June 14, 1966 R. M. GROSSMAN 3,255,880

STERILE INSTRUMENT PACKAGE

Filed Aug. 25, 1964

FIG. 1

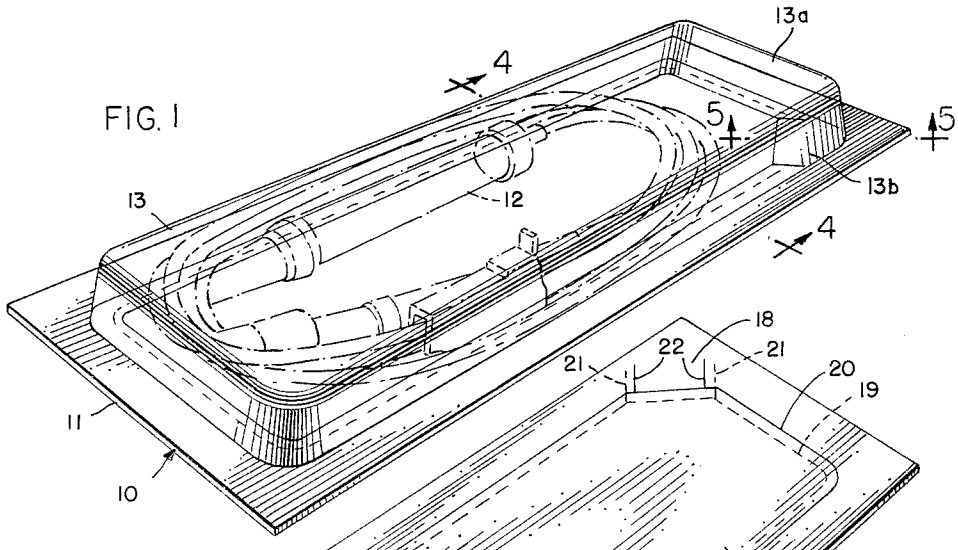



FIG. 2

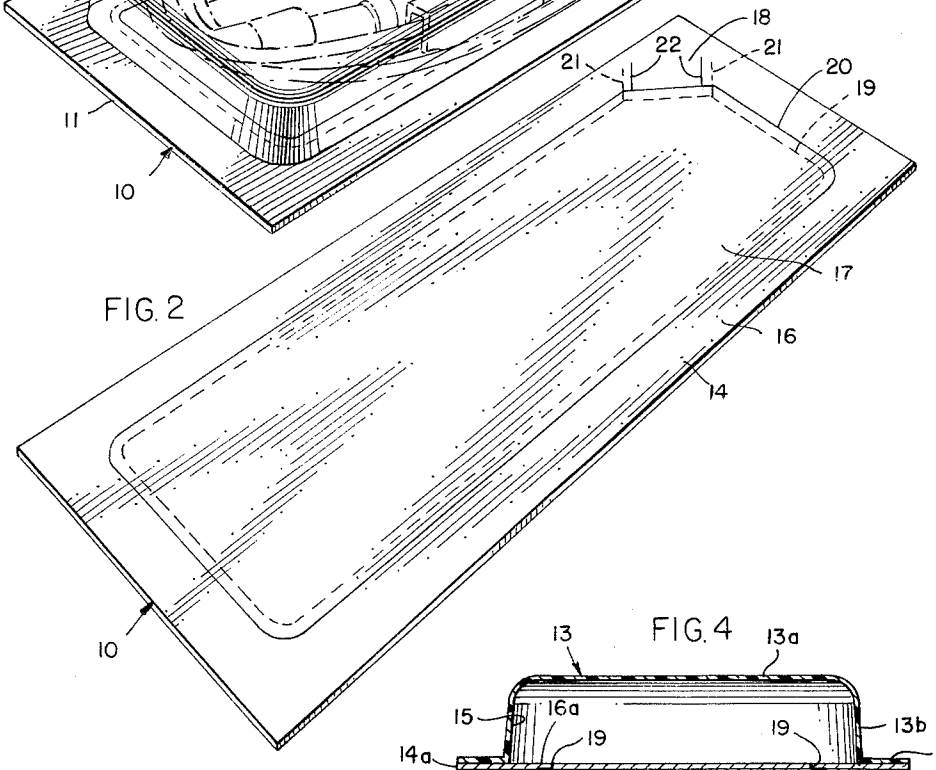



FIG. 3

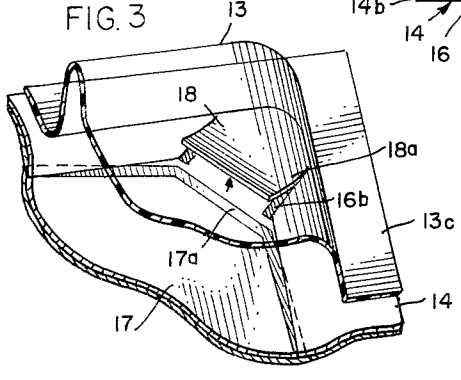
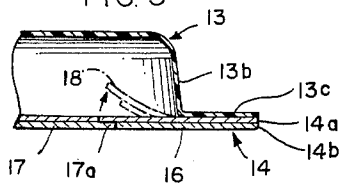



FIG. 4




FIG. 5




INVENTOR:

ROBERT M. GROSSMAN

BY

Dawson, Tilton, Fallon, Lungmus & Alexander

ATT'YS

United States Patent Office 3,255,880 Patented June 14, 1966



3,255,880

# STERILE INSTRUMENT PACKAGE

Robert M. Grossman, Milledgeville, Ga., assignor to McGaw Laboratories, Inc., Milledgeville, Ga., a corporation of Delaware

Filed Aug. 25, 1964, Ser. No. 391,872
3 Claims. (Cl. 206—78)

This invention relates to a sterile instrument package, and more specifically, to a container for sterile instruments such as, for example, blood administration sets and other devices suitable for medical or surgical use.

The main object of the present invention is to provide an inexpensive and disposable instrument container which effectively maintains its contents in sterile condition and which may be quickly and easily opened for removal of those contents. Ease of opening is particularly important where the sterile instrument is of a type which may be required for emergency use but such ease must not be achieved at the risk of a construction which might result in premature exposure and possible contamination of the instrument by bacteria or foreign particles.

Another object is to provide a container which is essentially tamper-proof; that is, one which for all practical purposes cannot be resealed after it has been once opened. In this connection, it is a specific object to provide a container construction in which an even partial prior opening of the package may be readily ascertained by a user.

A further object of the invention is to provide an instrument package which permits removal of the sterile instrument contained therein without danger that the instrument, as it is being removed, will contact non-sterile or contaminating surfaces or edges of the container itself.

A still further object is to provide a container which, upon opening, provides an enlarged removal opening for access to and removal of the instrument, thereby permitting the instrument to be lifted from the container rather than pulled or pushed therefrom.

