United States Patent [19]

Hartigan

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[45] **Feb. 12, 1974**

[54] **VENTED OPERATING ROOM GOWN**

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[73] Assignee: **The Kendall Company,** Walpole, Mass.

[22] Filed: **Nov. 22, 1971**

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[52] **U.S. Cl.** **2/114,** 2/DIG. 1, 2/DIG. 7

[51] **Int. Cl.** **A41d 13/00**

[58] **Field of Search** ..... 2/2.1 R, 2.1 A, 85, 87, 93, 2/97, 114, 115, DIG. 1, DIG. 3, DIG. 4, DIG. 5, DIG. 7

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Attorney, Agent, or Firm—Powell L. Sprunger

[57] **ABSTRACT**

An improved operating room gown of the type which has a front and a back for covering the front and back portions of a user's body, and in which sterile fields are associated with the outside of the gown front and the outside of the gown back generally intermediate the shoulders and the waist of the gown. The gown has means for ventilating the inside of the gown with air, while preventing contamination of the sterile fields from the ventilating air.

7 Claims, 4 Drawing Figures

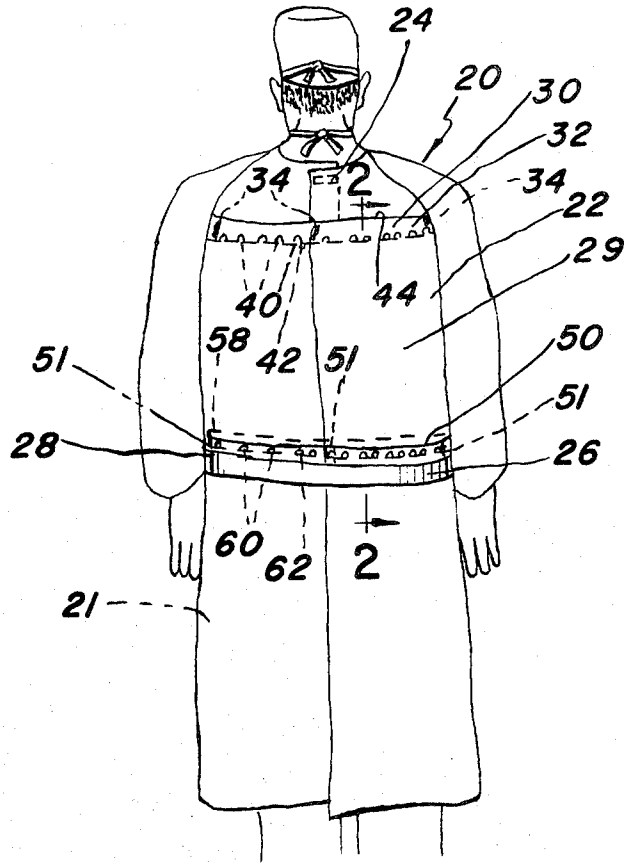
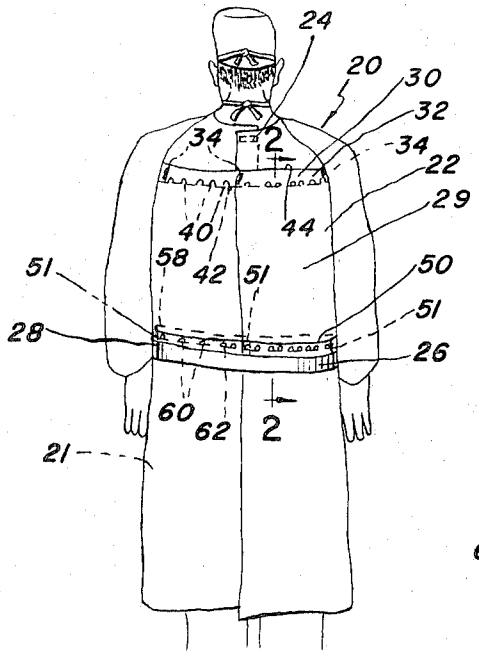


