Dec. 13, 1932. W. LEWIS 1,890,738

METHOD OF INTERLOCKING COILED SPRINGS

Filed July 15, 1929

Fig-1.

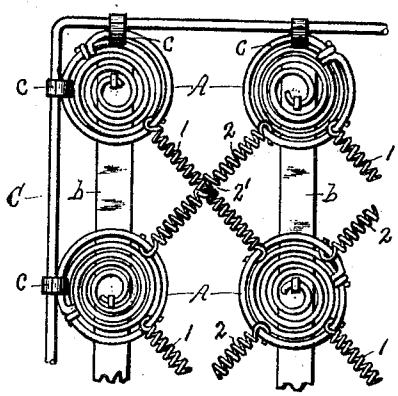


Fig-2.

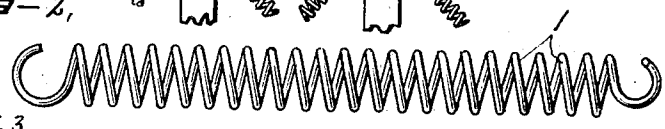


Fig-3.

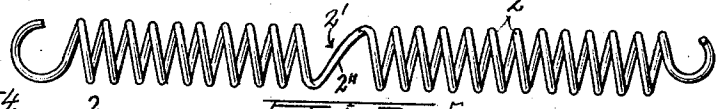
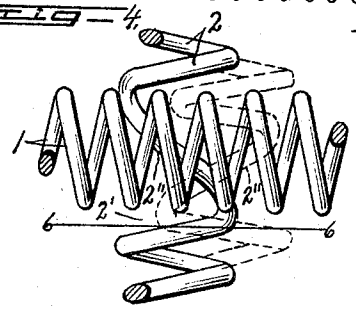


Fig-4.

Fig-5.



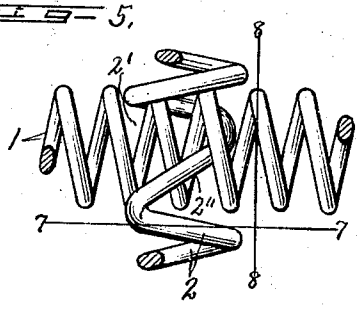


Fig-6.

Fig-7.



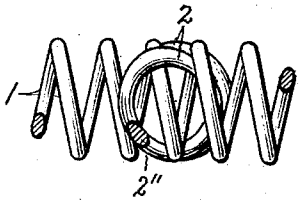
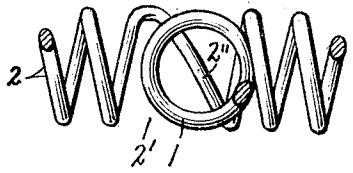


Fig-8.



Witness
H. L. Meade

Inventor
Wm. Lewis
By
Dennison & Thompson
Attorneys

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UNITED STATES PATENT OFFICE

WILLIAM LEWIS, OF UTICA, NEW YORK

METHOD OF INTERLOCKING COILED SPRINGS

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This invention relates to a cruciform spring and method of making the same, the spring being preferably composed of two similar coils usually crossing each other midway between their ends and interlaced at the crossing to hold them against relative movement.

These springs are adapted to be used more particularly as resilient ties or connections between the upholstering springs of beds, davenports, chairs and other cushions, such for example as are commonly used in motor vehicles.

Each cruciform spring may constitute a unitary article of manufacture having the opposite ends of each coil provided with suitable hook or loops for attachment to the upholstering springs or other anchorages whereby the upholstering springs are resiliently held in more or less parallel spaced relation without interfering with individual resiliency under local load or pressure.

In the manufacture of these cruciform springs as heretofore practiced, the coils have been brought into intersecting and interlaced relation by screwing each endwise between the helices of the other transversely thereof until the ends of the coils beyond the intersection are of substantially equal lengths.

That method, however, requires considerable time and frequently results in unequal projections of the ends of the coils beyond the crossing and consequent deflection or distortion of the ends of the coils and upholstering springs to which they are attached.

The main object of the present invention is to enable the coil springs to be more expeditiously and accurately assembled than has heretofore been practiced by directly interlacing or interlocking the helices of the coils at their crossing.

Another object is to enable the intersecting coils to be brought into substantially the same plane parallel with their axes so that when attached to the upper helices of the upholstering springs the upper surfaces of the cruciform coils will lie in substantially the same plane as the corresponding ends of the upholstering springs and, when assembled in the cushion their upper surfaces will be disposed at substantially the same plane as the corresponding ends of the upholstering springs.

Other objects and uses relating to specific parts of the cushion springs will be brought out in the following description.

In the drawing:—

Fig. 1 is a face view of one corner of a spring cushion embodying the various features of my invention.

Figs. 2 and 3 are enlarged face views of one of the spring coils adapted to form the cruciform spring.

Figs. 4 and 5 are further enlarged face views of the intersecting portions of the cruciform coils showing the steps in the process of assembling the same.

Figs. 6 and 7 are sectional views taken in the planes of lines 6—6, Fig. 4, and lines 7—7, Fig. 5 respectively.

Fig. 8 is a sectional view taken in the plane of line 8—8, Fig. 5.

The cruciform springs forming the subject matter of the present application are adapted to be used in connection with a system of uphostering springs —A— which are supported at one end upon suitable bars —*b*— in uniformly spaced relation both longitudinally and transversely, the outer end helices of the marginal springs —A— being connected by ties —*c*— to a marginal frame —C—.

Each cruciform spring comprises a pair of similar coils —1— and —2— except that certain adjacent helices preferably midway between the ends of the coil —2— are spread apart to form intervening space —2′— of about the same length as the diameter of the coil —1— to allow the latter to be seated in said space crosswise of the coil —2—.

Under these conditions, the connecting helix —2″— extending across one side of the said space will be somewhat elongated lengthwise of the axis of the coil —2— and will be inclined at a lesser angle to said axis than the remaining helices.

In assembling the two coils, the intermediate portion of the coil —1— preferably midway between its ends is placed crosswise within the space —2′— so that one or more

helices of the coil —1— may rest upon the inner face of the helix —2''— of the coil —2— whereupon the turning of the coil —2— in either direction about its axis through an arc of approximately 180° will cause the helix —2''— to enter the space between adjacent helices of the coil —1— as shown in Figs. 5, 7 and 8.

This turning movement of the coil —2— relatively to the coil —1— will also cause a part of the helix —2''— to pass under one of the adjacent helices of the coil —1— and another part to pass over another adjacent helix of the same coil thus locking both coils against relative lateral or endwise movement particularly when the ends of both coils are held against turning as for example when anchored to their respective upholstering springs as shown in Fig. 1, and at the same time holding both coils in one and the same plane as distinguished from the usual endwise screwing method in which the intersecting portions are necessarily in different planes.

In other words in applicant's cruciform spring, the axis of both coils at the crossing are disposed in substantially the same plane and therefore if the coils are of uniform diameter, the corresponding outer faces of both coils will also be in substantially the same plane so that when the cruciform springs are assembled upon the upholstering springs to form a spring seat or cushion their upper surfaces will be substantially flat for receiving and supporting the fabric or other mattress.

In practice, a spring-wire coil of uniform diameter may first be made of any desired length and by any well-known process, and then cut into suitable (preferably equal) lengths after which two of the adjacent helices of one of the sections midway between the ends thereof are spread apart at one side to form an opening of about the same length as its diameter.

The other coil section may then be placed crosswise between the spread helices of the face section, preferably from the top downward so that the intersecting portions of the sections will lie in substantially the same plane.

Another section is then placed across in said opening with its opposite ends projecting substantially equal distances from the crossing and its intermediate portion resting upon the connecting helix —2''— to bring the intersecting portions of both sections in about the same plane after which the section —2— is turned about its axis about one-half revolution (more or less) to interlock the intersecting portions of both sections with each other against relative endwise or lateral movement.

The ends of the sections are then bent into hook-shape form and attached to the adjacent upholstering springs —A— to hold said sections against relative turning movement.

In case any one of the sections should be impaired, the corresponding interlocked sections may be readily detached from the springs —A— and the section —2— turned about one-half revolution to the position shown in Figure 8 to permit the section —1— to be displaced from the opening —2'—.

This direct interlocking of the intersecting portions of the sections is not only simple and expeditious in greatly increasing the output of the cruciform springs and permitting the section —2— to be interlocked with the sections —1— and with the springs —A— after the sections —1— have been attached to the springs —A— but also brings the intersecting portions of the sections in about the same plane as their remaining portions.

I do not wish, however, to limit myself to the spreading of the intermediate helices of either section before placing the sections in interlocking position for the reason that the intermediate portion of one section might be pressed between intermediate helices of the other section to produce the desired spreading operation without departing from the spirit of the invention.

What I claim is:

The herein described method of interlocking two similar helical springs consisting in spreading adjacent helices of one spring apart a distance greater than the diameter of the other coil, placing said other coil crosswise between the spread helices of the first coil and then turning the first coil about its axis relatively to the second coil to interlock the helices of the crossing portions of the coils with each other against radial displacement and thereby to cause the crossing portions of both coils to lie in substantially the same plane.

In witness whereof I have hereunto set my hand this 25 day of June 1929.

WILLIAM LEWIS.