

[54] OPERATING ROOM GOWN BELTING MEANS

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[52] U.S. Cl.2/114, 206/63.2

[51] Int. Cl.A41d 9/00

[58] Field of Search2/114; 206/63.2, 46 AP; 128/156

[56] References Cited

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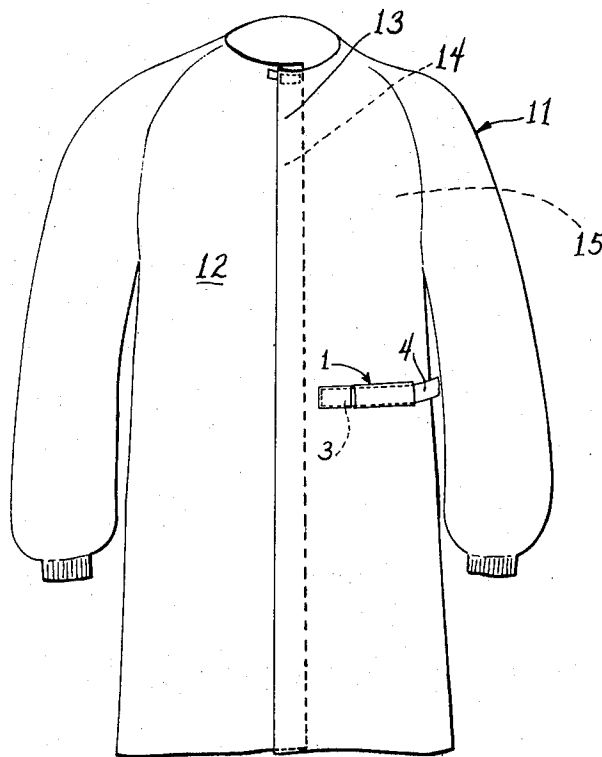
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[57] ABSTRACT

A belting means for operating room gowns which includes a belt folded a plurality of times or rolled throughout a portion intermediate its two ends and positioned within a housing. The housing may be a sleeve which is open at each end attached to or forming part of the gown in the region of the gown wearer's waist. The ends of the belt extend from each end of the housing sleeve and may be covered by a protective wrap. Each end of the belt may be grasped and pulled from that end of the housing out of which it extends. To employ this belting means on a person wearing a gown, portions of the belt within the housing are aseptically withdrawn from the housing in opposite directions and carried around the wearer so that the belt encircles his body near the waist outside the gown. The belt ends are then fastened together. If the belt is not affixed to the housing or gown, it may optionally be rotated around the wearer to place its fastened ends at a location where they will not interfere with activity.

14 Claims, 10 Drawing Figures



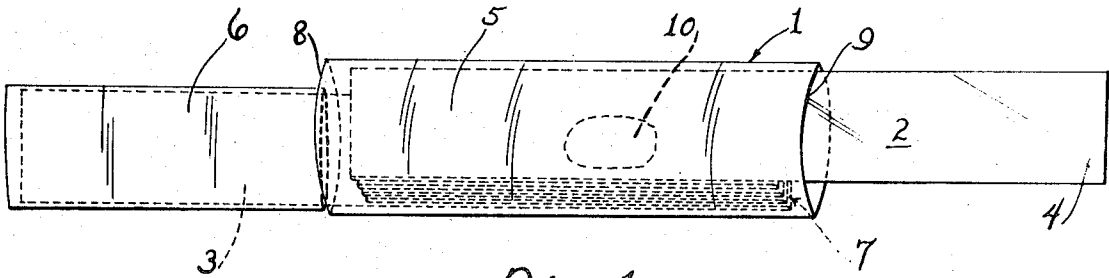


Fig. 1.

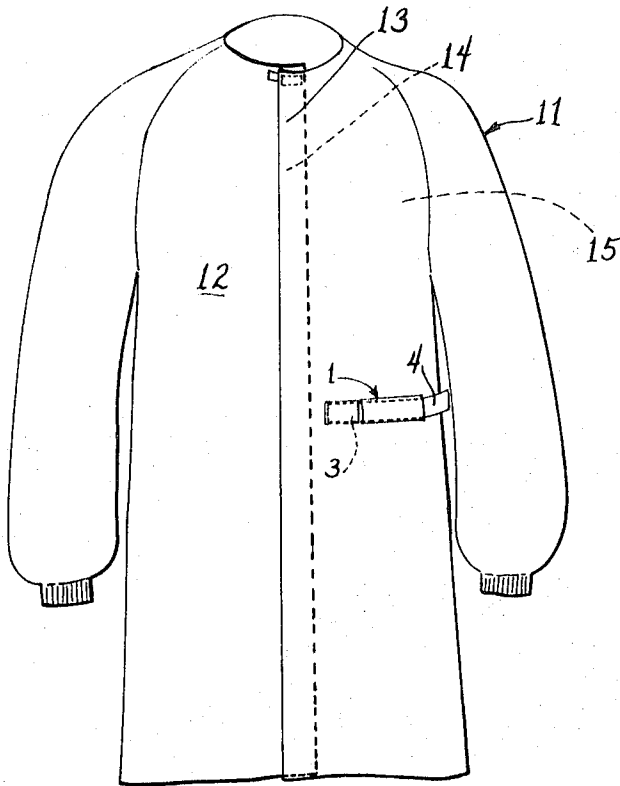


Fig. 2.

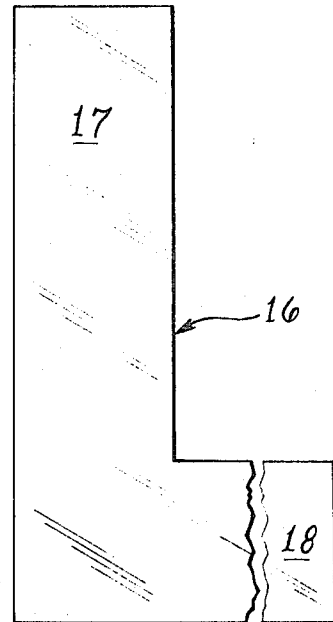


Fig. 3.

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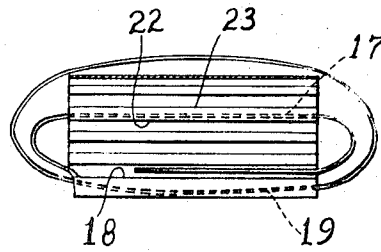


Fig. 5.

