July 10, 1951 A. HAY ET AL 2,559,956

COMPRESSIBLE SECTIONAL MATTRESS

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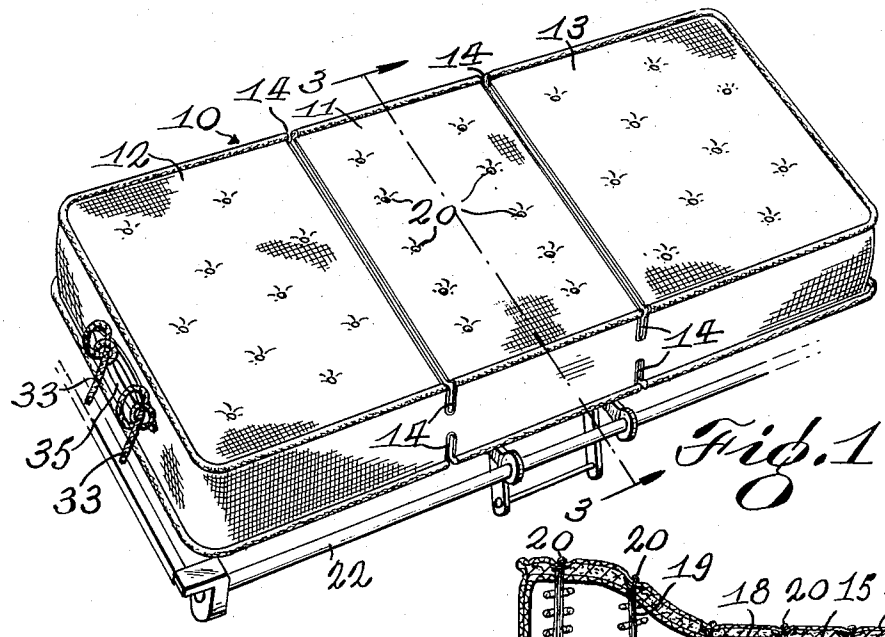

