

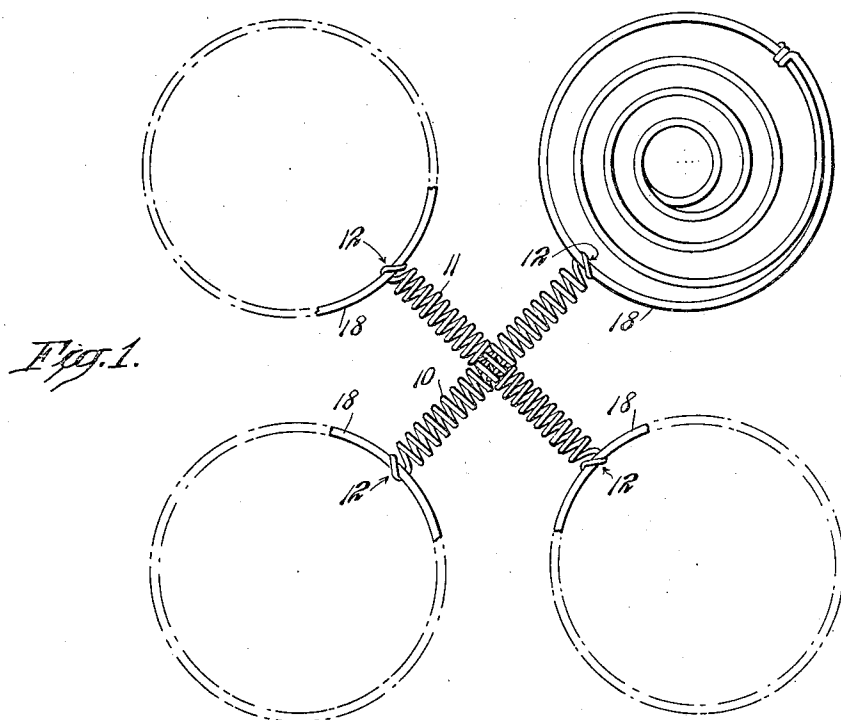
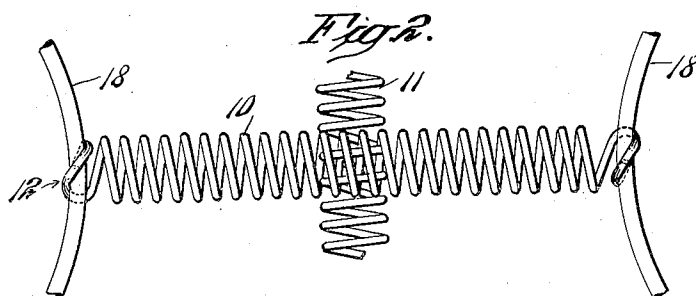
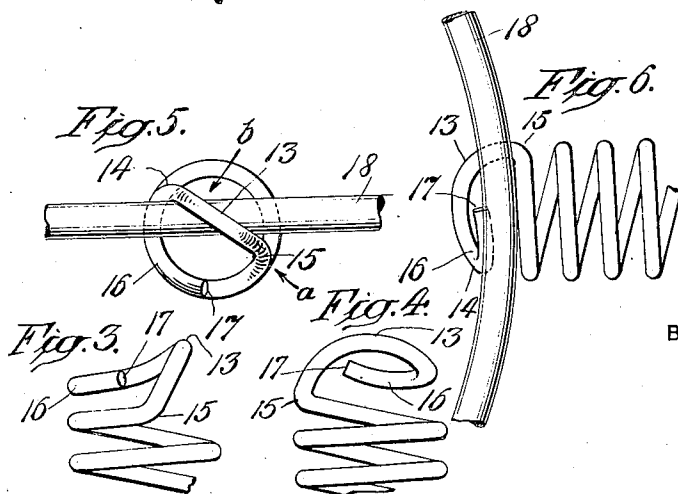
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WIRE SPRING FABRIC

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WIRE SPRING FABRIC

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6 Claims. (Cl. 5-269)

The present invention has relation to wire spring fabrics preferably of the type including upstanding spring coils spirally formed to provide the cushioning springs of a bed bottom or the like, such as upholstered seats, and wherein the uppermost coils are connected together by helical springs which are preferably arranged in pairs, the helical of each pair crossing the other helical, all in well known manner. Difficulty is frequently encountered in properly assembling such helicals with the cushioning coil springs for connecting the coil springs together resiliently.

An object of the present invention is to provide a helical spring for use in such bed bottom structures or the like, which helical spring is preferably and usually under this invention provided at each end with means for conveniently engaging them over the top coils of the spring cushioning coils, and for frictionally locking them on such top coils without the necessity of using pliers for bending or clinching the ends of the helicals and without using separate ties.

Another object of the present invention is to provide a helical spring which is practical and at the same time simple, and which can be economically manufactured.

These being among the objects of the present invention, the same consists of certain features of construction and combinations of parts to be hereinafter described in detail and then pointed out in the claims, reference being had to the accompanying drawing illustrating a preferred form of the invention and wherein

Fig. 1 is a plan which shows a number of spiral spring cushioning coils connected together by the improved helicals;

Fig. 2 shows enlarged the details of Fig. 1;

Figs. 3 and 4 are elevations of the terminal portion of the helical respectively in the direction of the arrow *a* and arrow *b*, Fig. 5;

Fig. 5 is an elevation showing a portion of a spring cushioning coil engaged in locking position by the improved helical spring which is shown in end elevation;

Fig. 6 is a detail view showing the improved helical in position for snapping the end thereof upon a spring cushioning coil; and

Fig. 7 is a view showing the parts about to be united, as shown in Fig. 6, the view being taken from the left of Fig. 6, and the top coil of the spiral spring being therefore shown in normal horizontal position.

In Figs. 1 and 2 two crossed helical springs 10, 11 are shown, the terminal portion 12 of each end of the body of each helical being engaged in

locking position with the top coils of the cushioning spirally coiled springs. As will appear herefrom the terminal portion 12 of each helical 10, 11 is specially formed so as to facilitate its engagement with a coil of the cushioning spring.

Referring now to Figs. 3 to 7 inclusive, the terminal portion 12 of the helical extends away from the end convolution thereof, and is curved out and extends for a portion of its length substantially diametrically across such end convolution as viewed axially of the end of the helical to form a curved part 13 which spans substantially such end convolution and lies in a plane substantially inclined to the longitudinal axis of the helical as is clear from Fig. 3. The terminal portion 12 is bent back on itself at 14, at the outer end of the outwardly curved part 13, the bend 14 being preferably located at a considerable distance from the adjacent end convolution of the helical. The point of mergence of the curved part 13 with the adjacent end convolution of the helical is in the form of a curved elbow 15.

Beyond the bend at 14 the terminal portion 12 is formed with a long hook-shaped part 16, which, with the bend at 14, lies in a plane which is relatively inclined to the longitudinal axis of the helical. The bend at 14 and the hook-shaped part 16 are formed so as not to project away from the substantially cylindrical outer surface of the helical; that is to say when the helical is viewed towards one end thereof the hook-shaped part appears to and does lie substantially concentric with the convolutions of the helical, the hook-shaped part curving so for a distance approximating one-third of the circumference of the helical.

The elements 13 and 16 of the terminal portion of the helical are curved and are joined by curves and not by abrupt angles. The tip 17 of the terminal portion 12 is slightly deflected directly away from the adjacent end convolution of the helical, as more clearly shown in Fig. 4. Of course the helical is formed of spring metal such as steel wire, for example, and as the least space between the hook-shaped part 16 and the adjacent end convolution of the helical is preferably slightly less than the diameter of the coil 18 of the spring coil to which the helical is adapted to be secured, the initial step in applying the helical to such coil 18 is to snap the end portion of the helical onto the coil or wire 18.

