

- [54] **DISPOSABLE SURGICAL COVER SHEET**

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| 3,589,365 | 6/1971 | Sejman | 128/132 D |
| 3,503,391 | 3/1970 | Melges | 128/132 D |

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- [22] Filed: **April 23, 1971**

- [21] Appl. No.: 136,840**

- [52] U.S. Cl. 128/132 D, 128/292**

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

- [58] **Field of Search**..128/132 D, 155, 156, 174, 292,
128/132 R, 133, 163, 165, 169, 170, 171

[56] **References Cited**

UNITED STATES PATENTS

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|-----------|--------|-------------|-----------|
| 3,561,439 | 2/1971 | Bayer | 128/132 D |
| 3,565,067 | 2/1971 | Bayer | 128/132 D |
| 3,424,153 | 1/1969 | Lewis | 128/132 D |

[57] ABSTRACT

A disposable, surgical cover sheet is provided comprising a main sheet formed of a nonwoven, cellulosic material having an enlarged opening therein, the opening covered by a sheet of plastic material. The plastic sheet is secured to the main sheet along a bonding zone surrounding the main sheet opening. A the bonding of absorbent pads is also provided surrounding the opening and secured to the main sheet and plastic sheet in the bonding zone. Portions of the plastic sheet project beyond the bonding zone and may be used to retain a suction tube or the like without risking the puncture or tearing of the cover sheet as a result of mishandling of the tube.

