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(54) **DRAPE FOR MULTIPLE-TIERED STERILE HOSPITAL SURFACE**

ABDECKUNG FÜR MEHRSTÖCKIGE STERILE HOSPITALOBERFLÄCHEN

DRAPERIE POUR SURFACE D'HOPITAL STERILE A PLUSIEURS NIVEAUX

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to sterile surface covers, and, more particularly, to drapes for tables in operating rooms.

[0002] In hospital operating rooms, areas that are sterile and non-sterile are carefully delineated. Typically a surface that is to hold instruments, such as a metal table, is covered by a sterile drape such as are known in the art. The surface of the table itself is considered non-sterile, being made sterile by the application of a drape. Any area below the draped surface is also considered non-sterile.

[0003] Fitted drapes are known for use on Mayo stands, which are supported along one edge of the table surface. Conventional drapes are also known for covering a single-tiered surface.

[0004] US 5,170,804 relates to a Mayo-stand disposable drape. The Mayo stand is used with a single tier table. The drape has a flaps to close off any open space between the Mayo stand and a draped body of a patient lying on the single tier table. The flaps are not suitable to isolate the surface of the table from the underside surface of the Mayo stand.

SUMMARY OF THE INVENTION

[0005] It is an object of the present invention to provide a sterile drape for covering a two-tiered table for use in an operating room.

[0006] It is another object to provide a method for covering a two-tiered table in an operating room.

[0007] It is a further object to provide a method for making a sterile drape for covering a two-tiered table for use in an operating room.

[0008] It is an additional object to provide a method for making such a drape in a one-piece embodiment.

[0009] It is yet another object to provide a method for making such a drape in a two-piece embodiment.

[0010] These and other objects are achieved by the surgical drape and methods of the present invention. The surgical drape is adapted to cover the surfaces of a multiple-tiered table such as is typically used for holding surgical instruments. Those drape section for covering surfaces above the bottom surface are fitted so as to avoid impeding access to and visibility of those surfaces immediately beneath. Clear sections of the drape are provided to extend between tiers for improved visualization from behind the table. Cuffs are also provided for aiding handling by a sterile nurse.

[0011] A method for making a surgical drape for covering multiple-tiered surfaces comprises the steps of affixing a bottom drape portion to a bottom edge of a clear middle section of flexible material, the clear middle section affixed adjacent a rear edge of the bottom drape portion. A top edge of the clear middle section is affixed

adjacent a front edge of an upper drape portion. Both side edges of the upper drape portion at a location in spaced relation from the front edge commensurate with the width of the surface to be covered. Thus, the upper portion of the clear middle section forms a cover for the underneath portion of the top tier. The upper portion of the clear middle section is affixed to the undersection of the top tier of the instrument table by hook-and-loop fasteners. From the side affixing locations the clear section is free to extend between the bottom and upper tier and permits visualization of the bottom tier from behind the table while inhibiting contamination by non-sterile personnel positioned there.

[0012] It will be apparent to one skilled in the art that additional steps similar to those recited above can be employed to cover a table having further surfaces. It will also be apparent that, although this particular embodiment is intended for use with tables having upper surfaces supported from the rear, alternate drape designs would be encompassed by the present invention for other table types, and limitations are not intended for this particular table.

[0013] A method of using such a surgical drape comprises the steps of arraying the bottom drape section on the bottom table surface desired to be covered, with the clear section facing toward the rear. Next the upper drape section is lifted up, which also brings the upper portion of the clear section upward. The top portion of the clear middle section is positioned under the top tier of the instrument table, and the remaining portion of the clear section is arrayed along the rear of the table for permitting visualization.

[0014] The features that characterize the invention, both as to organization and method of operation, together with further objects and advantages thereof, will be better understood from the following description used in conjunction with the accompanying drawings. It is to be expressly understood that the drawings are for the purpose of illustration and description and are not intended as a definition of the limits of the invention. These and other objects attained, and advantages offered, by the present invention will become more fully apparent as the description that now follows is read in conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

FIG. 1 is a perspective view of a table covered with the surgical drape.

