June 18, 1935. W. A. CLARK 2,005,454

SPRING STRUCTURE

Filed Aug. 18, 1934

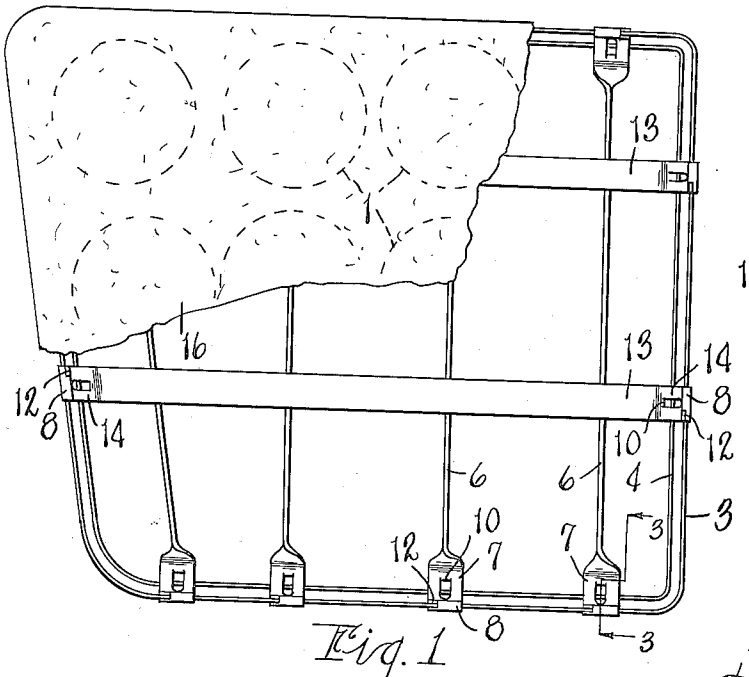


Fig. 1

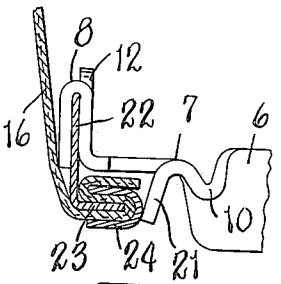


Fig. 5

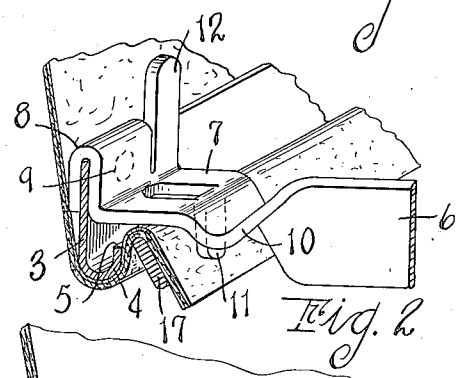


Fig. 2

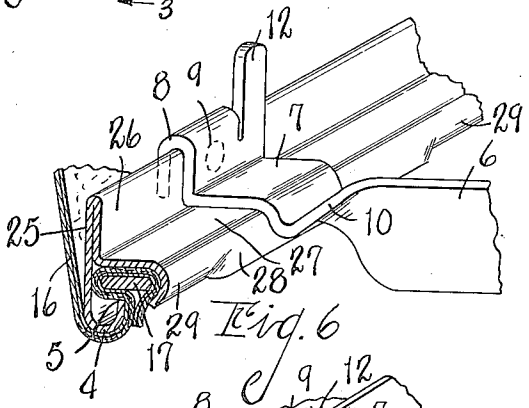


Fig. 6

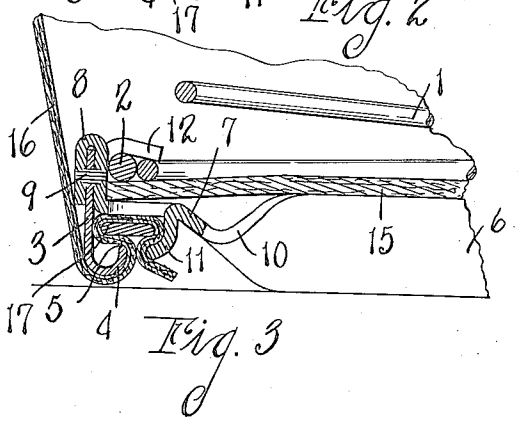


Fig. 3

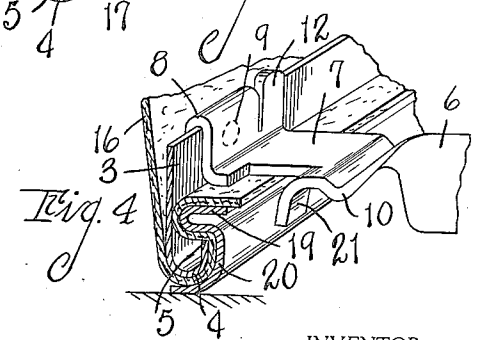


Fig. 4

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SPRING STRUCTURE

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Application August 18, 1934, Serial No. 740,386

16 Claims. (Cl. 155—180)

The main objects of this invention are:

First, to provide an improved spring structure which, although made of comparatively light material, is very rigid and capable of withstanding severe usage, and thereby well adapted for trucks, buses and the like.

Second, to provide in a spring structure an improved means for securing the upholstery by which the upholstery is very securely retained and at the same time the upholstering operations are rapidly performed, even by relatively unskilled workmen.

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

A structure which embodies the features of my invention is clearly illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary plan view of a spring cushion structure embodying the features of my invention, the springs and upholstery being conventionally illustrated.

Fig. 2 is an enlarged fragmentary section illustrating certain of the upholstering steps.

Fig. 3 is an enlarged detail section on line 3—3 of Fig. 1 of a completed structure.

Fig. 4 is a fragmentary perspective view partially in section of a modified form or embodiment of my invention in which the upholstery is provided with a binding and wear plate.

Fig. 5 is a fragmentary section showing another form or embodiment of my invention, somewhat more economical than that shown in Fig. 4 but lacking certain features of advantage of that structure.