9 Claims, 5 Drawing Figures

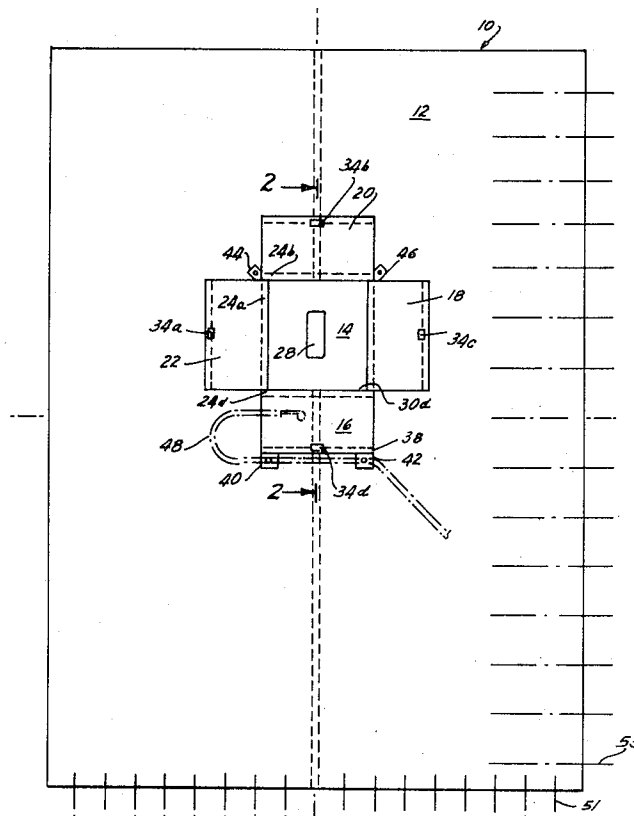


FIG. 1

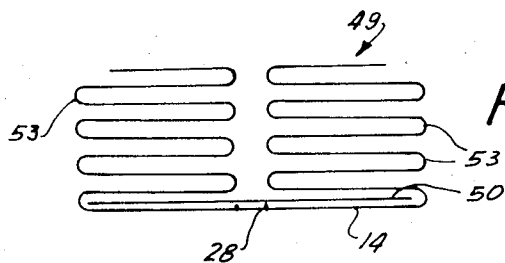
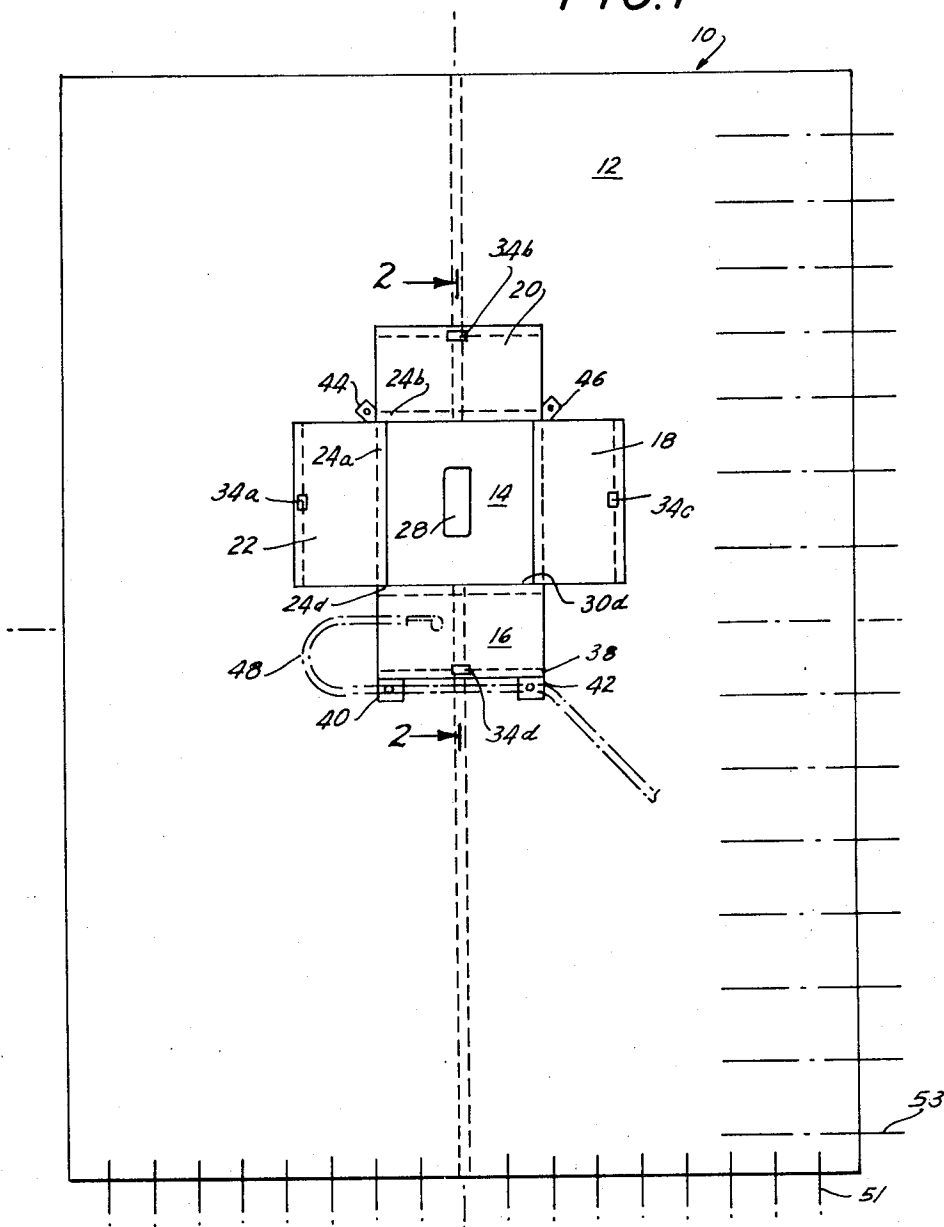


FIG. 4

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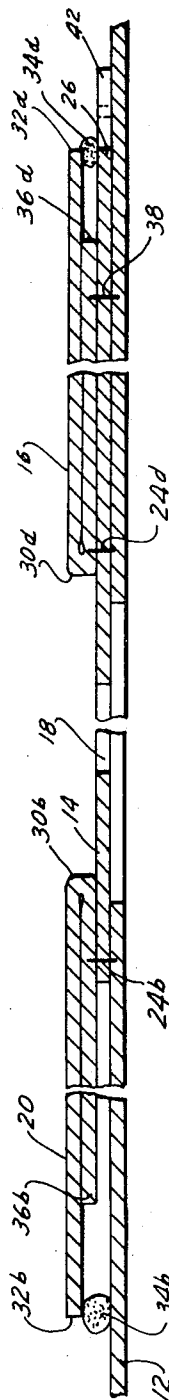


