

Fig. 3.

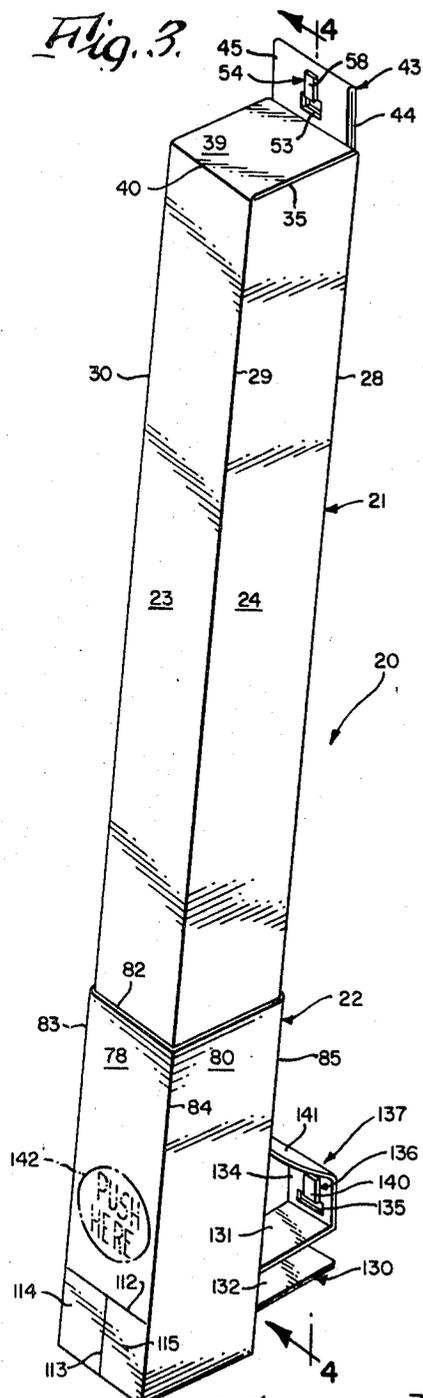


Fig. 4.

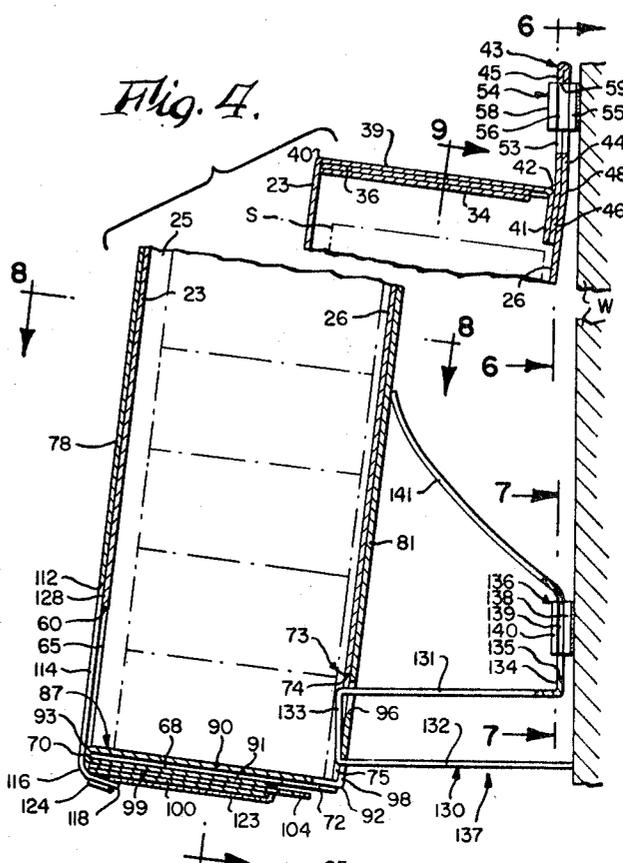


Fig. 5.