FIG. 2 is an exploded view of the one-piece embodiment of the surgical drape showing the attachment points of the three sections.

[0016] In accordance with the present invention, a drape for a multiple-tiered hospital surface is comprised of a generally rectangular bottom sheet affixed to a clear

middle sheet which is affixed to a generally rectangular top sheet and the means for continuous joining of said bottom, middle, and top sheet in a one piece embodiment and the means for applying said drape to a hospital surface.

DETAILED DESCRIPTION OF THE DRAWINGS

[0017] A description of the preferred embodiments of the present invention will now be presented with reference to FIGS. 1 and 2.

[0018] In a preferred embodiment the drape is for covering what is known in the art as a "back table", which will be shown as a table 10 having a bottom tier 12 and an upper tier 14, the two tiers 12, 14 connected by two rear posts 16, 18. The drape 100 is shown in place in FIG. 1 covering such a table 10.

[0019] Two embodiments of the present invention are provided: a one-piece 100 and a two-piece drape. The drape 100 is shown in exploded view in FIG. 2.

[0020] The bottom section 200 comprises a generally rectangular sheet of liquid impervious material such as are known for use in the art. The liquid impervious nature is important to prevent any spillage or leakage from seeping through the sheet, contacting the non-sterile table surface, and wicking back up through the sheet, which then would be contaminated. In a particular embodiment the material comprises a plastic such as polyethylene, typically colored blue for this application, although this is not intended to be limiting. The sheet has a pair of cutouts 216, 218 positioned along the rear edge 212 for admitting the table posts 16, 18. The rear part of the material surrounding the cutouts 216, 218 when in position on a table fall below the bottom tier 12 surface. The width and depth of the bottom section 200 are dimensioned for side and front draping along the side 206, 208 and front edges 204, respectively.

[0021] Affixed atop the bottom section 200 is another rectangular piece of flexible material, bonded to the bottom section 200 to form a laminate. This surface section 202 is dimensioned generally to conform to the top of the bottom tier 12, is made of a cloth-like material such as a non-woven fabric having a wood pulp base (e.g., Dexter® made by DuPont).

[0022] A top section 400 also comprises a generally rectangular sheet of liquid impervious material, for example, polyethylene, again typically colored blue. The top section 400 is also laminated with a non-woven cloth-like material such as Dexter®. The rear edge 404 is turned upward and affixed along the sides to form a top flap 410 which serves as a cuff for assisting in placing the drape, as will be described in the following.

[0023] A clear section 300 is affixed along its bottom edge 304 adjacent the bottom section's back edge 214 just forward of the cutouts 216, 218. Clear section 300 is also affixed along its top edge 302 to the top section's front edge 402, and its side edges 306, 308 are affixed to the corresponding side edges 406, 408 of the upper

drape portion 400 from the rear edge 212 to a location per side in spaced relation from the front edge 402 commensurate with the width of the upper tier 14. Thus the upper portion 302 of the clear section 300 forms a flap extending along the front edge of the drape 100 for fitting to an upper tier 14 and tucking thereunder.

[0024] Preferably the clear section 300 is also made of a liquid impervious material, such as but not limited to, polyethylene which has sufficient translucence to permit visualization of table surface there through.

[0025] In order to secure the flap onto the upper tier 14, further affixing means are also provided. In a preferred embodiment a piece 310 of one part of a hook-and-loop type fastener (Velcro®) is affixed to a back side of the clear section 300 generally in line with the inward ends of the side-affixing locations. This piece is for mating with a corresponding piece 312 affixed beneath and generally adjacent the rear edge of the top tier 14. When mated, the fastener pieces hold the central part of the clear section up and out of the way of the bottom tier 12.