Fig. 6 is a fragmentary perspective view partially in section of still another modification or embodiment of my invention.

In the embodiment of my invention illustrated in Figs. 1, 2 and 3 the body springs 1 are assembled as a unit, the assembly comprising a border frame 2. The connections for the spring in the assembly and the connections for the springs to the border frame are not illustrated as assemblies of this character are well known in the art, designed to be mounted on wood frames and other supporting bases.

The border frame 3 of my invention as shown in the embodiments of Figs. 1, 2 and 3 and also that of Fig. 4 is formed of a strip of metal disposed vertically and having an inturned curved flange 4 at its lower edge providing an upholstery supporting ledge 5; or, otherwise stated, this strip is of U cross section with the outer arm very much wider than the inner arm so that the ledge 5 is substantially spaced from the upper edge of the border frame. The border frame is preferably continuous, being formed of sections joined together or of one piece bent to suitable shape and dimensions and the ends joined. I have not illustrated the joint or joints.

The cross bars 6 are disposed on edge and are provided with saddles 7 at their ends terminating in hooks 8 engaged over the upper edge of the border frame and rigidly or fixedly secured thereto as by spot welding 9. The saddles have horizontal portions disposed above and in spaced relation to the upholstery supporting ledges 5. In this embodiment the saddles are joined to the body portions of the cross bars by the quarter twists 10 and have bendable tongues 11 struck downwardly therefrom and also tongues 12. The tongues 11 are upholstery securing tongues and the tongues 12 are spring unit securing tongues.

Cross pieces 13 are disposed transversely above the cross bars, these being flat strips having saddles 14 at their ends. These cross pieces have upholstery securing tongues struck down from the saddles and spring securing tongues corresponding to the tongues 11 and 12 of the cross bars.

