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SPIRAL BED SPRING AND SIMILAR STRUCTURE.

APPLICATION FILED MAY 8, 1916.

1,245,210. Patented Nov. 6, 1917.

Fig. 1.

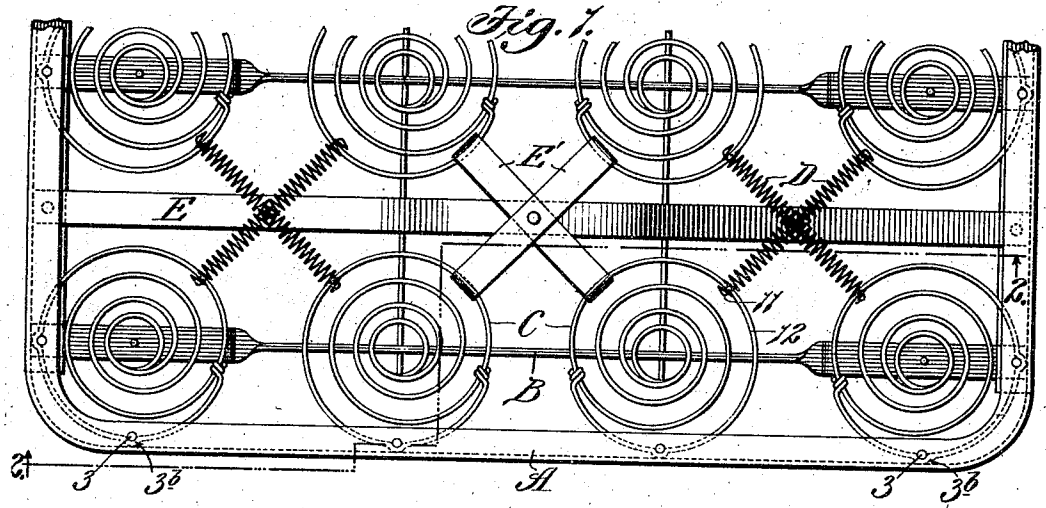


Fig. 2.

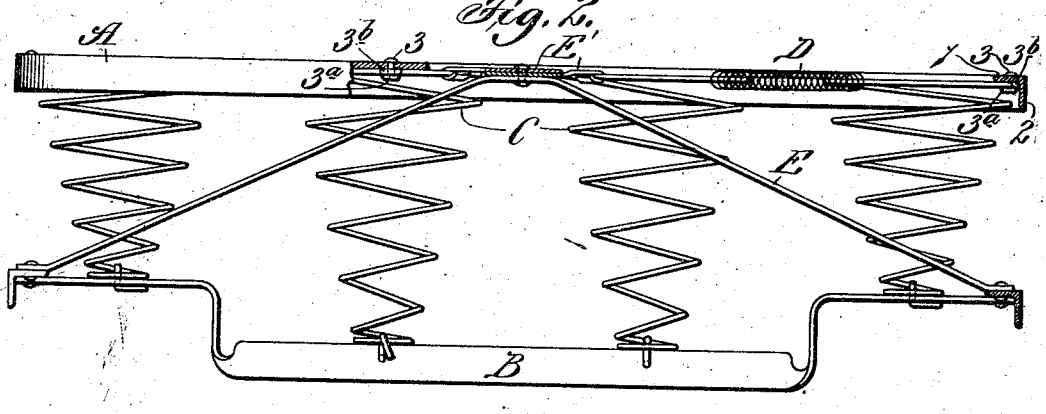


Fig. 3.

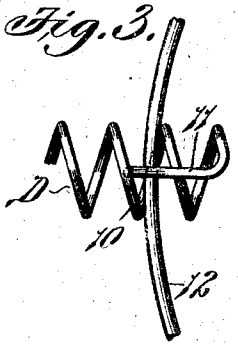


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SPIRAL BED-SPRING AND SIMILAR STRUCTURE.

1,245,210. Specification of Letters Patent. Patented Nov. 6, 1917.

Application filed May 8, 1916. Serial No. 96,056.

To all whom it may concern:

Be it known that I, WILLIAM E. FRANK, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Spiral Bed-Springs and Similar Structures, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to bed springs, spring seats and similar structures that are provided with vertically-disposed, spiral springs which form a resilient supporting structure.

The main object of my invention is to provide a structure of the character referred to in which the spiral springs are tied to each other in a novel manner.

And another object is to provide a connecting device adapted to be used for tying spiral springs together, and also for other purposes, which is so constructed that it can be securely locked with the member with which it coöperates by simply snapping said device into engagement with said member.

Figure 1 of the drawings is a top plan view of a portion of a spiral bed spring, spring seat or similar structure constructed in accordance with my invention.

Fig. 2 is a vertical cross-sectional view of same, taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged top plan view of a portion of my improved connecting device arranged in engagement with a spiral spring; and

Fig. 4 is a side elevational view of said device.

Referring to the drawings, which illustrate the preferred form of my invention, A and B designate the top and bottom frames, respectively, of a bed spring or similar structure, and C designates vertically-disposed, spiral springs that are arranged between said frames and which are combined with same in such a manner that they coöperate with the top frame A to form a resilient supporting structure. The springs C herein shown are single cone spiral springs, but it is immaterial, so far as my broad idea is concerned, whether the spiral springs of the structure are single cone springs or double cone springs. The springs C that are arranged adjacent the outer edge of the structure have their top coils connected to the frame A and the intermediate springs have their top coils tied to each other and also to the top coils of the outer springs, preferably by means of connecting devices of novel construction that will be hereinafter described. The top frame A is angle-shaped in cross section and is preferably formed from commercially rolled angle iron, the top flange 1 of said frame projecting inwardly over the top coils of the springs C at the outer edge of the structure, and the vertical flange of said frame projecting downwardly over said top coils, as shown in Fig. 2. The top coils of the springs at the outer edge of the structure are connected to the frame A by rivets or other suitable fastening devices 3 that pass through the top flange 1 of the frame A in such a manner that the top coils of the springs will be arranged between the vertical flange 2 of the frame A and the shanks of the rivets 3, said rivets being provided with heads 3^a that lap over the undersides of the top coils of the outer springs, and thus securely clamp same to the underside of the horizontal flange 1 of the top frame A. If desired, the top coils of the outer springs may be provided with notches or recesses 3^b, as shown in broken lines in Fig. 1, that receive the shanks of the rivets 3, and thus prevent the springs C at the outer edge of the structure from turning or from moving longitudinally of the members of the top frame A to which the top coils of said springs are connected. By providing the top frame A of the structure with two angularly-disposed flanges it is possible to securely connect the top coils of the outer springs to said frame by means of rivets or other suitable headed fastening devices, a single rivet being ample for each spring on account of the fact that the notch or recess 3^b in the spring that receives the shank of the rivet prevents the spring from turning or from moving longitudinally of the portion of the frame to which it is connected, If desired, each of the four springs at the corners of the frame A can be connected to said frame by means of two rivets, as shown in Fig. 1.

The intermediate springs of the structure are tied together and also tied to the springs at the outer edge of the structure by connecting devices which are fastened to the top coils of said springs. Any suitable

type of connecting device may be used for this purpose, but I prefer to tie most of the springs together by means of connecting devices D which are so constructed that they can be securely locked to the springs C by simply snapping said devices D into engagement with the top coils of said springs. If the structure is provided with one or more trusses E, as herein shown, each truss will have its upper portion connected to four of the intermediate springs by two crossed clips E' riveted or connected in any other suitable manner to the truss and having their end portions bent over or wrapped around the coils of the springs C with which they coöperate, as shown in Figs. 1 and 2. Each of the connecting devices D previously referred to is provided at each end with a coil 10 and with a tongue 11 arranged at an angle to its coöperating coil 10 and having its terminal bent downwardly toward the center of the coil so as to form a closure for the open side of the coil, as shown in Figs. 3 and 4. The coil 10 and tongue 11 are more or less resilient, and said tongue is preferably so proportioned that the bent terminal of same either projects under one portion of the coil 10, or lies in close proximity thereto. In connecting the device D to the top coil of the spiral spring C with which it coöperates, it is only necessary to snap the top coil of the spring C into the coil 10 of the device D by pressing said top coil downwardly between the bent terminal of the tongue 11 and the portion of the coil 10 of the device that lies adjacent the bent terminal of said tongue, the top coil of the spring C being designated by the reference character 12 in Figs. 3 and 4. After said top coil 12 has been arranged in engagement with the device D in the manner above described and as illustrated in Figs. 3 and 4, it will be impossible for said top coil to move accidentally out of engagement with the device D, on account of the fact that the coil 12 of the spring C is securely locked in the coil 10 of the device D by the tongue 11 that forms a closure for the open side of the coil 10. I prefer to form the device D from a short coiled spring, but it is immaterial, so far as my broad idea is concerned, how the intermediate portion of the device D is formed, so long as said device is provided at one end with a coil 10 for receiving the member to which the device is connected and with a tongue 11 that laps over one side of said coil and projects inwardly toward the center of same, so as to prevent said member from moving out of the coil 10.

I am aware of the fact that it is old to tie the spiral springs of structures of the character herein referred to together by means of short coiled springs provided at their ends with hooks that receive the top coils of the spiral springs, but one objection to tying devices of the character referred to is that the hooks of same have to be closed or bent downwardly after they have been arranged in engagement with the spiral springs. Another objectionable feature of tying devices of the character just mentioned is that the hooks at the ends of same sometimes pull open sufficiently to permit the spiral springs to jump out of same when the structure is subjected to a heavy load or sudden shock.

My improved connecting device D is so constructed that it can be arranged in engagement with a spiral spring and securely locked to same by one operation. Furthermore, said device is so constructed that it cannot become accidentally detached from the spiral spring to which it is connected. While my improved connecting device D is particularly adapted for use in spiral bed springs or similar structures for tying the coils of spiral springs together, I wish it to be understood that said connecting device may be used for various other purposes without departing from the spirit of my invention.

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

1. In a spiral bed spring, spring seat or similar structure, the combination of a spiral spring, and a tying device provided with a coil for receiving one coil of said spiral spring, said tying device being equipped with a tongue that is arranged at an angle to the coil of same so that it will lap over the coil of the spiral spring and thus prevent it from becoming detached when said spring is snapped into engagement with the coil of said tying device.

2. In a bed spring, spring seat or similar structure, the combination of a spiral spring, a tying device provided with a coil for receiving one coil of said spiral spring, and a tongue on said tying device that projects inwardly toward the center of the coil of the tying device, thereby enabling the spiral spring to be connected to said device by snapping one coil of the spring under the tongue on said device.

3. In a bed spring, spring seat or similar structure, the combination of spiral springs and short coiled springs that tie said spiral springs together, each of said short coiled springs being provided at its ends with integral tongues that extend approximately lengthwise of the spring so as to form closures for the coils of same in which the coils of the coöperating spiral springs are arranged by snapping said spiral springs under said tongues.

4. A connecting device provided at one end with a coil, and a tongue that laps over one side of the coil of same and projects in-

wardly toward the center of same, said device being adapted to be connected to a member by snapping said member under said tongue into said coil.

5. A connecting device provided at one end with a coil that is adapted to receive the member with which the device coöperates, and a resilient tongue on said device which forms a closure for the open side of said coil and under which said member can be snapped during the operation of connecting it to said device.

WILLIAM E. FRANK.