March 31, 1964 M. N. JANAPOL 3,126,554

PRESCRIPTION BEDDING HAVING INDIVIDUALLY ADJUSTABLE SPRING UNITS

Filed Oct. 27, 1961

FIG. 1.

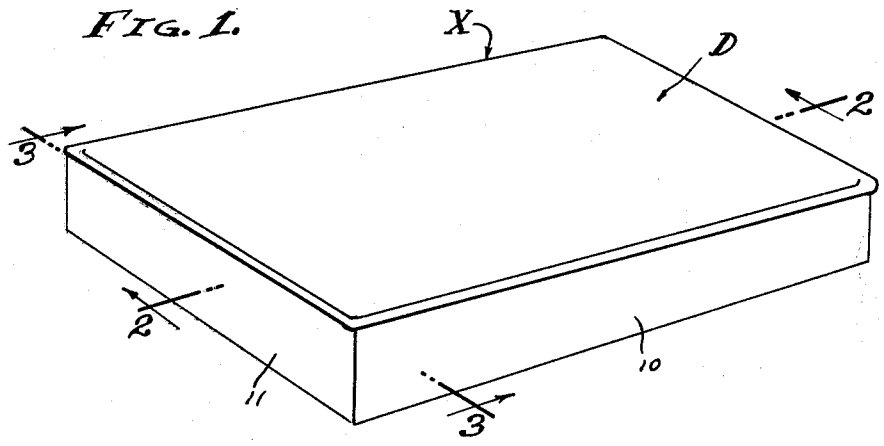


FIG. 2.

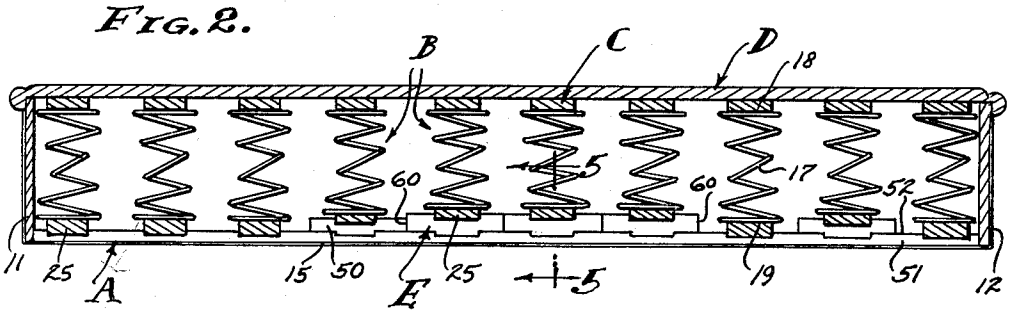


FIG. 3.

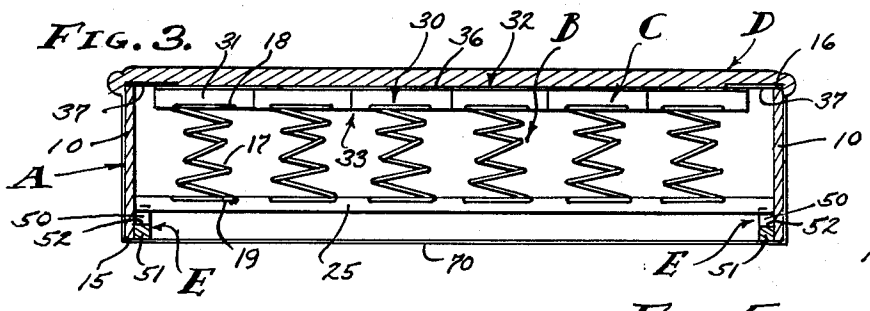


FIG. 4.

