

Sept. 16, 1952

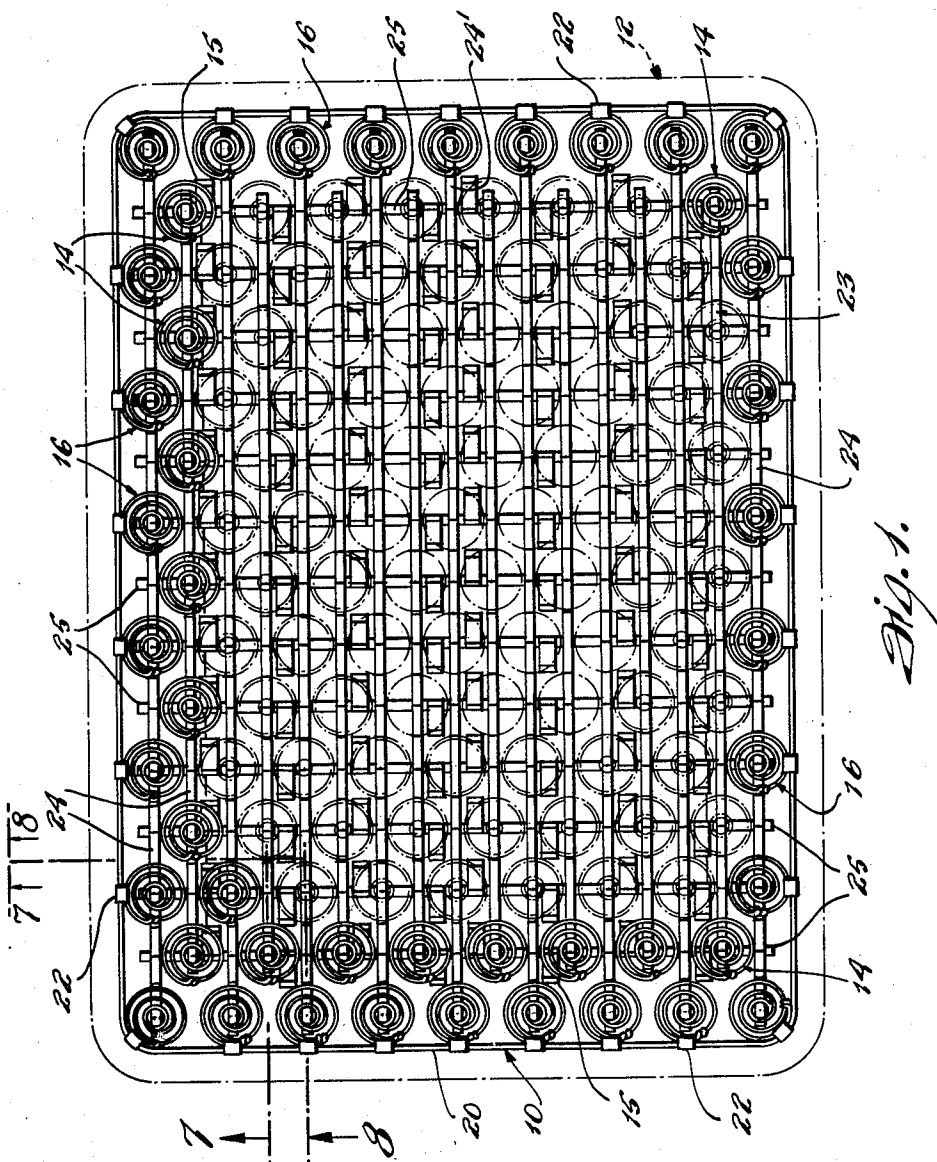
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2,610,333

