

Dec. 26, 1967

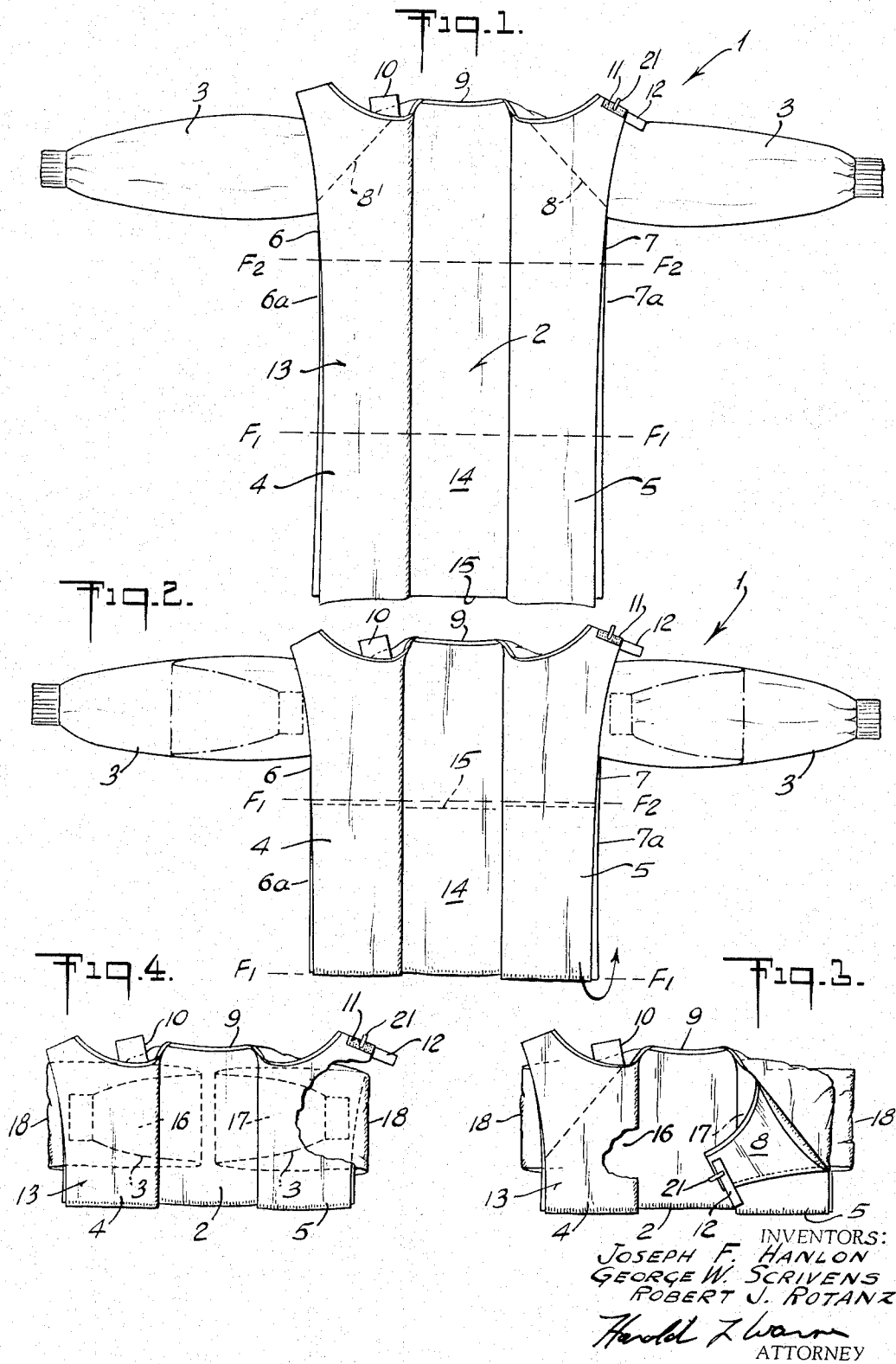
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3,359,569

