May 18, 1954 F. BURAS, JR 2,678,755

DISPENSER FOR COLLAPSIBLE CONTAINERS OPERATED BY BRUSH-ACTUATED MEANS

Filed March 27, 1953 2 Sheets-Sheet 1

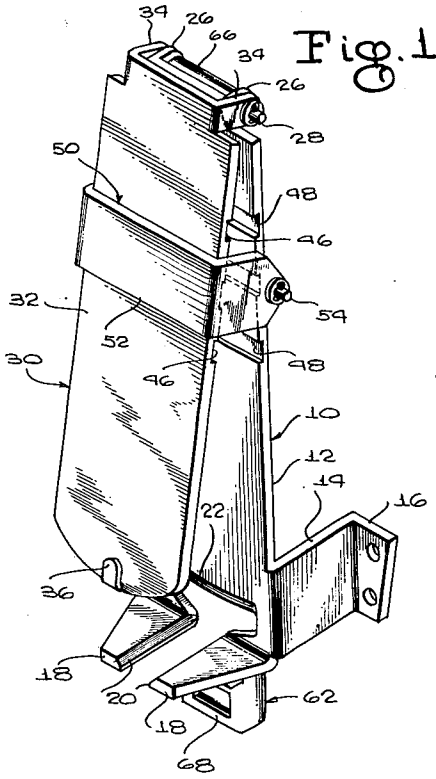


Fig. 1

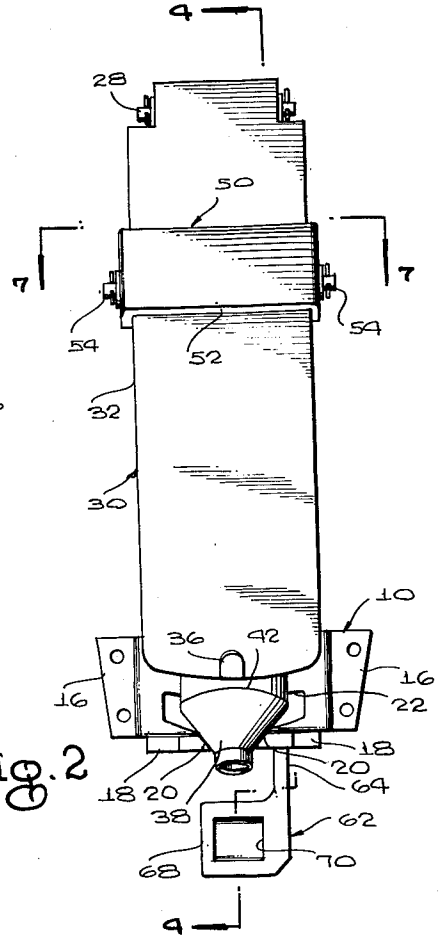


Fig. 2

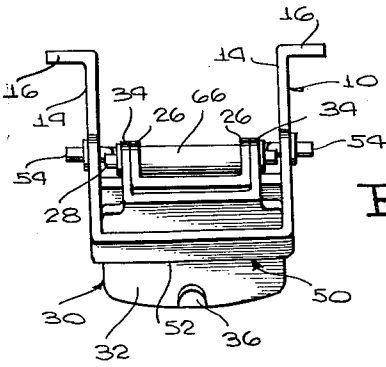


Fig. 3

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Filed March 27, 1953 2 Sheets-Sheet 2