Upon these cross members I arrange a panel 15, preferably a sheet of boxboard or fiberboard, the spring unit being arranged thereon and secured by the tongues 12 as shown in Fig. 3. The skirt of the upholstery 16 is wrapped around the curved bottom of the rim and over the upholstery supporting ledge. The upholstery clamping strips 17, which in the embodiment shown in Figs. 1, 2 and 6 are flat strips, are engaged in a fold in the edge of the upholstery and forced into the space between the supporting ledge and the overhanging portion of the cross strips, and secured by means of the tongues 11 which are struck with a hammer and effectively clamp the upholstery between the tongues and the clamping strips of the outer arm of the border frame, as is clearly shown in the drawing. The upholstery is thus secured by a combined clamping and snubbing action.

In the embodiment shown in Figs. 1, 2, 3, 5 and 6 the lower edges of the supporting bars are in a plane below the plane of the border frame with the upholstery wrapped thereon so that the cushion is supported by these bars. In the embodiment shown in Fig. 4 the clamping strips 19 are conformed from sheet metal in a general figure 5 shape providing a channel shaped part 20 which embraces the upholstery folded around the inturned flange portion of the rim, clamping

it over the supporting ledge and around the flange and providing a wear plate and supporting means for the structure. The clamping tongues 21 corresponding to the clamping tongues 11 are clamped against the inner side of this upholstery retaining strip 19, the parts being otherwise as shown in detail in Figs. 2 and 3.

In the embodiment shown in Fig. 5 the border frame 22 is provided with a straight inturned flange 23 providing a support for the upholstery and on which the upholstery is clamped by the U-shaped strip 24, which also constitutes a binding member or wear plate, although in this embodiment the cross strips 6 extend below the plane of the rim. The cross strips are provided with retaining tongues 21 for the strip.

In the embodiment shown in Fig. 6 the upper edge of the border frame 25 is folded downwardly at 26 upon the vertical portion and thence bent inwardly to provide a horizontal portion 27 overhanging the supporting ledge 5. The edge of this horizontal portion is bent downwardly at 28 so that after the clamping strip is inserted this downturned portion 28 may be crimped or bent at intervals, as at 29, to retain the upholstery clamping strip.

My improved spring structure is exceedingly rigid, the cross pieces serving to effectively brace and support the rim. The rim is economical in material and easily formed. The parts may be very quickly and easily assembled, even by unskilled workmen.

I have not attempted to illustrate or describe other modifications or adaptations which I contemplate as it is believed that this disclosure will enable those skilled in the art to embody or adapt the same 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 of U cross section, the inner arm of the border frame being relatively narrow and providing an upholstery supporting ledge substantially spaced from the upper edge of the outer arm, flat cross bars disposed on edge with their lower edges below the plane of the bottom of the border frame and constituting supports and having saddles at their ends joined thereto by quarter twists and engaged over the upper edge of the border frame and secured thereto, the saddles having horizontal portions disposed above and in spaced relation to the upholstery supporting ledge of the border frame, such horizontal portions having upholstery securing tongues struck downwardly therefrom, flat cross pieces disposed horizontally and transversely above said cross bars and having saddles at their ends engaged over the upper edge of the outer arm of the border frame and fixedly secured thereto and having upholstery securing tongues struck downwardly therefrom, a bottom panel arranged upon said cross bars and cross pieces, a body spring unit including a border frame arranged on said bottom panel, said cross bars and cross pieces having integral tongues clamped upon the border frame of said spring unit, flat upholstery clamping strips, and upholstery having its edges disposed around the bottom edge of the border frame and around said clamping strips, the clamping strips with the upholstery therearound being disposed horizontally above the upholstery supporting ledge of said border frame and the upholstery clamping tongues being clamped thereon whereby the upholstery is securely held by the clamping and snubbing engagement of the associated parts.

