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L. D. KURTZ
PACKAGING SURGICAL SUTURES

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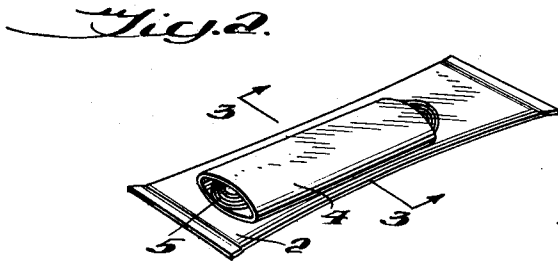
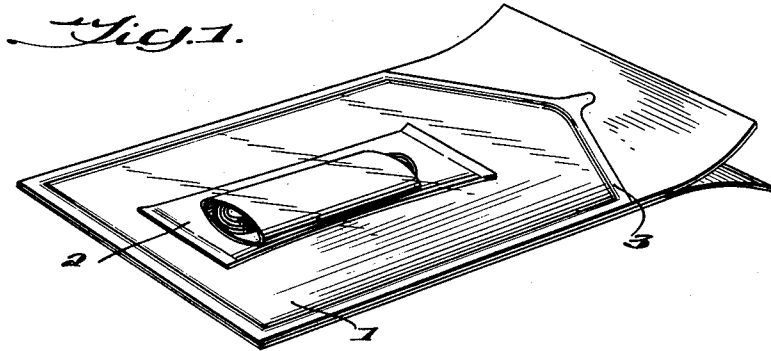


Fig. 3.

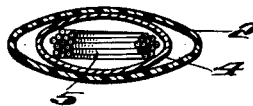
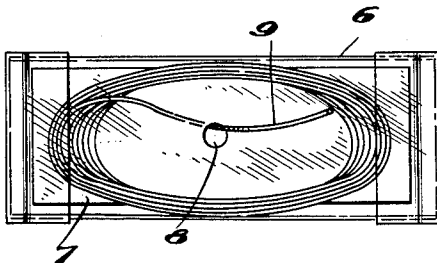


Fig. 4.



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PACKAGING SURGICAL SUTURES
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 1 Claim. (Cl. 206—63.3)

The present invention relates to an apparatus for packaging surgical sutures and more particularly to a package for surgical gut which serves to maintain the suture in a moistened condition up to the moment of use.

Heretofore surgical gut has been packaged in an inner pack containing a conditioning or tubing fluid such as alcohol and water for maintaining the gut in a proper moist condition for use. This inner pack is in turn packed in an outer package which will serve to maintain the inner pack completely sterile. The outer pack may comprise a jar containing sterilizing liquid or may comprise an individual completely sealed dry package. Normally the inner pack is removed from the outer pack outside the sterile area and the sterile inner pack given to the scrub nurse. Normally the procedure involved in the use of surgical gut is for the nurse to open a plurality of inner packages in the operating room and to lay out the suturing material on a sterile towel moistened by the tubing fluid so that the surgeon will have ample surgical gut available when required. Unfortunately the gut is not always used immediately and the tubing fluid saturating the gut evaporates and leaves the gut in a dry state. Surgical gut when dry becomes difficult to work with as it becomes embrittled and coarse and tends to fray so that knotting the gut is a real problem.

The use of tubing fluid poses another problem in that the free fluid tends to squirt out when the package is opened. The presence of free liquid within the operating room area is, of course, most objectionable. The liquid may splatter into the eyes or on the hands of personnel within the operating room.

Thus the packaging of surgical gut requires the use of a tubing fluid for proper conditioning of the sutures yet this tubing fluid is objectionable from the standpoint of being a hazard in the operating room and due to its rapid evaporation if not used immediately upon opening of the package.

The present invention overcomes all of the aforementioned disadvantages by utilizing a surgical suture package incorporating an absorbent sheath surrounding the suture, the suture and sheath being saturated with tubing or conditioning fluid, the atmosphere within the package being saturated with the vapor of the conditioning fluid. Thus in the package as it is opened in the operating room, there is no free liquid to create a hazard. Furthermore, the absorbent sheath surrounding the suture serves to maintain the suture in a moist condition after the package is opened and prior to actual use of the suture. The sheath may form a convenient reel about which the surgeon may wrap the suture prior to cutting the suture into convenient lengths for use.

It is also possible according to the present invention to utilize an evaporation inhibitor with the conditioning fluid so that the drying out of the surgical gut will be delayed. A substance such as polyvinylpyrrolidone has the characteristic of inhibiting the evaporation of the alcohol and water mixture commonly used as a tubing fluid for surgical gut. The use of such an inhibitor in combination with an absorbent sheath provides a most effective means for maintaining surgical gut in a moist pliable condition.

