Feb. 20, 1951 J. H. SAWYER 2,542,781

INFLATABLE MATTRESS UNIT

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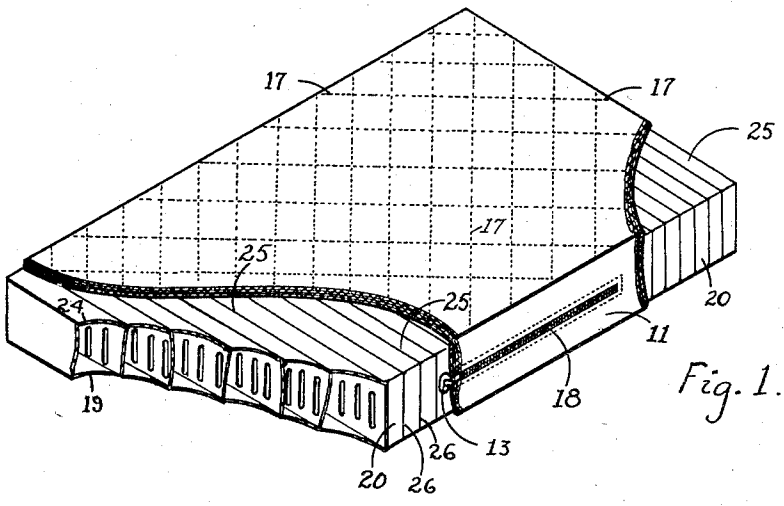


Fig. 1.

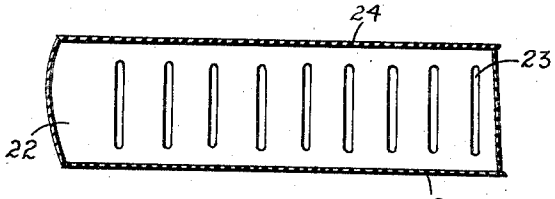


Fig. 2.

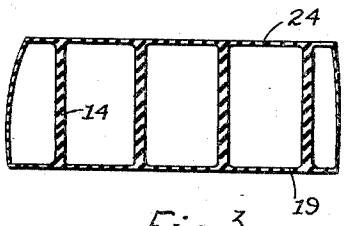


Fig. 3.

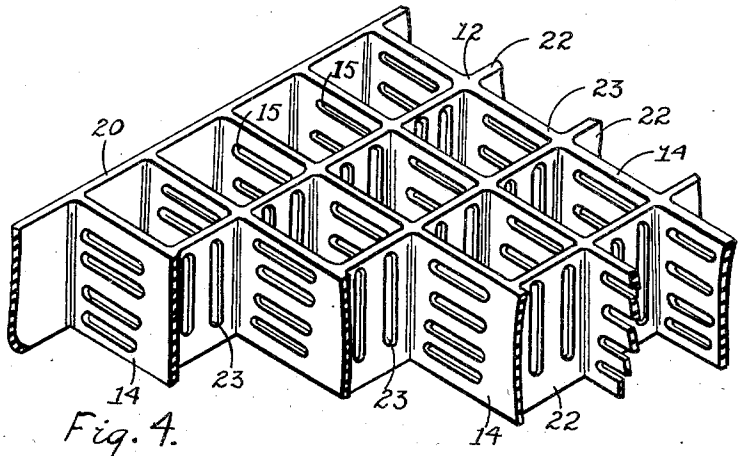


Fig. 4.

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INFLATABLE MATTRESS UNIT

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2 Claims. (Cl. 5—348)

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The present invention relates to improvements in inflatable mattress unit and has for an object to provide an improved pneumatic mattress unit to replace the present forms of inner-spring mattress units which may be constructed at substantial saving in initial cost and yet have improved efficiency over the conventional types of mattresses now in use.

Another object of the invention is to provide an improved form of pneumatic mattress so constructed and arranged that more or less volume of air at greater or less pressure may be introduced to the interior of the mattress to satisfy individual taste, more air being introduced to accommodate a person desiring a firm mattress, while for a soft mattress the user would introduce a lesser volume of air.