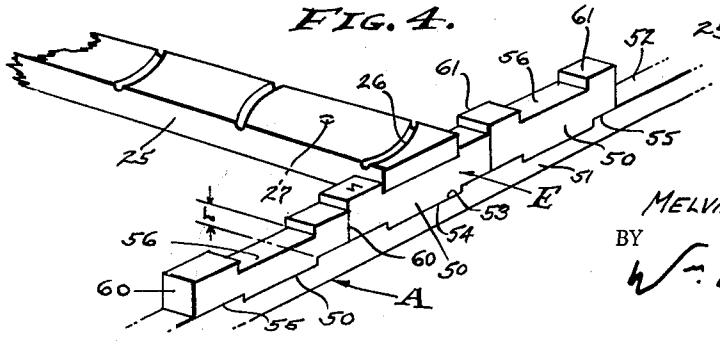
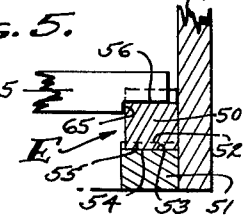


FIG. 5.



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PRESCRIPTION BEDDING HAVING INDIVIDUALLY ADJUSTABLE SPRING UNITS

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This invention relates to bedding and is particularly concerned with springs and mattresses to be furnished according to specified firmness in certain areas thereof as prescribed by doctors qualified to diagnose and make said requirements relating to individual persons for which the bedding is intended. More particularly, the invention is concerned with box springs, or the like, used for providing the underlying support beneath a mattress upon which the person is to lie. However, this invention relates broadly to any furniture, or the like, upon which a person is to sit or lie and does not necessarily require an overlying mattress.

Variable tension at different areas of spring units has been proposed and means have been provided in order to control the said tension as required. But, the tension controls that have been proposed are overall in function and do not afford individual control of the different areas of springing. For example, box springs or mattresses have been proposed with heavy springs throughout some areas and light springs throughout other areas thereof, and in order to vary the overall pressure all of the springs have been supported from beneath by a vertically shiftable member. Such a mattress can be said to have adjustable firmness but it is not necesarily designed to meet the requirements of a particular person. That is, the different areas of the box spring or mattress cannot be individually tensioned as particular circumstances may require, whereby greater or lesser support is provided within a specified area.

A scientific approach has been made to control the posture of the human form in a reclining position upon bedding, and it has been found that beneficial results can be obtained by using certain specified spring pressures at certain specified areas of the bedding. Because the stature of the human form is characterized by curvatures that vary from person to person and which also vary as a result of injuries and defects, it is not possible to design and build a single bedding unit suitable for all. On the contrary, each individual person will require a certain prescribed springing if proper support is to be expected throughout the length of the reclining body. Although various reclining positions are contemplated, for purpose of illustration a normal reclining position upon the back or posterior is to be considered. Obviously, the reclining body has protrusions and indentations, and it has portions heavier than others. Generally, these variations in stature occur longitudinally of the reclining body.

With the above requirements in mind it is a general object of this invention to provide means whereby the spring pressures can be individually set and established at different specified areas of the bedding, all as particular circumstances require. The said areas are adjacently related areas that extend transversely of the bedding, and each area will underlie a designated portion of the person's body which is to lie thereupon.

Another object of this invention is to provide bedding as herein specified wherein spring pressures are established by dimensionally prescribed elements that are inserted into working position in order to complete the bedding. As a result, the above mentioned transversely disposed areas can be individually tensioned as prescribed according to competent diagnosis of a qualified doctor.

The various objects and features of this invention will

be fully understood from the following detailed description of the typical preferred form and application thereof, throughout which description reference is made to the accompanying drawings, in which:

FIG. 1 is a perspective view showing a bedding unit of the type being considered.

FIG. 2 is an enlarged transverse sectional view taken as indicated by line 2—2 on FIG. 1.

FIG. 3 is an enlarged longitudinal sectional view taken as indicated by line 3—3 on FIG. 1.

FIG. 4 is an enlarged detailed perspective view of a fragment of the construction and showing the manner in which the dimensionally prescribed elements are installed.

FIG. 5 is a sectional view of the structure shown in FIG. 4 and taken as indicated by line 5—5 on FIG. 2.

Heretofore, bedding has not been provided in a form useable by doctors and physicians to give underlying support according to prescribed pressures at different areas thereof. That is, bedding has not been manufactured and sold according to prescription whereby firmness selectivity is possible. It is true that special bedding is built to suit an individual person, but it is an object of this invention to provide a single bedding structure which can be accurately completed by the insertion of tensioning elements according to precisely specified requirements.

