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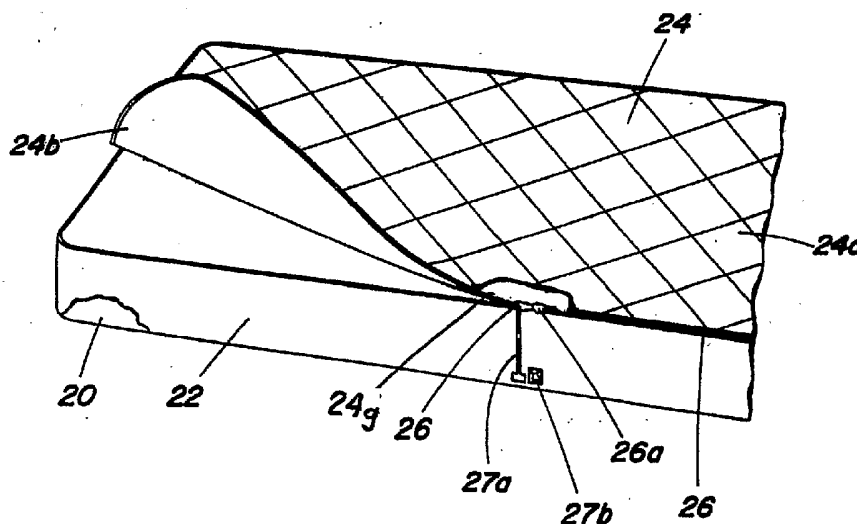
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- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

[Continued on next page]

(54) Title: EASILY CHANGEABLE ABSORBENT PANEL FOR BED CLOTHING



(57) Abstract: The securing layer such as a fitted sheet is modified to provide one half of a fastener, such as a zipper, and a separable, absorbent panel as adapted to overlay the top surface of a mattress and to underlay and be in direct contact of the occupant on the mattress. The separable, absorbent panel includes another fastener portion, such as the other side of a zipper, so as to secure the absorbent panel to the securing layer. The first and second fastener portions are to be located on the side surface of the mattress at the top, outer circumference of the mattress when the securing layer is applied to the mattress. In this manner, the fastener cannot be easily accessed by an infant so as to prevent the infant from loosening and becoming entangled in the absorbent panel. However, the absorbent panel is easily removed for quick changes in case the occupant of the mattress, such as a baby, soils the absorbent panel. Medical application embodiments are also disclosed.

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EASILY CHANGEABLE ABSORBENT PANEL FOR BED CLOTHING

Field of the Invention

5 [001] The present invention relates to bed clothing with means for facilitating the changing of panel thereof.

Description of the Related Art

10 [002] As parents of young children are aware, infants tend to soil sheets on a regular basis. This necessitates the changing of sheets, which for a crib is inconvenient insofar as the end walls and side rails of the crib tend to make this process more difficult. The end walls 12, 14 and side rails 16,18 of the crib 10 as illustrated in Fig. 1 restrict the movement of caregiver's hands adjacent to the mattress 20. The tight fit between the mattress 10 and the end walls 12, 14 and side
15 rails 16, 18 is deliberate. A caregiver does not want an infant to inadvertently or through exploration activities have a limb trapped in the space between the mattress 20 and rails 14, 16 insofar as this can cause severe injury to the child. Because of this tight fit, to change a sheet it is often necessary to completely or halfway lift the mattress out of the crib. The process is inconvenient, sometimes physically
20 uncomfortable, strenuous and aggravating, particularly in the early morning hours. It also disturbs the child because the child must be removed from the crib in order to change the sheets.

25 [003] Similar problems occur in any bed when they have adjacent structures, such as the side rails on hospital beds, which make it inconvenient for the caregivers to change the sheets when a patient for instance soils them. Even without adjacent structures, changing flat, fitted or encasement sheets can be inconvenient because generally at least part of the mattress is lifted. Also, because of the moisture content of the soiling agents, such as vomit, body fluids, fecal matter and urine, that
30 penetrates through to the under sheet, it is often also necessary to change the mattress pad that is conventionally placed between the undersheet and the mattress.

[004] Many solutions have been proposed to solve these types of problem but each suffers from one or more perceived defects. For instance, the U.S. Patents 4,922,565 and 5,086,530 to Blake disclose a composite sheet, which includes a first upper panel that has a moisture-proof element such as plastic or rubber, and a second panel that is fitted over the mattress. However, the moisture-proof upper panel is adhered to the lower panel via a hook and loop fasteners (e.g., Velcro®) placed on the topside of the mattress on the lower sheet. The problem with the structure is twofold. First, a child can pull the moisture proof panel off the lower panel and become entangled in it. Children have been known to suffocate when wrapped tightly in a sheet loosened from a crib mattress. While the Blake patents disclose the edge of the waterproof panel as placed underneath bumper pads, a curious infant would nevertheless be able to not only find the edge of the panel, but the edge of the panel would provide a finger hold so that an child, particularly a toddler, could remove it from its hook and loop fasteners.

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[005] Additionally, some attempts have been made to improve upon the Blake structure such as providing hook and loop panels that extend down the sides of the mattress. See, U.S. Patent 6,243,895 to Amin. However, this approach leads to the same problem as with conventional sheets because it is generally necessary to at least partially remove the mattress from the crib in order to secure the hook and loop panels to the sides of the mattress, for instance.

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[006] The U.S. Patent 3,570,026 to Allison discloses a baby bed sheet with a removable panel where two zippers are placed on the top surface of the mattress. As with the embodiment of the Blake patent, a hazard to this structure is that a curious baby could unzip the removable panel. The zipper location also creates a bit of a bump in the mattress surface. Further, as disclosed in the Allison patent, there are two zippers, which requires greater assembly because each zipper has to be started and zipped separately. The Allison patent discloses that an overlay of fabric can be provided with snaps or hooks fasteners to keep the curious hands of the child away from the zipper slider. Because the snaps are not out of the convenient reach of an

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infant, it is believed that an infant may be able to defeat these measures as well. In any event, the location of the zipper presents the zipper to curious hands and the fact that the zipper is located on and under the surface of the removable panel means that the panel has finger holds for the child to grasp and tug on, which can cause the
5 inadvertent separation of the zipper, even when the slider is not used. In any event, it is believed that the Allison baby sheet imposes an unacceptable risk and discomfort to the occupant of the bed. A similar structure is used with a continuous zipper in U.S. Patent No. 5,289,602 to Trader. There are several other examples of bed sheets which use hook and loop fasteners and the like such, as U.S. Patent No.
10 5,003,655 to Kafai, U.S. Patent No. 5,577,276 to Nicholson et al. and WO 01/79867. Additionally, there are a variety of mechanisms for securing sheets, in general, to a bed. See U.S. Patent No. 6,122,783 to Herndon et al. and U.S. Patent No. 4,546,508 to Ison, for instance.