Fig. 4

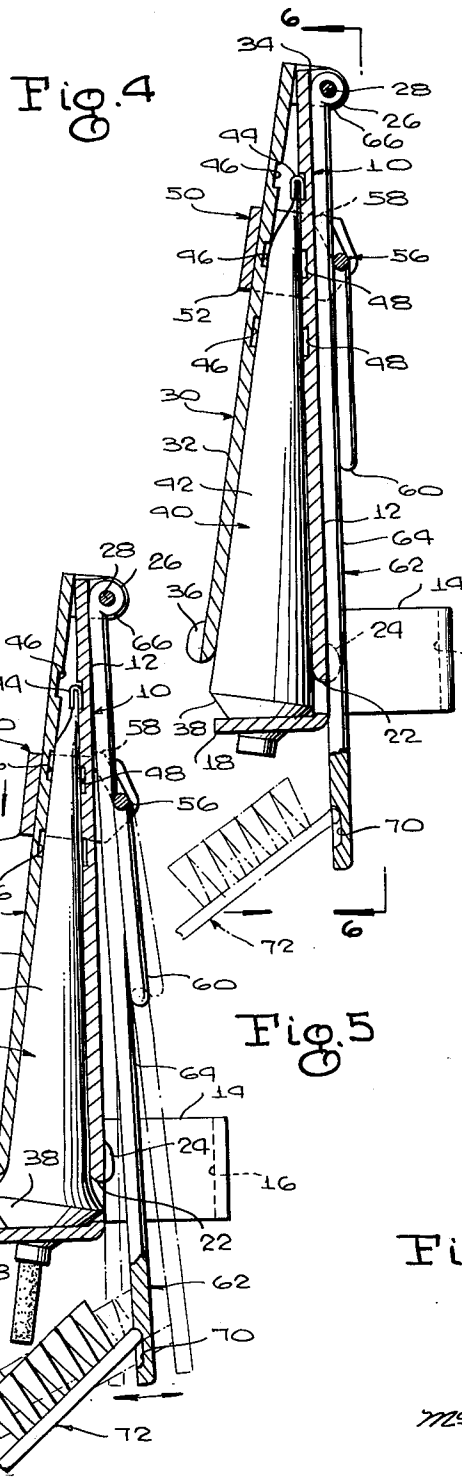


Fig. 6

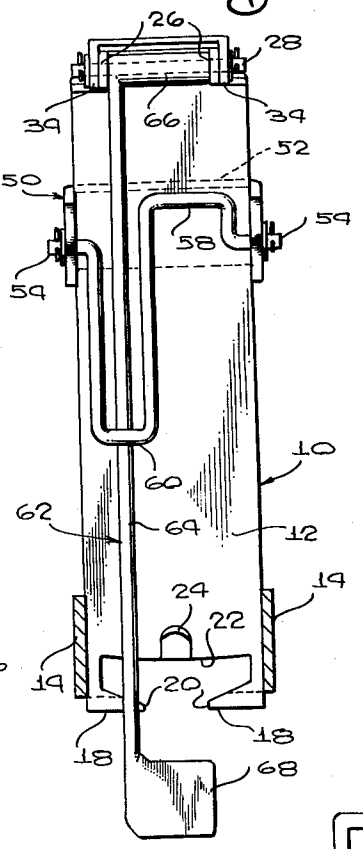
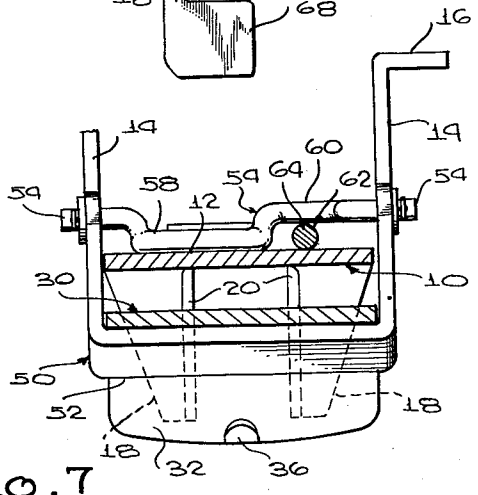


Fig. 5

Fig. 7



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DISPENSER FOR COLLAPSIBLE CONTAINERS OPERATED BY BRUSH-ACTUATED MEANS

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8 Claims. (Cl. 222—103)

1

This invention relates to a dispenser adapted to support a conventionally designed collapsible container, the dispenser constituting the present invention being so designed as to apply pressure against the container tending to collapse the same, under the control of a user.

Heretofore, dispensers for containers of the collapsible type have been devised, which dispensers apply squeezing pressure to the collapsible containers supported thereby, tending to reduce the interior cross sectional area of the containers and thereby bring about evacuation of the container contents. However, to my knowledge, there has not previously been devised a dispenser of this type which will initiate the container-squeezing action responsive to swinging of an operating lever by an object such as a toothbrush, when said object is positioned below the discharge end of the container at a location in which said object will receive the ejected container contents, with the operating lever transmitting pressure to a container-engaging pressure plate member through the medium of a self-adjusting yoke assembly that gravitates freely upon the plate member to a proper position determined by the extent of evacuation of the container contents.

