Dec. 27, 1955 A. M. HYNES 2,728,089

MATTRESS STIFFENER

Filed Sept. 8, 1953

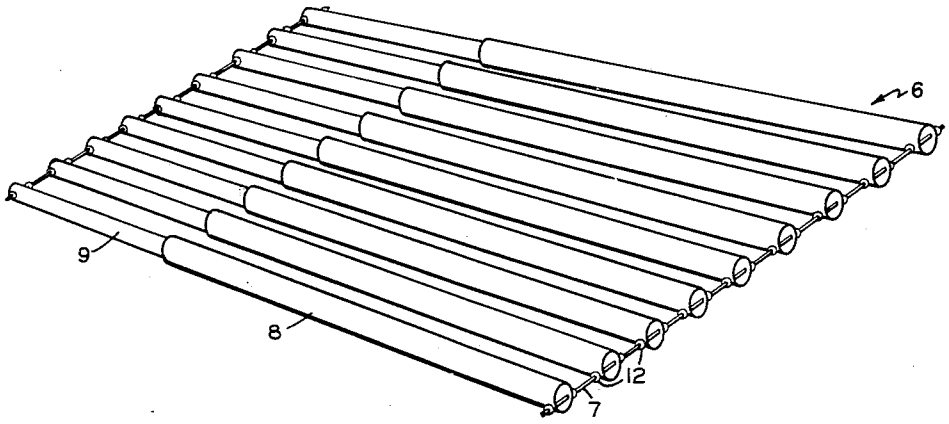


FIG_1

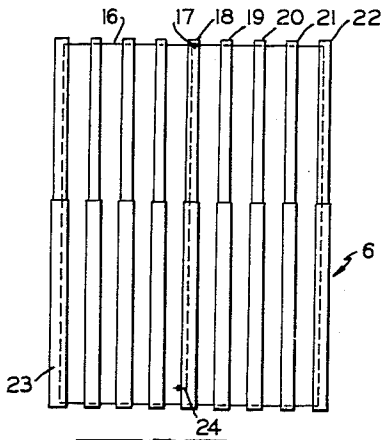


FIG_2

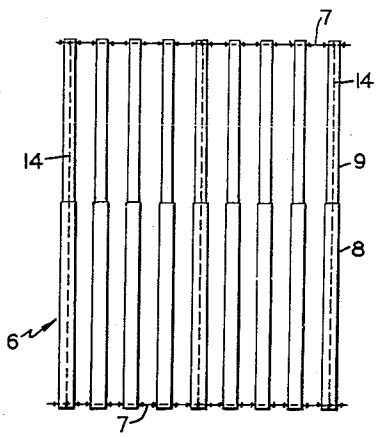
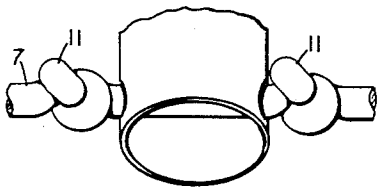


FIG_3

FIG_4



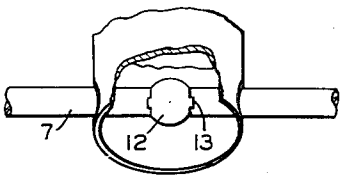


FIG_5

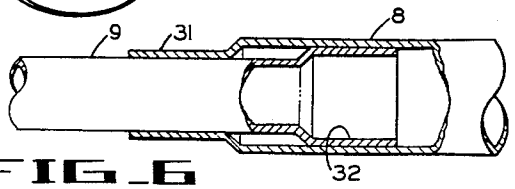


FIG_6

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MATTRESS STIFFENER

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5 Claims. (Cl. 5—354)

This invention relates to a structure to be used in conjunction with the mattress and springs on a bed to render the mattress less flexible and to impart an essential rigidity in a selected portion of the mattress. Mechanical devices of this kind are employed for improving posture or in the treatment of various muscular, skeletal and organic ailments. For convenience, such a structure will be referred to hereinafter as a mattress stiffener.