Fig. 1

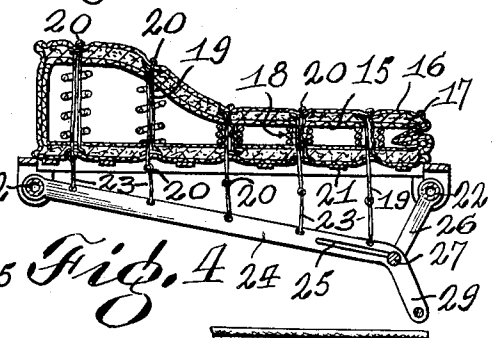

Fig. 4

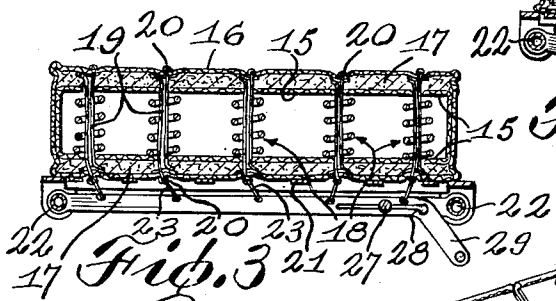

Fig. 3

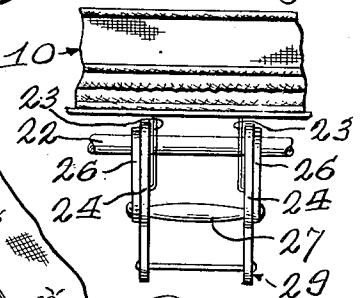

Fig. 5

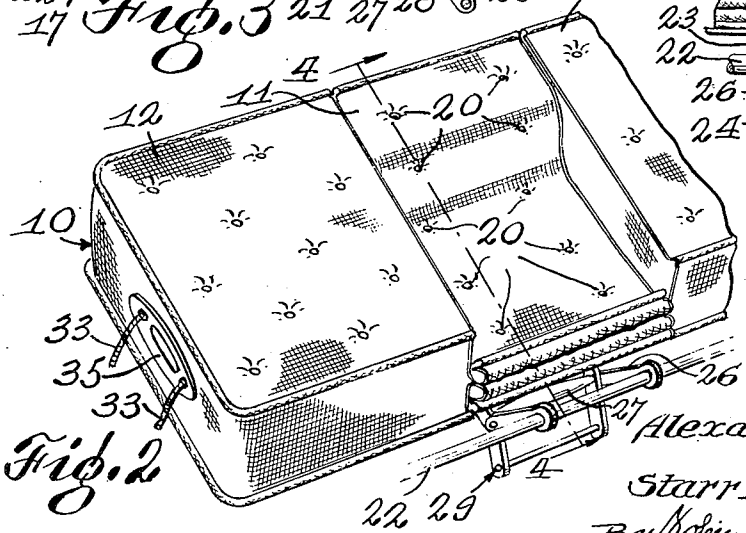

Fig. 2

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COMPRESSIBLE SECTIONAL MATTRESS

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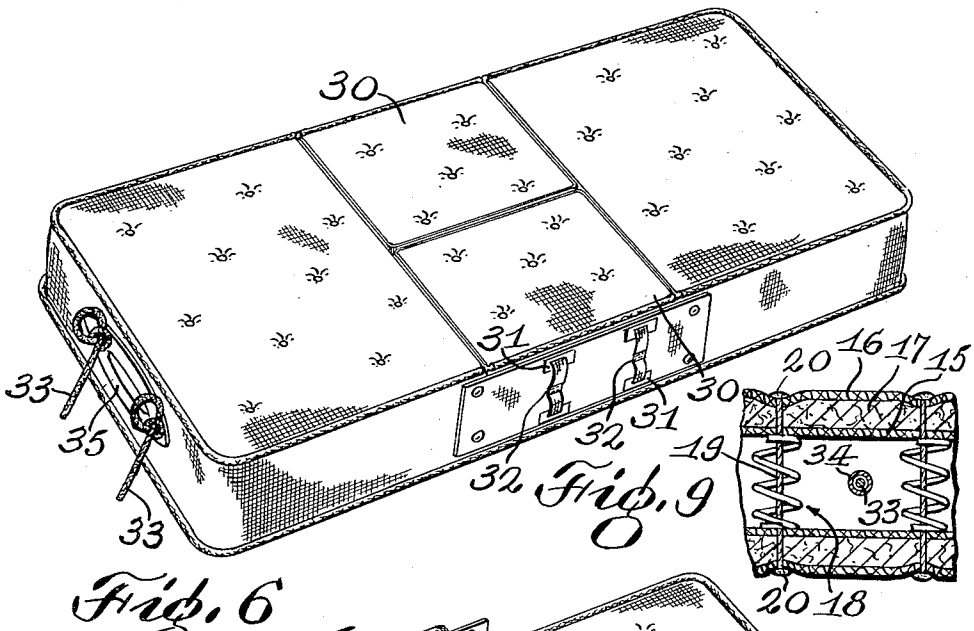

Fig. 9

Fig. 6

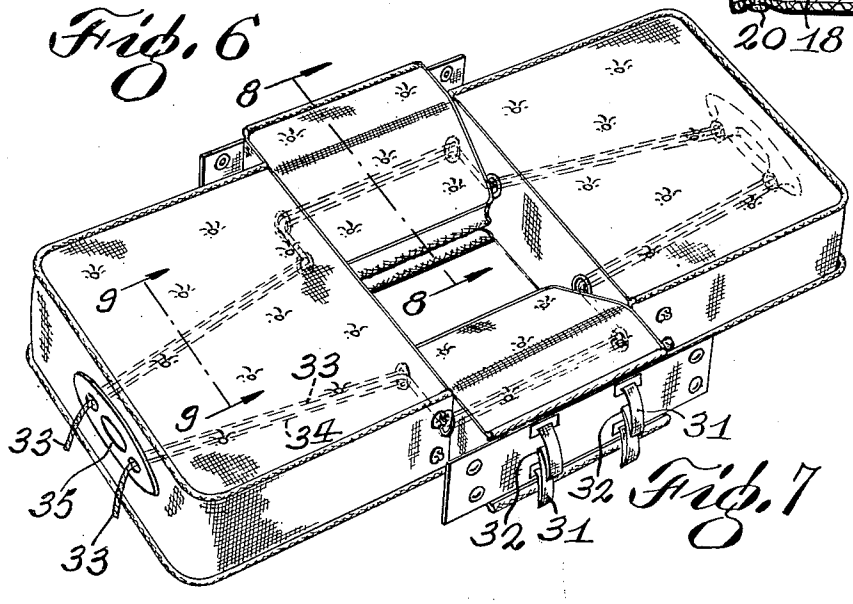

Fig. 7

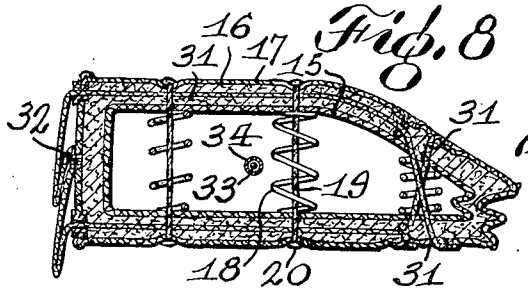

Fig. 8

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Patented July 10, 1951

2,559,956

UNITED STATES PATENT OFFICE

2,559,956

COMPRESSIBLE SECTIONAL MATTRESS

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Application September 28, 1948, Serial No. 51,502
In Canada September 29, 1947

8 Claims. (Cl. 5—91)

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The present invention relates to mattresses, and, more specifically, to such mattresses as are designed for use by invalids, and the like.

A major problem pertaining to the health and comfort of bedridden individuals resides in the means by which adequate sanitary facilities are provided. It is often dangerous and painful to a patient to insert a bedpan thereunder, for immobilized limbs may be damaged by being thus humped up above the mattress.

Some mattresses have been designed to obviate this difficulty by having a small section removable therefrom. This section being removed, a bedpan might be inserted and the patient moved over into position. Whilst such a method may be more comfortable for the patient, nonetheless it may be dangerous to move the latter, and in this case a more satisfactory solution to the problem must be sought.

Such a solution is contemplated by the present invention whose main object is to provide a mattress of a design which permits sanitary facilities to be inserted under a bedridden patient without moving the latter or causing undue discomfort thereto.

Another object of the invention is to provide a mattress having compressible sections; which sections may, or may not, be removable.

And another object of the invention is to provide means for compressing certain well defined, predetermined areas or sections of a mattress.

Yet another object resides in the provision of a mattress of the character described which will prevent undue suffering, strain and exertion on the part of the patient and lighten the burdensome duties of nurses and attendants.

Still another object resides in the provision of a mattress and means of the character described which are simple in construction and easy to operate.

Other objects and advantages will become apparent or be further pointed out in the description to follow.

As an example, and for purposes of illustration only, preferred embodiments of the invention are shown in the annexed drawings wherein:

Figure 1 shows a perspective view of a mattress constructed according to the invention having a transverse compressible section in normal position;

Figure 2 shows a part perspective view similar to Figure 1 only in compressed position;

Figure 3 shows a section along the line 3—3 of Figure 1;

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Figure 4 shows a section along the line 4—4 of Figure 2;

Figure 5 shows a detail side elevation of the operating handle for the compressing means;

Figure 6 shows a perspective view in normal position of a mattress constructed according to a further principle of the invention, wherein the transverse section is divided into two compressible removable half-sections;

Figure 7 shows a similar perspective view only with the half sections in compressed and partly withdrawn portion;

Figure 8 shows a section along the line 8—8 of Figure 7;

Figure 9 shows a detail section along the lines 9—9 of Figure 7.

Referring now to the drawings, wherein the same reference characters denote corresponding parts throughout, one type of mattress constructed according to the invention is shown in Figure 1 to 5.