SURGICAL GOWN

Filed April 12, 1966

4 Sheets-Sheet 1



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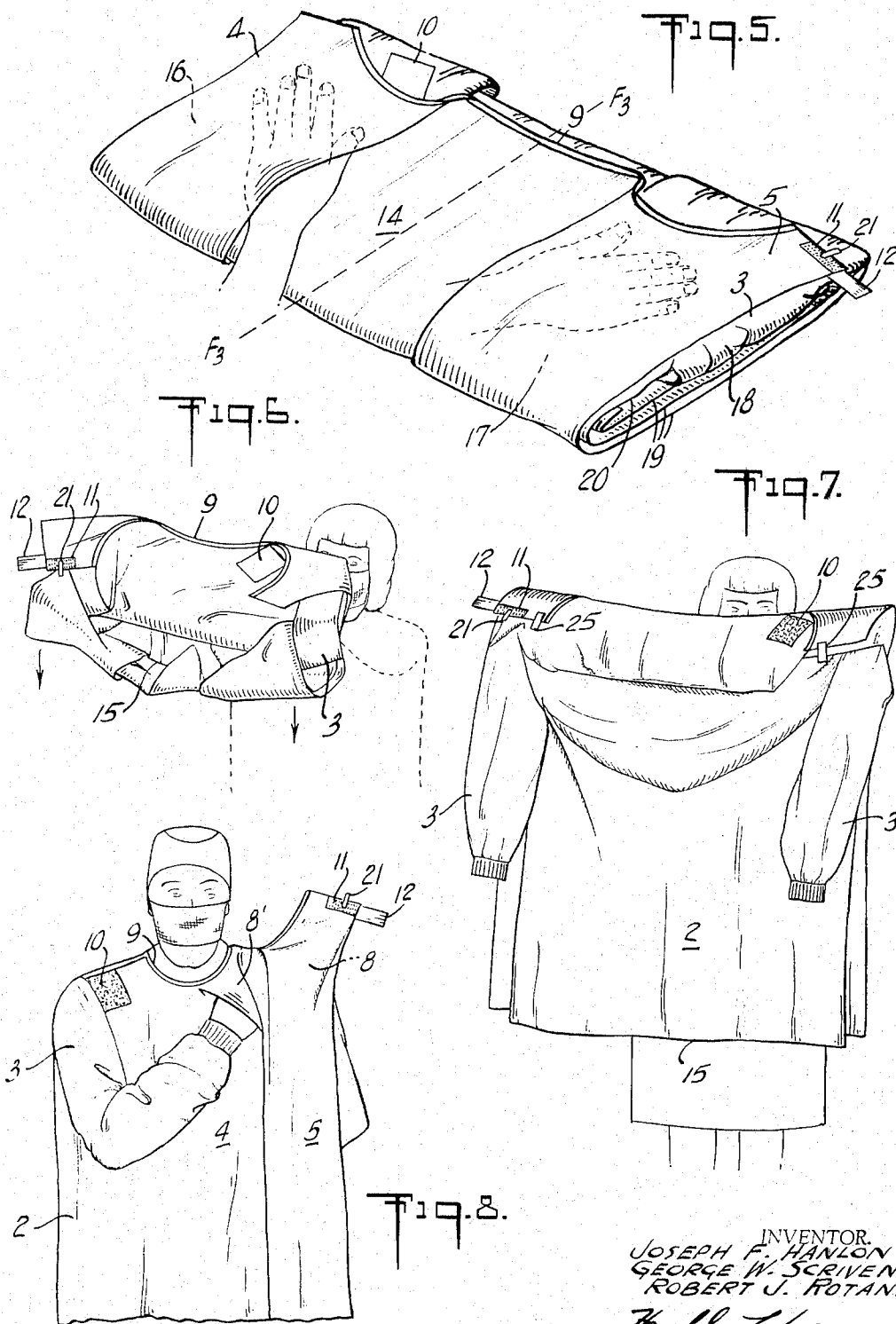
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SURGICAL GOWN

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Fig. 9.

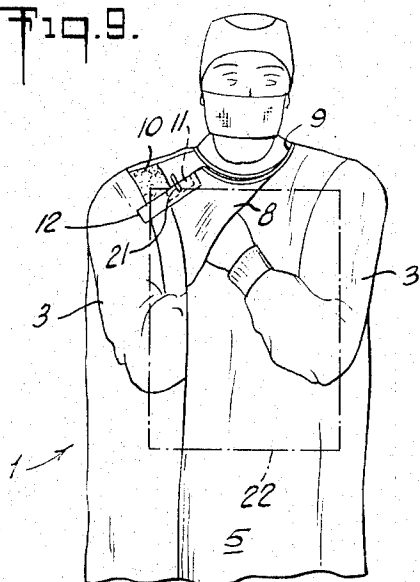


Fig. 10.

