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Olerud

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[54] **DEVICE FOR THE STERILE ENCLOSURE OF NON-STERILIZABLE OBJECTS**

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[52] **U.S. Cl.** **229/62;** 150/3; 229/66; 229/55

[51] **Int. Cl.²** **B65D 33/16;** B65D 33/00

[58] **Field of Search** 229/62, 66, 55; 150/3

[56] **References Cited**

UNITED STATES PATENTS

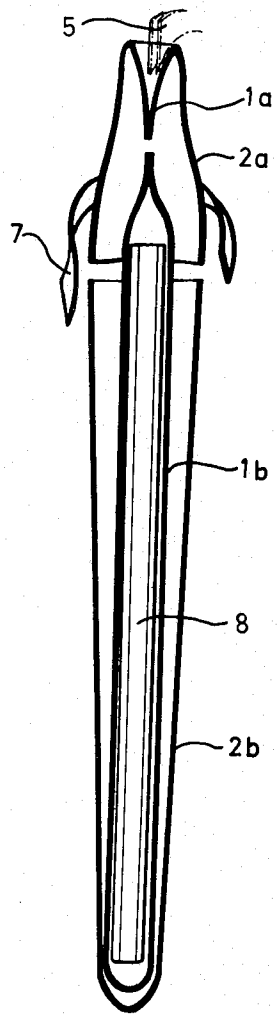
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Attorney, Agent, or Firm—Fred Philpitt

[57] **ABSTRACT**

A device for the sterile enclosure of non-sterilizable objects, comprising a) an inner sheath having a first sheath opening facilitating means extending across the sheath, lengths of an adhesive material arranged on both sides of said means on the inside of said sheath and a removable protective material strip covering the lengths of adhesive material, and b) an outer sheath having second sheath opening facilitating means extending across said sheath.

