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(54) **Title:** BOLSTER SYSTEM FOR LOW AIR LOSS MATTRESS

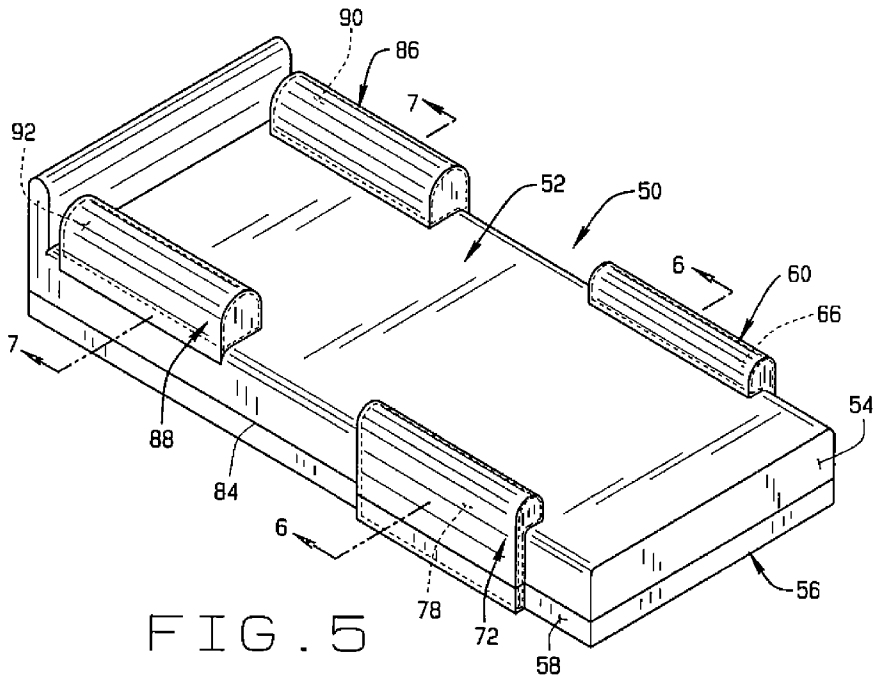


FIG. 5

(57) **Abstract:** A bolster system for a mattress to help prevent a user for falling or rolling out of bed. In one aspect, the bolster system comprised a cover with compartments at the head end and the foot end. There are inflatable bolsters in the compartments operably connected to a controller/blower. In another aspect of the invention the bolsters comprise a resilient foam material or batting. In general the cover is fashioned from a moisture resistant fabric.

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BOLSTER SYSTEM FOR LOW AIR LOSS MATTRESS

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of provisional patent application Serial No. 60/995,555, filed September 27, 2007, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

The invention relates generally to a bolster system that may be used with a low air loss mattress or other mattress to stabilize a user and prevent the user from rolling or falling out of a bed.

In certain situations individuals resting or reclining on a bed, for example a hospital bed or low air loss mattress used for the prevention of decubitis ulcers, will roll too far to the edge of the bed or mattress, putting the individual at risk of rolling off the mattress or falling out of bed. It may be that the individual, for example a hospitalized patient, is restless or impaired and does not realize that he or she is at risk. It would be advantageous, therefore, to have a bolster system that is easy to use and that can be employed with a mattress, for example, a low air loss mattress, to prevent the individual on the mattress from rolling or falling off the mattress or out of bed.

SUMMARY OF THE INVENTION

A bolster system for a mattress to help prevent a user from falling or rolling out of bed. In one aspect, the bolster system comprised a cover with compartments at the head end and the foot end. There are inflatable bolsters in the compartments operably connected to a controller/blower. In another aspect of the invention the bolsters comprise a resilient foam material or batting. In general the cover is fashioned from a moisture resistant fabric.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a bed employing one aspect of the bolster system;

Fig. 2 is a perspective view of the bolster arrangement of the bolster system;

Fig. 3 is a cross-sectional view taken along line 3-3 of Fig. 1;

Fig. 4 is a perspective view of another aspect of the bolster system;

Fig. 5 is another perspective view thereof;

Fig. 6 is a cross-sectional view taken along line 6-6 of Fig. 5;

Fig. 7 is a cross-sectional view taken long line 7-7 of Fig. 5; and

Fig. 8 is a cross-sectional view, similar to Fig. 6, of another aspect of the bolster system.

DETAILED DESCRIPTION

One aspect of the invention is a bolster system for use with a mattress for the support of a reclining individual. In general, the bolster system employs bolsters positioned on the lateral edges of the mattress or bed to prevent the user from rolling or falling off the mattress or bed. The system can employ bolsters on each side of the head/torso end, or on each side of the head/torso end and the foot/leg end, for example, as shown generally in Figs. 1 and 4.