The main object of the present invention is to provide an improved dispenser having the characteristics noted above. In this connection, it is believed important to note that by causing the container contents to be dispensed through the medium of an operating lever, a freely gravitating, self-adjusting yoke assembly, and a swinging pressure plate member as discussed above, I propose to accomplish uniform ejection of the container contents regardless of the amount of material remaining within the container, without substantially varying swinging movement of the operating lever or the pressure which must be exerted against the operating lever by the lever-engaging object.

A further object of importance is to provide a dispenser as described in which a stationary base plate and a pressure plate member will be pivotally connected to one another in such a manner as to cause the same to diverge in a direction away from the pivotal connection, the base plate being adapted to support a collapsible container in a position in which the container will be interposed between the diverging base plate and pressure plate member, said base plate and pressure plate member being specifically designed, at their divergent ends, to squeeze the container transversely while holding deformation of the head part of the container to a minimum.

2

Yet another object is to provide a device as stated in which the pressure plate member and the base plate will each be provided with a longitudinal series of complementary recesses, said recesses being so designed as to engage the foot end of a supported container. It is proposed, in this connection, to so space the recesses longitudinally of the plate member and base plate as to permit the device to be efficiently used with collapsible containers of different sizes.

Yet another object is to provide a means for swinging the pressure plate member toward the base plate which will comprise a self-adjusting yoke assembly that gravitates downwardly upon the pressure plate member, to adjusted positions that will be determined proportionately to the angle of divergence of the plate member and base plate. In this way, it is proposed that the yoke assembly associated with the pressure plate member will remain in engagement with said plate member at all times, regardless of the extent to which the plate member will have been swung inwardly toward the base plate as the container contents are exhausted. It is further proposed to associate with said yoke assembly an operating lever and a double-throw crank, the lever and crank being so arranged as to cause a small amount of swinging movement of the operating lever to be translated into a cam action exerted by one throw of the crank against the base plate, tending to shift the yoke assembly transversely of the base plate and the pressure plate member. A controlled, uniform pressure is thus applied against the plate member regardless of the position to which the plate member is swung toward the base plate, and regardless of the extent to which the yoke assembly has gravitated downwardly therealong.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawings, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a perspective view of a dispenser formed in accordance with the present invention;

Figure 2 is a front elevational view, a collapsible container being shown in proper position for dispensing of the contents thereof;

Figure 3 is a top plan view;

Figure 4 is a longitudinal sectional view on line 4—4 of Figure 2, a toothbrush being illustrated in dotted lines in a position in which said brush is disposed preliminary to actuation of the lever engaged thereby;

Figure 5 is a view similar to Figure 4, the lever

being swung outwardly, the dotted lines indicating other positions of the lever assumed thereby during the dispensing operation;

Figure 6 is a sectional view on line 6—6 of Figure 4; and

Figure 7 is an enlarged transverse sectional view on line 7—7 of Figure 2.

Referring to the drawings in detail, the reference numeral 10 has been applied generally to a stationary support assembly. Said support assembly is adapted to be fixedly mounted upon any suitable surface, such as a room wall. The assembly 10 includes a vertically disposed, flat back plate 12, said back plate being integrally formed, at its lower end, with rearwardly extended bracket members 14 terminating, at their rear ends, in outwardly extended ears 16. Ears 16 are each formed with spaced apertures adapted to receive screws or other fastening elements, not shown, whereby the device can be fixedly mounted upon the wall surface. It will be readily appreciated that when the support assembly 10 is mounted upon the wall surface, the base plate 12 will be spaced forwardly a short distance from said wall surface.

Integrally formed upon the lower end edge of the base plate 12 is a pair of forwardly projected support ledges 18. Ledges 18 are horizontally disposed, and have spaced apart, beveled inner edges 20. The inner edges 20 merge, at their rear ends, with the opposite ends of the edge of a relatively wide clearance opening 22 formed in the lower end portion of the base plate 12.

Disposed medially between opposite ends of the opening 22 is a lip 24, formed upon the back plate 12 for the purpose of reducing deformation of the head part of a collapsible container, in a manner to be presently made apparent.

At its upper end, the base plate 12 is formed with slits extending inwardly from its opposite side edges, and the portions defined between said slits and the upper end edge of the base plate 12 are extended rearwardly to form bearing lugs 26. The bearing lugs 26 are apertured to receive the opposite ends of a pivot pin 28, said pivot pin extending rearwardly of the base plate at the upper end thereof.

