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BODY SUPPORTS

3,323,152

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2 Sheets-Sheet 1

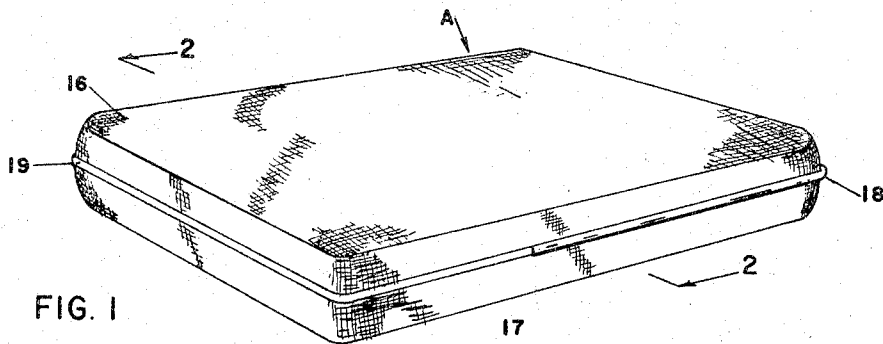


FIG. 1

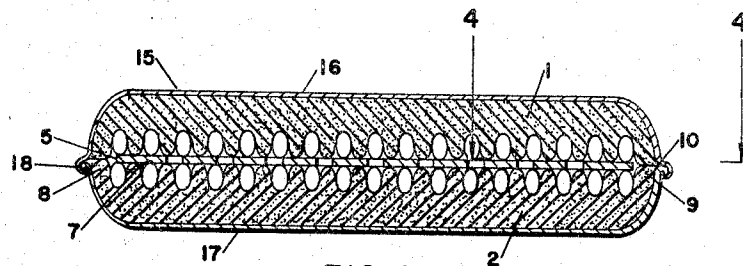


FIG. 2

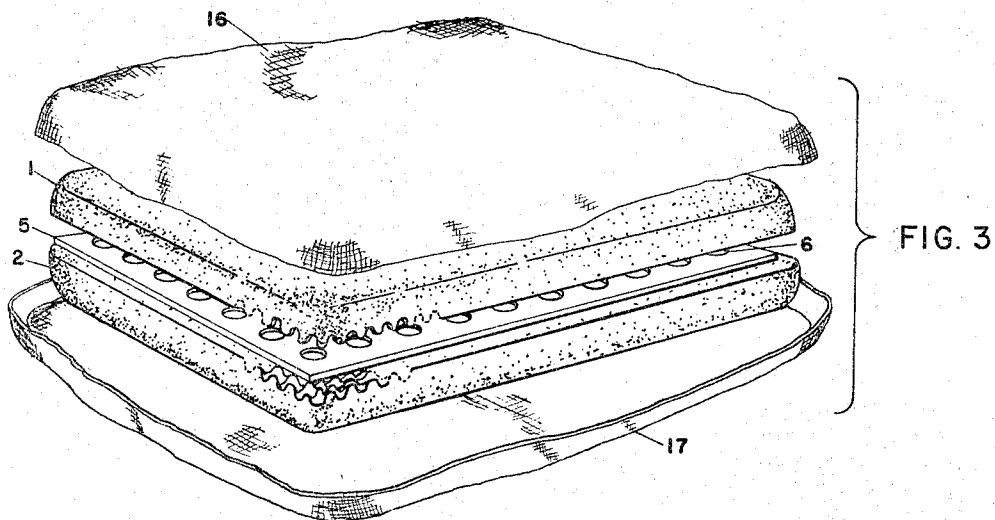


FIG. 3

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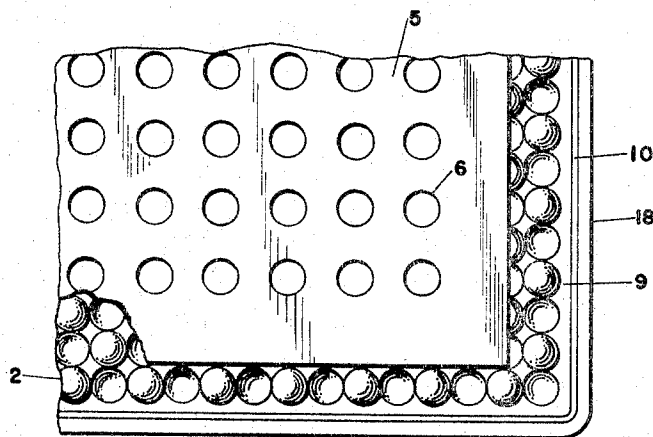