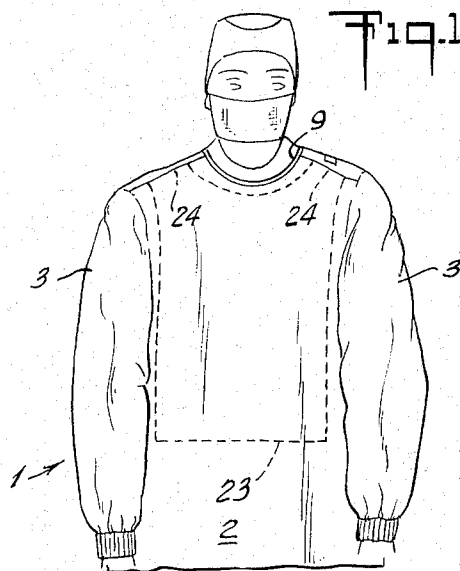
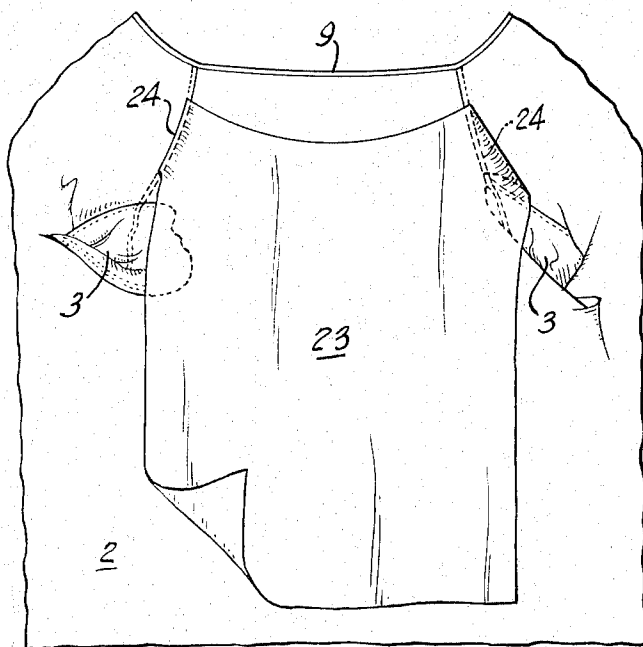


Fig. 11.



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Fig. 15.

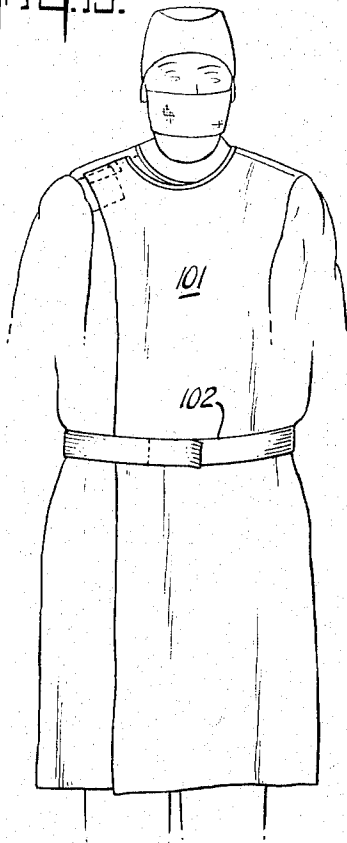


Fig. 12.

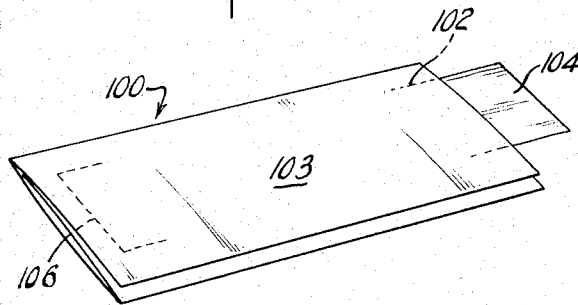


Fig. 13.

