Apr. 17, 1923. 1,451,936

L. A. YOUNG

METHOD OF FORMING COMPOUND SPRINGS

Filed Sept. 20, 1921 2 Sheets-Sheet 1

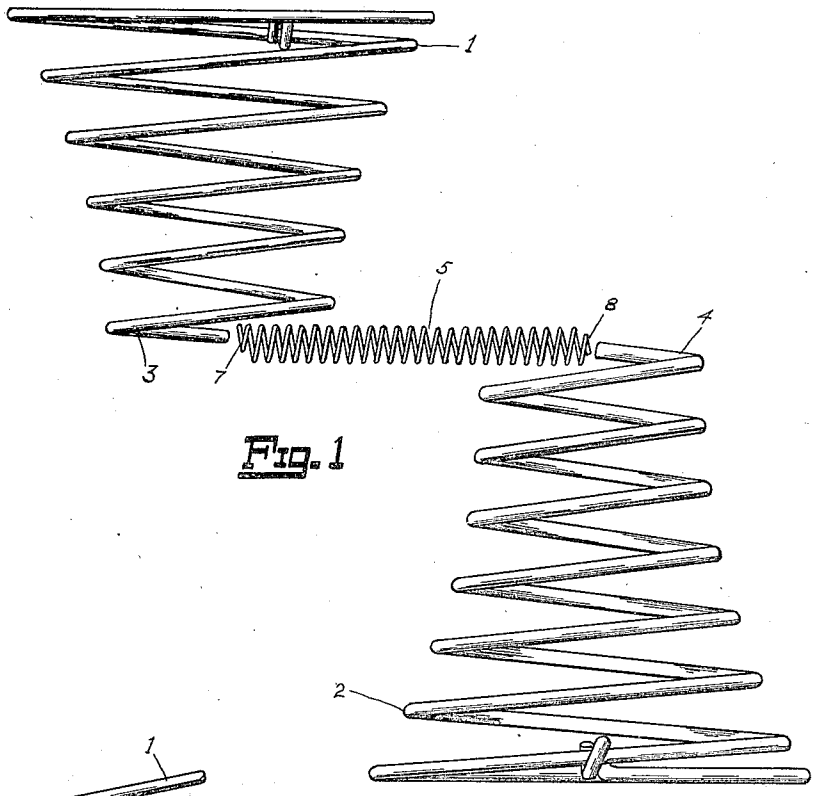

Fig. 1

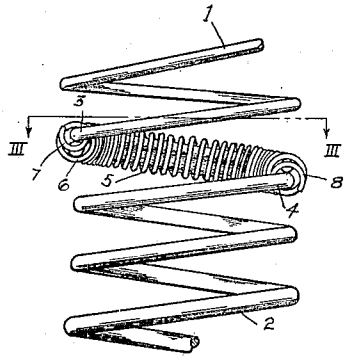

Fig. 2

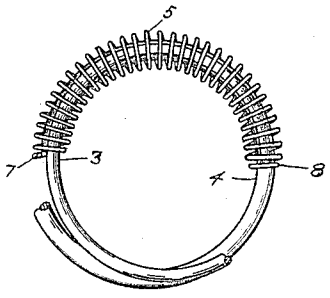

Fig. 3

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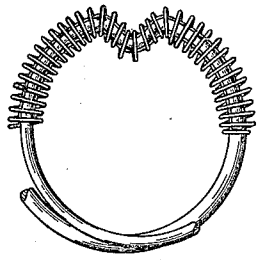

Fig. 4

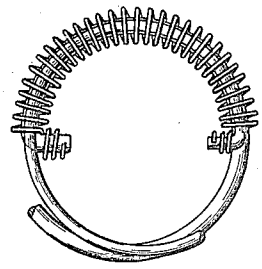

Fig. 5

Fig. 8

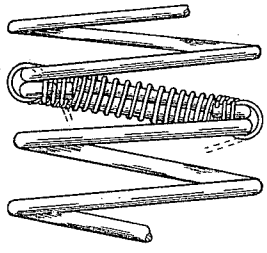

Fig. 6

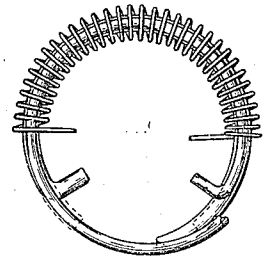

Fig. 7

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UNITED STATES PATENT OFFICE.

LEONARD A. YOUNG, OF DETROIT, MICHIGAN.

METHOD OF FORMING COMPOUND SPRINGS.

Application filed September 20, 1921. Serial No. 501,384.

To all whom it may concern:

Be it known that I, LEONARD A. YOUNG, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Methods of Forming Compound Springs, of which the following is a specification.

In the manufacture of compound spiral springs such as are used for and known as body springs in seat springs, mattress structures and in backs for seats, great difficulty has hitherto been found in uniting the two sections of each spring firmly at the point of junction in a way that would permit turning out quantities of such springs at a minimum cost of labor and time. The peculiar stress under which the springs are placed when compressed, the tendency of the spirals to enlarge and contract as the springs are shortened and elongated under vibration and the tendency of the coils to bend sidewise, all make the matter of securing the sections together one of difficulty which has hitherto required a number of operations pliant or like connecting members being used to hold the sections together and these devices requiring the use of presser or hand tools for applying them.

This invention relates to a method of construction of compound springs of the type having two end sections of different pitch and gauge in a manner that prevents their separation, while at the same time the process is extremely simple and minimizes the time and cost of operation.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings, Fig. 1 is a view showing a pair of springs with the connector so disposed as to be brought together in conformity with the initial step of the method;

Fig. 2 is a view in detail showing a portion of the spring and connector united;

Fig. 3 is a view in detail taken on or about line III—III of Fig. 2;

Fig. 4 is a view in detail showing one way of locking the parts together;

Fig. 5 is a view showing another method of locking the parts;

Figs. 6 and 7 are views showing the method of applying the locking method, indicated at Fig. 5;

Fig. 8 is a view in detail of one modification of the connector.

In carrying out this method, a pair of spring sections 1 and 2 are formed with their inner mating end turns 3 and 4 of substantially the same diameter whereby they may rest on each other. A connector 5 in the form of a hollow, resiliently walled bendable cylinder is likewise formed with an inner diameter sufficient to permit the insertion of end turns 3 and 4 at the opposite extremities of the connector. The wall 6 of this connector may be formed by a closely wound spiral as indicated in Fig. 1, or may be resilient or bendable sheet metal as shown in Fig. 8. In carrying out this method, the two end turns 3 and 4 are inserted in opposite relation at the ends of the connector and are then screwed together, the connector conforming itself to the curvature and pitch of the spirals and causing them to ride on each other into superposed relation. In the formation of the spiral connector, the end turns 7 and 8 thereof are so contracted or are of such diameter as to each receive a single wire only and thereby act as an abutment for the opposing member.

If desired, where springs are to be used for severe service, another step in the method of operations consists in anchoring the parts against unscrewing. This may be done as indicated in Fig. 4 by indenting the parts or the end portions of the connector and the extremities of the end turns may be secured together as indicated in Fig. 5. In Fig. 8 I illustrate a connector 5′ of resilient or bendable sheet metal. To connect the springs they are manipulated substantially the same as the coiled spring type of connector.

Obviously changes in the detail of construction may be made without departing from the spirit of the invention and I do not care to limit myself to any particular form or arrangement of parts.

I claim as my invention:

1. A method of forming compound spiral springs which consists in inserting the end coils of a pair of spring sections in the opposite ends of a hollow, resilient, substan-

tially cylindrical connector and in rotating the sections until the end turns are in superposed and axially aligned position, with the connector conformed to the curvature and pitch of the enclosed whorls.

2. A method of forming compound spiral springs out of a pair of spring sections, consisting in inserting the end turns of the sections in a hollow resilient cylindrical connector, in forcing the inserted whorls past each other by rotation of the sections and in thereby bending the connector into resilient gripping contact with the spirals to which it is forced to conform.

3. A method of forming compound spiral springs of two opposed sections interconnected at their mating ends, which consists in forcing the mating end turns each into an end of a straight resilient cylindrical connector and in rotating them relatively until they are in abutment for a major portion of their circumference with the connector bent into conformation thereto and in yielding frictional engagement therewith.

4. A method of forming compound spiral springs of two opposed sections interconnected at their mating ends which consists in forcing the mating end turns each into an end of a straight, resilient, cylindrical connector, in rotating them relatively until they are in abutment for a major portion of their circumference with the connector bent into conformation thereto and in yielding frictional engagement therewith and in forming a positive interlock between the conector and the enclosed whorls.

In testimony whereof I affix my signature.

LEONARD A. YOUNG.