A further object of the invention is to provide an improved inflatable mattress so constructed and arranged as to be easily inserted in the conventional mattress cover by the ordinary purchaser without requiring the services of a specialist in this field of work.

A still further object of the invention resides in providing an improved inflatable mattress unit which is light in weight, easily moved, and capable of being folded or bent into any shape without harm to the unit.

A still further object of the invention is to provide an improved inflatable mattress unit capable of being completely deflated for purposes of shipping or moving, thus occupying small space as compared to present type mattresses.

Other objects of the invention are to provide a unit that is waterproof, in which usage does not cause deterioration, which has long life and retains its elasticity through continued use, in which the mattress cover is not subjected to the hazards encountered with inner-spring mattresses and therefore has longer life and maintains its presentable state, the mattress cover protecting the rubber mattress from puncture and other damage.

With the foregoing and other objects in view, the invention will be more fully described hereinafter and more particularly pointed out in the appended claims.

In the drawings, in which like parts are denoted by the same reference characters throughout the several views,

Figure 1 is a perspective view, with parts broken away and parts shown in section, of an improved inflatable mattress unit constructed in accordance with the present invention.

Figure 2 is a transverse section, taken on an enlarged scale, through the unit with parts broken away and parts shown in section.

Figure 3 is a fragmentary edge elevation along one longitudinal edge of the mattress.

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Figure 4 is a fragmentary perspective view showing the interior cellular construction of the unit.

Referring more particularly to the drawings, 11 designates a mattress cover containing the improved unit which is provided with a nozzle or valve stem containing the usual valve core by which a service air pressure hose nozzle may be applied to the mattress for the purpose of introducing air under pressure to the internal cells thereof.

This unit is formed of rubber or other suitable material fabricated into a cellular construction in which longitudinal spaced parallel partitions 14 intersect transverse spaced and parallel partitions 22, the partitions intersecting at the zones 12 where the same are molded or vulcanized together. Horizontally elongated slots 15 are made in the longitudinal partitions 14 and are spaced apart vertically and arranged in preferably parallel arrangement. The companion transverse partitions 22 have vetically elongated slots 23 therein which are spaced apart and substantially parallel to one another. Preferably two such vertical slots 23 are provided to four of the horizontal slots 15 although this precise number is not essential and the openings 15 and 23 may be of other forms although this particular arrangement gives very efficient results as hereinafter described. The cells between the partitions 14 and 22 are closed at the top and bottom by the horizontal rubber or other sheets 19 and 24, the same being vulcanized or otherwise connected to the upper edges of the transverse partitions 22 by seams 25 and also being connected to the longitudinal partitions 14. In the same way longitudinal side walls 20 of rubber form continuations of the upper and lower sheets 19 and 24 and are seamed at 26 to the side edges of the transverse partitions.

The entire unit comprising the partitions 14 and 22, the top and bottom walls 19 and 24, the longitudinal side walls 20 and including end walls are all preferably made of rubber sheets of material having resiliency and capable of expansion and contraction. This entire unit may be introduced into the cover 11 which cover may have a lining 16 of felt or cotton placed next to the rubber internal unit and being attached to the interior of the cover 11 through the application of quilting or the like 17. The mattress cover may be provided with a zipper 18 or the like through which, when opened, the inflatable unit may be inserted.

In use, air is introduced through the valve stem 13. This valve stem is shown as placed at a substantially central position of the unit but its relative position is unimportant as the air may flow in common to all of the cells between the par-

titions 14 and 22 through the slots 15 and 23. Therefore all of the cells will be inflated to the same pressure and this pressure may be high or low according to the desires and dictates of the occupant of the mattress.

The partitions 14 and 22 serve a number of functions: first, they equalize the air pressure through the firm attachment of the rubber sheets 19, 24 and 20. The seams 25 and 26 occur at regular intervals, thus preventing the bulging of the mattress unit; secondly, the partition structure increases the efficiency and the ruggedness of the unit; thirdly, the partitions serve to support the superimposed weight; fourthly, the partitions provide points of connection 23 which strengthen the mattress structure throughout; and fifthly, these partitions enable the inclusion of the slots 15 and 23 whereby the cells may be air filled to the desired pressure in a short time and whereby all of the cells will instantly communicate changes of pressure to one another through the entire unit.

