Oct. 8, 1957 G. D. UTLEY ET AL 2,808,927

SUTURE CONTAINERS AND HANDLING DEVICES THEREFOR

Filed March 29, 1955 2 Sheets-Sheet 1

FIG. 1

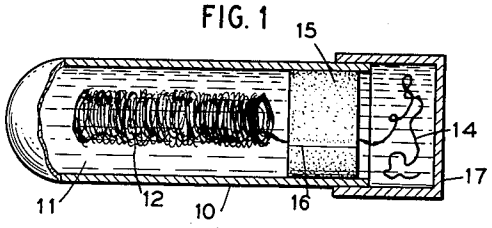


FIG. 2

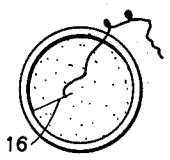


FIG. 3

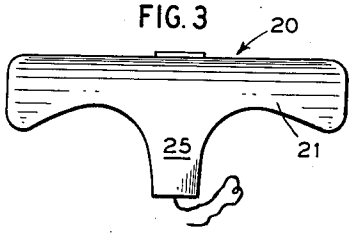


FIG. 4

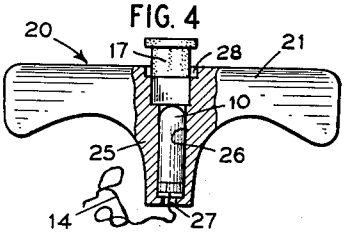


FIG. 5

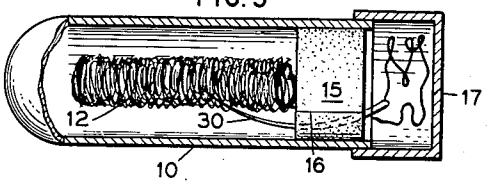


FIG. 6

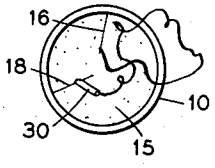


FIG. 7

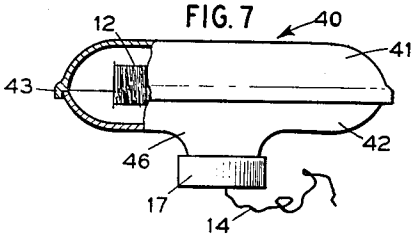
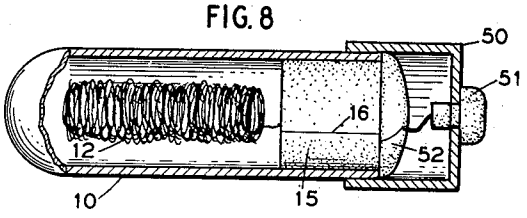


FIG. 8



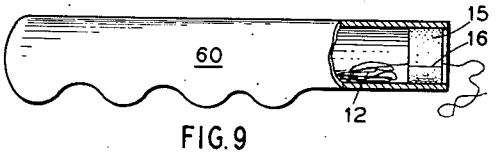
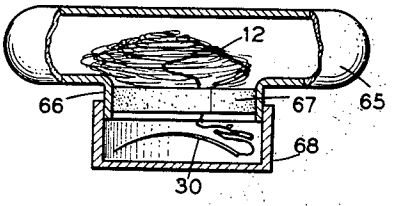


FIG. 9

FIG. 10



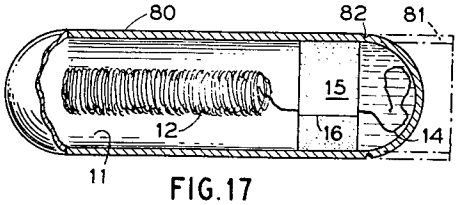


FIG. 17

INVENTORS
GEORGE D. UTLEY
SIDNEY HIRSCH
BY
Irving Seidman
ATTORNEY.

Oct. 8, 1957 G. D. UTLEY ET AL 2,808,927

SUTURE CONTAINERS AND HANDLING DEVICES THEREFOR

Filed March 29, 1955

2 Sheets-Sheet 2

FIG.11

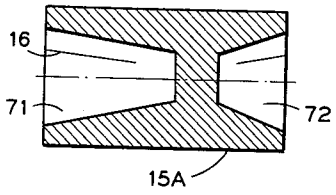


FIG.14

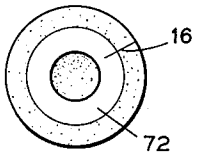


FIG.12

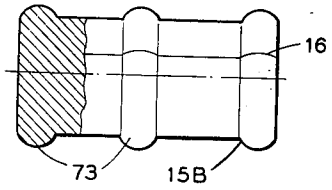


FIG.15

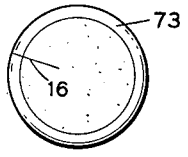


FIG.13

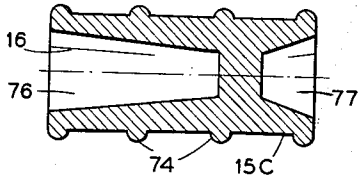
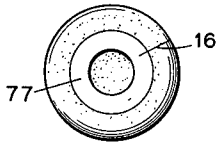


