CONTAMINATION-FREE PACKAGING

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ABSTRACT OF THE DISCLOSURE

For contamination-free packaging and dispensing of sterile articles such as surgical goods, a folder is provided with two compartments each having a dispensing edge folded in the closed position and unfolded in the dispensing position. In operation, the act of opening the folder causes the dispensing edges to snap open to provide a sterile delivery surface over which the package contents can be safely spilled out without risk of contamination. The folder also includes means for mounting articles and for raising the articles from the folder aseptically.

This invention relates to novel means for contamination-free packaging of surgical supplies, dressings, apparel and like articles. The invention is particularly applicable to the sterile packaging of gloves, masks and like articles intended for dispensing and use in clinics, offices, hospitals and operating rooms.

The practice of surgery, as is known, requires operating under contamination-free conditions to minimize the possibility of pathogenic infection. Elaborate precautions are routinely taken to maintain sterility. Some of the procedures are described, for example, in U.S. Patent No. 3,057,471 relating to the packaging of sutures. In particular, it is standard practice in the operating room for the surgical supplies to be brought in to the operating area on sterile trays, whereupon the supplies are transferred onto table surfaces free of contamination and readily accessible to the surgeon. Extreme care is exercised to prevent any sterile article from contacting the least edge or surface of a non-sterile object.

For the packaging of surgical supplies, articles such as sponges, gloves, etc. are enclosed in paper envelopes or cloth or other permeable covering and are sterilized suitable means such as steam sterilization. The articles are packaged loosely to allow complete penetration of the package and thereafter to permit easy removal and transfer from the package to the sterile table. The conventional practice is, however, often unsatisfactory. In some cases, for example, the package may be ineffectively sealed or the contents may shift into a bunched or cramped position making it difficult to remove or orient the same for dispensing, wearing purposes, etc. In other cases, opening of the package may be unduly inconvenient. Also, as is often the case, removal of the contents by the spillout method (that is, by gravity dropping to a table surface) is almost certain to result in contamination by an exposed package edge or surface.

It is therefore an object of the present invention to provide economical packaging for surgical supplies of the kind described which effectively maintains the contained articles in sterile condition and which may be easily opened for removal of the contents.

Another object is to provide packaging which can be reused if desired.

Yet another object is to provide packaging of a type which can be made and assembled efficiently on high speed packaging machinery without breakage, disorientation of contents, etc.

A further object is to provide sterile packaging of the type indicated which upon opening permits removal of the contents in different ways without contacting any contaminating package edges or surfaces.

Still another object is to provide sterile packaging which maintains its contents in presentable form without shifting or cramping.

Still another object is to provide sterile packaging which facilitates the dispensing, handling, donning, etc. of its contents by aseptic techniques.

These and other objects, advantages and features will become evident from the description of the invention and the accompanying drawings in which:

FIGURE 1 is a plan view of one embodiment of a package assembly according to the invention;

FIGURES 2 and 3 are plan views of the assembly of FIGURE 1 in successive steps of folding;

FIGURE 4 is a similar view of the assembly in fully folded position;

FIGURE 5 is a plan view of a preferred embodiment of a package assembly of the invention having left and right complementary compartments for storage of articles;

FIGURE 6 is a perspective view of the assembly of FIGURE 5 showing the compartment containing articles, with the left side in open, unfolded condition and the right side in process of being opened;

FIGURES 7 and 8 are perspective views of partly folded and fully folded package assemblies of the type shown in FIGURE 5;

FIGURE 9 is a sectional view of the package of FIGURE 6 taken in line 9—9; and

FIGURE 10 is a view similar to FIGURE 9 illustrating the packaged article in partly raised position.

Referring to FIGURE 1, the package assembly 11 includes two central panels 12 in book or wallet form. Each panel has opposing sides which for purposes of the invention can be held in any desired position to suit the needs of the user but which are referred to here for convenience as a top side 13 and a bottom side 14. Between the opposing sides is a third side defined by a common score line or fold line 15. For purposes of the invention the panels are preferably rectilinear in form but it will be understood that the panels can be any variety of shapes which include a common fold line. Tab or flap means 16a and 16b are attached to the panels as an extension of the panels extending beyond a fold line. The panels are adapted to be folded and unfolded along the common fold line 15 into closed and open positions respectively. As seen with the panels closed in face-to-face relation (FIGURES 2 and 3), the flap means 16a and 16b are adapted for grasping without touching the panels and for unfolding the panels to the side-by-side position (FIGURE 1).

