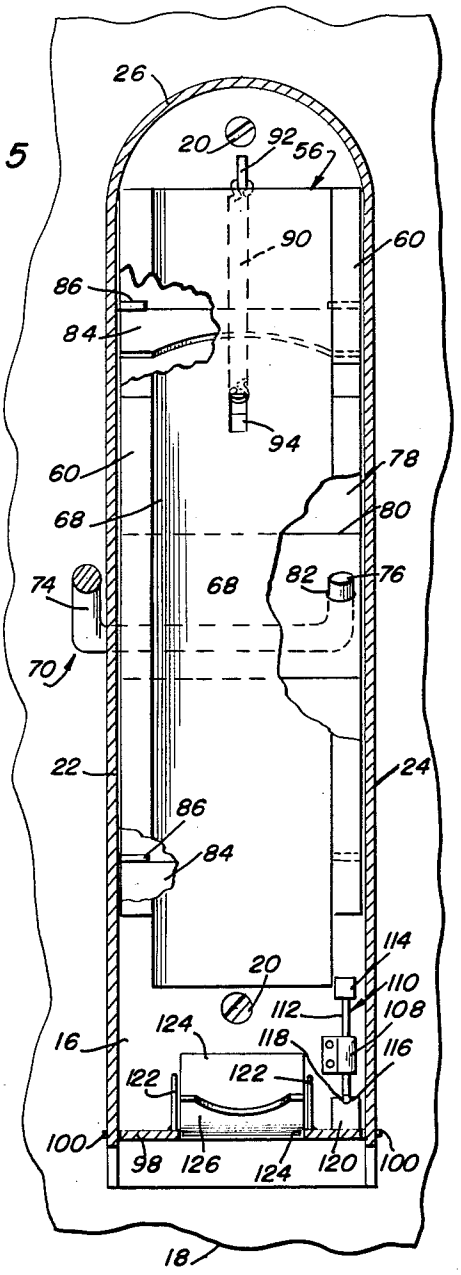


Fig. 5



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United States Patent Office 2,715,979
Patented Aug. 23, 1955

2,715,979

DISPENSER FOR COLLAPSIBLE TUBES

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Application May 22, 1952, Serial No. 289,296

6 Claims. (Cl. 222—101)

This invention relates in general to dispensers, and more particularly to dispensers for dispensing the contents of collapsible tubes containing substances such as tooth paste, shaving cream, salves, et cetera.

The primary object of this invention is to provide an improved dispenser for dispensing the contents of collapsible tubes, said dispenser being provided with means for effectively collapsing a collapsible tube whereby the contents thereof are effectively dispensed therefrom in order to reduce the loss to a minimum.

Another object of this invention is to provide an improved dispenser for collapsible tubes which includes a tube holder having a ball associated therewith for compressing a collapsible tube thereagainst, said ball being urged toward the tube holder by selectively actuated mechanical linkage.

Another object of this invention is to provide an improved dispenser for collapsible tubes, said dispenser being of a two piece construction whereby it may be quickly and easily secured to the wall of a bathroom or other suitable place and at the same time permitting a tube of the substance to be dispensed to be easily mounted therein.

A further object of this invention is to provide an improved dispenser for collapsible tubes, said dispenser having a novel closure structure for sealing a dispensing opening of a collapsible tube, said closure structure including a roll of sealing paper adapted to be disposed between a closure plate and the dispensing opening.

With these objects definitely in view, this invention resides in certain novel features of construction, combination and arrangement of elements and portions as will be hereinafter described in detail in the specification, particularly pointed out in the appended claims, and illustrated in the accompanying drawings which form a material part of this application and in which:

Figure 1 is a side elevational view of the dispenser, which is the subject of this invention, and shows the general outline thereof including an actuating handle;

Figure 2 is a fragmentary elevational view of a wall on which the dispenser of Figure 1 is mounted and shows the general appearance of the front portion of the dispenser;

Figure 3 is an enlarged longitudinal sectional view through a housing of the dispenser and shows the general construction of the means for supporting a tube within said housing and the mechanical means for collapsing the tube;