FIG.16



INVENTORS
GEORGE D. UTLEY
SIDNEY HIRSCH

BY
Irving Deidman
ATTORNEY.

United States Patent Office 2,808,927 Patented Oct. 8, 1957

2,808,927

SUTURE CONTAINERS AND HANDLING DEVICES THEREFOR

George D. Utley, Forest Hills, and Sidney Hirsch, Cedarhurst, N. Y.

Application March 29, 1955, Serial No. 497,701

1 Claim. (Cl. 206—63.3)

This invention relates to suture containers and handling devices therefor and, more particularly, to a novel suture container in which a suture may be maintained in a sterilized condition and withdrawn therefrom as needed without danger of glass breakage and with facility of handling.

Sutures used in surgery are usually of catgut, silk thread, cotton thread or wire. The sutures must be maintained in a thoroughly sterilized and antiseptic condition right up until the time of actual use. For this purpose, the sterilized suture is stored in a sealed container or holder filled with an antiseptic liquid, or may be stored dry.

At the time of use, the suture is removed from the solution in the container, as by being withdrawn from the container as needed or by removal of a wound spool or bobbin of suture from the container. The containers are usually of glass, and care must be exercised to prevent breakage of the glass, particularly in the vicinity of a wound. The presently used containers present considerable difficulties with respect to handling the sutures at the time of use in surgery.

The present invention is directed to a suture containing ampule having a novel seal through which the suture may be withdrawn and including a hollow cap arranged to maintain the projecting end of the suture in antiseptic-soaked condition or dry, the hollow cap preventing exposure of the projecting end of the suture. To facilitate protective handling of the container and suture during surgery, particularly when the ampule is made of glass, a novel handle is provided having a grip and a projecting stem formed with a recess to receive the ampule, an open end of this recess being closed by the aforementioned hollow cap.

Preferably, the ampule is made of a suitable shatter-proof substance such as a plastic, and may be shaped to form a handle or grip.

The seal is in the form of a plug of compressible material, having a side slit receiving the suture and arranged to have a surgical needle pierced therethrough, inserted through a second slit, or placed between the plug and the inner surface of the ampule. The plug may be rubber or may be a suitable plastic such as "Teflon" or "neoprene," and is preferably cored or circumferentially ribbed, or both, for greater compressibility.

For an understanding of the invention principles, reference is made to the following description of typical embodiments thereof as illustrated in the accompanying drawing. In the drawing:

Fig. 1 is a side elevation view, partly in section, of a sealed ampule embodying the invention;

Fig. 2 is an end view of the ampule with the hollow cap removed;

Fig. 3 is an elevation view of the ampule handling device;

Fig. 4 is a sectional view of the handling device;

Fig. 5 is a view similar to Fig. 1 showing a surgical needle placed in the ampule;

Fig. 6 is a view similar to Fig. 2 showing the needle inserted through a second slit in the plug seal;

Fig. 7 is a side elevational view, partly in section, of another form of ampule embodying the invention;

Figs. 8, 9 and 10 are sectional views of still other forms of ampules embodying the invention;

Figs. 11, 12 and 13 are sectional views of plug seals embodying the invention;

Figs. 14, 15 and 16 are end elevation views of the plugs of Figs. 11, 12 and 13, respectively; and

Fig. 17 is an elevation view, partly in section, of an hermetically sealed ampule embodying the invention.

Referring to Figs. 1–4, an ampule **10**, which may be of glass or plastic, is illustrated as an open ended container containing an antiseptic solution **11** for soaking a suture or ligature **12**. The suture or ligature is sealed in the container by a plug **15** of rubber, plastic or other compressible material having a side slit **16** through which the suture is withdrawn leaving a projecting end **14**. Beyond plug **15**, the ampule is closed by a hollow cap **17** arranged to maintain a ligature or suture soaking liquid outwardly of plug **15** to soak suture end **14** and maintain it sterile. Cap **17** may be rubber or a suitable plastic to have a sealing fit with the end of ampule **10**.