[0026] The drape can be made in a two-piece embodiment (not shown), where the bottom section 200 and the clear section 300 are not affixed together; otherwise, the sections are constructed substantially the same as for the drape 100, with the clear section 300 being longer to permit a draping behind the bottom tier 12.

[0027] The drape 100 as described above is made by forming the three sections 200, 300, 400 from the appropriate materials and affixing them together as shown in FIG. 2.

[0028] The drape 100 is used by removing it from a protective covering, placing it in the center of the bottom tier of the instrument table 12 and unfolding the drape 100 from the middle to each side of the table 12 so that the sterile side of the bottom section 200 is positioned upward. The exposed front part of the drape 204 is then brought forward to cover the front edge of the bottom tier 12. Moving to the rear of the table 10 the remaining exposed drape is brought back so that the cutouts 216, 218 in the bottom section of drape 202 correspond to the posts 16, 18 supporting the top tier 14. The drape will now have cuffed flap areas 410 exposed on both ends. The upper drape section 400 is then raised up by a person on either side of the instrument table 10 inserting hands into the flap areas 410, lifting the drape and placing upper drape section 400 on top tier of instrument table 14 with back overhang 404 draping over the rear portion of top tier of instrument table 14. Lifting the upper drape section 400 also brings the upper portion of the clear section 300 upward. To finish applying drape 100 middle section of drape 300 is affixed up and away from the bottom piece of drape 200 by means of hook-and-loop type fasteners 310, 312. The hook-and-loop fasteners on the back of the clear middle section 310 are joined to their corresponding mates 312 on the underside of the top tier of the instrument table 14, and the remaining portion of the clear section 300 is arrayed along the rear of the table.

[0029] It may be appreciated by one skilled in the art

that additional embodiments may be contemplated, including additional drapes designed for tables having multiple tiers and supports thereof.

[0030] Accordingly the reader will see that the drape for the multiple-tiered hospital surface can be used to quickly and conveniently create a sterile field. Furthermore, the multiple-tiered drape has the additional advantages in that:

- It permits the draping to be done by sterile or non-sterile personnel;
- It allows for instrument trays to be seen on both levels as well as from the back of the table;
- It provides a superior surface upon which multiple trays can be placed;
- It provides a custom fit to the surface it is covering so as to keep the instrument trays in place.

[0031] Although the description above contains many specificities, these should not be construed as limiting the scope of the invention. Rather, as merely providing illustrations of the presently preferred embodiments of this invention currently in use in over fifty hospital operating rooms in the United States. Certain terms have been used for brevity, clarity, and understanding, but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such words are used for description purposes herein and intended to be broadly construed. Moreover, the embodiments of the apparatus illustrated and described here are by way of example, and the scope of the invention is not limited to the exact details of construction.

[0032] Thus, the scope of the invention should be determined by the appended claims rather than by the examples given.

Claims

1. A drape for a table (10) in an operating room, the table (10) having a lower tier (12) and an upper tier (14), the lower tier (12) having a lower tier surface, the upper tier (14) having an upper tier surface and an opposed underside surface disposed at least partially over the lower tier surface, the drape (100) comprising:

- a bottom section (200) having a top surface operable to cover the lower tier surface to define a sterile lower tier surface;
- a top section (400) having a front edge (402) and operable to cover the upper tier surface to define a sterile upper tier surface;
- a middle section (300) having a bottom edge (304) and a top edge (302);
- a side edge (306, 308) of the middle section (300) being attached to a side edge (406, 408) of the top section (400) to form a flap operable

to fit over at least a portion of the upper tier (14);

wherein the drape is formed either as a one-piece drape (100) or, alternatively, as a two-piece drape; the one-piece drape (100) having the bottom edge (304) of the middle section (300) attached to the top surface of the bottom section (200) and having the top edge (302) of the middle section (300) attached to the front edge (402) of the top section (400) for isolating the sterile lower tier surface from the underside surface;

the two-piece drape having the bottom edge of the middle section abutting the top surface of the bottom section and having the top edge of the middle section attached to the front edge of the top section for isolating the sterile lower tier surface from the underside surface.