INNERSPRING MATTRESS CONSTRUCTION

Filed March 15, 1949

4 Sheets-Sheet 1



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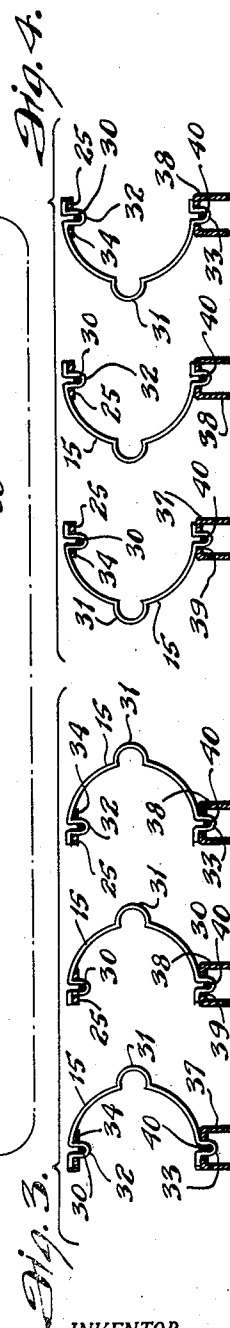
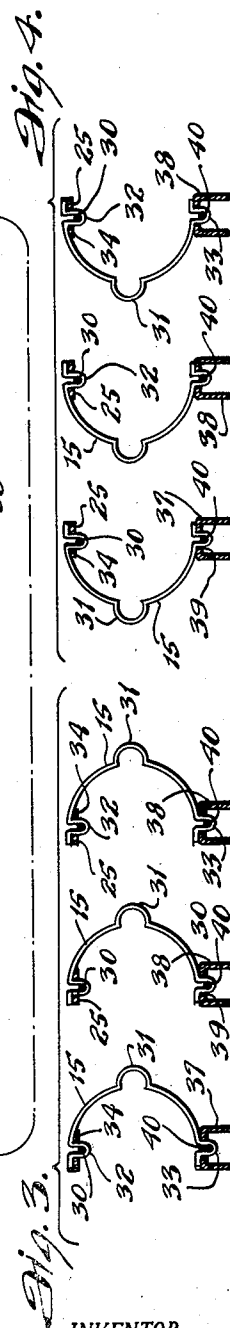
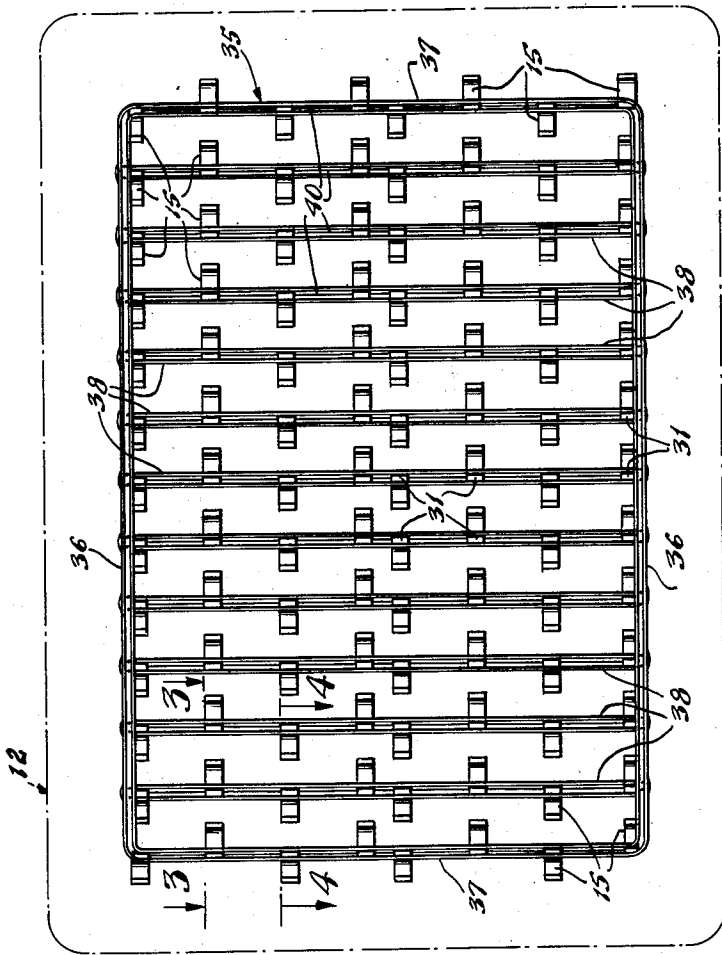
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INNERSPRING MATTRESS CONSTRUCTION

