

Dec. 13, 1949

C. W. GREENHILL

2,490,867

BED BOARD

Filed Aug. 6, 1946

2 Sheets-Sheet 1

Fig. 1.

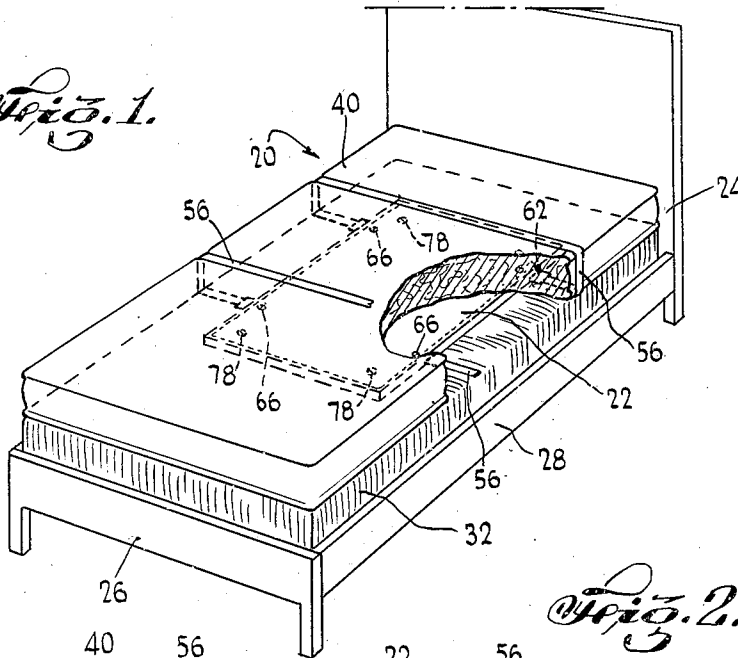


Fig. 2.

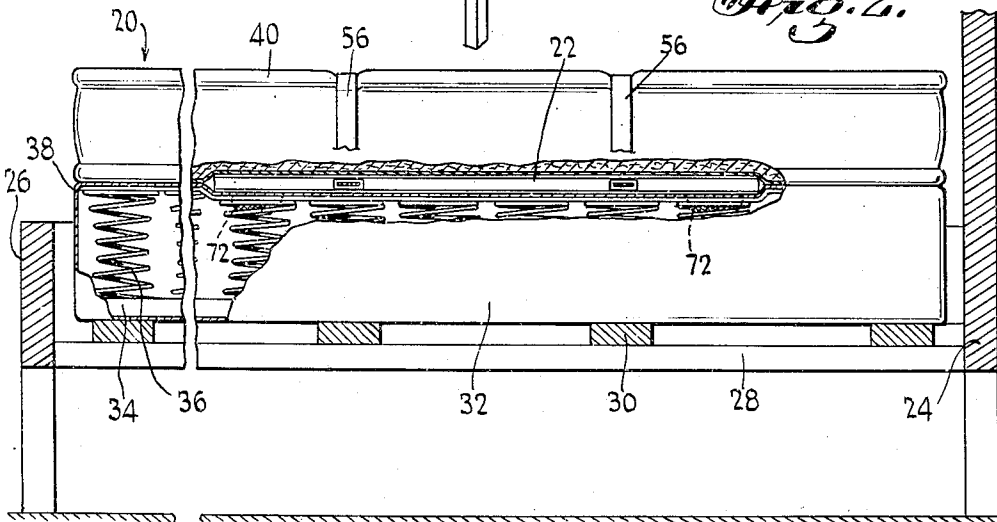
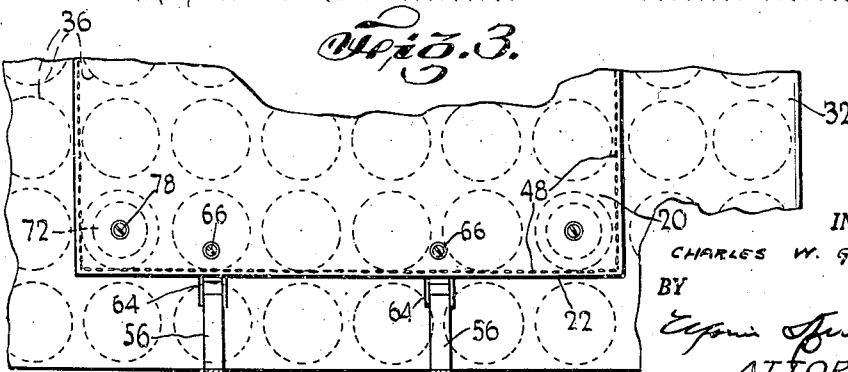


Fig. 3.



