

[54] SELF-ADHESIVE SURGICAL APPAREL AND METHOD

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[21] Appl. No.: 384,843

[57] ABSTRACT

[52] U.S. Cl. .... 128/132 D, 161/167

[51] Int. Cl. .... A61t 13/00

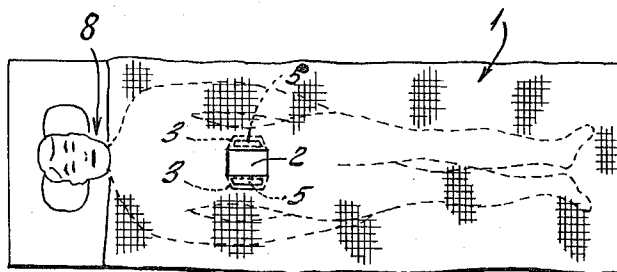
[58] Field of Search ..... 128/132 D, 292, 296; 161/167, 406

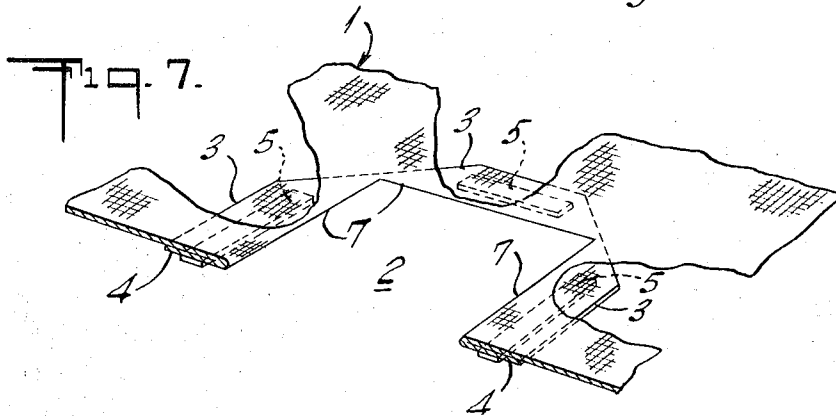
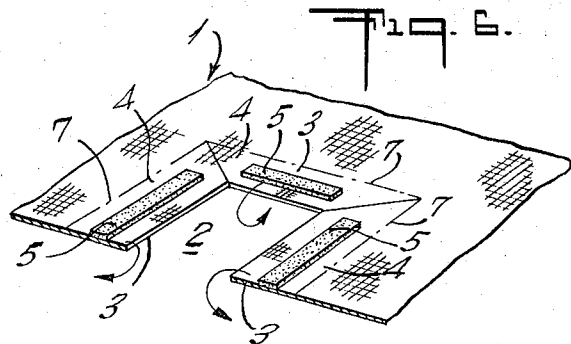
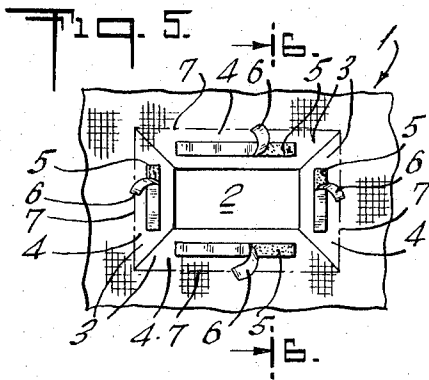
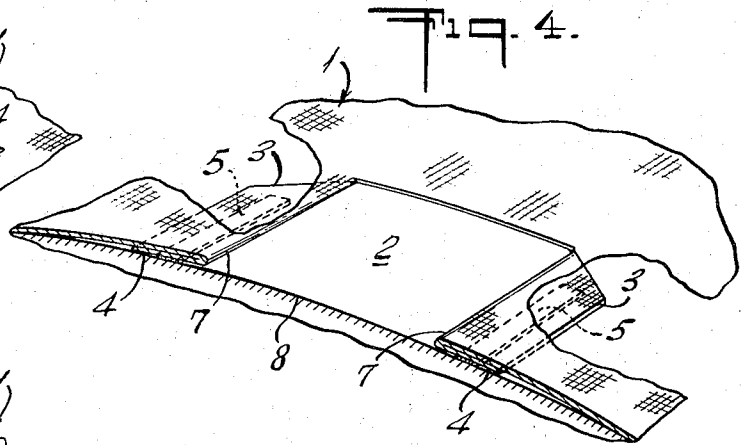
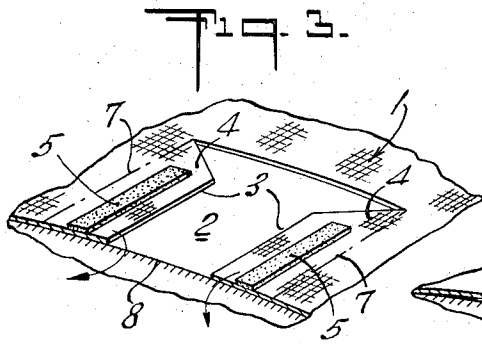
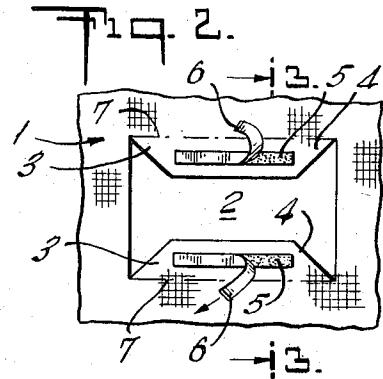
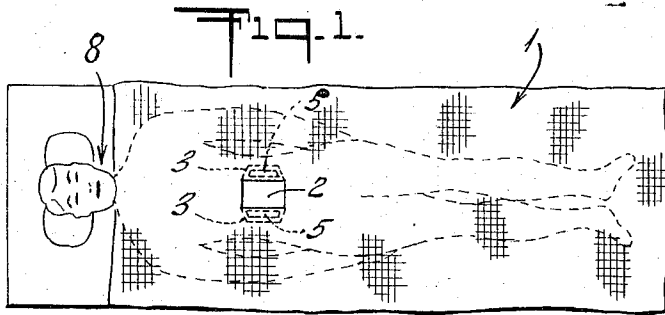
Self-adhesive disposable surgical drapes and towels, having at least one foldable flap integral with an edge thereof, which flap has pressure-sensitive adhesive on at least part of one surface thereof and a releasable cover sheet for said adhesive. The flap is so disposed as to present the covered adhesive away from the body of the patient during positioning of the drape or towel thereon for convenient removal of the releasable cover sheet from the adhesive, the flap being foldable to present the uncovered adhesive toward the body of the patient for securing the drape or towel thereof.