Persons requiring a mattress stiffener must, during any period of prone rest, never be without one, even for a short period. Therefore, if a person requiring a mattress stiffener in a bed is away from his usual abode, it is necessary for him, for example, to sleep upon the floor or a similar hard surface, or else carry with him a suitable mattress stiffener. In the past, such stiffeners have generally been made up of solid pieces of plywood of the size of a mattress, or to utilize long wooden slats; in either case, these are bulky, weighty and inconvenient to carry.

It is in general the broad object of the present invention to provide a novel and improved mattress stiffener.

A further object of the present invention is to provide a mattress stiffener which may be manufactured to sell relatively inexpensively and yet provide a structure which can be utilized and transported readily by anyone requiring a mattress stiffener.

The invention includes other objects and features of advantage, some of which, together with the foregoing, will appear hereinafter wherein the present preferred form of mattress stiffener of this invention is disclosed. In the drawing accompanying and forming a part hereof,

Figure 1 is a perspective view of a mattress stiffener embodying this invention, this being shown in extended position and ready for use.

Figures 2 and 3 are plan views, illustrating different arrangements which can be utilized to maintain the several members comprising the mattress stiffeners in operative relation to one another.

Figures 4 and 5 are fragmentary perspective views illustrating various ways in which telescoping extension of the several mattress stiffener members can be limited.

Figure 6 is a side elevation, partly in section, illustrating another construction for limiting extension of the mattress stiffener members.

In accordance with this invention, the mattress stiffener is provided with a plurality of mattress stiffening members 6 adapted to extend longitudinally of the mattress and between the mattress and springs over a selected area; in the form shown, nine stiffening members are shown joined together by suitable flexible joining means 7, this being the number usually required to fit the ordinary single bed. Each of the mattress stiffener members is made up of a first tubular element 8 and a second tubular element 9, the latter sliding freely but snugly in the former so that the two telescope, one upon the other, whereby the overall length of the mattress stiffener members can be varied. In one form of device embodying the invention, tubes 6 were made up of two lengths, 8 and

9, of aluminum tubing, tubing 8 having approximately 1" internal diameter, while tubing 9 had a tight sliding fit therewith. Each of tubes 8 and 9 was three feet in length so that the two could be extended to provide a rigid stiffening member extending longitudinally of the bed for a maximum distance of the order of 66". This length will suffice for all persons of ordinary height inasmuch as it is only necessary to provide support between a mattress and springs over that length between the shoulders and knees of a patient lying prone and stretched to full length on a mattress. By pulling the tubes apart, a selected distance the stiffening members can be extended to serve adults and children at will. In place of aluminum, one can use other metals, wood or plastic materials of a desired weight and strength. The cross-section of the tubular members can be circular, as shown, rectangular, square, triangular or polygonal.

To secure the several tubes in the desired parallel spaced relation, flexible members 7 are provided at each end thereof, these being flexible cables or ropes extended through suitable apertures provided in the end of each of the tubes 8 and 9 or otherwise joined to the tubes.

To retain the tubes in position on the flexible member 7, the latter can be knotted upon itself as at 11, or suitable mechanical fastening such as a hollow sphere 12 having a plurality of integral projections 13 thereon forced into engagement with the flexible members 7. In Figure 1, spheres 12 are shown on each side of a mattress stiffener 6, while in Figure 5 one sphere 12 is secured on rope 7 within the tubular stiffener. To maintain the tubes 8 and 9 in engagement, one can extend a flexible cord through the tubes between the flexible members 7 at each end of the tubes. Thus, referring particularly to Figure 3, I have shown the flexible cords 14 extended through each of the terminal members 6 and through the center-most member 6. Thus, the tubes 8 and 9 can be collapsed one upon the other and placed in a suitable traveling case (not shown) for convenient transportation. When it is desired to put the tubes to use, they can be drawn out to the desired length and without pulling all the tubes out of engagement; the extended tubes are then inserted between the spring and mattress on the bed.

If, desired, instead of providing a rope in only three of the tubes to limit extension of the tubes 8 and 9 with respect to one another, one can place such retaining means in all of the tubes, or in any selected number thereof.

In that form of device shown in Figure 2, a rope 16 has been shown as passed through the several tubes and secured by suitable fastening means, knots or the fastening device 13, as at 17 to the central tube 18. The rope is extended through the tubes 19, 20 and 21, and thence down through the outer tube 22 from one end thereof to the other, the rope being knotted or held by one of the retaining means 12 between each tube. The rope is extended from the other end of the tube 22 across the end of all of the tubes to the other terminal tube 23 through which it is passed and from whence it is returned to the tube 18, being extended through tube 18 and being secured in position at its other end as at 24 by one of the retaining means 12 or 13. In this manner, one length of rope or other flexible retaining means can be utilized to secure all the tubes in position and at the same time secure them in relation so they cannot be extended beyond a selected maximum length.

In place of utilizing one or more flexible means to limit extension of tubes 8 and 9, one can flare over the ends of the tubes. Thus, as is shown in Figure 6, one end of the larger tube 8 is reduced as at 31 to a sliding fit with the outside surface of the smaller tube 9 while an end of tube 9 is expanded as at 32 to a sliding fit with the inside of the larger tube 8.

From the foregoing, I believe it will be apparent that I have provided a novel, improved and much simplified mattress stiffener device.

I claim:

1. A self-contained, adjustable, collapsible, readily-portable mattress stiffener device comprising a plurality of tubular members, flexible means joining the tubular members together in a parallel spaced relation one to the other, each of said tubular members including at least two telescoping elements, said telescoping arrangement rendering the device adjustable and collapsible whereby it may be extended for use to the full length of the usual bed or collapsed to a comparatively small size to render it readily portable.

2. A self-contained, adjustable, collapsible, readily-portable mattress stiffener device comprising a plurality of tubular members, flexible means joining the tubular members together in a parallel spaced relation one to the other, each of the tubular members including at least two telescoping elements, means extending between opposite ends of at least one of the telescoping members and limiting the movement of the elements comprising such members with respect to one another to less than the total length of the two elements, said telescoping arrangement rendering the device adjustable and collapsible whereby it may be extended for use to the full length of the usual bed or collapsed to a comparatively small size to render it readily portable.

3. A self-contained, adjustable, collapsible, readily-portable mattress stiffener device comprising a plurality of tubular members, flexible means joining the tubular members together in a parallel spaced relation one to the other, each of said tubular members including at least two telescoping elements, and means provided between said elements for limiting telescoping extension thereof, said telescoping arrangement rendering the device adjustable and collapsible whereby it may be extended for use to the full length of the usual bed or collapsed to a comparatively small size to render it readily portable.

4. Self-contained, adjustable, collapsible, readily-portable orthopedic bed slats comprising a plurality of first tubular rigid slats of equal length arranged in a spaced parallel relation, a plurality of second tubular rigid slats of equal length each mounted with a snug sliding fit within one of the first slats to provide matched slidable slat pairs, a first flexible means joining terminal ends of each of the first slats together in said spaced parallel relation, and a second flexible means joining a terminal end of each of the second slats together in said spaced parallel relation, and means limiting extension sliding movement of each slidably mounted slat pair, said sliding fit arrangement rendering the slats adjustable and collapsible whereby they may be extended for use to the full length of the usual bed or collapsed to a comparatively small size to render them portable.

5. Self-contained, adjustable, collapsible, readily-portable orthopedic bed slats comprising a plurality of first tubular rigid slats of equal length arranged in spaced parallel relation, a plurality of second tubular rigid slats of equal length, each mounted with a snug sliding fit within one of the first slats, and a single flexible means joining the terminal end of each of the first slats together and of each of the second slats together and limiting sliding of each engaged slat pair, said sliding fit arrangement rendering the slats adjustable and collapsible whereby they may be extended for use to the full length of the usual bed or collapsed to a comparatively small size to render them portable.

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