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Fig. 4.

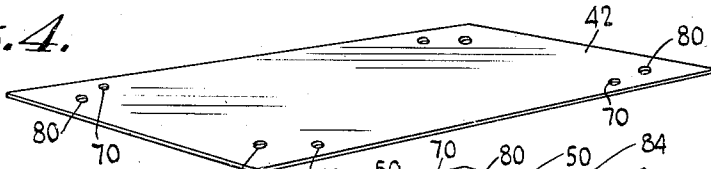


Fig. 5.

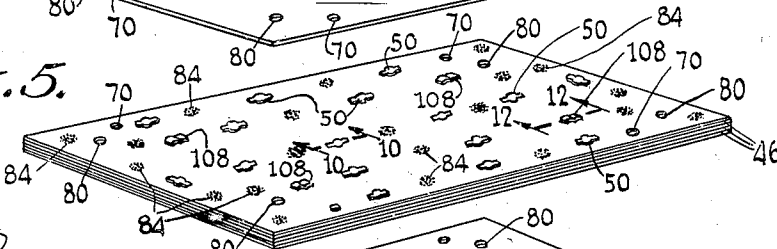


Fig. 6.

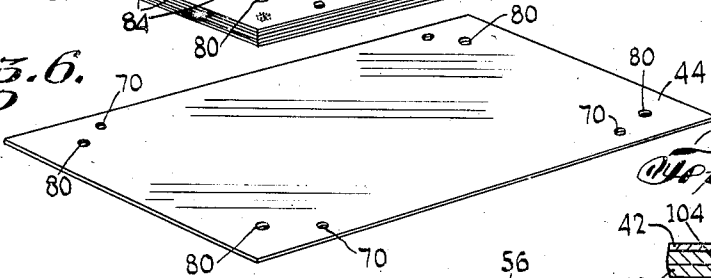


Fig. 8.

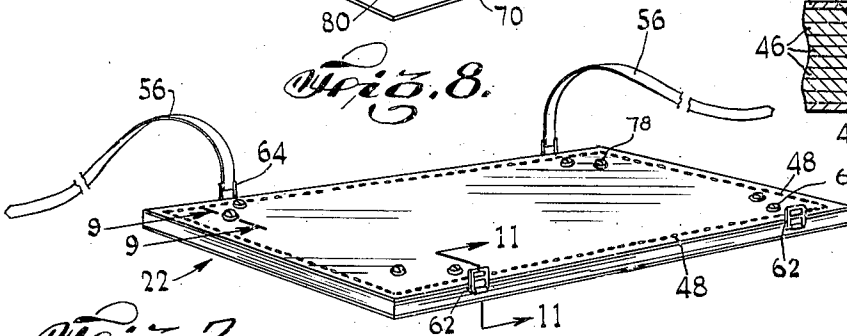


Fig. 7.

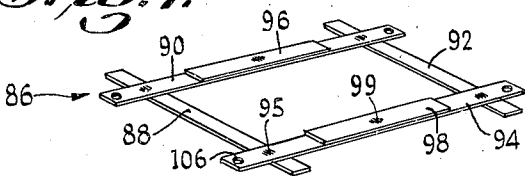


Fig. 12.

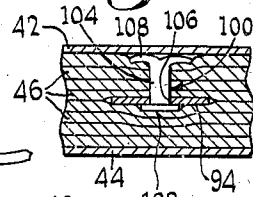


Fig. 11.