In one aspect of the invention, the mattress may be an inflatable, low air loss mattress, such as the SelectAir® line of inflatable low air loss mattresses manufactured and sold by ROHO, Inc., Belleville, Illinois, U.S.A. One aspect of such a bolster system includes a cover, having a first end corresponding to the head and torso end of the mattress, and a second end, corresponding to the foot end of the mattress. The cover includes a pair of opposed upper compartments or pockets along the lateral edges at the first end and a pair of opposed, lower compartments or pockets positioned below the upper compartments or pockets. The cover also includes a pair of opposed compartments or pockets along the lateral edges at the second end, with these pockets lying generally in the same horizontal plane as the upper pockets at the first end.

In one aspect of the invention, there is an inflatable bolster positioned in each of the described pockets. Each of the bolsters is in fluid communication with an air source, such as a control unit with a blower. The control unit can be used to inflate the inflatable low air loss mattress as well. The control unit controls inflation of the described bolsters.

In another aspect of the invention the cover includes a top and bottom section, releasably connected by an attachment means, such as a zipper or the like. There is a pair of opposed compartments or pockets at the lateral edges of the first or head/torso end of the cover. An upper portion of each of the compartments is defined by the top section of the cover and a lower portion of each of the compartments is defined by the bottom section of the cover. There is also a pair of opposed compartments or pockets at the lateral edges at the second or leg/foot end of the cover.

In one aspect of the invention there is a substantially resilient bolster positioned in each of the compartments or pockets. The bolsters can be made from an appropriate material, such as resilient foam. Batting or inflatable bolsters could also be employed in this aspect of the invention. In one aspect of the invention there is a substantially rigid support associated with the resilient bolsters in at least the first or head/torso end of the cover.

In the various aspects of the invention, the bolsters at the lateral edges of the first end of the cover provide torso support for the torso of a reclining user. The bolsters at the first end extend up above the plane of the mattress, for example, to provide support and protection from the user rolling out of bed. The bolsters at the lateral edges of the second end of the cover extend up above the plane of the mattress to provide support and protection for the user's legs and feet and keep the legs and feet in place on the mattress and not over the side or off the mattress or bed.

Referring to the drawings one aspect of a bolster system is illustrated in Figs. 1 through 3. As seen in Fig. 1, the bolster system, indicated generally by reference numeral 10, in the drawings. Bolster system 10 is employed on a bed, indicated generally as B, having support frame F and a mattress M for the support of a user. In the illustrated embodiment, bed B can employ a lower mattress or box springs S. For purposes of description of this aspect, mattress M can be a low air-loss mattress such as the SelectAir® line of low air loss mattresses sold by ROHO, Inc., Belleville, Illinois, U.S.A.

Bolster system 10 comprises a cover 12 that has a first or head/torso end 14 and a second, or foot end 16. There is a plurality of compartments in the cover, such as a pair of opposed upper first end compartments 18, 20 at the lateral edges of the mattress, a pair of opposed lower, first end compartments 22, 24 and a pair of opposed foot end compartments 26, 28 at the lateral edges of the mattress. It will be understood that the compartments can be pockets formed in the cover, or can be comprised of straps, adjustable straps or any other type of structure that will retain bolsters in place, as explained below. Hence, the term compartment, as used herein in reference to all aspects of the invention is intended to encompass structures, or components that maintain the position of the bolster in the desired location.

There is a first, upper bolster 30 in compartment 18, a second upper bolster 32 in compartment 20, a first lower bolster 34 in compartment 22 and a second lower bolster 36 in compartment 24. These illustrated bolsters are positioned under mattress M to provide an individual resting on mattress M with support to their upper body or torso and head in the event the individual moves too close to the edge of the mattress. There is a bolster 38 in compartment 26 and a second bolster 40 in compartment 28. These bolsters are positioned at the second or foot end of the mattress so as to provide lateral support to the lower extremities or legs of the individual on mattress M.

It will be appreciated that the illustrated aspect of the system, the respective bolsters are resilient, inflatable bolsters interconnected by a series of air conduits, e.g. 42 and operably connected to a controller/blower 44. Controller/blower 44 can be the same unit that inflates mattress M. However, the controller blower, conduits and interconnected bolsters comprise a closed system that does not communicate back to mattress M. The closed inflation system includes internal check valves (not seen) that prevent communication between of the inflatable bolsters and the mattress. The controller/blower is programmable to maintain the desired pressure and low air loss flow in mattress M and to maintain a desired pressure in the respective bolsters.