A handle **20** is provided to facilitate handling of ampule **10** and suture **12** without the risk of glass breakage as the suture is withdrawn for use in surgery. Handle **20** is formed of a suitable substantially shatter-proof material, which may be a plastic, and has a grip portion **21** shaped to fit the closed fingers and a stem **25** projecting from the midportion of grip **21**. Stem **25** has a recess **26** therein to receive ampule **10**, the outer end of the recess having an opening **27** for passage of suture **12**.

In use, cap **17** is removed from ampule **10** and the ampule is placed in recess **26** with plug **15** toward the bottom end of the recess, end **14** of suture **12** being passed outwardly through opening **27**. Cap **17** is then set in the open end of recess **26**, having a tight fit therein; and seats on a shoulder **28** adjacent the outer end of the recess. Thus, handle **20** with ampule **10** may be safely and firmly gripped in one hand as suture **12** is withdrawn through opening **27**.

The provision of side slit **16** in plug seal **15** provides for ready passage of the suture through the plug without the awkward operation required to thread a suture through a hole in the plug. Furthermore, the sides of the slit close tightly on the suture as the plug is set into ampule **10**, maintaining a tight seal. This seal is fully maintained as the suture is withdrawn through the slit.

A surgical needle **30** may be protectively mounted in ampule **10** either by piercing the needle through plug **15** (Fig. 5), inserting it between plug **15** and the inner surface of ampule **10**, or placing the needle through a second slit **18** in plug **15** as shown in Fig. 6.

While a glass ampule may be safely used with handle **20**, it is possible to provide an ampule which forms its own handle. Thus, in Fig. 7, the ampule **40** is formed from two elongated halves **41** and **42**, of plastic, top **41** having an offset flange **43** fitting over the rim of bottom **44** and sealed thereto. Bottom **42** has a neck **46** in which is set plug **15** and which fits cap **17**.

In Fig. 8, the ampule **10** is provided with a cap **50** through which extends a suture feedout seal **51** secured to the outer end of suture **12**. Cap **50** thus need not be removed for withdrawl of suture **12**. Seal **51** has a gripping end **52** which extends beyond ampule **10**, so that suture **12** can be withdrawn by grasping end **52** of seal **51**.

The ampule **60** of Fig. 9 resembles that of Fig. 1, but is formed of plastic and shaped to form a grip.

Fig. 10 illustrates a one-piece plastic ampule **65** having a neck **66** receiving a flattened seal **67** slit to receive

suture **12**. The needle **30** may be contained in cap **68** fitting neck **66**.

The plug seal may take various forms to improve its compressibility and sealing effect. Thus, in Figs. 11 and 14, plug **15A** is cored as at **71** and **72**. In Figs. 12 and 15, plug **15B** is formed with ribs **73**. Plug **15C** of Figs. 13 and 16 has ribs **74** and is cored at **76** and **77**.

The ampule **80** of Fig. 17 is initially in the general shape of a test tube having an open end **81** and formed with a score line **82** inwardly of the open end. After placing of suture **12** in the antiseptic liquid **11** in the ampule, plug **15**, having the suture **12** placed in its side slit **16**, is seated in the ampule inwardly of score line **82**. Antiseptic liquid may be placed in the ampule above plug **15**, and the open end **81** is sealed as by heating and deforming the open end to form a sealed closed outer end of the ampule. To use the ampule, the sealed outer end is broken off at score line **82** and discarded.

Suture **12** may be coiled loosely in the ampule or may be wound on one or more spools or bobbins therein. The suture may be maintained either dry or soaked in an antiseptic liquid.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the invention principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

An ampule adapted to protectively maintain a surgical suture dry or soaked in an antiseptic liquid, comprising, in combination, a container having an open end and arranged to receive the suture; and an otherwise imperforate plug of compressible material having a containing sealing fit in said container and formed with a side slit receiving the suture; whereby the suture may be withdrawn through said slit without destroying the sealing of the container; said container having a score line outwardly of said plug and the open end of the container being hermetically sealed after the suture, liquid and plug are inserted therein and an antiseptic liquid placed in the container outwardly of the plug; the hermetically sealed end being broken off at the score line to withdraw the suture through the plug.

References Cited in the file of this patent

UNITED STATES PATENTS

450,766	Crawford	Apr. 21, 1891
490,207	Lee	Jan. 17, 1893
992,324	Yale	May 16, 1911
1,116,663	Woodruff	Nov. 10, 1914
1,592,432	Barry	July 13, 1926