

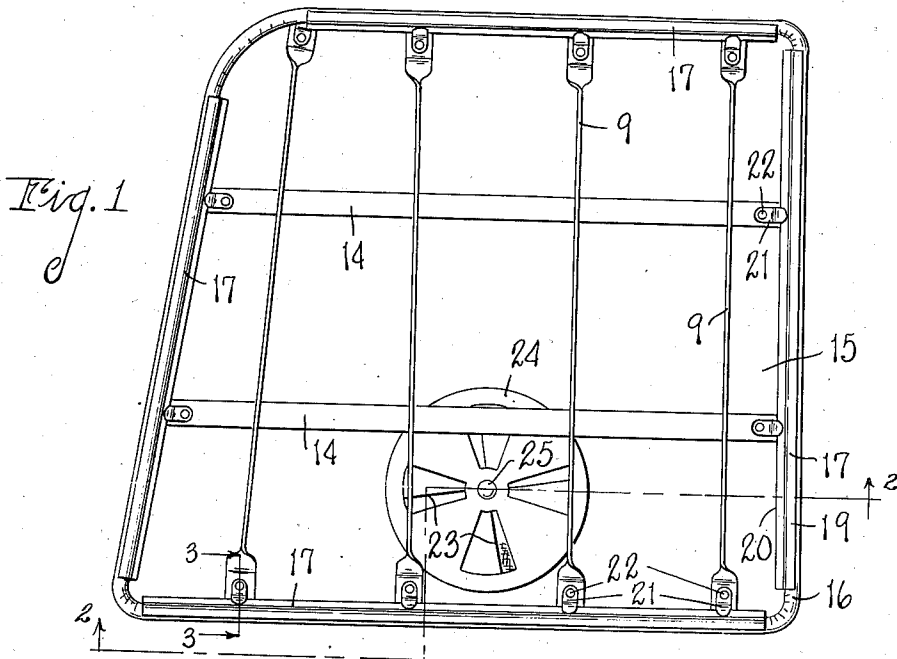
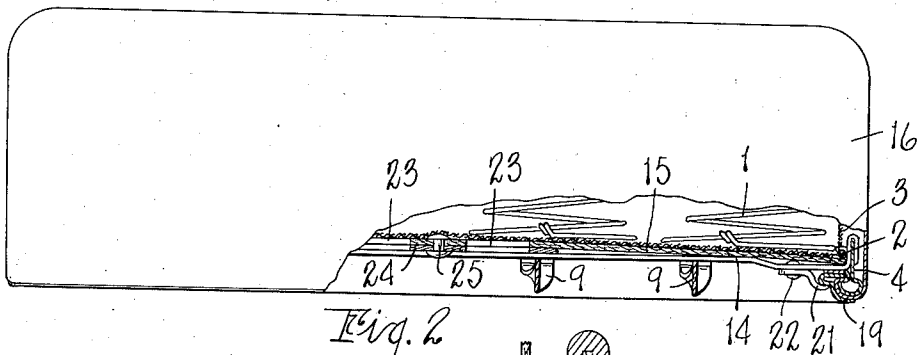
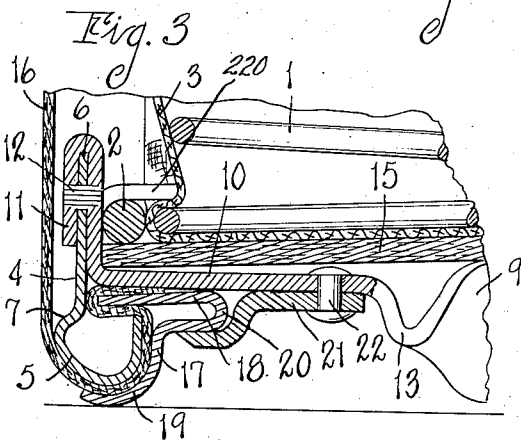
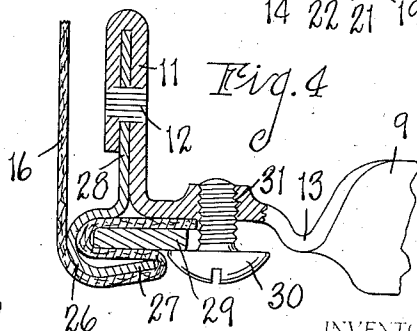
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W. A. CLARK

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SPRING STRUCTURE

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INVENTOR.
William A. Clark

BY
Chappell & Carl
ATTORNEYS

UNITED STATES PATENT OFFICE

2,072,243

SPRING STRUCTURE

William A. Clark, Detroit, Mich., assignor to L. A. Young Spring and Wire Corporation, Detroit, Mich.