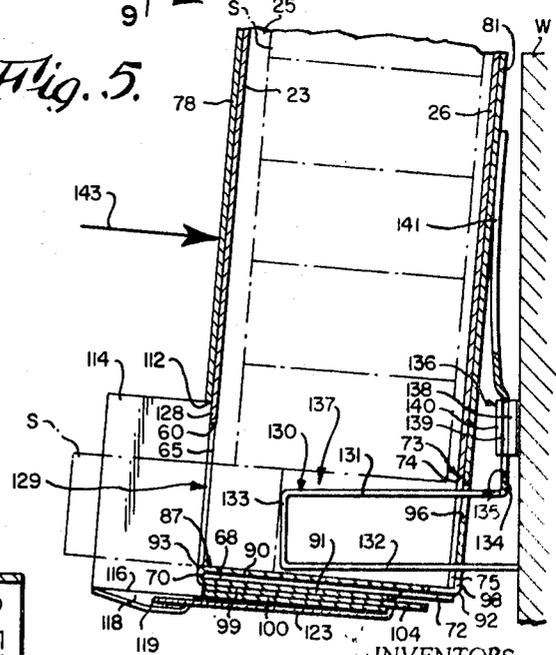


Fig. 6.

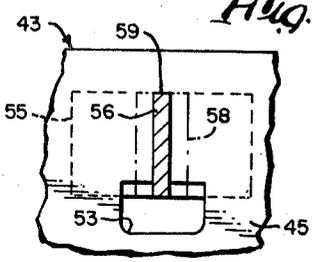
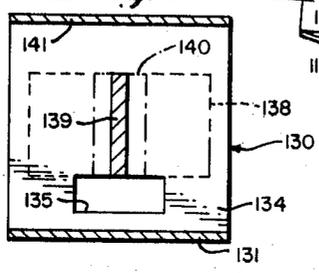


Fig. 7.



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ARTICLE DISPENSER OPERABLE WITHOUT THE USE OF HANDS

BACKGROUND OF THE INVENTION

Dispensers for articles such as surgical scrubbers as heretofore constructed have not been fully satisfactory. For example, prior dispenser construction was such that a person was required to touch the dispenser incidental to removing a scrubber therefrom. This could result in contamination of the container by the person's hands or could transfer previous contamination of the container to the hands of a subsequent user, even though the dispenser and its contents were initially sterilized.

Another disadvantage of the previous dispensers was that they were formed with an article exit which was left open between article withdrawals so that the opportunity to contaminate undispensed articles still within the container from dirt and air entering the exit was increased.

SUMMARY OF THE INVENTION

The inventive dispenser, overcoming the aforementioned disadvantages of prior dispensers, comprises a vertically elongated container having a discharge opening adjacent its lower end and adapted to contain a plurality of superimposed articles such as scrubber sponges to be dispensed singly through such opening, doors normally closing such opening, and a projector arranged to push an article against such doors and through such opening upon relative movement between the container and projector. Thus a normally closed dispenser provides continued protection against environmental contamination.

Another advantage of the inventive dispenser is that it is always ready for use and can be operated to project an article away from the container without requiring handling as by pushing against it with an elbow, enabling the user to completely remove the article by only touching the article and thereby either avoid contaminating the container or being contaminated thereby.

Another advantage of the inventive dispenser is that it is easy to mount on a suitable support such as a wall to place it in operative condition.

A further advantage of the inventive dispenser is that is sturdy, yet economical and is disposable after all of the articles therein have been dispensed.

Other objects and advantages of the invention will be apparent from the following detailed description of a preferred embodiment thereof illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is an elevational view of a flattened blank from which is assembled the inner box of a container forming part of a dispenser embodying a preferred form of the present invention.

FIG. 2 is an elevational view of a flattened blank from which is assembled the outer box of such container.

FIG. 3 is a perspective view of the inventive dispenser and illustrating the same mounted for operation, this view being from a point above, in front and to one side of the dispenser.

FIG. 4 is a fragmentary enlarged vertical sectional view thereof taken on line 4-4 of FIG. 3.

FIG. 5 is a view similar to the lower portion of FIG. 4 and showing the container pushed toward its support so as to effect partial projection of an article from the container.

FIG. 6 is a fragmentary vertical sectional view of the upper mounting for the dispenser taken on line 6-6 of FIG. 4.