In regards to bolster system 10, an individual resting in a normal posture and position on mattress M does not contact the bolsters comprising the bolster system. When the individual rolls to slides toward the side of the mattress, the bolsters keep the individual from rolling off the mattress. The lower torso-end bolsters 34 and 36 are positioned under the mattress M on each side of the individual. Bolsters 30 and 32 are positioned on top of mattress M and on each side of the individual. When the individual rolls or slides to a side of the mattress, the mattress tends to yield under the weight. This effectively draws cover 12 and the upper bolster, for example bolster 30 down until the upper bolster 30 contacts lower bolster 34. The increased tension of the cover combined with the two bolsters pressing against one another creates a reactive resistance to the individual's motion.

Further, bolsters 38 and 40 at the other end of the mattress provides means for keeping the individual's lower extremities from sliding off the side of the mattress.

In the foregoing aspect of the invention, cover 12 can be comprised of a fabric, for example, a suitable moisture resistant or impermeable fabric. The inflatable bolsters can be constructed from a resilient, durable, moldable material

such as neoprene. The conduit can be constructed from a flexible, resilient material, such as flexible plastic tubing, rubber tubing or any other material that can be used to fashion conduits that function well in this environment. The controller/blower can be one the same as or similar to the controller/blower used with the SelectAir mattresses.

It will be recognized that although the aspect of the invention described about employs inflatable bolsters, the same arrangement could employ non-inflatable bolsters, for example, resilient foam bolsters, cotton batting or pillow-like bolsters or any other construction of bolster that functions well in the bolster system.

Another aspect of the bolster system is indicated generally by reference number 50 in Figs. 4 through 8. Bolster system 50 is shown employed with a mattress M which can be the previously described low air loss mattress. As shown, mattress M includes a main section MS, and its own opposed lateral bolsters MB, which generally extend the length of the mattress. It will be understood, however, that bolster system 50 can be employed with any appropriate bed mattress.

Bolster system 50 includes a cover 52 comprised of a top section 54 and a bottom section 56. The cover material may be a suitable moisture resistant or moisture impermeable fabric. Bottom section 56 is dimensioned such that mattress M is positioned inside the bottom section so that bottom section 56 is positioned under the mattress and has side walls 58 that extend up the side of the mattress. At first or head/torso end of the cover is a first compartment 60. Compartment 60 comprises lower portion or pocket 62 formed in side wall 58 of the bottom section of the cover. An upper portion 64 of compartment 60 is formed from the top section 54 of cover 52. A bolster 66 is positioned in compartment 60. It will be noted that bolster 66 includes an upper segment 68, which in the illustrated embodiment is an arch-shaped rail, and a lower segment

70, which is substantially thinner than the upper segment. Upper segment 68 of the bolster extends laterally toward the mattress and effectively raises the height of mattress bolster MB. Lower segment 70 fits in pocket 62 in the side wall 58 of the bottom section of the cover and extends up along the side of mattress bolster MB. Upper portion 64 of compartment 60 is fitted to the configuration of the upper segment of the bolster so as to fit over it and encapsulate the bolsters within compartment 60.

Also at the first or head/torso end of the cover is a second compartment 72. Compartment 72 comprises lower portion or pocket 74 formed in side wall 58 of the bottom section of the cover. An upper portion 76 of compartment 72 is formed from the top section 54 of cover 52. A bolster 78 is positioned in compartment 72. Bolster 78 is constructed like, and can be interchanged with bolster 66 and also includes an upper segment 80, constructed as an arch-shaped rail, and a lower segment 82. Upper segment 80 of the bolster also extends laterally toward the mattress and effectively raises the height of opposite mattress bolster MB. Lower segment 82 fits in a pocket 74 in the side wall 58 of the bottom section of the cover and extends up along the side of mattress bolster MB. Upper portion 76 of compartment 72 is fitted to the configuration of the upper segment of bolster so as to fit over it and encapsulate the bolster within compartment 72.

It will be appreciated that the top and bottom sections 54, 56, respectively, of cover 52 can then be releasably secured together, for example by a zipper 84 or other appropriate means such as hook and loop fastener, to secure the bolsters in the compartments.

The configuration of bolsters 66 and 78 provide stability in the event the user on the mattress rolls or moves against the bolster. The lower segments 70 and 82 respectively, positioned in the lower portions of the compartments and extending along side the mattress bolsters provide added stability, particularly

when encapsulated by the cover material. This configuration of bolsters is employed at the head/torso end of the system because the user generally applies more lateral force to the bolster with his or her upper body than with the lower torso or legs.

As best seen in Fig. 7, at the second or foot/leg end of the bolster system there is a first compartment or pocket 86 formed in one lateral side of top section 54 of cover 52 and a second, opposed compartment or pocket 88 formed in the opposite lateral side of the top section of the cover. A first bolster 90 is positioned in first compartment 86 and a second bolster 92 positioned in the second compartment 88. As seen in the drawings, the bolsters 90 and 92 are identically constructed and interchangeable and include a substantially arch-shaped upper rail segment 94 and a depending, substantially narrower lower segment 96. This configuration allows the bolster to conform to the configuration of the mattress bolster MB on which it rests. It has been found that the leg/foot bolsters can be configured in this manner and still function well since a user generally exerts less force against the leg/foot bolsters when moving on the mattress. However, it will be understood, that bolster system 50 can be constructed so that all four bolsters are constructed and positioned like bolsters 66 and 78 to provide additional support at the foot/leg end of the mattress.