A pressure plate assembly has been designated generally by the reference numeral 30, and includes a pressure plate member 32. The plate member 32 is coextensive in width with the base plate 12, but is slightly shorter in length than the base plate, thus to cause the lower end edge of the pressure plate member to be spaced upwardly from the support ledges 18 of the base plate.

At its upper end, the pressure plate member is slit inwardly from the opposite sides thereof, and the portions defined above said slits are extended rearwardly to provide ears 34. The ears 34 are apertured for extension of the pivot pin 28 therethrough, and thus, it is seen that the plate member 32 is pivotally connected at its upper end to the base plate 12, for swinging of the free or lower end of said plate member toward and away from the lower end portion of the base plate.

The lower end edge of the plate member 32 is of arcuate formation, in the preferred embodiment of the invention, as best shown in Figures 1 and 2. It has been found that this particular shape of the lower end edge facilitates the transverse squeezing of the collapsible container, while holding deformation of the head part of the container to a minimum.

Disposed medially between the opposite side edges of the pressure plate member 32, and formed upon said arcuate lower end edge thereof, is a lip 36, which lip desirably thickens the pressure plate member at the particular location at which the head part 38 of a collapsible container 40 would normally curl upwardly when the body 42 of said container has been squeezed almost to its full extent.

It will thus be seen (see Figures 4 and 5) that initially, the head part 38 of the container will be disposed below the lower end edge of the plate member 32, and below the upper edge of the clearance opening 22 of the base plate. As a result, swinging of the plate member 32 toward the base plate 12 will be effective to squeeze the body 42 of the container, while not squeezing the head part 38 correspondingly. Ordinarily, squeezing of the body 42 would tend to curl diametrically opposite portions of the head part upwardly, but the enlargements defined by lips 24, 36 resist the upward curling of said diametrically opposite portions of the head part, thereby to control the deforming of the head part during the reduction of the container to a completely exhausted state.

It may be noted that when the container 40 is inverted and positioned against the base plate 12, the neck of the container will extend downwardly within the space between the support ledges 18, the beveled inner edges 20 of said support ledges complementing the generally tapered or conical formation of the head part 38 (see Figure 2).

I provide, in my dispenser, means for accommodating the same to collapsible containers of different sizes. Accordingly, the inner surface of the plate member 32 is formed with a longitudinal series of shallow, transversely extending recesses 46. The recesses 46 are spaced equal distances apart, longitudinally of the plate member 32, and extend fully from side to side of the plate member. In the opposing surface of the base plate 12, a longitudinal series of shallow, transversely extending recesses 48 is provided, the several recesses 48 being paired with corresponding recesses 46 of the plate member 32.

The recesses 46, 48 are provided for engagement therein of the bottom flange or clamp 44, generally provided at the foot end of a collapsible container of the type illustrated. It is desirable, in this connection, that said recesses be provided, since the clamp or flange 44 defines a thickened portion at the foot end of the container, which thickened portion would ordinarily prevent the container from being squeezed flat. Since the recesses 46, 48 are arranged in pairs spaced longitudinally of the plate member 32 and base plate 12, it will be obvious that containers of different lengths can be readily accommodated in the dispenser constituting the present invention.

The device also includes a yoke assembly designated generally by the reference numeral 50. In this connection, the yoke assembly 50 is circumposed about the pressure plate member 32 and the base plate 12, and is slidable longitudinally of these parts, the yoke assembly gravitating freely therealong, responsive to the changing angle of divergence of the member 32 and base plate 12.

The yoke assembly 50 includes a yoke 52, the yoke 52 being formed substantially to a U shape, and having its bight extending transversely of and overlying the outer surface of the plate member 32. The arms of the yoke embrace between them the plate member and the base plate 12,

as best shown in Figure 7, and the free end portions of said arms are projected rearwardly for a short distance beyond the rear surface of the base plate 12.

Formed in the free ends of the yoke arms are bearing openings, in which are journaled the opposite end portions 54 of a double-throw crank designated generally at 56. The crank 56 has been illustrated to its best advantage in Figures 4–6, and as will be noted, said double-throw crank includes a relatively short throw 58, merging into a long throw 60. Thus, the bight portion of the short throw 58 is spaced outwardly a relatively short distance from the axis of rotation of the crank, the bight portion of the throw 60 being spaced a substantially greater distance away from said axis of rotation.

