G. A. FRANZ.

SPRING STRUCTURE.

APPLICATION FILED DEC. 29, 1916.

1,255,151.

Patented Feb. 5, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

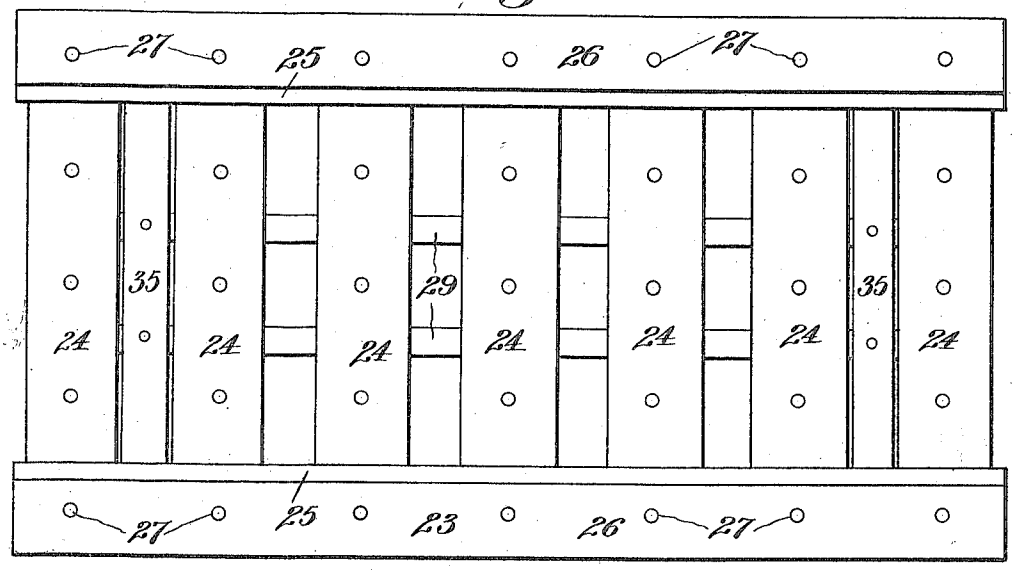
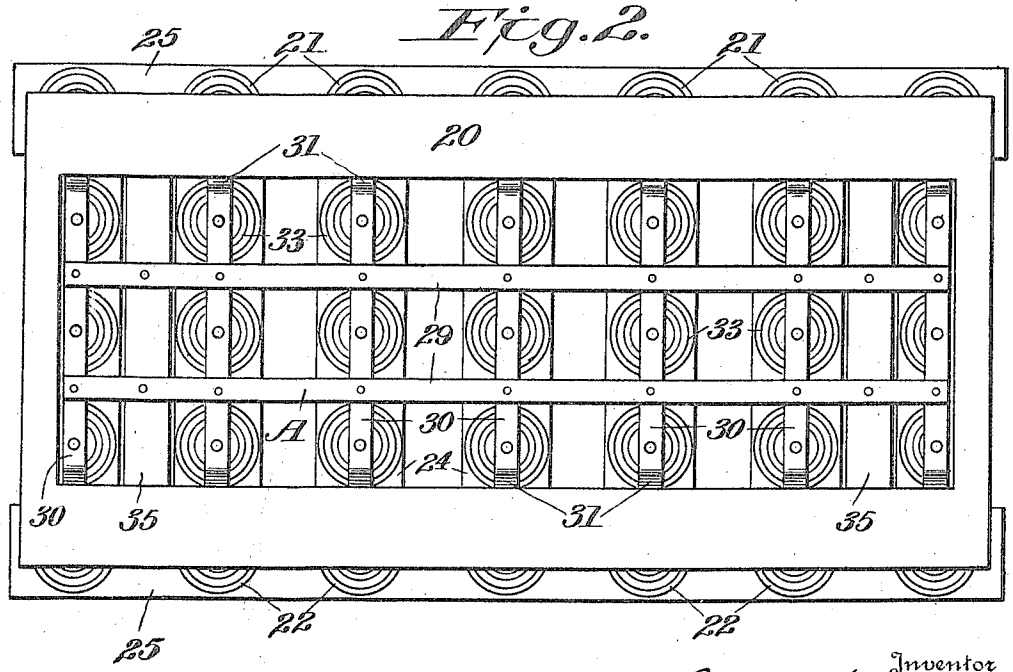