In one aspect of the bolster system, above described bolsters are constructed from a resilient material, such as foam, which can be cut foam, molded or blown foam or other appropriate material. The bolsters could be more pillow-like and constructed from a batting-type material. Also, the bolsters could be inflatable. Moreover, any other configuration or material that performs the desired function of providing bolsters at the head/torso and leg/foot sides of a mattress are intended to be included within the scope of the invention.

Fig. 8 illustrates another aspect of the bolster system. This aspect of the bolster system employs a bolster support, in this instance, a substantially L-

shaped angled brace 100 associated with the respective head/torso bolsters 66 and 78. Angled braces 100 have a first side 102 which extends upward along the lower segments 70 and 82 of the bolsters, and a second side 104 at right angle to the first side which extends under mattress M. The respective sides of the brace are generally the same length as the bolster. Hence, the weight or downward pressure created by a user on mattress M secures second side 104 under the mattress. The first side 102 of the brace resists outward deflection of the bolster when the user rolls or moves against the bolster. Brace 100 can be housed in the compartment and extend out of the compartment under the bottom section of the cover and under the mattress or it can extend out of the compartment and under the mattress, but inside the bottom section of the cover. Brace 100 can be a separate structure, as illustrated for clarity, or it can have the first side 102 molded into the bolster. Any arrangement of a bolster and bolster support is within the scope of the invention.

It will be appreciated that the foregoing written specification and accompanying drawings are intended to be illustrative of the broader aspects of the invention, and represent the best mode of working the invention currently known by the inventors. However, they are illustrative only and should not be construed to limit in any way the scope of the appended claims.

Claims:

1. A bolster system for use with a bed mattress comprising:

a cover, said cover having at least a first and a second compartment at a first end of the cover;

a first bolster in said first compartment; and

a second bolster in said second compartment.

2. The bolster system of claim 1 comprising a third compartment and a fourth compartment at a second end of said cover;

a third bolster in said third compartment; and

a fourth bolster in said fourth compartment.

3. The bolster system of claim 2 further comprising a fifth compartment at the first end of the cover positioned under said first compartment and a sixth compartment at said first end positioned under said second compartment; a fifth bolster in said fifth compartment and a sixth bolster in said sixth compartment.

4. The bolster system of claim 1 wherein said first and second bolsters are inflatable.

5. The bolster system of claim 3 wherein each of the recited bolsters is inflatable.

6. The bolster system of claim 1 wherein said first and second bolsters are comprised of a resilient foam material.

7. The bolster system of claim 2 wherein the said third and fourth bolsters are comprised of a resilient foam material.

8. The bolster system of claim 5 further comprising an air source operatively connected to the recited bolsters.

9. The bolster system of claim 6 further comprising a substantially rigid bolster support associated with said first and second bolsters.

10. The bolster system of claim 1 wherein said cover comprises a bottom section and a top section with a lower portion of each said first and second compartments in said bottom section and an upper portion of each said first and second compartments in said top section.

11. The bolster system of claim 10 wherein said bottom and top sections of said cover are releasably connected together.

12. A bolster system for use with a bed mattress comprising:

a mattress cover, said mattress cover having a first and a second compartment at a first end of the cover and at second and third compartment at a second end of the cover;

a first bolster in said first compartment;

a second bolster in said second compartment.

a third bolster in said third compartment; and

a fourth bolster in said fourth compartment.

13. The bolster system of claim 11 further comprising a fifth compartment at the first end of the mattress cover under said first compartment and a sixth compartment at said first end of the mattress cover, a fifth bolster in said fifth compartment, and a sixth bolster in said sixth compartment

14. The bolster system of claim 13 wherein each said bolster is an inflatable bolster.

15. The bolster system of claim 12 wherein said cover comprises a top section and a bottom section with an upper portion of each said first and second compartments in the top section and a lower portion of each said first and second compartments in the bottom section.

16. The bolster system of claim 15 wherein the top and bottom sections comprise a releasable connection means for attaching the top section to the bottom section.

17. The bolster system of claim 16 wherein said releasable connection means comprises a zipper.

18. The bolster system of claim 14 further comprising an air source operably connected to said inflatable bolsters.

19. The bolster system of claim 12 wherein each of the recited bolsters is a resilient foam bolster.

20. The bolster system of claim 17 further comprising a substantially rigid support associated with said first and second bolsters.