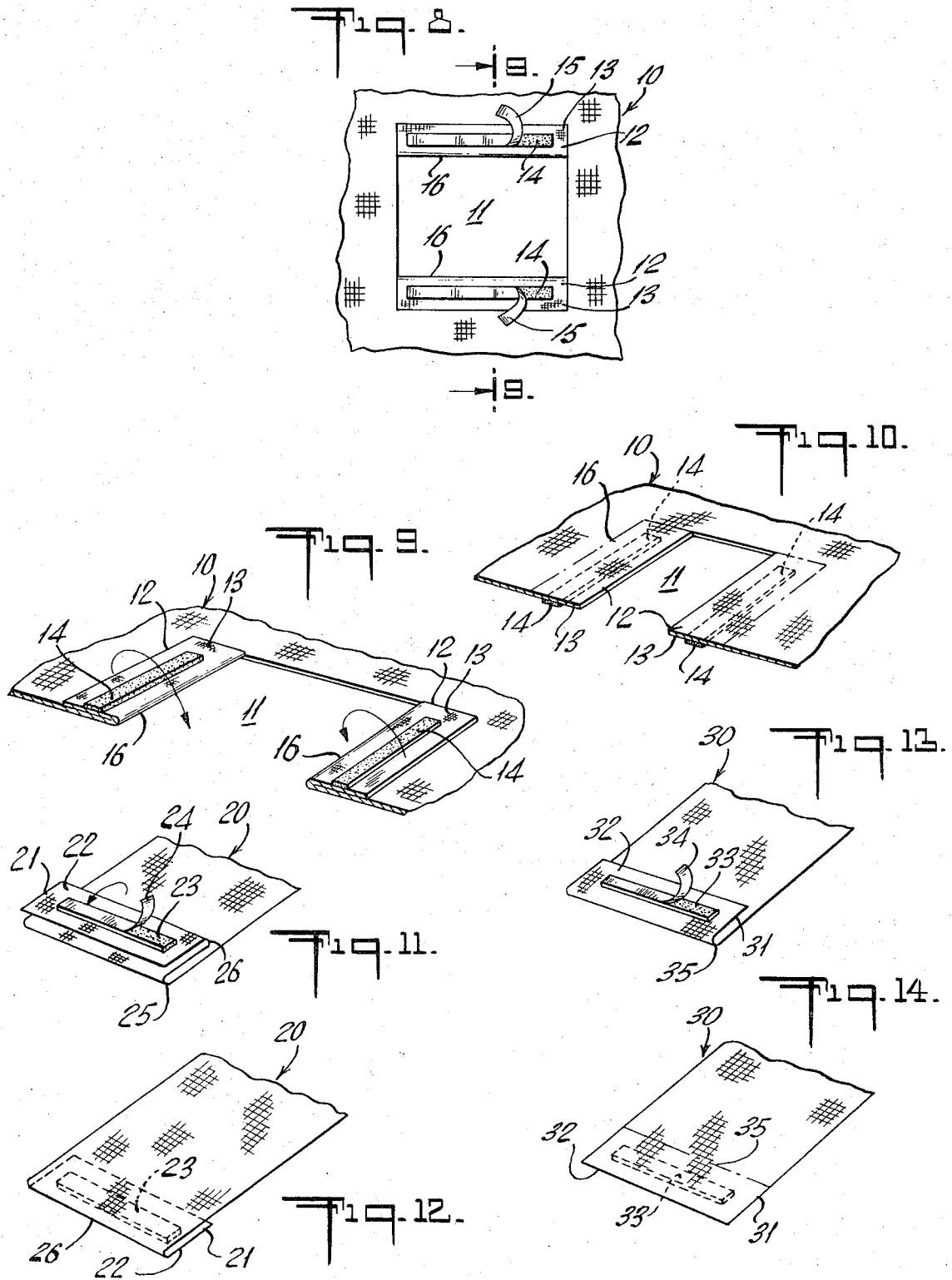
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6 Claims, 14 Drawing Figures