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

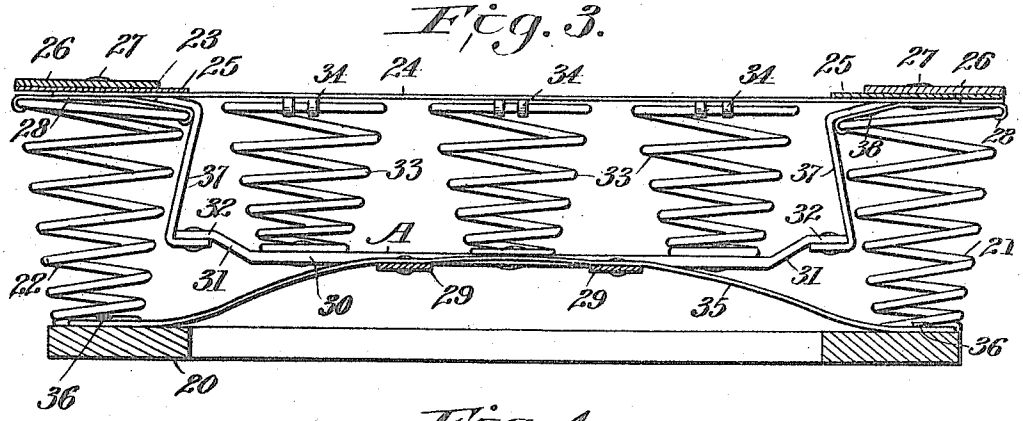
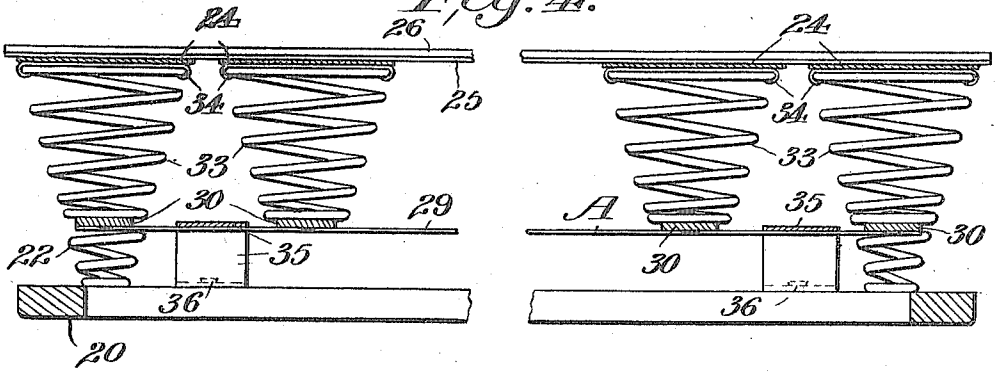


Fig. 4.



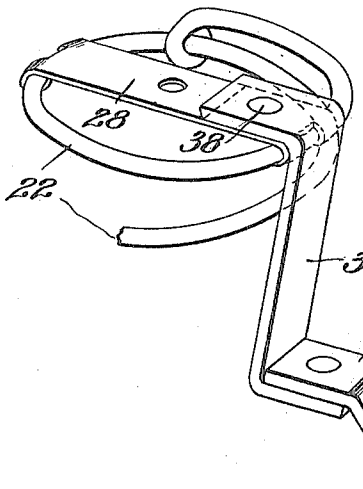


Fig. 5.

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SPRING STRUCTURE.

1,255,151. Specification of Letters Patent. Patented Feb. 5, 1918.

Application filed December 29, 1916. Serial No. 139,693.

To all whom it may concern:

Be it known that I, GUSTAV A. FRANZ, a citizen of the United States of America, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Spring Structures, of which the following is a specification.

This invention relates to spring structures particularly adapted for car, automobile, or other seats, beds or the like.