Other objects will appear from the specification and drawings in which:

FIGURE 1 is a perspective view of the instrument package embodying the present invention;

FIGURE 2 is a perspective view of the underside of the package;

FIGURE 3 is an enlarged fragmentary perspective view of a corner portion of the package illustrating the structure in the process of being opened;

FIGURE 4 is a transverse vertical sectional view taken along line **4**—**4** of FIGURE 1;

FIGURE 5 is a vertical sectional view taken along line **5**—**5** of FIGURE 1 and illustrating in broken line the package in the process of being opened.

In the embodiment of the invention illustrated in the drawing, the numeral **10** generally designates an instrument package comprising a container **11** and a sterile instrument **12** (shown in broken line) therein. In the illustration given, the sterile instrument consists of a conventional administration set for parenteral fluids, the set including the usual plastic tubing, drip housing, sheathed needle adapter, and clamp. Since all of these components are entirely conventional and since the administration set **12** is simply an example of the type of instrument which the container **11** is particularly adapted to protect and maintain in sterile condition, a further description of the administration set itself is believed unnecessary herein.



Container **11** consists essentially of a transparent plastic shell **13** and a backing panel **14**. The shell may be molded from any suitable plastic material such as polyvinyl chloride, polyvinyl acetate, or polyvinyl chloride acetate. As shown in the drawings, the shell is molded to provide a cavity **15** defined by integral top wall **13***a* and side wall **13***b*. The cavity as defined by the shell is open at its bottom but is sealed by the backing panel **14** which will be described in detail hereinafter. As shown most clearly in FIGURES 4 and 5, shell **13** is also provided with a laterally projecting skirt portion **13***c* which extends completely about the perimeter of the cavity's bottom opening.