FIG. 7 is a fragmentary vertical sectional view of the lower mounting for the dispenser taken on line 7-7 of FIG. 4.

FIG. 8 is a generally horizontal transverse sectional view of the dispenser taken on line 8-8 of FIG. 4.

FIG. 9 is a fragmentary vertical sectional view thereof taken on line 9-9 of FIG. 4.

FIGS. 10 through 15 severally are perspective views of the lower portion of the container, viewed from a point below and in front of the same, and illustrates the sequence of assembling the container.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The dispenser is shown in FIG. 3 as comprising a vertically elongated container 20 including an inner box 21 and an outer box 22. The inner box 21 extends for the full height of the container, whereas the outer box 22 surrounds the lower portion of the inner box for reenforcement of the same and for other purposes as will be apparent from the ensuing description.

The inner box 21 is formed from a one-piece blank 21B of suitable sheet material shown in FIG. 1. The outer box 22 is also formed from a one-piece blank 22B of suitable sheet material shown in FIG. 2. Preferably the sheet material for both blanks is paperboard. An explanation of the construction and shape of blanks 21B and 22B will initiate a description of boxes 21 and 22, following which the manner of joining the boxes together will be described.

Referring to FIG. 1, blank 21B is shown as including a front panel 23, a first side panel 24, a second side panel 25 and a rear panel 26. A vertical fold line 28 joins front panel 23 and side panel 24. A vertical fold line 29 joins front panel 23 and the other side panel 25. A vertical fold line 30 joins side panel 25 and rear panel 26. Connected to this rear panel along a fold line 31 is an attaching flange 32. With the various panels 23-26 folded along lines 28-31 so that adjacent panels are at right angles to each other, a rectangular tubular member can be provided. Flange 32 which is folded along line 31 to beat a right angle to rear panel 26 is adhesively secured to the inside of side panel 24 so that fold line 31 is adjacent the free edge 33 of this side panel, as shown in FIG. 8.

Side panel 24 is shown as having at its upper end a flap 34 connected along a horizontal fold line 35. The other side panel 25 has a similar flap 36 connected to it by a horizontal fold line 36. These flaps can overlap when the box 21 is set up. The upper end of front panel 23 has a rectangular cover panel 39 as an extension connected along a horizontal fold line 40. The free end of this cover panel has a flange 41 connected to it along horizontal fold line 42. In the assembled condition of box 21 cover panel 39 overlies overlapped flaps 34 and 36, and flange 41 is arranged vertically and inserted adjacent rear panel 26.

Means are provided for hinging the upper end of box 21 to a suitable support such as a wall W (FIGS. 4 and 5). For this purpose, the upper end of rear panel 26 is shown as having a compound hinge tab 43 including a rear rectangular section 44, a front rectangular section 45 and a flange 46. Rear section 44 is connected to the rear panel along a horizontal fold line 48. Front section 45 is connected to the rear section along a horizontal fold line 49. Flange 46 is connected to the front section by a horizontal fold line 50. Flange 44 has an inverted T-shaped slot 51 and flange 45 has a similar but upright T-shaped slot 52, both slots being in vertical alignment and equidistant from intermediate fold line 49.

It will be seen that by folding the two sections 44 and 45 along line 49 and inserting flange 46 between flange 41 of cover panel 39 and rear panel 26, a double-ply hinge tab extending upwardly generally as an extension of the rear panel is provided, as shown in FIG. 4. The T-shaped slots 51 and 52 of the overlapping sections 44 and 45 register and jointly provide an inverted T-shaped hole 53, shown in FIGS. 3 and 4, adapted to receive a support bracket 54. This bracket is shown in FIGS. 3, 4 and 6 as including a base plate 55 adhesively attachable to wall W, a vertical rib 56 outstanding from this base plate and a vertical retaining plate 58 joined centrally to the outer edge of this rib. Thus in cross section the rib and retaining plate are T-shaped. The wings or portions of the retaining plate 58 laterally of rib 56 extend over front hinge tab section 45 laterally of the vertical leg of hole 53. The walls of hinge tab sections 44 and 45 at the upper end of this leg of hole 53 engage the upper edge 59 of bracket rib 56, as shown in FIG. 4

and 6. Thus, the horizontal transverse hinge axis for inner box 21 is along fold line 48.