4 Claims, 3 Drawing Figures



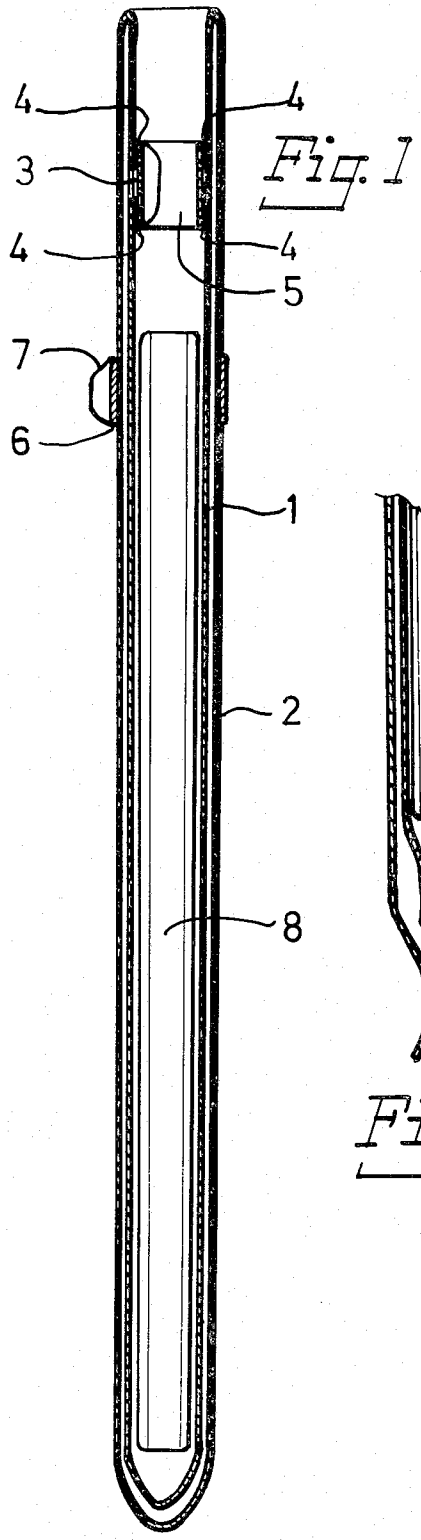


Fig. 1

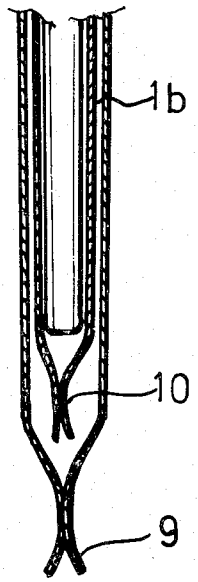


Fig. 3

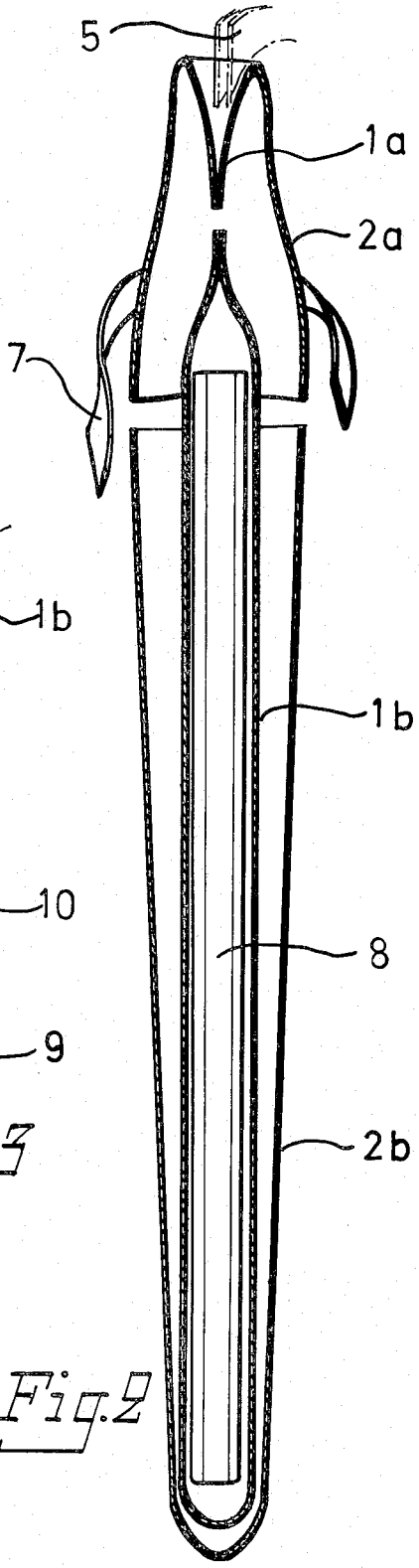


Fig. 2

DEVICE FOR THE STERILE ENCLOSURE OF NON-STERILIZABLE OBJECTS

The present invention relates to a device for the sterile enclosure of non-sterilizable objects, such as X-ray cassettes for example, in an envelope.

With some surgical operations it is necessary to examine the result of the operation by means of a radiograph (X-ray photograph). Before the X-ray cassette is placed in position for the radiograph to be taken, it is normally placed in sterile cloth bags. Since the cassette cannot be sterilized, however, handling of the cassette can be hazardous with respect to the surgical procedure.

This problem is now overcome by the present invention, which enables non-sterilizable objects, such as X-ray cassettes, to be handled without risk of contamination, thereby maintaining the desired state of sterility at the operating table and to the surgical wound.

The device of the present invention is characterized by the fact that it comprises a) an inner sheath having a separation zone extending thereacross and lengths of adhesive material attached to both sides of the separation zone on the inside of the sheath, the lengths of adhesive material being covered by a removable protective strip, and b) an outer sheath having opening facilitating means extending thereacross. In accordance with the invention the outer sheath opening facilitating means may have the form of a separation zone extending across the sheath and being covered by a removable protective strip, or may have the form of pull-tabs.

The invention will now be described more clearly with reference to the accompanying drawing, where

FIG. 1 shows in longitudinal section one embodiment of the device according to the invention, the device being shown in an open state with an object inserted thereinto,

FIG. 2 is a longitudinal sectional view of the device shown in FIG. 1 showing the device when closed and further showing the initial stages of the separation of the outer sheath and inner sheath, and

FIG. 3 shows part of another embodiment of the device according to the invention.