FIG. 2

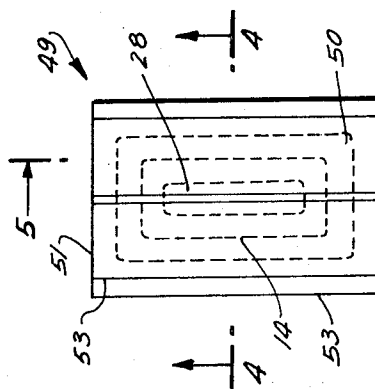


FIG. 3

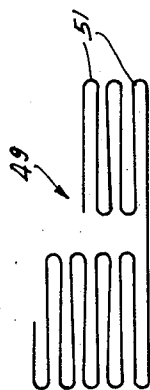


FIG. 5

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DISPOSABLE SURGICAL COVER SHEET

BACKGROUND OF THE INVENTION

An initial step followed in almost all modern surgical techniques is to drape the patient and the surrounding tables and utensils with sterile covers to provide an effective barrier between the surgical wound and microorganisms in the surrounding environment.

In the past, a cotton fabric such as muslin was used primarily for surgical drapes. In recent years, however, more and more hospitals have been adopting the practice of using prepackaged, disposable drapes formed from a wide variety of synthetic and cellulosic materials. Various nonwoven cellulosic materials are particularly popular. These versatile materials can be manufactured to meet different specifications in both absorbent and nonabsorbent forms. Further, they are soft, light in weight, compact, readily sterilized, and nonirritating. In addition, there are treatments well known in the art which render the material flame and moist resistant, reduces lint, and renders the drape static-free.

There are two principal shortcomings of the nonwoven drapes. The first relates to the free fiber problem inherent in nonwoven, cellulosic structures. Such free fibers could fall into the operative site thereby presenting obvious problems. Even if the fibers are prevented from falling into the operative site (such as by suitable surface treatments) there is the problem of wicking of body fluids through fibers that extend into the operative site.

The second shortcoming grows out of the fact that, generally speaking, the nonwoven materials are readily susceptible to punctures and tears. During many operative procedures, a suction tube must be available to drain fluids from the operative site. The suction tube must be maintained within the sterile field and many surgeons clamp the tube to the drape. With conventional nonwoven drapes, this clamping can cause a puncture and subsequent tear in the drape thereby causing a break in the sterile field.

In view of the above, it is the principal object of the present invention to provide an improved disposable, surgical drape which retains the aforementioned benefits of prior art nonwoven drapes while, at the same time, overcoming the principal shortcomings described above.

A related object is to provide such a drape which may be produced at a cost sufficiently low so as not to affect the disposability of the drape.

SUMMARY OF THE INVENTION

The above and other beneficial objects and advantages are attained in accordance with the present invention by providing a disposable, surgical drape comprising a main sheet of nonwoven, cellulosic material having an enlarged opening therein. A sheet of plastic film material completely overlies the opening and is bonded to the main sheet along a bonding zone at the border of the main sheet opening. The plastic sheet includes at least one integral section which extends beyond the bonding zone. A surgical fenestration may be provided in the plastic sheet in any desired shape. The section of the plastic sheet extending beyond the bonding zone freely overlies the main sheet and provides convenient means to which an article, such as a suction line can be clamped without danger of

a resultant puncture and tearing of the sterile field defined by the main sheet and plastic sheet.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. 1 is a top plan view of a disposable, surgical drape in accordance with the present invention;

FIG. 2 is an enlarged sectional view taken along reference lines 2—2 of FIG. 1 in the direction indicated by the arrows;

FIG. 3 is a plan view of the present drape in the folded condition in which the drape is supplied to hospitals;

FIG. 4 is a simplified sectional view taken along reference lines 4—4 of FIG. 3 in the direction indicated by the arrows indicating the folding sequence for the present drape; and