## SELF-ADHESIVE SURGICAL APPAREL AND METHOD

### BACKGROUND OF THE INVENTION

This invention relates to self-adhesive surgical apparel and, in particular, to self-adhesive disposable surgical drapes and towels, and, more particularly to means for conveniently securing the same to a patient.

Surgical drapes and towels are used to cover a patient and operating table during surgery in order to provide a sterile field and to prevent contamination of the region of the patient on which the operation is to be performed. In order to serve this function, drapes and towels must be impervious to penetration by liquids and microorganisms. In addition, they should not be subject to slipping or moving about relative to the operative site on the patient after having been placed on the patient in the arrangement desired by the surgeon. Otherwise, bacteria from the patient's own body could be transferred to (and contaminate) the site of the incision by the underside of the drape or towel. Also, such undesired slipping could interfere with and delay an operative procedure.

The prior art development of attachment means for surgical drapes and towels has taken two main approaches. The first of these approaches, which has long been used in the surgical art, is the use of clips to fasten drapes or towels together. The use of surgical clips as attachment means for surgical drapes and towels has the disadvantage that the clips may not only damage the drapes and towels, thereby destroying the sterile field, but may also injure the patient.

To overcome the disadvantages which follow from the use of clips as attachment means, a second approach to the attachment of surgical drapes and towels to a patient has been taken. This approach involves the use of pressure-sensitive adhesive on the undersides of disposable surgical drapes and towels, that is, the sides in contact with or closest to the patient's body when in use. The use of pressure-sensitive adhesive as an attachment means substantially eliminates the possibility of damage both to drapes and towels and to the patient. However, the prior art use of pressure-sensitive adhesive on the undersides of surgical drapes and towels has itself caused a further difficulty.

Thus, releasable cover sheets are generally placed over the adhesive to prevent undesired adhesion thereof prior to use of the drape or towel, and the surgeon or nurse must remove these cover sheets prior to attaching the drape or towel to a patient. The location of the adhesive on the underside of the drape or towel, combined with the necessity for removal of the releasable cover sheet prior to use thereof, results in either lack of accurate placement or difficulty of attachment of the drape or towel, as will be described in more detail below.

Self-adhesive surgical drapes of the prior art may be arranged over and secured to a patient by one of two procedures. On the one hand, the cover sheets may be removed and the prior art self-adhesive drape may be attached to the patient prior to the unfolding thereof. If such a procedure is followed, then inaccurate or incomplete draping may result when the drape is unfolded. No adjustment of the position of the drape is possible subsequent to unfolding, because attachment has already been effected.

On the other hand, the cover sheets may be removed and the self-adhesive prior art drape may be attached to the patient after the drape has been unfolded and properly positioned on the patient. Such a procedure allows correct positioning of the unfolded drape, but makes attachment inconvenient and difficult, particularly without endangering the sterile field which has just been created by the draping procedure. Thus, to remove the cover sheets of the prior art self-adhesive drape after unfolding the same, the surgeon must grope under the drape to find the adhesive and must then remove the cover sheets therefrom. This is difficult to do without disturbing the drape or disrupting the sterile field. Such a procedure is inconvenient and risks contamination.

Prior art self-adhesive towels are attached by similar procedures and suffer from similar difficulties, although not to the same degree as prior art self-adhesive drapes.

### SUMMARY OF THE INVENTION

There is provided by my invention pressure-sensitive adhesive securing means for surgical drapes and towels whereby they may be unfolded and arranged over a patient prior to attaching said towels or drapes thereto, without incurring the inconvenience and risk of contamination necessitated by the pressure-sensitive adhesive attachment means of the prior art. The present invention comprises a surgical drape or towel, preferably of the disposable type, which has at least one foldable flap integral with an edge thereof, this flap having pressure-sensitive adhesive on at least part of one surface thereof and a releasable cover sheet overlying said adhesive. The flap is so disposed on the unused drape or towel as to present the covered adhesive away from the body of the patient while positioning the drape or towel, whereby the releasable cover sheet can be readily removed from the adhesive without disturbing the drape or towels; and the flap is foldable whereby to present the uncovered adhesive toward the body of the patient for attachment of the drape or towel thereto, again without disturbing the arrangement thereof or risking contamination of the sterile field. The edge with which said flap is integral can be an external edge, as the edge of a surgical towel, or an internal edge, as the edge of a fenestration opening of a surgical drape.

In using the self-adhesive surgical drape or towel of my invention, it is arranged over a patient with the flap positioned so that the covered adhesive is presented away from the patient. The releasable cover sheet is then removed, and the flap is folded so that the uncovered adhesive is presented toward the patient for attachment of the drape thereto.

The disposable self-adhesive drapes and towels of my invention may be of any conventional construction and may be made of materials conventionally employed therefor. For example, they may be constructed of such liquid—and bacteria—impervious material as plastic film and treated nonwoven fabrics. Suitable films include polypropylene, polyethylene and polyvinyl chloride films. A preferred material of construction is adhesive-bonded, wet-laid nonwoven fabric formed from nylon and cellulosic fibers and treated to impart water repellency thereto. Of course, where desired, absorbent materials may also be employed.