15 **[007]** Other solutions, such as disclosed in U.S. Patent No. 5,330,487 issued to Beer, in which bedclothes designed to make a bed more readily made-up includes zippers which apply an under sheet that is in direct contact with the occupant at a location about midway down the mattress. However, this solution does not work well in a crib environment or any bed that has obstructions adjacent to the mattress
20 because the mattress would still have to be lifted above the obstruction. A problem associated with the location of this zipper is that it is difficult for someone changing the sheet to reach past the side walls 12 and 14 and side rails 16 and 18 of a crib, or like a bed with obstructions adjacent with the sides of the mattress. It generally becomes necessary for the person desiring to change the sheet to lift the mattress
25 high enough off the bed to clear any adjacent obstructions in order to unzip it. This is inconvenient, particularly when it is desired that the occupant such as a baby not be woken during the process such as in the early hours of the morning when it sometimes becomes necessary to change the sheets of a baby's crib. Also, the bed pad is underneath the under or bottom sheet. Therefor, if the bed is sufficiently
30 soiled, it is necessary to remove not only the under sheet, but the mattress pad,

leading to greater inconvenience regardless of whether there are obstructions next to the mattress.

5 [008] However, it is also equally inconvenient for a zipper to be on the top of the matter such as done for waterbed sheets because infants are likely to find and play with, perhaps to their detriment, the zipper, as explained above. Also, the location of the zipper on the top surface of the bed can be inconvenient and uncomfortable particularly in the hospital environment where the patients may be asked to slide across the zipper portion in getting in or out of bed.

10 [009] Further, in the medical arts, patients often need heat or cold therapy, to have broken limbs stabilized, to have bodily functions monitored and other types of medical therapy that currently involve separate devices that need to be secured to the patient and/or bed, for instance. Also, patients that remain in bed for long
15 periods of time need to be turned from side to side or turned over to prevent inadequate blood perfusion.

Summary of the Invention

20 [0010] It is an object of the present invention to provide bed clothing which includes a securing layer such as a fitted sheet of material adapted to be in direct contact with the top and side surfaces of a mattress. It further includes a separable insert panel that may be absorbent in certain embodiments and is adapted to overlay all the top surface of the mattress and to underlay and be in direct contact with an occupant of the bed on the mattress. Embodiments of the present invention further
25 provides a continuous, separable fastener, such as a zipper, which includes first fastener portion mounted to an outer periphery of the insert panel and a second fastener portion mounted to a securing layer being located on the side surfaces of the mattress and a top, outer circumference of the mattress when the securing layer is applied to the mattress. The first and second fastener portions are opposed,
30 elongated and cooperating configured surfaces intended to directly contact and interlock with each other in a single plane. In this manner, movement between the

securing layer and the absorbent panel is restricted in the direction forces transmitted between the absorbent panel and the securing layer. The first fastener portion and the second fastener portions are easily associated and disassociated, as would be expected with a zipper.

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[0011] Other aspects of the present invention will be described in the following text.

Brief Description of the Drawing Figures

[0012] The present invention will now be described by way of exemplary
10 embodiments to which it is not limited with reference to the accompanying drawing figures.

[0013] Fig. 1 is a perspective view of a conventional baby crib.

15 [0014] Fig. 2 is a perspective view of one embodiment of the present invention.

[0015] Fig. 3 is a sectional view of one embodiment of the present invention on a mattress.

20 [0016] Figs. 4 and 5 are detailed views showing embodiments of a slider of the fastening means.

[0017] Fig. 6 is a perspective view of another embodiment of the present invention.

25 [0018] Fig. 7 is a sectional view of therapeutic devices inserted in the insert panel.

[0019] Fig. 8 is a sectional view of expandable cushions insertable into the insert panel.

30 [0020] Fig. 9 is a sectional view of a heating or cooling device for placement in the insert panel.

Detailed Description of the Invention

5 [0021] As illustrated in Fig. 1, a baby's crib 10 includes an enclosure defined by fixed sides 12 and 14 and side rails 16 and 18. A mattress is placed between the fixed walls 12 and 14 and side rails 16 and 18 so as to provide very little gap between the mattress and the walls and rails. A frame (not labeled) supports the mattress. Typically, bumper pads (not labeled) are positioned around the inner surface of the fixed walls 12 and 14 and side rails 16 and 18 above and adjacent to the top surface of the mattress so to reduce the possibility of a baby bumping his or her head. While very useful in a crib environment, it should be noted that various embodiments of the invention can be used in regular beds, hospital beds, bunk beds, play pens, circular beds, beds having designs (such as race car and boat shaped beds), and nearly any other bedding or bed like structure having a surface that is often in contact with the occupant and might require changing for maintaining a degree of cleanness, whether or not adjacent obstructions are present.

20 [0022] As illustrated in Figs. 2 and 3, embodiments of the present invention include a securing layer 22 of material adapted to be in direct contact with the top surface and side surfaces of the mattress 20. The securing layer 22 can take the form of a modified fitted sheet which includes at least one corner and preferably four corners which are preformed to surround corners of the mattress 20. An elastic band is generally located on an outer edge of the fitted sheet to provide a smooth and secure fit to a mattress 20. Hence, the securing layer 22 covers all four sides of the top surface of the mattress 20. As an alternative, an encasement sheet can be used as part of the securing layer 22 in which all four sides, the top and the bottom of the mattress 20 are covered. A flat sheet could be used as the securing layer 22, but alignment of the top might prove inconvenient. In yet another embodiment of the present invention, the securing layer 22 can be simply a loop of material covering only the four sides of the mattress 20 and secured into location by, for instance, by elastic bands such as found on an edge of a conventional fitted sheet on both sides of

the loop of material. It should also be noted that either of the surfaces of the securing layer 22 covering the top and bottom of the mattress 20 can have an insert of mesh material to permit greater movement of air and/or can be made out of relatively less expensive materials insofar as this securing layer 22 does not have to come into contact with the occupant of the bed, as will become apparent in the description below. The material of the insert panel 24 and/or the securing layer 22 can be hypoallergenic, antimicrobial, disposable, medicated, stain resistant, stain proof (including new materials based on nanometer sized whiskers that repel materials), or untreated, and a wide variety of quality of materials including but not limited to cottons, synthetics and blends.