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9 Claims. (Cl. 155—180)

The main objects of this invention are:

First, to provide an improved spring structure in which the upholstery is very securely retained and at the same time the upholstering operations may be rapidly performed even by unskilled workmen.

Second, to provide a structure of this character in which the upholstery is effectively protected from wear.

Third, to provide a structure having these advantages which is very strong and rigid and capable of withstanding severe usage even when made of relatively light materials.

Fourth, to provide a structure having these advantages which may be used as an air bound cushion or not as may be desired or in which the vent openings may be adjusted to secure the desired air resistance supplementing the springs.

Objects relating to details and economies of my invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is illustrated in the accompanying drawing, in which:

Fig. 1 is an inverted view of a seat cushion embodying the features of my invention.

Fig. 2 is an elevation thereof partially broken away and sectioned on line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary view on line 3—3 of Fig. 1.

Fig. 4 is an enlarged fragmentary view of a modified form or embodiment of my invention.

In the embodiment of my invention illustrated, the body springs 1 are assembled as a unit, the assembly comprising a border frame 2. The connecting means for the springs are not illustrated. They are preferably enclosed in a light fabric casing 3.

The border frame 4 of my invention as shown in the embodiments of Figs. 1, 2 and 3 is formed of a strip of metal and comprises a bottom inwardly opening channel portion 5 and an upright web-like portion 6 inwardly offset at 7 from the outer arm of the channel portion. The channel opens inwardly, the free arm of the channel in the embodiment best shown in Fig. 3 being preferably substantially vertical.

Cross bars 9 are disposed on edge and are provided with saddles 10 at their ends terminating in hooks 11 engaged over the upper edge of the web portion of the border frame and secured thereto, preferably by spot welding, as indicated at 12. The saddles have horizontal portions disposed above the free arms of the channel por-

tions of the border frames and connected to the vertical portions of the cross bar by the quarter twists 13.

Cross pieces 14 are disposed above these cross supporting bars 9, the cross pieces being secured to the border frame by saddles substantially as shown in Fig. 3.

A bottom panel 15 is arranged above the cross members described with its edge in abutting relation to the border frame so as to provide a substantially airtight joint.

The upholstery 16 is preferably of leather or imitation leather or suitable material substantially impervious to air. The skirt portion of the upholstery is wrapped around the bottom portion of the border frame and drawn over the edge of the free arm of the border frame.

The upholstery clamping members 17 are, in the embodiment shown in Figs. 1, 2 and 3, of substantially U-cross section, the upper arm 18 being flat, the lower arm 19 being curved to correspond to the curvature of the channel portion of the border frame, the two arms being joined by a loop 20. The upholstery is folded over the upper arm of the clamping strip, as clearly shown in Fig. 3, so that it has a "snubbing" engagement or is bound or clamped upon the upper edge of the free arm of the border frame. The arm 19 of the clamping strip embraces and clamps the upholstery on the channel portion of the border frame and extends below to provide a binding and wear strip.

Turnbutton securing members 21 pivoted at 22 are provided, these securing members engaging under the loop portion of the strips and effectively securing them in upholstery retaining clamping engagement. With this arrangement, the upholstery can be quickly placed and secured merely by adjusting the clamping strips and turning the turnbutton securing members. Tongues 220 formed integrally might be used for this purpose as shown in my Letters Patent No. 2,005,454, June 18, 1935, this invention being in some respects an improvement upon the structure there illustrated. It will be noted that by inwardly offsetting the web portion of the border frame, there are no projections such as the book portion of the saddle to contact with the upholstery, the structure being in this respect an improvement over the structure of my said patent. With this arrangement, the upholstery is secured so as to provide a substantially airtight connection between it and the border frame.

The bottom panel is provided with an annular series of vent openings 23 controlled by the disk

valve 24 which is pivoted at 25 for rotative adjustment so as to completely close the vent openings or to open them to any desired degree, thereby providing a substantially air-bound cushion so that the air cooperates with the springs, or to vent the cushion as may be desired to secure the proper venting or the desired air resistance.