Any conventional pressure-sensitive adhesive may be used in the practice of my invention, as for example,

known polyacrylate or polymethacrylate pressure-sensitive adhesives formulated for contact with the skin without adverse side effects for the anticipated duration of use.

The releasable cover sheet used in my invention may be of any conventional material commonly used as release paper, for example, silicone-coated or wax coated paper.

In one embodiment of the drape of my invention, the pressure-sensitive adhesive is located on the upper surface of the flap, which is folded under the drape to present the uncovered adhesive toward the body of the patient for attachment of the drape thereto, after proper placement of the drape over the patient and removal of the releasable cover sheet from the adhesive.

In a second and preferred embodiment of a drape in accordance with my invention, the adhesive is located on the lower surface of the flap, which is folded up to present the covered adhesive away from the body of the patient, for removal of the releasable cover sheet therefrom after proper placement of the drape, and is then unfolded to present the uncovered adhesive toward the body of the patient for attachment of the drape thereto.

The same embodiments are possible with towels. That is, the adhesive may be located on either the upper surface or the lower surface of the towel on a flap integral with an edge of the towel. In either embodiment, the towel is first placed in position, the flap of the towel being positioned so that the covered adhesive is presented away from the body of the patient, the releasable cover sheet is removed, and the flap is then folded so that the uncovered adhesive is presented toward the body of the patient for attachment of the towel thereto (or to a previously positioned drape or towel).

My invention will be more clearly understood by referring to the attached drawings, which show illustrative embodiments thereof.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of one embodiment of a surgical drape in accordance with the invention, covering a patient;

FIG. 2 is an enlarged fragmentary plan view of the fenestration opening of the embodiment shown in FIG. 1, showing the adhesive-surfaced flaps in their normal position prior to attachment of the drape to the patient;

FIG. 3 is a perspective in section along line 3—3 of FIG. 2;

FIG. 4 is a perspective in section similar to FIG. 3, with parts broken away, showing the flaps folded under the drape after removal of the releasable cover sheets from the adhesive, to present the same toward the body of the patient for attachment of the drape thereto;

FIG. 5 is a fragmentary plan view of a second embodiment of a surgical drape in accordance with the invention, showing a fenestration opening having four adhesive-surfaced flaps;

FIG. 6 is a perspective in section along line 6—6 of FIG. 5;

FIG. 7 is a perspective in section similar to FIG. 6, with parts broken away, showing the flaps folded under the drape after removal of the releasable cover sheets from the adhesive, to present the same toward the body of the patient for attachment of the drape thereto;

FIG. 8 is a fragmentary plan view of the fenestration area of the presently preferred embodiment of a surgical drape in accordance with the invention;

FIG. 9 is a perspective in section along line 9—9 of FIG. 8;

FIG. 10 is a perspective in section similar to FIG. 9, but showing the flaps in position when secured to the patient;

FIG. 11 is a perspective illustrating an embodiment of a towel in accordance with the present invention, in which the adhesive is on the upper surface of the flap, with the flap folded so as to present the covered adhesive away from the body of the patient;

FIG. 12 is a view similar to FIG. 11 showing the adhesive-surfaced flap positioned after removal of the releasable cover sheet from the adhesive so as to present the same toward the body of the patient for attachment of the towel thereto;

FIG. 13 is a perspective of another embodiment of a towel in accordance with the present invention in which the adhesive is located on the lower surface of the flap, showing the flap folded, so as to present the covered adhesive away from the body of the patient; FIG. 14 is a perspective similar to FIG. 13 showing the towel of FIG. 13 with the adhesive-surfaced flap unfolded after removal of the releasable cover sheet from the adhesive so as to present the same toward the body of the patient for attachment of the towel thereto.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring specifically to FIGS. 1-4, there is illustrated a surgical drape 1 having a fenestration opening 2 of generally rectangular configuration. Integral with a pair of opposed edges of the fenestration opening are flaps 3 which normally extend into the opening. Flaps 3 are of generally trapezoidal configuration, as illustrated, for ease of folding in use, but may be of any desired configuration, such as a generally rectangular configuration. On at least part of upper surfaces 4 of flaps 3 there is pressure-sensitive adhesive 5 covered with releasable cover sheets 6. Flaps 3 are foldable along fold lines 7 so that they may be folded under the drape to present the uncovered pressure-sensitive adhesive 5 to the body of patient 8 after placement of the drape on the patient and removal of the releasable cover sheets. As shown in FIG. 4, when flaps 3 are so folded, fenestration opening 2 is enlarged to the full size intended for use.