[0023] The present invention also can include a separable insert panel 24 adapted to overlay all the top surface of the mattress 20 and to underlay and be in direct contact with the occupant on the mattress 20 and can be absorbent in various embodiments of the invention. The insert panel 24 includes a top surface 24a and a bottom surface 24b. The insert panel 24 also may include at least one absorbent layer 24c and/or a moisture restriction layer 24d. The moisture restriction layer 24d is not always necessary particularly on adult oriented products because cognizant adults can ask that a soiled absorbent panel 24 be replaced quickly. Also, many crib mattresses have a moisture resistant surface, making the restriction layer 24d less necessary. When the absorbent panel 24 is placed on the mattress 20, an occupant is in direct contact with the absorbent layer 24c. In an alternative, the absorbent panel 24 can include a second absorbent layer 24e positioned on the side opposite to the first absorbent layer 24c relative to the moisture restriction layer 24d.

[0024] The moisture restriction layer 24d can in one embodiment resist moisture from passing there through, but not completely block moisture as far as in some circumstances moisture does not seep through the absorbent layer 24c and the moisture resistant layer 24d before the absorbent panel 24 is reasonably expected to be replaced. Moisture resistant material can be advantageous insofar as it can

permit the passage of minor amounts of moisture out of the mattress or away from the occupant, for instance, which may be desirable.

5 [0025] Alternatively, the moisture restriction layer 24d can prevent moisture from passing therethrough, thereby providing maximum protection to the mattress.

Additionally or alternatively, the moisture restriction layer 24 can permit air to pass there through which may be viewed as healthy for the occupant, e.g., baby, insofar as there is some indication that crib death is caused through some as yet unidentified suffocation mechanism.

10 [0026] In certain embodiments the absorbent panel 24 is washable for reuse, but it is also possible that the absorbent panel 24 be disposable after a single soiling. A disposable absorbent panel 24 might be advantageous in some circumstances such as hospitals or anywhere the soiling agent may constitute a biohazard, for instance. If disposable, it is envisioned that the absorbent panel 24 could be have a structure similar to the layered structure of a diaper including a moisture or liquid permeable layer, an absorption layer, and a moisture resistant or impermeable layer, the latter acting as the moisture restriction layer 24d as described above.

20 [0027] Additionally, particularly in the embodiment which uses first and second absorbent layers 24c, 24e with the moisture restriction layer 24d interposed therebetween, can have applied decorative designs. In another embodiment, the decorative designs would be different from each other so as to provide the user with the option of which decorative design is exposed, for coordination with room decorations for instance. In this way, the first absorbent layer 24c of the two absorbent layer embodiment be in direct contact with the occupant of the mattress when the absorbent panel 24 is oriented one way, whereas the second absorbent layer 24e is in direct contact with the occupant on the mattress 20 when the absorbent panel 24 is oriented another way, i.e., flipped over. The moisture restriction layer 24d would be interposed between the first absorbent layer 24c and
30 the second absorbent layer 24e. The absorbent panel 24 may be of a single layer of

absorbent material with different decorative designs applied to the different sides. The absorbent panel 24 may be embossed with a pattern on at least one and optionally both sides.

5 **[0028]** It is noted at this point that the absorbent panel 24 may be adapted to overlay all of and extend beyond the top surface of the mattress 20, for reasons which will become apparent in conjunction with the description of the continuous separable fastener 26.

10 **[0029]** The continuous, separable fastener 26 can be in the form of a zipper with a slide 26 or similar mechanism (e.g., a Zip Lock® fastener). The continuous, separable fastener 26 includes a first fastener portion 26b mounted to an outer periphery of the absorbent panel 24 and a second fastener portion 26c mounted to the securing layer 22 such that it is located on the side surfaces of the mattresses 20
15 at the top, outer circumference of the mattress when the securing layer 22 is applied to the mattress 20.

[0030] The continuous separable fastener 26 includes a first and second fastener portions 26b and 26c which are opposed, elongated cooperating configured surfaces
20 intended to directly contact and interlock with each in a single plane, unlike Velcro and the like. The movement between the securing layer 22 and the absorbent panel 24 is restricted in the direction of force, by the pulling motion of the fabric, which is transmitted between the securing layer 22 and the absorbent panel 24. The first fastener portion 26b and the second fastener portion 26c are usually easily
25 associated and disassociated from each other, as it is typical of a zipper, or the like.

[0031] The fastener 26 may be covered by tabs of fabric 22b and 24f associated with the securing layer 22 and absorbent panel 24, respectively to not only reduce the likelihood that an infant will find the fastener 26, but also provide greater
30 comfort in environments where the bed occupant may be asked to slide across the fastener 26 in getting in or out of bed. Further, an additional tab of material 24g

may extend over the end point of the fastener 26 where a slider 26a is located when the fastener is fully engaged. This additional tab of material 24g can be securable to the securing layer 22 with hook and loop fasteners for instance, to further restrict a child from reaching and manipulating the slider 26a. The additional tab 24g can
5 extend part way or all the way down the side of the mattress 20 to be secured to the securing layer 22. It can be located at a position where there is likely not going to be an obstruction, e.g., between the slates of a side rail 16, 18, so that it can be fastened and unfastened without requiring the mattress 20 to be lifted.

10 **[0032]** While the tabs 22b and 24f and the additional tab 24g provide protection from disassociating the first fastener portion 26b from the second fastener portion 26c, an additional measure can be taken in which is the slider 26a is secured against movement by a young child occupant. This mechanism can take the form of a lanyard 27b with one end secured to the slider 26a and the other end including
15 means for securing it to a fixed object. For instance, the other end of the lanyard 27b may include Velcro, hooks, loops, buttons, etc. for fastening to either a lower portion of a mattress 20 or to the securing layer 22, as illustrated in Fig. 2 at location 27b, or to a side rail 16, 18 or end walls 12, 14.

20 **[0033]** It should be noted that a preferred location for the slider 26a of the continuous separable fastener 26 to end its movement in a fastened state is at a midpoint at the head or foot of the bed for embodiment intended for adult size beds and at a midpoint of any side for a product intended for a crib mattress 20, in light of the ease in changing the separable panel 24 while the bed remains occupied, as
25 explained below.

