

June 15, 1965

J. A. CORMACK
SURGICAL SUPPLY PACKAGE

3,189,174

Filed Jan. 12, 1962

Fig. 1.

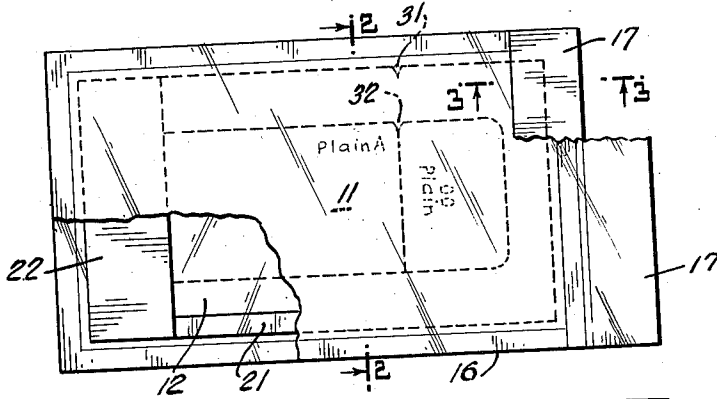


Fig. 2.

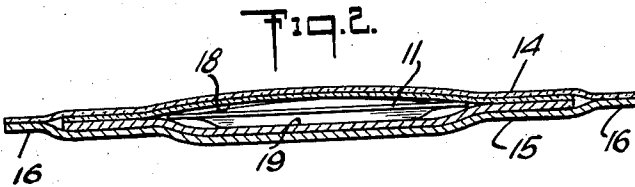


Fig. 3.



Fig. 4.

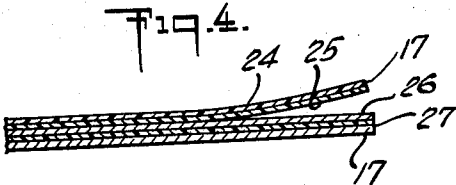


Fig. 5.

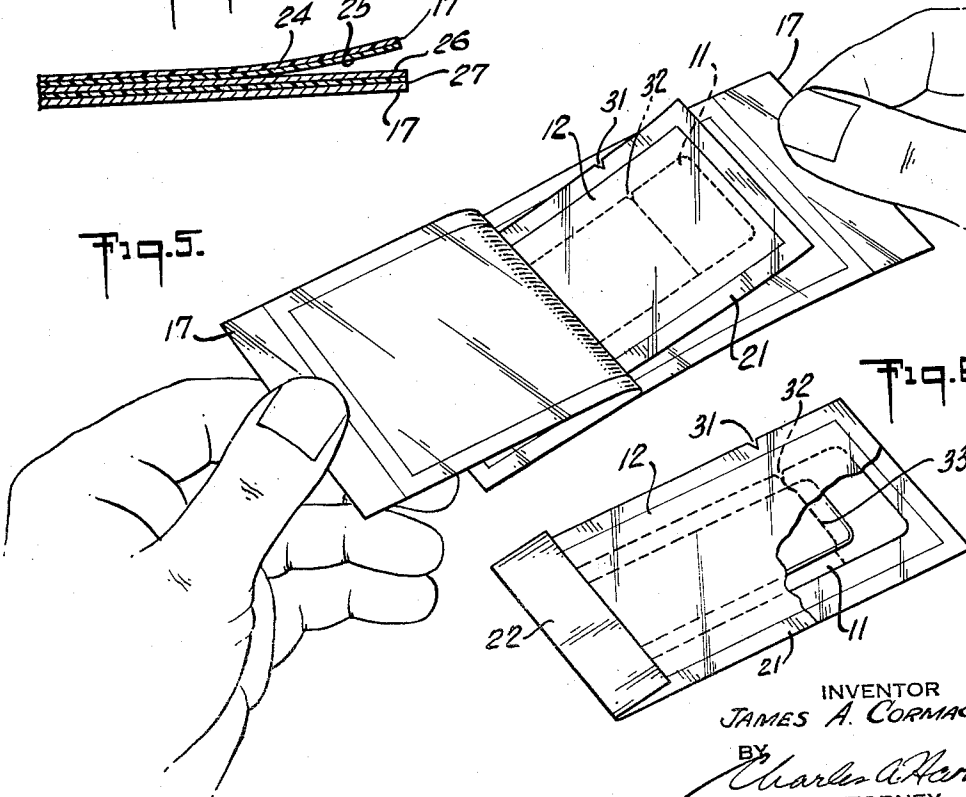
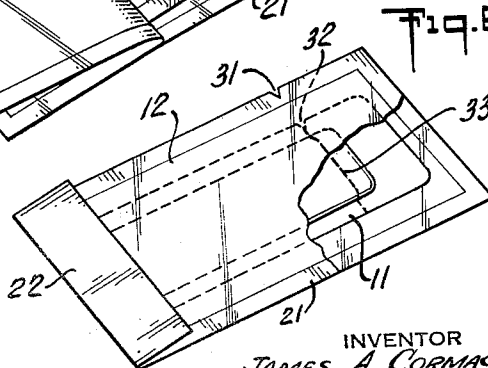


Fig. 6.