FIG. 4

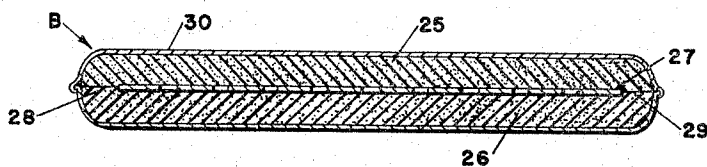


FIG. 5

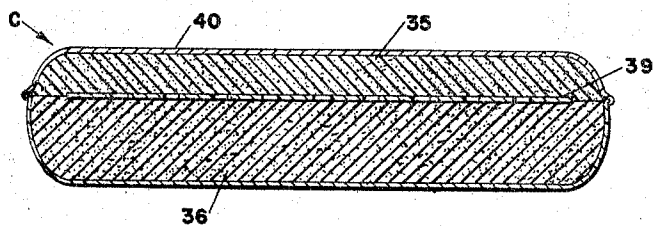


FIG. 6

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BODY SUPPORTS

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3 Claims. (Cl. 5—361)

This invention relates in general to certain new and useful improvements in body supports and, more particularly, to orthopedic-type cushions and mattresses.

It is a common practice for people who suffer from back troubles to insert a relatively hard board, such as a piece of plywood or Masonite, in between the mattress and the springs of the bed. This relatively hard board which is sandwiched between the springs and the mattress is believed to give additional rigidity to the mattress and will supply some comfort to the person suffering from the back condition. The interposition of a relatively hard board between a spring and mattress does not really serve its intended function. Actually, when the board is sandwiched between the mattress and the springs, it is too remote from the user's back to provide any considerable benefit and, moreover, does not really eliminate the flexibility of the mattress.

Some manufacturers offer a so-called "orthopedic" mattress, but this is largely a matter of advertising terminology, because such mattresses are not structurally different from conventional mattresses, but, rather, are merely made of heavier weight stuffing and are packed more tightly so as to be "hard" mattresses.

Of course, the ideal practice for people who suffer from weak backs and similar disorders is to lie on a completely hard surface, such as a floor while sleeping or resting. Needless to say, this method of sleeping is most uncomfortable even though such procedure is desirable as an orthopedic measure. However, this is psychologically unacceptable to most people and, moreover, causes skin abrasions and bruises which are often quite painful.

Additionally, those people who suffer from back troubles must seek out chairs, sofas, and other seating devices which are relatively rigid for the conventional overstuffed or moderately stuffed chairs do not lend sufficient support to their relatively weak backs. Often the only chairs available for such individuals are straight-back hard-surfaced chairs of the so-called dining room and occasional variety. These types of chairs, however, in time become extremely uncomfortable to the back sufferer and, consequently, are not suited for lounging. Moreover, such chairs do not blend with the decor of living rooms, so-called family rooms, and many other styles of rooms associated with the modern households.

Furthermore, those individuals who suffer from back disorders often find conventional automobile seats too soft and, if they are forced to ride in an automobile for moderate periods of time, their backs are adversely affected. So-called orthopedic seat cushions have been developed which generally comprise a series of convoluted metal elements held together by rigid cross-members and enclosed within a suitable fabric cover. These cushions provide adequate support but in time become extremely uncomfortable and are, therefore, not suited for sustained periods of driving.

Among the several objects of the invention may be noted the provision of a body support having an internal relatively hard element which provides the needed rigidity and support while presenting a soft surface to avoid bruises, abrasions, or other similar damage to the skin of the user; the provision of a body support which is sufficiently rigid to provide orthopedic support and yet is comfortable for sleeping purposes; the provision of an orthopedic body support of the type stated which is ideally

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suited for persons suffering from back conditions; the provisions of a body support of the type stated which is relatively durable and economical to manufacture; and the provision of cushions for chairs and other types of seating devices which are sufficiently rigid so as to lend adequate support, yet are soft enough for comfortable lounging. Other objects and features will be in part apparent and in part pointed out hereinafter.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which several of various possible embodiments of the invention are illustrated,

FIG. 1 is a perspective view of a body support constructed in accordance with and embodying the present invention;

FIG. 2 is a vertical sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is an exploded perspective view of the body support showing the cover broken away and the layers of foam rubber partially convoluted;

FIG. 4 is a fragmentary sectional view, partially broken away, taken along line 4—4 of FIG. 2;

FIG. 5 is a transverse sectional view of a modified form of body support constructed in accordance with and embodying the present invention; and

FIG. 6 is a transverse sectional view of another modified form of body support constructed in accordance with and embodying the present invention.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Generally speaking, the present invention consists of a body support in the nature of a mattress or cushion which comprises a pair of relatively soft resilient layers of a foamed or spongy material and interposed between each of the resilient layers is a relatively hard rigid support element. The support element is slightly shorter in length and width than the respective lengths and widths of the resilient layers. The overhanging margins of the foam layers are then heat-sealed together so as to envelop the support element. Finally, the foam rubber layers can be covered with a suitable fabric or other cover.