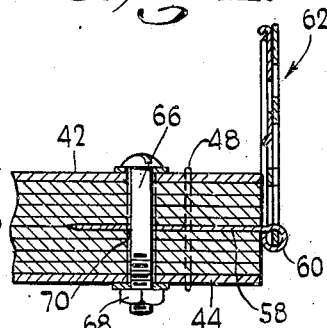
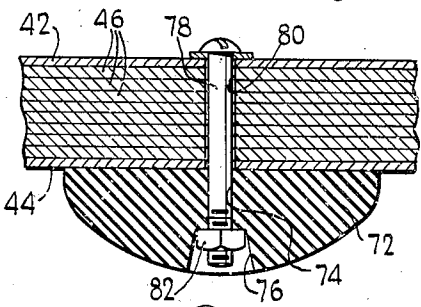
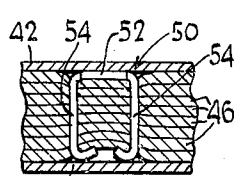


Fig. 10.

Fig. 9.

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BED BOARD

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Application August 6, 1946, Serial No. 688,610

13 Claims. (Cl. 5—354)

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This invention relates to furniture. More particularly the invention is concerned with a board used in conjunction with or incorporated in a bed mattress to render the mattress less flexible, boards of this kind being employed for improving posture or for various muscular, skeletal and organic ailments. For convenience such a board will be referred to hereinafter as a "bed board."

It is an object of the invention to provide a bed board which, although stiffer than a mattress or a bed spring, nevertheless still is flexible, so that it will not form a relatively unyielding and highly uncomfortable surface beneath the mattress, as is the case with wooden bed boards.

It is another object of the invention to provide a bed board whose flexibility can be varied during fabrication.

It is a further object of the invention to provide a bed board which can be quickly attached to or detached from a mattress and is adapted to be combined with a mattress.

It is an additional object of the invention to provide a bed board which will maintain a relatively fixed position in respect to the bed spring.

It is still another object of the invention to provide a bed board which is resilient and which will maintain its resiliency over the life of the bed board.

It is yet another object of the invention to provide a bed board which comprises relatively few and simple parts, is inexpensive to manufacture and is rugged and efficient in use.

Other objects of the invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the construction hereinafter described and of which the scope of application will be indicated in the appended claims.

In the accompanying drawings, in which is shown one of the various possible embodiments of the invention,

Fig. 1 is a perspective, partly broken away, view of a bed including a bed board constructed in accordance with my invention;

Fig. 2 is a side view of the bed shown in Fig. 1;

Fig. 3 is a fragmentary top view of the bed with the mattress removed the better to show the bed board;

Figs. 4, 5 and 6 are perspective views of the upper, intermediate and lower elements, respectively, of said bed board;

Fig. 7 is a perspective view of the spring element of the bed board;

Fig. 8 is a perspective view of the bed board apart from a bed;

Fig. 9 is an enlarged sectional view taken substantially along the line 9—9 of Fig. 8 and is il-

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lustrative of the means employed to prevent shifting of the bed board relative to the bed spring;

Fig. 10 is an enlarged sectional view taken substantially along the line 10—10 of Fig. 5 and is illustrative of the means employed to hold together the intermediate elements of the bed board and thereby vary its flexibility;

Fig. 11 is a sectional view taken substantially along the line 11—11 of Fig. 8 and is illustrative of the attachment for the buckle used to engage the tape which holds the bed board to a mattress; and

Fig. 12 is a sectional view taken substantially along the line 12—12 of Fig. 7 and is illustrative of the means used to secure the spring element to the bed board.

Referring now to the drawings, 20 denotes a conventional bed with which there is used a bed board 22 embodying my invention. Said bed includes the usual head and foot boards 24, 26 joined by side rails 28 which support, by means of slats 30, a bed spring 32 of any ordinary construction. By way of example, said spring includes a bottom frame 34 on which there are mounted a large number of helical springs 36, both the frame and springs being covered by a fabric casing 38. The bed board 22 is disposed on top of the bed spring 32, a mattress 40 of any conventional type being laid on top of the bed board. Said bed board may be coextensive with the mattress or, as illustrated, may have a width and length less than the corresponding dimensions of the mattress. Inasmuch as the bed board is chiefly used to correct ailments pertaining to the spine, I prefer to have the same extend from about the neck to slightly below the buttocks.

The bed boards comprises several separate layers of relatively heavy paper stock, the top layer 42 and the bottom layer 44 being of hard pressed fibre board. The intermediate layers 46, of which several are employed, e. g. eight, are of soft pressed newsboard or chip board. The several layers are held together in a suitable fashion, as for instance by a row 48 of stitching extending around the periphery of the bed board.