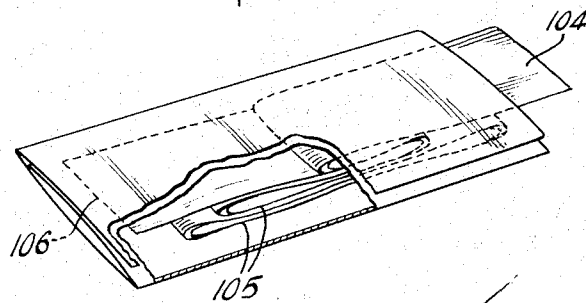
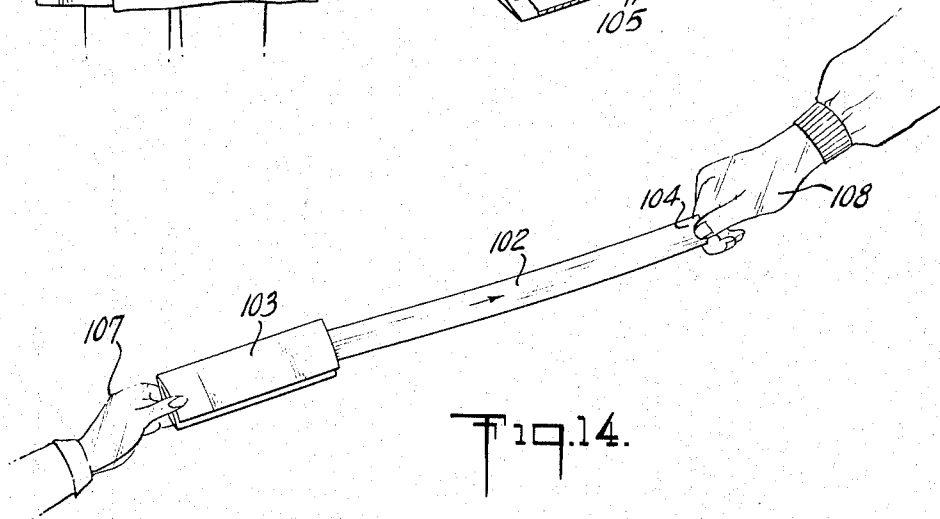


Fig. 14.

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3,359,569

SURGICAL GOWN

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16 Claims. (Cl. 2—114)

This invention relates to surgical gowns and the like and in particular to surgical gowns designed to facilitate the aseptic gowning of operating room personnel and to minimize the passage of fluids through the gown.

The surgeon's sterile gown plays an important role in surgical procedures, the same functioning to prevent contamination of the patient, surgical instruments, and other personnel through contact with the wearer and to prevent the underclothes of the wearer from becoming saturated with blood and other fluids. Surgical gowns of prior design have been inadequate in a number of ways.

First, in most hospitals, the conventional sterilized back closing surgical gown is folded in such a way that essentially only interior surfaces of the gown face outward when the folded gown is placed on a utility table, however, the gown is not otherwise folded with a view toward aseptic application. The nonsterile circulating nurse in attempting to open the gown while grasping only internal surfaces of the same must carefully chose the proper hand grasping positions, thus consuming valuable time, to insure that as the gown falls open she will not inadvertently touch exterior surfaces of the same. In addition, when the nurse grasps the proper interior surfaces of a gown folded in this conventional manner and lifts it from the table to hold it for the surgeon to insert his arms into the sleeves, it unfolds and portions of the gown may fall below waist and/or table level, these portions then being deemed to be contaminated.

Second, surgical gowns, as indicated above, have been generally the back closing type, the same usually being closed by virtue of drawstrings or the like which are tied by the circulating nurse. Since the circulating nurse is nonsterile, the portion of the gown adjacent the drawstrings, and the drawstrings themselves, are considered contaminated. Frequently during operations, a surgeon may back into one of his associates thus causing the front and critical portion of the associate's gown to become contaminated. In order to avoid this contamination, it has been suggested to drape a bib over the back of the surgeon's gown to cover the contaminated area, the bib being secured by strings tied in the front of the surgeon by the surgeon. However, this is time consuming and adds to the discomfort of the surgeon.

Third, surgical gowns usually have been designed for use in conjunction with a belt brought about the midsection to insure a snug fit for persons of different size and to prevent billowing of the gown during surgery. These belts are usually tightly rolled, to prevent the belt from touching nonsterile surfaces during the gowning procedure, and permanently attached to the back of the gown. The surgeon must therefore reach around his back to grasp the belt, bring it to his front and then secure the same. Since the back of the gown has previously been considered to be nonsterile for the reasons noted above, it is undesirable for the surgeon to reach around behind his back. If such a belt is positioned on the front of the surgical gown, it is still necessary to pass the same around behind the surgeon again causing contamination of the same either by the surgeon reaching behind his back or by the circulating nurse touching the belt.

