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M. SHEROVER

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MATTRESS

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Fig. 1.

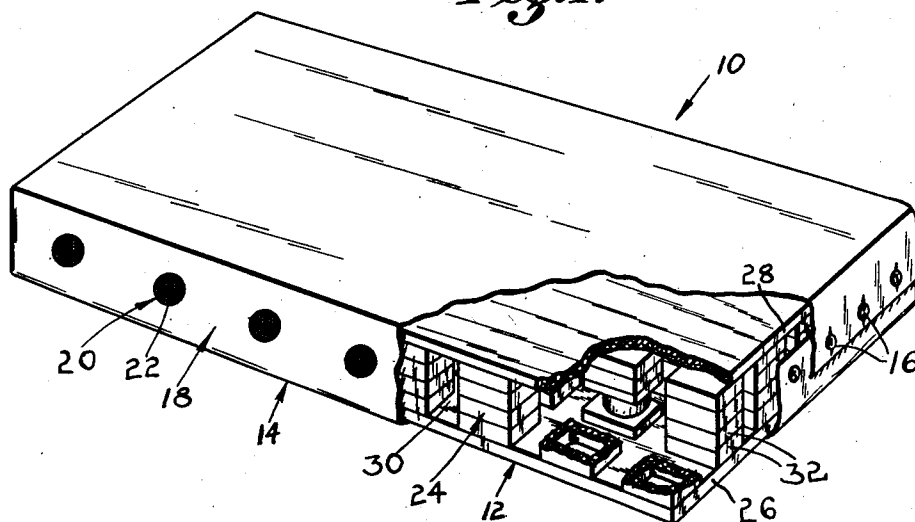


Fig. 2.

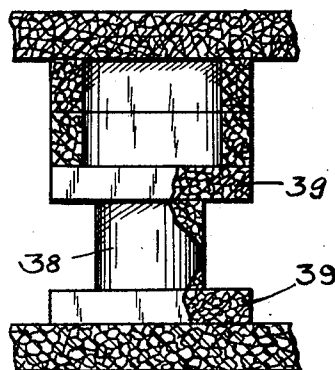
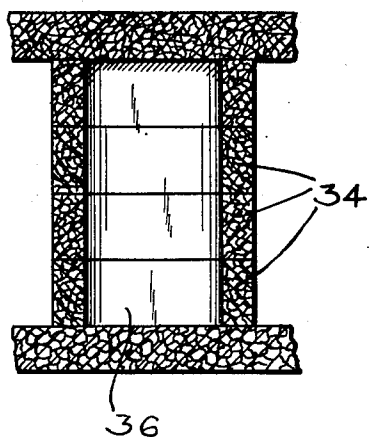


Fig. 3.

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1,980,445

MATTRESS

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1 Claim. (Cl. 5—345)

This invention relates to mattresses, and particularly to the type of mattress providing a body resistant to the action of fluids and capable of conforming positively, without complete collapse, to the shaping of a form disposed thereon.

The customary fabric or hair mattress, used in hospitals and like institutions, may be subjected, in use, to the action of liquids or like substances, which might harmfully affect the materials of the mattress and also make it insanitary for further use. The production of a mattress or like cushioning body, capable of being washed whenever this operation is desired, without, in any way, harming the materials of the unit and yet providing a single, substantial, integral unit capable of being handled as such, is one of the objects of this invention. It is desired that a mattress embodying the invention be capable of properly cushioning a form disposed thereon and further, be capable of conforming readily to the shaping of such a form without, however, suffering complete collapse from the weight of such a form disposed thereon.

For the purposes of this invention, resilient material, such as sponge rubber, was found to be the most desirable. However, to make the mattress from a single mass of sponge rubber was not desirable. In such case, there would have resulted a body substantially non-conductive to heat, disposing a heat retaining surface with relation to the body of the person lying thereon. To eliminate such undesired conditions, it is an object of the invention to form a mattress in such manner that air may move easily and readily through the mattress in order to cool and dry it and also in order that the surface upon which the person rests may have immediately associated therewith a suitable radiating area so that the building up of uncomfortable temperatures, while the mattress is being used, will be avoided.

To effectuate this purpose, the mattress is formed from a plurality of upright columnar members, disposed between two opposed outer sheets or coverings defining the outer surfaces of the mattress. The uprights are constructed and disposed at spaced apart intervals to assure that a sufficient air space will be provided between adjacent uprights for air ventilation. The uprights themselves, or certain of them, may be cored out. In this manner, in addition to the resilient compressibility of the sponge rubber itself, there is added the cushioning effect of entrapped air. However, with continued pressure, this air will slowly be dissipated through the pores of the rubber into the air spaces surrounding the

uprights. Such air will move through the spaces around the uprights as the body moves with relation to the surface, causing active ventilation of the interior of the mattress, in addition to any normal movement of air therethrough.

Some of the uprights may be formed from solid sections of sponge rubber, either assembled between other solid sections or with a cored section disposed immediately above or below, or on both sides of such a solid section. Upon compression, the solid section may become pressed into the hollow of a cored section. Also solid sections intermediately of a column may be of lesser extent than immediately adjacent sections; when compression occurs, such reduced sections will suffer complete collapse before any other portion of the column. A graduated cushioning effect results therefrom. From the several constructions there will result uniform compression of the columns without lateral bending, thereby effecting one of the objects of the invention, that is, that the uprights be insured against lateral movement and be restrained to movement as much as possible in a direction substantially perpendicular to the plane of the surface upon which the body of a person will rest.

