

G. C. SHOEMAKER.
 SPRING STRUCTURE.
 APPLICATION FILED MAY 8, 1912.

1,059,080.

Patented Apr. 15, 1913.

Fig. 1.

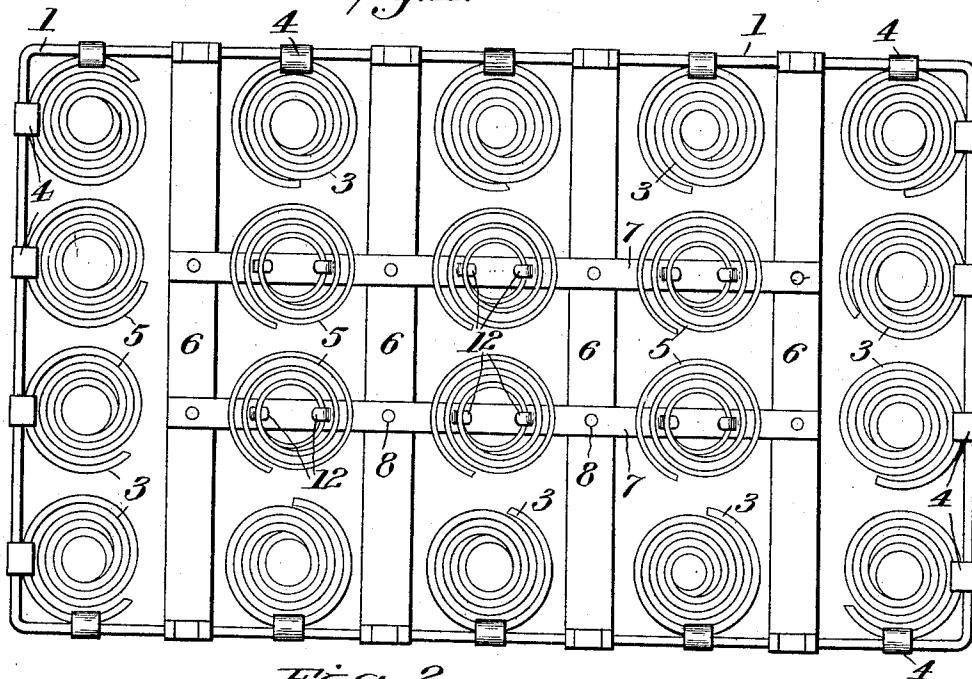


Fig. 2.

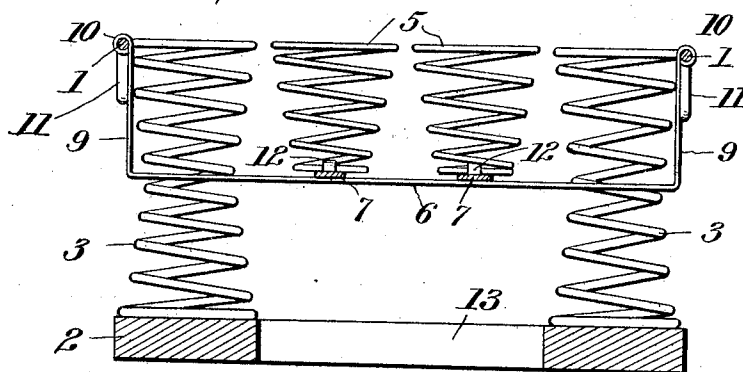
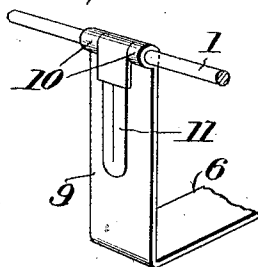


Fig. 3.



WITNESSES

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SPRING STRUCTURE.

1,059,080.

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To all whom it may concern:

Be it known that I, GEORGE C. SHOEMAKER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Spring Structures, of which the following is a specification.

This invention relates to spring structures.

One object is to provide a spring structure embodying among other characteristics means whereby, when the structure is subjected to pressure, it will be given a pillow-like effect, or in other words, its central upper surface will be capable of greater depression than its edge portions.

Another object resides in the provision of a spring structure embodying border springs and interior springs which latter springs are preferably of lighter gage wire than the border springs and which are supported on means suspended from the upper frame.

Another object resides in the provision of a spring structure composed of border and inner springs with the inner springs formed preferably shorter than the border springs and with their lower ends terminating substantially midway between the upper and lower frames to provide a space within the structure beneath the inner springs and to obviate the usual supporting wires that are generally connected to the lower frame and also thereby eliminating numerous clips heretofore employed for the purpose of connecting the lower ends of the springs to the old type of supporting wires.

A still further object is to provide a spring structure embodying upper and lower frames with border springs connecting the upper and lower frames and with interior springs suspended within the border springs by means connected to the upper frame whereby the structure is lightened and material saved in the manufacture of the same.

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, proportion, size and minor details without departing from the scope or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a top plan view; Fig. 2 is a transverse sectional view; Fig. 3 is a fragmentary perspective view illustrating the suspension or hanging connection of the intermediate frame with the upper frame.

Referring now more particularly to the accompanying drawings, there is shown a spring structure embodying one form of my invention wherein the upper and lower frames are indicated at 1 and 2, respectively, with the lower or base frame 2 formed of a comparatively broad width to effectually support the main or border springs 3 whose upper ends are connected to the wire or other frame 1 by means of suitable clips 4.

