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R. E. McELROY

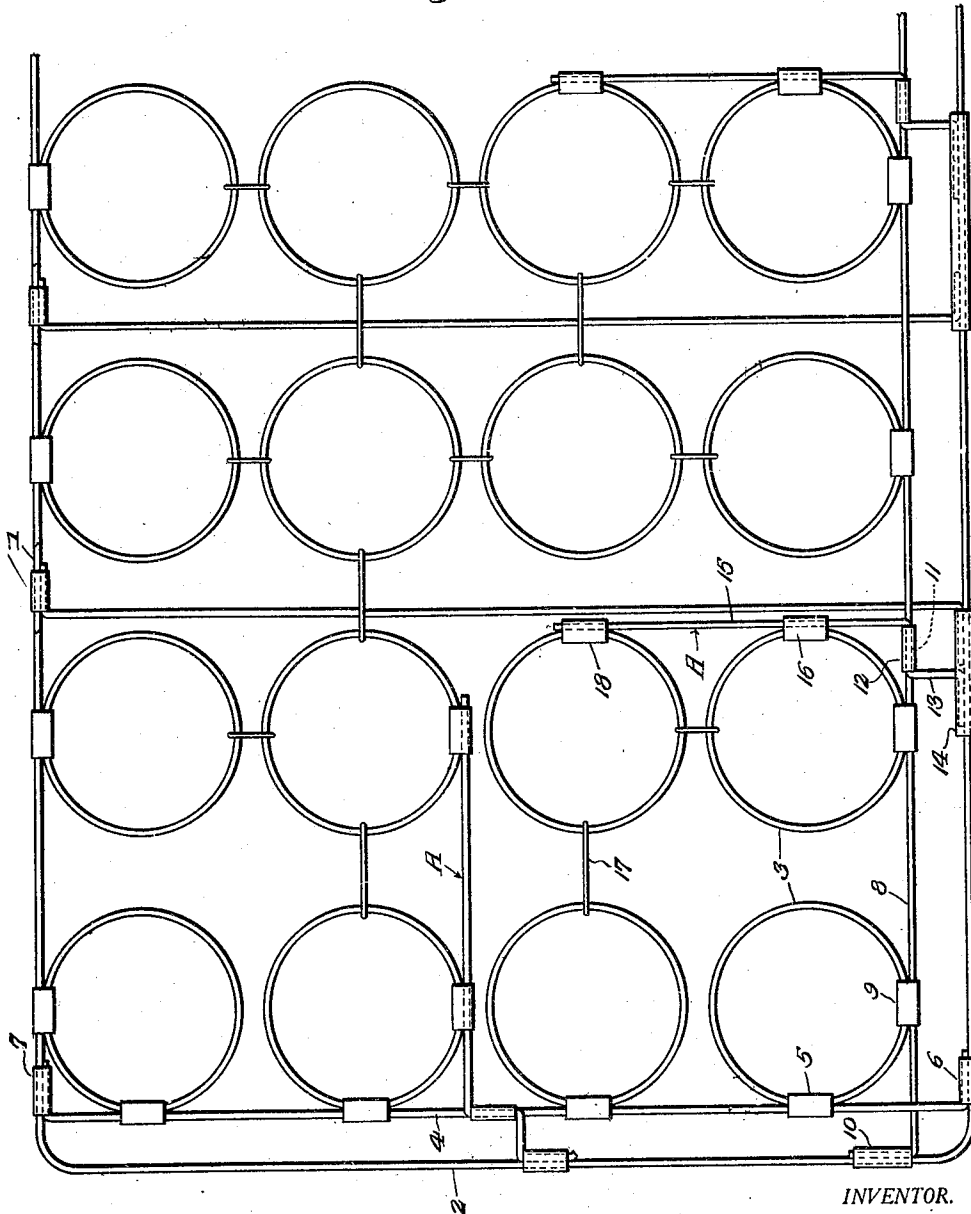
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CONNECTER ELEMENT FOR SPRING STRUCTURES

Filed March 6, 1928

2 Sheets-Sheet 1

Fig. 1.