The valve is, as shown in Fig. 1, supported by a plurality of cross members of the cushion so that it cannot become accidentally displaced or become distorted or ineffective as it is held downwardly upon the cross members when the seat is occupied, and further, disks of thin material such as fiber may be effectively used for the valve.

In the embodiment shown in Fig. 4, the channel portion 26 is disposed with its free arm 27 approximately horizontal. The web portion 28 is inwardly offset and the cross bars 9 are secured thereto the same as in the structure described. The upholstery clamping strip 29 is in the form of a flat bar, the upholstery being wrapped around the edge of the free channel and over the clamping strip, the clamping strip being retained by screws 30 engaging threaded holes 31 provided therefor in the cross bars. In this embodiment, the lower edges of the cross bars are below the plane of the border strip so that the upholstery is held above the supporting base. However, the structure shown in Fig. 3 has the advantage of having the upholstery effectively protected.

Spring structures embodying my invention may be very economically produced. They are strong and rigid and the upholstery can be quickly assembled and they are very durable. The valve vent permits adjustment to secure the desired air resistance.

I have not attempted to illustrate or describe certain modifications or adaptations which I contemplate as it is believed that this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a spring cushion structure, the combination of a border frame having a bottom portion of rounded channel section facing upwardly and an upright web portion inwardly offset from the outer arm of the bottom portion, flat cross bars disposed on edge and having saddles at their ends joined thereto by quarter twists and secured to the top portion of the border frame, the saddles having horizontal portions disposed above and in spaced relation to the inner arm of the bottom portion of said border frame, a bottom panel arranged upon said cross bars, a body spring unit arranged on said bottom panel, said cross bars having integral tongues engaging said spring unit, upholstery having its edge disposed around the bottom portion of said border frame and over the edge of the inner arm thereof, a clamping strip of U-cross section, the edge of the upholstery being folded around the upper arm of the clamping strip which is disposed above the inner arm of the border frame, the upholstery being held thereby in binding engagement with the upper edge of the inner arm and the web portion of the border frame and the saddles of the cross bars, the lower arm of the binding strip clamping the upholstery upon the inner side and bottom of the bottom portion of the border frame and constituting a wear member for the structure, and means securing the clamping strip in clamping engagement with the upholstery.

2. In a spring cushion structure, the combination of a border frame having a bottom portion of channel section facing upwardly and an upright web portion, cross bars secured to the top portion of the border frame, a body spring unit arranged above said cross bars, upholstery having its edge disposed around the bottom portion of said border frame and over the edge of the inner arm thereof, a clamping strip of U-cross section, the edge of the upholstery being folded around the upper arm of the clamping strip which is disposed above the inner arm of the border frame, the upholstery being held thereby in binding engagement with the upper edge of the inner arm and the web portion of the border frame and the cross bars, the lower arm of the binding strip clamping the upholstery upon the inner side and bottom of the bottom portion of the border frame and constituting a wear member for the structure, and means securing the clamping strip in clamping engagement with the upholstery.

3. In a spring cushion structure, the combination of a border frame having a bottom portion of channel section facing upwardly and an upright web portion, cross bars secured to the top portion of the border frame, a body spring unit arranged above said cross bars, upholstery having its edge disposed around the bottom portion of said border frame and over the edge of the inner arm thereof, a clamping strip of U-cross section having a flat upper arm and a curved lower arm, the arms being connected by a loop-like portion, the edge of the upholstery being folded around the upper arm of the clamping strip which is disposed above the inner arm of the border frame, the upholstery being held thereby in binding engagement with the upper edge of the inner arm and the web portion of the border frame and the cross bars, the lower arm of the binding strip being conformed to and clamping the upholstery upon the inner side and bottom of the bottom portion of the border frame and constituting a wear member for the structure, and turnbuttons pivoted on the horizontal portions of said cross bars engaging the loop portions of said clamping strips for holding them in clamping engagement with the upholstery.