2. The drape of claim 1, further comprising a means for holding a central portion of the middle section (300) away from the sterile lower tier surface.
3. The drape of at least one of the preceding claims, further comprising a fastener (310) attached to a back surface of the middle section (300).
4. The drape of claim 3, wherein the fastener (310) comprises a hook and loop fastener.
5. The drape of at least one of the preceding claims, wherein the middle section (300) comprises a clear material.
6. The drape of at least one of the preceding claims, further comprising a flap (410) formed on a rear portion of the top section (400).
7. The drape of at least one of the preceding claims, wherein the table (10) has a post (16, 18) between the upper tier (14) and the lower tier (12), the drape (100) further comprising a cutout (216, 218) formed in a rear portion of the bottom section (200) and operable to fit around the post (16, 18).
8. A draped table for an operating room, the draped table (10) comprising:
 - a table lower tier (12) having a lower tier surface;
 - a table upper tier (14) having an upper tier surface and an opposed underside surface;
 - a structure connecting the table lower tier (12) and the table upper tier (14) so that the underside surface is disposed at least partially above the table lower tier surface; and
 - a drape (100) according to at least one of the preceding claims with the top surface of the bottom section disposed over the lower tier surface to define the sterile lower tier surface and the

top section disposed over the upper tier surface to define the sterile upper tier surface and the middle section disposed under the upper tier underside surface for isolating the sterile lower tier surface from the underside surface.

9. The draped table of claim 8, wherein the structure comprises a post (16, 18) connecting a rear portion of the upper tier (14) and a rear portion of the lower tier (12), and the drape (100) further comprising a cutout (216, 218) in a rear portion of the bottom section (200) for admitting the post (16, 18), the post (16, 18) and the cutout (216, 218) being isolated from the sterile lower tier surface by the middle section (300).

Patentansprüche

1. Abdeckung für einen Tisch (10) in einem Operationsraum, wobei der Tisch eine untere Etage (12) und eine obere Etage (14) aufweist, wobei die untere Etage (12) eine untere Etagenoberfläche aufweist, die obere Etage (14) eine obere Etagenoberfläche und eine entgegen gesetzte Unterseitenoberfläche aufweist, die mindestens teilweise über der unteren Etagenoberfläche angeordnet ist, wobei die Abdeckung (100) aufweist:

einen unteren Abschnitt (200) mit einer oberen Oberfläche, die funktionsfähig ist, um die untere Etagenoberfläche abzudecken, um eine sterile untere Etagenoberfläche zu definieren;
einen oberen Abschnitt (400) mit einem vorderen Rand (402) und funktionsfähig, um die obere Etagenoberfläche abzudecken, um eine sterile obere Etagenoberfläche zu definieren;
einen mittleren Abschnitt (300) mit einem unteren Rand (304) und einem oberen Rand (302);
einen Seitenrand (306, 308) des mittleren Abschnitts (300), der an einem Seitenrand (406, 408) des oberen Abschnitts (400) befestigt ist, um eine Klappe zu bilden, die funktionsfähig ist, um mindestens über einen Teil der oberen Etage (14) zu passen,

wobei die Abdeckung entweder als einstückige Abdeckung (100) oder alternativ als eine zweistückige Abdeckung ausgebildet ist;

wobei die einstückige Abdeckung (100) den unteren Rand (304) des mittleren Abschnitts (300) an der oberen Oberfläche des unteren Abschnitts (200) und den oberen Rand (302) des mittleren Abschnitts (300) an dem vorderen Rand (402) des oberen Abschnitts (400) befestigt hat, um die sterile Oberfläche der unteren Etage von der Unterseitenoberfläche zu isolieren;

wobei die zweistückige Abdeckung den unteren

Rand des mittleren Abschnitts an die obere Oberfläche des unteren Abschnitts angrenzend hat und den oberen Rand des mittleren Abschnitts an dem vorderen Rand des oberen Abschnitts befestigt hat, um die sterile Oberfläche der unteren Etage von der Unterseitenfläche zu isolieren.