The backing panel **14** is laminated from paper or other suitable material having similar properties of flexibility, bendability and tearability and is composed of an upper sheet or inner layer **14***a* and a lower sheet or outer layer **14***b*. The opposing surfaces of the two sheets are secured together by any suitable adhesive and the undersurface of perimetric skirt portion **13***c* is similarly secured to the upper surface of sheet **14***a*. If desired, the upper surface of sheet **14***a* may be plastic coated and the skirt portion of the shell may then be heat-sealed thereto. The plastic coating of the upper sheet not only facilitates the joining of the backing to the shell but also assists in maintaining the contents of the container in sterile condition.

Referring in particular to FIGURES 2–4, it will be noted that the backing panel is die cut to form an interconnected outer frame portion **16**, a closure member **17** and an access flap **18**. The closure member **17** is of substantial size, being only slightly smaller in its dimensions than those of cavity **15**.

To form the closure member, the top sheet **14***a* is die cut along line **19** to define an inner closure portion and bottom sheet **14***b* is die cut along line **20** to define an outer closure portion, the two lines being of substantially the same configuration but being spaced laterally apart to define therebetween a narrow zone of adhesive connection between the closure member **17** and the frame portion **16** of the backing panel. Specifically, the upper line of die cutting is spaced inwardly of lower line **20** with the result that the closure member is held in place by a narrow perimetric flange **17***a* extending outwardly or laterally beneath the overhanging flange **16***a* of the backing sheet's perimetric frame portion **16**. Since the die-cut opening in the upper sheet **14***a* is smaller than the opening in lower sheet **14***b*, the flanges **16***a* and **17***a* coact to prevent member **17** from being pushed inwardly into the cavity upon rupture of the adhesive interconnection.

The closure member may, however, be pulled outwardly or downwardly away from the remainder of the backing panel if sufficient force is applied to break the adhesive connection in the narrow zone or band between lines **19** and **20**. Any suitable adhesive which will maintain an effective seal before the package is opened and which cannot act to reseal the parts together after the bond has been broken may be used. Normally this would exclude the use of pressure-sensitive adhesives, but even such adhesives may be used if the adhesive bond is stronger than the paper so that paper fibers are torn from either of the flanges **17***a* or **16***a* as the closure member **17** is removed.

Access flap **18** is provided in one corner of the backing panel and is defined by die cut lines **21** in upper

sheet 14*a* and lines 22 in lower sheet 14*b*, the lines in the respective sheets intersecting the die cut lines 19 and 20 already mentioned. It will be noted, however, that unlike the die cut lines which define the closure member, the lines 21 and 22 which define the sides of access flap 18 are reversely arranged with lines 21 in the upper sheet being spaced farther apart than lines 22 in the lower sheet. The side flanges 18*a* of the flap therefore extend over (rather than beneath) the flanges 16*b* of the backing sheet's frame portion and, upon the application of inward force against flap 18, the flap may flex inwardly into cavity 15 (FIGURES 3 and 5) shearing the adhesive connection between the upper and lower sheets in the zones between the upper and lower flanges 18*a* and 16*b* and also between those portions of flanges 17*a* and 16*a* which complete the marginal definition of the flap.

To remove the contents of the package, a user simply pushes the access flap inwardly until the adhesive seal between the front and side flanges of the flap is broken and the flap flexes inwardly as indicated in FIGURE 3 and by the broken lines in FIGURE 5. Preferably this step is carried out with the package in inverted condition as illustrated in FIGURE 2 and with the contents of the package spaced from the flap (FIGURE 1). Since the cavity 15 is substantially larger than the instrument packaged within the container, a shifting of the instrument to one end of the container may be accomplished simply by tipping the container on end before it is inverted and the flap 18 is depressed.

After the flap has been pushed inwardly, a user may open the package by merely inserting a finger through the flap opening and pulling upwardly on the closure member of the inverted package. After the adhesive interconnection between the overlapping flanges 17*a* and 16*a* has been broken, the closure member is fully released from the container and its removal exposes the instrument supported within shell 13. Since substantially the entire instrument is exposed, it may be easily lifted and removed from the container.

During removal of the instrument from the container, it is likely that the instrument will brush the edges of flange 16*a* which defines the container opening. Since the surfaces and edges of the flange, prior to removal of closure member 17, form a part of the interior of the container or constitute adhesive-bearing surfaces between laminations of the backing sheet, such surfaces and edges are in the same sterile condition as the contents and interior surfaces of the package. Therefore, contact between the instrument and such surfaces or edges as the instrument is removed will not result in its contamination.