It is also important to note that in the preferred commercial embodiment of the invention, the throw 58 lies in a plane disposed at a wide obtuse angle to the plane in which the throw 60 lies (see Figure 4).

It will be seen that with throw 60 depending vertically in spaced relation to the back surface of the base plate 12, swinging movement of the throw 60 away from the base plate, that is, in a counter-clockwise direction when the throw 60 is viewed as in Figures 4 and 5, will be effective to swing the short throw 58 inwardly into engagement with the back surface of the base plate 12. As a result, the entire yoke assembly 50 will be biased to the right in Figure 4, thus to cause pressure to be exerted against the plate member 32 tending to swing said plate member inwardly toward the base plate 12.

I provide means actuated by the object onto which the container contents are to be dispensed, that is adapted to impart said swinging movement to the long throw 60 of the crank 56. Said crank rotating means has been designated generally by the reference numeral 62, and includes an elongated operating lever 64. Lever 64, as will be readily noted from Figure 4, is substantially greater in length than the length of the base plate 12, so as to cause the lower end of said lever to project below the lower end of the base plate.

At its upper end, the lever 64 is formed with a transversely extended bearing sleeve 66 (Figure 6) through which the pivot pin extends. In this way, the lever 64 is swingably connected, at its upper end, to the upper end of the base plate 12, thus to permit the lever 64 to swing between the full and dotted line positions shown in Figure 5.

At its lower end, the lever 64 is formed with a laterally projecting, flat, enlargement 68, having a recess 70 in which is engageable the tip of a lever-actuating object such as a conventional toothbrush 72.

It will thus be seen that if the brush or other object 72 is shifted to the right in Figures 4 and 5, the lever 62 will be swung from its normal position shown in Figure 4 to the full or chain-dotted positions shown in Figure 5. In other words, if it is desired that a relatively small amount be dispensed from the container, the lever could be urged rearwardly to the full line position shown in Figure 5. If, however, a longer ribbon is desired, the lever could be swung to the chain-dotted position shown at the right in Figure 5.

In any event, when the lever is being swung rearwardly, the brush may be inclined as shown in full lines in Figure 5. As a result, when the lever 64 has been swung rearwardly, the ribbon

dispensed from the container will extend downwardly from the discharge end of the container, so as to overlie the midlength or inner end portion of the bristle part of the brush, the portion toward which said ribbon extends depending, of course, upon the extent to which the lever 64 is swung rearwardly.

Thereafter, the brush may be tipped upwardly, pivoting about the point of its engagement with the lever 64, so as to cause the lower end of the dispensed ribbon to impinge against the bristles of the brush. The brush can then be pulled away from the lever 64, and will cause the ribbon to arrange itself longitudinally of the brush.

It may be noted that the arcuate formation of the end edge of the plate member 32, and the arcuate formation of the intermediate edge portion of the opening 22 is designed to prevent tearing of the wall of the container, where said edges engage the container wall. It has been found by experimentation that the arcuate edge formation will eliminate such tearing, as distinguished from straight edges, which tend to tear the material of which the container is formed.

Further, it is to be noted that the particular formation and arrangement of the lips 24, 36, while preventing undesirable deformation of the head part 38 of the container, will, after the container has been substantially exhausted of its contents, control the upward curling of the diametrically opposite portions of said head part, thus to eventually cause the head part to be collapsed to an extent effective to make use of the full amount of the container contents.

Of course, the device is adapted not only for use in association with toothpaste containers, but also is adapted to control the dispensing of shaving cream, cream shampoo, and other material of a paste-like or cream-like consistency that is ordinarily dispensed from collapsible tubes.

It is also important to note that the particular construction which I have devised is such as to cause the pressure exerted against the plate member 32 to be maintained uniformly, regardless of the extent to which the plate member 32 is swung inwardly toward the base plate 12. In other words, the angle of divergence of the plate member 32 and base plate 12 will, of course change according to the extent to which the container contents are dispensed. As said angle of divergence changes, the yoke assembly will adjust itself to the changing angle, the yoke assembly gravitating freely upon the plate member 32 and base plate 12. At all times, of course, the crank and the lever remain in the normal position shown in Figure 4, this being true without regard to the location to which the yoke assembly adjusts itself longitudinally of the device. Therefore, the extent of throw of the lever 64, under pressure of the brush or other object 72, remains unchanged at all times, and the pressure exerted against the plate member 32 correspondingly remains substantially unchanged. Controlled dispensing of the container contents is thus assured, whether the container is full, or practically exhausted.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only in-

tended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. A dispenser for collapsible containers comprising: means to support a collapsible container; a pressure plate assembly including a pressure plate member pivotally connected at one end to said means, for swinging of said member in the direction of the support means to apply a pressure against a container supported between the plate member and support means tending to collapse the container and eject the container contents; a yoke assembly embracing the pressure plate assembly and support means; and brush-actuated means movably mounted on the support means in engagement with the yoke assembly and arranged to shift the same transversely of the support means, for swinging the plate member toward said support means.