Figure 4 is a transverse horizontal sectional view taken substantially upon the plane indicated by the section line 4—4 of Figure 3 and shows the general cross section of the housing and the relationship of the mechanical means for collapsing the tube disposed therein;

Figure 5 is a longitudinal vertical sectional view taken substantially upon the plane indicated by the section line 5—5 of Figure 3 and shows the general construction of the mechanical means for collapsing the tube disposed in the housing;

Figure 6 is an exploded side elevational view of the dispenser and showing the relationship of the component parts thereof, a portion of the side wall of the housing being broken away in order to show the relationship of the mechanical means for collapsing the tube mounted within a tube holding portion of the housing;

Figure 7 is a bottom plan view of the dispenser of Figure 1 and shows the general configuration of a closure plate pivotally carried by the housing for sealing the dispensing opening of the tube disposed within the housing; and

Figure 8 is a fragmentary longitudinal vertical sectional view similar to Figure 3 and shows the position of the closure plate with respect to the housing when the closure plate is in its open position.

Similar characters of reference designate similar or identical elements and portions throughout the specification and throughout the different views of the drawings.

Referring now to the drawings in detail, it will be seen that the dispenser for collapsible tubes, which is the subject of this invention, includes a tubular housing which is divided into two detachable parts, said parts including a mounting part **10** in which is disposed actuating mechanism, which is referred to in general by the reference numeral **12**, and a tube holder **14** which is detachably connected to the mounting part **10**. The mounting part **10** is channel-shaped in cross section and includes a back wall **16** which is secured to a supporting surface **18** by a plurality of fasteners in the form of screws **20**. Projecting outwardly from the back portion **16** are a pair of spaced parallel wing flanges **22** and **24** forming generally the sides of the housing of the dispenser. The mounting part **10** also includes a rounded top portion **26** which is formed as a continuation of the wing flanges **22** and **24** so as to provide a housing having a pleasing appearance.

The tube holder **14**, as is best illustrated in Figure 4, is substantially semi-circular in cross section for a major portion of its length and has a diameter equal to the spacing between the wing flanges **22** and **24** of the mounting part **10** whereby free edges **28** thereof may be disposed in abutting engagement with the free vertical edges of the wing flanges **22** and **24**. The tube holder **14** is also provided with a rounded top wall **30** which has the same configuration as the top wall **26** of the mounting part **10** and is in abutting engagement with the free edge thereof.

Referring now to Figures 2 and 6 in particular, it will be seen that the lower portion of the tube holder **14** gradually decreases in diameter towards the bottom thereof and at the same time the arcuate extent thereof increases from the semi-circular cross section of the upper portion of the tube holder **14**. The lower portion of the tube holder **14** is referred in general by the reference numeral **32** and a portion thereof extending rearwardly of the edges **28** of the upper portion of the tube holder **14** are positioned between the wing flanges **22** and **24** of the mounting part **10**, the wing flanges **22** and **24** being of a reduced width adjacent its lower end to facilitate the entrance of the lower portion **32** of the tube holder **14**.

The tube holder **14** is secured to the mounting part **10** by positioning the lower portion **32** thereof between the wing flanges **22** and **24** at a point above their lower ends. The wing flanges **22** and **24** are provided with inwardly projecting cut out tabs **34** which are progressively fed into aligned openings **36** in the lower portion **32** of the tube holder **14** upon downward movement of the tube holder **14** with respect to the mounting part **10**. The relationship of the openings **36** with respect

to the tabs 34 is such that when the tabs 34 are firmly seated within their respective openings 36, the top wall 30 of the tube holder 14 is in alignment with the top wall 26 of the mounting part 10. After the tabs 34 have become seated within their respective openings 36, the upper portion of the tube holder 14 is swung into engagement with the upper portion of the mounting part 10 and secured thereto by a pin 38 passing through an aperture 40 in the top wall 30 of the tube holder 14. The pin 38 is mounted on a spring arm 42 carried by the top wall 26 of the mounting part 10.