Considering now the construction of the lower end of blank 21B, front panel 23 is shown as having a transverse horizontal edge 60 which is at a level above a horizontal fold line 61 on side panel 24 and a similar fold line 62 on the other side panel 25. The cutout portion 63 of the front panel so provided has a slightly upwardly and outwardly inclined edge 64 adjacent side panel 24. A similar edge 65 is on the opposite side of this cutout portion adjacent side panel 25. A locking tab 66 is connected to side panel 24 along fold line 61. A similar locking tab 68 is connected to the other side panel 25 along fold line 62. Preferably the edges of locking tabs 66 and 68 adjacent the lower ends of edges 64 and 65 are set back slightly as indicated at 69 and 70, respectively. The opposite ends of these locking tabs 66 and 68 are shown as inclined as indicated at 71 and 72, respectively.

The lower end of rear panel 26 is shown as being recessed as indicated at 73. This recess is defined by a horizontal edge 74 above the level of fold line 62, an inclined side edge 75 extending upwardly and leftwardly from the juncture of fold lines 62 and 30, and a similar inclined side edge 76 extending upwardly and rightwardly from the lower end of fold line 31.

Turning now to FIG. 2, the blank 22B there shown comprises a front panel 78, a side panel 79, another side panel 80, and a rear panel 81. The upper edges of these panels are coterminal and horizontal as indicated at 82. Side panel 79 is connected to front panel along a vertical fold line 83. Side panel 80 is connected to the other edge of this front panel along a vertical fold line 84. Rear panel 81 is connected to side panel 80 along a vertical fold line 85. Connected to the other edge of this rear panel along a vertical fold line 86 is an attaching flange 88. With the various panels 78—81 folded along lines 83—86 so that adjacent panels are at right angles to each other, a rectangular tubular member can be provided. Flange 88 which is folded along line 86 to beat a right angle to rear panel 81 is adhesively secured to the inside to the inside of side panel 79 so that fold line 86 is adjacent the free edge 89 of this side panel, as shown in FIG. 8.

Each of panels 78—81 is slightly wider than the corresponding panels 23—26 so that the box 22 formed from panels 78—81 can closely receive box 21 formed from panels 23—26, as shown in FIG. 8. The vertical extent of panels 78—81 is only a fraction of that of panels 23—26, as shown in FIG. 3 and as can be seen from a comparison of FIGS. 1 and 2.

The lower end of rear panel 81 has a compound tab extension 87 including an upper portion 90 and a lower portion 91. Upper portion 90 is rectangular having the same width as rear panel 81 and joined thereto along a horizontal fold line 92. Lower portion 91 is connected to upper portion along horizontal fold line 93 and has slightly downwardly convergently tapered side edges 94 and a pointed free end part 95. The purpose of this compound tab 87 will appear infra.

Rear panel 81 adjacent its lower end is shown as having a horizontally elongated slot 96 of a length less than the width of this panel between fold lines 85 and 86. Below this slot is a second horizontally elongated slot 98 but of about twice the width of slot 96 and arranged with about equal portions above and below fold line 92.

Means are provided for closing the lower end of outer box 22, the same including a first cover flap 99 and a second cover flap 100. Flap 99 forms an extension of the lower end of side panel 79 and is connected thereto along a horizontal fold line 101. The edge 102 of this cover flap 99 adjacent fold line 83 is shown as being slightly offset laterally thereof in a direction inwardly of side panel 79. The opposite edge 103 of flap 99 is shown as extending downwardly from the lower end of edge 89 at an angle of about 45° and directed inwardly of this flap for a portion of the length thereof. At the termination of this angled edge 103, flap 99 is formed with a tongue part 104 which extends laterally toward the free edge 89 of side panel 79. This flap 99 is also shown as formed with a C-shaped slit 105 adjacent the juncture of fold line 101 and edge 102.