It is believed apparent from the foregoing that the container construction of the present invention permits quick removal of a sterile instrument when emergency use of that instrument is required. Furthermore, such removal may be accomplished easily and rapidly without danger of contaminating the instrument during the removal process.

While in the foregoing I have disclosed an embodiment of the invention in considerable detail for purposes of illustration, it will be understood by those skilled in the art that many of these details may be varied without departing from the spirit and scope of the invention.

I claim:

1. In an instrument package, a container comprising a transparent plastic shell defining a cavity open at its lower end, a bottom panel of flexible sheet material sealingly secured to said shell about the bottom of said cavity and being die cut to define an integral and removable closure member, said panel comprising upper and lower sheets adhesively secured together, said upper sheet being die cut to define the outline of an enlarged opening and the upper portion of said closure member, and said lower sheet being die cut along a line conforming generally with said outline but being spaced outwardly therefrom to define a lower portion of said closure member of greater area than said upper portion, said die cut lines defining therebetween a narrow zone of adhesive interconnection between said closure member and the remainder of said bottom panel, and access means provided by said bottom panel for permitting access to the cavity of said shell for pulling said closure member outwardly away from the remainder of said bottom panel, said access means comprising a flap formed in said bottom panel as an integral portion thereof disposed outwardly beyond said closure member, said flap having its sides defined by die-cut side-forming lines in the upper and lower sheets of said bottom panel intersecting at spaced points the die cut lines defining said closure member, portions of the die cut lines for said closure member also defining between said points of intersection the end of said flap, the die-cut side-forming lines in the lower sheet being spaced closer to each other than the side-forming lines in the upper sheet to define along opposite sides of said flap narrow zones of adhesive interconnection between the sides of the flap and the remainder of the bottom panel, whereby, an access opening is formed by urging said flap upwardly into said cavity to break the adhesive interconnections along the sides and end of the flap to expose an edge portion of said closure member, thereby facilitating removal of said closure member.

2. A laminated panel for containers comprising outer and inner layers of flexible sheet material adhesively joined together and being strippable from each other, said inner layer having a continuous die cut line therethrough defining an inner closure portion, said outer layer having a die cut line therethrough and spaced outwardly from the line of said inner layer and defining an outer closure portion, said inner and outer closure portions together constituting a removable closure member, and an access flap formed as an integral part of said panel and disposed beyond the periphery of said closure member, said access flap having side edges and having an end edge co-extensive with a portion of the periphery of said closure member, said side edges being defined by spaced pairs of inner and outer die cut lines in the inner and outer layers of said panel extending toward the periphery of said closure member, said inner pair of die cut lines terminating at the die cut line defining said outer closure portion and said outer pair of die cut lines terminating at the line defining said inner closure portion, said inner pair of lines being spaced substantially closer together than said outer pair of lines, whereby, an access opening may be formed by urging said flap inwardly to expose a portion of the periphery of said closure member, and thereafter said closure member may be gripped through said access opening and pulled outwardly from the remainder of said panel.

3. A laminated panel for containers comprising a closure member and a frame portion thereabout, both formed as integral parts of said panel; said closure member and frame portion having overlapping flanges defined by die cut lines spaced laterally from each other in said outer and inner layers, respectively; the flange of said closure member being disposed outwardly of the flange of said frame portion; an access flap formed in said frame portion; said flap having sides and having an end co-extensive with a portion of the periphery of said closure member; the sides of said flap and the remainder of said frame portion having overlapping side flanges defined by die-cut lines spaced laterally from each other in said inner and outer layers, respectively; the side flanges of said flap being disposed inwardly of the side flanges of said remainder of said frame portion, and said end of said flap having a flange disposed inwardly of a portion of the flange of said closure member; whereby, access to a peripheral portion of said closure member for outward removal of the same is achieved by urging said flap inwardly to strip the end flange of said flap from the flange of said closure member and thereby expose a portion of the

periphery of said closure member through the access opening so formed.


**References Cited by the Examiner**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,773,553 | 8/1930 | Taylor et al. | 229—51 |
| 2,813,624 | 11/1957 | Phipps | 206—78 |
| 2,858,060 | 10/1958 | Kuechler | 229—51 |
| 2,993,590 | 7/1961 | Denton. | |
| 3,004,661 | 10/1961 | Schumann | 206—78 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 673,494 | 6/1952 | Great Britain. |





THERON E. CONDON, *Primary Examiner.*

GEORGE E. LOWRANCE, *Examiner.*

J. M. CASKIE, *Assistant Examiner.*