21. A bolster system for use with a mattress comprising:

cover having a first end and a second end, a top section and a bottom section;

a first bolster compartment at the first end of the cover, said first bolster compartment having an upper portion defined by said top section of the cover and a lower portion defined by said bottom section of the cover;

a resilient bolster in said first bolster compartment extending between said upper portion and said lower portion of the compartment;

a second bolster compartment at the first end of the cover and opposite said first bolster compartment, said second bolster compartment having an upper portion defined by said top section of the cover and a lower portion defined by said bottom section of the cover;

a resilient bolster in said second bolster compartment extending between said upper portion and said lower portion of the compartment;

a third bolster compartment at the second end of the cover;

a resilient bolster in said third bolster compartment;

a fourth bolster compartment at the second end of the cover, opposite said third bolster compartment; and

a resilient bolster in said third bolster compartment.

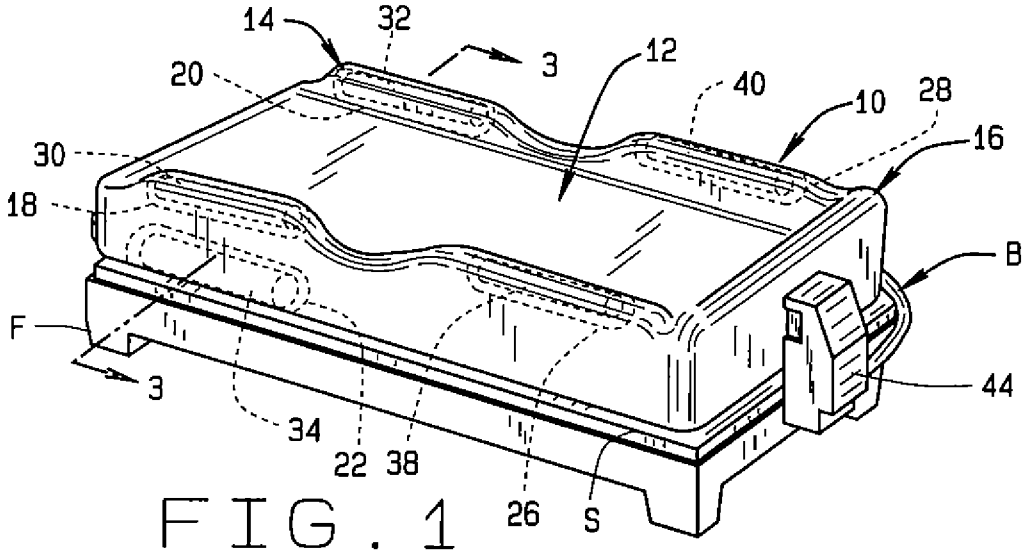


FIG. 1

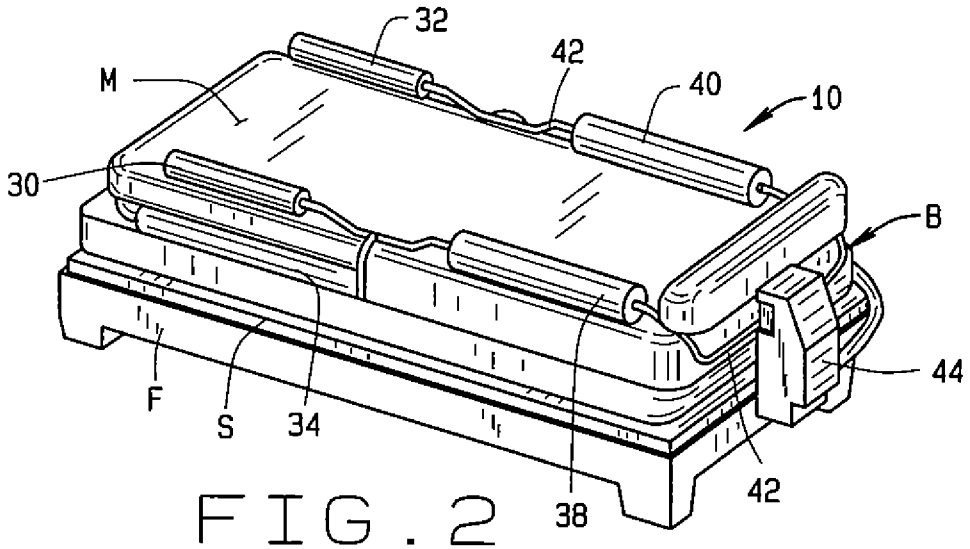