The foregoing arrangement provides a bed board which is quite flexible due to the combination of a preponderant number of highly pliable layers of newsboard or chip board and a few layers of much stiffer fibre board. However, the overall pliability or flexibility of a bed board thus fashioned is less than that of an ordinary mattress or spring and greater than that of a wooden bed board so that the bed board 22 will increase the effective stiffness of the mattress without rendering the same uncomfortable to sleep upon.

It is desirable to be able to vary the stiffness of the bed board, and for such purpose I provide

means to bind together the intermediate layers 46 of newsboard at intervals. This prevents the newsboard layers from experiencing a relative movement when flexed and thus renders the bed board less pliable. Said means, in the illustrated embodiment of my invention, comprises a plurality of staples 50 each having a base 52 disposed on a surface of one of the intermediate layers and legs 54 extending through pierced apertures in several of intermediate layers with the tips of the legs turned over to engage the last of the layers pierced. Optionally, the base of the staple may rest upon the outermost surface of the intermediate layer adjacent the upper or lower layer of fibre board and the legs of the staple may pierce all of the intermediate layers, it being understood that in this manner the stiffening effect is enhanced. The increase in stiffening, all other factors being constant, will depend upon the number of staples employed, that is as more staples are used and, therefore, disposed closer to one another, the bed board will become less and less flexible.

Although I have shown the bases 52 of the staples as being disposed immediately below the top layer 42, it will be understood that the same may be located immediately above the bottom layer 44, that is each staple may have its base near either the top or the bottom of the bed board.

Means may be included to detachably secure the bed board to the mattress. Such means, as shown herein, comprises a pair of tapes 56 permanently attached to the bed board adjacent a lateral edge thereof and adapted to be detachably secured to the opposite lateral edge, "lateral" being considered those edges of the bed board which run parallel to the longitudinal axis of the bed.

In Fig. 11 I have shown in detail the attachment for removably connecting an end of a tape to the bed board. Said attachment includes a metal plate 58 interleaved between adjacent intermediate layers 46 at a lateral edges of the board half way between the top and bottom layers 42, 44. Said plate has an outwardly extending edge formed into a sleeve 60 in which a conventional buckle 62 is hingedly secured. The fixed end of the tape is permanently secured to a clasp 64 which is hingedly connected to another plate (not shown) similar to the plate 58. This latter plate (the one not shown) and the plate 58, are fastened to the bed board by bolts 66 and nuts 68, the bolts extending through the entire bed board from the top through the bottom layer thereof, and passing through apertures 70 formed in the plates 58.

Means also may be included for preventing extensive shifting of the bed board relative to the spring. Such means comprises several projections extending from the lower surface of the board and adapted to fit either into the upper ends of the helical springs 36 or into the spaces between the springs. Said projections may assume the form of rubber pads 72 having a central through aperture 74 which is enlarged to provide a countersunk recess 76 in its surface remote from the bed board. A bolt 78, whose head is located on the top layer 42 and whose shank extends through registered apertures 80 in the top, intermediate and bottom layers, passes through the aperture 74 to receive a nut 82 in the recess 76. The pad is enough, e. g. about an inch in diameter, to fit inside the smallest helical spring employed in a bed spring.

Optionally, additional means may be incorporated to secure the top and bottom fibre board layers to the intermediate layers, such means comprising patches 84 of a cementitious material, such as glue.

A bed board consisting principally of fibre layers such as described tends to lose its shape over a period of time and, accordingly, means should be incorporated to resiliently urge the bed board to maintain its initial flat condition. Such means preferably comprises a long wide flat spring element 86 (Fig. 7) including four individual flat leaf springs 88, 90, 92, 94 arranged to form a hollow rectangle with the ends of the leaf springs crossing at and extending beyond the corners of the rectangle. The leaf springs are secured together as by spot welding 95 at the points where they cross. If desired, some leaf springs such as the larger ones 90, 94 at the sides of the rectangle may be stiffened by one or more additional leaf springs 96, 98 disposed on top of the springs 90, 94 and permanently attached at their centers, as by spot welding 99 to the underlying leaf springs.