One object is to provide a spring structure, embodying an organization of parts designed to provide for considerable pliability and consequent comfort in the use of the same.

Another object resides in the provision of a spring structure wherein the interior springs are supported on an auxiliary frame arranged intermediate the upper and lower frames of the structure, or in any event, normally above the lower or base frame.

A still further object resides in the provision of a spring structure embodying an auxiliary frame for the support of the interior springs and which is suspended from the upper frame by a plurality of straps or other yieldable elements and which auxiliary frame may be further yieldably supported above the base frame through the instrumentality of arch springs connected thereto at the ends thereof and to the base frame.

A still further object is to provide a spring structure embodying an open base frame and an auxiliary frame supported normally above the base frame for the support of springs and which and the springs carried thereby cannot be forced through the open base frame upon excessive pressure brought to bear on the structure, incident to unusual weight or shocks and jars, or to uneven riding.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportion and minor details without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Figure 1 is a top plan view of the invention.

Fig. 2 is a bottom plan view.

Fig. 3 is a transverse sectional view.

Fig. 4 is a longitudinal sectional view.

Fig. 5 is a detail perspective view, parts being broken away, of the strap connection between the top of the structure and the auxiliary frame.

Referring now more particularly to the accompanying drawings, the reference character 20 indicates a base frame of wood, metal, or other suitable material, and which may be of any suitable form in cross section.

Front and rear rows of springs 21 and 22 of any suitable helical or other form, are secured in any suitable manner to said base frame 20, and preferably adjacent the edges of the front and rear of the base frame when the latter is of the form illustrated in the accompanying drawings.

An upper frame is indicated at 23. This upper frame consists preferably of a plurality of transverse flat yieldable bands 24, connected at their ends by the longitudinal flat yieldable bands 25 and on top of which latter, may be secured flat thin yieldable wood or other strips 26. If these strips 26 are employed, they are preferably connected to the strips 25 by means of suitable fastenings 27 which also connect the band strips 25 to the ends of the transverse bands 24 and which are also designed to secure double ended clips 28 to the under side of the upper frame. These double ended clips 28 are designed to connect with the upper convolutions of the aforesaid front and rear rows of springs 21 and 22, for the purpose of connecting the upper frame to said springs and supporting the upper frame yieldably thereby over the base frame.

An auxiliary frame A is arranged between the aforesaid upper and lower frames. This auxiliary, intermediate frame A may be of any suitable construction. As shown, it consists of flexible longitudinal strips 29 to which are riveted relatively stiff metallic transverse strips 30, the ends of the transverse strips 30 extending beyond the sides of the longitudinal strips 29 and having their ends directed upwardly, as at 31, and outwardly, as at 32 to overlie the inner edge of the base frame. On this auxiliary frame A,

and secured preferably to the transverse strips 30, are rows of springs 33 which are relatively short, as compared with the aforesaid front and rear rows of springs 21 and 22. These springs 33 may be connected to said auxiliary frame A in any suitable manner. The springs 33 at their upper ends are secured to the transverse bands 24 of the upper frame by means of double ended clips 34 riveted or otherwise secured to the under faces of said transverse bands 24. Any other suitable means may be employed for connecting these springs 33 to the upper frame.

The auxiliary frame A may be supported between the upper and lower frames in any suitable manner. As shown, however, the auxiliary frame A is supported above the base frame by means of arch springs 35, two of these arch springs being shown, one adjacent each end of the auxiliary frame. These arch springs 35 are formed preferably of yieldable band material and secured at their ends to the base frame by means of suitable fastenings 36 and intermediate their ends these arch springs are riveted or otherwise secured to the longitudinal strips 29 of the auxiliary frame A.

Straps 37 are riveted or otherwise secured to the outwardly projecting ends 32 of the transverse strips 30 and to the aforesaid clips 28 by means of suitable fastenings 38. These straps 37 are designed to coöperate with the arch springs 35 in maintaining the auxiliary frame A in normal operative position, or to yieldably suspend the auxiliary frame from the upper frame in coöperation with the arch springs 35, or if the arch springs 35 be eliminated from the structure.