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3,189,174

SURGICAL SUPPLY PACKAGE

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4 Claims. (Cl. 206—63.2)

The present invention relates to interiorly sterilized packages for surgical supplies, more particularly to such packages which are intended to maintain surgical sutures in sterile condition and present them for use.

When the term "sutures" is used hereinafter in this application it refers to surgical strands used for ligating, and normally called ligatures, as well as those used for suturing, and normally called sutures, whether or not the sutures are attached to a needle or in the form of a coiled or cut length.

It has been proposed to provide a suture package comprising an inner plastic envelope in which the suture is hermetically sealed either dry or wet and in sterile condition, and an interiorly sterilized and hermetically sealed outer envelope having flaps adapted to be pulled apart to open a strippable seal and expose the inner envelope. In use, several of these outer envelopes may be stripped open and the inner envelopes removed and placed on the sterile stand, or table, in ready condition. The suture, itself, is maintained sterile in this location until the inner envelope in which it is positioned is opened. Normally when each surgical procedure is completed, one or more of the sealed inner envelopes containing the suture is left unused.

This presents a problem because once the unused inner envelope is removed from the sterile station, the outside of the envelope becomes unsterile. This means that the unsterile envelope cannot be used again at the sterile station until the exterior of the envelope is resterilized. It also means that the resterilized inner envelope must be repackaged in a sealed outer envelope, or the like, to assure that the inner envelope remains sterile prior to use.

It also has been proposed to seal sutures in a triple package comprising hermetically sealed glass tubes containing the sutures, a first interiorly and exteriorly sterilized and hermetically sealed plastic inner envelope containing the tubes, and a second interiorly sterilized and hermetically sealed outer envelope enclosing the first envelope. With this arrangement the second, or outer, envelope may be cut or opened so that the inner envelope containing the tubes may be removed and placed on the sterile stand. When it is desired to use a suture, the inner envelope is opened and the tube is removed and then the suture is exposed by breaking the tube. If, however, the inner envelope is not opened, the exteriorly sterilized glass tube primary container holding the suture remains hermetically sealed therein and therefore can be stored in sterile condition ready for the next surgical procedure. In the next procedure, the unused inner envelope is opened and the sterile glass tube is removed and placed on the sterile stand ready to be opened to present a sterile suture for use.

The present invention contemplates an improved triple package of this general type wherein the suture, itself, is enclosed in a hermetically sealed inner envelope sterilized inside and out, and the inner envelope, containing the suture, is enclosed in first and second outer envelopes to form the triple package. The inner envelope is enclosed in the first outer envelope which is hermetically sealed and sterile inside and out, and the first outer envelope is enclosed in the second outer envelope which is hermetically sealed and sterilized on the inside. Thus, only the outside of the second outer envelope, forming

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the exterior of the package, is unsterilized. Each of the outer envelopes has opposed stripping flaps at one end adjoining a strippable seal extending across the same end of the envelope and down its sides, whereby the envelope may be opened by pulling the flaps away from one another to strip the seal and expose its contents.

It is an important feature of this invention that the inner envelope containing the suture and the first outer envelope each have means adjacent one end for facilitating tearing of the inner envelope and the first outer envelope together along a common tear line extending across the envelopes when the inner envelope is in position in the first outer envelope. This allows the inner envelope and the first outer envelope to be opened in one step when it is desired to use a suture contained therein after the second outer envelope has been stripped open to expose the sterile exterior of the first outer envelope and the first outer envelope containing the inner envelope and the suture has been laid on the sterile stand.

It also is important that the opposed stripping flaps at the one end of the first outer envelope are located at the opposite end of the envelope from the above-referred-to tear line. This is particularly important when a tearing notch is located in one edge of the envelope for facilitating tearing. If such a notch is located at the end of the envelope adjacent the stripping flap, it may interfere with opening of the envelope and cause the envelope to rip at the notch rather than strip open along the seal line as it should.