The device shown in FIGS. 1 and 2 comprises an inner sheath or casing 1 and an outer sheath or casing 2 which is formed integrally with the sheath 1. A separation zone 3 extends across the sheath 1 and lengths 4 of adhesive material are arranged on both sides of the separation zone 3, on the inside of the sheath 1. The lengths of adhesive material 4 are covered with a removable protective strip 5. The outer sheath 2 has an opening facilitating means which extends in the cross direction of the sheath and which has the form of a separation zone 6. As will be seen from the drawing, the zone 6 is covered by a protective strip 7.

By "cross direction" is meant here and in the following a direction which is generally parallel with the edges of the sheath openings.

FIG. 1 shows an X-ray cassette 8 enclosed in the sheath 1, the cassette having been inserted in the sheath through the opening thereof. The device of the present invention is used as follows:

The device is sealed by removing the protective strip 5 and applying pressure to the outer surfaces of the outer sheath 2 in the region of the separation zone 3, the lengths of adhesive material 4 tightly sealing the inner sheath 1. The protective strip 7 is then removed, to expose the separation zone 6. The sheaths are then

divided into three parts as shown in FIG. 2, namely a first part which includes the upper part of the inner sheath, identified by the reference 1*a*, and the upper part of the outer sheath 2, identified by the reference 2*a*, a second part, 2*b*, of the outer sheath 2, and a third part comprising the lower part, 1*b*, of the inner sheath.

In accordance with the invention, the two sheaths are sterilized before inserting the cassette thereinto. When the cassette, which is not sterile, is inserted into the sheath, it comes into contact with the inner surfaces of the inner sheath, while the person inserting the cassette touches the outside of the outer sheath and possibly also the inside of the inner sheath. The outside of the inner sheath and the inside of the outer sheath, however, remain untouched and are still sterile. The sheaths can be separated into the aforementioned different parts while retaining their sterility, by gripping only the outside of the first and second parts and pulling them apart and by turning the second part so that the third part can slide out.

The separation zones may have the form of zones provided with perforations, or the sheaths may be cut and the cut surfaces of the sheath opening surfaces held fixed in position by means of protective tape.

As an alternative to the separation zone 6 and cooperating protective tape 7, the opening facilitating means of the outer sheath may have the form of pull flaps 9 (FIG. 3) arranged at a portion of the sheath located furthest from the sheath opening, by means of which a seal sealing the outer sheath can be broken.

In accordance with another embodiment of the invention, the inner sheath may also be provided with pull flaps, such as those shown at 10 in FIG. 3, to facilitate removal of the cassette from said third part 1*b*, which forms the lower portion of the inner sheath, upon completion of the X-ray photograph and when desiring to develop the X-ray film in the darkroom.

The sheaths are conveniently made of a flexible plastics material, although other flexible material, such as paper may also be used.

Although the invention has been described with reference to preferred embodiments thereof, it is not restricted to such embodiments. For example, the sheaths need not be produced integrally, but may comprise two separate sheaths, the edges of the openings of which may be interfolded or affixed together by protective tape, to join said sheaths together.

What I claim is:

1. A flexible enclosure device for enclosing articles in a sterile manner comprising:

a. two end sections of generally tubular configuration that are each closed at one end and open at the other end, one of said end sections being annularly disposed around the other end section,

b. a tubular intermediate section having two open ends,

c. a first connecting means for detachably connecting one open end of the tubular intermediate section to the open end of one end section in a gas tight manner,

d. a second connecting means for detachably connecting the other open end of the tubular intermediate section to the open end of the other end section in a gas tight manner,

e. adhesive material disposed adjacent the interior of the open end of the inner of said two annularly disposed end sections, and

f. a removable protective strip covering said adhesive material.

2. A flexible enclosure device according to claim **1** wherein at least one of said connecting means is composed of a circumferential row of perforations which are covered by a removable protective strip.

3. A flexible enclosure device according to claim **1** wherein at least one of said connecting means is a pull flap disposed around the circumference of the tube.

4. A flexible enclosure device for enclosing articles in a sterile manner comprising:

a. an elongated tube having its opposite ends closed,

b. said elongated tube being divided into two end sections and an intermediate section by two spaced apart sets of circumferential perforations intermediate the opposed ends of said elongated tube, one of said end sections being annularly disposed around the other end section,

c. adhesive material disposed around the circumference of the inner of said two annularly disposed end sections at a point which is between its closed end and the nearest set of circumferential perforations, and

d. at least one removable protective strip covering said adhesive material and said circumferential perforations.

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