Cover flap 100 is an extension of side panel 80 and is connected thereto along a horizontal fold line 106. The edge 108 of this flap adjacent fold line 84 is slightly offset laterally thereof in a direction inwardly of side panel 80. Edge 108 is interrupted adjacent its lower end to provide a locking tab 109 adapted to be inserted in slit 105 in the other cover flap 99. The opposite edge of this flap 100, or the one adjacent fold line 85, is shown having a portion indicated at 110 extending downwardly from the lower end of fold line 85 at an angle of about 45° and directed inwardly of this flap for a portion of the length thereof. The extent of this angled edge 110 is about the same as that for the angled edge 103 on the other cover flap 99. At the lower termination of angled edge 110, the flap edge indicated at 111 continues in a direction generally parallel to opposite edge 108.

Upwardly of fold lines 101 and 106, front panel 78 is cut horizontally between fold lines 83 and 84 to leave a horizontal edge 112. Intermediate these fold lines and below edge 112 is a vertical slit 113 thereby to provide a pair of doors 114 and 115. Door 114 is hinged along its outer vertical edge or a portion of fold line 83. The other door 115 is hinged along its outer vertical edge or along a portion of fold line 84. Door 114 is defined along its lower horizontal edge by a fold line 116 which is arranged slightly below fold lines 101 and 106. Connected to this door 114 as an extension thereof along a horizontal fold line 116 is an attaching tab 118 having a hole 119 extending therethrough. The side edges of this attaching tab are inclined as shown. A similar attaching tab 120 having a hole 121 therethrough is integrally connected to the other door 115 along horizontal fold line 122 which is also slightly below fold lines 101 and 106. The height of doors 114 and 115 between aligned fold lines 116 and 122 and edge 112 is slightly greater than the vertical distance of the lower horizontal edge 60 of front panel 23 of blank 21B above aligned fold lines 61 and 62 thereof.

When the dispenser is assembled, the ends of an elastic cord 123 are severally connected to attaching tabs 118 and 120 for doors 114 and 115. For this purpose, the ends of this cord extend severally through holes 119 and 121 and each end has a metal anchor bar 124 crimped to the cord. Bar 124 extends generally transversely of the cord and is adapted to bear against the outer surface of the corresponding attaching tab 118 or 120 and prevents withdrawal of the cord. The function of the elastic cord will be explained more fully infra.

Considered now will be FIGS. 10 through 15 which illustrate a sequence for closing the lower ends of the telescoped boxes 21 and 22, the lower end portion of inner box 21 having been previously inserted into outer box 22 so that fold lines 61 and 62 on the side panels 24 and 25 of this inner box are substantially at the level of fold lines 101 and 106 on this outer box, as shown in FIG. 10.

Compound tab 87 is now swung forwardly along fold line 92 so that the upper portion 90 of this tab is horizontal and its lower surface is substantially at the level of fold lines 61 and 62 for locking tabs 66 and 68, as shown in FIG. 11.

Next, as shown in FIG. 12, locking tabs 66 and 68 are folded inwardly toward each other about their respective fold lines 61 and 62 into a horizontal position so as to lie against the bottom surface of the upper portion 90 of now horizontally disposed compound tab 87.

Next, as shown in FIG. 13, the end portion 91 of compound tab 87 is folded back along fold line 93 to a horizontal position below inturned horizontal locking tabs 66 and 68.

Thereafter, as can be determined from FIG. 14, cover flap 99 is folded along line 101 into a horizontal position underlying the lower portion 91 of compound tab 87. Then the other cover flap 100 is folded along line 106 into a horizontal position overlapping cover flap 99. The locking tab 109 is inserted into slit 105 so as to join the locking flaps together. It will be noted that tongue 104 on now upper cover flap 99 is exposed behind the edge portion 111 of the other and now lower cover flap 100 and that the side edges of this tongue cooperate with the inclined edges 103 and 110 of the cover flaps to provide two crotches indicated at 125 and 126 in FIG. 14.