FIG. 1



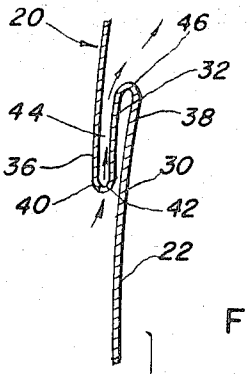


FIG. 2

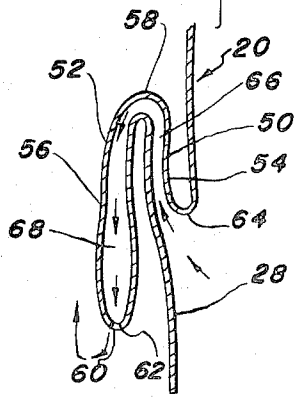


FIG. 3

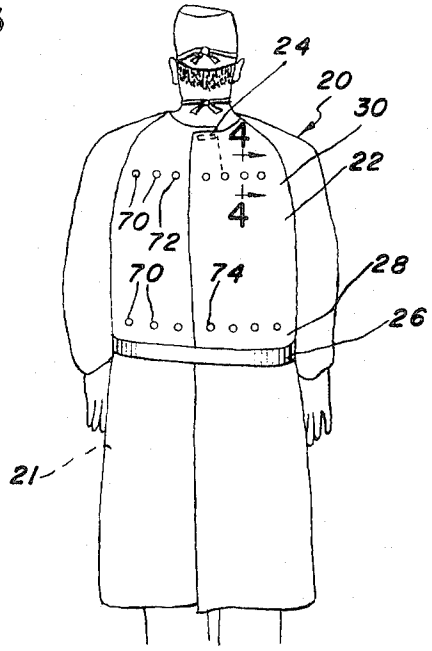
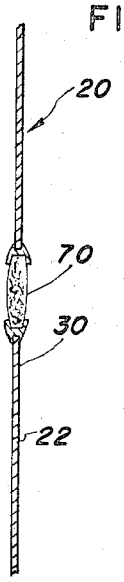


FIG. 4



VENTED OPERATING ROOM GOWN

BACKGROUND OF THE INVENTION

The present invention relates to operating room gowns.

At the present time, surgical gowns are usually made from either woven cloth or nonwoven fabric, and generally the nonwoven fabrics and many of the woven materials which are specifically designed for use in operating room gowns are constructed to have a high degree of liquid repellency in order to prevent liquid from wetting the gown which provides a medium for passage of bacteria. Although liquid repellent materials are desirable for operating room gowns, an undesirable characteristic of such materials is that they are far less permeable to air than non-repellent materials. Consequently, when such gowns are worn, air is retained inside of the gown causing a build-up of body heat between the gown and the wearer's body, and profuse perspiration of the wearer. Not only is this uncomfortable to the wearer, but the perspiration may wet through the gown and become a source of bacterial penetration from the body through the gown. Also, the gown may be partially destroyed by the perspiration in certain areas of the body, such as under the arms.

SUMMARY OF THE INVENTION

The improved gown of the present invention is of the type which includes a front and a back for covering the front and back portions of the user's body, and in which sterile fields are associated with the outside of the gown front and the outside of the gown back generally intermediate the shoulders and waist of the gown.

A feature of the present invention is the provision of means for ventilating the inside of the gown with air.

Another feature of the invention is that the ventilating means prevents contamination of the sterile fields from the ventilating air, which is contaminated due to contact with the wearer's body.

Further features will become more fully apparent in the following description of the embodiments of this invention and from the appended claims.

DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a perspective view of the back of an improved gown of the present invention;

FIG. 2 is a fragmentary sectional view taken substantially as indicated along the line 2—2 of FIG. 1 of ventilating means for the gown;

FIG. 3 is a perspective view from the back of another embodiment of the improved gown of the present invention; and

FIG. 4 is a sectional view taken substantially as indicated along the line 4—4 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. 1, a sterile operating room gown designated generally 20 is shown having a front 21 and a back 22 for covering the front and back portions of a wearer's body, respectively, at least between the wearer's shoulders and waist. The gown 20 may be of the type which closes at the back, as shown, preferably with a 5 or 6 inch overlap at the back to provide a complete sterile barrier around the wearer's body. The gown may be attached to the body of the wearer by fastening means 24 at the top of the gown back 22 and by a belt 26 at the waist 28 of the gown.