As an extension of the top side 13 of the panels, there is provided a dispensing flap 17 having two areas defined by first and second score lines or fold lines 18 and 19 and a dispensing edge 20. Preferably the dispensing edge 20 of FIGURE 17 extends completely across the top side 13, as shown. The structure, including the second fold line 19, is important since it provides a remotely-controllable web-like means for projecting or expelling the dispensing flap beyond the panel margin each time the panels are opened by flap means 16a and 16b into side-by-side position. A pedestal or staging flap 21 is provided adjacent the bottom side 14 of at least one of the panels 12. The staging flap can be fastened by suitable means to the panel (in upright position as shown by the dotted lines in FIGURES 2 and 3) or preferably, it can form an extension of the panel 12 which when folded double on the line 14 assumes the position shown in FIGURES 2 and 3. The flap 21 conveniently has a centrally located guide slot 24 into which articles such as apparel, masks, etc. can be partly inserted or folded to provide a point of attachment to the staging flap. The package assembly 11 pref-
erably is of one-piece construction and is made of heavy-weight paper or lightweight board such as bleached sul-

Folded lines are conveniently set by die punch means on the package blank and the folded lines well scored by folding to facilitate movement of the panels and flaps under actual conditions of use.

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The dispensing flaps 17 which extend generally over the top of the two panels and these are divided into two halves by a folded line 19 which is an extension of the common fold line 15. The dispensing flap 17 is joined to the panels by the fold line 18. The hinge panel 16c and flap means 16d are provided for unfolding the two panels. At the bottom of one of the halves there is provided a staging flap 21 having a foot portion 22 which adiuns a head portion 23 adapted to support an article 25 for sterile packaging and handling. The compartments to the left of hinge panel 16c has substantially the same construction as the right compartment just described, an exception being that flat 16a (instead of 16b) serves with hinge panel 16c for unfolding the two central panels 12. The hinge panel 16c advantageously serves not only as a means connecting the right and left compartments but also as a means for spacing the compartments. The spacing function facilitates folding and unfolding the panels and flaps on one side without interference with the other side. It also facilitates later manipulation of the articles for individual removal from the staging flaps 21.

The empodiment shown in FIGURE 5 is preferred for packaging paired particles and articles which complement each other such as gloves To illustrate the use of the two-compartment type in FIGURE 5, refer specifically in this connection to the packaging of gloves such as surgeon's gloves, but it will be realized that the package has general application and can be used for other types of articles as well. To commence packaging, the cuff of the glove is folded to a point below the thumb and the resulting cuff is slipped on the hand, preferably with the palm surface of the glove facing up, this operation being carried out for both of the left and right sides of the assembly 11 as shown in FIGURE 5, so that the back or dorsal surface of the glove lies generally over the outside of panel 12 above the staging flap 21. The two staging flaps are then scored and folded on the fold lines 26 to the partly assembled position shown in FIGURE 6. The flaps 16a and 16b are grasped as in FIGURE 6 and folded in on fold lines 15 to the panel facing position shown in FIGURE 7. The dispensing flaps 17 are then folded downward on line 18 to outside the facing panels 12 as in FIGURE 7 whereupon the opposing com-

An alternate procedure for dispensing the contents is the reverse procedure where the glove mounted on the
pedestal in the open position shown in FIGURE 9 is lifted upwards by manual contact of the pedestal in the area of the foot portion 22 using fold line 26 (FIGURE 10) as the point of leverage. In this way, and by inclining the package toward the operator the contents can be readily spilled out to a sterile table without contacting exposed surfaces or edges. The package in an open position also can be used as a sterile field from which the surgeon alone or with the nurse in assistance can work directly in donning the gloves. Thus, the gloves can each be partially raised by the technique illustrated in FIGURE 10 in which raised position the glove can conveniently be grasped at the inner surface of the cuff and the glove manipulated onto the hand without need for touching the outer surface of any part of the glove.

1 claim:

1. For contamination-free packaging and dispensing of surgical dressings, apparel and like articles, in a package assembly having

   two matching four-sided panels with upper and lower opposing sides, the panels being joined along a common fold line defining a third side intermediate the opposing sides for folding and unfolding the panels in face-to-face and side-by-side relation,

   flap means on the fourth side for grasping and unfolding the panels,

   and a dispensing flap extending along the upper side

   and adapted to be folded onto the panels in face-to-face relation,

   the improvement wherein one of the flap means comprises a second matching and complementary package assembly adapted to fold in registry with the first mentioned assembly, and each assembly includes a staging flap adapted for mounting and holding an article centrally of the panels, whereby an unfolding movement of the panels into side-by-side relation remotely accomplishes exposure of paired articles and unbending of the dispensing flaps to a flat position adjacent each article of the pair.

2. An assembly according to claim 1 adapted for mounting and dispensing gloves.

3. A package assembly according to claim 1 wherein the second package assembly is joined to the first by a hinge panel adapted to accommodate folding and unfolding.

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