The removal of cover sheets 6 is shown in the enlarged view of FIG. 2. FIG. 3 shows the adhesive-coated flaps, with the release paper removed, preparatory to folding the same under the drape. FIG. 4 shows the flaps of FIG. 3 folded under the drape to present the same toward the body of the patient for attachment of the drape thereto.

In FIGS. 5-7, the same reference numerals are used as for the embodiment illustrated in FIGS. 1-4 to designate the same parts. As shown, surgical drape 1 of this embodiment has a fenestration opening 2 of generally rectangular configuration, and four flaps 3, each flap being integral with one of the four edges of the opening, and extending into the opening. Flaps 3 may be of generally trapezoidal configuration, as illustrated herein, or may be of generally rectangular configuration, but preferably do not overlap. In this embodiment of the invention, the four flaps about the fenestration

opening provide enhanced attachment of the drape to the body of the patient in the area of the fenestration. As in the embodiment of FIGS. 1-4, there is pressure-sensitive adhesive 5 on at least part of the upper surfaces 4 of flaps 3. In storage, the pressure-sensitive adhesive is covered by releasable cover sheets 6. The flaps are foldable along lines 7 so that they may be folded under the drape after removal of the releasable cover sheets from the adhesive, so as to present the same toward the body of the patient for attachment of the drape thereto. In FIG. 7 the flaps have been folded under the drape to present the uncovered pressure-sensitive adhesive toward the body of the patient for attachment of the drape thereto.

In FIGS. 8-10, there is illustrated the fenestration area of the presently preferred embodiment of a surgical drape in accordance with the present invention. As shown, surgical drape 10 has a fenestration opening 11 of generally rectangular configuration, and a pair of rectangular flaps 12, each integral with one of a pair of opposed edges of said opening. On at least part of the upper surfaces 13 of flaps 12, as best seen in FIG. 9, there is pressure-sensitive adhesive 14 covered with releasable cover sheets 15. The flaps are foldable along lines 16. Normally the flaps are folded back on top of the drape to present the covered adhesive away from the body of the patient. In using this preferred embodiment of my invention, the flaps are unfolded, after removal of the cover sheets, to present uncovered pressure-sensitive adhesive 14 to the body of the patient for attachment of the drape thereto. As shown in FIG. 10 this unfolding of the flaps decreases the area of the fenestration opening to the size intended for use.

Referring to FIGS. 11 and 12, there is illustrated a surgical towel 20 of generally rectangular configuration embodying the present invention, towel 20 having a foldable flap 21 at one end thereof. On at least part of upper surface 22 of the flap there is pressure-sensitive adhesive 23 covered with releasable cover sheet 24. The towel of this embodiment of the invention is folded along lines 25 and 26 so as to present covered adhesive 23 away from the body of the patient. In use, the towel is positioned on a patient, cover sheet 24 is removed from the adhesive, and towel 20 is folded along line 25 so as to present the uncovered adhesive 23 of flap 21 towards the body of the patient for attachment of the towel thereto or to a previously positioned towel or drape.

In FIGS. 13 and 14, there is illustrated the presently preferred embodiment of a towel in accordance with my invention, a surgical towel 30 of generally rectangular configuration having a foldable flap 31 at one end thereof. On at least a part of lower surface 32 of the flap (as seen in FIG. 14) there is pressure-sensitive adhesive 33 covered with releasable cover sheet 34 (FIG. 13). Normally, the flap is folded along line 35 so as to present the covered adhesive away from the patient. In use, the towel is positioned on a patient, the cover sheet is removed from the adhesive, and the flap is unfolded so as to present the uncovered pressure-sensitive adhesive toward the body of the patient for securing of the towel.