Other and further advantages of this invention will be apparent from the following description and claims taken together with the drawings wherein:

FIG. 1 is a plan view of a surgical supply package according to one embodiment of this invention.

FIG. 2 is a somewhat enlarged view partly in section and partly in elevation taken along the line 2—2 of FIG. 1.

FIG. 3 is a partial sectional view taken along the line 3—3 of FIG. 1 and at about the same enlargement as FIG. 2.

FIG. 4 is a still further enlarged sectional view through the stripping flaps of either the first or the second outer envelope of FIG. 1.

FIG. 5 is a view in perspective of the package of the preceding figures showing the second outer envelope being stripped apart to expose the first outer envelope and contents.

FIG. 6 is a similar view in perspective showing the first outer envelope and contents after removal from the second outer envelope.

Referring to the drawings there is shown a hermetically sealed inner envelope 11 containing a surgical suture, not shown. The inner envelope 11 is sterilized inside and out and is contained directly within the first outer envelope 12 which, in turn, also is sterilized inside and out and hermetically sealed to preserve the sterility of its contents. The first outer envelope 12 is hermetically sealed within a second outer envelope 13 which also is interiorly sterilized. The envelopes each comprise a top and bottom sheet superimposed one upon the other and sealed together along their edges. This structure may be formed by using two separate rectangular sheets and sealing them together along all four edges, or by folding a single sheet to superimpose its halves and then sealing the halves together along their edges. It is preferred that heat sealable materials be used for this purpose.

In the drawings, the second outer envelope 13 comprises a top sheet 14 and a bottom sheet 15 so constituted that when the sheets 14 and 15 are superimposed one upon the other, they may be heat sealed together to form hermetic seals 16 in the form of strips extending across the ends of the package and down its sides. At one end of the

package the hermetic seal 16 is spaced an appreciable distance from the superimposed edges of the end of the sheets 14 and 15 so that stripping flaps 17 are provided. Similarly, the first outer envelope 12 is made up of a top that when the sheets 14 and 15 are superimposed one upon the other and sealed along its edges to form hermetic seals 21 and stripping flaps 22.

Preferably the sheets 14 and 15 of the outer envelope 13 and the sheets 18 and 19 of the outer envelope 12 are chosen from materials which are adapted to be heat sealed one to the other to form hermetic seals between them which are strippable when the envelopes are pulled apart from one end utilizing the stripping flaps 17 or 22, as shown for the flaps 17 in FIG. 5. This may be accomplished by using a single material such as polyethylene, rubber hydrochloride, or the like, to form the sheets, or by utilizing one or more materials to form a laminated sheet. For instance, one laminated construction, which has been found to be particularly suitable for packages according to this invention, is shown schematically in FIG. 4. FIG. 4 is an enlargement of the stripping flap portion of the second outer envelope 13. In this construction the top sheet comprises a first layer 24 of Mylar and an inner layer 25 of polyethylene. The bottom sheet comprises a top layer 26 of paper and a bottom, or outside, layer 28 of aluminum foil joined together by a third layer 27 of a vinyl adhesive. It has been found that outer envelopes according to this invention, when formed by heat sealing these sheet materials together as shown, provide excellent hermetic seals which also possess excellent stripping qualities when the package is opened by drawing the stripping flaps away from one another as shown in FIG. 5. However, it will be recognized that various other materials and combinations thereof may be used to provide at least equivalent results for the purposes of this invention.

A tearing notch 31 is provided in one of the longitudinal edges of the first outer envelope 12 to facilitate tearing. This notch 31 is designed to cooperate with a corresponding notch 32 located adjacent one end of the inner envelope 11 on a tearing line 33 defined by indicia extending across the inner envelope. The dimensions of the first outer envelope 12 are so chosen that when the inner envelope is positioned therein, the notches 31 and 32 and the tear line 33 are aligned. Thus, the first outer envelope 12 and the inner envelope 11 may be opened together simply by tearing both envelopes simultaneously downward through the notches 31 and 32 and along the tear line 33 to remove the ends of both envelopes and expose the contents of the inner envelope 11.

The opposed stripping flaps 22 in the first outer envelope 12 are located at the opposite end of the envelope from the tearing notch 31. This is important to prevent the tearing notch 31 from interfering with stripping along the hermetic seal 21 extending along the edge of the envelope. The flaps 22 on the first outer envelope 12 are folded down as shown in FIGS. 1 and 6 to provide a more compact package. When the flaps are folded, the second outer envelope 13 need not be as long as would be necessary to enclose the first outer envelope 12 with the flaps extended. The flaps 17 on the second outer envelope 13 also may be folded down as shown in the upper right hand corner of FIG. 1 for maximum compactness.