In order that the tube holder 14 may perform its required function, the bottom wall thereof is in the form of an annular ring 44 having a concentric bore 46 therethrough. The annular ring 44 is provided with a transversely extending threaded bore 48 on the inner side thereof, the bore 48 communicating with the bore 46 and having threadedly mounted therein a locking screw 50. The tube holder 14 is intended to have a collapsible tube 52 mounted therein in an inverted position with a neck 54 thereof positioned within the bore 46 and retained therein by the locking screw 50. It will be understood that the collapsible tube 52 is disposed within the tube holder 14 prior to its connection to the mounting part 10.

Referring now to Figures 3, 4 and 5 in particular, it will be seen that the mounting part 10 is provided with a longitudinal extending guide, which is referred to in general by the reference numeral 56. The guide 56 includes a concave longitudinally extending central portion 58 having vertically extending wing flanges 60 on opposite sides thereof. The wing flanges 60 have edges in engagement with the inner surfaces of the flanges 22 and 24 so as to prevent transverse movement of the guide 56.

The concaved central portion 58 of the guide 56 has seated therein for vertical movement thereon a ball 62. The ball 62 is also in engagement with the tube 52 and is adapted to be urged towards the tube holder 14 by the guide 56 in order to collapse the collapsible tube 52.

Secured to the rear wall 16 of the mounting part 10 by a fastener 64 is a clip 66. The clip 66 secures to the rear wall 16 for rotation with respect thereto a transversely extending portion 68 of a J-shaped dispensing lever, which is referred to in general by the reference numeral 70. The dispensing lever has a transverse portion 68 thereof extending through the wing flange 22 and projecting outwardly through an opening 72 therein. Integral with the transverse portion 68 is a forwardly and upwardly extending crank arm 74 which may be utilized in rotating the transverse portion 68. Integral with the other end of the transverse portion 68 is a short leg 76 which extends upwardly and rearwardly in spaced parallel relation to the crank arm 74, the short leg 76 being disposed within the housing of the dispenser.

Bearing against the outer surface of the rear wall 16 of the mounting part 10 for vertical sliding movement is a shiftable member 78. The shiftable member 78 is substantially the same width as the spacing between the wing flanges 22 and 24 and is guided for vertical movement only thereby. The shiftable member 78 has an offset central portion 80 which provides clearance for the clip 56 and the transverse portion 68 of the dispensing lever 70, the offset portion 80 also providing a stop to limit inward movement of the guide 56. The short leg 76 of the dispensing lever 70 is engaged within an enlarged opening 82 in the offset portion 80 and moves the shiftable member 78 downwardly when the crank arm 74 of the dispensing lever 70 is moved downwardly.

In order that the downward movement of the shiftable member 78 may be converted into an outward thrust on the guide 56, a pair of links 84 are disposed between the shiftable member 78 and the guide 56 adjacent the upper and lower ends. The links 84 are disposed at an angle to both the horizontal and vertical and extend transversely between the wing flanges 22 and 24. The shiftable member 78 is provided with outwardly struck flanges 86 which overlie their respective links 84 to urge the upper ends thereof downwardly in response to downward movement of the shiftable member 78. Downward movement of the lower ends of the links 84 is prevented by rearwardly struck tabs 88 struck out from the wing flanges 60 of the guide 56. Inasmuch as the upper ends of the links 84 are moved downwardly by downward movement of the shiftable member 78, and the lower ends of the links 84 are restrained against movement, it is obvious that the links 84 must pivot with the result that their effective widths are increased and the guide 56 is urged forwardly away from the shiftable member 78.

When the guide 56 is moved forwardly with respect to the shiftable member 78, the ball 62 guidingly engaged with the guide 56 is urged towards the front portion of the tube holder 14 with the resulting collapsing of the collapsible tube 52 positioned therein. It will be understood that the ball 62 is moved to a position closely adjacent the rear surface of the front portion of the tube holder 14 whereby the collapsible tube 52 is completely collapsed to dispense substantially all of the substance contained therein.