It is to be understood that the reinforcement or partition units 14 and 23 are attached to the rubber sheets 19 and 24 at the top and at the bottom and also at the sides 20 by vulcanizing or any other proper method or application of heat and pressure.

It is also to be noted that the openings 15 and 23 are shown in two different forms, that is, vertical and horizontal. Such openings are placed in the partitions 14 and 22 for two reasons; first, to allow the air to equalize throughout the mattress unit and, secondly, to keep the partitions 14 and 22 from being too rigid. Therefore almost any type or shape of opening would serve in these partitions, those shown in the drawings being merely two suggestive types which however have certain functions in relation to the material, namely rubber, of which the cell block is formed. For instance, the blank walls of the partitions 14 and 22 between the slots 15 and 23 form connecting webs which are the rigid portions of the partitions. In the case of the horizontally elongated slots, the slots 15 are shorter than the vertical slots 23 but the slots 15 are preferably more numerous to provide three connecting webs between the slots to compensate with more material of the partitions 14 for the weakness produced by slots 15 which run horizontally and therefore produce greater weakness in a vertical direction than do the slots 23 of the partitions 22, the slots 23 being very narrow in a vertical sense so that vertically the major area of the partitions 22 is unimpaired and not weakened. Again, the change of direction of length of the slots 15 and 23 presents changes of port area to the air so that the flow of air tends to be unidirectional through successive partitions 14 and unidirectional through partitions 22; otherwise if the air turns at right angles from the horizontally elongated slots to the vertically elongated slots 23, there is a lag of air movement. The individual partitions 22 are preferably shorter in a horizontal sense than the partitions 14.

The improved replacement mattress unit will give to the public an adjustable mattress unit which is light in weight, easy to move or turn over, reasonable in cost, long-lasting, easy to repair (well-known automobile inner tube patches may be used), easy to insert or remove from the mattress cover and efficient in operation.

The improved inflatable mattress unit may be used to replace the customary inner-spring mattress units and also any type cushion which has

an inner-spring unit or inner-spring construction. The improved inflatable mattress unit is ideal for use in boats and ships because of its extremely light weight.

It is to be understood that while the unit is to be composed of rubber it is in no sense like the present type sponge-rubber or "foam" mattresses or cushions, and the present invention is not to be confounded with the present type inflatable mattresses used on camping trips or the like, inasmuch as the improved mattress unit according to the present invention is primarily intended to replace inner-spring mattress units.

The partitions may be vertical or horizontal or both; or if preferred, diagonal partitions may be employed.

While I have disclosed herein the best form of the invention known to me at the present time, I desire it to be understood that I reserve the right to make changes and modifications in the herein described embodiment of the invention provided such changes fall within the scope of the following claims.

What I claim is:

1. An inflatable unit made of rubber for replacing innerspring units comprising a plurality of parallel transverse partitions having a plurality of vertically elongated slots therethrough, a plurality of parallel longitudinal partitions having a plurality of horizontally elongated slots therethrough, said longitudinal and transverse partitions forming box-like air cell supports for providing over their surface area a rigid support, top and bottom walls for said unit, and side and end walls for said unit the height of said walls being substantially that of said partitions, said transverse partitions being secured at their extremities to said side walls and said longitudinal partitions being secured at their extremities to said end walls for providing a transversely and longitudinally stabilized unit.

2. An inflatable unit as claimed in claim 1 wherein the slots in said longitudinal partitions are disposed with their major axis substantially horizontal and are disposed vertically one above the other while said slots in said transverse partitions are disposed with their major axis substantially vertical and are arranged side by side, all of said slots being permanently opened slots thereby providing a continuous passage for air from one cell to another to maintain equal pressure throughout the box-like cells of the unit.

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