Fourth, surgical gowns have generally been made from materials which are not fluid repellent and have had only

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a single thickness of material in the central front area of the gown. During surgery the gowns become saturated with blood and this blood is wicked through the single layer of nonrepellent material wetting the underclothes and the skin of the surgeon. Microorganisms present on the skin of the surgeon or his underclothes may then be carried outward through the capillary channels to the surface of the gown thus contaminating the same.

It is therefore one object of this invention to provide a surgical gown folded so that it may, with certainty, be lifted from a utility table as a unit without unfolding while grasping only interior surfaces of the gown and without inadvertently touching any exterior surfaces, and which may subsequently be opened by a simple motion such as shaking, and in particular a folded gown in which the proper hand grasping areas are defined by a plurality of pockets on the outer surface of the folded unit.

It is a second object of this invention to provide a gown which may be quickly put on the surgeon and closed without requiring the touching of any exterior surfaces of the gown by unsterile personnel and further to provide a gown which the surgeon may secure himself.

It is a third object of this invention to provide a folded belt unit which may be temporarily secured to the surgical gown so that it will not drop to the floor when the gown is opened but which can be removed from the gown and put on without the surgeon reaching behind his back and without the circulating nurse touching any part of the sterile gown or belt.

It is a fourth object of this invention to provide a surgical gown having a double layer of fluid repellent material in the central operative field, the layers preferably being secured together only outward of the central operative field to avoid needle holes in the central operative field.

According to this invention, surgical gowns are provided which eliminate the problems hereinbefore discussed and fulfill these objectives. The design of these gowns will be best understood by reference to the accompanying drawings and following descriptions in the drawings.

FIG. 1 is a plan view of a front closing surgical gown of this invention additionally showing the first step in folding the gown;

FIG. 2 shows the second and third steps of folding the gown illustrated in FIG. 1;

FIG. 3 is a plan view of the gown after the folding has been completed;

FIG. 4 is another plan view of the folded gown showing particularly the position and function of the sleeves in the fold;

FIG. 5 is a view in perspective of the folded gown illustrating the proper positioning of the hands prior to lifting the gown from the table;

FIG. 6 illustrates the folded gown after it has been lifted from the table;

FIG. 7 illustrates the surgical gown after it has been opened and prior to its being put on by the surgeon;

FIG. 8 illustrates the first step in closing the front closing gown shown in FIG. 1;

FIG. 9 illustrates the final step in the gowning procedure;

FIG. 10 is a front exterior plan view of a back closing surgical gown incorporating the feature of this invention;

FIG. 11 is an interior plan view of the front portion of the gown of FIG. 10;

FIG. 12 is a view in perspective of a belt unit for use in conjunction with the gowns of FIG. 1 and FIG. 10;

FIG. 13 is another view of the belt unit showing the manner in which the belt is folded;

FIG. 14 illustrates the method of using the belt unit of FIG. 12;

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FIG. 15 shows the belt of FIG. 12 in use with a gown of this invention.

Referring now specifically to FIG. 1 there is illustrated a front closing surgical gown 1. The gown comprises a main sheet 2 and sleeves 3 integrally fastened thereto, the main sheet 2 having back portion 14 with side edges 6a and 7a and front portion 13 having left and right flaps 5 and 4 with generally longitudinally extending edges 6 and 7. A pair of pockets 8 and 8' are located adjacent the neck band 9 and edges 6 and 7. One portion 10 of a pressure sensitive closure is secured to one shoulder of the gown and the second portion 11 of the pressure sensitive closure is secured to the interior surface of left flap 5 underlying pocket 8. A tab 12 is detachably secured by virtue of steel clip 21 to the outer surface of the left flap 5 at the edge of pocket 8 and overlying the closure 11.

In folding the gown, left flap 5 and right flap 4 are folded back and outward upon themselves as shown in FIG. 2 so as to essentially overlie side edges 6a and 7a and so that only interior surfaces of the flaps are exposed.

The bottom 15 of the gown is folded upward upon itself first along fold line F1 and then along fold line F2, as shown in FIGS. 2 and 3 to form a series of underlying folds 19, best seen in FIG. 5. The sleeves 3 are folded in half inward and are tucked between two of the underlying folds 19 as shown most clearly in FIGS. 4 and 5.

