April 11, 1950 A. R. GYLES 2,503,333

BED SPRING

Filed June 11, 1948

FIG. 1.

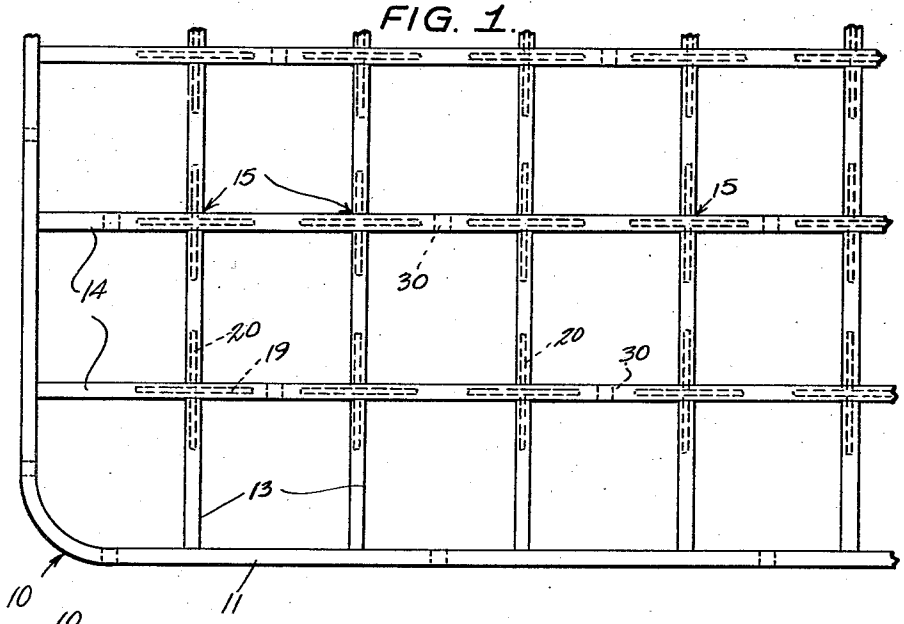


FIG. 2.

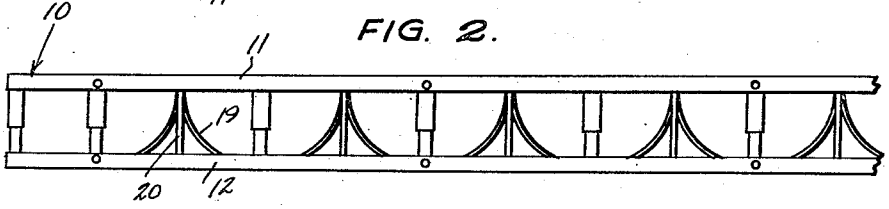


FIG. 3.

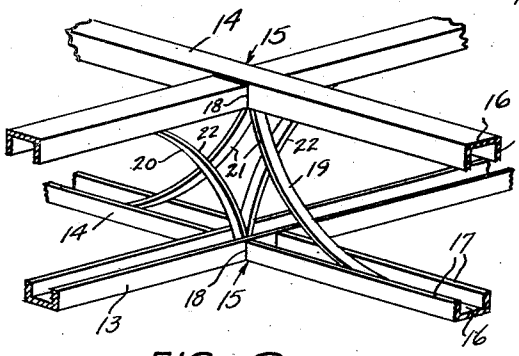


FIG. 4.

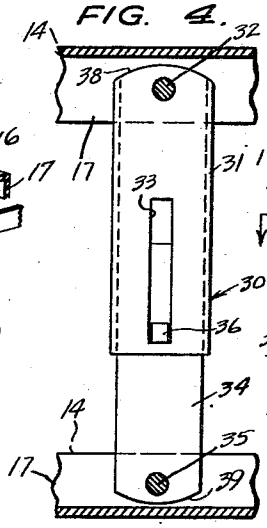


FIG. 5.

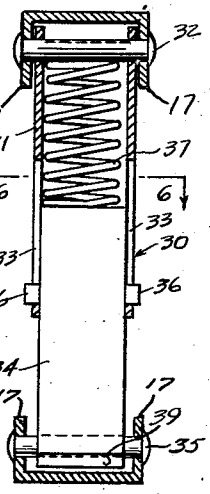


FIG. 6.

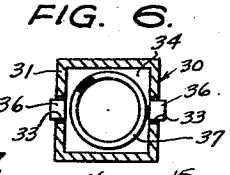
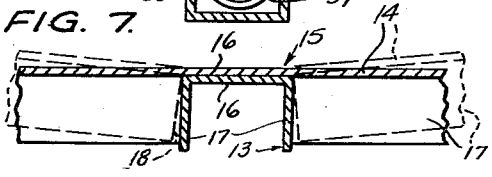


FIG. 7.