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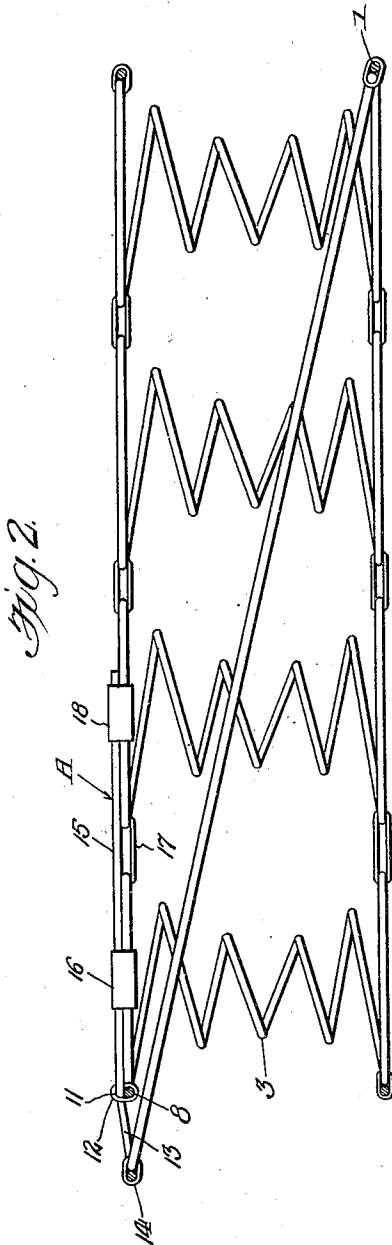
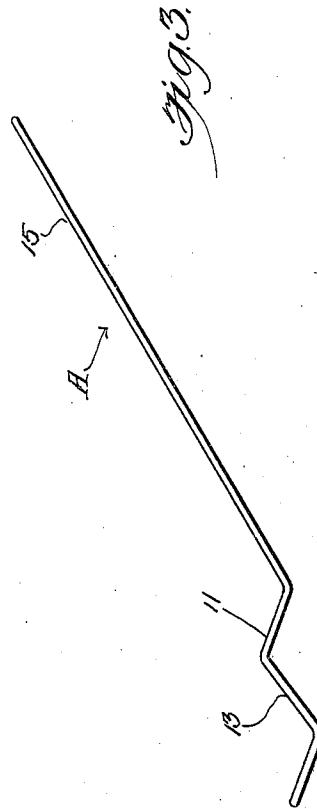
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UNITED STATES PATENT OFFICE

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CONNECTER ELEMENT FOR SPRING STRUCTURES

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This invention relates to a connector element for spring structures.

In the manufacture of spring structures for seats, especially those embodying overhanging extensions at the upper edges thereof, difficulties have been experienced in forming the parts constituting such extensions, and much loss of time frequently occurs in aligning the parts. Heretofore, the overhanging extensions in the matter of size and dimensions have required the making of the same under special specifications according to the special design of structure. Generally, the extensions have included the formation of loops in either the upper border wire or in the adjacent frame wire, and the bights of the loops have been clipped to the adjacent wire. The spring seat structures under different orders generally vary in size, and the distance between the border and frame wires varies with the result that the loops have had to be made of lengths depending upon different specifications and requiring the production of special looped wires for different orders. In addition to the necessity of forming these loops in either the border or a frame wire, requiring expense and time, there has been difficulty experienced in lining up the wires to be connected, and this has caused more loss of time. Sometimes the wires have become bent in the assembling process incident to efforts to properly line up the parts, all to the disadvantage and defect of the structure. This bending of the wires sometimes happens after assembly of the parts, incident to the weight of the occupant of the seat, and in instances there has been breakage of parts, in addition to the difficulty experienced by parts becoming bent out of shape at the time of assembly or thereafter. Moreover, by reason of special orders, various other parts have to be made to meet requirements.

It is, therefore, one object of the present invention to obviate the usual loop form of

connection between the overhanging extension and the structure, so as to reduce the cost of manufacture and eliminate the said difficulties attendant upon alignments, and to provide as a new article of manufacture, a connector element designed to make an effective connection between the overhanging extension and the structure, and in such a manner as to prevent tipping or twisting of the border springs adjacent the extension, the connector being of a character such as to be carried in stock in large quantities and readily applicable to various sized structures wherein varying distances exist between the extension and the structure proper.

Another object resides in the provision of a spring structure wherein there is an overhanging extension and in which there is provided a connecting device between the extensions and one or more body springs of the structure, so that as the springs are subjected to pressure incident to the weight of the rider such springs are maintained against twisting or undue tipping and the upper frame parts thereby protected against accidental bending or breakage or separation.

Another object is to provide a spring structure composed of parts which may be kept in large quantities and readily brought together into an organization to meet various requirements irrespective of size and dimensions.

With the above and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter described, illustrated in the accompanying drawings and set forth in the claims hereto appended, it being understood that various changes in the form, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Fig. 1 is a top plan view of the invention,

a portion of the top frame being broken away to show the base frame.

Fig. 2 is a transverse sectional view.

Fig. 3 is a detail perspective view of the connector element.

Referring more particularly to the accompanying drawings, the reference character 1 indicates a base frame of any suitable type and 2 indicates an ordinary upper border wire frame. The character 3 designates body springs of common type.

The upper border frame 2 is shown as extending beyond the front row of springs and at one side the border frame extends beyond the border springs at that side of the structure, it being understood that where the upper border frame extends beyond the opposite side of the structure it would be in like or similar manner to that shown on the one side in Fig. 1, each side, in other words, having a separate frame wire 4 inwardly spaced from the side of the upper border frame and secured by clips 5 to the side border springs and having its ends bent into parallelism with the front and back of the upper frame and secured thereto by clips 6 and 7 respectively.

A frame wire 8, spaced inwardly from the front of the upper frame and disposed vertically over the front of the base frame 1 substantially in horizontal alignment with the front of the upper frame 2, is secured by clips 9 to the front border springs and has its ends bent in parallelism with ends of the upper frame and secured thereto by clips 10, the wire 8 intersecting the wire 4 at the front corners of the structure, thereby to stiffen and brace the front corners.

When pressure is placed on the front or side overhanging portion of the upper frame, incident to the weight of the occupant, there is a tendency of the adjacent springs to tip and twist, and this tipping and twisting action on the springs tends to pull parts of the structure apart and sometimes the border frame becomes bent and does not return to a normal straight line position. These defects manifest themselves even where the frame wires and adjacent overhanging upper frame portion are connected together as by forming loops in one or the other of said frame parts and clipping the bights of the loops to adjacent frame parts. Therefore, I provide connecting elements A of peculiar shape and design which are connected at spaced points to the frame wires and the adjacent border frame parts, and to one or two of the body springs. For instance, each connector element A includes an intermediate or main portion 11 adapted to engage and extend parallel with the adjacent frame wire 4-8, and secured thereto by means of a suitable clip 12. One end of each main portion 11 of each connector element has an L-shaped or double armed part 13 extending forwardly there-

from and bridging the space between the frame wire and the overhanging front or overhanging side of the upper frame and secured to the overhanging part of the upper frame by means of a clip 14. A straight arm 15 extends inwardly between rows or springs from the opposite end of the main part of each connector element, and may be of a length to extend to the aligning spring behind the corresponding border spring 3, but in any event of a length to extend alongside the top coil of the adjacent body spring and secured thereto by means of a suitable clip 16. By virtue of the clips 12, 14 and 16 effecting a tight connection of the connector elements A with the structure elements specified, the overhanging portions of the structure are effectively supported and the body springs prevented from twisting or tipping forwardly or backwardly to an extent to cause undue bending of the upper border frame or from causing such twisting or tipping as to cause breakage of connecting links 17, clips or other parts. If the straight arm 15 of each connector be lengthened to extend from the border spring to the next aligning spring, as shown, and clipped thereto by means of a clip 18, the connection of the straight arms to two springs instead of one spring provides greater security against tipping or twisting of the springs and a consequent detrimental effect upon the structure.