In the use of the spring structure herein described, the same is exceedingly flexible or pliable and particularly at points within the front and rear rows of springs 21 and 22, because of the flexible mounting or support of the auxiliary frame A within the structure between the front and rear rows of springs 21 and 22 and intermediate the upper and lower frames. Under normal conditions, the auxiliary frame A is maintained above the lower frame. Under abnormal conditions, downward movement of the auxiliary frame A is against the arch springs 35 and the leather or other yieldable straps 37, either of which, or both, are designed for the purpose of normally preventing the auxiliary frame A from contacting with the base frame of the structure. However, in the event of excessive pressure or downward movement of the auxiliary frame A, the latter and the springs which it carries, cannot be forced through the base frame because of the fact that the outwardly projecting ends 32 of the transverse strips 30 of the auxiliary frame overlie the base frame, as previously stated, and therefore, in the event of undue downward movement of the auxiliary frame, it is arrested by the base frame and thereby prevented from being forced through the base frame. When the auxiliary frame is forced suddenly or otherwise into engagement with the base frame, the straps 37, being composed of leather or similar material, will give and not break, as would likely be the case in the use of metallic elements for the leather straps 37. Moreover, the ends of the straps being thrown into engagement with the base frame instead of the auxiliary frame being thrown into direct engagement with the base frame, noise, incident to the contact, is reduced, if not overcome.

What is claimed, is:—

1. A spring structure comprising upper and lower frames, a front row of springs and a rear row of springs connecting the upper and lower frames, arch springs connected to the lower frame, an auxiliary frame connected to the arch springs, springs connected to the auxiliary frame and to the upper frame, and straps connected to the upper frame and the auxiliary frame.

2. A spring structure comprising upper and lower frames, a front row of springs and a rear row of springs connected to the frames at the front and rear thereof, an auxiliary frame arranged intermediate the upper and lower frames, straps connecting the auxiliary frame with the upper frame, and springs mounted on the auxiliary frame.

3. A spring structure comprising upper and lower frames, a front row of springs and a rear row of springs connected to the frames at the front and rear thereof, an auxiliary frame arranged intermediate the upper and lower frames, straps connecting the auxiliary frame with the upper frame, springs mounted on the auxiliary frame, and means connected to the lower frame and the auxiliary frame to coöperate with said straps to support the auxiliary frame and the springs carried thereby normally in operative position.

4. A spring structure comprising upper and lower frames, means for yieldably supporting the upper frame over the lower frame, an auxiliary frame arranged intermediate the aforesaid frames, springs carried by the auxiliary frame, and leather straps connected to the auxiliary frame and the upper frame.

5. A spring structure comprising a frame, springs mounted on said frame, another frame disposed over said first frame, springs on said second frame, and straps secured to the second frame and depending from the top of the structure.

6. A spring structure comprising upper and lower frames, the lower frame being open, an auxiliary frame arranged between the upper and lower frames and having portions projecting beyond its sides into overlying relation to the lower frame, springs be-

tween the upper and lower frames, springs carried by the auxiliary frame, and means for supporting the auxiliary frame normally in yieldable operative position.

7. A spring structure comprisng upper and lower frames, the lower frame being open, an auxiliary frame arranged between the upper and lower frames and having portions projecting beyond its sides into overlying relation to the lower frame, springs between the upper and lower frames, springs carried by the auxiliary frame, and means connected to both the upper frame and the lower frame and to the auxiliary frame to support the latter normally in operative position.

8. A spring structure comprising upper and lower frames, an auxiliary frame intermediate the upper and lower frames, arch springs connected to the lower frame and to the auxiliary frame to yieldably support the latter and to prevent sidewise movement of the auxiliary frame, springs carried by the auxiliary frame, and elements connected to the auxiliary frame and to the upper frame to resist downward movement of the auxiliary frame against downward pressure brought to bear upon the arch springs.

In testimony whereof I affix my signature in the presence of two witnesses.

GUSTAV A. FRANZ.

Witnesses:
WATSON R. SMITH,
RALPH L. WILCOX.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."