INVENTOR.
ALFRED R. GYLES
BY
McMorrow, Berman + Davidson
ATTORNEYS.

Patented Apr. 11, 1950 2,503,333

UNITED STATES PATENT OFFICE

2,503,333

BEDSPRING

Alfred R. Gyles, Liberty Grove, Md.

Application June 11, 1948, Serial No. 32,365

7 Claims. (Cl. 5—246)

1

My invention relates to bed springs, and more particularly to a bed spring comprising a pair of vertically-spaced frame members spanned by horizontally-disposed suspension members and including a plurality of individual springs interposed between the frame members and/or the suspension members to resiliently support the frame members in vertically-spaced relation. Particularly, the spring according to the invention comprises a flexible mattress-supporting surface which is yieldable at substantially any point, whereby to permit the spring and mattress to conform to the contours of a person resting thereon.

With the foregoing in view, it is an object of my invention to provide an improved bed spring of the class described.

A further object is to provide an improved bed spring which includes a plurality of spaced individual springs connecting upper and lower frame members, said springs being fixed to one frame member and slidable on the opposed frame member.

Other objects and advantages reside in the particular structure of the invention, combination and arrangement of the several parts thereof, and will be readily understood by those skilled in the art upon reference to the attached drawing in connection with the following specification, wherein the invention is shown, described and claimed.

In the drawing:

Figure 1 is a fragmentary plan view of a bed spring showing the invention applied thereto;

Figure 2 is an edge elevation thereof;

Figure 3 is an enlarged perspective view showing the individual spring structure;

Figure 4 is a fragmentary elevational view showing a supplemental spring element;

Figure 5 is a view like Figure 4, but taken at right angles thereto and with parts broken away and shown in longitudinal vertical section;

Figure 6 is a horizontal sectional view taken substantially on the plane of the line 6—6 of Figure 5;

Figure 7 is an enlarged fragmentary vertical sectional view showing a detail of the spring element of Figure 3.

Referring specifically to the drawing, wherein like reference characters have been used throughout the several views to designate like parts, 10 designates generally a bed spring according to the invention which comprises an upper rectangular frame 11 and a similar lower rectangular frame 12. Each frame 11 and 12 is connected

2

together by a plurality of spaced transverse suspension members 13 which are preferably parallel to each other. Likewise, each frame includes a plurality of longitudinally-extending suspension members 14 which are likewise spaced and parallel. The suspension members 13 and 14 cross each other to provide intersections 15. As best seen in Figures 3 and 7, the suspension members 13 and 14 are of channeled configuration to provide horizontally-disposed webs 16 and vertically-disposed side flanges 17. As best seen in Figure 7, at each intersection 15, the side flanges 17 of one of the suspension members are cut away to provide aligned notches 18 receiving the intersecting suspension member therein with the webs 16 of the intersecting members abutting. Preferably, the formation of the notches 18 is staggered at alternate intersections 15. Thus, at one intersection 15, the notches will be formed in a longitudinal suspension member 14, while at the next intersection of the same longitudinal member 14, the notches will be formed in the transverse suspension member 13. However, in the vertically-aligned intersections 15, and as clearly shown in Figure 3, it is preferred that the notches 18 be not alternated. Thus, in Figure 3, the notches 18 are formed in the longitudinal suspension member 14 in both instances. This structure permits vertical flexing at each intersection 15 in both the upper and the lower frame. However, by alternating the notches at alternate intersections, no one set of suspension members is materially weakened and, also, each suspension member is flexible despite its channeled configuration at one or more points along its length. Moreover, it is preferred that the abutting web 16 at each intersection 15 be fixedly secured together in any suitable manner, as by being spot-welded to each other and/or riveted to each other.

Each intersection 15 of the upper suspension members 13 and 14 has secured to the under side thereof the apex of an inverted V-shaped spring 19. Said spring has a pair of downwardly-diverging legs 21, the free ends of which are slidably received in the upwardly-directed channel of a suspension member 14 of the lower frame. Likewise, at each intersection 15 of the lower suspension members there is secured the apex of a substantially V-shaped spring 20. The springs 20 are identical to the springs 19 except for their reversed position and include diverging legs 22, the free ends of which are slidably received in the downwardly-directed channels of the transverse upper suspension members 13. Thus, the springs 19 and 20 are offset to a degree

conforming to the angularity of the intersections 15. Thus, in the form illustrated, the suspension members 14 and 13 are intersected at right angles whereby the springs 19 and 20 are offset 90°. However, it is obvious that the angularity of the intersecting suspension members need not be a right angle as long as the offsetting of the springs conforms to the angularity of the intersection.