The mattress, indicated generally by 10, may be in the shape of a parallelepiped having a transverse compressible mid-section 11 and two incompressible end sections 12 and 13. Separating the mid-section from the end sections on each side thereof at both top and bottom of the mattress are the pleats 14. These pleats are folded substantially into the mattress and thus allow the mid-section to be compressed without affecting the rest of the mattress. In outline, then, the mattress will be of regular shape and may be reversible end for end and top for bottom.

The interior structure of the mattress may be similar to that of those currently in use, having the usual inside cover and outside ticking 15 and 16, padding or the like 17 therebetween, and cushioning members such as 18 within. These members 18 act to inflate or distend the mattress and are limited by the restraining straps or cords 19 which connect with the looped stops 20 outside the ticking 16 at one end thereof, and are directly secured to the reinforced ticking at the other end thereof. In the incompressible sections of the mattress, the looped stops 20 may be replaced by the usual padded buttons, or the like.

The mattress may be presumed to rest upon bedsprings such as those indicated by 21, and these in turn will be supported by some bed frame structure such as the tubular longitudinal side supports 22. The means by which the mid-section of the mattress is compressed may also be held by supports 22.

Such means preferably consist of the hooks 23 which, passing through the springs of the bed, are securable to the looped stops 20 at the bottom of the mattress and out of the bottom where they hang through bedsprings 21.

Underneath the bedsprings, the hooks 23 (which will be preferably secured to at least two transverse rows of stops 20) are secured to two transverse bars 24 each of which are pivoted at one end to one of the supports 22. The free end of these bars will each have a slot such as 25. Pivotally secured to the other support 22 are the two short bars 26. A handle 27 connects the bars 26, this handle projecting at each end somewhat beyond these bars to engage each slot 25. Thus the handle and short bars will act as a crank by which the longer transverse bars 24 are pivoted up and down. When the latter is pivoted downward, the hooks 23 draw down the straps 19 secured to the mattress ticking at the top thereof. This causes the mid-section of the mattress to be compressed at one end as shown in Figures 2 and 4. The mattress may be locked in compressed position if each of the slots 25 has a downwardly projecting notch such as shown at 28.

As a further aid to an attendant in operating this compressing means, the handle 27 might be supplemented by a crank-actuating foot lever such as indicated by 29. This would obviate stooping on the part of a nurse.

It will be clear that when the mattress has been so compressed at its mid-section, it will be a simple matter to insert a bedpan under the patient without moving or causing discomfort to the latter. Moreover, it will render washing the patient a much less arduous task, since it will make it possible to get underneath his limbs.

Another example of a mattress constructed according to the invention is shown in Figures 6 to 9. In this example, the transverse mid-section has been divided into two separate sections 30 which are in turn wholly separate from the end mattress sections. As before, the mattress may have a regular shape which is reversible end for end and top for bottom. In this example, the object is to provide separable mid-sections, each of which may be compressed independently prior to removal in order to avoid disturbing the patient.

Examining one of the mid-sections 30, the interior construction seems, at first sight, similar to the rest of the mattress, having the outer ticking 16, inner cover 15, padding 17 therebetween, cushioning members 18, and restraining cords 19 between the ticking and outside buttons or loops 20. In addition, however, each of the sections is provided with at least two compressing straps 31.

Figure 8 illustrates clearly the operation of such a strap 31. The middle of the strap is secured to the middle of the lateral side of the mattress section at 32. From here, the strap passes into the padding 17 between 15 and 16 at both the top and bottom of the mattress. Each end of the strap extends through this padding to the cushioning member 18 which is closest to the inside of the mattress. From here, each end of the strap passes through the cushioning member to be secured to the outside ticking at the opposite ends thereof.

With such a construction, it will be obvious that when the straps 31 are loose, the members 18 will force the mattress section to take its normal shape. When the straps of one of the sections 30 are tightened, however, that section will be compressed to the shape shown in Figures 7 and 8. This will render it possible to remove section 30 for the purpose of inserting a bedpan under the patient or in order to wash the latter.