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4 Sheets-Sheet 2



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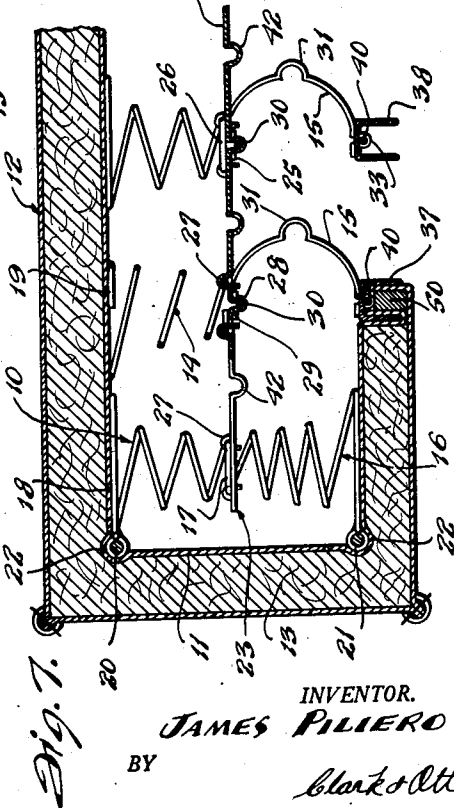
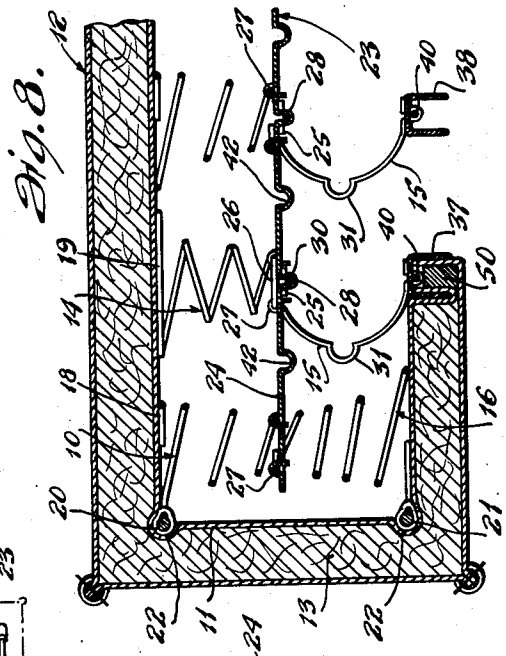
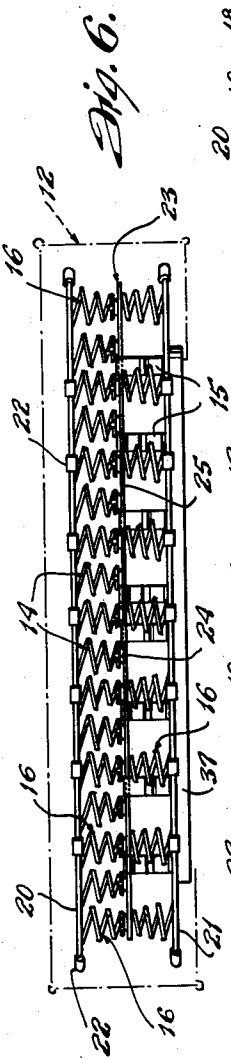
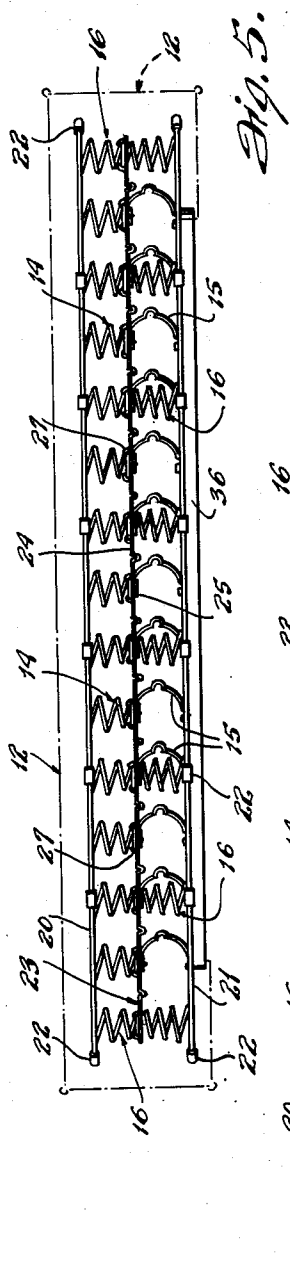
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INNERSPRING MATTRESS CONSTRUCTION

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4 Sheets-Sheet 3



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INNERSPRING MATTRESS CONSTRUCTION

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Fig. 9.