According to another embodiment of the present invention the surgical gut is packaged within an inner pack with an absorbent sheet to obviate the need for any substantial quantity of free tubing fluid within the inner pack

and an aperture is provided in the inner pack for the passage of the suture end. The suture is package within the inner pack in such a manner that it may be freely drawn through the aperture and the inner pack is not opened so that it serves as a reel holder for the gut which is removed as required. The absorbent sheet saturated with tubing fluid maintains the gut and atmosphere within the inner pack moist and evaporation through the small aperture in the inner pack is slow.

An object of the present invention is to provide packaging for surgical suturing material which will maintain such material in a properly moist condition up to the time of actual use of the suturing material.

Another object of the present invention is to incorporate in the inner pack for surgical gut an absorbent sheath saturated with conditioning fluid which will serve to maintain the gut in a moist pliable state.

Still another object of the present invention is to utilize the inner pack as a holder for the surgical gut as the surgical gut is unwound to be cut into proper lengths for use.

Other objects and many of the attendant advantages of the present invention will become more readily apparent upon consideration of the following detailed description in connection with the accompanying drawings wherein:

FIGURE 1 is a perspective view of a suture packaged in an inner and outer pack,

FIGURE 2 is a perspective view of the inner pack, FIGURE 3 is a sectional view thereof, and

FIGURE 4 is a plan view of another embodiment of an inner pack according to the present invention.

Referring now more specifically to the drawings wherein like numerals indicate like parts throughout the several views there is shown at 1 in FIG. 1 an outer pack which may be made of clear plastic as shown or other suitable material and which serves to maintain the inner pack 2 in a completely sterile state. The outer pack is sealed in such a manner as to be openable along a tear strip 3 to flip out the inner pack 2.

The inner pack 2 according to prior art packaging is filled with a tubing fluid so that the inner pack contains from two to four cubic centimeters of free fluid. This fluid comprises a mixture of alcohol and 2 to 10% water which serves to swell the gut to a proper degree and maintains the gut in a pliable state.

According to the present invention, the inner pack is provided with a cylindrically shaped cover 4 of a highly absorbent paper material which forms a sheath for the surgical gut 5. This sheath is saturated with tubing fluid and maintains the gut in a properly moist state. The atmosphere within the inner pack is saturated with vapor.

The actual method of manufacture may be to place the dried gut into a saturated atmosphere of alcohol and water and to permit the gut to remain in contact with this atmosphere until equilibrium is achieved. At that time the gut would be satisfactorily conditioned and ready for packaging within a saturated sheath. It may also be possible to soak the suture in a normal tubing fluid for a predetermined period of time, transferring the wetted gut into a package containing the saturated vapors, thereby maintaining the moisture of the gut.

When the outer pack 1 is opened and the inner pack 2 passed to the scrub nurse, the inner pack may be opened without the attendant hazard occasioned by the presence of free tubing fluid. The nurse may place the suture 5 encased within the sheath 4 on a sterile towel until the suture is required by the surgeon. The sheet 4 which is saturated by tubing fluid will maintain the gut in a properly moist condition. The sheath 4 may serve as a reel about which the surgeon may wind the gut to be unwound and cut into desired lengths.

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It is also possible to incorporate into the tubing fluid used within the inner pack an evaporation inhibitor which will retard the loss of moisture by the surgical gut. This inhibitor may be a substance such as polyvinylpyrrolidone. This evaporation inhibitor greatly enhances the results achieved by the present invention.

In FIG. 4 there is shown an inner pack 6 according to another embodiment of the present invention. This pack is provided with a sheet of absorbent material 7 which serves the same purpose as the sheath of the embodiment previously described. The pack is also provided with an aperture 8 through which the end portion of the suture 9 is passed. According to this modification it is not necessary to open the inner pack as the inner pack serves as a holder for the surgical gut while the gut is drawn out through the aperture to be cut to desired length. The sheet of absorbent material which is soaked with tubing fluid will maintain the gut in a moistened state and evaporation through the aperture 8 will be relatively slow. It can be appreciated that the sheet 7 may be in the form of an encasing envelope through which the gut passes but it is more convenient for the gut to be clearly visible within the inner pack so that the surgeon may readily determine the amount of gut remaining.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings.

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What is claimed as new and desired to be secured by Letters Patent is:

A package for surgical suturing material comprising a sealed outer tear pack, a sealed inner pack disposed within said outer pack, a substantially cylindrically shaped cover of moisture absorbent material disposed within said inner pack, surgical suturing material disposed within said cylindrical cover, said cylindrical cover completely surrounding the suturing material and having open ends for the removal of the suturing material therefrom, tubing fluid saturating said absorbent material and said surgical suturing material, there being substantially no free tubing fluid in said inner pack, upon opening of the outer and inner packs, said cylindrical cover ensheathing the suturing material and preventing the evaporation of moisture therefrom and upon removal of the suturing material from within the cylindrical cover, said cover adapted to serve as a reel about which the surgical suturing material may be wound whereby rapid evaporation of the moisture in the suturing material is inhibited.

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