Bedding, or furniture, of the type under consideration is characterized by a multiplicity of coil springs for the general purpose of providing a depressible surface upon which a person can sit or lie. The coil springs have an hour glass shape for engagement with the opposed supporting and supported elements, namely, the frame and padding respectively. It is common practice to limit movement of said springs by tying them or by enclosing them in pockets, all for the purpose of establishing the maximum height to which they will be free to extend. Bedding constructions are commonly characterized by the combination of a spring unit and a mattress unit, and it is desirable to have a spring unit that is yielding but which nevertheless gives substantial support. That is, firmness is much to be desired, and in extreme cases a person will of necessity insert flat elements between the spring unit and mattress unit in order to give this effect. Said flat elements that are used as inserts are usually in the nature of thin boards.

In FIG. 1 of the drawings I have shown a typical embodiment of my invention in a spring unit X to be used underlying a mattress unit (not shown). It is to be understood that the present invention is applicable to other like units of construction used to underlie a padding for the comfort of a person. As it is illustrated, the spring unit X involves, generally, a frame A, one or more sets of spring coils B, height limiting means C for the coils B, a cover or padding D, and a position selection means E.

The frame A is the supporting structure that carries the sets of spring coils B and it is of the desired shape as circumstances require. The sets of spring coils B can vary in number and arrangement and they are preferably in a series disposed transversely of the frame A. The height limiting means C is cooperatively related to the sets of spring coils B, there being a means C for each set of coils B.

The supporting frame A can be a simple rectangular structure having side rails 10, a foot rail 11, and a head rail 12. As shown, the rails 10, 11 and 12 are alike in that each is a flat elongate member disposed in a vertical plane and one right-angularly related to the other. Thus, the frame A is a four-cornered structure with parallel side rails 10, each rail having a bottom edge 15 and an upper edge 16.

The sets of spring coils B are usual in that they are in a straight series that extend between the side rails 10. The number of individual coils can vary, six coils being

shown, and each is a helically wound spring 17 disposed on a vertical axis. The top and bottom ends 18 and 19 of the springs 17 are closed and are round and in a plane normal to the axes of the springs.

There is a spring support 25 that extends transversely between the side rails 10 at the bottom edge 15 thereof. The support 25 is a substantially rigid member adapted to withstand the compressive forces of the combined springs 17 of the sets of spring coils B. As shown, the springs 17 are seated with their round bottom ends 19 received in arcuate channels 26 in the support 25. The support 25 is narrower than the diameter of the spring ends, the said arcuate channels 26 being formed about a common center at 27. The top ends 18 of the springs 17 are received in a like manner in the body parts of the means C later described. The ends 18 or 19 are anchored by fasteners driven into place with a head overlying the spring end.

With the construction thus far described it will be apparent that the spring unit is characterized by transversely disposed rows of springs 17, each row comprising a set of spring coils B, said springs 17 being supported or carried by the support 25 to which they are mounted at their bottom ends 19.

The height limiting means C is cooperatively related to the springs 17 to permit their extension to a predetermined level, preferably a level at/or coincidental with the top edge 16 of the frame A. The means C is embodied in a structure that overlies the spring coils B and in its preferred form it is an elongate structure that is coextensive with a set of spring coils, there being a height limiting means C for each row of spring coils B. The height limiting means C is best illustrated in FIG. 3 of the drawings and it involves, generally, an elongate element 30, flexible in one direction and inflexible in the other direction. More specifically, the element 30 is normally straight and flexible so as to be deflected downwardly from the straight condition, but it is inflexible upwardly from said straight condition. In its preferred form, the means C comprises a series of adjacently related bodies 31, hinge means 32 joining the bodies in said series and permitting said downward deflection, and means 33 inflexibly preventing said upward deflection.

The hinge means 32 joining the adjacently related bodies 31 can vary and it is preferably in the form of a band 36 that extends from one body 31 to the other along the tops 35 of the said bodies, as more completely disclosed in my co-pending application Serial No. 100,421, filed April 3, 1961, entitled "Spring Unit with Limiting Means." In actual practice, the band 36 is a band of metal, or the like, preferably of spring steel, in which case it has flexibility in that it is resiliently bendable. The terminal ends of the band 36 are coupled to the side rails 10 by means of tension bands 37 of heavy burlap or the like, in order to allow for depression of said means C without inward collapse of the side rails 10. The said tension bands 37 are sufficiently stretchable in order to permit the downward flexure of band 36. The band 36 is fastened to the bodies 31 by means of staple fasteners or the like.