2. In a spring cushion structure, the combination of a border frame of U cross section, the inner arm of the border frame being relatively narrow and providing an upholstery supporting ledge substantially spaced from the upper edge of the outer arm, flat cross bars disposed on edge and having saddles at their ends engaged over the upper edge of the outer arm of the border frame and secured thereto, the saddles having horizontal portions disposed above and in spaced relation to the upholstery supporting ledge of the border frame, such horizontal portions having upholstery securing tongues struck downwardly therefrom, flat cross pieces disposed horizontally and transversely above said cross bars and having saddles at their ends engaged over the upper edge of the outer arm of the border frame and fixedly secured thereto and having upholstery securing tongues struck downwardly therefrom, a bottom panel arranged upon said cross bars and cross pieces, a body spring unit including a border frame arranged on said bottom panel, said cross bars and cross pieces having integral tongues clamped upon the border frame of said spring unit, flat upholstery clamping strips, and upholstery having its edges disposed around the bottom edge of the border frame and around said clamping strips, the clamping strips with the upholstery therearound being disposed horizontally above the upholstery supporting ledge of said border frame and the upholstery clamping tongues being clamped thereon whereby the upholstery is securely held by the clamping and snubbing engagement of the associated parts.

3. In a spring cushion structure, the combination of a border frame of U cross section, the inner arm of the border frame being relatively narrow and providing an upholstery supporting ledge substantially spaced from the upper edge of the outer arm, cross bars having saddles at their ends engaged over the upper edge of the outer arm of the border frame and secured thereto, the saddles having portions disposed above and in spaced relation to the upholstery supporting ledge of the border frame and having upholstery securing tongues struck therefrom, cross pieces disposed transversely above said cross bars and having saddles at their ends engaged over the upper edge of the outer arm of the border frame and fixedly secured thereto and having upholstery securing tongues struck downwardly therefrom, body springs supported by said cross bars, flat upholstery clamping strips, and upholstery having its edges disposed around the bottom edge of the border frame and around said clamping strips, the clamping strips with the upholstery therearound being disposed horizontally above the upholstery supporting ledge of said border frame and the upholstery clamping tongues being clamped thereon whereby the upholstery is securely held by the clamping and snubbing engagement of the associated parts.

4. In a spring cushion structure, the combination of a border frame of U cross section, the inner arm of the border frame being relatively narrow and providing an upholstery supporting ledge substantially spaced from the upper edge of the outer arm, flat cross bars disposed on edge and having saddles at their ends joined thereby by quarter twists and fixedly secured to the outer arm of said border frame, the saddles having horizontal portions disposed above and in spaced relation to the upholstery supporting ledge of

the border frame, such horizontal portions having upholstery securing tongues struck downwardly therefrom, flat cross pieces disposed transversely above said cross bars and having saddles at their ends engaged over the upper edge of the outer arm of the border frame and having upholstery securing tongues struck downwardly therefrom, a bottom spring unit including a border frame carried by said cross bars, said cross bars and cross pieces having integral tongues clamped upon the border frame of said spring unit, upholstery clamping strips, and upholstery having its edges disposed around the bottom edge of the border frame and around said clamping strips, the clamping strips with the upholstery therearound being disposed horizontally above the upholstery supporting ledge of said border frame and the upholstery clamping tongues being clamped thereon whereby the upholstery is securely held by the clamping and snubbing engagement of the associated parts.

5. In a spring cushion structure, the combination of a border frame of U cross section, the inner arm of the border frame being relatively narrow and providing an upholstery supporting ledge substantially spaced from the upper edge of the outer arm, cross bars having their ends secured to the outer arm of said border frame, the bars having portions disposed above and in spaced relation to the upholstery supporting ledge of the border frame, said portions having upholstery securing tongues struck therefrom, upholstery clamping strips, and upholstery having its edges disposed around the bottom edge of the border frame and around said clamping strips the clamping strips with the upholstery therearound being disposed horizontally above the upholstery supporting ledge of said border frame and the upholstery clamping tongues being clamped thereon whereby the upholstery is securely held by the clamping and snubbing engagement of the associated parts.