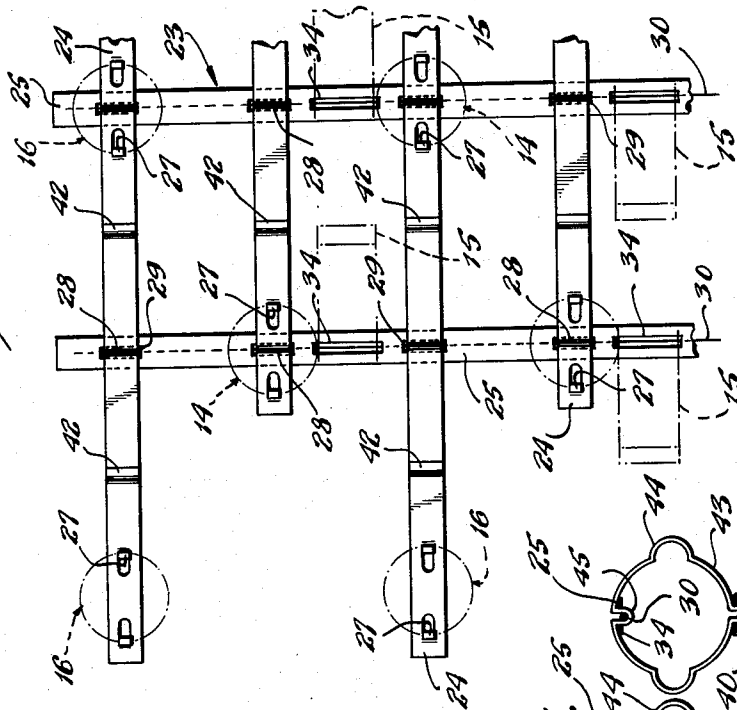


Fig. 10.

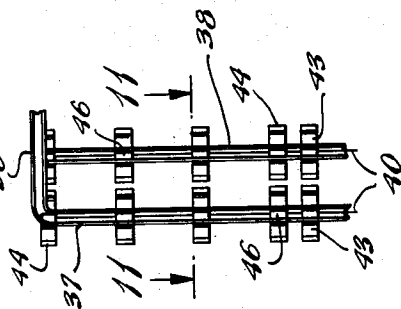
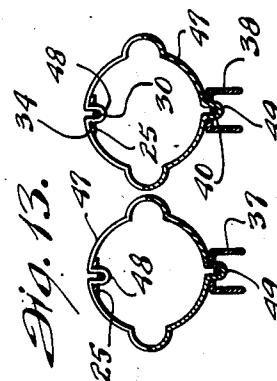
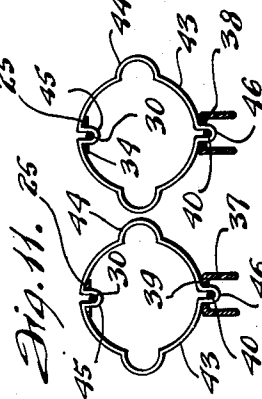
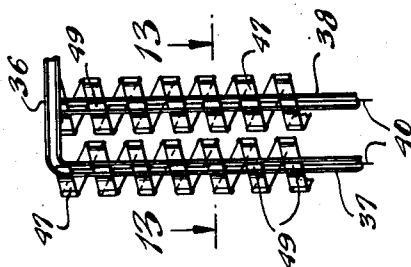


Fig. 12.



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INNERSPRING MATTRESS CONSTRUCTION

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13 Claims. (Cl. 5—351)

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This invention relates to an innerspring mattress construction.