The means 33 inflexibly preventing said upward deflection is incorporated in the adjacently related bodies 31 which have abutting ends 40 and 41 that have face-to-face engagement when the element 30 of the means C is in the straight, or any other desired, normal condition. The ends 40 and 41 are flat, as described, and they depend from the band 36 to the end that a stop is formed in order to prevent upward movement of the bodies.

With the bedding structure hereinabove described, and with all bedding of the type here under consideration, there are adjacently related transverse areas in a series extending longitudinally of the frame A. As shown, the padding D overlies all of these areas, and there is a set of spring coils B, or the like, underlying and establishing each area to be tensioned to the desired firmness. In accordance with the present invention I provide means E to selectively position the spring supports 25 whereby the height of installation of each support 25 can be fixed according to prescription.

The position selection means E for the supports 25 can vary somewhat in its embodiment and in its preferred form it involves tensioning elements in the form of blocks 50 individually positioning the supports 25. In carrying out the invention each side rail 10 is provided with a flange 51 that presents an upwardly facing shoulder 52, the flange and shoulder presented thereby being coextensive with and positioned at the lower edge or margin of the rail. The flange 51 is provided with a notch 53 to receive and position the end portion of the support 25, or block 50 as the case may be. Normally, the downward pressure exerted by the spring coils B urges the terminal end portions of the supports 25 into pressure engagement with the flanges 51 at the opposite side rails 10. In this sense, the bedding unit X is complete, but the said terminal end portions of the supports 25 are not fastened to the rails 10 or flange 51, said portions being left free for the insertion of the blocks 50 thereunder.

The blocks 50 are alike, although each is of a prescribed height L. Generally, the blocks 50 are rectangular solid elements, or the equivalent, with a flat bottom 55 to seat on the shoulder 52 and with a flat top 56 to engage and carry the support 25. The blocks 50 correspond in horizontal thickness with the flanges 51 and the vertical distance L between the bottom 55 and top 56 determines the fixed height of the support 25. Thus, by inserted blocks 50 of prescribed height L the firmness at predetermined areas can be accurately controlled to meet with the preciseness of a prescription.

The blocks 50 cooperatively engage one with the other, with the flange 51 and cooperatively engage with the terminal ends of the supports 25 whereby the said supports are fixed in position and whereby the blocks themselves cannot become inadvertently displaced. However, it is nevertheless a simple matter to remove and replace any block 50 with another block 50 of different specified height L. As shown, the blocks 50 have opposite end faces 60 adapted to abut with each other when the blocks are adjacently related in a series. The faces 60 are in planes normal to the bottom 55 and top 56 and when a complete set of blocks 50 is installed the two opposite series thereof extend along the opposite side rails 10 and between the foot rail 11 and head rail 12. Each block is provided with a boss 54 projecting from its bottom 55, said boss being engageable in the notch 53 provided to position the same.

In order to positively position the supports 25, each block 50 is recessed at its top 56 whereby said top 56 is lowered between opposed positioning lugs 61. The lugs 61 project above the plane of the top 56 and thereby oppose the opposite sides of the support 25. In this way, the blocks 50 positively fix the plurality of supports 25 in position and parallel with each other.

In order to positively position the blocks 50 themselves, each terminal end portion of the support 25 is notched at 65 to present an outwardly facing step to engage with the inside of the block 50 that supports said terminal end. In practice, the notch 65 seats on the top 56 of the block, with the said block confined between the rail 10 and said step. In this way, the pressure of the spring coils B yieldingly urges the supports 25 onto the blocks 50 with said supports and blocks properly arranged in fixed positions.