In order that the guide 56 may normally be urged into engagement with the offset portion 80 of the shiftable member 78 and also to assure upward movement of the guide 56, there is connected to the rear wall 16 of the mounting part 10 a tension spring 90. The upper end of the tension spring 90 is hooked over a forwardly projecting tab 92 struck out from the rear wall 16 and the tension spring extends downwardly and forwardly therefrom. The lower end of the tension spring 90 is hooked over a rearwardly projecting tab 94 struck from the central portion of the guide 56 intermediate its ends. In view of the tension spring 90 it will be seen that when the crank arm 74 of the dispensing lever 70 is moved back to its normal position, the shiftable member 78 is moved outwardly to its normal position and the guide 56 is pulled inwardly into engagement with the offset portion 80 of the shiftable member 78. Upward movement of the shiftable member 78 may be limited by engagement of a portion of the offset portion 80 with the clip 66 or by jamming of the links 84 between the tabs 88 of the guide 56 and stops 96 secured to the wing flanges 60 thereof in vertically spaced relation.

Referring to Figure 3 in particular, it will be seen that the relationship of the links 34 with respect to the flanges 86 of the shiftable member 78 and the tabs 88 and stops 96 of the guide 56 is such that in addition to the guide being urged outwardly away from the shiftable member, the guide is moved slightly downwardly against the tension of the spring 90. The frictional engagement between the ball 62 and the guide 56 is such that the ball 62 is also rolled downwardly, in addition to being urged outwardly, so as to progressively force the material to be dispensed from the tube 52 downwardly out of the upper end thereof.

In order that the dispensing opening of the collapsible tube 52 may be conveniently closed, the mounting part 10 of the housing has pivotally secured to the lower portion thereof a flat closure plate 98. The closure plate 98 extends between the lower ends of the wing flanges 22 and 24 is pivotally connected thereto by a pair of transversely aligned outwardly extending projections 100 which are positioned in transversely aligned apertures 102 in the wing flanges 22 and 24. The outer portion of the closure plate 98 is provided with an enlarged opening 104 in which is positioned a circular closure cap 106, the closure cap 106 being of the same diameter as the annular ring 44 and being vertically aligned therewith when the closure plate 98 is in its horizontal tube closing position.

In order that the closure plate **98** may be retained in its closed position, the rear wall **16** of the mounting part **10** has secured thereto adjacent the lower end thereof and at one side a clip **108** which clamps to the rear wall **16** for vertical movement only an L-shaped spring **110**. The L-shaped spring **110** includes a vertical arm **112** which is clamped by the clip **108** and whose upward movement is limited by a stop **114** carried by the rear wall **16** and engaging the upper end thereof. The L-shaped spring **110** is provided with a horizontal arm **116** which compressively engages within a notch **118** in the upper edge of a tab **120** struck out from the rear portion of the closure plate **98**.

Downward movement of the closure plate **98** results in the upward bending of the horizontal arm **116** which accordingly resists swinging of the closure plate **98**. Referring to Figure 8 particularly, it will be seen that once the closure plate **98** has swung from its horizontal position to a substantially vertical position the rear edge of the tab **120** engages the horizontal arm **116** and prevents the accidental swinging of the closure plate from the position illustrated in Figure 8.

Referring now to Figure 3 in particular, it will be seen that the closure plate **28** is provided with a pair of spaced parallel upstanding lugs **122** between which is mounted a small roll of paper **124**. In order that the roll of paper **124** may be maintained positioned between the lugs **122**, the closure plate **98** is provided with an outwardly struck tab **126** which engages the forward side of the roll of paper **124**. The closure plate **98** in the vicinity of the tab **126** is provided with a transversely extending slot **128** through which the paper **124** passes, the slot **128** forming a guideway for the paper **124**. Positioned adjacent the slot **128** but spaced forwardly thereof is a second elongated transversely extending slot **130** through which the paper **124** passes to be positioned once again on the upper side of the closure plate **98**. The paper **124** then passes between the closure cap **126** and the angular ring **44** to provide a seal between the two.