The invention comprehends a mattress which is constructed and arranged to provide a comfortable and resilient support throughout the entire area of the upper surface thereof, which will depress in accordance with the contour of the body disposed thereon so as to conform therewith without distortion of the portions of the inner structure of the mattress surrounding the depressed area and which includes a flexible and resilient peripheral portion adapted to permit of the convenient insertion of the edge portion of the bed clothing thereunder.

Another object of the invention is to provide an innerspring mattress construction which takes the place of and accomplishes the results obtained by the usual combination of innerspring mattress and box spring, bed or open coil springs and the like.

Another object of the invention is to provide an innerspring unit including upper and lower springs so arranged that the lower springs resiliently support the upper springs and the upper springs are relatively more flexible than the lower springs.

Another object of the invention is to provide an innerspring unit including upper and lower springs surrounded at their edges by a row of border springs which are substantially equal in length to the combined length of said upper and lower springs.

Another object of the invention is to provide an innerspring unit including upper springs arranged with their axes disposed vertically and lower springs arranged with their axes disposed horizontally and which latter springs resiliently support the upper springs.

Still another object of the invention is to provide an innerspring unit of said character including an intermediate frame affixed to the medial convolutions of the border springs and affixed to the adjacent ends of the upper and lower springs.

Still another object of the invention is to provide a lower frame and novel means for connecting the lower spring members to said lower frame and to the intermediate frame.

With the foregoing and other objects in view, reference is now made to the following specification and accompanying drawings in which the preferred embodiment of the invention is illustrated.

In the drawings:

Fig. 1 is a top plan view of the innerspring unit

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of the mattress constructed in accordance with the invention and showing the outline of the mattress in broken line.

Fig. 2 is an under side view of the lower frame and lower springs with the outline of the mattress shown in broken line.

Fig. 3 is an enlarged fragmentary sectional view taken approximately on line 3—3 of Fig. 2.

Fig. 4 is a similar view taken on line 4—4 of Fig. 2.

Fig. 5 is a view in side elevation of the innerspring unit showing the outline of the mattress in broken line.

Fig. 6 is a view in elevation of one end of the mattress.

Fig. 7 is an enlarged fragmentary sectional view through the mattress and innerspring unit taken approximately on line 7—7 of Fig. 1.

Fig. 8 is a similar view taken approximately on line 8—8 of Fig. 1.

Fig. 9 is an enlarged top plan view of a portion of the intermediate frame.

Fig. 10 is a fragmentary under side view of the lower frame showing a modified form of lower spring.

Fig. 11 is an enlarged fragmentary sectional view taken approximately on line 11—11 of Fig. 10.

Fig. 12 is a fragmentary under side view of the lower frame illustrating another modified form of lower spring.

Fig. 13 is an enlarged fragmentary sectional view taken approximately on line 13—13 of Fig. 12.

Referring to the drawings by characters of reference, the mattress includes an innerspring unit indicated generally by the reference character 10 which is located within a suitable outer mattress structure preferably comprising an inner fabric casing 11, an outer casing or ticking 12, and soft compressible filling material 13 arranged therebetween.

The innerspring unit 10 is of rectangular formation in plan corresponding to the general rectangular formation of the mattress and the same includes upper and lower springs 14 and 15 preferably arranged in longitudinally and transversely extending rows throughout a rectangular area of the innerspring unit.

The springs 14 are spaced apart in the longitudinally and transversely extending rows and are of a length substantially half the thickness of the innerspring unit. The said springs are preferably of spiral formation with the convolutions decreasing in size from the top to the bot-

tom thereof. The uppermost convolutions of the said springs are disposed in a common plane and said springs have their axes disposed vertically when the mattress is arranged in horizontal bed forming condition.

The lower springs 15 are also spaced apart in the longitudinally and transversely extending rows and the same preferably are of bowed or semicircular formation having their axes disposed at right angles to the vertical axes of the coil springs 14 and extending horizontally when the mattress is arranged in horizontal bed forming condition.

