April 23, 1935. J. A. KONKEL 1,998,898

SPRING STRUCTURE

Filed June 16, 1933

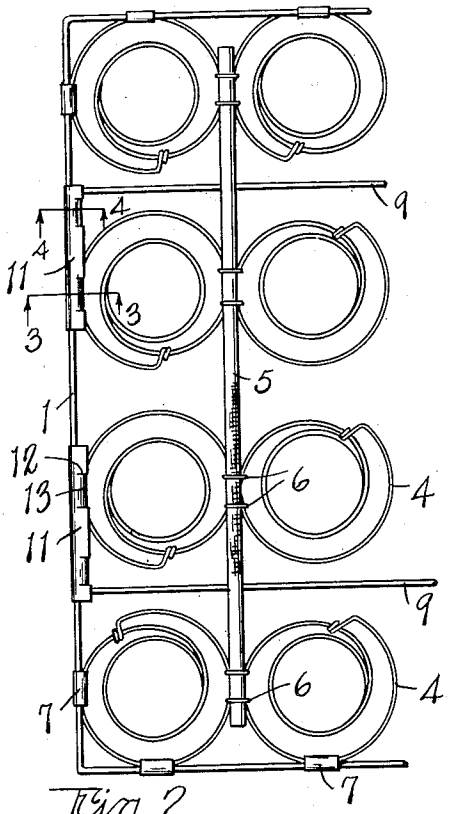


Fig. 2

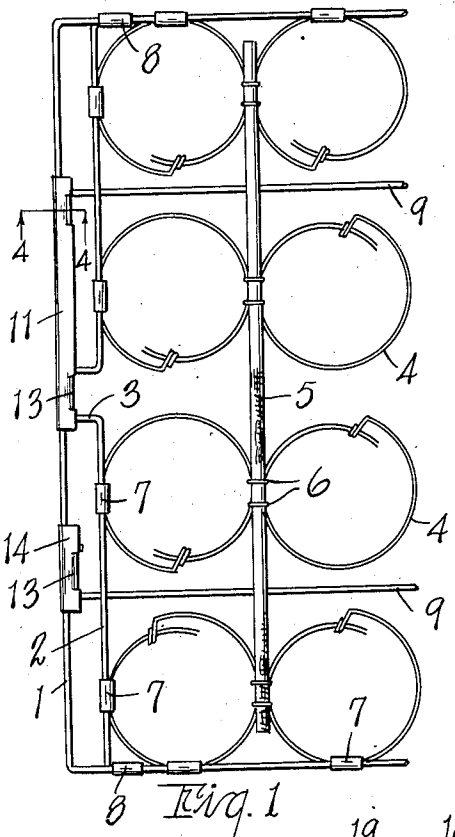


Fig. 1

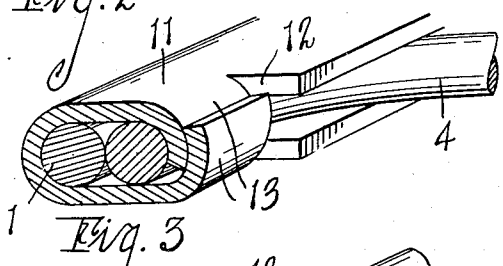


Fig. 3

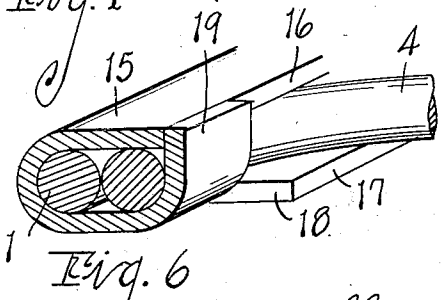


Fig. 6

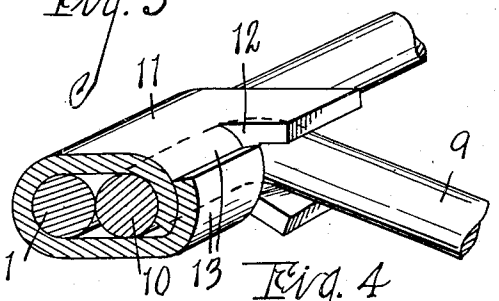


Fig. 4

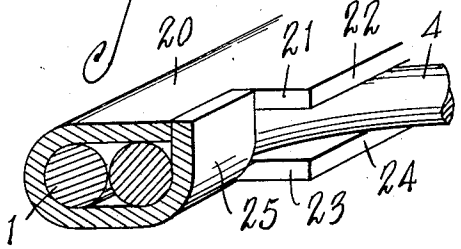


Fig. 7

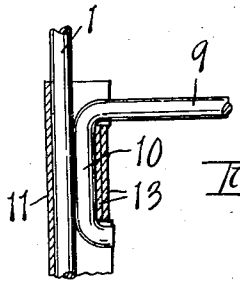


Fig. 5

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UNITED STATES PATENT OFFICE

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SPRING STRUCTURE

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Application June 16, 1933, Serial No. 676,060

4 Claims. (Cl. 155—179)

The main objects of this invention are:

First, to provide in a spring structure an improved means for securing braces and springs to frame parts which provides a very secure connection and one which constitutes a reinforcement for the frame.

Second, to provide in a spring cushion structure an improved clip for connecting braces and springs to frame parts which may be very easily applied, formed of comparatively light material, and at the same time very securely holds the parts in position.

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 a fragmentary plan view of a spring structure embodying the features of my invention.

Fig. 2 is a fragmentary inverted plan view of a modified form or embodiment of my invention and also of a structure showing an arrangement such as is present on the opposite side of the spring structure in certain embodiments having the features of Fig. 1.

Fig. 3 is an enlarged fragmentary perspective view on line 3—3 of Fig. 2.

Fig. 4 is an enlarged fragmentary perspective view on a line corresponding to line 4—4 of Figs. 1 and 2.

Fig. 5 is a fragmentary view showing further details of the parts illustrated in Fig. 4.

Fig. 6 is a fragmentary perspective view of a modified form or embodiment of my invention, the modification being in the clip.

Fig. 7 is a fragmentary perspective view of a still further modification of the clip.

Referring to the drawing, it is to be understood that my improvements are sometimes embodied in a structure having a so-called extension frame on both front and rear like the front extension shown in Fig. 1, or the rear portion of the frame and the bottom frame have parts arranged as shown in Fig. 2, and Fig. 2 would, in the ordinary commercial construction, be a correct inverted view of the rear portion of the structure, the front portion of which is shown in Fig. 1.

Referring to Fig. 1 of the drawing, 1 represents a border or outer frame member, 2 an inner frame member disposed parallel with the frame member 1 and having a loop-like offset 3 disposed adjacent the outer frame member 1.

The body springs 4 are of the helically coiled type shown more or less conventionally and arranged in rows. Tie members 5 are disposed between the rows and adjacent springs are secured thereto by clips 6. The front row of springs is secured to the inner frame member by means of clips 7. This front frame member is secured at its ends to the border frame by means of clips 8.

Braces 9 are provided having laterally turned arms 10 at their ends, these arms being preferably angled as shown in Fig. 5.

The loop 3 of the inner frame member and the end of one of the braces is secured to the outer frame member 1 by means of the U-shaped clips 11. This clip 11 is formed of sheet metal and has spaced slits 12 in its flanges providing opposed clamping tongues 13 which are folded in overlapping clamping relation upon the brace arm 10.

A second pair of tongues is folded upon the bight portion of the loop-like offset 3 of the inner frame member 2, so that the single clip 11 secures one of the braces and the inner frame member to the outer frame member. The clip 11 might be extended to take in the second brace, in the embodiment shown in Fig. 1, but I preferably employ an individual clip 14 having, however, the same arrangement of tongues as that described. Therefore, the clip 14 is not detailed.

In Fig. 2, the clips 11 are employed to secure the braces 9 and to secure adjacent springs 4 directly to the outer frame, the tongues 13 being folded into overlapping clamping engagement with a coil of the spring, as clearly shown in the enlarged view of Fig. 3.

In the embodiment of my invention shown in Fig. 6, the clip 15 is modified from that described in the other figures in that the flange 16 of the clip is shorter than the flange 17. The flange 17 has spaced slits 18 providing a clamping tongue 19 which is folded to closely embrace and clamp the spring into the channel of the clip. This structure results in a slight saving of material over that of the preferred embodiment.

In the embodiment shown in Fig. 7, the clip 20 is provided with a notch 21 in its flange 22 and with slits 23 in its flange 24 providing a tongue 25 which is folded into the notch or slot 21, as clearly shown in the drawing. The tongue is thus supported laterally, but slightly more material is required than in the embodiment shown in Fig. 6.

In all the embodiments, the parts are very firmly clamped and securely held and at the same

time the clips are very easily applied. There is a very secure clamping action and one which prevents relative movement of the clamped parts. Structures of this character such as automobile cushion springs are subjected to very severe usage and my improvements are particularly well adapted to hold the parts.

I am familiar with the structure of the Brandt Patent No. 1,497,888, dated June 17, 1924. My improvements, however, have substantial advantages structurally, from the assembling standpoint, over the structure there illustrated.

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

1. A spring structure comprising a frame member, a brace having a laterally turned angled arm disposed adjacent to said frame member, and a clip of U-cross section embracing said frame member and the end of said brace and having spaced slits in its flanges providing opposed clamping tongues, the tongues being folded into overlapping clamping relation within the angled arm of the brace and with their edges in engagement with the inner sides thereof to prevent lateral movement of the brace.

2. A spring structure comprising a frame member, a body spring disposed with a coil adjacent said frame member, and a clip of U-cross section embracing said frame member and having spaced slits in its flanges providing opposed clamping tongues, said clamping tongues being folded into overlapping relation with each other and in clamping engagement with the coil of the spring.

3. A spring structure including a coiled spring, and means for securing the spring to an element, said means comprising a clip of U-cross section having spaced slits in its flanges providing a pair of opposed clamping tongues bent into overlapping clamping relation with each other and with the coil of said spring.

4. A spring structure comprising a wire frame, a wire brace having a lateral arm in parallel contact with said frame and terminating in an inturned end substantially parallel with the brace, a channel member receiving said frame and arm in side-by-side relation with the frame in the bottom of the channel member, the flanges of said channel member having opposed slits providing opposed clamping tongues which are bent into overlapping clamping relation with each other and with said arm, the end of the outer tongue being received by the notch left by the inner tongue, and the opposite sides of the tongues engaging the inner sides of the brace and the inturned end of said arm to prevent lateral movement of the brace relative to the channel member.

JOHN A. KONKEL.