As seen in Fig. 1, auxiliary compressive springs 30 are interposed between upper and lower suspension members 14 intermediate some of the intersections 15. It is noted also that the springs 30 are staggered in adjacent suspension members 14 whereby there is a spring 30 between every other pair of adjacent intersections 15. Obviously, instead of placing the auxiliary springs 30 on the longitudinal suspension members, they could be located on the transverse suspension members 13 or partially on the transverse suspension members and some on the longitudinal frame members. The auxiliary springs 30 are best seen in Figures 4, 5 and 6, and comprise an upper sleeve 31 including an upper end interposed between the flanges 17 of an upper suspension member 14 and pivotally connected to such flanges by means of a horizontally-disposed pivot 32 spanning such flanges. The sleeves 31 may be rectangular in cross-section, as shown, and opposite sides thereof are provided with longitudinally-extending slots 33. A plunger 34, which is complementary to the sleeve 31, is slidably received therein. Each plunger 34 includes a lower end extending axially outwardly of the sleeve 31. Such lower end is pivotally connected between the flanges 17 of a lower suspension member 14 by means of a pivot 35 spanning such flanges. Each plunger 34 includes a pair of laterally oppositely-directed lugs 36 which are slidable in the slots 33 of the sleeves 31. A compressive coil spring 37 is interposed between the upper end of each plunger 34 and the pivots 32 for the sleeves 31. The upper and lower ends of the sleeves 31 and the plungers 34, respectively, are preferably rounded, as at 38 and 39, and, as shown, in view of the fact that the pivots 32 and 35 are parallel, limited lateral displacement of the upper frame 11 and lower frame 12 is permitted by the arrangement.

It follows from the foregoing that each upper and lower frame includes intersecting suspension members of channeled configuration, whereby the suspension members are rigid between the notches 18. Thus, each suspension member comprises alternate rigid and vertically-flexible portions, each intersection comprises a rigid portion of one frame member and a vertically-flexible portion of an intersecting frame member, and the rigid and flexible portions of adjacent transverse and adjacent longitudinal suspension members are staggered, whereby each adjacent intersection is flexible on a different suspension member. Likewise, by forming the suspension members of channeled configuration, with the channels facing each other, means are provided for slidably guiding the free ends of the springs 19 and 20 and disengagement of such free ends with the related suspension member is prevented. The auxiliary springs 30 supplement the springs 19 and 20, and it is conceivable that in some instances they may be dispensed with. Likewise, it is contemplated that more or less of the auxiliary springs 30 than the particular number shown may be utilized and the arrangement may differ from the particular arrangement shown.

Consequently, while I have shown and described what is now thought to be a preferred embodiment of the invention, it is to be understood that the same is susceptible of other forms and expressions. Consequently, I do not limit myself to the precise structure shown and described hereinabove except as hereinafter claimed.

I claim:

1. A bed spring, comprising an upper frame and a similar lower frame, each frame including a plurality of spaced and parallel suspension members extending longitudinally of the frame and a plurality of spaced and parallel suspension members extending transversely of said frame to provide a plurality of intersections with said first-mentioned suspension members, means resiliently mounting said frames in vertically-spaced relation with like intersections of each frame vertically aligned, said means comprising a plurality of V-shaped springs each including a pair of converging legs providing an apex and free ends, there being an apex of a spring secured to each intersection of each frame, opposed springs of aligned intersections being angularly offset to correspond to the angularity of said intersections, and the free ends of the springs of each frame slidably engaging opposed suspension members of the other frame.

2. A bed spring, comprising an upper frame and a similar lower frame, each frame including a plurality of spaced and parallel suspension members extending longitudinally of the frame and a plurality of spaced and parallel suspension members extending transversely of said frame to provide a plurality of intersections with said first-mentioned suspension members, means resiliently mounting said frames in vertically-spaced relation with like intersections of each frame vertically aligned, said means comprising a plurality of V-shaped springs each including a pair of converging legs providing an apex and free ends, there being an apex of a spring secured to each intersection of each frame, opposed springs of aligned intersections being angularly offset to correspond to the angularity of said intersections, said suspension members of each frame being formed with longitudinal channels facing the other frame, and said free ends of said springs of each frame being slidably seated in said channels of the opposed suspension members of the other frame.