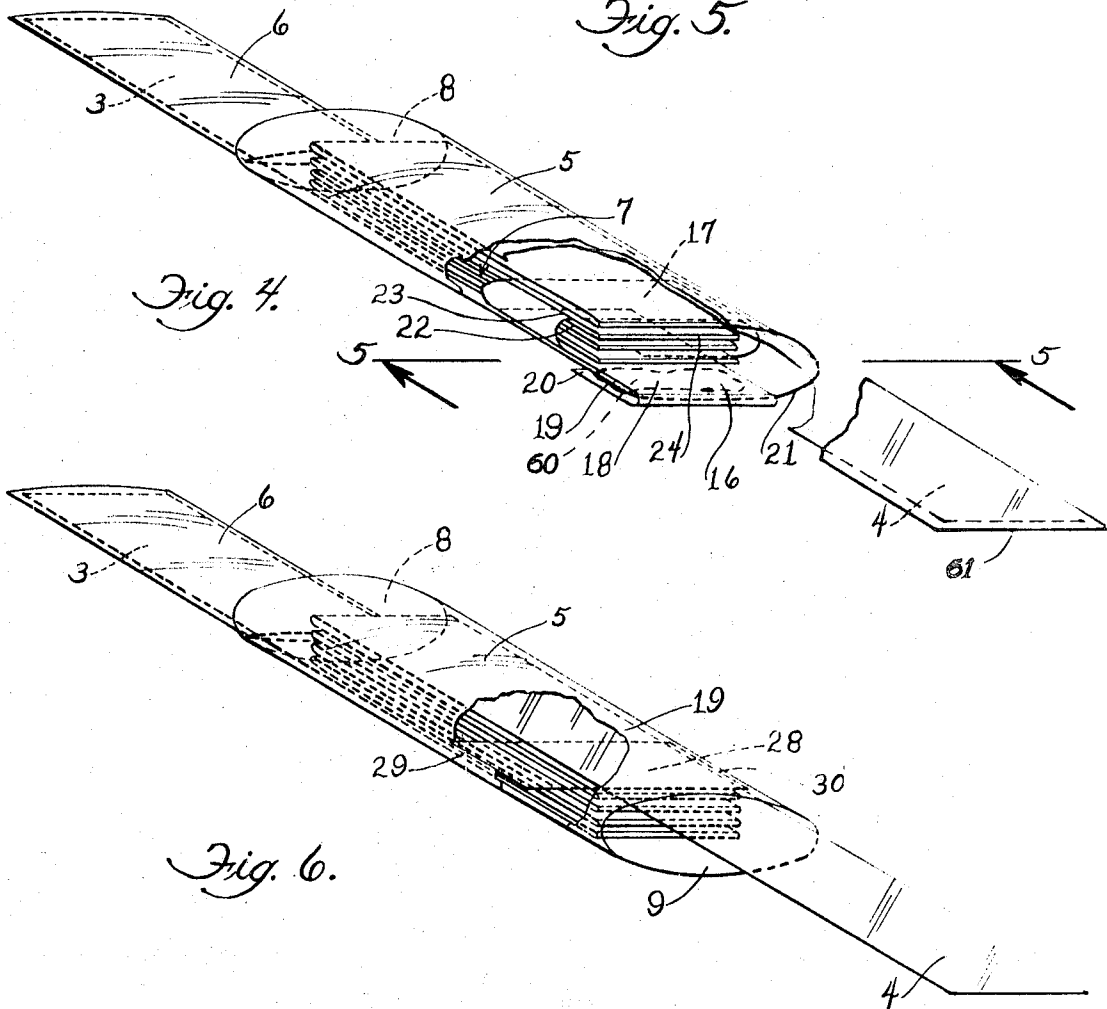


Fig. 4.

Fig. 6.

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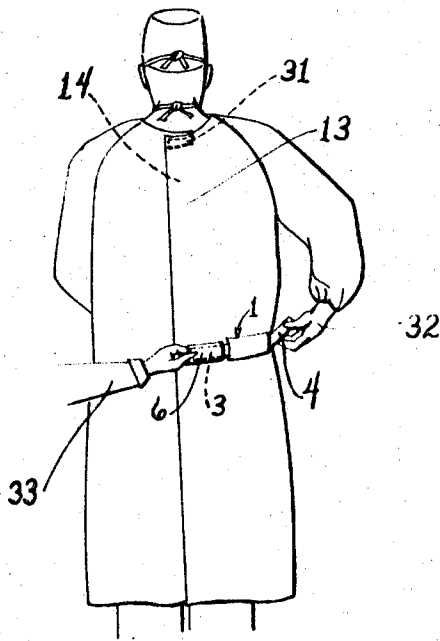


Fig. 7.

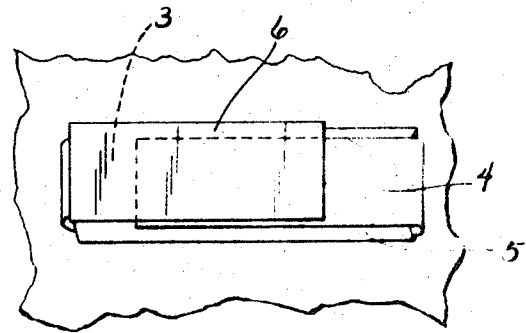


Fig. 10.

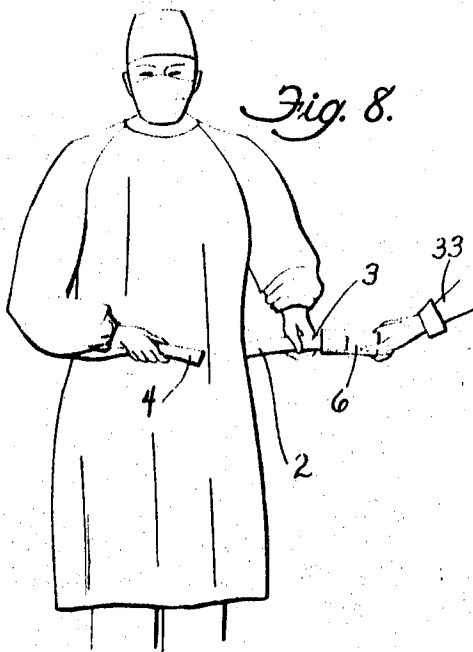


Fig. 8.

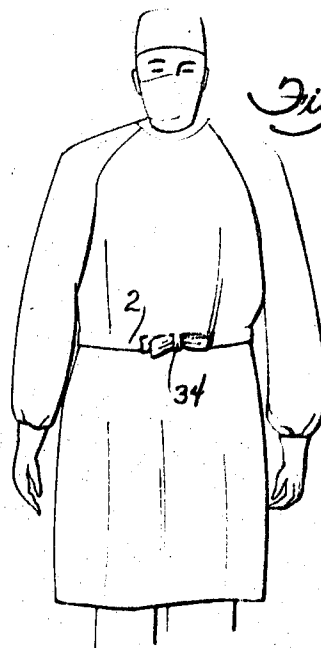


Fig. 9.

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OPERATING ROOM GOWN BELTING MEANS

BACKGROUND OF THE INVENTION

This invention relates to an operating room gown having a novel aseptic belting means and to a method of using that belting means.

The necessity of maintaining proper aseptic conditions in an operating room throughout the preparation for and performance of a surgical or obstetrical procedure presents many serious problems to doctors and other hospital personnel. For instance, aseptic gowning of doctors and nurses in preparation for an operation has traditionally proven difficult to achieve satisfactorily. One phase in aseptic gowning that has posed problems is the belting procedure. A doctor normally dons a back-closing operating room gown by inserting his hands and arms into its sleeves and having the gown pulled up around his body so it will close at his back. Usually some type of fastening means holds the gown closed near the back portion of the collar. Means are also usually employed to close the main body portion of the gown around the wearer's body and control the gown material, thereby preventing the gown from flapping into the zone of operation, bunching, or interfering with the wearer or other persons around the wearer. Frequently a belt is employed to close the body portion of the gown around the doctor's, or other wearer's, midsection and control the gown material. Since the belt, in use, must extend around the back of the doctor, a nurse usually assists in applying it around his body. In the past belts completely unattached to the gown have been utilized. This requires handling two separate items, the gown and the belt. Thus, the problem of maintaining aseptic conditions is increased. As a separate item, the unattached belt may not be adequately protected in sterile conditions. If one end of an unattached belt is accidentally dropped during the belting procedure, the belt is apt to fall into a lower nonsterile area and become contaminated.

BRIEF SUMMARY OF THE INVENTION

The present invention provides an improved aseptic belting means for operating room gowns. Briefly stated, this invention employs a belt having two ends folded a plurality of times or rolled upon itself throughout a portion intermediate its two ends to produce a compacted portion, with the ends of the belt extending in generally opposite directions away from the compacted portion of the belt. The compacted portion of the belt is positioned within a housing which includes one or more openings out of which the ends of the belt protruded in opposite directions. The housing may comprise a sleeve of material or tunnel which is open at both end. The housing may be attached to or form a part of an operating room gown, preferably located in the region of a gown wearer's midsection. One or both of the belt ends extending from the housing may be covered by removable protective wraps to prevent contamination from resulting by the belt ends being grasped or contacted by a nonsterile person or object. The belting means may be utilized in connection with single use, disposable gowns and reusable gowns. The belt and housing may be constructed from the same material as the major portion of the gown on which it is employed, or they may be constructed of other materials, so long as the belt is reasonably flexible and strong enough to secure the gown around the wearer's midsection. A few examples of suitable materials for construction of the elements of this belting means are cotton fabrics, paper, plastic, nylon reinforced nonwoven fabric, or any woven or nonwoven fabric recognized in the art as appropriate for the manufacture of operating room gowns or drapes.

In a preferred embodiment of this invention the compacted portion of the belt is formed by folding the belt a plurality of times throughout a portion intermediate its ends along fold lines extending transversely across the width of the belt, thereby forming a compact accordion-pleated or folded portion. The accordion-pleated portion is then inserted in an open-ended housing sleeve with an end of the belt extending from each end of the sleeve. It should be noted that other fold-

ing patterns besides accordion-pleating of the belt may be employed in accordance with this invention, it being only necessary that the belt be compactly folded or rolled such that a major intermediate portion of the belt may be positioned in the housing with the ends of the belt protruding therefrom. The belting means presents a belt that may be metered out of the housing at either end or both ends simultaneously. Such metering may be accomplished by pulling the end portion of the belt which protrudes from the housing in the direction of the desired metering. As the belt is pulled, the portion of the belt inside the housing is progressively withdrawn from the housing.

A belt retaining means optionally may be included as part of the belting means of this invention to prevent the entire belt from being pulled from the housing when only one end of the belt is pulled. The belt retaining means comprises a strip of material extending across the interior of the housing between two layers of a folded portion of the belt. The belt retaining means is usually attached at one or more points to the walls of the housing or to the body of the gown. When a sufficient portion of the belt is pulled by one end from an opening in the housing, the belt retainer catches one or more layers or loops of the folded belt within the housing and helps prevent the entire belt from being extracted from the housing. The retaining means thus prevents the entire belt from being accidentally pulled from the housing and becoming contaminated by falling into a nonsterile area.

Additionally, the belt retaining means may serve to regulate the length of belt which will be metered in one direction from the housing. By appropriate placement of the belt retainer strip within the folds of the belt, only a predetermined length of the belt will be metered from one end of the housing before the retaining means catches on the belt. Thus, a predetermined length of belt may be withdrawn in each direction from the housing, permitting the belt ends to be fastened together at a desired location around the gown wearer.

The protective housing is usually affixed to an operating room gown in the region of the wearer's waist, preferably at one side of the gown's back portion.

In the normal gowning procedure of this invention, a sterile gown including a sterile belting means affixed thereto is donned by a doctor as previously described, with the back panel of the gown being closed by an overlapping relationship of the side portions of the back panel. Usually the doctor, or other gown wearer, is then aseptically gloved. Then, one end portion of the belt extending from the housing is grasped by one person, often the gown wearer, and the other end portion is usually grasped by another person. The ends are pulled in opposite directions to progressively withdraw belt portions from the housing and are carried around the doctor so that the belt extends about his waist outside the gown. Portions of the belt adjacent its two ends are then fastened together, by tying or otherwise, so that the belt secures the gown around the doctor's waist. The belt may or may not be affixed within the housing to the housing wall or gown body. If the belt is not so affixed, the belt may be rotated about the doctor before or after fastening the ends around his waist, so that the point of fastening is positioned wherever desired around his midsection, such as at his back side, so as not to interfere with activity.

To withdraw the belt from the housing, as described above, it is often convenient for the doctor being gowned to grasp the end of the belt nearest his front side and pull that end away from the housing and around a portion of his body, while a nurse grasps the other end of the belt and pulls it away from the housing in the opposite direction. Since the doctor's hands generally are covered by sterile gloves, it is usually unnecessary for the belt portion he grasps to be covered with a protective wrap. The other end, however, is often grasped and pulled by a circulating nurse, who is not considered sterile. Therefore, the end portion she grasps should be protected against contamination by being covered with a removable wrap. The nurse pulls her end of the belt from the housing and carrier

that end around the doctor to approximately the same point as the other end has been carried in the opposite direction around the doctor so that the belt encircles the doctor's waist. The nurse then hands her end of the belt to the doctor, who takes it at a point not covered by the protective wrap. As she releases the belt, the nurse slides the protective wrap off the belt without contacting the belt itself. In this way the doctor aseptically receives both ends of the sterile encircling belt. He can then tie the belt or otherwise fasten the ends together, and, if the belt is not attached to the housing wall or gown, he may rotate the tie point around to his back, rather than leaving it at his front or side as has been common practice with previous gown belts.

As just described, the doctor being gowned initially grasps only one end of the belt. However, if preferred, the housing may be positioned so that the doctor can initially grasp both ends of the belt and draw the belt from the housing and around his waist without the assistance of a nurse. A third variation employs two nurses, each of which pulls a separate end of the belt from the housing and carries it around the doctor being gowned. If nonsterile personnel pull the belt ends in this third variation of the procedure, both ends of the belt should be covered with removable protective wraps to maintain the sterility of the belt and gown.

According to a doctrine followed by some doctors the back portion of an operating room gown is always considered nonsterile. The belting means of this invention is readily adaptable to the practice of those doctors who prescribe to this doctrine, especially if the belt is secured at some point within the housing. As the belt is metered from the housing, those parts of the belt which must cross portions of the gown considered nonsterile may be held away from the gown itself until the belt is metered out of the housing a sufficient distance for encircling the doctor or until the point is reached where the belt is secured to the housing, which terminates the belt metering. Then the belt may be tied or otherwise fastened to secure the belt around the doctor. In this way no part of the belt touches any portion of the gown which might be considered nonsterile, such as a back portion, prior to being brought into contact with a sterile area of the gown. Furthermore, if affixed to the housing wall or gown body, the belt cannot be rotated about the doctor to bring any portion of the belt considered possibly contaminated into contact with a sterile portion of the gown.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of this invention will become apparent from the following description detailed in reference to the accompanying drawings, in which:

FIG. 1 is a view of one embodiment of the belting means of this invention with a compacted portion of the belt comprising an accordion-pleated portion positioned inside the housing;

FIG. 2 shows the embodiment of FIG. 1 positioned on a back panel of a gown;

FIG. 3 shows one embodiment of a belt retaining means that may be included as part of the belting means of this invention.

FIG. 4 is a view of an embodiment of the belting means of this invention including the belt retaining means of FIG. 3;

FIG. 5 is a cross-sectional perspective view of the belting means of FIG. 4 taken along line 5-5;

FIG. 6 shows another embodiment of a belt retaining means included on a belting means;

FIGS. 7-9 illustrate a sequence of steps in belting a gown in accordance with this invention; and

FIG. 10 shows a belting means in accordance with this invention positioned on a section of gown material with the protruding belt ends folded over the top of the housing for packaging and use.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, the belting means 1 includes a flexible belt 2 having a first end portion 3 and a second end portion 4, a housing defined by an open-ended sleeve or tunnel 5, and a

protective wrap 6 removable covering the first end portion 3. In this embodiment the belt 2 is compacted by being folded back and forth a plurality of times over a substantial part of its length intermediate its end portions 3 and 4 to form an accordion-pleated or folded portion 7. The accordion-pleated portion 7 of the belt is housed within the sleeve 5. The first belt end portion 3 extends out of the first end 8 of the sleeve, and the second belt end portion 4 extends out of the second end 9 of the sleeve. Although it is not critical to this invention, it has been found suitable in many cases for the belt end portions to initially extend from 4 to 6 inches out of the sleeve ends. The protective wrap 6 preferably envelops the entire segment of belt extending from the first end 8 of the sleeve. The wrap may extend its coverage to include a small portion of the belt within the housing sleeve 5, if desired. However, it is only necessary that the protective wrap cover enough of the first belt end portion 3 to enable a nurse, or other person, to grasp and pull that end without contacting the belt itself. If desired, for additional protection, another protective wrap 61, as shown in FIG. 4, may be placed over the second belt end portion in a fashion similar to that described for the first end. Means for attaching the belting means to a gown or other surface may be placed at any advantageous position on the sleeve. In the embodiment shown in FIG. 1, the attachment means is tacky adhesive 10 placed on the outer surface of that portion of the sleeve 5 which is placed directly adjacent to the body portion of the gown. As an optional additional feature the belt may be attached at a point along its intermediate portion to the interior wall of the housing to prevent the belt from being pulled completely out of the housing when only one end of the belt is pulled and also to permit the metering of a definite maximum length of belt from each end of the housing.

FIG. 2 illustrates one position where this belting means may advantageously be affixed to an operating room gown. FIG. 2 shows a gown 11 which is closable down its back panel or portion 12 by a first marginal portion 13 overlapping a second marginal portion 14 at the back of the gown. The belting means 1 is attached to the gown in the vicinity of the wearer's waist and is spaced from the edge of first marginal portion 13 toward one side of the gown. It is usually preferable to position the belting means 1 on that side of the back portion 12 which includes the overlapping marginal portion 13, so that when the belt is drawn across the back of the gown overlapping marginal portion 13 will be drawn over and against the underlying marginal portion 14 to close the gown. The belting means is also positioned so that the first end portion 3 of the belt points generally toward the overlapping marginal portion 13 and the second end portion 4 of the belt points generally toward the side and perhaps the front portion 15 of the gown, so that a wearer of the gown may easily grasp the second end portion 4 with his hand nearest thereto.

A belt retaining means 16 that may be employed as part of the belting means of this invention is illustrated in FIGS. 3-5. FIG. 3 shows one type of belt retaining means contemplated by this invention in an unfolded condition. The belt retaining means 16 comprises an L-shaped piece of material having a first flap 17 and a second flap 18 extending therefrom in an approximately right angle. FIG. 4, shows the belt retaining means 16 of FIG. 3 as part of the belting means. The belt 2 is folded back and forth a plurality of times along fold lines extending transversely across the width of the belt, such as fold line 24, to form a folded portion 7 in which segments of the belt are layered upon each other in an accordion-pleated fashion. The folded portion 7 is housed within the protective sleeve 5, as described above. The first flap 17 of the belt retaining means 16 is positioned between two adjacent layers 22 and 23 of the folded portion 7 of the belt. The retaining means 16 is folded around the layers of the folded portion 7 on one side of first flap 17, such that at least part of the second flap 18 is positioned between the folded portion 7 of the belt and the wall 19 of the sleeve 5. The end portion 20 of the second flap 18 is folded back over the end edge 21 of the sleeve wall 19 to secure the belt retaining means in the sleeve.

Additional or alternative attaching means may also be employed to secure the belt retaining means within the sleeve. Such attaching means include adhesive material 60 attaching the second flap to the sleeve or gown. In order for the belt retaining means to prevent the belt from being completely withdrawn from the housing sleeve from a given end of the sleeve, the first flap of the belt retaining means should be positioned between two adjacent layers of the folded portion of the belt between the fold line connecting those two adjacent layers and that end of the sleeve out of which complete withdrawal of the belt is to be prevented. Thus, in reference to FIG. 4, positioning of the first flap 17 of the retaining means between layer 22 and layer 23 helps prevent the belt from being pulled completely out of the sleeve 5 at its first end 8, since the first flap 17 is between the fold line 24 connecting the two layers 22 and 23 and the first end 8 of the housing sleeve.

The relationship of the retaining means first flap 17 to the folded portion of the belt can be seen in FIG. 5, which shows a cross sectional view of the belting means of FIG. 4 taken along line 5-5. The first flap 17 extends between layers 22 and 23 of the folded portion of the belt and around the lower layers of the folded portion. The second flap 18 of the retaining means extends forward in the direction of the second end of the sleeve between the folded portion of the belt and the sleeve wall 19.

FIG. 6 illustrates a belting means including another embodiment of the belt retaining means. In this embodiment the belt retaining means is a strip 28 of material attached at its ends 29 and 30 to the inside of the housing sleeve wall 19.

The belt is more likely to be accidentally pulled completely from the housing by an assisting nurse than by the gown wearer unless a retainer device is employed. Therefore, the belt retaining means may be more often advantageously used to prevent the belt from being completely withdrawn from the housing at that end from which an assisting nurse pulls the belt. Of course, a belt retaining means may be employed equally well to prevent the belt from being pulled from the other end of the housing. In fact, if desired, two belt retaining means could be employed on a single belting means to help prevent the belt from accidentally being pulled completely out of the housing at either end.

By preventing the belt from being pulled by one end completely out of the housing, the belt retaining means prevents the other end of the belt from accidentally dropping from the housing into lower nonsterile areas and being contaminated. The belt retainer also may serve as a metering device to allow the proper length of belt to be withdrawn from each end of the housing so that the belt will extend around the wearer to be tied at a predetermined location, such as at the wearer's front.

A method of using the belting means in accordance with this invention in the aseptic gowning of doctors, or other persons, is illustrated in FIGS. 7-9. FIG. 7 shows a doctor wearing a sterile operating room gown that closes down the back by overlapping marginal portions 13,14. The gown includes means 31 for maintaining the marginal portions 13,14 closed near the back of the collar of the gown. The gown includes a sterile belting means 1 attached to the back of the gown toward the right side of the gown wearer. To secure the belt around his waist by the method of this invention, the doctor or other wearer grasps the end portion of the belt closest to the right side of the gown with his aseptically gloved right hand 32. Another person 33, such as a circulating nurse, grasps the other end portion 3 of the belt through the covering protective wrap 6, without contacting any portion of the sterile gown body or any portion of the sterile belting means other than the protective wrap.

As shown in FIG. 8, the doctor being gowned and the assisting nurse each pull a portion of the belt from opposite ends of the housing and carry their respective belt ends around to the front of the doctor, so that the belt will surround the doctor near his waist. Then, as shown, the nurse hands her end 3 of

the belt to the doctor, who grasps it at a point not covered by the protective wrap 6. The nurse then slips the protective wrap 6 off the belt, which leaves the doctor holding each end of the belt in a completely uncontaminated condition.

The doctor then cinches the belt 2 to close the gown about the midsection of his body, and ties the belt at his front, as shown in FIG. 9.

If the belt 2 is not secured to the wall of the housing, or otherwise held stationary, it may be rotated through the housing around the circumference of the wearer's body. Thus, if the doctor desires to remove the tied ends of the belt from his front, he may slide the belt around his body so that the tie point 34 is located elsewhere, such as at his back, possibly tucking the tie point into the housing.