In FIGS. 10 through 14, doors 114 and 115 are shown open or projecting substantially perpendicularly outwardly from front wall 78. It will be noted that the lower edge 60 of front panel 23 of inner box 21 is slightly below the lower edge 112 of front panel 78 of outer box 22 so as to expose a marginal portion of the panel 23 indicated at 128. The doors 114 and 115 when closed about this marginal portion 128 and are thereby prevented from entering into the interior of the container.

The intermediate section of elastic cord 123 is now placed over the exposed portion of tongue 104 so that the cord is caught in the crotches 125 and 126, as shown in FIG. 15. This disposition of the cord 123 stretches the same and causes the attaching flanges 118 and 120 on the doors 114 and 115, respectively, to bend about their fold lines 116 and 122, respectively, to a substantially horizontal position, as depicted in FIG. 14. As there shown, the doors 114 and 115 are closed and spring loaded against the stop surface provided by marginal portion 128. When closed, these doors cover an exit or discharge opening indicated at 129 provided by cutout portion 63 in the front panel 23 of inner box 21.

The container 20 is shown in vertical section in FIGS. 4 and 5. Arranged within this container are a plurality of superimposed articles. Assuming the dispenser is adapted for dispensing surgical scrubber sponges, each article is such a sponge and typically represented by the letter S. Referring to FIGS. 4 and 5, it will be noted that the lowermost sponge S is opposite exit or discharge opening 129.

Projector means are provided for pushing an article such as the lowermost sponge S against doors 114 and 115 and through the discharge opening 129 in the container normally closed by such doors, upon relative movement between the container and the projector means. While such projector means may be variously constructed, the same is shown as including a U-shaped strap member 130 having an upper horizontal actuator element or strut 131 extending through upper slot 96 in rear panel 81 and recess 73, a lower actuator element or strut 132 extending through lower slot 98 in rear panel and recess 73, and a vertical web element 133 integrally connected to the front ends of actuator elements 131 and 132. The rear end of lower actuator element 132 abuts wall W. The length of actuator elements 131 and 132 is less than the spacing between the front and rear walls of container 20.

The projector member 130 is shown attached to wall W. For this purpose, the rear end of upper actuator element 131 is shown as having an integral vertical web 134 provided with an inverted T-shaped slot 135. For mounting this web on wall W another bracket member 136, similar to the one 54 previously described, is provided. Bracket 136 thus includes a base plate 138 preferably adhesively attachable to the surface of wall W. Outstanding from this base plate is a vertical rib 139 and extending crosswise of the outer edge of this vertical rib is a retainer plate 140 having wing portions which overlap the portions of the web adjacent the upright narrow portion of inverted T-slot 135, as shown in FIG. 7.

Means interposed between the supporting wall W and the container 20 for yieldingly holding the lower end of the container away from the wall are provided. Preferably as shown, such means are formed integrally with the projection member 30. Accordingly, the upper edge of mounting web 134 is shown as continued in the form of a forwardly and upwardly extending leaf spring 141, the free end portion of which bears against rear panel 81 of the container. Preferably, the combined leaf spring and projector member so provided is formed as a one-piece device 137 of suitable plastic material.

Referring to FIG. 4, it will be seen that leaf spring 141 urges the lower end portion of the container 20 away from the wall W, such outward position being limited by engagement of the rear surface of the projector web part 133 engaging the front or inner surface of the bar portion of rear panel 81 of the outer box 22 intermediate slots 96 and 98 therein.

The operation of the dispenser is readily apparent. Assuming the container 20 has therein a plurality of superimposed articles such as sponges S and with the container disposed in

the inclined position relative to the wall as depicted in FIG. 4 in which position the doors 114 and 115 are closed and the projector web part 133 is arranged behind the lowermost sponge S, it will be seen that a person desiring a sponge presses his elbow against the front wall of the container above doors 114 and 115 at the target area indicated at 142 in FIG. 3, the force thereby applied being represented by the arrow 143 in FIG. 5. This swings the container about the hinge axis 48 provided by the compound hinge tab 43 so that relative movement between the lower end of the container and the projector member 130 occurs. This projector member remains stationary as the container swings rearwardly over it. The consequence of this is that the lower most sponge S is pushed by the web element 133 against the inside of the doors 114 and 115 so as to swing them open against the urging of elastic cord 123, as depicted in FIG. 5.