Surrounding the rectangular area embracing the upper and lower springs 14 and 15 is a peripheral row of border springs 16 which are of coil formation having their convolutions decreasing in size from their upper and lower convolutions toward the medial convolutions 17 respectively and the same are of a length substantially equal to the combined length of the upper and lower springs 14 and 15. The said border springs are arranged with their uppermost convolutions 18 disposed in the plane of the uppermost convolutions 19 of the upper springs 14 and have their axes disposed parallel with the axes of the upper springs 14 and extending vertically when the mattress is disposed in horizontal bed forming condition. Upper and lower wire members 20 and 21 surround the border springs 16 and are secured to the outermost convolutions thereof by clips 22 or equivalent fastening means to thereby reinforce the upper and lower peripheral edges of the innerspring unit and provide upper and lower rectangular border frames about which the inner fabric casing 11 is formed.

Arranged between the upper and lower springs 14 and 15 is an intermediate frame indicated generally by the reference character 23 which consists of longitudinally and transversely extending strips 24 and 25. The longitudinally extending strips 24 correspond in number to the number of longitudinal rows of upper springs 14 and border springs 16 while the transversely extending strips 25 correspond in number to the transverse rows of upper springs 14. The longitudinally extending strips 24 cross the transversely extending strips 25 centrally below the lowermost convolutions 26 of the upper springs 14 which are secured thereto by longitudinally spaced tongues 27 struck upwardly from the body of the longitudinally extending strips and bent downwardly into overlying clamping relation with the lowermost convolutions 26. The two outermost longitudinally extending strips 24 cross the transversely extending strips adjacent their outer ends centrally below the medial convolutions 17 of the two longitudinally extending rows of border springs 16 and the same are secured to the outermost longitudinally extending strips 24 by similar upstruck tongues 27 which are bent into clamping overlying relation with the medial convolutions 17 thereof. The longitudinally extending strips 24 project centrally under the medial convolutions 17 of the border springs 16 in the two outermost transverse rows of border springs and which are secured to the border springs 16 in said rows by upstruck tongues 27 clampingly engaging over the medial convolutions 17 thereof.

The longitudinally extending strips 24 also cross the transversely extending strips 25 intermediate the springs 14 and 16 in the longitudinally extending rows thereof and in order to secure the strips together the longitudinally extending strips 24 are formed with transversely ex-

tending depending U-shaped bends 28 located centrally at each intersection or crossing of said strips, while the transversely extending strips 25 are formed with spaced longitudinally extending slots 29 adapted to receive the U-shaped bends 28 which project therethrough with a wire 30 extending longitudinally of the transversely extending strips 24 and through the loops formed by the protruding portions of the U-shaped bends 28.

The lower springs 15 are preferably fashioned from spring strip material which is bent into bowed or semicircular formation and with an outwardly extending U-shaped bend 31 formed thereon in medially of the height thereof. The said springs are also formed with transversely extending upper and lower U-shaped bends 32 and 33 depending from the upper and lower ends thereof and which springs are arranged with the upper ends thereof extending over the transversely extending strips 25 with the depending U-shaped bends 32 projecting through longitudinally extending slots 34 in said strips and with the wires 30 extending through the loops formed by the projecting portions of the U-shaped bends 32 to thereby secure the springs 15 to the intermediate frame 23. Adjacent lower springs 15 project in oppositely disposed relation from the transversely extending strips 25 and it will be seen that two such springs are arranged adjacent the intermediate longitudinally extending strip 24 with the remainder of the springs in each of the transverse rows being equally spaced apart and spaced farther apart than the two springs adjacent the intermediate longitudinally extending strip 24.

The innerspring unit also includes a lower frame indicated generally by the reference character 35 which is of rectangular formation and corresponds to the rectangular area of the upper and lower springs 14 and 15 whereby the sides 36 and the ends 37 of the frame underlie the outermost longitudinal and transverse rows of the lower springs 15. The sides and ends 36 and 37 of the lower frame 35 are of inverted U-shaped formation in cross-sectional configuration and the said frame is provided with transversely extending bars 38 secured at their ends to the sides 36 thereof and which are also of inverted U-shaped formation in cross-sectional configuration. The ends 37 of the frame and the intermediate transversely extending bars 38 thereof are formed with longitudinally extending slots 39 similar to the slots 34 in the transversely extending strips 25 and which receive the lower U-shaped bends 33 in protruding relation therethrough so as to form loops below the upper walls of the said ends 37 and bars 38 through which extend wires 40 for securing the lower springs 15 to the lower frame 35.

In order to render the intermediate frame 23 relatively flexible, the longitudinally extending strips 24 thereof are formed with transversely extending U-shaped bends 42 which are located intermediate the transversely extending strips 25 and intermediate the ends thereof and the endmost transversely extending strips 25. This permits of the flexing of the intermediate frame 23 downwardly with the load on the upper springs 14.

Constructed in this manner there is provided an innerspring unit which includes a rectangular area extending throughout the area of the upper and lower springs 14 and 15 and the lower frame 35 and surrounding said area is the peripheral

row of border springs 16 which are of a length equal to the combined length of the upper and lower springs. The lower frame 35 rigidly supports the lower springs which springs resiliently support the upper springs and have horizontally extending axes function to provide lateral and longitudinal stability in the frame structure of the unit.

In place of the lower springs 15, circular springs 43 may be utilized as illustrated in Figs. 10 and 11 of the drawings which are formed with outwardly projecting U-shaped bends 44 located medially of the oppositely disposed arcuate portions thereof. The said springs are provided with upper and lower depending U-shaped bends 45 and 46 which engage through the slots 34 and 39 in the intermediate and lower frames and have the protruding ends thereof engaged by the wires 30 and 40 for securing the springs to the said frames. The lower springs may also be in the form of a continuous coil 47 as illustrated in Figs. 12 and 13 of the drawings with spaced convolutions thereof formed with U-shaped bends 48 and 49 for securing the springs to the said frames.

The inner fabric casing 11 and the outer casing or ticking 12 on the under side of the innerspring unit extend into the channels in the opposite sides 36 and ends 37 of the lower frame 35 and are secured therein by filler strips 50 which tightly clamp the lower ends of said casings against the inner walls of the sides and ends of said lower frame.

What is claimed is:

1. In a mattress construction, an innerspring unit including coil springs arranged in adjacent relation throughout a rectangular area of the unit having their axes disposed parallel and in vertical relation, bowed spring members having their axes disposed horizontally and at right angles to the vertical axes of the coil springs, and a frame structure on which said coil springs are mounted and secured with the upper convolutions thereof being free to flex and yield downwardly and laterally about their axes respectively and to which frame structure the upper ends of the bowed spring members are secured for resiliently supporting the frame structure and the coil springs thereon.

2. In a mattress construction, an innerspring unit including coil springs arranged in adjacent relation throughout a rectangular area of the unit having vertical axes and with the uppermost convolutions of the spring located in a common plane, bowed spring members having horizontal axes, intermediate members on which said coil springs are mounted and secured with the upper convolutions thereof being free to flex and yield downwardly and laterally about their axes respectively and to which intermediate members the upper ends of the bowed spring members are secured for supporting the intermediate members and the coil springs thereon, and a lower rigid frame arranged below and secured to the lower ends of the lower spring members.

3. In a mattress construction, an innerspring unit including coil springs arranged in adjacent relation throughout a rectangular area of the unit having their axes disposed parallel and in vertical relation when the mattress is arranged in horizontal bed forming condition with the uppermost convolutions of the springs located in a common plane, bowed spring members having their axes disposed horizontally when the mattress is disposed in horizontal bed forming relation and

at right angles to the vertical axes of the coil springs, and a frame structure on which said coil springs are mounted and secured with the upper convolutions thereof being free to flex and yield downwardly and laterally about their axes respectively and to which frame structure the bowed spring members are secured for resiliently supporting the frame structure and the coil springs thereon, and said coil springs being relatively more flexible than the bowed springs.

4. In a mattress construction, an innerspring unit including coil springs arranged in adjacent relation throughout a rectangular area of the unit having their axes disposed vertically when the mattress is arranged in horizontal bed forming relation, border coil springs having their axes disposed vertically and in parallel relation with the axes of the aforesaid coil springs, peripheral members extending continuously about the upper and lower edges of the unit and connected with the outermost convolutions of the border springs, bowed spring members having their axes disposed horizontally when the mattress is arranged in horizontal bed forming condition, and a frame structure on which said coil springs are mounted with the upper convolutions thereof being free to flex and yield downwardly and laterally about their axes respectively and to which frame structure the lower spring members are secured for supporting the frame structure and the coil springs thereon.