[0034] Alternatively, the continuous separable fastener 26 can include two sliders 26a, as is known in the zipper art, and the lanyard 27a interlock the apertures thereof through a mechanism which is likely to defeat the efforts of an infant disassociating
30 the two fastener portions 26b and 26c. The end of the lanyard 27a can take the form of a simple lock, latch or other structure easily released by an adult, but not easily

released by a child. The lanyard 27a, as mentioned above, can also simply be fastened to itself by looping it around the slate of one of the rails 16, 18 and back on to itself, again using a mechanism such as a snap, button, Velcro, knotting or other mechanism for securing the lanyard 27a, and therefor the slider 26a, against movement by an infant. For added safety, it is best of the securing mechanism at the end of the lanyard 27a be out of the convenient reach of the child occupant.

[0035] As an alternative to the lanyard 27a, the slider 26a can include an aperture into which is fit a rotatable clasp head 27b, such as found on purses and the like, as shown in Fig. 5. Hence, when the fastener 26 is in its fully fastened position, the head can be flipped over such that the clasp head 27b projects through an aperture in the slider 26a and can be rotated about a pivot point such that the head 27b secures the slider handle in a locked position. The locked position of the clasp head 27b can be secured by means of detents in the slider handle adjacent to the aperture, for instance. The clasp head 27b can be mounted on the securing layer 22, or on another slider 26a in a two slider 26a embodiment (wherein a zipper for instance has two heads rather than the more common head and zipper stop combination) or on a slider stop, for instance.

[0036] It should be noted that the absorbent panel 24 can be sold separately such that a consumer need only purchase one securing layer 22, but could have a number and variety of absorbent panels 24 so as to reduce the urgency of washing and reusing an individual absorbent panel 24, or for purely decorative reasons.

[0037] The present invention could also be sold as a crib sheet set, including bumper pads and the absorbent panel or panels 24, and optionally the securing layer 22, pillow cases, sconces, canopies, curtains, wall decorations and toys such as mobiles, etc. The bumper pads could have two decorative sides to match the two decorative sides of the panel 24, in a two-sided embodiment.

5 [0038] While a crib 10 is shown, it will be apparent that the present invention is useful for other types of beds, particularly but not limited to any bed that has side rails or structures closely adjacent to the mattress sides. But even without adjacent structures the present invention is useful in that the edges of a mattress 20 do not have to be lifted to change the insert panel 24 because it is not tucked under the mattress 20. Also, the relatively uniform thickness and lack of elastic bands makes the absorbent panel 24 easier to change than conventional fitted sheets when the bed remains occupied. The occupant is simply rolled to one side of the bed, the insert panel 24 unzipped half way around the bed and folded to cover the soiled spot if any and adjacent to the occupant, a new absorbent panel 24 is placed on the uncovered half of the top surface of the mattress 20, and then the occupant is rolled over onto the clean side of the bed. Completing the removal and replacement of the soiled insert panel 24 completes the process.

15 [0039] Additionally the present invention is useful even when the absorbent panel 24 is simply a single layer of material. While the user would not enjoy the benefit of an absorbent layer, the single layer could still have two different decorative sides, for example. Even as a single layer of material (or two sheets adhered or sewn together, this embodiment of the present invention is still be easier to change than conventional sheets because the mattress 20 does not have to be lifted at all to change the sheet, as explained above. Further, the absorbent panel 24 could have a separate function, such as an auxiliary feather mattress, whose primary purpose is to provide greater comfort to the bed occupant(s).

25 [0040] As illustrated in Fig. 3, the insert panel 24 can also include a top sheet 31 fastenable to the top surface 24a of the insert panel 24 at one end (foot) of the insert panel 24. The fasteners 31a, 31b can be zippers, Zip Lock, hook and loop type fasteners or buttons and button holes, which detachably fasten the top sheet 31 to the insert, or sewn to the edge of the insert 24. In this way, the insert panel 24 and top sheet 31 can be assembled and thereafter removed from or attached to the securing layer 22 as a unit for quick convenient changing and washing. The top sheet 31 can

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have different decorative designs on respective sides, possible coordinated with different decorative sides of the insert panel 24. Hook and loop fasteners 31a and 31b would be acceptable even for crib applications, because top sheets and blankets can be made to be highly air permeable and pose less of a risk of suffocating a child. Being at a foot end of a mattress, the fastener 31a, 31b of the top sheet 31 of the hook and loop fastener should not prove uncomfortable to an occupant, particularly if the loop portion 31b is secured to the top surface 24a of the insert panel 24.

[0041] Figure 6 illustrates medical application embodiments of the present invention. As illustrated, these embodiments of the invention includes an underpanel 64 that has pockets 33, 34 for holding the extremities of a patient's body. For instance, there are leg holes and arm holes that include zippered slits 33a, 34a for easy insertion of the leg or arm into a pocket 33, 34 between the top surface 64a and the bottom surface 64b of the insert panel 64. As illustrated in Figure 7, these pockets 33, 34 form chambers around which heating or cooling elements 36, 37, or pneumatic or fluid (air, gel or liquid) bladders 38 can envelop the extremity of the body. In this manner, either heating or cooling treatment for the extremity, for instance, can be applied. Similarly, broken bones for instance can be stabilized by placing them into chambers 33, 34 and inflating a bladder 38 to compress and stabilize the limb, while perhaps additionally treating it with heating or cooling fluids or air, as deemed medically appropriate.

[0042] As alternatives to the heating, cooling and bladder embodiments, medical devices 37 (Fig. 9), such as integral pulse and blood pressure monitors, as well as skin temperature and skin color monitors, can be included in addition to or as substitutes for other devices.

[0043] It should also be noted that these embodiments can be used in conjunction with the removable absorbent panel 24 complete with continuous fasteners 26, but are equally applicable to normal fitted sheets. However, in the medical environment, both aspects of the present invention would often be appropriate.

[0044] As also illustrated in Figure 6, a long slit 35 can extend over a portion over the entire length of the absorbent panel 24. This additional or alternative slit 35, which can include a zipper or other fastening mechanisms, is for insertion of various medical devices 37, such as but not limited to heating and cooling elements, monitoring devices or the like. Additionally, one aspect of the invention is insertion of inflatable bladders 38, as illustrated in Figure 8 having two or more chambers 38a, 38b. In a two-chamber embodiment, the chambers 38a, 38b extend down the right and left sides of a patient occupying the bed. If a patient remains in bed for a long time, long enough for circulation to become a problem, the bladders 38 can be selectively inflated and deflated so as to slightly rotate the patient's body from having greater pressure on the one side to greater pressure on the other side, either in a cyclic manner or upon detection of a condition of the body. For instance, the bladders 38 can be connected to monitors that will continuously obtain readings of adequate blood perfusion through sensors (not shown) lining the padding. To properly maintain skin integrity of patients who are immobile and are at high risk of decubitus ulcers, for instance, the chambers are selectively inflated and deflated. There can be multiple chambers and they can be in the form of a grid structure. Sensors (not illustrated) connect to a line grid that corresponds to either pneumatically or gel filled chambers 38a, 38b within the pad 38. Each chamber 38a, 38b can have valves that are regulated and controlled by a monitoring system for instance. If the sensors note a decrease in blood perfusion, the medical underpanel 64 will adjust itself by deflating one or more of the chambers 38a, 38b in the affected area. This will reduce pressure on the patient in that area, thereby allowing proper circulation to continue and skin integrity to be maintained. The chambers 38a, 38b can also be set at timed intervals to deflate and inflate in vertical lines and so as to slowly and slightly turn the patient from side to side. This will also help in maintaining skin integrity by not having the skin compressed in one place for too long. Air mass alternating pressure pads are commercially available, such as provided by R. D. Grant Co., Cleveland, Ohio.