2. A dispenser for collapsible containers comprising: means to support a collapsible container substantially vertically with its discharge end faced downwardly; a pressure plate assembly including a pressure plate member pivotally connected at its upper end to said means and diverging downwardly therefrom, for swinging of said member in the direction of the support means to apply a pressure against a container supported between the plate member and a support means tending to collapse the container and eject the container contents, the angle of divergence between said plate member and support means being reduced proportionately to the extent of evacuation of the container contents; a yoke assembly circumposed about said pressure plate assembly and support means, said yoke assembly being loosely slidable upon the pressure plate assembly and support means to gravitate toward the lower ends thereof responsive to said reduction in the angle of divergence of the same; and brush-actuated means movably mounted on the support means in engagement with the yoke assembly and arranged to shift the yoke assembly transversely of the support means in each position to which said yoke assembly gravitates, for swinging the plate member toward the support means.

3. A dispenser for collapsible containers comprising: a base plate adapted for connection to a supporting surface and having means to support a collapsible container; a pressure plate member having a pivotal connection at one end to the base plate, said base plate and pressure plate member diverging in a direction away from said pivotal connection to engage the container therebetween, thus to apply pressure against the container tending to collapse the same responsive to swinging of the other end of the plate member toward the base plate; a yoke assembly embracing the pressure plate member and base plate, for swinging the plate member toward the base plate responsive to shifting of the yoke assembly transversely of said base plate; and an operating lever pivotally connected to said base plate and extending through the yoke assembly for shifting said yoke assembly transversely of the base plate responsive to swinging of said lever about its pivotal connection.

4. A dispenser for collapsible containers comprising: a base plate adapted for connection to a supporting surface and having means to support a collapsible container; a pressure plate member having a pivotal connection at one end to the base plate, said base plate and pressure plate member diverging in a direction away from said pivotal connection to engage the container therebetween, thus to apply pressure against the container tending to collapse the same responsive to swinging of the other end of the plate member toward the base plate; a yoke assembly embracing the pressure plate member and base plate, for swinging the plate member toward the base plate responsive to shifting of the yoke assembly transversely of said base plate; and an operating lever pivotally connected to said base plate and extending through the yoke assembly for shifting said yoke assembly transversely of the base plate responsive to swinging of said lever about its pivotal connection, said yoke assembly including a double-throw crank, one throw of which is engaged by said lever so as to be swung outwardly when the lever is correspondingly swung outwardly in a direction away from the base plate, the other throw of said crank being arranged to swing inwardly responsive to outward movement of the first throw, said second throw engaging the base plate when swung inwardly to bias the yoke assembly transversely of the base plate.

5. A dispenser for collapsible containers comprising: a base plate adapted for connection to a supporting surface and having means to support a collapsible container; a pressure plate member having a pivotal connection at one end to the base plate, said base plate and pressure plate member diverging in a direction away from said pivotal connection to engage said container therebetween, thus to apply pressure against the container tending to collapse the same responsive to swinging of the other end of the plate member toward the base plate; a yoke straddling the pressure plate member and base plate with its bight engaging the plate member, for swinging the plate member toward the base plate responsive to shifting of the yoke toward said base plate; a double-throw crank extending between and journaled in the arms of the yoke back of said base plate; and an operating lever pivotally connected at one end to said base plate and having its intermediate portion engaged with one throw of the crank, swinging movement of said lever in a direction away from the base plate being arranged to rotate the crank through swinging of the lever-engaged throw, the other throw of said crank being disposed to swing against the base plate responsive to said rotation of the crank, for biasing the yoke in the direction of the base plate.