Referring now in more detail and by reference characters to the drawings, which illustrate preferred embodiments of the present invention, A designates a body support comprising two resilient layers 1 and 2 formed of a foamed or spongy material such as polyurethane foam preferably having a density of from 30 to 40 ounces per cubic foot. Interposed between each of the resilient layers 1 and 2 is a relatively hard rigid support element or board 5 preferably formed of one-fourth inch plywood or tempered hard-board such as "Masonite," the board 5 being provided with a plurality of apertures 6 which reduce the weight thereof and permit the free circulation of air and moisture therethrough. It can be seen, by reference to FIG. 2, that the longitudinal and transverse dimensions of layers 1 and 2 are somewhat greater than the respective longitudinal and transverse dimensions of the board 5, thereby forming a central pocket 7 for accommodating the board 5 which is thereby surrounded by encircling overhanging margins 8 and 9 of the foam rubber layers 1 and 2. The overhanging margins 8 and 9 are preferably heat-sealed together in the formation of an outer peripheral margin 10, whereby to completely envelop the board 5 within the layers 1 and 2, substantially in the manner as shown in FIG. 2. However, while the board 5 is enclosed by said layers, it is not physically attached to said layers or either of them.

The inwardly presented surfaces of the resilient layers 1 and 2, that is to say, the surfaces in juxtaposition with

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the rigid board 5, are "convoluted" or, in other words, provided with a multiplicity of alternate depressions and embossments which present an appearance similar to that of the inner surface of a conventional egg carton. The convoluted surfaces, in effect, add additional resiliency to layers 1 and 2 and reduce the quantity of foamed material required to produce the desired degree of cushioning.

Although the thickness of the resilient layers 1 and 2 is not particularly critical and is more or less a matter of individual choice, it has been found that a thickness of approximately three to four inches for each of the layers serves ideally for mattresses, whereas seat and back cushions for chairs and automobile cushions can be somewhat thinner and will serve adequately when even one-half inch thick.

If desired, the resilient layers 1 and 2 can be suitably enclosed within a fabric cover 15 preferably made of heavy ticking or similar material and having top and bottom faces 16 and 17, which are conventionally joined together along a peripheral bead 18. The cover 15 is also provided with a horizontally extending zipper 19 which extends along the bead 18 for the entire distance of one transverse end and around for a short distance along the adjacent longitudinal sides in the manner as shown in FIG. 1. Thus, the cover 15 can be conveniently removed from the foam rubber layers 1 and 2 for cleaning when desired or necessary.

The body support A has been found to be particularly suitable for persons suffering from back disorders. It is rigid and thus provides the requisite firm support which produces beneficial orthopedic results. Notwithstanding the hardness and rigidity of the element or board 5, the layers 1 and 2 are sufficiently resilient at the surface so that no abrasions, bruises, or the like are caused to the skin. In fact, quite unexpectedly, the body support A has a superficial soft feeling backed up by an unusual degree of rigidity quite different from the character of conventional mattresses and cushions. Moreover, apertures 6 permit a limited amount of flexure in board 5 so that body support A flexes slightly to conform to the various contours of the body. Therefore, it is not only orthopedically beneficial, but is also quite comfortable either as a mattress or a seat or back cushion.

Moreover, the body support A can be easily and economically manufactured in the configuration of a mattress as well as seat and back cushions for chairs. The latter embodiments can be incorporated into attractively styled chairs, sofas, and similar types of furniture in which the back sufferer can lounge for sustained periods without becoming uncomfortable or adversely affecting his back.

Aside from imparting limited flexure to board 5, apertures 6 also permit air to circulate freely through body support A. This characteristic has proved highly desirable when body support A is used as a mattress by bedridden or other confined individuals, for whom the circulating air is beneficial to the skin and retards the formation of bed sores. Slight movements of the body, even as limited as mere breathing, stimulate air circulation, for such movements tend to displace the resilient layers 1 and 2 slightly and thereby force air into and out of the cells of the foamed material.

Furthermore, apertures 6 insure rapid dissipation of perspiration and other moisture since the moisture can flow entirely through both resilient layers 1 and 2 and eventually evaporate into the air circulating therethrough. Thus, from a comfort standpoint, body support A is far superior to orthopedic-type cushions and mattresses currently marketed.