Referring now specifically to FIG. 5, by virtue of this folding, a pair of pockets 16 and 17 are formed on the top surface of the folded unit and, except for areas 18 along the top of the sleeves, only interior surfaces of the folded gown are exposed. Thus, the circulating nurse may insert her hands into the pockets as shown in FIG. 5 without any danger of touching exterior surfaces of the gown and may lift the entire unit high above the supporting table as shown in FIG. 6 without the same becoming unfolded, the sleeves 3 serving to secure the underlying folds 19 to the top 20 of the gown. By shaking the folded unit, the nurse may cause sleeves 3 to fall out from its tucked position and the gown to open as shown in FIG. 7.

In some cases, it may be desirable to provide a gown which may be lifted from the table without unfolding but which may be subsequently opened without shaking. In this case the sleeves 3 would be tucked between the top 20 of the gown and the set of underlying folds 19 instead of between a pair of the underlying folds 19, and the folded unit shown in FIG. 5 further folded in half backward on itself along fold line F3 so that the pockets 16 and 17 are on opposing sides of the folded unit.

Once the gown is unfolded, various alternate procedures are suitably followed. In the case of the front opening gown illustrated, the nurse may hold the gown as shown in FIG. 7 while the surgeon inserts his right arm into the right sleeve and then move out of the way of the surgeon by holding the tab 12 while the surgeon puts his left arm into the left sleeve. In order to prevent the overlying portions of the flaps 4 and 5 from falling outward, these portions should be detachably secured to the remainder of the gown as by the piece of tape 25.

This fold may also be used in conjunction with gowns other than front closing gowns. In the case of a back closing gown, the gown wearer would perform the functions performed by the nurse in FIGS. 5 through 7. The surgeon would insert his hands in the pockets 16 and 17 as shown in FIG. 5, lift the gown from the table, and shake the same to cause it to open as shown in FIGS. 6 and 7, and then being in the same position as the nurse shown in FIG. 7, would slip his arms into the sleeves.

Once the surgeon has inserted his arms in the sleeves, other advantages of the gown design become important. Referring again to the front opening gown and particularly to FIG. 8, the surgeon, being in a sterile condition, may place his gloved hands within the pockets 8 and 8',

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slip the right flap 4 under the left flap 5 and press the portion 11 of the pressure sensitive closure underlying the pocket 8 against portion 10 of the closure, this latter step being shown in FIG. 9.

If the gown is to be closed by an assistant rather than by the wearer, the assistant may place one hand in the pocket 8' on the right flap 4, slip the same under the left flap 5 as the wearer is doing in FIG. 8, and then grasp the tab 12 on the left flap 5 and pull the left flap 5 across the right flap 4 contacting the two portions 10 and 11 of the pressure sensitive closure. Since the area surrounding pocket 8' is an underlying surface, the nonsterile nurse may properly touch the same. The tab 12 as previously mentioned is detachably secured to the gown by virtue of clip 21 so that a small force in the plane of flap 5 after the gown has been closed will separate the contaminated tab from the gown.

The tab 12 preferably consists of the folded belt unit 100, illustrated in FIGS. 12 through 14, for use in conjunction with the wearing of the gown, the belt 102 being folded into a compact unit and enclosed in a sterile overwrap 103. By attaching the belt which is to be used in conjunction with the gown to the gown itself, there is little danger of the belt falling to the floor when the package is opened, and the nurse or surgeon may grasp the belt tab and remove the same in essentially the same motion as that used for closing the gown.

By virtue of the pocket, tab and underlying closure, the gown illustrated and described may be put on without touching any exterior portion of the gown. The drawstrings used on conventional gowns and the tying of the same drawstrings in the back of the gown and the resultant contamination of the gown are eliminated, the particular gown shown being optionally aseptically closed either by the surgeon himself or by an assistant.

The pockets 8 and 8' and/or the tab 12 and the closure 10 and 11 need not be positioned in the upper corner of the front flaps 4 or 5 of the gown although this positioning best facilitates the aseptic closing of the gown. A number of pockets and/or tabs and closures may be provided vertically so that the gown may be secured at a number of positions. A number of closures or pockets may also be provided horizontally to enable simple aseptic adjustment of the girth of the gown.