[0045] Figure 9 illustrates a generic description of other types of devices 37 including heating or cooling pads. In the heating pad environment, it should be noted that for sheets sized for full, queen or king size beds, dual controls can be offered so as to selectively heat or cool one side of the bed, as desired by different
5 occupants of the same bed.

[0046] The present invention has been described by way of exemplary
embodiments to which it is not limited. Variations and alterations will occur to
those skilled in the art upon reading the above disclosure. Also, not all
10 embodiments necessarily have any or all of the advantages mentioned about. While
problems existing in the prior art can be solved by various embodiments of the
present invention, not every embodiment of the present invention solves any or all
of them. These alterations and variations are likely encompassed within the
invention, as defined in the claims, appended below.

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WHAT IS CLAIMED IS:

1. Bed clothing comprising:
 - a securing layer of material adapted to be in direct contact with a top
5 surface and side surfaces of a mattress;
 - a separable, absorbent panel adapted to overlay all of said top surface of
the mattress and to underlay and be in direct contact with an occupant on the
mattress; and
 - a continuous, separable fastener including
 - 10 a first fastener portion mounted to an outer periphery of said
absorbent panel; and
 - a second fastener portion mounted to said securing layer to be
located on said side surfaces of the mattress at a top, outer circumference of the
mattress when said securing layer is applied to said mattress,
 - 15 wherein said first and second fastener portions are opposed, elongated,
cooperating, configured surfaces intended to directly contact and interlock with each
other in a single plane, such that movement between said securing layer and said
absorbent panel is restricted in the direction force is transmitted therebetween, and
wherein said first fastener portion and said second fastener portion are easily
20 associated and dissociated from each other.
2. Bed clothing in accordance with claim 1, wherein said continuous,
separable fastener further comprises a slider.
- 25 3. Bed clothing in accordance with claim 2, wherein said slider
includes a slide securing device that restricts the occupant from dissociating said
first fastener portion and said second fastener portion from each other.
- 30 4. Bed clothing in accordance with claim 3, wherein said securing
device is a lanyard fastenable to either said securing layer at a position an occupant

on the mattress cannot easily reach or a bed structure at a position an occupant on the mattress cannot easily reach.

5 5. Bed clothing in accordance with claim 1, wherein said absorbent panel includes an absorbent layer to be in direct contact with the occupant on the mattress and a moisture restriction layer.

10 6. Bed clothing in accordance with claim 1, wherein said absorbent panel includes a first absorbent layer to be in direct contact with an occupant on the mattress when said absorbent panel is oriented one way and a second absorbent layer to be in direct contact with an occupant on the mattress when said absorbent panel is oriented another way, and a moisture restriction layer interposed between said first absorbent layer and said second absorbent layer.

15 7. Bed clothing in accordance with claim 1, wherein said absorbent layer includes a first applied decorative design on one side and a second applied decorative design on another side, wherein the first and second applied decorative designs are different from each other.

20 8. Bed clothing in accordance with claim 5, wherein said moisture restriction layer prevents moisture from passing therethrough.

 9. Bed clothing in accordance with claim 5, wherein said moisture restriction layer resists moisture from passing therethrough.

25 10. Bed clothing in accordance with claim 5, wherein said moisture restriction layer permits air to pass therethrough.

30 11. Bed clothing in accordance with claim 1, wherein said absorbent panel is embossed on at least one side.

12. Bed clothing in accordance with claim 1, wherein said absorbent panel is washable and reusable.

5 13. Bed clothing in accordance with claim 1, wherein said absorbent panel is disposable.

14. Bed clothing in accordance with claim 1, wherein said absorbent panel adapted to overlay all of said top surface of said mattress.

10 15. Bed clothing in accordance with claim 1, wherein said securing layer of material is adapted to cover all four side surfaces of a mattress.

15 16. Bed clothing in accordance with claim 1, wherein said securing layer of material is adapted to cover all four side surfaces of a mattress, and further comprises an elastic band secured to an outer edge of said securing layer.

17. Bed clothing in accordance with claim 1, wherein said securing layer of material includes a corner which is preformed to surround the corner of a mattress.

20 18. A crib sheet set comprising: bed clothing in accordance with claim 1 and at least one of: bumper pads, pillow case, sconces, canopies, curtains, wall decorations and toys.

25 19. An absorbent panel adapted to overlay all of a top surface of a mattress and to underlay and be in direct contact with an occupant on the mattress, said absorbent panel comprising:

an absorbent layer to be in direct contact with the occupant on the mattress; and

30 a first fastener portion mounted to an outer periphery of said absorbent panel,

wherein said first fastener portion is adapted to engage a second fastener portion mounted to a securing layer, wherein the second fastener portion is to be located on side surfaces of the mattress at a top, outer circumference of the mattress when the securing layer is applied to the mattress, and

5 wherein first and second fastener portions are opposed, elongated, cooperating, configured surfaces intended to directly contact and interlock with each other in a single plane, such that movement between the securing layer and said absorbent panel is restricted in the direction force is transmitted thereto, and wherein said first fastener and the second fastener portion are easily associated or dissociated
10 from each other in the form of a continuous, separable fastener.

20. An absorbent panel in accordance with claim 19, further comprising a moisture restriction layer.

15 21. Bed clothing comprising:

 a securing layer of material adapted to be in direct contact with a top surface and side surfaces of a mattress;

 a separable, under panel adapted to overlay all of said top surface of the mattress and to underlay and be in direct contact with an occupant on the mattress;

20 and

 a continuous, separable fastener including

 a first fastener portion mounted to an outer periphery of said under panel; and

25 a second fastener portion mounted to said securing layer to be located on said side surfaces of the mattress at a top, outer circumference of the mattress when said securing layer is applied to said mattress,

 wherein said first and second fastener portions are opposed, elongated, cooperating, configured surfaces intended to directly contact and interlock with each other in a single plane, such that movement between said securing layer and said
30 under panel is restricted in the direction force is transmitted there between, and

wherein said first fastener portion and said second fastener portion are easily associated or dissociated from each other.

5 22. Bed clothing in accordance with claim 21, wherein said separable under panel includes a first applied decorative design on one side and a second applied decorative design on another side, wherein the first and second applied decorative designs are different from each other.

10 23. Bed clothing in accordance with claim 21, wherein said separable under panel adapted to overlay all of said top surface of said mattress.

15 24. A set comprising bed clothing in accordance with claim 21 and at least one of: bumper pads, pillow cases sconces, canopies, curtains, wall decorations and toys.

20 25. An under panel adapted to overlay all of a top surface of a mattress and to underlay and be in direct contact with an occupant on the mattress, said under panel comprising:

25 a first layer to be in direct contact with the occupant on the mattress; and
 a first fastener portion mounted to an outer periphery of said under panel, wherein said first fastener portion is adapted to engage a second fastener portion mounted to a securing layer located around a circumference of a mattress, wherein the second fastener portion is to be located on side surfaces of the mattress at a top, outer circumference of the mattress when the securing layer is applied to the mattress, and

30 wherein first and second fastener portions are opposed, elongated, cooperating, configured surfaces intended to directly contact and interlock with each other in a single plane, such that movement between the securing layer and said absorbent panel is restricted in the direction force is transmitted thereto, and wherein said first fastener and the second fastener portion are easily associated and dissociated from each other in the form of a continuous, separable fastener.

26. A medical application underpanel adapted to overlay a top surface of a mattress, said underpanel comprising:

a first layer of material; and

5 a second surface of material joined at least at a majority of its edge to an edge of the first layer, thereby forming at least one pocket between the first and second layers,

wherein the pocket formed between said first and second layers is sized to receive a medical device such that said medical device interacts with an occupant of the mattress for medical or therapeutic purposes.

10

27. A medical application underpanel in accordance with claim 26, wherein said medical device is a cooling panel.

15 28. A medical application underpanel in accordance with claim 26, wherein said medical device is a heating panel.

29. A medical application underpanel in accordance with claim 26, wherein said medical device is a biological function monitoring device.

20

30. A medical application underpanel in accordance with claim 26, wherein said medical device is an inflatable panel having at least two chambers that are separately inflatable.

25 31. A medical application underpanel in accordance with claim 26, wherein said first layer includes an aperture to said pocket a location designed to receive an extremity of an occupant of said mattress.

30 32. A medical application underpanel in accordance with claim 31, wherein said aperture includes a fastener permitting the aperture to be adjusted in size.

33. A medical application underpanel in accordance with claim 31, wherein said pocket is dimensional to receive an extremity of an occupant of a mattress and wherein said medical device substantially surrounds said extremity when received in said pocket.

5

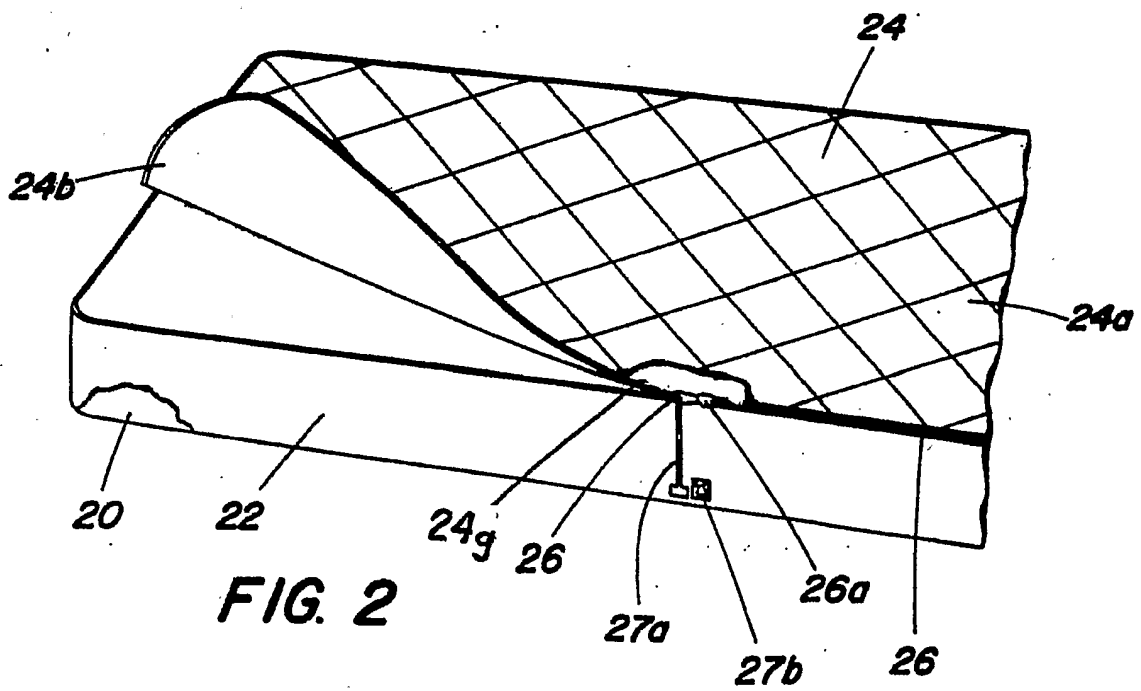
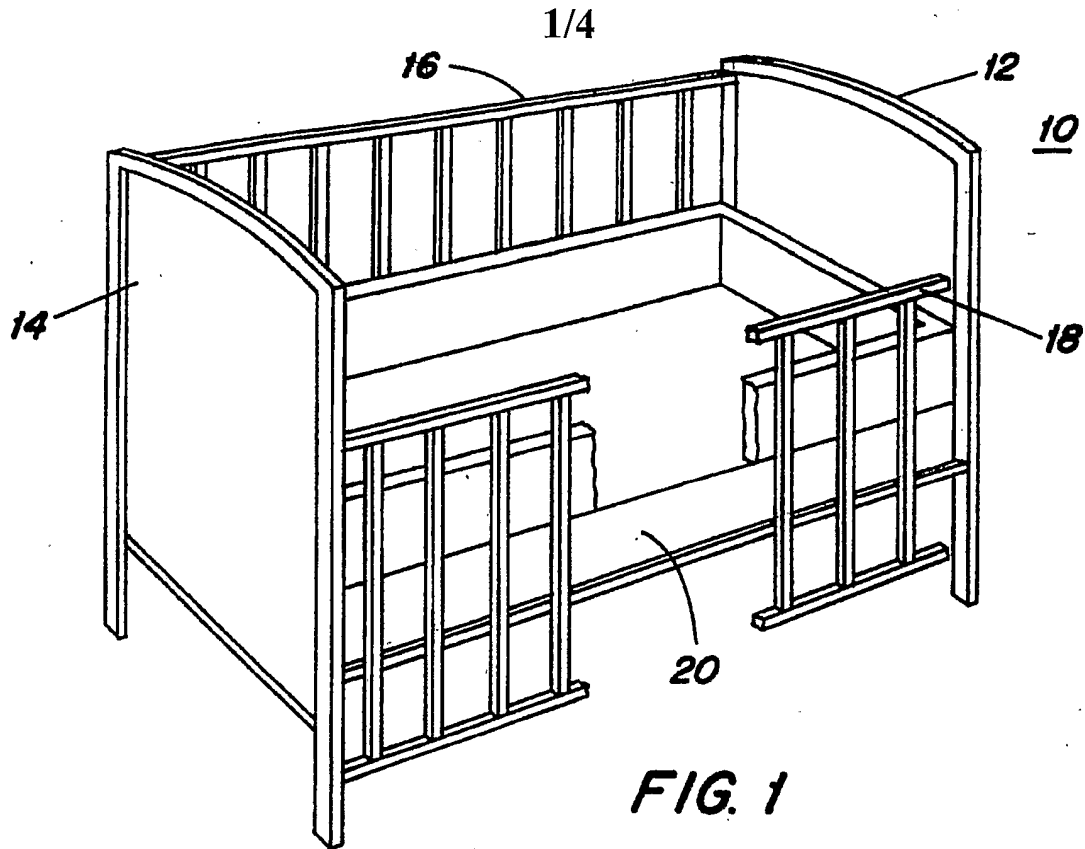
34. A medical application underpanel in accordance with claim 33, wherein said medical device is an inflatable bladder which, upon inflation, will hold an inserted extremity in a fixed position.