A number of uses and advantages for the belting means and method of this invention have been discussed above. Another advantage of this invention is that the housing may protect the belt from contamination even after a portion of the belt has been pulled from it. For instance, if the nurse should accidentally drop her end of the belt after pulling it partially from the housing, that end will not drop down the complete length of the belt. Instead, the housing will uphold the belt, possibly preventing it from dropping into a nonsterile area. This permits the nurse to regasp the dropped end of the belt which has not been contaminated with her hand or other holding means, such as forceps, and resume the gowning procedure, without requiring the procurement of a new belt or gown.

In the folding or packaging of a gown having the belting means of this invention, the belt ends 3 and 4 may be folded back against themselves or against the housing wall, possibly with one end portion overlapping the other, as shown in FIG. 10. This folding pattern is useful in that it causes the belt end portions 3 and 4 to stand out from the gown after the gown has been unfolded and placed on a doctor, presenting tabs that are readily available for grasping by the doctor and nurse.

The belting means of this invention may be sterilized prior to use by any one of several conventional methods now being employed to sterilize operating room materials, such as autoclaving or ethylene oxide sterilization. The belting means may be sterilized after it is attached to an operating room gown, or it may be separately sterilized and aseptically affixed to a previously sterilized gown.

As mentioned above, several modifications to the above detailed method of using this belting means fall within the scope of this invention. Each end of the belt may be grasped by separate nurses and drawn around the doctor. The doctor may even grasp and pull both end portions away from the housing by himself. Several other embodiments and modifications of this belting means and method of using will be obvious to persons skilled in the art of this invention upon reading this disclosure. Such embodiments and modifications are intended as within the scope of the invention, except as limited by the following claims.

I claim:

1. A belting means for operating room gowns comprising a flexible belt having a first end portion, a second end portion, and an intermediate portion between said end portions, a housing having a pair of spaced openings therein, said belt being compacted in its intermediate portion to form a compacted portion and being positioned with said compacted portion inside said housing and with said first and second end portions of said belt extending out of said housing through said openings, said compacted portion of the belt comprising a folded portion having a plurality of layers formed by folding said belt back and forth a plurality of times throughout said intermediate portion along fold lines which extend transversely across the width of said belt, and belt retaining means comprising a strip of material having two ends, said strip extending between two layers of said folded portion of said belt within said sleeve, said belt retaining means being secured within said sleeve.

2. The belting means of claim 1 wherein said housing comprises a sleeve of material having a first end and a second end, said first end having an opening therein through which said first end portion of said belt extends out of said sleeve and said second end having an opening therein through which said second end portion of said belt extends out of said sleeve.

3. The belting means of claim 1 wherein said belt retaining means is secured within said sleeve by being attached to the sleeve at one end of said strip.

4. The belting means of claim 1 wherein said belt retaining means is secured within said sleeve by being attached to the sleeve at both ends of said strip.

5. The belting means of claim 1 wherein said belt retaining means is secured within said sleeve by adhesive means.

6. The belting means of claim 1 wherein said belt retaining means comprises an L-shaped piece of material having first and second flaps substantially perpendicular to each other, said L-shaped piece of material being folded such that said first flap extends between said two layers of said folded portion of belt and said second flap extends between said belt and the interior wall of said sleeve.

7. The belting means of claim 6 wherein said second flap is attached by adhesive means to said sleeve to thereby secure said belt retaining means within said sleeve.

8. The belting means of claim 6 wherein said second flap is attached to said sleeve by being folded back over an edge of one end of said sleeve.

9. The belting means of claim 1 including attachment means for permanently securing said belting means to an operating room gown.

10. An operating room gown having a body portion, including in combination therewith the belting means of claim 9 secured to said body portion of said gown by said attachment means.

11. In combination with an operating room gown having a body portion which is closable by a first marginal portion overlapping a second marginal portion, the belting means of claim 9 wherein said belting means is secured to said gown by said attachment means, said attachment means attaching said housing to the body portion of said gown in the region of a gown wearer's waist.

12. The combination of claim 11 wherein said gown is closable down its back portion by said first marginal portion overlapping said second marginal portion, said housing being attached to a section of the gown's back portion which includes said first marginal portion.

13. The belting means of claim 1 including a protective wrap removably covering at least part of said first end portion of said belt.

14. The belting means of claim 13 including a second protective wrap removably covering at least part of said second end portion of said belt.

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