The interior springs of my improved structure are preferably suspended within the structure and are shorter than the border springs and also preferably of lighter gage wire than the border springs with their lower ends terminating preferably intermediate the top and bottom of the structure. To suspend these interior springs within the main or border springs various supporting means may be employed. One form of suspending means for this purpose, however, may consist of an intermediate frame composed preferably, in this instance, of transverse members 6 which may be intersected at right angles by longitudinal members 7 and at their points of intersection secured together in any suitable manner, as for instance, by rivets 8. The ends of the transverse members 6 are directed upwardly, as at 9, with the extremities of their upwardly directed parts 9 preferably slitted to provide fingers 10 adapted to be hooked, wound, or coiled around the upper frame 1 in order that the intermediate frame for the support of the interior springs may be suspended from the upper frame to suspend the interior springs within the border springs.

To prevent any possibility of swinging movement of the intermediate frame and consequent conflict between the interior springs and the border springs I may provide means to prevent any tendency of the intermediate frame swinging laterally. This may be accomplished, if the upper frame be composed of wire, by forming a plurality of downwardly directed spaced kinks 11 adapted to engage the outer faces of the upwardly directed hanger parts 9 of

the intermediate frame to form stops and thereby prevent lateral swinging movement of the frame transversely of the structure. If these kinks 11 be employed, the fingers 10 of each upwardly directed hanger part 9 are preferably wound, coiled or hooked over the upper frame 1 on opposite sides of the corresponding kink 11 so as to prevent swinging movement of the intermediate frame longitudinally of the structure. Thus these kinks 11 form means to prevent sliding or swinging movement of the intermediate frame and consequently maintain the inner springs in proper position within the structure and out of conflict with the border springs.

The inner springs 5 may be secured to the intermediate frame in any suitable manner, one form of means, however, residing in the formation of a plurality of tongues 12 struck up from the longitudinal members 7 and adapted to engage over the lower convolutions of the inner springs 5. The upper convolutions of these inner springs may be tied or linked together and to the border springs by any of the usual well known methods of connecting the same to avoid conflict of the springs with one another at their upper ends. It is well known that in upholstering spring structures that the upper ends of the springs are linked, stayed, or in some way connected together to keep the springs out of conflict with one another and for the purpose of supporting upholstering material and, as this part of the disclosure does not form any part of my invention and is not claimed herein, it seems unnecessary to illustrate the same. The essence of the present invention and what I claim broadly is the suspension of the inner springs within the border springs from the upper frame.

In practice, the border springs being of heavier gage wire than the inner springs, there is a greater depression centrally of the structure under the influence of weight than around the edges of the structure and this gives to the structure a pillow-like effect. Moreover, I am enabled to eliminate the numerous supporting wires usually connected to the lower frame and also eliminate from the structure the numerous clips necessarily employed to connect the lower ends of the springs to such supporting wires. The inner springs of my structure being shorter than the usual inner springs of spring structures, are less expensive and I provide not only a lighter structure by the use of my shorter inner springs but I provide ample space beneath the inner springs for the accommodation of tools or other articles which it may be desired to store within the spring structure, there being an opening 13 in the lower or base frame through which articles may be inserted under the cushion if this opening be left unrestricted and if it be de-

sired to place tools in the structure by lifting the same from its usual supporting means in a vehicle.

What is claimed is:—

1. A spring structure comprising upper and lower frames, border springs connecting the frames, and inner springs supported from their lower ends within the border frames with their lower ends terminating substantially intermediate the upper and lower frames.

2. A spring structure comprising upper and lower frames, border springs connecting said frames, an intermediate frame suspended from said upper frame, and springs secured to said intermediate frame.

3. A spring structure comprising upper and lower frames, border springs connecting said frames, an intermediate frame consisting of transverse and longitudinal members connected together with the transverse members provided with upwardly directed parts whose extremities are connected to the upper frame to suspend the intermediate frame within the structure, and interior springs mounted on the intermediate frame.

4. A spring structure comprising border springs, inner springs of less height than the border springs, and whose lower ends terminate short of the lower ends of the border springs and with their upper ends substantially alining with the upper ends of the border springs, and means for supporting the inner springs adjacent their lower ends from the upper portion of the structure.

5. In a spring structure, the combination of upper and lower frames, the upper frame being composed of wire and having downwardly directed kinks, an intermediate frame consisting of transverse and longitudinal members connected together with the transverse members provided with upwardly directed parts whose extremities are slitted to form fingers which are directed around the upper frame on opposite sides of corresponding kinks, and springs mounted on the intermediate frame.

6. In a spring structure the combination of upper and lower frames, border springs connecting the upper and lower frames, an intermediate frame suspended from the upper frame, springs mounted on the intermediate frame, and means to prevent swinging movement of the intermediate frame.

7. In a spring structure, the combination of upper and lower frames, border springs connecting said frames, an intermediate frame suspended from said upper frame, inner springs mounted on said intermediate frame with their lower ends terminating substantially midway between the upper and lower frames, and means to prevent swinging movement of the intermediate frame.

8. A spring structure comprising upper and lower frames, border springs connect-

ing the frames, inner springs mounted within the border springs with their lower ends terminating above the lower frame, and means connected to the upper frame and engaging the lower ends of the inner springs for the support of the latter.

9. A spring structure comprising upper and lower frames, border springs of heavy gage wire connecting the upper and lower frames, an intermediate frame suspended from the upper frame, comparatively short springs secured to the intermediate frame within the border springs, and means to prevent sliding and swinging movement of the intermediate frame with relation to the

upper frame to maintain the inner springs out of conflict with the border springs.

10. A spring structure comprising border springs, inner springs arranged within the border springs, and means engaging the inner springs adjacent their lower ends to support said inner springs from the upper portion of the structure.

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

GEORGE C. SHOEMAKER.

Witnesses:

JOHN H. SIGGERS,
DAVID R. WAGNER.

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