Due to the criticality of preventing contamination to the patient's body during operating room procedures, the gown is defined as having sterile fields which must be maintained in an aseptic condition during the operation. One of these fields is associated with the front 21 of the gown, and another such field 29, is associated with the back 22 of the gown 20 generally intermediate the shoulders 30 and the waist 28 of the gown. The region of the gown back 22 below the waist 28 is below the operating table, and may be considered a non-sterile area, as well as the region generally above the shoulders 30 on the gown back toward the neck of the wearer.

As illustrated in FIGS. 1 and 2, a transverse tuck 32 is secured in the shoulders 30 of the gown back 22 by suitable means, such as adhesive 34. The tuck 32 has a first downwardly directed inner fold 36, and a second upwardly directed outer fold 38 extending from the inner fold 36. The tuck 32 has a plurality of apertures 40 which are transversely located in the tuck adjacent a fold line 42 at the lower end of the inner fold 36. Thus, as indicated by the direction of the arrows in FIG. 2, air is permitted to pass from inside the gown through the apertures 40 into a pocket 44 defined by the tuck 32, and from the pocket 44 out of the tuck adjacent a fold line 46 at the top of the outer fold 38. Consequently, air from the inside of the gown, which may be contaminated due to contact with the wearer's body or clothes, is directed upwardly by the tuck 32 toward the neck of the wearer in a non-sterile area of the body and gown and away from the sterile field 29, in the same direction as air may be exhausted from the neck opening of conventional gowns. Thus, the invention provides improved ventilation in the upper back or shoulder portion of the gown without sacrifice in sterility of the sterile field at the back of the gown as desired by present practices.

The gown also has a transverse convolution 50 adjacent the gown waist 28 which serves as ventilating means, and which may be secured in the gown 20 by suitable means such as adhesive 51. The convolution 50 includes a transverse inward tuck 52 in the gown, which has a first portion 54 extending from the outside of the gown 20 and directed upwardly inside the gown, and which has a second end portion 56 folded downwardly inside the gown along a fold line 58 separating the first and second tuck portions 54 and 56, such that the second tuck portion 56 underlies the first tuck portion 54. The convolution 50 has a plurality of apertures 60 transversely located in the tuck 52 adjacent a fold line 62 at the lower end of the second tuck portion 56.

Thus, as indicated by the direction of the arrows in FIG. 2, air is permitted to pass from the outside of the gown past a fold line 64 at the outer end of the first tuck portion 54, into a first pocket 66 in the first tuck portion 54, from the first pocket 66 into a second pocket 68 in the second tuck portion 56, and from the pocket 68 through the apertures 60 into the inside of the gown 20. If air flows backward from the convolution 50 to the outside of the gown, the air is directed downwardly by the first tuck portion onto the lower part of the gown back 22, which is a non-sterile region of the gown. Thus, again the invention provides for the direction of exhaust air away from the sterile field to prevent contamination thereof by direct contact with

the exhaust air coming from the vent opening. As the temperature of the air inside the gown raises, the warm air rises inside the gown from the convolution **50** toward the tuck **32** adjacent the gown shoulder **30**, and eventually passes through the tuck **32** to the outside of the gown. Accordingly, air is circulated from the convolution **50** to the tuck **32** in order to ventilate the inside of the gown. Further, movement of the wearer causes flexing in the tuck **32** and convolution **50**, and results in a pumping action in the tuck and convolution to accelerate the flow of air into and out of the gown.