10

35. A medical application underpanel in accordance with claim 26, further comprising at least one of an absorbent layer and a moisture restriction layer.

15

36. A medical application underpanel in accordance with claim 26, further comprising a securing layer separable from the underpanel, for selectively securing the underpanel to a mattress.



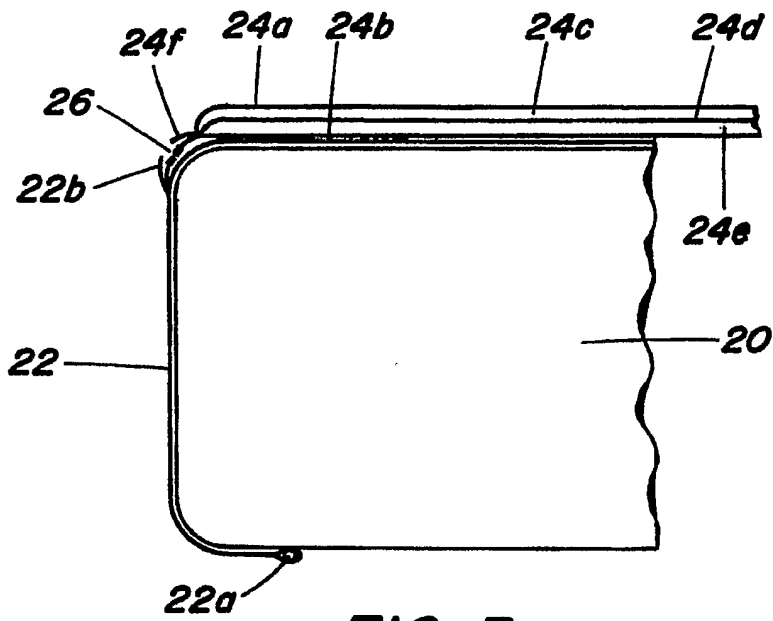


FIG. 3

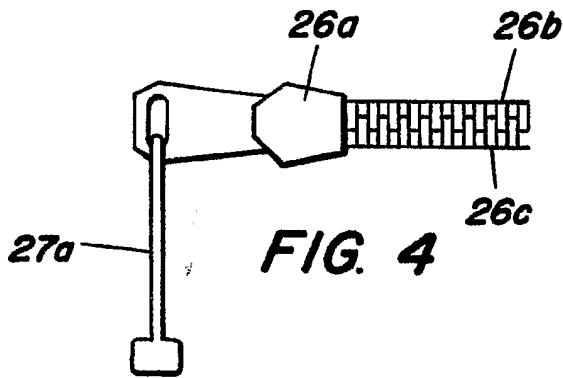


FIG. 4

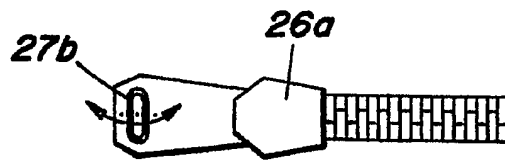


FIG. 5

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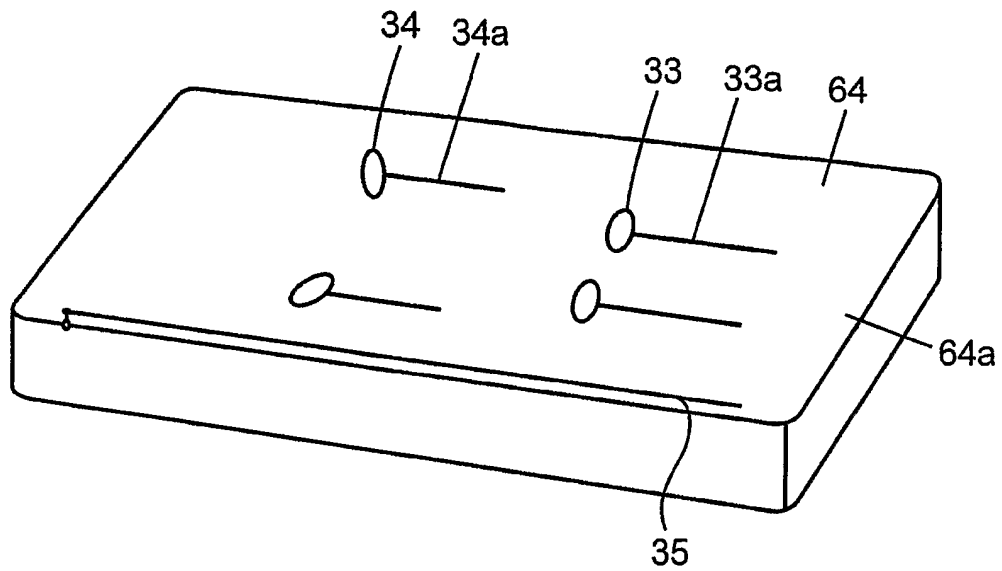


