Dec. 5, 1950 V. ASARO 2,532,875

SPRING STRUCTURE

Filed Nov. 12, 1946 2 Sheets-Sheet 1

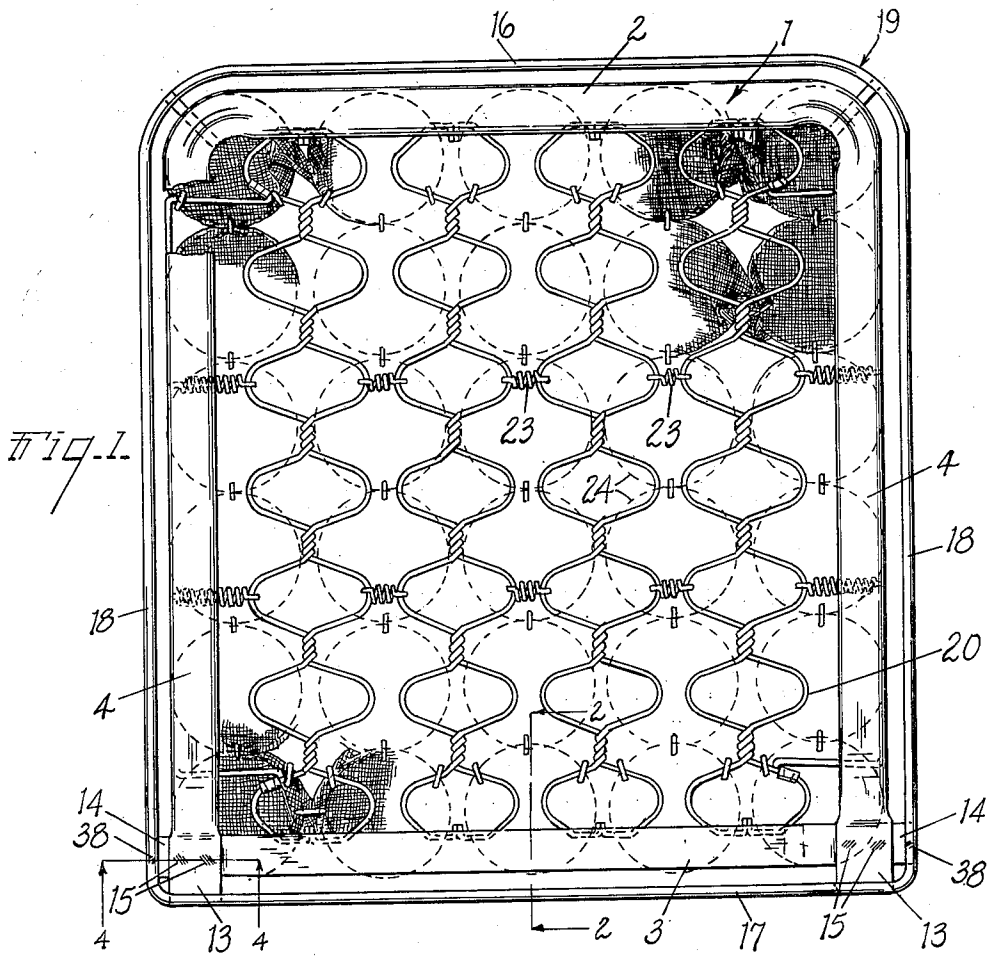


Fig. 1.