Another embodiment of the ventilating means is illustrated in FIGS. **3** and **4**, in which a plurality of air permeable filter elements **70** are secured to the gown. Preferably, the filter elements **70** are arranged in rows transversely across the back **22** of the gown, with one row being located adjacent the shoulders **30** of the gown and another row adjacent the waist **28** of the gown, as shown. The filter elements **70** permit the ingress and egress of air through the gown to ventilate the inside of the gown, while filtering the air to prevent contamination of the sterile fields from air passing out of the gown. Examples of materials which may be utilized for the filter elements are the following: a high-count tightly woven cloth, such as cotton; an open cell urethane foam; a woven fiberglass fabric with a teflon coating; and, a spun bond fabric. The filter materials have a greater porosity than the gown fabric itself, in order that the filters permit the passage of air more readily than the gown material.

In the first embodiment of the ventilating means, as shown in FIGS. **1** and **2**, air may pass directly from the inside to the outside of the gown without being filtered. Although this embodiment of the ventilating means may be located on the front of the gown, it is preferably located on the back of the gown since the gown front may face the site of an operation. However, since the filter elements **70** in the second embodiment of the ventilating means, as shown in FIGS. **3** and **4**, filter the air passing from the gown, this embodiment of the ventilating means may be located on the front of the gown. Also, filter elements may be placed in the tuck and convolution apertures **40** and **60** of the ventilating means of FIGS. **1** and **2**, to filter the air passing out of the gown and insure the integrity of this ventilating means when placed on the front of the gown.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, as modifications will be obvious to those skilled in the art.

I claim:

1. An improved operating room gown of the type wherein the gown includes a front and a back for covering the front and back portions of a user's body at least between the shoulders and waist of the user, and wherein sterile fields are associated with the outside of the gown front and the outside of the gown back generally intermediate the shoulders and waist of the gown, wherein the improvement comprises, means for ventilating the inside of the gown with air and preventing contamination of the sterile fields by direct contact with air ventilated from inside to the outside of the gown, said ventilating means comprising a plurality of air permeable filter elements secured to the gown and arranged in a plurality of rows transversely across the back of said gown, one of said rows being located adjacent the shoulders of the gown and another row being located adjacent the gown waist on the back of the gown.

2. The gown of claim **1** wherein said tuck is located adjacent the gown shoulders.

3. The gown of claim **2** wherein said tuck is located on the gown back.

4. An improved operating room gown of the type wherein the gown includes a front and a back for covering the front and back portions of a user's body at least between the shoulders and waist of the user, and wherein sterile fields are associated with the outisde of the gown front and the outside of the gown back generally intermediate the shoulders and waist of the gown, wherein the improvement comprises, means for ventilating the inside of the gown with air and preventing contamination of the sterile fields by direct contact with air ventilated from inside to the outside of the gown, said ventilating means comprising a transverse tuck in the gown, said tuck having a first downwardly directed inner fold, a second upwardly directed outer fold slightly spaced from the gown, and a plurality of apertures transversely located in the tuck adjacent the lower end of the inner fold.

5. An improved operating room gown of the type wherein the gown includes a front and a back for covering the front and back portions of a user's body at least between the shoulders and waist of the user, and wherein sterile fields are associated with the outside of the gown front and the outside of the gown back generally intermediate the shoulders and waist of the gown, wherein the improvement comprises, means for ventilating the inside of the gown with air and preventing contamination of the sterile fields by direct contact with air ventilated from inside to the outside of the gown, said ventilating means comprising a transverse inward convolution is said gown, said convolution including a transverse inward tuck in the gown having a first portion extending from the outside of the gown and directed upwardly inside the gown, a second end portion directed downwardly inside the gown and underlying the first tuck portion, the first and second tuck portions being separated by an upper fold, and a plurality of apertures transversely located in the tuck adjacent the lower end of the second tuck portion.

6. The gown of claim **5** wherein said convolution is located adjacent the gown waist.

7. The gown of claim **6** wherein said convolution is located on the gown back.

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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,790,964

DATED : February 12, 1974

INVENTOR(S) : EDWARD G. HARTIGAN

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

Column 4, Claim 2, line 1, change "1" to -- 4 -- .

Column 4, line 45, change "is" to -- in -- .

Signed and Sealed this

sixteenth Day of *December 1975*

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks