

Dec. 8, 1942.

A. PUDLO

2,304,652

SPRING STRUCTURE

Filed July 21, 1941

2 Sheets-Sheet 1

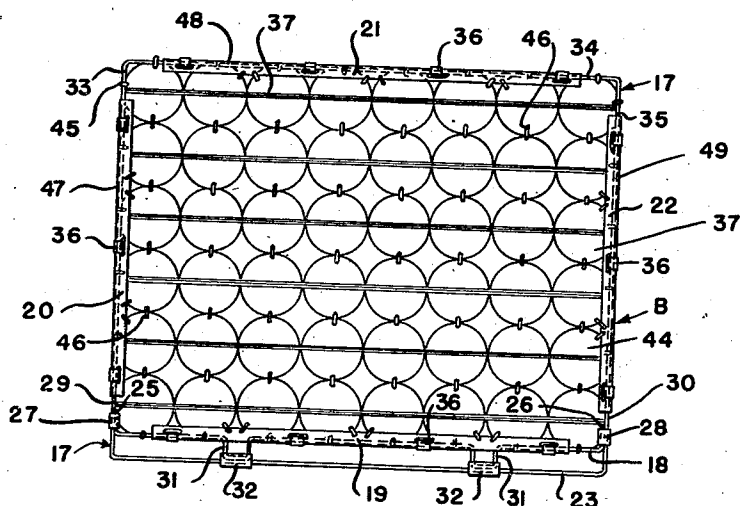


FIG. 1.

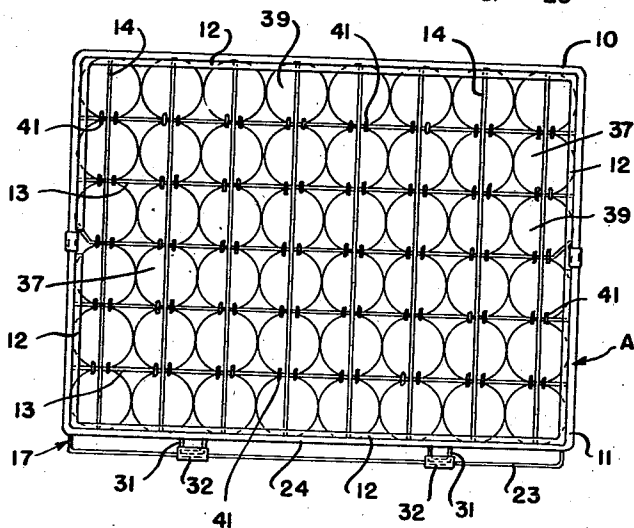


FIG. 2.

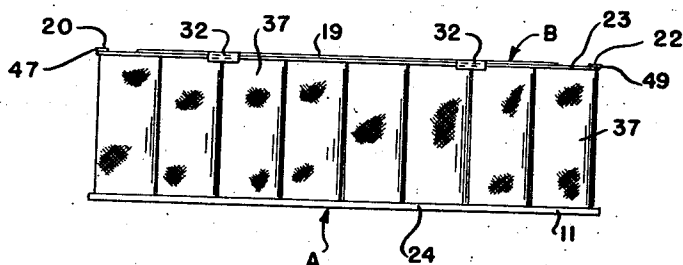


FIG. 3.

INVENTOR.
ANTHONY PUDLO
BY *W. Hittmore, Hubert & Belknap*
ATTORNEYS

Dec. 8, 1942.

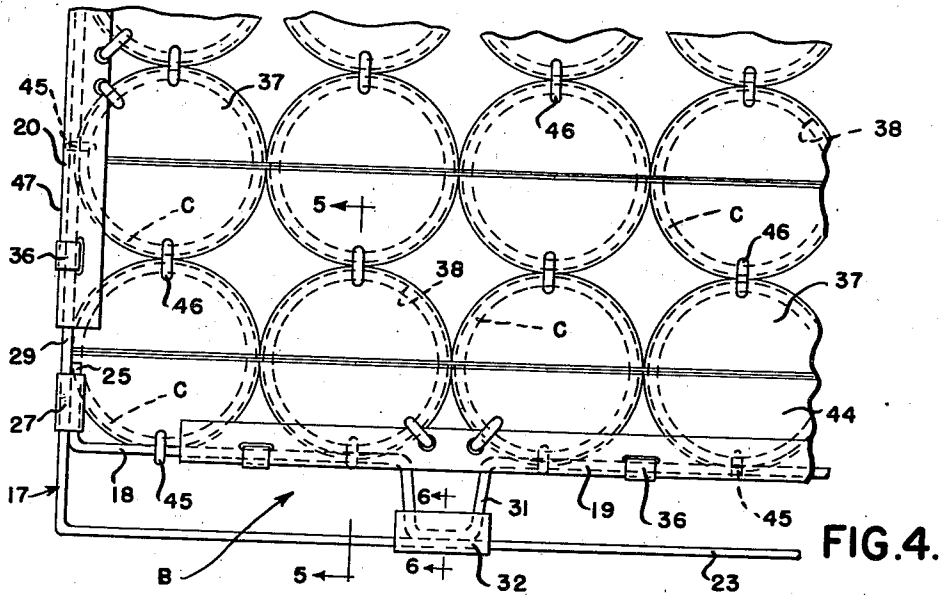
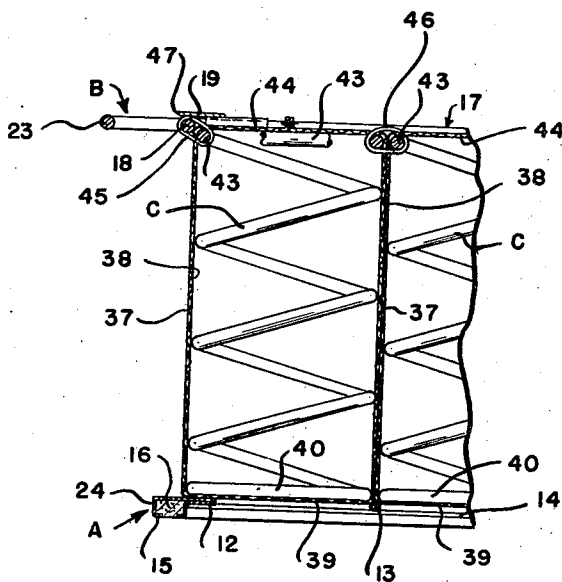
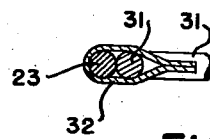
A. PUDLO

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SPRING STRUCTURE

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2 Sheets-Sheet 2



INVENTOR.
ANTHONY PUDLO
BY *Whittemore, Helbert & Belknap*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,304,652

SPRING STRUCTURE

Anthony Pudlo, Detroit, Mich., assignor to Falls Spring and Wire Company, Detroit, Mich., a corporation of Michigan

Application July 21, 1941, Serial No. 403,433

4 Claims. (Cl. 155-179)

This invention relates generally to spring structures and refers more particularly to those designed for use in vehicle seat cushions and the like.

One of the essential objects of the invention is to provide a spring structure with a forwardly projecting or overhanging upper edge portion to obtain the desired width or sitting area at the top of the structure while maintaining the area of the structure below said edge portion at predetermined less dimensions for proper placement upon a correspondingly small supporting portion of the vehicle.

Another object is to provide a forwardly projecting edge portion that includes a part of the upper border wire and a reinforced auxiliary or secondary wire of the spring structure.

Another object is to provide a forwardly projecting edge portion that cooperates with suitable upholstery or covering material to provide the desired sitting edge of the seat cushion.

Another object is to provide a forwardly projecting edge portion wherein the reinforcement for the secondary wire includes a strip of spring metal that will yield when subjected to a load but will spring back and restore the parts with which it is associated to normal position when relieved of such load.

Another object is to provide a forwardly projecting edge portion wherein the reinforcement mentioned affords freedom of movement in a vertical direction of the upright coil springs of the structure unhampered by braces or other impediments.

Another object is to provide a forwardly projecting edge portion wherein the reinforcement and cooperating auxiliary wire are connected to the upright coil springs and pockets therefor at the margins of the spring structure and keep upright the pockets for said springs so that the latter may flex freely within the limits of the pockets.

Other objects, advantages and novel details of construction of this invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a top plan view of a spring structure embodying my invention;

Figure 2 is a bottom plan view thereof;

Figure 3 is a front elevation thereof;

Figure 4 is an enlarged fragmentary plan view of a portion of Figure 1;

Figure 5 is a vertical sectional view taken sub-

stantially on the plane indicated by the line 5-5 of Figure 4;

Figure 6 is a vertical sectional view taken substantially on the plane indicated by the line 6-6 of Figure 4.

Referring now to the drawings, A is the lower frame, B is the upper frame, and C are the intermediate upright coil springs of a spring structure embodying my invention.

As shown, the lower frame A is preferably rectangular-shape and comprises two substantially U-shaped pressed metal strips 10 and 11 that open toward each other and have the arms thereof abutting in end-to-end relation and rigidly connected together. Projecting inwardly from this frame are lateral flanges 12 upon which are mounted suitable crossed wires 13 and 14, respectively, constituting supports for the coil springs C, while in the bottom face of said frame is a downwardly opening channel 15 containing a suitable tacking strip 16 for the margins of the upholstery material (not shown) that is employed to cover the spring structure.

The upper frame B includes a border wire 17, an auxiliary or secondary wire 18, and reinforcing strips 19, 20, 21 and 22, respectively. Preferably the area of the border wire 17 is greater from front to rear of the structure than the area of the lower frame A so that the front side 23 of said border wire is a predetermined distance in advance of but substantially parallel to the vertical plane in which the front side 24 of the lower frame is located. The auxiliary wire 18 is substantially parallel to the front side 23 of the border wire and is substantially in vertical alignment with the front side 24 of the lower frame. Opposite ends 25 and 26, respectively, of this auxiliary wire are bent along and are secured by clips 27 and 28, respectively, to the rearwardly extending portions 29 and 30, respectively, of the border wire. Intermediate its ends such wire 18 has two spaced substantially U-shaped loops 31 projecting forwardly and secured by clips 32 to the front side 23 of the border wire. The reinforcing strips 19 to 22, inclusive, are formed of spring metal and extend along the auxiliary wire 18 and the rearwardly extending and rear portions 33, 34 and 35, respectively, of the border wire. Preferably these strips are of sufficient width to overhang slightly the outer sides of the auxiliary wire 18 and portions 33 to 35, inclusive, of the border wire and to overlie the coil springs C at the margins of the spring structure. Any suitable means such as the clips 36 may be used to secure the strips 19 to 22, in-

clusive, to the auxiliary wire 18 and portions 33 to 35, inclusive, of the border wire.

The coil springs C are arranged in a group between the upper and lower frames A and B and preferably are in parallel rows extending longitudinally of the structure. Each row of springs has a covering 37 of some coarse fabric such as burlap, and the springs of each row are individually enclosed in pockets 38 of such covering. The bottoms 39 of these pockets form seats for the lowermost convolutions 40 of the coil springs and rest upon the crossed wires 13 and 14 on the lower frame A. Any suitable means such as the hog rings 41 may be employed to connect the bottoms 39 of the pockets and the lowermost convolutions 40 of the springs to said wires 13, and it will be noted that these rings 41 also interconnect the lowermost convolutions 40 and bottoms 39 of the pockets throughout the structure. At the margins of the spring structure the uppermost convolutions 43 of the coil springs C and the tops 44 of the pockets 38 for said springs are connected by hog rings 45 to the auxiliary wire 18 and portions 33 to 35, inclusive, of the border wire, while throughout the structure the uppermost convolutions 43 of adjacent coil springs and the tops 44 of the pockets for said springs are preferably interconnected by hog rings 45. Likewise, at the margins of the structure the reinforcing strips 19 to 22, inclusive, are connected to the upper convolutions 43 of the underlying springs C and tops 44 of the pockets therefor adjacent the auxiliary wire 18 and portions 33 to 35, inclusive, of the border wire. Thus, an interconnected group of individually enclosed springs is provided between the upper and lower frames A and B, and since the individual springs are in pockets that are anchored as aforesaid, these springs are held partially compressed. This insures the proper depth of spring structure while at the same time permitting the individual springs to flex freely within the limits of the pockets.

Thus, from the foregoing, it will be apparent that the outer longitudinal edges 47, 48 and 49, respectively, of the strips 20 to 22, inclusive, provide straight edges for the upholstery material or other covering (not shown) for the spring structure. The strip 21 at the rear of the structure also insures a straight joint between the seat cushion and a seat back (not shown) and therefore will eliminate bowed or irregular edge formations and resulting holes heretofore present between such seat cushion and seat back. The strips also provide flexible couplings between the upper border wire 17 and auxiliary wire 18 and adjacent coil springs C and pockets 38 therefor. Consequently, the pockets 38 and springs C therein will be held in the proper upright position, and the reinforcing strips 19 to 22, inclusive, will be held flat on the upper border wire and auxiliary wire. Actually the reinforcing strips serve as flexible protectors for the portions of the border wire and auxiliary wire covered thereby and will automatically spring back and restore the parts to normal position after being subjected to loads. Moreover, such strips afford freedom of movement in a vertical direction of the coil springs C of the structure unhampered by diagonal braces or other impediments heretofore used in such structures. In this connection, the underlying coil springs C will serve as flexible backers and will

cooperate with said strips to accomplish the results desired.

In the present instance, the front side 23 of the border wire and the auxiliary wire 18 cooperate with each other to provide a proper sitting edge for the upholstery material or other covering (not shown) for the spring structure. Such edge projects forwardly and overhangs the front of the structure so as to obtain the desired width or sitting area at the top of the structure while maintaining the area of the structure below said edge at predetermined lower dimensions for proper placement upon a correspondingly small supporting portion of the vehicle.

Although I have shown and described a spring structure for vehicle seat cushions as one embodiment of my invention, it is to be understood that the inventive concept set forth may be incorporated in a cushion of any desired character regardless of whether it is to be used in a vehicle seat or in any other type of cushion where a spring structure is desired.

What I claim as my invention is:

1. A seat cushion spring structure having a group of interconnected upright coil springs, an upper border wire enclosure for said group, an auxiliary wire extending between and secured to opposite sides of the enclosure just in advance of the foremost springs of the group and disposed substantially parallel to the front part of the enclosure, said auxiliary wire having one or more forwardly projecting rearwardly opening U-shaped portions secured to the front part of the enclosure, the springs adjacent the sides and rear part of the enclosure being connected thereto, the springs adjacent the auxiliary wire being connected thereto, and means reinforcing the auxiliary wire and providing laterally outward beyond the same a seat for upholstery material of the seat cushion, comprising a substantially flat spring metal strip entirely above and overlying the auxiliary wire and coil springs adjacent thereto and covering substantially all of the connections aforesaid therebetween, said strip extending lengthwise of the auxiliary wire and overhanging and projecting laterally outward beyond the same, the outer longitudinal edge of said strip being substantially parallel to the front part of the enclosure, and means connecting the strip to the auxiliary wire and springs adjacent thereto whereby said strip also provides a flexible coupling therebetween.

2. A seat cushion spring structure having a group of interconnected upright coil springs, an upper border enclosure for said group, an auxiliary wire extending between and secured to opposite sides of the enclosure just in advance of the foremost springs of the group and disposed substantially parallel to the front part of the enclosure, said auxiliary wire having one or more forwardly projecting rearwardly opening U-shaped portions secured to the front part of the enclosure, the springs adjacent the sides and rear part of the enclosure being connected thereto, the springs adjacent the auxiliary wire being connected thereto, and means reinforcing the auxiliary wire and providing laterally outward beyond the same a seat for upholstery material of the seat cushion, comprising a substantially flat spring metal strip entirely above and overlying the auxiliary wire and coil springs adjacent thereto and covering substantially all of the connections aforesaid therebetween, said strip extending lengthwise of the auxiliary wire and overhanging and projecting laterally outward beyond the same to-

ward the front part of the enclosure, and means connecting the strip to the auxiliary wire and springs adjacent thereto whereby said strip also provides a flexible coupling therebetween.

3. A seat cushion spring structure having a group of interconnected upright coil springs, an upper border wire enclosure for said group, an auxiliary wire extending between and secured to opposite sides of the enclosure just in advance of the foremost springs of the group and disposed substantially parallel to the front part of the enclosure, said auxiliary wire having one or more forwardly projecting rearwardly opening U-shaped portions secured to the front part of the enclosure, the springs adjacent the sides and rear part of the enclosure being connected thereto, the springs adjacent the auxiliary wire being connected thereto, and means reinforcing the auxiliary wire and providing laterally outward beyond the same a seat for upholstery material of the seat cushion, comprising a substantially flat spring metal strip entirely above and overlying the auxiliary wire and coil springs adjacent thereto and covering substantially all of the connections aforesaid therebetween, said strip extending lengthwise of the auxiliary wire and overhanging and projecting laterally outward beyond the same, the outer longitudinal edge of said strip being substantially parallel to the front part of the enclosure, means connecting the strip to the auxiliary wire, and means connecting the

strip to the springs adjacent said auxiliary wire.

4. A seat cushion spring structure having a group of interconnected upright coil springs, an upper border enclosure for said group, an auxiliary wire extending between and secured to opposite sides of the enclosure just in advance of the foremost springs of the group and disposed substantially parallel to the front part of the enclosure, said auxiliary wire having one or more forwardly projecting rearwardly opening U-shaped portions secured to the front part of the enclosure, the springs adjacent the sides and rear part of the enclosure being connected thereto, the springs adjacent the auxiliary wire being connected thereto, and means reinforcing the auxiliary wire and providing laterally outward beyond the same a seat for upholstery material of the seat cushion, comprising a substantially flat spring metal strip entirely above and overlying the auxiliary wire and coil springs adjacent thereto and covering substantially all of the connections aforesaid therebetween, said strip extending lengthwise of the auxiliary wire and overhanging and projecting laterally outward beyond the same toward the front part of the enclosure, said strip being connected to the auxiliary wire and springs adjacent thereto whereby said strip also provides a flexible coupling therebetween.

ANTHONY PUDLO.