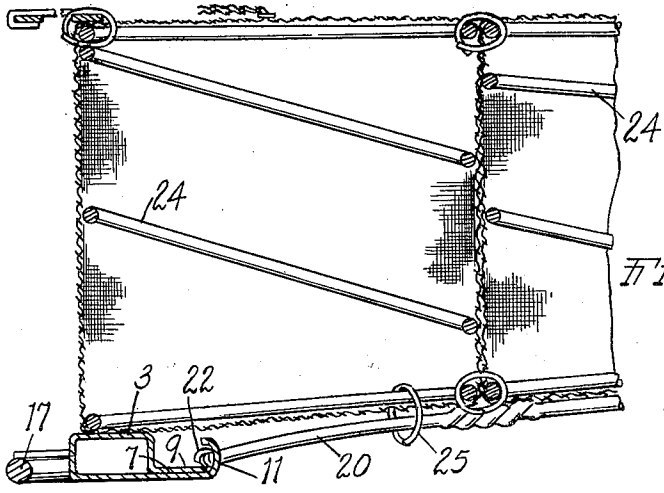


Fig. 2.

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SPRING STRUCTURE

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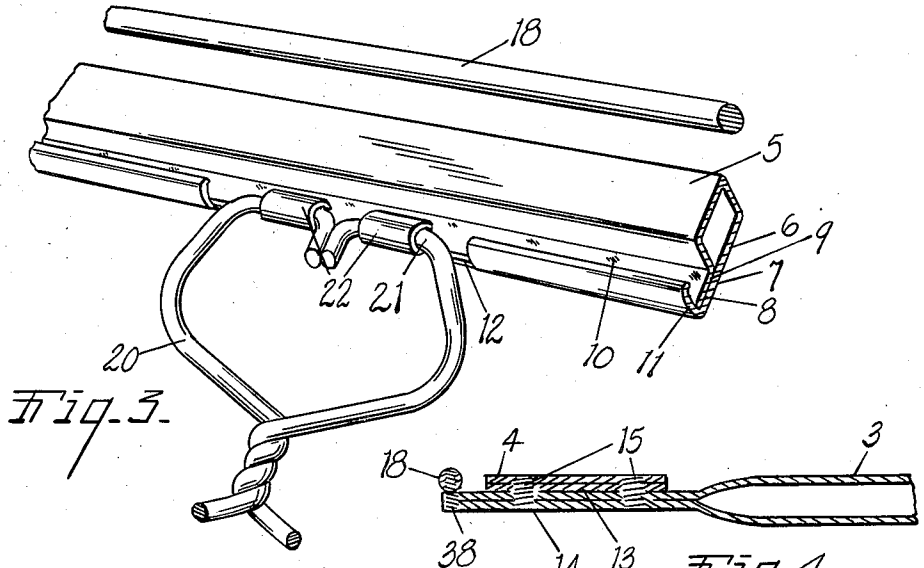


Fig. 3.

Fig. 4.

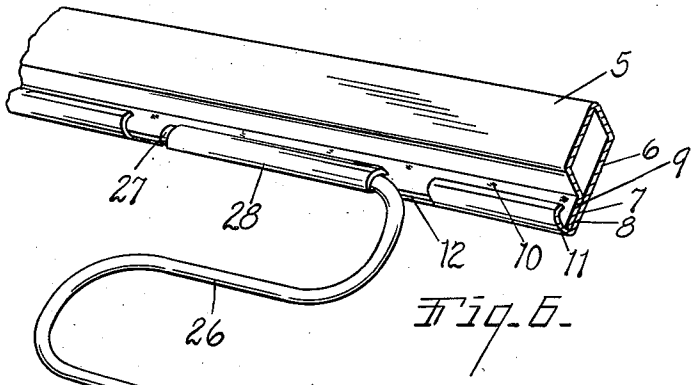


Fig. 6.

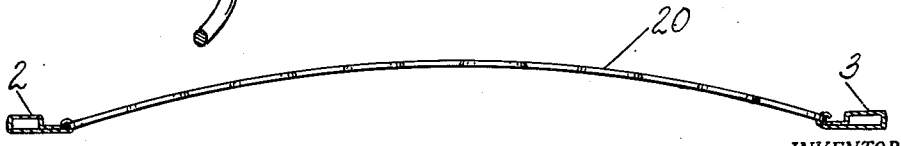


Fig. 5.

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Patented Dec. 5, 1950 2,532,875

UNITED STATES PATENT OFFICE

2,532,875

SPRING STRUCTURE

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Application November 12, 1946, Serial No. 709,253

10 Claims. (Cl. 155—179)

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This invention relates to improvements in spring structure.

The main objects of this invention are:

First, to provide a spring cushion structure of the type embodying springs of the bowed, zigzag type in which such springs are effectively supported and at the same time quickly and easily engaged with a supporting frame.

Second, to provide a base frame which is very rigid and at the same time may be formed of relatively light material and constitutes means for ready attachment of upholstery thereto notwithstanding that the base frame is formed of metal.

Further objects will appear from the detailed description to follow. The invention is defined and pointed out in the claims.

A structure embodying features of the invention in a practical form is illustrated in the accompanying drawing, in which:

Fig. 1 is a bottom view of a spring structure showing my invention, the upholstery being omitted.

Fig. 2 is an enlarged fragmentary view in section on line 2—2 on Fig. 1.

Fig. 3 is an enlarged fragmentary perspective view of the base frame showing the relation of one of the spring elements thereto.

Fig. 4 is an enlarged fragmentary view in section on a line corresponding to line 4—4 of Fig. 1, showing details of the base frame structure.

Fig. 5 is a fragmentary view of the base frame and a modified form of spring element.

Fig. 6 is an enlarged fragmentary view corresponding to that of Fig. 3 illustrating the spring element of Fig. 5.

The structure illustrated is especially designed for the support of bowed springs, generally classified or designated as zigzag springs. It is also desirable for use in supporting other types of springs.

The springs illustrated in Figs. 1, 2, and 3 are thus illustrated in the Stewart Patent No. 2,291,004, issued July 28, 1942.

In spring structures embodying springs of the zigzag type the base frame or frame on which the springs are mounted is subjected to heavy load stresses as the springs are supported from their ends. It is also highly important that the structure permit rapid and effective mounting of the springs.

In the accompanying drawing no consideration has been given to dimensions of the spring unit, but it will be understood that they are varied according to uses.

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In the embodiment illustrated the base frame 1 designated generally by the numeral 1 comprises front member 2, rear member 3, and end member 4. Where the spring structure is designed as a back spring, the members 2 and 3 would commonly be designated top and bottom members.

The front and end members in the embodiment illustrated are formed integrally. The base frame members are formed of sheet metal folded upon itself to provide a tubular body portion 5, the bottom 6 of which is extended to form the bottom ply 7, of a multi-ply flange 8, the top ply 9 of which being formed on the other edge of the sheet metal. These flange plies are fixedly secured together, desirably by spot welding as indicated at 10. The edge of the bottom ply is extended upwardly into a spring-attaching flange-like member 11 having longitudinally spaced slots 12 therein. Thus formed the flange member will be very rigid in proportion to the amount of material therein. The rear ends of the end members 4 are flattened at 13 while the ends of the rear member 3 are flattened at 14, these flattened ends being disposed in lapping relation and rigidly secured together as by spot welding at 15. The ends of these flattened portions 13 and 14 are extended beyond overlaps to constitute supports for the upholstery securing frame which is formed of wire and comprises front member 16, rear member 17, and end members 18, desirably formed integrally as is illustrated. The end members 18 of the frame are secured to the projecting ends 14 of the rear base frame member while the rear member 17 of the upholstery frame is secured to the rear ends of the side members of the base frame, desirably by welding as indicated at 38. Supporting brackets 19 formed of wire are secured to the base frame at its front corners, the front corners of the upholstery securing frame being secured to these supports preferably by welding, not illustrated. The upholstery, not illustrated, is secured to this upholstery attaching means by means of clips.

The spring units or elements 20 in the embodiment shown in Figs. 1, 2, and 3, are those shown in the Stewart patent referred to. These spring elements terminate at arms 21 which are disposed through the openings 12 in the flanges 11 and secured by clamping the arms with the portions 22 of the flanges. The springs are connected at intervals by the coiled tie members 23, and in the embodiment illustrated support a set of pocketed springs 24 which are anchored in place by means of clips 25.

The upholstery not illustrated is further supported by padding material on the spring unit 4, the skirt of the upholstery material being secured to the upholstery securing frame.

In the embodiment shown in Figs. 5 and 6, the bowed zigzag spring 26 is of the single strand type as distinguished from the double strand type of Figs. 1 to 3, and terminates in arms 27 which are secured by clamping portions 28 of the spring-securing frame thereon. With the parts thus arranged I secure a very rigid base frame structure and one to which both the springs and upholstery can be readily attached.

I have not attempted to illustrate or describe certain further modifications or embodiments of my invention, as it is believed that this disclosure will enable those skilled in the art to embody or adapt the invention 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 structure the combination of a base frame comprising front, rear, and end members formed of sheet metal folded upon itself to provide a tubular body portion, the edges of the sheet metal being extended in side by side overlapping relation and welded together to provide a double ply flange, the under ply being extended beyond the upper ply and terminating in an upwardly projecting spring attaching flange, the flanges of the front and rear members having longitudinally spaced slots therein, the front and end members being formed integrally, the rear ends of the end members and the ends of the rear member being flattened, superimposed and welded together with their ends projecting, a continuous upholstery attaching frame of wire comprising front, rear, and end members, embracing said base frame in outwardly spaced relation thereto with its end members welded to the projecting ends of the rear base member and its rear member welded to the projecting ends of the base frame end members, the base frame being provided with arms at its front corners to which the front corners of said upholstery frame are secured, and upwardly bowed zigzag spring elements having arms at their ends engaged with the spring attaching flanges of the front and rear members of said base frame through the said notches thereof, portions of said spring attaching flanges being clamped upon the arms of said spring elements.

2. In a spring structure the combination of a base frame comprising front, rear, and end members formed of sheet metal folded upon itself to provide a tubular body portion, the edges of the sheet metal being extended in side by side overlapping relation and welded together to provide a double ply flange, the under ply being extended beyond the upper ply and terminating in an upwardly projecting spring attaching flange, the flanges of the front and rear members having longitudinally spaced slots therein, the front and end members being formed integrally, the rear ends of the end members and the ends of the rear member being flattened, and superimposed and welded together, and upwardly bowed zigzag spring elements having arms at their ends engaged with the spring attaching flanges of the front and rear members of said base frame through the said notches thereof, portions of said spring attaching flanges being clamped upon the arms of said spring elements.

3. In a spring structure the combination of a base frame comprising front, rear, and end members formed of sheet metal folded upon itself to provide a tubular body portion, the edges of the sheet metal being extended in side by side overlapping relation and welded together to provide a double ply flange, the under ply being extended beyond the upper ply and terminating in an upwardly projecting spring attaching flange, the flanges of the front and rear members having longitudinally spaced slots therein, the front and end members being formed integrally, the rear ends of the end members and the ends of the rear member being flattened, and superimposed and welded together, and upwardly bowed spring elements having arms at their ends engaged with the spring attaching flanges of the front and rear members of said base frame.

4. In a spring structure the combination of a base frame comprising front, rear, and end members formed of sheet metal folded upon itself to provide a tubular body portion, the edges of the sheet metal being extended in side by side overlapping relation and welded together to provide a double ply flange, the under ply being extended beyond the upper ply and terminating in an upwardly projecting spring attaching flange, the flanges of the front and rear members having longitudinally spaced slots therein, the front and end members being formed integrally, the rear ends of the end members and the ends of the rear member being flattened and superimposed and welded together with their ends projecting, a continuous upholstery attaching frame of wire comprising front, rear, and end members, embracing said base frame in outwardly spaced relation thereto with its end members welded to the projecting ends of the rear base member and its rear member welded to the projecting ends of the base frame end members, the base frame being provided with arms at its front corners to which the front corners of said upholstery frame are secured.

5. In a spring structure, the combination of a base frame comprising front, rear, and end members formed of sheet metal folded upon itself to provide a tubular body portion, the edges of the sheet metal being extended in side by side overlapping relation and welded together to provide a double ply flange, the under ply of opposed frame members being extended beyond the upper ply and terminating in upwardly projecting spring attaching flanges, the rear ends of the end members and the ends of the rear member being flattened and superimposed and secured together with their ends projecting, a continuous upholstery attaching frame of wire comprising front, rear, and end members, embracing said base frame in outwardly spaced relation thereto with its end members secured to the projecting ends of the rear base member and its rear member welded to the projecting ends of the base frame end members, the base frame being provided with supports, at its front thereof to which the said upholstery frame is secured, and upwardly bowed spring elements engaged at their ends with the spring attaching flanges.

6. In a spring structure, the combination of a base frame comprising front, rear, and end members formed of sheet metal folded upon itself to provide a tubular body portion, the edges of the sheet metal being extended in side by side overlapping relation and welded together to provide a double ply flange, the under ply of opposed frame members being extended beyond the upper ply and terminating in upwardly projecting spring attaching flanges, the rear ends of the end mem-

bers and the ends of the rear member being flattened and super-imposed and secured together, and upwardly bowed spring elements engaged at their ends with the spring attaching flanges.

7. In a spring structure, the combination of a base frame comprising front, rear, and end members formed of sheet metal folded upon itself to provide a tubular body portion, the edges of the sheet metal being extended in side by side overlapping relation and welded together to provide a double ply flange provided with spring attaching means, the rear ends of the end members and the ends of the rear member being flattened and superimposed and secured together with their ends projecting, a continuous upholstery attaching frame of wire comprising front, rear, and end members, embracing said base frame in outwardly spaced relation thereto with its end members secured to the projecting ends of the rear base member and its rear member welded to the projecting ends of the base frame and members, the base frame being provided with supports at its front thereof, to which the said upholstery frame is secured.

8. In a spring structure the combination of a base frame comprising front, rear, and end members formed of sheet metal folded upon itself to provide a tubular body portion, the edges of the sheet metal being extended in side by side overlapping relation and welded together to provide a double ply flange provided with spring attaching means, the rear ends of the end members and the ends of the rear member being flattened and superimposed and secured together with their ends projecting.

9. In a spring structure the combination of a base frame comprising opposed members formed of sheet metal folded upon itself to provide a body portion, the edges of the sheet metal being extended in side by side overlapping relation and secured together to provide a double ply flange, the under plies being extended beyond the upper ply and terminating in upwardly projecting

spring attaching flanges having longitudinally spaced slots, and upwardly bowed zigzag spring elements having arms at their ends engaged with the spring attaching flanges of said opposed members of said base frame, through the said notches thereof, portions of said spring attaching flanges being clamped upon the arms of said spring elements, said edges and flanges being disposed upon the inner opposed sides of said opposed members to facilitate transmission of the compressive stresses upon said upwardly bowed spring elements directly to the inner opposed sides of said opposed members.

10. In a spring structure the combination of a base frame comprising opposed members formed of sheet metal folded upon itself to provide a body portion, the edges of the sheet metal being extended in side by side overlapping relation and secured together to provide a double ply flange, one of said plies being extended beyond the other ply and terminating in upwardly projecting spring attaching flanges, and upwardly bowed spring elements having arms at their ends engaged with the spring attaching flanges of said opposed members of said base frame, said edges and flanges being disposed upon the inner opposed sides of said opposed members to facilitate transmission of the compressive stresses upon said upwardly bowed spring elements directly to the inner opposed sides of said opposed members.

VITO ASARO.

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