In order to secure the uprights to the two outer layers of sponge rubber, these parts may be vulcanized together, or any other desired method of arrangement may be used. By the construction of the uprights and their positive fixation to the outer layers, movement of the uprights will be substantially limited to the perpendicular direction of movement.

The mattress as a whole may, for convenience in handling and for the sake of appearances, be covered with waterproof sheeting of any desired character. This waterproof sheeting preferably has vents provided therein in order that movement of air through the mattress shall not be hindered. The mattress, in its construction, has the inherent quality of being capable of being washed without harming any portion thereof nor will customary liquids affect the surface or the material of such a mattress.

Other objects of this invention will hereinafter be set forth, or will be apparent from the description and the drawing, in which is illustrated an embodiment of a product carrying out the invention.

The invention, however, is not intended to be restricted to any particular construction, or to any particular application of such construction, or to any specific manner of use, or to any of the various details thereof herein shown and de-

scribed, as the same may be modified in various particulars or be applied in many varied relations without departing from the spirit and scope of the claimed invention, the practical embodiment herein illustrated and described merely showing one of the various forms and modifications in which the invention might be embodied.

On the drawing, in which the same reference characters refer to the same parts throughout, and in which is disclosed an embodiment of the invention;

Fig. 1 is a view in perspective of a mattress embodying the invention, portions being broken away to illustrate the interior construction thereof;

Fig. 2 is a view in cross-section, vertically through a portion of the mattress, illustrating the construction of one type of upright; and

Fig. 3 is a view, similar to Fig. 2, of another type of upright.

In the mattress 10, shown on the drawing, a body 12 is shown encased in a cover 14 held secured by a securing device or devices 16 of any desired construction. The cover may have arranged along side faces 18 thereof, and at any desired intervals, perforations 20, closed by screen elements 22, to permit access of air to the interior of the cover and of the body 12 at all times.

The body 12 is made from resilient, compressible material, preferably sponge rubber. Materials such as sponge rubber generally are supplied in sheets, and, in the construction of this mattress, this factor is availed of, as will be related subsequently. The body 12 consists of a plurality of columns 24, disposed upon a sheet 26 and preferably covered by another sheet 28. Where two sheets are thus used, the columns, all being substantially of identical height, are arranged between the sheets in any predetermined spaced apart relationship so that at least a substantial air space 30 will be formed between adjacent columns.

The columns themselves are formed of a plurality of superposed sections 32 of material preferably of the thickness of the sheet as supplied, and either of the same material, or one similar to that used for the sheets, these sections being secured together, as by vulcanization, to form the columns. The end faces of the columns may be secured to the sheets in the same manner as the sections are secured to each other or in any other desired manner, to assure positive retention by the sheets of the columns and to insure against lateral shifting of these several elements.

Some of the columns may be formed from a plurality of sections 34. Some or all of these sections may have cored-out centers 36 to provide air spaces within the columns. By this arrangement, an air cushion is formed within each such columns, which cushion, due to the porosity of the material used, will gradually discharge its air contents into the spaces 30 when pressure is brought to bear upon the top sheet 28.

In some cases, the superposed sections may include a section 38, without a cored-out center and of less extent than the other sections related to it. It may be formed of a section cut around

so as to be just slightly larger than the cored-out center 36 of an immediately related section or sections. Disposed on either side of the section 38 may be other sections 39, either with or without a cored-out center. In any case, the section 38 will be less resistant to pressure and tend to collapse before the others in the same column. In such cases where it is related to sections having cored-out centers, when pressure is active to effect collapse, section 38 will tend to enter the cored-out center 36, driving out substantially all air from that center. However, this movement of air in all cases will be gradual and effect a smooth, cushioning effect in the use of the article.

Since the columns are each secured to the sheets of sponge rubber, lateral movement of any one column may be effected only if similar movement of the other columns results. The bases of each of the columns, or at least of a plurality of them, are made of sufficiently large extent that any such lateral movement of sheet and column will be effectually resisted. Therefore, the mattress sheets 26 and 28 will be restrained to movement only in a vertical plane or in planes substantially perpendicular to their normal surfaces, and, therefore, in the line of the uprights secured beneath the point of application of a particular force.

In all of these cases, the column height is greater than the thickness of any sheet. By such arrangement, not only is a greater air space provided between adjacent columns, but also the degree of compression of sheets and columns possible before the body resting on the mattress will "feel bottom", as it were, when the limit of compressibility of the material is reached, will be far beyond that possibly derived from the ordinary body weight intended to be supported upon such a surface.

Many other changes could be effected in the particular article designed, and in the methods of its formation, and in specific details thereof, without substantially departing from the invention intended to be defined in the claims, the specific description herein being merely to illustrate operative embodiments carrying out the spirit of the invention.

What is claimed as new and useful is—

In a cushioning means for disposing a resiliently soft supporting surface in a predetermined contour, and in which, when a form is disposed upon such surface, the latter will tend to conform to the contouring of the form, which comprises a body made up of a plurality of uprights of resilient, porous sponge rubber, and coverings of a similar material defining surfaces at the opposed ends of the uprights, the uprights being secured to the coverings to extend substantially perpendicularly thereto when the coverings assume a normal, non-deflected contour, the uprights including a plurality of superposed sections, the sections secured to one of the coverings being greater in extent than other sections, one of the other sections having a cavity formed therein, and one of the other sections being solid but of reduced extent.

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