3. A bed spring, comprising an upper frame and a similar lower frame, each frame including a plurality of spaced and parallel suspension members extending longitudinally of the frame and a plurality of spaced and parallel suspension members extending transversely of said frame to provide a plurality of intersections with said first-mentioned suspension members, means resiliently mounting said frames in vertically-spaced relation with like intersections of each frame vertically aligned, said means comprising a plurality of V-shaped springs each including a pair of converging legs providing an apex and free ends, there being an apex of a spring secured to each intersection of each frame, opposed springs of aligned intersections being angularly offset to correspond to the angularity of said intersections, all of said suspension members being of channeled configuration providing horizontal webs and vertical side flanges, the flanges of one suspension member at each intersection being formed to provide notches receiving the intersecting suspension member therein with webs of the intersecting suspension members abutting, said notches permitting vertical flexing of one suspension member at each intersection, and said free ends

of said springs of each frame being slidably seated in said channels of the opposed suspension members of the other frame.

4. A bed spring, comprising an upper frame and a similar lower frame, each frame including a plurality of spaced and parallel suspension members extending longitudinally of the frame and a plurality of spaced and parallel suspension members extending tranversely of said frame to provide a plurality of intersections with said first-mentioned suspension members, means resiliently mounting said frames in vertically-spaced relation with like intersections of each frame vertically aligned, said means comprising a plurality of V-shaped springs each including a pair of converging legs providing an apex and free ends, there being an apex of a spring secured to each intersection of each frame, opposed springs of aligned intersections being angularly offset to correspond to the angularity of said intersections, said suspension members of each frame being formed with longitudinal channels facing the other frame, said free ends of said springs of each frame being slidably seated in said channels of the opposed suspension members of the other frame, compressive coil springs connecting said suspension members between said intersections, a pair of telescoping sleeves surrounding said coil springs, and means connecting each sleeve of each pair to an opposed suspension member.

5. A bed spring, comprising an upper frame and a similar lower frame, each frame including a plurality of spaced and parallel suspension members extending longitudinally of the frame and a plurality of spaced and parallel suspension members extending transversely of said frame to provide a plurality of intersections with said first-mentioned suspension members, means resiliently mounting said frames in vertically-spaced relation with like intersections of each frame vertically aligned, said means comprising a plurality of V-shaped springs each including a pair of converging legs providing an apex and free ends, there being an apex of a spring secured to each intersection of each frame, opposed springs of aligned intersections being angularly offset to correspond to the angularity of said intersections, said suspension members of each frame being formed with longitudinal channels facing the other frame, said free ends of said springs of each frame being slidably seated in said channels of the opposed suspension members of the other frame, compressive coil springs connecting said suspension members between said intersections, a pair of telescoping sleeves surrounding said coil springs, and horizontal pivots pivotally connecting each sleeve of each pair to an opposed suspension member.

6. A bed spring, comprising an upper frame and a similar lower frame, each frame including a plurality of spaced and parallel suspension members extending longitudinally of the frame and a plurality of spaced and parallel suspension members extending transversely of said frame to provide a plurality of intersections with said first-mentioned suspension members, means resiliently mounting said frames in vertically-spaced relation with like intersections of each frame vertically aligned, said means comprising a plurality of V-shaped springs each including a pair of converging legs providing an apex and free ends, there being an apex of a spring secured to each intersection of each frame, opposed springs of aligned intersections being angularly offset to correspond to the angularity of said intersections, the free ends of the springs of each frame slidably engaging opposed suspension members of the other frame, said suspension members each including alternating rigid and vertically-flexible portions, each intersection comprising a flexible portion of one suspension member and a rigid portion of an intersecting suspension member, and the rigid and flexible portions of adjacent parallel suspension members being staggered whereby each suspension member is alternately rigid and flexible at successive intersections.

7. A bed spring, comprising upper and lower frames, each frame including a plurality of longitudinal and transverse suspension members disposed in intersecting relation to provide a plurality of intersections, the intersections of said upper and lower frames being vertically aligned, compressive springs interposed between said vertically-aligned intersections for resiliently supporting said upper frame in vertically-spaced relation to said lower frame, said suspension members each including alternating rigid and vertically-flexible portions, each intersection comprising a flexible portion of one suspension member and a rigid portion of an intersecting suspension member, and the rigid and flexible portions of adjacent longitudinal suspension members and adjacent transverse suspension members being staggered whereby each suspension member is alternately rigid and flexible at successive intersections.

ALFRED R. GYLES.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
88,070	Partello	Mar. 23, 1869
1,248,671	Kelley	Dec. 4, 1917
1,286,607	Hammrich	Dec. 3, 1918
2,068,996	Smith	Jan. 26, 1937

FOREIGN PATENTS

Number	Country	Date
90,056	Germany	Jan. 9, 1897
574	Great Britain	A. D. 1877