6. In a spring cushion structure, the combination of a border frame having an inturned curved flange at its lower edge providing an upholstery supporting ledge substantially spaced from the upper edge of the border frame, cross bars disposed on edge and having saddles at their ends secured to the border frame and provided with horizontal portions disposed above and in spaced relation to said upholstery supporting ledge, said horizontal portions having integral upholstery clamping tongues, cross pieces disposed transversely above said cross bars and secured to the said border frame and having integral upholstery securing tongues, upholstery having its edge wrapped around the bottom of said border frame and over said supporting ledge, and upholstery clamping strips projecting between said supporting ledge and the said cross bars and cross pieces in clamping engagement with the upholstery arranged therearound, said upholstery clamping tongues being in retaining engagement with said upholstery clamping strips, the upholstery clamping strips having channel portions embracing the inturned portion of said border frame and projecting below the border frame to constitute a binding and guard for the upholstery.

7. In a spring cushion structure, the combination of a border frame having an inturned flange at its lower edge, cross bars having their ends secured to the border frame, said cross bars having integral upholstery clamping tongues, cross pieces disposed transversely above said cross bars and secured to said border frame and having integral upholstery securing tongues, upholstery having its edge wrapped around the bottom of said border frame and over said supporting ledge, and upholstery clamping strips projecting between said supporting ledge and said cross bars and cross pieces in clamping engagement with the upholstery arranged therearound, said upholstery clamping tongues being in retaining engagement with said upholstery clamping strips, the upholstery clamping strips having channel portions embracing the inturned portion of said border frame and projecting below the border frame to constitute a binding and guard for the upholstery.

8. In a spring cushion structure, the combination of a border frame having an inturned curved flange at its lower edge providing an upholstery supporting ledge substantially spaced from the upper edge of the border frame, cross bars disposed on edge and having saddles at their ends secured to the border frame and provided with horizontal portions disposed above and in spaced relation to said upholstery supporting ledge, said horizontal portions having integral upholstery clamping tongues, cross pieces disposed transversely above said cross bars and secured to the said border frame and having integral upholstery securing tongues, upholstery having its edge wrapped around the bottom of said border frame and over said supporting ledge, and upholstery clamping strips projecting between said supporting ledge and said cross bars and cross pieces in clamping engagement with the upholstery arranged therearound, said upholstery clamping tongues being in retaining engagement with said upholstery clamping strips.

9. In a spring cushion structure, the combination of a border frame having an inturned flange at its lower edge, cross bars having their ends secured to the border frame, said cross bars having integral upholstery clamping tongues, cross pieces disposed transversely above said cross bars and secured to the said border frame and having integral upholstery securing tongues, upholstery having its edge wrapped around the bottom of said border frame and over said supporting ledge, and upholstery clamping strips projecting between said supporting ledge and said cross bars and cross pieces in clamping engagement with the upholstery arranged therearound, said upholstery clamping tongues being in retaining engagement with said upholstery clamping strips.

10. In a spring cushion structure, the combination of a border frame having an inturned flange at its lower edge, cross bars disposed on edge and having saddles at their ends joined thereby by quarter twists and engaged over the upper edge of the border frame and fixedly secured thereto, the saddles having upholstery clamping tongues and spring unit clamping tongues integral therewith, a spring unit arranged on said cross bars and comprising a border frame with which said spring unit clamping tongues are engaged, upholstery having its edges disposed around the bottom of the border frame and around its said inturned flange, and a U shaped upholstery securing strip embracing said flange and the upholstery wrapped thereon, the upholstery clamping tongues of said cross bars being in retaining engagement with said upholstery clamping strips, the upholstery clamping strips constituting binding and wear members for the upholstery.