While several specific embodiments of the invention have been described with particularity, they are provided for purpose of illustration, and many variations and modifications may be made without departing from the spirit and scope of the invention. Thus, for exam-

ple, while the drapes, towels and flaps of the invention have been illustrated as being generally rectangular in configuration, other configurations could be employed. Similarly, it is not necessary that pairs of tabs be employed around the fenestration, the use of one or three flaps, for example, being within the scope of the invention.

What is claimed is:

1. A self-adhesive surgical drape having a top side adapted to lie facing away from the body of a patient and a bottom side adapted to lie adjacent the body of a patient, said drape having a fenestration opening spaced inwardly from the outer periphery thereof, an interior edge defining said fenestration opening, a foldable flap integral with a portion of said interior edge, pressure sensitive adhesive on at least part of a surface of said flap and a releasable cover sheet covering said adhesive, said adhesive surface being adapted to lie facing away from the patient during draping and to be folded over to lie adjacent the patient when the fenestration portion of the drape is properly positioned on the patient, whereby to facilitate rapid and sterile draping of a patient.

2. The surgical drape of claim 1, wherein said fenestration opening is of substantially rectangular configuration and one of said foldable flap is disposed on and integral with each of two opposed edges of said fenestration.

3. The self-adhesive surgical drape of claim 2, wherein said flaps normally extend into said fenestration opening, said adhesive is located on the upper surfaces of said flaps when the same are extending into the fenestration opening, and said flaps are foldable under the drape, so as to present the same toward the body of the patient for attachment of the drape thereto after removal of the cover sheets from the pressure-sensitive adhesive.

4. The self-adhesive surgical drape of claim 2, which comprises said flaps on both said pairs of opposed edges.

5. The self-adhesive surgical drape of claim 2, wherein said flaps are normally folded back on top of the drape, said adhesive is located on the upper surfaces of said flaps when the same are folded back on top of the drape, and said flaps are foldable into the fenestration opening so as to present the same toward the body of the patient for attachment of the drape thereto after removal of the cover sheets from the pressure-sensitive adhesive.

6. A method of attaching a self-adhesive surgical drape to a patient, which comprises positioning over a patient a drape having a fenestration spaced inwardly from the outer periphery of said drape, an interior edge defining said opening, a foldable flap integral with a portion of said interior edge, said flap having pressure-sensitive adhesive on at least part of one surface thereof, and a releasable cover sheet covering said adhesive; unfolding said drape with the flaps positioned so that the covered adhesive is presented away from the body of the patient; adjusting the drape to the desired position over the patient; removing said cover sheet from said pressure-sensitive adhesive; and folding said flap so that said pressure-sensitive adhesive is presented toward the body of the patient for attachment of the drape thereto.

\* \* \* \* \*

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 3,871,369  
DATED : March 18, 1975  
INVENTOR(S) : Henrietta K. Krzewinski

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In Column 6, Claim 2, delete the word "of" preceding the words "said foldable flap".

Signed and Sealed this  
seventeenth Day of February 1976

[SEAL]

*Attest:*

RUTH C. MASON  
*Attesting Officer*

C. MARSHALL DANN  
*Commissioner of Patents and Trademarks*

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 3,871,369

DATED : March 18, 1975

INVENTOR(S) : Henrietta K. Krzewinski

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Abstract - the last word of the abstract should read thereto --- not "thereof" ---.

In Column 2, line 13, the word "distruping" should read disrupting ---.

In Column 6, lines 26 & 27 after the word "configuration" insert the phrase ---, having two pairs of opposed edges,----.

Signed and Sealed this  
twenty-sixth Day of August 1975

[SEAL]

Attest:

RUTH C. MASON  
Attesting Officer

C. MARSHALL DANN  
Commissioner of Patents and Trademarks