The bedding unit X hereinabove described is completed as set forth, with the plurality of transversely disposed spring coils B, limiting means C and padding D assembled in finished form. In said finished form the spring coils B urge the supports 25 into engagement with the flange 51, whereby said unit X has a marketable appearance. However, a prescribed compression can be applied to each set of spring coils B and so that each transversely disposed area of the unit X can have a speci-

fied firmness. It is to be observed that with the particular limiting means C herein described in combination with the positionable supports 25, there is no alteration in the contour of the padding D, and on the contrary said padding remains flat and in one plane regardless of the positioning of the supports 25 and the degree of firmness applied thereby.

From the foregoing it should be apparent that a commerically practical bedding unit is provided and wherein it is a simple matter to insert blocks 50 of prescribed height L. Each transversely disposed area overlying a set of spring coils B will have an accurately specified firmness as precisely dictated by prescription and when the blocks 50 are completely installed a cover 70 can be placed over the bottom of the structure in order to prevent tampering with the same. As a result of installing sets of blocks 50 at opposite terminal end portions of the supports 25, according to prescription, a very practical bedding unit is provided. Each transverse area of the mattress can have its specified firmness, and if necessary this firmness can be altered by replacing said blocks with blocks of more suitable height, all without destroying or in any way altering the bedding unit X as it was originally constructed.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any modifications or variations that may appear to those skilled in the art and fall within the scope of the following claims.

Having described my invention, I claim:

1. A spring unit including, a frame with side rails having flanges, a single row of springs arranged transversely between the side rails, padding overlying said springs, a support underlying said springs and shiftably extending between the side rails, and insertable blocks of prescribed height to be engaged on the flanges for carrying the support, there being a notch at each opposite end portion of the support to form a step to engage opposite blocks and hold them in fixed spaced relationship.

2. A spring unit including, a frame with side rails having flanges, a single row of springs arranged transversely between the side rails, padding overlying said springs, a support underlying said springs and shiftably extending between the side rails, and insertable blocks of prescribed height to be engaged on the flanges for carrying the support, there being a notch at each opposite end portion of the support and forming a step opposing the rail in order to confine opposite blocks in fixed spaced relationship.

3. A spring unit including, a frame with side rails having flanges and with a head rail and a foot rail, a single row of springs arranged transversely between the side rails, padding overlying said springs, a support underlying said springs and shiftably extending between the side rails, and insertable blocks of prescribed height to be engaged on the flanges for carrying the support, said blocks being in abutment with each other and extending along the side rails.

4. A spring unit including, a frame with side rails having flanges, a single row of springs arranged transversely between the side rails, padding overlying said springs, a support underlying said springs and shiftably extending between the side rails, and insertable blocks of prescribed height to be engaged on the flanges for carrying the support, said blocks having lugs to position the support.

5. A spring unit including, a frame with side rails having flanges and with a head rail and a foot rail, a single row of springs arranged transversely between the side rails, padding overlying said springs, a support underlying said springs and shiftably extending between the side rails, and insertable blocks of prescribed height to be engaged on the flanges for carrying the support, said blocks being in abutment with each other and extending along the side rails and said blocks having lugs to position the support.

6. A spring unit including, a frame with side rails having flanges and with a head rail and a foot rail, a single row of springs arranged transversely between the side rails, padding overlying said springs, a support underlying said springs and shiftably extending between the side rails, and insertable blocks of prescribed height to be engaged on the flanges for carrying the support, said blocks being in abutment with each other and extending along the side rails, there being a notch at each opposite end portion of the support to form a step to engage opposite blocks and hold them in fixed spaced relationship.

7. A spring unit including, a frame with side rails having flanges, a single row of springs arranged transversely between the side rails, padding overlying said springs, a support underlying said springs and shiftably extending between the side rails, and insertable blocks of prescribed height to be engaged on the flanges for carrying the support, said blocks having lugs to position the support, there being a notch at each opposite end portion of the support to form a step to engage opposite blocks and hold them in fixed spaced relationship.

8. A spring unit including, a frame with side rails having flanges and with a head rail and a foot rail, a single row of springs arranged transversely between the side rails, padding overlying said springs, a support underlying said springs and shiftably extending between the side rails, and insertable blocks of prescribed height to be engaged on the flanges for carrying the support, said blocks being in abutment with each other and extending along the side rails and said blocks having lugs to position the support, there being a notch at each opposite end portion of the support to form a step to engage opposite blocks and hold them in fixed spaced relationship.

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