11. In a spring cushion structure, the combination of a border frame having an inturned flange

at its lower edge, cross members having upholstery clamping tongues integral therewith, upholstery having its edges disposed around the bottom of the border frame and around its said inturned flange, and a U shaped upholstery securing strip embracing said flange and the upholstery wrapped thereon, the upholstery clamping tongues of said cross members being in retaining engagement with said upholstery clamping strips.

12. In a spring cushion structure, the combination of a border frame having an inturned curved flange on its lower edge providing an upholstery supporting ledge, cross bars fixedly secured to said border frame with portions thereof in spaced relation to said supporting ledge, upholstery having its edge disposed around the bottom of the border frame and over said supporting ledge, and upholstery clamping strips disposed between said cross bars and said supporting ledge and binding the upholstery thereon, said cross bars having bendable parts in retaining engagement with said clamping strips, the clamping strips having parts extending below the border frame and constituting a wear plate for the upholstery.

13. In a spring cushion structure, the combination of a border frame having an inturned curved flange on its lower edge providing an upholstery supporting ledge, cross bars fixedly secured to said border frame with portions thereof in spaced relation to and above said supporting ledge, upholstery having its edge disposed around the bottom of the border frame and over said supporting ledge, and upholstery clamping strips clamped between the said portions of said cross bars and said supporting ledge and binding the upholstery thereon, said cross bars having bendable parts in retaining engagement with said clamping strips.

14. In a spring cushion structure, the combination of a border frame of J cross section, the upper edge of the inner arm providing an upholstery supporting ledge, a cross bar having an end saddle engaged over the outer and upper edge of the border frame, the saddle having an upholstery clamping portion in parallel relation with said upholstery supporting ledge, an upholstery clamping member of Figure 5 cross section having its short arm arranged above said upholstery supporting ledge and under said upholstery clamping portion, the long arm depending alongside of and below said border frame, and an upholstery member disposed around the bottom of said border frame, upwardly between the arms of the border frame and upholstery clamping member, outwardly over the upholstery supporting ledge, around the edge of the short arm of the upholstery clamping member, and inwardly between the upholstery clamping member and said upholstery clamping portion, the latter having a tongue engaging said upholstery clamping member for holding the same in place.

15. In a spring cushion structure, the combination of a border frame of substantially J cross section, the upper edge of the inner arm providing an upholstery supporting ledge, a cross bar having an end saddle engaged over the upper edge of the border frame and provided with an upholstery clamping portion disposed for cooperation with said upholstery supporting ledge, an upholstery clamping member having a horizontal portion disposed above said upholstery supporting ledge and a vertical portion depending below said border frame, and an upholstery member disposed around the bottom of said border frame, upwardly between the inner arm of the border frame and the depending portion of the upholstery clamping member, outwardly between the upholstery supporting ledge and the horizontal arm of the upholstery clamping member, upwardly around the outer edge of the horizontal portion of the upholstery clamping member, inwardly between the upholstery clamping portion of the saddle and the horizontal portion of the upholstery clamping member, and finally downwardly around the inner edge of the horizontal portion of the upholstery clamping member, the upholstery clamping portion of the saddle having an outwardly and downwardly extending tongue engaging said upholstery clamping member and acting to hold the same in place.

16. In a spring cushion structure, the combination of a border frame of substantially J cross section, the upper edge of the inner arm providing an upholstery supporting ledge, a cross bar having an end saddle engaged over the upper edge of the border frame and provided with an upholstery clamping portion disposed for cooperation with said upholstery supporting ledge, an upholstery clamping member having a horizontal portion disposed above said upholstery supporting ledge and a vertical portion depending below said border frame, and an upholstery member disposed around the bottom of said border frame, upwardly between the border frame and the upholstery clamping member, outwardly between the upholstery supporting ledge and the horizontal arm of the upholstery clamping member, upwardly around the outer edge of the upholstery clamping member, inwardly between the upholstery clamping portion of the saddle and the upholstery clamping member, and finally downwardly around the inner edge of the upholstery clamping member.

WILLIAM A. CLARK.