In Figs. 6 and 7 the improved helical is shown as being applied to the wire 18 of the spring coil, from which it will be seen that the tip 17 is presented towards the wire 18 of the spring coil,

with the transverse gap between the tip 17 and the end convolution of the helical in registration with wire 18. When such registration has been obtained, the operator or manipulator presses the end coils of the helical and the terminal portion 12 with sufficient force towards the wire 18 as to cause the adjacent end convolution of the helical and the hook-shaped part 16 to be snapped over the wire 18, thereby positioning the terminal 10 17 to the opposite side of the wire 18. By a manipulatory slight twist of the terminal portion 12, the parts thereof are brought into the position shown in Fig. 5. From Fig. 5 and also Figs. 1 and 2 it will be seen that the out-curved part 13 extends diagonally its full length across wire 18, with the bend 14 resting against the wire 18 and with the hook-shaped part curving towards the observer from a point back of the wire 18, and with the terminal 17 located at the lower 20 part of the assembly. An inspection of Figs. 1, 2 and 5 clearly discloses that the terminal portion 12 of the helical therefore hugs the wire 18 and bears frictionally along it, and around it for a distance approximating considerably more than 25 one-half of the circumference of the wire 18, the out-curved part 13 extending at a considerable inclination from the bend 15 to the bend 14.

It will be obvious to those skilled in the art that various advantages are achieved by the described and illustrated improvements, and particularly it will be obvious that without the use of pliers or tools a workman may readily properly engage the improved helical with the spring coils of a bed bottom, for example, and that without the use of separate ties and tools a firm anchorage of the end of the helical to a spring coil is obtained, as the parts are locked together against accidental shifting of the helical with respect to the length of the coil to which it is 40 attached, and that noise and squeakiness of the parts is eliminated.

What I claim as new and of my invention is:

1. A spring helical connecting member having a terminal portion outwardly from the adjacent 45 end convolution of the helical and curved out for a part of its length away from such end convolution of the helical so as to extend substantially diametrically across such end convolution, the terminal portion also including a hook-shaped 50 part curved in a plane inclined across the longitudinal axis of the helical, and the curve thereof extending in such plane substantially concentric with such end convolution for a substantial distance.

2. A spring helical connecting member having a terminal portion outwardly from the adjacent 55 end convolution of the helical and curved out for a part of its length away from such end convolution of the helical so as to extend substantially diametrically across such end convolution, 60 the curved out portion being inclined relatively to the axis of the helical, and the terminal portion also including a hook-shaped part curved substantially concentrically with such end convolution for a substantial distance.

3. The combination with the spiral cushioning coils of a structure, such as a bed bottom,

of a spring helical connecting member having at an end thereof a terminal portion outwardly from the adjacent end convolution of the helical and curved out for a part of its length away from such end convolution sufficiently to substantially span it and to extend in a plane substantially diametrically across such convolution, such curved out part bearing snugly upon one side of the wire of a spiral cushioning coil in a direction inclined to the length of the wire and the terminal portion also including a curved hook-shaped part bearing upon the opposite side of the wire also at an inclination, whereby the terminal portion is anchored to the wire to secure the terminal portion against movement along 90 the wire.

4. The combination with the spiral cushioning coils of a structure, such as a bed bottom, of a spring helical connecting member having at each end thereof a terminal portion outwardly from the adjacent end convolutions of the helical and curved out for a part of its length away from the adjoining end convolution so as to extend substantially diametrically across such convolution, each such curved out part bearing snugly upon one side of the wire of a spiral cushioning coil in a direction inclined to the length of the wire and each terminal portion also including a curved hook-shaped part bearing upon the opposite side of the wire, also at an inclination, the hooked shaped parts being oppositely disposed whereby the terminal portions are anchored to the wire to secure the terminal portions against movement along the wire, each hook-shaped part being curved for that purpose substantially concentrically with such end convolution of the helical.

5. A spring helical connecting member having a terminal portion outwardly from the adjacent end convolution of the helical and curved out 115 for a part of its length away from such end convolution of the helical so as to extend across such end convolution, the curved out portion being inclined relatively to the axis of the helical, and the terminal portion also including a hook-shaped part curved substantially concentrically with such end convolution for a substantial distance.

6. The combination with the spiral cushioning coils of a structure, such as a bed bottom, of a spring helical connecting member having at each end thereof a terminal portion outwardly from the adjacent end convolutions of the helical and curved out for a part of its length away from the adjoining end convolution so as to extend substantially diametrically across such convolution, each such curved out part bearing snugly upon one side of the wire of a spiral cushioning coil in a direction inclined to the length of the wire and each terminal portion also including a curved hook-shaped part bearing upon the opposite side of the wire, also at an inclination, the hooked shaped parts being oppositely disposed, whereby the terminal portions are anchored to the wire to secure the terminal portions against movement along the wire.

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