It will be seen that the lowermost sponge S is only partially projected from the container 20 and the front edge of this sponge extends forwardly of the front edges of the now open doors 114 and 115. Release of the operating force represented by the arrow 143 will cause leaf spring 141 to restore the container from the position shown in FIG. 5 to that shown in FIG. 4 insofar as its angular position is concerned. However, if the sponge has not as yet been removed, the same will still be clamped between these doors which are spring loaded toward a closed position. Thus the user can grasp the exposed portion of the sponge and remove it completely from the container, touching only the sponge and without touching any portion of the container. Thereupon the doors 114 and 115 close automatically under the urging of elastic cord 123.

Upon complete removal of the lowermost sponge and with the container 20 restored to its ready position depicted in FIG. 4, it will be seen that the stack of sponges within the container will drop down so that another sponge assumes the lowermost position immediately in front of the projector web elements 133.

When all of the articles within the container have been dispensed, the container can be removed from the supporting brackets 54 and 136 by lifting the container upwardly to free the hinge tab 43 from the upper bracket and also by lifting the mounting web 134 from the lower bracket.

When the dispenser is utilized for dispensing surgical scrubber sponges, the container 20 including the projector and spring device 137 are confined in a sealed plastic bag which is processed in a well-known manner so as to sterilize all the contents of the bag including the sponges inside the container.

To replace an emptied container which may be disposed of, a loaded container is removed from its bag, the hinge tab 43 thereof mounted on upper bracket 54 and the attaching web 134 mounted on lower bracket 136. This is achieved by first inserting the retainer plates of the brackets through the horizontal portions of the T-holes 53 and 135 and then slipping the vertical portions of these holes over the bracket ribs. The fresh container is then ready for use.

It will be noted that the vertical spacing between brackets 54 and 136 is such as to correspond with the vertical spacing between T-holes 53 and 135. For initially positioning these brackets, a template (not shown) may be provided by the supplier of the containers.

We claim:

1. A dispenser, comprising a vertically elongated container including an inner box and an outer box surrounding the lower portion of said inner box, said inner box including a front panel, side panels which extend below said front panel and a locking tab joined to each of said side panels along a fold line, said outer box including a front wall, a rear wall, sidewalls, a compound tab having upper and lower tab portions, cover flaps and doors, said upper tab portion being joined to said rear wall along a fold line and overlying said locking tabs, said lower tab portion being joined to said upper tab portion along a fold line and underlying said locking tabs, said cover flaps being severally joined to said sidewalls along fold lines, over-

lapping each other, joined together and underlying said compound tab, the space below the lower edge of said front panel providing a discharge opening, said doors being parts of said front wall severally joined to said sidewalls along fold lines and when substantially coplanar closing said opening and having margins overlapping said front panel, elastic means connected to said doors and one of said cover flaps and arranged to urge said doors to a closed condition, said container being adapted to contain a plurality of superimposed articles to be dispensed singly through said opening, and projector means arranged to push an article against said doors and through said opening upon relative movement between said container and projector means.

2. A dispenser according to claim 1 wherein a flange is connected to each of said doors along a fold line and underlies said cover flaps, one of said cover flaps has a tongue, and said elastic means includes an elastic cord having its ends severally secured to such door flanges and its intermediate portion looped over said tongue.

3. A dispenser according to claim 2 wherein said rear wall

has a first opening adjacent said fold line between said upper portion and said rear wall and a second opening above said first opening, said projector means includes a U-shaped member having a pair of actuator elements severally extending through said first and second openings and connected by a web element arranged in said container on the rear side of the article to be dispensed, an attaching web upstanding from the upper one of said actuator elements and having an opening adapted to receive a support bracket, and a leaf spring connected to the upper end of said attaching web and extending upwardly and forwardly therefrom and having a free end slidably engaging said rear wall, the portion of said rear wall between said first and second openings engaging said web element to limit the forward position of said rear wall relative to said attaching web, whereby movement of said container toward said attaching web causes said web element to push an article against said doors and partially through the opening provided by said doors when open.

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