

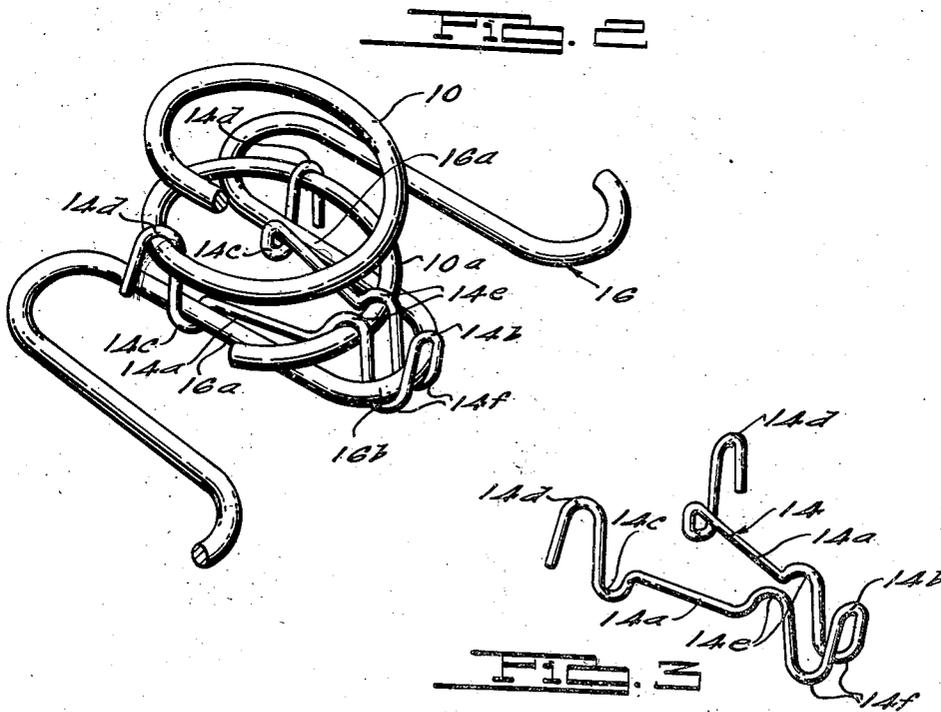
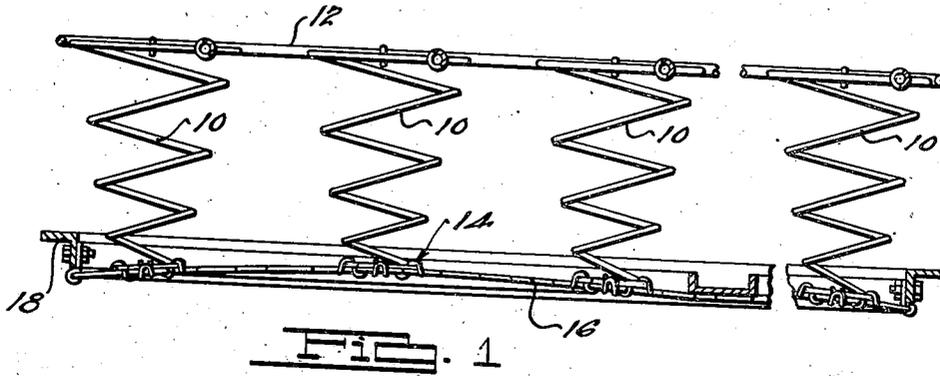
Dec. 19, 1939.

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2,183,843

CLIP

Filed Nov. 8, 1937



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## UNITED STATES PATENT OFFICE

2,183,843

CLIP

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Application November 8, 1937, Serial No. 173,343

2 Claims. (Cl. 155—179)

The present invention relates to cushion constructions, and in particular is directed to the combination of an improved method of and means for connecting together a spring element and a cooperating structural member.

Objects of the present invention are to provide an improved connecting element for forming a firm and effective but readily separable connection between two cooperating members; to provide such a connecting element which is particularly adapted to form a connection between one or more spring elements forming part of a cushion or like member; to provide such a connecting element which is of unitary, one-piece construction and which may be formed from a single length of spring wire or the like; to provide such a connecting element having one or more hook-like seats for cooperation with one of the structural members and a corresponding series of hook-like seats for cooperation with the other structural members; and to provide such a connecting element so formed that it may be secured upon one structural member and thereafter the other structural member may be freely turned into it so as to complete the connection.

With the above as well as other objects in view, which appear in the following description and in the appended claims, a preferred but illustrative embodiment of the invention is shown in the accompanying drawing, in which:

Figure 1 is a view in elevation of an illustrative cushioning structure embodying the invention;

Fig. 2 is a view in perspective of a connection embodying the invention, and

Fig. 3 is a view in perspective of the improved connecting element.

It will be appreciated from a complete understanding of the invention, that the improvements thereof may be embodied in connecting elements adapted to form a connection between widely differing cooperating members. In its preferred form, however, the invention is adapted to form a connection between the end of a spiral spring element and a spring of the sinuous longitudinally arched type, described and claimed in the Kaden Patent No. 2,002,399, granted May 21, 1935, under which the assignee of the present application is an exclusive licensee. By way of illustration and not of limitation, the following description is concerned specifically with the just mentioned preferred arrangement.

Referring to the drawing, and particularly Fig. 1, one form of cushioning structure to which the present invention may be applied, may comprise a plurality of groups of conventional coil springs

10, the upper ends of which are secured to and confined within an upper frame 12, and the lower ends of which are connected by means of the hereinafter described connecting elements 14, to corresponding ones of a series of laterally spaced transverse spring elements 16. The opposite ends of the spring elements 16 are secured to the lower frame structure 18.

Referring particularly to Figs. 2 and 3, it will be noted that the extreme end portion 10a of each coil spring 10 spans and rests upon adjacent laterally turned portions 16a of the associated supporting spring 16. As is described in more detail in the above identified Kaden patent, each complete supporting spring 16 is made up of a series of similar laterally turned portions and the spring as a whole is longitudinally arched, as shown in Fig. 1, so as to form in itself a resilient supporting body.

Each connecting element 14 may be formed of a single length of spring wire or equivalent resilient material bent into generally U shape, so as to define leg sections 14a and a bight 14b. The end portions of the legs 14a are offset into generally S shape so as to define upwardly presenting seats 14c and downwardly presenting seats 14d. The legs 14a are similarly offset adjacent the bight portion so as to define downwardly presenting seats 14e and upwardly presenting seats 14f. It will be understood that the terms "upwardly presenting" and "downwardly presenting" are used in a relative sense herein, for convenience of description.

Referring again to Fig. 2, it will be noted that each connecting element 14 is positioned beneath the associated supporting spring 16, with one lateral turn 16a of the latter received in one of the seats 14c, with an adjacent lateral turn 16a received in the other seat 14c, and with the bight 16b received in the pair of seats 14f. With the parts thus positioned, a firm and effective three-point connection is afforded between the supporting spring 16 and the connecting element 14, and the seats 14d and 14e of the latter project above the general plane of the supporting spring 16 for cooperation with the coil spring 10. The seats 14e are positioned far enough above the level of the turn 16a so that the extreme end portion 10a of the coil spring 10 may be received and yieldingly wedged between these seats and spring 16. Similarly, the seats 14d are positioned at an appropriate elevation above turns 16a so as to receive corresponding portions of the end 10a. A firm and effective three-point connection is thus afforded between the connecting

element 14 and the coil spring 10, which connection causes the end of the coil spring 10 to positively bear upon supporting spring 16.

5 In use, it may be expected that a compression of each coil spring 10 will cause the parts thereof which cooperate with the seats 14d to move downwardly somewhat with respect to the supporting spring 16. To accommodate such movement, the seats 14d are made sufficiently deep  
10 so as to insure that the spring 10 will be retained therewithin.

In assembling the connection, each connecting element 14 may be positioned adjacent the associated supporting spring 16 in the manner previously described, and thereafter, the spiral spring  
15 10 may be turned in a clockwise direction as viewed in Fig. 2 from a position in which the extreme end thereof is positioned adjacent one of the seats 14c to the position shown in Fig. 2.  
20 During the course of this clockwise movement, such extreme end portion of the coil spring 10 successively enters and passes through the seats 14d and thereafter enters the seats 14f and wedges between these seats and the adjacent sides of the lateral turns 16a, thus completing the connection. A reverse turning readily releases the  
25 connection.

It will be noted that by spreading or restricting the spacing between the legs of each connecting element 14, it may be accommodated to  
30 coil and supporting springs of larger or smaller size. It will further be noticed that the connection affords a simple adjustment of the effective length of each coil spring 10, since by con-

tinuing the just described clockwise motion of the coil spring 10, the latter may be threaded through the supporting spring 16 and the connecting element 14 so as to position a substantial part thereof beneath the supporting spring 16.  
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Although only a single specific embodiment of the invention has been described, it will be appreciated that various modifications in the form and arrangement thereof may be made within the spirit and scope of the invention.  
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What is claimed is:

1. A clip construction for clamping wire spring elements together comprising a wire element bent upon itself intermediate its ends, said element being formed to provide a first hook seat presenting in one direction adjacent said bend,  
15 hook seats presenting in a direction opposite to that of said first hook seat located adjacent said first hook seat, the legs of said element having straight portions diverging with the ends of said legs each terminating in a pair of oppositely  
20 disposed, adjacent hook seats with the end seats facing in the opposite direction to that of said first hook seat, said hook seats lying in planes normal to the plane of said straight portions.  
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2. A clip for maintaining a pair of spaced elements in clamped relation comprising, a wire bent upon itself with the fold deflected out of its plane into S-formation, the ends of the wire being spaced apart and also deflected into S-formation, said S-formations providing pairs of oppositely presenting adjacent hooks with the end hooks disposed in opposite directions.  
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