The flat spring element may be sandwiched between any two paper layers but preferably is located between two of the intermediate layers 46 in a symmetrical position with respect to the edges of the bed board. Said spring element is suitably held in place as by rivets 100 whose heads 102 are disposed immediately below the element and whose shanks 104 pass through holes 106 in the ends of the individual leaf springs and through registered openings in the intermediate layers above the spring element. The split ends 108 of the rivets are clenched against the upper surface of next to the top intermediate layer.

It will be seen that I have provided a bed board which achieves several objects of this invention and is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A bed board comprising a plurality of separate heavy fibrous layers, the top and bottom layers being of hard pressed fibre and the intermediate layers being of soft pressed fibre, and means to detachably secure the bed board to a mattress.

2. A bed board comprising a plurality of separate heavy fibrous layers, the top and bottom layers being of hard pressed fibre and the intermediate layers being of soft pressed fibre, and means to detachably secure the bed board to a mattress, said last named means including a tape, means to attach the tape adjacent one lateral edge of the bed board and means to detachably secure the tape adjacent the opposite lateral edge.

3. A bed board comprising a plurality of separate heavy paper layers, the top and bottom layers being of hard pressed fibre board and the intermediate layers being of soft pressed paper board, means to locally secure only a plurality of intermediate layers to each other at several spaced points, and means to secure the top, bot-

tom and intermediate layers to each other around the periphery of the bed board.

4. A bed board comprising a plurality of separate heavy paper layers, the top and bottom layers being of hard pressed fibre board and the intermediate layers being of soft pressed paper board means to locally secure only the intermediate layers to each other at several spaced points, and means to secure the top, bottom and intermediate layers to each other around the periphery of the bed board.

5. A bed board comprising a plurality of separate heavy paper layers, the top and bottom layers being of hard pressed fibre board and the intermediate layers being of soft pressed newsboard, means to locally secure only a plurality of intermediate layers to each other at several spaced points, and means to secure the top, bottom and intermediate layers to each other around the periphery of the bed board.

6. A bed board comprising a plurality of separate heavy fibrous layers, the top and bottom layers being of hard pressed fibre and the intermediate layers being of soft pressed fibre, and means to attach the top and bottom layers and the intermediate layers to one another, and a plurality of projections depending from the bottom layer and adapted to engage a bed spring so as to prevent the bed board from shifting extensively relative thereto.

7. A bed board comprising a plurality of fibre layers, the top and bottom layers being of hard pressed fibre board and the intermediate layers being of soft pressed newsboard, means including staples to locally secure only the intermediate layers to each other at spaced points, and means including stitching to secure the top, bottom and intermediate layers to each other around the periphery of the bed board.

8. A bed board comprising a plurality of separate heavy fibrous layers, the top and bottom layers being of hard pressed fibre and the intermediate layers being of soft pressed fibre, a long wide flat spring element between two adjacent layers, means to secure said element in said bed board, and means to attach the top and bottom layers to the intermediate layers.

9. A bed board comprising a plurality of separate heavy fibrous layers, the top and bottom layers being of hard pressed fibre and the intermediate layers being of soft pressed fibre, a long

wide hollow spring element between two adjacent layers, means to secure said element in said bed board, and means to attach the top and bottom layers to the intermediate layers.

10. A bed board comprising a plurality of separate heavy fibrous layers, the top and bottom layers being of hard pressed fibre and the intermediate layers being of soft pressed fibre, a set of flat leaf springs, means to join said springs together to define a long wide flat hollow spring element, means to secure said element in said bed board between two adjacent layers, and means to attach the top and bottom layers to the intermediate layers.

11. A bed board comprising a plurality of superimposed flat layers of heavy flexible material in face-to-face contact and a resilient flat member interposed between portions of two adjacent layers and extending for substantially the length and breadth of said layers whereby to maintain the bed board in flat condition.

12. A bed board comprising a plurality of flat layers of heavy fibrous material, a flat spring interposed between two adjacent layers whereby to maintain the board in flat condition and means to secure said layers to each other.

13. A bed board comprising a plurality of flat layers of heavy fibrous material, a hollow flat spring interposed between two adjacent layers whereby to maintain the board in flat condition and means to secure said layers to each other.

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