The upper border frame, the frame wires and the connector elements A may be produced in various sizes in large quantities and carried in stock for assembly to meet different specifications for seats as to size or dimensions. These parts may be standardized the same as the body springs 3 and the clips and the links 17, as may also the base frame and the usual diagonal braces 19, if used, and which latter, if used, may be secured at their upper ends by the same clips 14 which secure the double armed outer parts 13 of the connector elements A to the upper frame. These braces may be kept in stock of various lengths to facilitate the present idea of mass production.

The present type of connector element A has a decided advantage in the production of cushion spring structures where an extension or overhang is required, and is simple, durable, and efficient in use, and readily and easily applied and obviates the time and expense heretofore involved in the formation of connecting loops as well as the difficulty heretofore experienced in aligning the looped parts with other parts of the structure.

What is claimed is:

1. The combination of a base frame, springs within the frame, an upper frame having a part overhanging the springs, a frame wire between the overhanging part of the upper frame and the adjacent border springs and connected to the latter, and a connector ele-

ment secured intermediate its ends to the frame wire adjacent one of the springs and having a double armed part secured to the overhanging part of the upper frame and also having an arm extending inwardly from the frame wire and secured to the top coil of the said adjacent body spring.

2. In a spring structure, the combination of a base frame, rows of springs within said frame, an upper frame, a frame wire adjacent the upper frame, the upper frame and the said frame wire being arranged outside of the border springs and a connector element secured to the upper frame and to said frame wire and having a portion extending inwardly between rows of springs and secured at spaced points to coils of two aligning springs of one row.

3. In a spring structure, the combination of a base frame, rows of springs within said frame, an upper frame, a frame wire cooperating with the upper frame to provide an overhanging extension at the top of the structure, and a connector element secured to the upper frame and to said frame wire and having a portion extending inwardly alongside the top coil of one of said springs and adjacent the inner end thereof secured to said coil.

4. As a new article of manufacture, a connector element for connecting spring structure parts together, consisting of an intermediate part, a double armed part projecting from one end of the intermediate part, and a relatively long straight arm projecting at substantially a right angle from the opposite end of said intermediate part.

5. In a spring structure, a base frame, springs within the base frame, an upper frame extending at the front and one side beyond the border springs, a frame wire connected to the front row of springs and to the sides of the upper frame and spaced from the front of the upper frame, a frame wire connected to the springs at one side of the structure and to the front and rear of the upper frame and spaced from the adjacent side of the upper frame and intersecting the first named frame wire at one corner of the structure to stiffen said corner, a connector element connecting the first mentioned frame wire with the front of the upper frame, and a connector element connecting the second mentioned frame wire and the side of the upper frame.

6. In a spring structure, a base frame, springs within the base frame, an upper frame extending at the front and one side beyond the border springs, a frame wire connected to the front row of springs and to the sides of the upper frame and spaced from the front of the upper frame, a frame wire connected to the springs at one side of the structure and to the front and rear of the upper frame and spaced from the adjacent side of the upper frame and intersecting the first named frame

wire at one corner of the structure to stiffen said corner, a connector element connecting the first mentioned frame wire with the front of the upper frame and having an inwardly extending portion secured to one of the springs, and a connector element connecting the second mentioned frame wire and the side of the upper frame and having a portion extending inwardly and connected to one of the springs of the structure.

In testimony whereof I have hereunto set my hand.

ROBERT E. McELROY.