4. In a spring cushion structure, the combination of a border frame having a bottom portion of rounded channel section facing upwardly and an upright web-portion inwardly offset from the outer arm of the bottom portion, flat cross bars disposed on edge and having saddles at their ends joined thereto by quarter twists and secured to the top portion of the border frame, the saddles having horizontal portions disposed above and in spaced relation to the inner arm of the bottom portion of said border frame, a clamping strip of U-cross section having a flat upper arm and a curved lower arm, the arms being connected by a loop-like portion, upholstery disposed above the inner arm of the border frame and clamped thereto by the upper arm of said clamping strip, the lower arm of the binding strip being conformed to and clamping upholstery upon the inner side and bottom of the bottom portion of the border frame and constituting a wear member for the structure, and turnbuttons pivoted on the horizontal portions of said cross bars engaging the loop portion of said clamping strip.

5. In a spring cushion structure, the combination of a border frame having a bottom portion of rounded channel section facing upwardly and an upright web-portion, cross bars secured to the

top portion of the border frame, a clamping strip of U-cross section having a flat upper arm and a curved lower arm, the arms being connected by a loop-like portion, upholstery disposed above the inner arm of the border frame and clamped thereto by the upper arm of said clamping strip, the lower arm of the binding strip being conformed to and clamping upholstery upon the inner side and bottom of the bottom portion of the border frame and constituting a wear member for the structure, and means on said cross bars engaging the loop portion of said clamping strip.

6. In a spring cushion structure, the combination of a border frame having bottom portion of channel section opening upwardly, and an upright top portion, cross bars secured to the top portion of the border frame with portions disposed above and in spaced relation to the bottom portion of said border frame, said bottom portion of channel section terminating in an inner arm disposed inwardly of the border frame, a body spring unit arranged on said cross bars, upholstery having its edge disposed around the bottom portion of said border frame and over the edge of the inner arm thereof, a clamping strip of U-section having a flat upper arm and a curved lower arm, the arms being connected by a loop-like portion, the edge of the upholstery being folded around the upper arm of the clamping strip which is disposed above the inner arm of the portion of channel section, the upholstery being bound thereby with the lower arm of the binding strip clamping the upholstery upon the bottom portion of the border frame and constituting a wear member for the structure, and means on said cross pieces engaging the loop portion of said clamping strip for holding it in clamping engagement with the upholstery.

7. In a spring cushion structure, the combination of a border frame having a bottom portion of channel section opening upwardly, and an upright web-like portion offset inwardly from the sides of the channel section, cross bars secured to the upright portion of the border frame with portions of the bars disposed above and in spaced relation to the bottom portion of said border frame, said bottom portion of channel section terminating in an inner arm disposed inwardly of the border frame, an upholstery clamping strip of U-section having a flat upper arm and a curved lower arm, the arms being connected by a loop-like portion, the upper arm of the clamping strip being disposed above the inner arm of the portion

of channel section and adapted to bind upholstery thereon, the lower arm of the binding strip embracing the bottom portion of the border frame and constituting an upholstery binding and wear member, and means on said cross pieces engaging the loop portion of said clamping strip for holding them in clamping engagement with the upholstery.

8. In a spring cushion structure, the combination of a border frame having a bottom portion of channel section bent inwardly of the border frame and terminating in a free arm, and an upright web-like top portion offset from the portion of channel section, cross bars disposed on edge and having saddles at their ends joined thereto by quarter twists and secured to the top portion of the border frame, the saddles having horizontal portions disposed above and in spaced relation to the free arm of the channel portion, upholstery having its edge disposed around the bottom portion of said border frame and lapped upon the edge of the free arm thereof, upholstery securing means extending over the free arm of said channel portion, the upholstery being wrapped around a portion of said securing means, said means wedging its upholstery against said free arm and the horizontal part of the saddle spaced from the arm and constituting a binding and retaining member for the upholstery, and means mounted on said cross bars for locking said upholstery securing means in clamping engagement with the upholstery.

9. In a spring cushion structure, the combination of a border frame having a bottom portion of channel section bent inwardly of the border frame and terminating in a free arm, and an upright web-like portion, cross bars disposed above and in spaced relation to the free arm of the channel portion, hooks on said cross bars securing said bars to said upright web-like portion, upholstery having its edge disposed around the bottom portion of said border frame and lapped upon the edge of the free arm thereof, upholstery securing means extending over the free arm of said channel portion, the upholstery being wrapped around a portion of said securing means, said means wedging its upholstery against the free arm and the cross bar spaced from the arm and constituting a binding and retaining member for the upholstery, and means for locking said upholstery securing means in clamping engagement with the upholstery.

WILLIAM A. CLARK.