After each opening of the closure cap **106** the portion of the paper **124** underlying the annular ring **44** is removed in order to facilitate the removal of accumulation of the substance stored within the collapsible tube **52** thereon and thereby maintaining a sanitary condition.

In recapitulation, it will be understood that after the guide **56** has been initially urged towards the ball **62**, the same is moved downwardly with the shiftable member **78**. When the guide **56** moves downwardly, the ball **62**, in addition to pressing the tube, has imparted thereto a downward rolling action due to frictional engagement with the guide **56**.

The operation of this device will be understood from the foregoing description of the details thereof, taken in connection with the above recited objects and the drawings. Further description would appear to be unnecessary.

Minor modifications of the device, varying in minor details from the embodiment of the device illustrated and described here, may be resorted to without departure from the spirit and scope of this invention, as defined in the appended claims.

Having described the invention, what is claimed as new is:

1. A dispenser for collapsible tubes comprising a tube holder, a ball carried within said tube holder for engagement with a collapsible tube, means for selectively urging said ball toward an adjacent collapsible tube for collapsing the same in order to dispense material formed therein, said means including an elongated guide for said ball, and actuating means carried by said tube holder in engagement with said guide for simultaneously moving said guide towards said ball for urging said ball into compressive engagement with a collapsible tube and longitudinally of the tube to roll the ball along the tube.

2. A dispenser for collapsible tubes comprising a tube holder, a ball carried within said tube holder for engagement with a collapsible tube, means for selectively urging said ball toward an adjacent collapsible tube for collapsing the same in order to dispense material formed therein, said means including an elongated guide for said ball, said guide being movable towards said ball for urging the same into compressive engagement with the collapsible tube, said elongated guide being suspended within the tube holder, a shiftable member carried by said tube holder, by parallel links, said parallel links connecting said guide to said shiftable member and retaining said guide and said shiftable member in spaced relation, said guide being movable by said shiftable member through said links.

3. A dispenser for collapsible tubes comprising a housing including a tube holder, a ball carried within said housing for cooperating with said tube holder to collapse a collapsible tube supported thereby, means carried by the housing for selectively urging said ball towards said tube holder, said means including an elongated guide for said ball, said guide being movable towards said ball for urging the same into compressive engagement with the collapsible tube, said guide being simultaneously movable downwardly to roll said ball over said tube.

4. A dispenser for collapsible tubes comprising a housing including a tube holder, a ball carried within said housing for cooperating with said tube holder to collapse a collapsible tube supported thereby, means carried by the housing for selectively urging said ball towards said tube holder, said means including an elongated guide for said ball, said guide being movable towards said ball for urging the same into compressive engagement with the collapsible tube, a shiftable member carried by said housing for vertical movement, links extending between said guide and said shiftable member said guide being retained in spaced parallel relation with said shiftable member by said links, said guide being spring urged towards said shiftable member.

5. A dispenser for collapsible tubes comprising a housing including a tube holder, a ball carried within said housing for cooperating with said tube holder to collapse a collapsible tube supported thereby, means carried by the housing for selectively urging said ball towards said tube holder, said means including an elongated guide for said ball, said guide being movable towards said ball for urging the same into compressive engagement with the collapsible tube, a shiftable member carried by said housing for vertical movement, links extending between said guide and said shiftable member, said guide being retained in spaced parallel relation with said shiftable member by said links, said guide being spring urged towards said shiftable member, said links engaging stop elements carried by said shiftable member and said guide, said links being pivotable for varying the spacing between said shiftable member and said guide.

6. A dispenser for collapsible tubes comprising a housing including means for holding a tube in an inverted position, means for dispensing contents of the tube, a closure plate carried by said housing for closing a dispensing end of the collapsible tube, a paper seal positioned between said closure plate and the dispensing end, said paper seal being in the form of a roll of paper carried by said closure plate and movable with respect thereto whereby used portions of said roll may be removed.

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