FIG. 5 is a view similar to FIG. 4 taken along reference lines 5—5 of FIG. 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference is now made to the drawings wherein similar components bear the same reference numeral throughout the several views. In FIG. 1, the disposable drape 10 of the present invention is shown comprising a generally rectangular main sheet 12, plastic insert sheet 14, and absorbent pads 16, 18, 20 and 22. The main sheet 12 is formed of a nonwoven, cellulosic material such as Dexter 1433L or equivalent furnished by the C. H. Dexter Company of Hartford, Connecticut. This material is generally nonabsorbent, readily sterilizable, and possesses the other qualities required of a disposable drape.

A rectangular cutout is provided in the main sheet 12 and plastic sheet 14 overlies the entire cutout. The plastic sheet 14 is bonded to the main sheet 12 along a bonding zone 24 (made up of sections 24a, 24b, 24c and 24d) which comprises a narrow strip of the main sheet forming the periphery of the main sheet cutout. The plastic sheet extends beyond the bonding zone in both the head and foot directions and the remaining sides of the plastic sheet terminate at the associated portions of the bonding zone where they are bonded to the main sheet, namely 24a and 24c. The plastic sheet 14 is also bonded to the main sheet along zone portions 24b and 24d which are contiguous with portions 24a and 24c. Plastic sheet 14 includes an extension, section 26, that extends beyond bonding zone 24d in the foot direction, thereby overlying portions of the underlying main sheet 12. A suitable fenestration 28 is provided disposed generally centrally of plastic sheet 14. In this embodiment, the fenestration shown is rectangular, the shape of the fenestration, however, may vary and will be determined by the operative procedure for which the sheet is to be used. In some instances, a surgeon may prefer to make his own fenestration at the time the operation incision is made, in which case a solid plastic sheet may be provided.

Absorbent pad squares 16, 18, 20 and 22 each formed of a highly absorbent, nonwoven cellulosic material are provided about the periphery of the opening in main sheet 12. Each pad has a first edge 30 overlying an associated section of the bonding zone and an opposite edge 32 extending away from the main sheet

opening. The first edge 30 of each pad is bonded to the main sheet and plastic sheet along the corresponding portion of the bonding zone 24. By using a thermo plastic material such as polyethylene film for the plastic sheet 14, the pad and main sheet may be bonded to the plastic sheet in a single, heat sealing operation. The free edge 32 of pads 18, 20 and 22 is then glued to the main sheet 12 with a dab of a suitable adhesive or tape 34.

The free edge 32d of absorbent pad 16 is taped to the corresponding edge of section 26 of plastic sheet 14 in a manner similar to that employed for the other pads. Prior to fixing pads 16, 18, 20 and 22 to drape 10, each of the pads, which is generally square, is folded over upon itself once, with the fold line defining edge 30 and the original edges opposite the fold line. Of the original edges, each top edge 32 extends beyond the bottom edge 36. In the case of pad 16, a heat seal 38 is used to secure the bottom edge 36 of the folded pad to the plastic sheet section 26 and main sheet 12. The bottom edges of the remaining pads are not connected to the plastic sheet.

The plastic sheet extension 26 includes two projections 40 and 42 which extend beyond the bonding zone defined by heat seal 38 and which are not fixed to the main sheet 12. Two additional projections 44 and 46 of the plastic sheet extend generally diagonally, respectively, beyond the intersections of (1) bonding zones 24a and 24b and (2) bonding zones 24b and 24c. Projections 40, 42, 44 and 46 are each integral extensions of the plastic sheet and are not connected to portions of the main sheet that they overlie. These projections form convenient means by which auxiliary instruments such as a suction line 48 (shown in phantom) may be secured in position for use during an operation. In this connection, cutouts may be provided in the projections to receive the suction tube in the manner shown in FIG. 1 or, alternately, the suction line may be clipped to the projections without any danger of disturbing the sterile field should a clip accidentally puncture the projections.