2. Abdeckung nach Anspruch 1, ferner ein Mittel aufweisend, um einen zentralen Teil des mittleren Abschnitts (300) von der sterilen Oberfläche der unteren Etage entfernt zu halten.
3. Abdeckung nach mindestens einem der vorhergehenden Ansprüche, ferner aufweisend ein Befestigungselement (310), das an einer hinteren Oberfläche des mittleren Abschnitts (300) befestigt ist.
4. Abdeckung nach Anspruch 3, wobei das Befestigungselement (310) einen Klettverschluss aufweist.
5. Abdeckung nach mindestens einem der vorhergehenden Ansprüche, wobei der mittlere Abschnitt (300) ein klares Material aufweist.
6. Abdeckung nach mindestens einem der vorhergehenden Ansprüche, ferner eine Klappe (410) aufweisend, die an einem hinteren Teil des oberen Abschnitts (400) gebildet ist.
7. Abdeckung nach mindestens einem der vorhergehenden Ansprüche, wobei der Tisch (10) einen Pfosten (16, 18) zwischen der oberen Etage (14) und der unteren Etage (12) aufweist, wobei die Abdeckung (100) ferner einen Ausschnitt (216, 218) aufweist, der in einem hinteren Teil des unteren Abschnitts (200) gebildet ist und funktionsfähig ist, um um den Pfosten (16, 18) herumzupassen.
8. Abgedeckter Tisch für einen Operationsraum, wobei der abgedeckte Tisch (10) aufweist:

eine untere Tischetage (12) mit einer unteren Tischetagenoberfläche;
eine obere Tischetage (14) mit einer oberen Tischetagenoberfläche und einer entgegen gesetzten Unterseitenoberfläche;
eine Struktur, die die unteren Tischetage (12) und die oberen Tischetage (14) so verbindet, dass die Unterseitenoberfläche mindestens teilweise über der Oberfläche der unteren Tischetage angeordnet ist; und
eine Abdeckung (100) nach mindestens einem der vorhergehenden Ansprüche, wobei die obere Oberfläche des unteren Abschnitts über der Oberfläche der unteren Etage angeordnet ist, um die sterile Oberfläche der unteren Etage zu definieren, und wobei der obere Abschnitt über der Oberfläche der oberen Etage angeordnet

ist, um die sterile Oberfläche der oberen Etage zu definieren, und wobei der mittlere Abschnitt unter der Unterseitenoberfläche der oberen Etage angeordnet ist, um die sterile Oberfläche der unteren Etage von der Unterseitenoberfläche zu isolieren.

9. Abgedeckter Tisch nach Anspruch 8, wobei die Struktur einen Pfosten (16, 18) aufweist, der einen hinteren Teil der oberen Etage (14) und einen hinteren Teil der unteren Etage (12) verbindet, und wobei die Abdeckung (100) ferner einen Ausschnitt (216, 218) in einem hinteren Teil des unteren Abschnitts (200) aufweist, um den Pfosten (16, 18) aufzunehmen, und wobei der Pfosten (16, 18) und der Ausschnitt (216) von der sterilen Oberfläche der unteren Etage durch den mittleren Abschnitt (300) isoliert sind.