5. In a mattress construction, an innerspring unit including upper and lower springs arranged throughout a rectangular area of the unit, an intermediate frame disposed between the upper and lower springs, a lower frame of rectangular formation, said intermediate frame and lower frame having slots and said lower springs having U-shaped bends arranged to protrude through said slots, and wire members extending through the loops formed by the protruding bends for securing the lower springs to the intermediate and lower frames.

6. An innerspring unit including upper and lower springs arranged throughout a rectangular area of the unit, intermediate members disposed between the upper and lower springs and connected with the adjacent ends thereof, a rigid lower frame arranged below and secured to the lower ends of the lower spring, and a row of border springs disposed about the rectangular area in which the upper and lower springs are arranged and extending peripherally about said rigid frame and secured to said intermediate members substantially medially of the upper and lower ends thereof.

7. An innerspring unit including upper and lower springs arranged throughout a rectangular area of the unit, an intermediate flexible frame disposed between the upper and lower springs and connected with the adjacent ends thereof, a rigid lower frame arranged below and secured to the lower ends of the lower spring, a row of border springs of a height substantially equal to the combined height of said upper and lower springs and connected with said intermediate frame substantially medially of the upper and lower ends thereof, said border springs extending about the rectangular area embracing said upper and lower springs and about the periphery of said rigid frame, and peripheral members extending continuously about the upper and lower edges of said unit and connected with the upper and lower ends of the border springs.

8. An innerspring unit including a rigid rec-

tangular lower frame; an upper flexible frame; spring members arranged throughout a rectangular area corresponding substantially to the area of said lower frame and disposed between and secured to said frames; and a row of border springs arranged peripherally about said rigid lower frame and secured to said intermediate frame substantially medially of the upper and lower ends thereof.

9. An innerspring unit including a rigid rectangular lower frame; an upper flexible frame; spring members arranged throughout a rectangular area corresponding substantially to the area of said lower frame and disposed between and secured to said frames; a row of border springs arranged peripherally about said rigid lower frame and secured to said intermediate frame substantially medially of the upper and lower ends thereof; and peripheral members extending about the upper and lower edges of said unit and connected with the outer ends of the border springs.

10. An innerspring unit including a rigid lower frame of rectangular formation in plan having cross bars connected at their ends to opposite sides thereof; an upper flexible frame consisting of crossed flexible metallic straps; spring members arranged throughout an area corresponding to the area of said lower frame, said bars and certain of said straps having slots opening there-through and said spring members having U-shaped bends arranged to protrude through said slots, and wire members extending through the loops formed by the protruding bends for securing the springs to said frames.

11. An innerspring unit including a rigid lower frame of rectangular formation in plan; an upper frame including a series of longitudinally and transversely extending crossed metallic straps; one of said series of straps having U-shaped bends intermediate the straps in the other series for rendering the frame flexible and permitting of longitudinal expansion and contraction of said straps; and rows of spring members arranged between said frames throughout the rectangular area of

said lower frame and secured at their opposite ends to said upper and lower frames.

12. An innerspring unit including a rigid lower frame of rectangular formation in plan; an upper frame including a series of longitudinally and transversely extending crossed metallic straps; one of said series of straps having U-shaped bends intermediate the straps in the other series for rendering the frame flexible and permitting of longitudinal expansion and contraction of said straps; rows of spring members arranged between said frames throughout the rectangular area of said lower frame and secured at their opposite ends to said upper and lower frames; and a row of border springs arranged in surrounding relation with said rigid frame and secured substantially medially of the upper and lower ends thereof to said upper frame.

13. In a mattress construction; an innerspring unit including coil springs arranged in adjacent relation throughout a rectangular area of the unit having their axes disposed vertically when the mattress is arranged in horizontal bed forming relation; border coil springs having their axes disposed vertically and in parallel relation with the axes of the aforesaid coil springs; lower spring members arranged in adjacent relation throughout the area within said border springs; intermediate members secured to said border springs and to the upper ends of the lower springs and the lower ends of the upper springs; and a rectangular frame arranged below the lower springs and located inwardly of the border springs and to which said lower springs are secured.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,313,171	Piliero	Mar. 9, 1943
2,348,897	Gladstone	May 16, 1944