FIG. 2

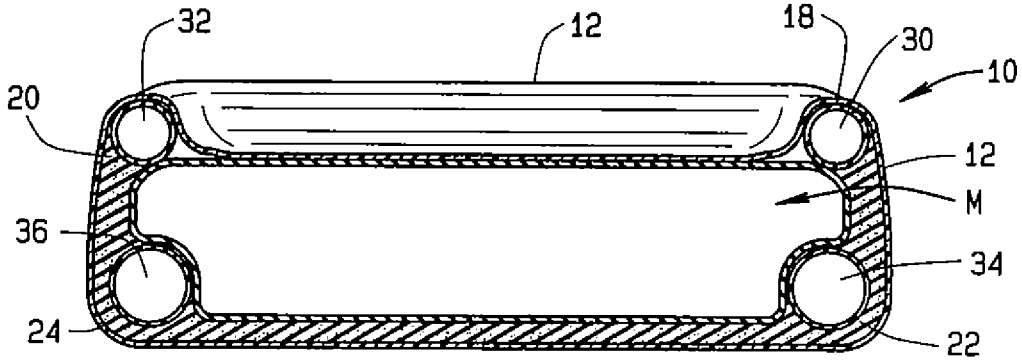


FIG. 3

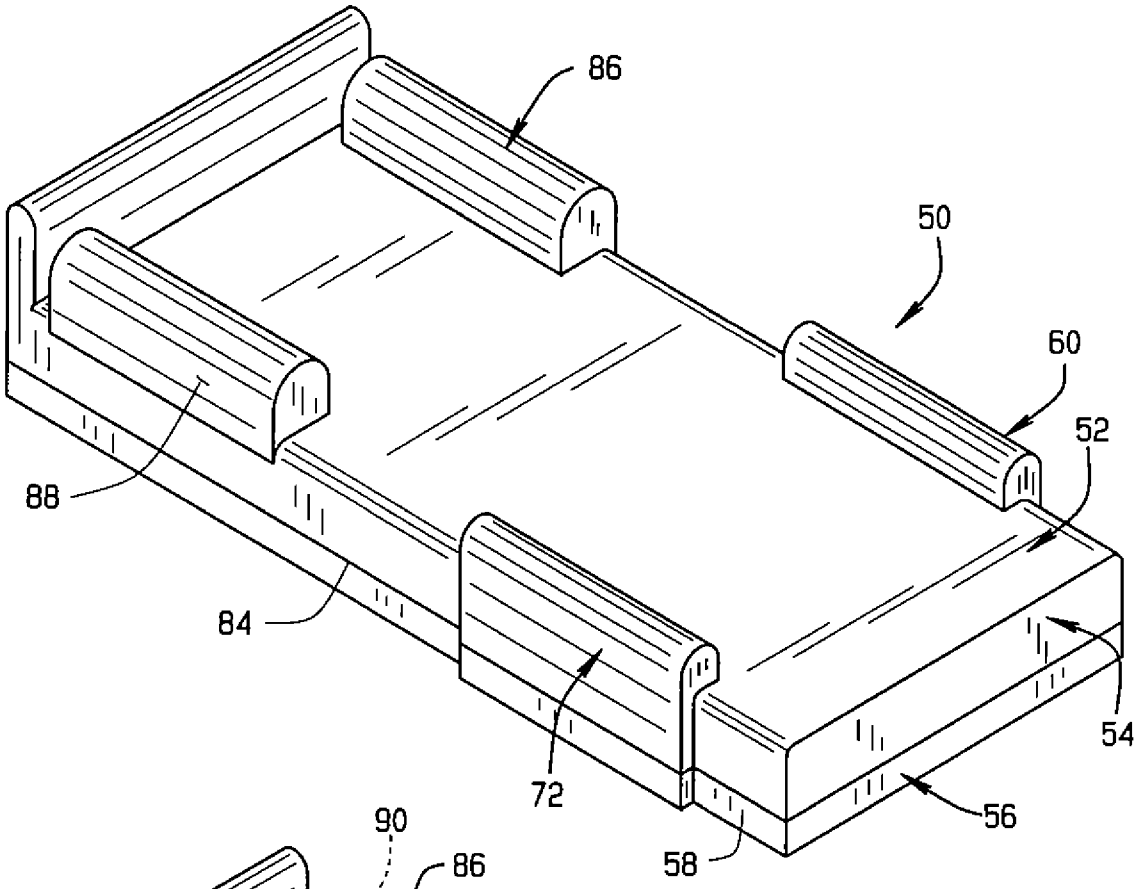

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FIG. 4

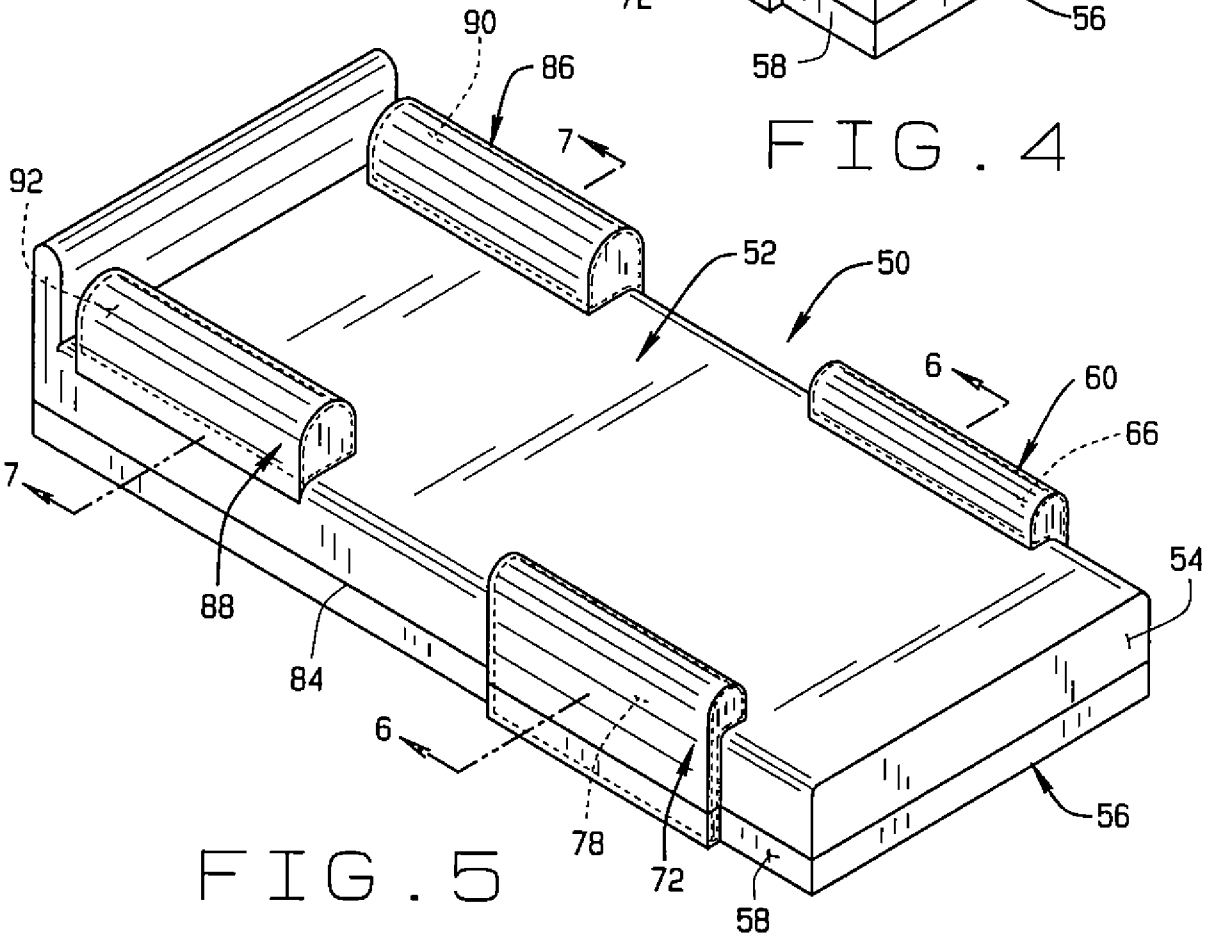

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FIG. 5

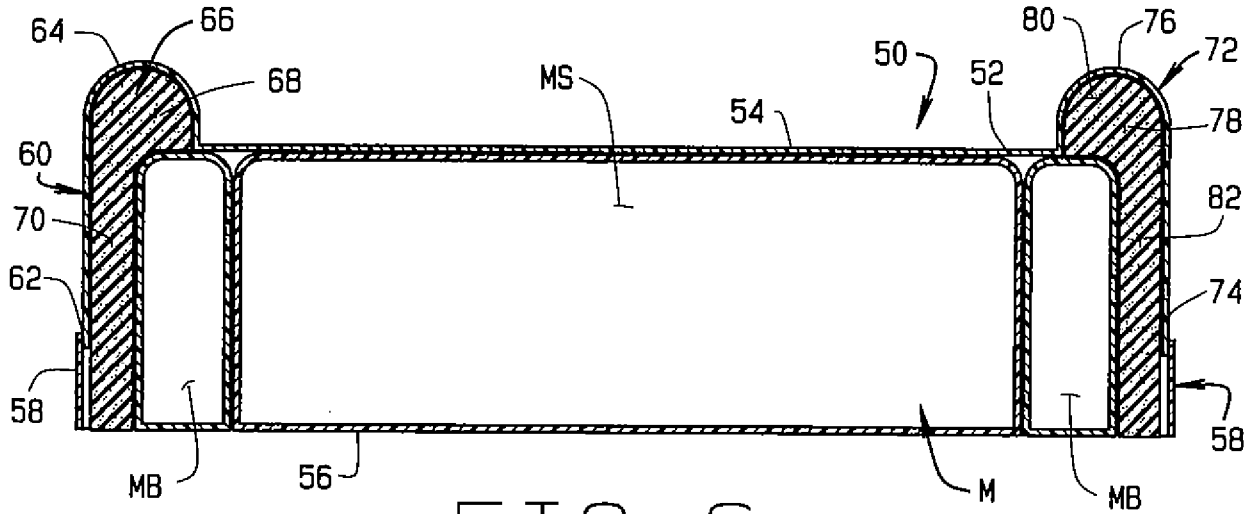


FIG. 6

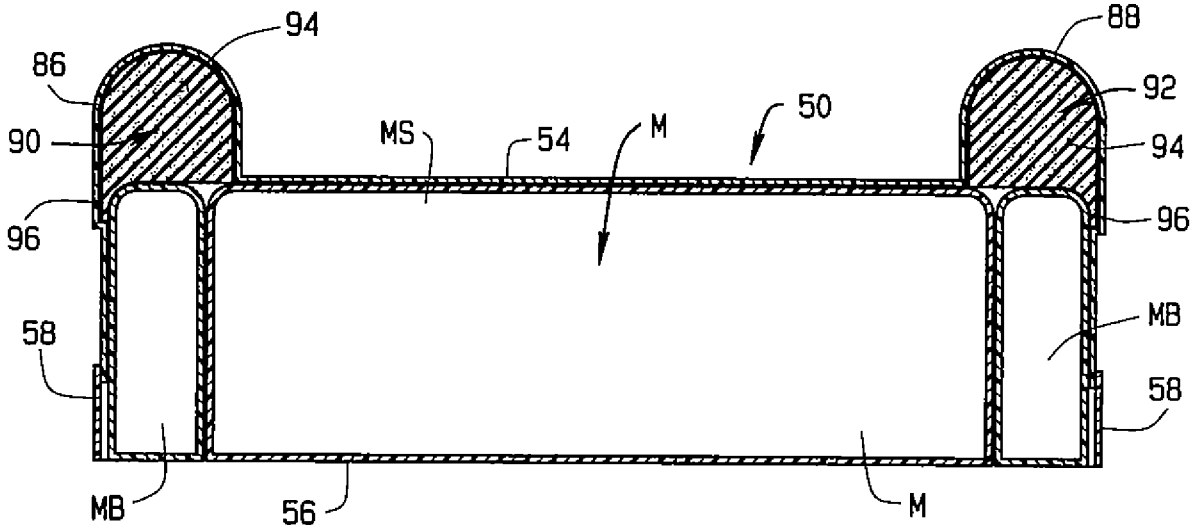


FIG. 7

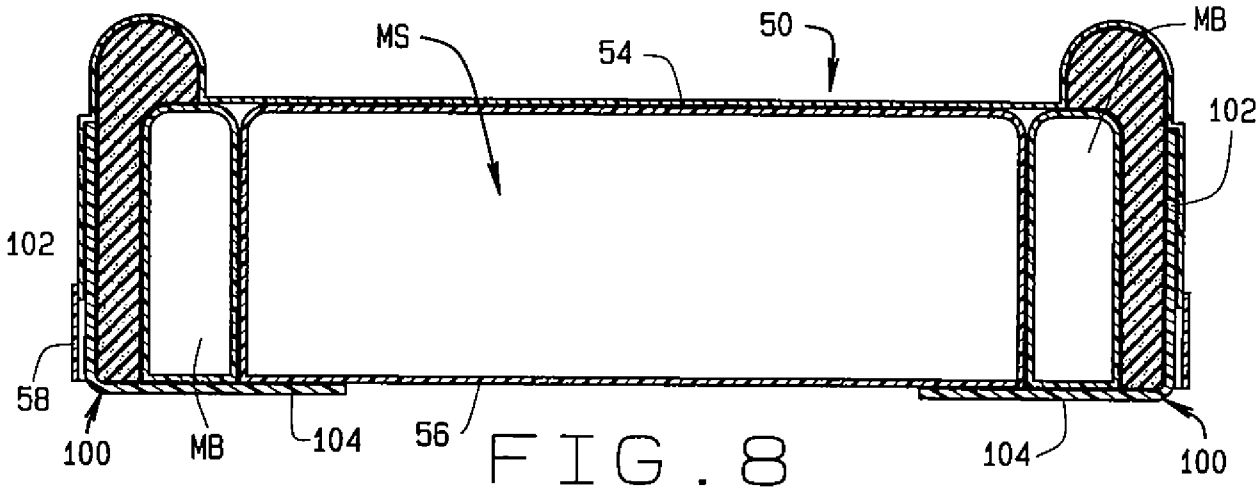


FIG. 8