Revendications

1. Draperie pour une table (10) dans une salle d'opération, la table (10) comprenant un niveau inférieur (12) et un niveau supérieur (14), le niveau inférieur (12) présentant une surface de niveau inférieur, le niveau supérieur (14) présentant une surface de niveau supérieur et une face inférieure opposée disposée au moins partiellement au-dessus de la surface de niveau inférieur, la draperie (100) comprenant:

une section inférieure (200) présentant une surface supérieure pouvant être utilisée pour recouvrir la surface de niveau inférieur afin de définir une surface de niveau inférieur stérile;
une section supérieure (400) présentant un bord avant (402) et pouvant être utilisée pour recouvrir la surface de niveau supérieur afin de définir une surface de niveau supérieur stérile;
une section intermédiaire (300) comportant un bord inférieur (304) et un bord supérieur (302);
un bord latéral (306, 308) de la section intermédiaire (300) étant attaché à un bord latéral (406, 408) de la section supérieure (400) pour former un rabat pouvant être adapté sur au moins une partie du niveau supérieur (14);

dans lequel la draperie est formée soit d'une draperie d'une seule pièce (100), soit, alternativement, d'une draperie en deux pièces;

la draperie d'une seule pièce (100) étant ayant le bord inférieur (304) de la section intermédiaire (300) attaché à la surface supérieure de la section inférieure (200), et ayant le bord supérieur (302) de la section intermédiaire (300) attaché au bord avant (402) de la section supérieure (400) afin d'isoler la surface de niveau inférieur stérile de la face inférieure;

re;

la draperie en deux pièces ayant le bord inférieur de la section intermédiaire placée bout à bout contre la surface supérieure de la section inférieure, et ayant le bord supérieur de la section intermédiaire attaché au bord avant de la section supérieure afin d'isoler la surface de niveau inférieur stérile de la face inférieure.

2. Draperie selon la revendication 1, comprenant en outre un moyen pour maintenir une partie centrale de la section intermédiaire (300) à l'écart de la surface de niveau inférieur stérile.
3. Draperie selon au moins une des revendications précédentes, comprenant en outre une attache (310) fixée à une surface arrière de la section intermédiaire (300).
4. Draperie selon la revendication 3, dans laquelle l'attache (310) comprend une attache velcro.
5. Draperie selon au moins une des revendications précédentes, dans laquelle la section intermédiaire (300) comprend une matière transparente.
6. Draperie selon au moins une des revendications précédentes, comprenant en outre un rabat (410) formé sur une partie arrière de la section supérieure (400).
7. Draperie selon au moins une des revendications précédentes, dans laquelle la table (10) comprend un montant (16, 18) entre le niveau supérieur (14) et le niveau inférieur (12), la draperie (100) comportant en outre une découpe (216, 218) pratiquée dans une partie arrière de la section inférieure (200) et pouvant être agencée autour du montant (16, 18).
8. Table drapée pour une salle d'opération, la table drapée (10) comprenant:

un niveau de table inférieur (12) présentant une surface de niveau inférieur;
un niveau de table supérieur (14) présentant une surface de niveau supérieur et une face inférieure opposée;
une structure reliant le niveau de table inférieur (12) et le niveau de table supérieur (14) de telle sorte que la face inférieure soit disposée au moins partiellement au-dessus de la surface du niveau de table inférieur; et
une draperie (100) selon au moins une des revendications précédentes dont la surface supérieure de la section inférieure est disposée au-dessus de la surface de niveau inférieur afin de définir la surface de niveau inférieur stérile, la section supérieure est disposée au-dessus de la surface de niveau supérieur afin de définir la

surface de niveau supérieur stérile, et la section intermédiaire est disposée en dessous de la face inférieure de niveau supérieur afin d'isoler la surface de niveau inférieure stérile de la face inférieure.

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9. Table drapée selon la revendication 8, dans laquelle la structure comprend un montant (16, 18) reliant une partie arrière du niveau supérieur (14) et une partie arrière du niveau inférieur (12), et la draperie (100) comporte en outre une découpe (216, 218) dans une partie arrière de la section inférieure (200) pour laisser passer le montant (16, 18), le montant (16, 18) et la découpe (216, 218) étant isolés de la surface de niveau inférieur stérile par la section intermédiaire (300).