6. A dispenser for collapsible containers comprising: a base plate adapted for connection to a supporting surface and having means to support a collapsible container; a pressure plate member having a pivotal connection at one end to the base plate, said base plate and pressure plate member diverging in a direction away from said pivotal connection to engage said container therebetween, thus to apply pressure against the container tending to collapse the same responsive to swinging of the other end of the plate member toward the base plate; a yoke straddling the pressure plate member and base plate with its bight engaging the plate member, for swinging the plate member toward the base plate responsive to shifting of the yoke toward said base plate; a double-throw crank extending between and journaled in the arms of the yoke back of said base plate; and an operating lever pivotally con-

nected at one end to said base plate and having its intermediate portion engaged with one throw of the crank, swinging movement of said lever in a direction away from the base plate being arranged to rotate the crank through swinging of the lever-engaging throw, the other throw of said crank being disposed to swing against the base plate responsive to said rotation of the crank, for biasing the yoke in the direction of the base plate, said yoke being freely slidable upon the pressure plate member and base plate to shift longitudinally thereof, to retain the bight of the yoke in engagement with said plate member in each position to which the plate member is swung in the direction of the base plate.

7. A dispenser for collapsible container comprising: a generally vertical, elongated base plate adapted for connection to a supporting surface and having means at its lower end to support a collapsible container, said means comprising a forwardly projected pair of support ledges spaced apart to accommodate the neck of an inverted container, said ledges supporting diametrically opposite portions of the head part of the container, thereby to support said container substantially vertically against the base plate, the base plate having, adjacent said ledges, a wide clearance space for said head part of the container with the upper edge of said clearance space being formed with an outwardly extended lip preventing deformation of said head part on collapsing of the container; a pressure plate member pivotally connected at its upper end to the base plate, said base plate and pressure plate member diverging downwardly from said pivotal connection to engage the supported container therebetween, thus to apply pressure against the container tending to collapse the same responsive to swinging of the lower end of the plate member toward the base plate, said lower end of the plate member being formed with an outwardly extended lip corresponding to the lip of the base plate, for preventing deformation of the head part of said container; and means circumposed about the base plate and pressure plate member actuable by a brush positioned below the neck of the container, and arranged to swing the lower end of the plate member in the direction of the base plate.

8. A dispenser for collapsible containers comprising: a vertically arranged support assembly including a flat, elongated, base plate having means to fixedly mount the same upon a vertical wall surface, said support assembly including horizontally disposed support ledges at the lower end of the base plate, said support ledges being spaced apart to receive the neck of a collapsible container therebetween, whereby to support said container in a substantially vertical position in engagement, throughout its length, with the base plate, the base plate having a longitudinal series of transverse notches intermediate its ends any of which is adapted to receive the foot end

of the inverted container, said notches being adapted for engaging the foot ends of containers of different lengths, the base plate being formed, adjacent the support ledges, with a clearance space for the head part of said container; a pressure plate assembly including an elongated pressure plate positioned forwardly of the base plate, said pressure plate being pivotally connected at its upper end to the upper end of the base plate and diverging downwardly from the base plate, for engagement of the supported container between the base plate and plate member, whereby to apply pressure to the container responsive to swinging of the lower end of the plate member in the direction of the base plate, the plate member having a longitudinal series of transversely extended recesses complementing the notches of the base plate, for engagement of the foot end of the container in opposed recesses of the plate member and base plate respectively; a yoke assembly circumposed about the plate member and base plate, said yoke assembly including a yoke the bight of which is engaged with the plate member, for swinging the plate member in the direction of the base plate responsive to shifting of the yoke in the direction of the base plate, the yoke assembly further including a crank journaled at its opposite ends in the arms of the yoke in back of the base plate, said crank and yoke freely sliding longitudinally of the base plate and plate member, to retain the bight of the yoke in engagement with the plate member in each position to which the plate member is swung toward the base plate, said crank being of the double-throw type with the throws thereof extending in opposite directions, one throw being extended radially of the crank for a substantially greater distance than the other throw is extended; and brush-actuated means for swinging the plate member toward the base plate, said last-named means including an elongated arm pivotally connected at one end to the upper end of the base plate, said arm being engaged intermediate its ends with one throw of the crank, whereby to rotate the crank responsive to swinging movement of said arm in a direction away from the base plate, said lever engaging the longer throw of the crank, whereby to swing the shorter throw of the crank into engagement with the base plate on pivotal movement of the lever away from the base plate, swinging of said shorter throw against the base plate being effective to bias the yoke assembly in the direction of said base plate.

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