The present surgical drape is furnished to hospitals in the form of a prefolded module. The drape is sterilized and packaged in a manner to protect its sterility during storage up to the time of use. The folded module is shown in FIGS. 3-5. As shown in these figures, the drape 10 is fan-folded inwardly from its longitudinal and transverse edges along fold lines 51 and 53 as indicated on FIG. 1 to produce a generally rectangular package. The module is designed so that the plastic insert sheet 14 appears at the bottom of the module 49 with the fenestration 28 visible when the drape is in the folded condition. This arrangement enables the surgeon to accurately position the fenestration over the area of the patient where the incision is to be made.

The drape may be unfolded while on the patient by undoing the fanfolds with the plastic sheet maintained in position with the fenestration overlying the required portion of the patient's body. To facilitate maintaining the sheet in position, a suitable, contact adhesive may be provided about fenestration 28. The adhesive should be covered with a release paper to preserve its tackiness until use. To further facilitate the placement of the drape, plastic insert 14 may comprise a clear plastic sheet.

In order to protect the sterility of the folded module, a removable sheet 50 of any suitable material is provided overlying the plastic insert 14 beneath the superimposed fanfolds. The dimensions of sheet 50 are such as to prevent it from uncovering fenestration 28 should it slide within the folded module during handling. Sheet 50 floats freely within the folded module and may be easily removed and discarded by the operating room nurse or surgeon during the patient draping procedure.

It should be understood that modification may be made in the illustrated and described embodiment of the present invention without departing from the invention as set forth in the accompanying claims.

Having thus described the invention, what is claimed is:

1. A disposable, surgical drape comprising a main sheet of nonwoven, nonabsorbent cellulosic material, an enlarged opening in said main sheet, a zone of said main sheet defined by the portions of said main sheet surrounding said opening, a sheet of plastic material completely overlying said enlarged opening, bonding means connecting said entire zone to the portions of said plastic sheet overlying said zone, wherein said plastic sheet includes at least one integral section defining a projection extending beyond said zone away from said main sheet opening, said section being free from connection to the portions of the main sheet that it overlies.

2. The disposable surgical drape in accordance with claim 1, wherein said main sheet is formed of a nonabsorbent, cellulosic material and further comprising at least one absorbent pad formed of an absorbent cellulosic nonwoven material overlying portions of said main sheet, said pad having a first edge overlying portions of said zone, an edge opposite said first edge extending away from said main sheet opening, and means bonding said first edge to both said plastic sheet and said main sheet zone.

3. The disposable, surgical drape in accordance with claim 2 wherein said pad overlies portions of said plastic sheet section and said plastic sheet projection extends beyond said pad opposite edge.

4. The disposable, surgical drape in accordance with claim 2 further comprising a plurality of pads disposed about said opening, each of said pads including a first edge overlying a portion of said zone and an edge opposite said first edge extending away from said opening.

5. The disposable, surgical drape in accordance with claim 1 further comprising a surgical fenestration disposed generally centrally within the portion of said plastic sheet overlying said main sheet opening.

6. The disposable, surgical drape in accordance with claim 3 wherein said zone defines a hollow rectangle having a top, sides, and a bottom, additional bonding means spaced below said zone bottom for a distance equal to the distance between the first edge and opposite edge of said pad, said plastic sheet is generally rectangular in shape and sufficiently large to overlie said entire zone, and said plastic sheet projection comprises at least one integrally formed tab extending beyond the edge of said plastic sheet designed to overlie said additional bonding means.

7. The disposable, surgical drape in accordance with claim 6 comprising a pair of tabs at opposite sides of said plastic sheet edge.

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8. The disposable surgical drape in accordance with claim 7 wherein each of said tabs has a suction tube receiving opening therein.

9. The disposable, surgical drape in accordance with claim 4 wherein said bonding zone comprises a generally hollow rectangle having a top, sides, and bottom; four pads are provided each bonded to one of said

zone sides, top or bottom, and said plastic sheet projection comprises at least one integrally formed tab projecting diagonally outwardly from said plastic sheet whereby said tab overlies a portion of said main sheet between two adjacent pads.

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