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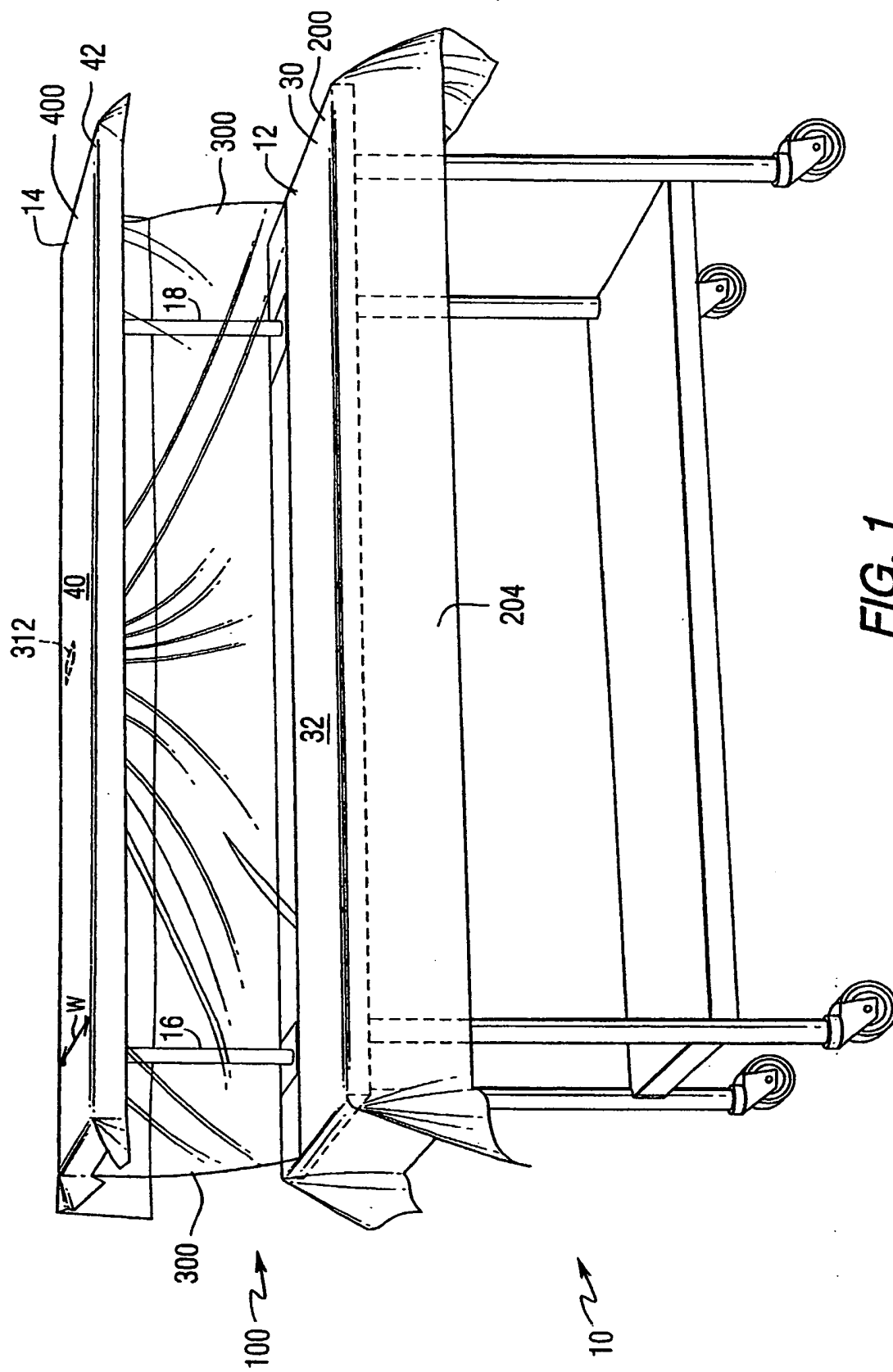