While use of pockets and/or tabs and closures has been described and illustrated with respect to a front closing gown, these inventive concepts may be incorporated into a back or side closing gown. In the case of a back closing gown, the pockets would suitably be eliminated, since it would be impossible for the surgeon to close the gown himself and since it is not desirable for the nonsterile nurse to touch the exterior surfaces to the gown. The aseptic closing of the back of the gown would therefore be suitably accomplished through the use of a tab and a pressure sensitive closure placed on the left and right back flaps in a manner similar to those in the front closing gown.

Preferably the gown should be made of a material which is relatively fluid repellent and is particularly suitably made of a laminated scrim reinforced nonwoven material so that they are economically disposable. In addition to the advantages of the gown design thus far described, when the front closing gown of FIGS. 1 through 9 is worn as illustrated in FIGS. 8 and 9, the left front flap 5 underlies the right front flap 4, thus a double thickness of this repellent material is provided in the central operative field 22 of the gown thus providing two independent barriers to the passage of blood or other fluids through the gown. Because of the abrasion forces to which the central area of the gown is subjected, one layer of material, even though repellent, is not sufficient to prevent the passage of fluid through this central area of the gown, the abrasion reducing its repellency. Since the two overlapping portions 4 and 5 are not secured together within the central operative field 22 of the gown

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by sewing or the like and since both portions 4 and 5 are made from continuous sheets of material, there are no thread holes through which fluid may pass.

In the case of a gown which is not double breasted in front, such as a back closing gown, the double thickness of repellent material is suitably provided as shown in FIGS. 10 and 11. An anterior bib 23 underlies the main sheet 2 in the central operative field and is secured by sewing to the main sheet 2 along the seam 24 between the sleeves 3 and the main sheet 2, no needle holes being present within the central field.

Referring now to FIGS. 12 through 15, there is shown the novel belt unit 100 for use with the surgical gown 101. The belt 102 is of generally elongated rectangular shape and is fan-folded to form a series of looped folds 105, stacked one on top of another. By fan-folded it is meant that each individual fold is independent of any other fold and the belt may be unfolded by pulling on one end without disturbing the position of any of the remaining folds.

The folded belt 102 is contained in the sterile overwrap 103. One end 104 of the belt extends beyond the stacked folds 105 and also projects outward from the sterile overwrap 103. The second end 106 of the belt also extends past the stacked folds 105 but is contained within the sterile overwrap 103.

Referring now to FIG. 14, when it is time for the surgeon to put on the belt, the nurse 107 suitably grasps the overwrapped unit at one end so as to have a firm grip on end 106 of the folded belt 102. The potential belt wearer 108, being in a sterile condition, then may grasp the projecting end 104 of the belt. The assistant may then walk around the wearer, thus causing the fan-folded belt to unfold and be extended around the surgeon. Upon the assistant again reaching the starting point, the surgeon may then grasp the belt with his other hand at the point where it projects outward from the sterile overwrap and may remove this final short section from the overwrap and secure the belt. By virtue of this procedure, it is not necessary for any nonsterile personnel to touch any portion of the belt or gown and it is not necessary for the surgeon to reach around behind his back.

Specific embodiments of the inventive concept have been described, however, the same should not be construed to limit the invention which is limited only by the appended claims.

What is claimed is:

1. A surgical gown comprising a main sheet and sleeves connected integrally thereto;

said main sheet having a central operative field, said surgical gown additionally comprising a sheet of fluid repellent material underlying essentially the entire central operative field of said main sheet and being secured to said main sheet only outward of the central operative field to provide a second independent barrier to the passage of blood and exudate through that portion of the gown;

said main sheet comprising a back portion and a front portion which in turn comprises left and right flaps, said left flap and said right flap of said front portion overlapping when said gown is worn, said surgical gown additionally comprising a closure interposed between said right flap and said left flap when the gown is worn and secured to at least one of said right flap and said left flap, and means to facilitate aseptic closing of said gown secured to the outer surface of the overlapping one of said flaps in proximate relation to said closure;

said left flap and said right flap of said front portion being folded outward upon themselves, the bottom of said gown being folded backward and upward a plurality of times to form a plurality of underlying folds, and said sleeves being tucked between a pair of said underlying folds to secure the underlying folds to the top of said gown;

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said surgical gown additionally comprising a folded belt for use in conjunction with said gown detachably secured to said main sheet, said belt being of generally elongated rectangular shape and being fan-folded upon itself longitudinally a plurality of times, said folds being stacked one on another, said folded belt unit further comprising an overwrap, one end portion of said belt projecting from said overwrap so that it may be gripped by a wearer, said opposite end portion of said belt being contained within said overwrap and extending outward of said stacked folds so that it may be grasped by the wearer's assistant through said overwrap.