Either of the types of mattresses hereinbefore described might be provided with means for retaining their sections against relative displacement. Thus in the mattress of Figure 1, it may, in some constructions, be necessary to provide means for retaining the end sections against longitudinal movement away from the mid-section. And in the second type of mattress, means should be included for preventing the sections 30 from inadvertently separating out from under a patient.

Figures 7 and 9 illustrate such retaining means. As is shown, a pair of flexible stays 33 pass longitudinally through the mattress from end to end. Each of these stays will hold in place one of the sections 30 and thus enable the mattress to be locked together. Within each mattress section, the stays will be enclosed in flexible tubing 34 which will be securely held in place by reinforcing at the mattress covers. At the two ends of the mattress, the stays will emerge from the tubing into a locking collar such as shown at 35, or a flat securing plate (not shown) respectively. This collar will enable the ends of the stays to be loosened for separating sections 30 or will allow the stays to be drawn tight and knotted.

A similar pair of flexible stays 33 may be used in the mattress of Figure 1. These will, as in the former case, pass longitudinally through the mattress and be secured in end plates. The stays may, or may not, pass through flexible tubing such as 34. In this mattress, the stays might be kept virtually always in locked position.

It will be understood, that, having regard to the foregoing objectives and the equivalent methods shown of fulfilling the same, I do not limit myself to the precise embodiments of my invention herein shown and described for it is obvious that various changes as to size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described our invention, we claim:

1. In a mattress having cushioning members therewithin and means for limiting the outward extension of said members, the combination of a transverse compressible mid-section in said mattress, infolded pleats connecting said mid-section to the rest of the mattress, straps secured to the top of the mid-section and passing through said cushioning members, and means below the mattress for exerting tension on at least some of said straps whereby at least a part of said mid-section is compressed.

2. In a mattress having cushioning members therewithin and means for limiting the extension of said members, means for compressing at least a portion of said mattress comprising straps secured to the top thereof and passing through said members and means for exerting tension on said straps.

3. In combination with a bed a mattress having cushioning members within said mattress and means for limiting the extension of said members, said mattress comprising a transverse compressible mid-section, infolded pleats connecting said mid-section to the rest of the mattress, straps secured to the top of said mid-section extending downwardly through the members therewithin, at least one transverse bar below the mattress pivotally secured at one end to said bed, said straps engageable with said

bar, and said bar movable to exert tension on at least some of said straps whereby at least a part of said mid-section is compressed.

4. In a mattress having an outer ticking, cushioning members therewithin, means for limiting the outward extension of said members, and a section thereof removable therefrom, means for compressing said section comprising at least one strap the extremities of which are secured to the mattress cover at opposite ends of one of said members, said strap extremities crossing through the member and extending outside the mattress section along the top and bottom ticking thereof respectively, and whereby tension on said strap causes at least a part of said section to be compressed.

5. In a mattress having cushioning members therewithin and means for limiting the outward extension of said members, two end sections, a mid-section comprised of two separately removable compressible mattress portions, flexible tubing disposed longitudinally through said end sections and each of said mid-portions, at least two stays extending through said tubing each of which passes through one of said portions, said stays adapted to be drawn tightly through the mattress and hold said mid-portions in place, means for releasably locking said stays in tightened position, straps in said mattress portions passing through the members thereof and extending outside therefrom, said straps secured at each end to the top and bottom of said portions whereby tension may be exerted on said straps to compress said mattress portions.

6. In a mattress, the combination of a compressible section, pleats connecting said section to the rest of the mattress, means for compressing at least part of said section and retaining means for holding said section in place in the mattress.

7. In a mattress, a transverse mid-section comprised of two separately-removable end portions, means associated with each of said portions for compressing at least part of same, retaining stays longitudinally disposed through the mattress and the portions thereof, and means for releasably locking said stays in tightened position for holding said portions in place in the mattress.

8. In a mattress, a transverse compressible mid-section, in folded pleats connecting said mid-section to the rest of the mattress, means for compressing at least part of said mid-section, longitudinal stays through said mattress and means for holding said stays in tightened position whereby the mattress and section thereof are held together.

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The following references are of record in the file of this patent:

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