FIG. 6

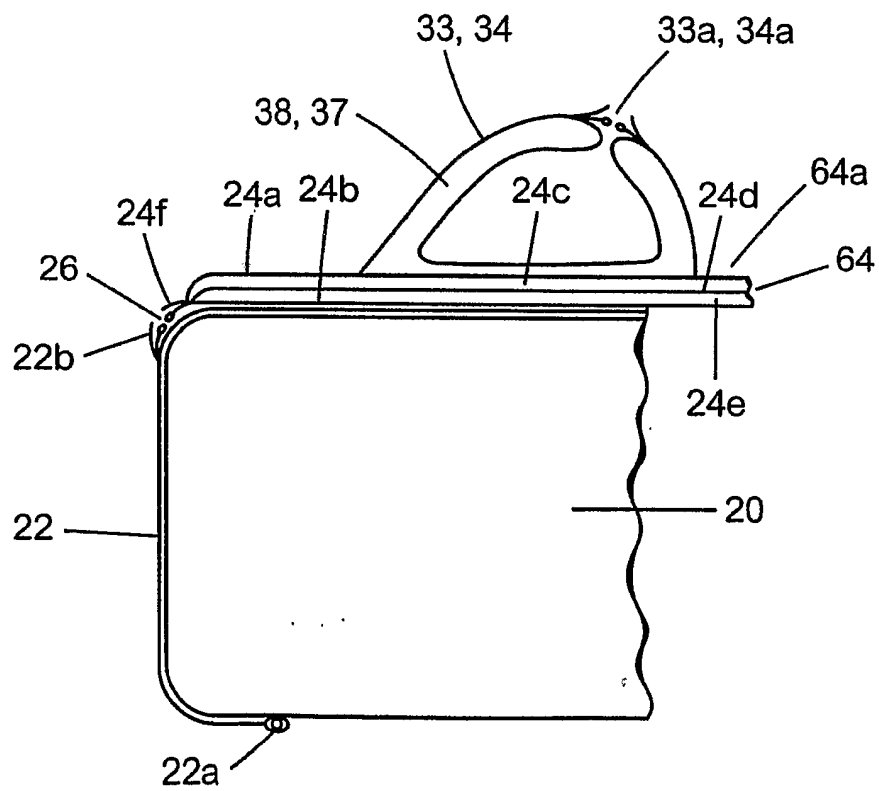


FIG. 7

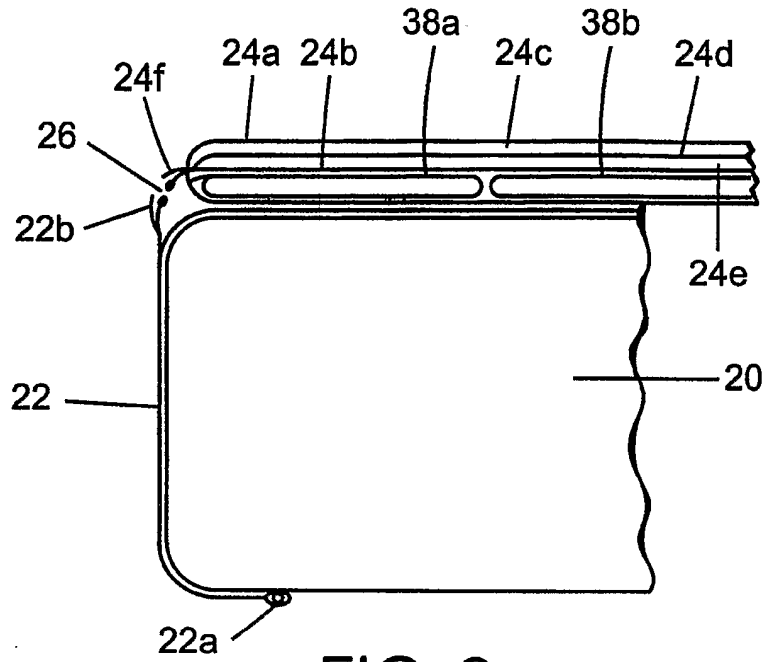


FIG. 8

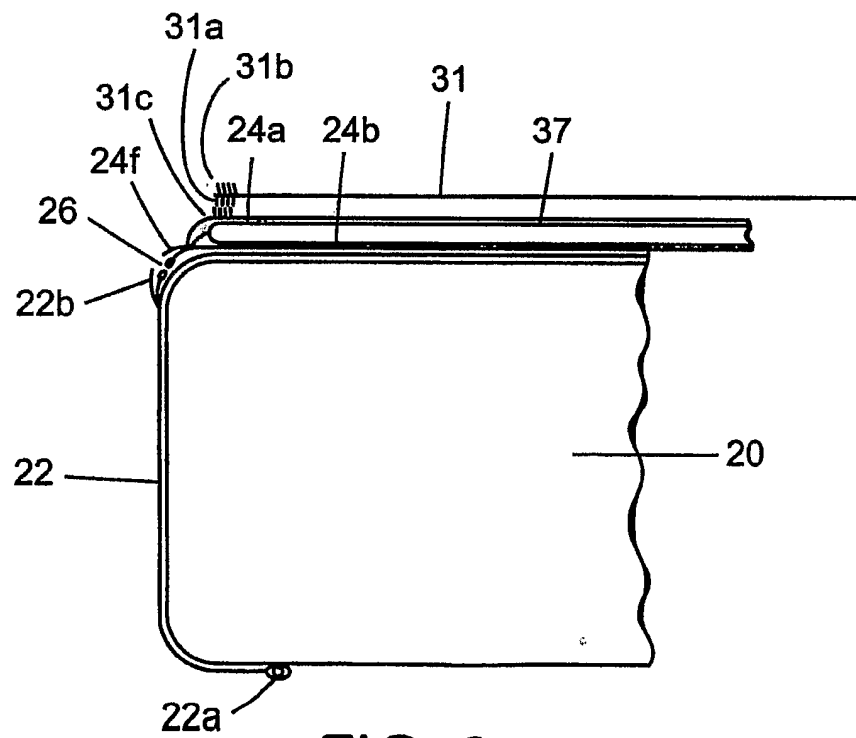


FIG. 9