2. A folded surgical gown comprising a main sheet and sleeves integrally fastened thereto, said main sheet comprising a back portion and a front portion comprising left and right flaps, said left flap and said right flap of said front portion being folded outward and backward upon themselves, the bottom of said gown being folded backward and upward a plurality of times to form a plurality of underlying folds, whereby a folded surgical gown is provided in which a plurality of pockets are present on its outer face in which a person's hands may be inserted to lift said gown from a supporting surface and which are eliminated when the gown is opened.

3. A folded surgical gown of claim 2 which is additionally folded backward upon itself along a line lying between said pockets so that said pockets are on opposing sides of the folded unit, and in which said sleeves are tucked between the top of said gown and said underlying folds, whereby a folded gown is provided which may be lifted from a supporting surface by virtue of said pockets without the gown unfolding.

4. A surgical gown of claim 2 in which said sleeves are tucked between a pair of said underlying folds to secure said folds to the top of said gown whereby a folded gown is provided which may be lifted from a supporting surface by virtue of said pockets without the gown unfolding.

5. The folded surgical gown of claim 2 in which said left flap and said right flap of said top portion essentially overlie the left and right side edges of said back portion respectively, and in which the top edge of said gown overlies at least one of said underlying folds, by virtue of which a folded surgical gown is provided in which essentially only interior surfaces of the gown are exposed.

6. The folded surgical gown of claim 2 additionally comprising a tab detachably secured to at least one of said right flap and said left flap of said front portion to facilitate the aseptic handling of said gown.

7. A surgical gown comprising a main sheet, said main sheet being divided along essentially its entire vertical length to define a left flap and a right flap and a pair of generally longitudinally extending edges, said right flap and said left flap overlapping when said gown is worn; said surgical gown additionally comprising a closure interposed between said right flap and said left flap when the gown is worn and secured to at least one of said right flap and said left flap, and means to facilitate aseptic closing of said gown secured to the outer surface of the overlapping one of said flaps in proximate relation to said closure, whereby a surgical gown is provided which may be rapidly aseptically closed.

8. A surgical gown of claim 7 in which said closure is a pressure sensitive closure and in which said closure is secured to said flap in proximate relation to the generally longitudinally extending edge of said overlying flap and to the top of said gown.

9. A surgical gown of claim 8 in which said means to facilitate aseptic closing of the gown is a tab detachably secured to said flap so that it may be disconnected therefrom during the closing of said gown, whereby a gown is provided which is designed primarily to be aseptically closed by an assistant to the wearer.

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10. A surgical gown of claim 9 in which said tab comprises a folded overwrapped belt designed for use in conjunction with the wearing of said gown.

11. A surgical gown of claim 8 in which said means to facilitate aseptic closing of the gown is a pocket adapted to receive a person's hand, whereby a gown is provided which is designed primarily to be aseptically closed by the wearer.

12. The surgical gown of claim 11 additionally comprising a pocket adapted to receive a person's hand on the outer surface of the underlying one of said flaps.

13. A surgical gown of claim 11 additionally comprising a tab detachably secured to said overlying flap in proximate relation to said pressure sensitive closure.

14. A surgical gown comprising a main sheet having a central operative field and sleeves integrally fastened to said main sheet only outward of said central operative field, said main sheet being fluid repellent within said central operative field, said surgical gown additionally comprising a sheet of fluid repellent material underlying essentially the entire central operative field of said main sheet and being secured to said main sheet only outward of the central operative field, whereby a surgical gown is

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provided having at least a double thickness of repellent material in the central operative field of the gown which provides separate and independent barriers to the passage of blood and exudate through that portion of the gown.

15. A surgical gown of claim 14 in which said main sheet comprises a front portion and a back portion, said front portion comprising a left flap and a right flap, one of said right flap and said left flap overlying the other of said flaps throughout essentially the entire central operative field of said gown.

16. A surgical gown of claim 14 in which each of the underlying sheet and the central operative field of said main sheet comprises a single continuous sheet of material.

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