FIG. 1

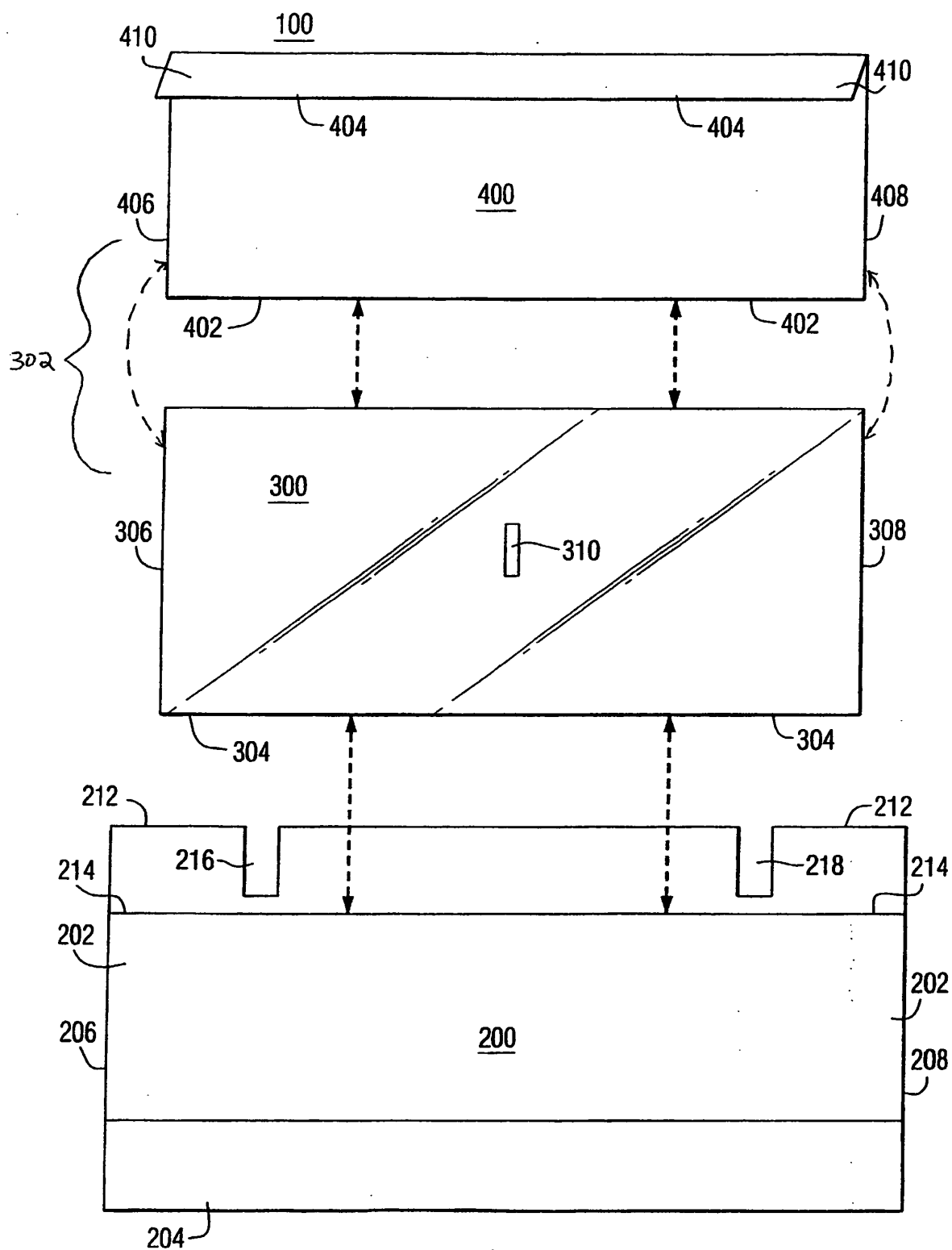


FIG. 2