It is possible to provide a modified form of body support B substantially as shown in FIG. 5, which comprises a pair of resilient layers 25 and 26 similar to the layers 1 and 2, but having planar inner faces instead of convoluted faces. Interposed between the layers 25 and 26 is a relatively rigid element or board 27 which is substan-

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tially identical to the previously described board 5. The longitudinal and transverse dimensions of the layers 25 and 26 are greater than those of the board 27, thereby forming a pocket for accommodating the board 27 which is, in effect, surrounded by encircling overhanging margins 28 and 29, which are heat-sealed or otherwise fastened together. The remainder of the construction of the body support B is substantially identical to the body support A and is similarly provided with a cover 30 which is also substantially identical to the previously described cover 15. However, it can be seen that the inner surfaces of the layers 25 and 26 are not convoluted and that the thickness or vertical dimension of each of the foam rubber layers 25 and 26 is approximately one-half of the thickness of the foam rubber layers 1 and 2, respectively.

The body support B similarly has been found to give excellent beneficial orthopedic results for persons suffering from back disorders. However, the body support B is somewhat less flexible than the body support A and gives a greater amount of rigidity and support. Nevertheless, the body support B is still sufficiently flexible to conform to the natural contour of the body.

It is possible to provide another modified form of body support C shown in FIG. 6 which is substantially similar to the previously described body support A. The body support C consists of a pair of foam rubber layers 35 and 36, each being provided with relatively flat matching inner surfaces similar to those of the layers 25 and 26 of body support B. However, by reference to FIG. 6, it can be seen that the thickness or vertical dimension of the foam rubber layer 35 is approximately equal to the thickness or vertical dimension of either of the foam rubber layers 25 and 26 and the thickness or vertical dimension of the foam rubber layer 36 is substantially equal to the thickness or vertical dimension of either of the foam rubber layers 1 and 2. Thus, it is obvious that the foam rubber layer 35 is of approximately one-half the thickness of the foam rubber layer 36 and, therefore, located at a position where it is approximately one-third of the distance from the exterior face of the layer 35 with respect to the overall thickness of the layers 35 and 36.

Interposed between the foam rubber layers 35 and 36 is a relatively rigid support element or board 39 which is substantially identical to the previously described board 5 and has longitudinal and transverse dimensions which are somewhat less than the respective longitudinal and transverse dimensions of the foam rubber layers 35 and 36, thereby forming a central pocket 40 for accommodating the board 39. The abutting overhanging margins of the layers 35 and 36 are heat-sealed together, thereby completely enveloping the board 39. The body support C is similarly provided with a suitable cover 40 which is substantially identical to the previously described cover 15.

It can thus be seen that the body support C serves as somewhat of a combination of the body support A and the body support B. Thus, for one desiring a relatively hard surface to sleep or rest on with only a small amount of flexibility, the body support C would be used in the position as shown in FIG. 6, that is the position where the board 39 is closer to the upper surface of the body support C. However, for an individual desiring less rigidity and a greater amount of flexibility in the body support, he would invert the body support C so that the board 39 is located closer to the bottom surface thereof rather than closer to the upper surface, as appears in FIG. 6. It should also be understood in this connection that the body supports can be constructed in accordance with the present invention where the ratio of thicknesses between the two foam rubber layers is other than one to two. For example, it is possible to construct a body support having an upper foam rubber layer which is one-fourth the thickness of the lower foam rubber layer.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

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As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A body support comprising a pair of relatively soft flexible layers formed from a resilient foamed material and having their peripheral margins located in registration, and a relatively rigid planar support member interposed between the flexible layers and having its peripheral margin located inwardly from but in close proximity to the registered peripheral margins of the soft flexible layers, the flexible layers being heat sealed together along their registered peripheral margins so as to completely envelop the planar support member but being free of any positive attachment to the latter, the planar support member having a plurality of apertures formed therein whereby to impart a limited degree of flexibility to the body support and to permit the free circulation of air and moisture therethrough.

2. A body support comprising a pair of relatively soft flexible layers formed from a resilient foamed material and having their peripheral margins located in registration, and a relatively rigid planar support member interposed between the flexible layers and having its peripheral margins located inwardly from but in close proximity to the registered peripheral margins of the soft flexible layers, the flexible layers being heat sealed together along their registered peripheral margins so as to completely envelop the planar support member but being free of any positive

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attachment to the latter, the inwardly presented surfaces of the flexible layers being convoluted in the provision of alternately spaced depressions and embossments so as to impart further resiliency to the layers, the planar support member having a plurality of apertures formed therein whereby to impart a limited degree of flexibility to the body support and to permit the free circulation of air and moisture therethrough.

3. A body support according to claim 1, wherein the flexible layers have different thickness whereby said support upon inversion is capable of providing varying degrees of flexibility.

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