Thus, it will be seen that once the second outer envelope 13 is opened and separated from the remainder of the package, a combination package is provided which may be opened at one end through the tearing notches 31 and 32 along the tear line 33 to immediately expose the contents of the inner envelope 12, or opened at the other end via the stripping flaps 22 to expose only the sterile exterior of the inner envelope 11. In the first case, the combination package acts as a primary package which presents its contents for use as soon as it is opened. In the second case the combination package acts as a secondary package which, when opened, presents a sterile primary

package, i.e., the inner envelope 11, which may be positioned on the sterile stand for later opening if it is desired to use its contents.

The inner envelope may be formed of a flexible plastic material such as Mylar or polyethylene or a laminate of the two, or it may be formed one half of aluminum foil bearing a heat sealable coating and the other of plastic. From the standpoint of resistance to penetration by sterilizing agents and the like, as well as ease of tearing, it is desirable to form both halves of the inner envelope from coated foil with the coated sides of the foil sheets facing one another to provide heat sealable areas.

Having now described the invention in specific detail and exemplified the manner in which it may be carried into practice, it will be readily apparent to those skilled in the art that innumerable variations, modifications, applications, and extensions of the basic principles involved may be made without departing from its spirit and scope.

The invention claimed is:

1. A surgical supply package which comprises a hermetically sealed inner envelope sterilized inside and out and enclosing a surgical item in sterile condition, a first outer envelope sterile inside and out and enclosing the inner envelope, and a second outer envelope sterile inside and enclosing the first outer envelope and contents, the first and second outer envelopes each having opposed stripping flaps at one end adjoining a strippable seal extending across the same end of the envelope and down its sides, whereby the envelope may be opened by pulling the flaps away from one another to strip the seal and exposed its contents, said inner envelope and said first outer envelope each having means adjacent one end of the envelope for facilitating tearing of the inner envelope and the first outer envelope together along a common tear line extending across said envelopes when said inner envelope is in position in said first outer envelope, the opposed stripping flaps of said first outer envelope being located at the opposite end of said first outer envelope to said tear line.

2. An interiorly sterilized surgical supply package which comprises a hermetically sealed inner envelope sterilized inside and out and enclosing a surgical item in sterile condition, a first outer envelope sterile inside and out and enclosing the inner envelope, and a second outer envelope sterile inside and enclosing the first outer envelope and contents, the first and second outer envelopes each having opposed stripping flaps at one end adjoining a strippable seal extending across the same end of the envelope and down its sides, whereby the envelope may be opened by pulling the flaps away from one another to strip the seal and expose its contents, said inner envelope and said first outer envelope each defining a tearing notch in one side edge of the envelope adjacent one end of the envelope for facilitating tearing of the inner envelope and the first outer envelope together along a common tear line extending across said envelopes when said inner envelope is in position in said first outer envelope, the opposed stripping flaps of said first outer envelope being located at the opposite end of said first outer envelope to said tear line.

3. An interiorly sterilized surgical supply package according to claim 2, wherein the strippable seals are heat sealed.

4. An interiorly sterilized suture package which comprises a hermetically sealed inner envelope sterilized inside and out and enclosing a surgical suture in sterile condition, a first outer envelope sterile inside and out and enclosing the inner envelope, and a second outer envelope sterile inside and enclosing the first outer envelope and contents, the first and second outer envelopes each having opposed stripping flaps at one end adjoining a strippable seal extending across the same end of the envelope and down its sides, whereby the envelope may be opened by

pulling the flaps away from one another to strip the seal and expose its contents, said inner envelope and said first outer envelope each having means adjacent one end of the envelope for facilitating tearing of the inner envelope and the first outer envelope together along a common tear line extending across said envelopes when said inner envelope is in position in said first outer envelope, the opposed stripping flaps of said first outer envelope being located at the opposite end of said first outer envelope to said tear line.

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FRANKLIN T. GARRETT, *Primary Examiner.*10 EARLE J. DRUMMOND, *Examiner.*

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,189,174

June 15, 1965

James Anderson Cormack

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 5, for "that when the sheets 14 and 15 are" read -- sheet 18 and a bottom sheet 19 --; column 4, line 15, for "readily" read -- readily --.

Signed and sealed this 16th day of November 1965.

(SEAL)

Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents