May 2, 1933. C. D. KARR 1,906,612

SPRING ASSEMBLY

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Fig. 1

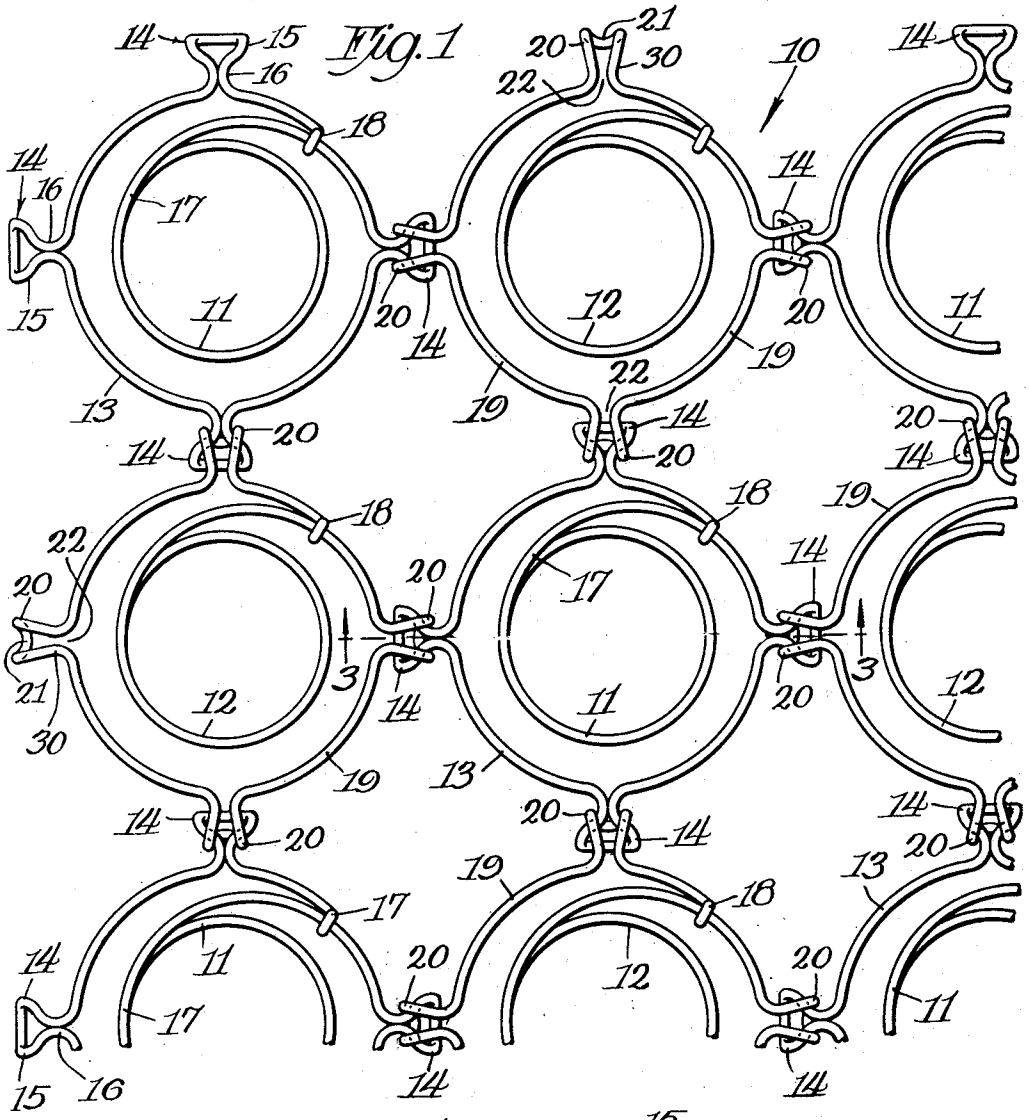
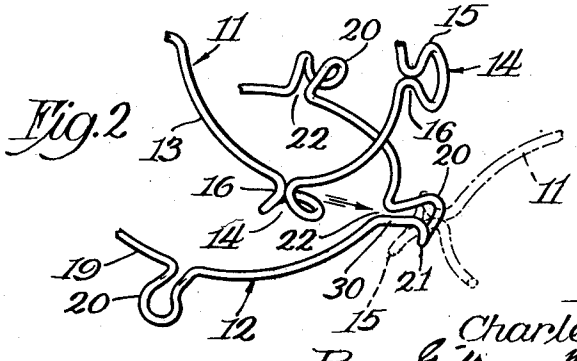


Fig. 2



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Fig. 3

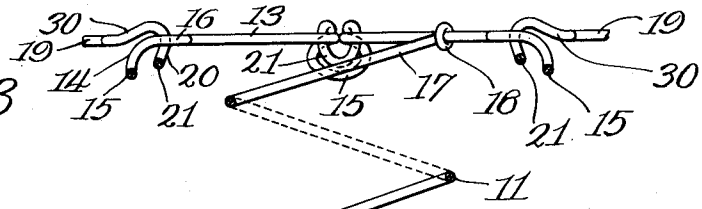
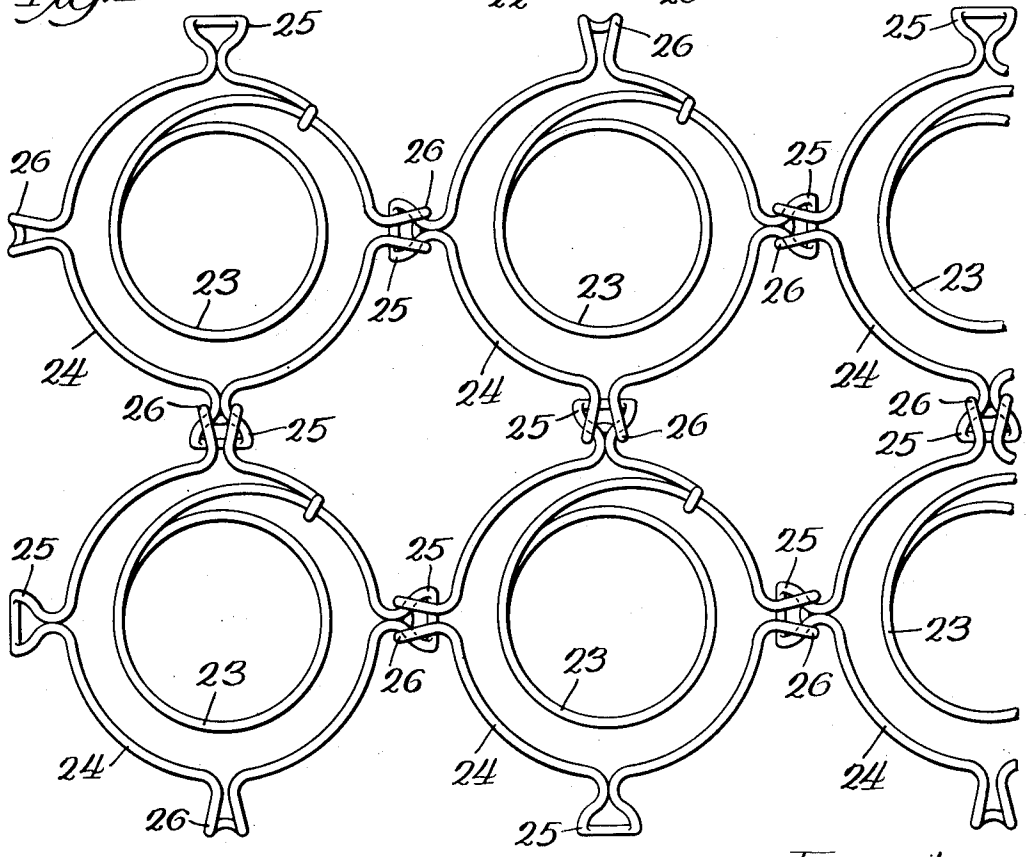


Fig. 4



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Patented May 2, 1933 1,906,612

UNITED STATES PATENT OFFICE

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SPRING ASSEMBLY

Application filed March 21, 1930. Serial No. 437,809.

This invention relates to spring assemblies and more particularly to spring assemblies for mattresses, cushions and the like.

One of the objects of the invention is the provision of a new and improved spring assembly in which novel and extremely simple means are employed for connecting and holding the individual springs together.

A further object of the invention is the provision of a new and improved spring assembly having means whereby the springs may be connected together and the device assembled at a minimum of time and labor.

A still further object of the invention is the provision of a new and improved spring assembly that is cheap to manufacture, easily assembled and that is noiseless in use, strong, durable and one in which the individual springs may easily be removed or replaced, when desired.

Other and further objects and advantages of the invention will appear from the following description taken in connection with the accompanying drawings, in which:

Fig. 1 is a plan view of a portion of a spring assembly embodying the present invention;

Fig. 2 is a perspective view of two of the terminal coils, showing the same in the position in which they are about to be interlocked;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 is a plan view of a portion of a spring assembly showing a modified form of the invention.

In the construction of spring assemblies for mattresses, cushions and the like, in which coil springs constitute the resilient elements of the assembly, it is desirable that those springs be so connected together that they will have freedom of motion and with no clicking or other noise while in use. It is also desirable that the terminal coils of the springs be connected together with a minimum number of separate parts. The present invention not only possesses these desirable characteristics, but it is also so constructed that it may be readily assembled and disassembled with a minimum amount of labor and expense.

Referring now to the drawings, the reference character 10, see Fig. 1, designates generally a spring assembly comprising the spiral springs 11 and 12 which are preferably, though not necessarily, arranged in rows both transversely and longitudinally of the assembly.

In the form of device selected to illustrate one embodiment of the invention each of the spiral springs 11 has its terminal coils 13 provided with distorted portions 14 arranged 90° apart. Each distorted portion 14 comprises a head or loop portion 15 and a connecting, restricted or neck portion 16. The distorted portion 14 is integral with and is formed from the terminal coil 13. The end of the terminal coil 13 is knotted or attached to the next adjacent coil 17, as shown at 18 in Fig. 1. The head or loop portions 15 on the upper terminal coils 13 are bent downwardly, as more clearly shown in Fig. 2 of the drawings, for forming an interlocking head or button as will presently appear.

Each of the terminal coils 19 of the spirals 12 is provided with a plurality of distorted portions 20 also arranged 90° apart. Each of the distorted portions 20 comprises a loop 21 and a connecting portion 30. The connecting portions 30 are spaced apart to form a passage 22 through which the restricted portion 16 of the distorted portion 14 is adapted to pass. The width of the passage 22 is greater than the diameter of the wire of the terminal coil of the spiral 11 but is less than twice the diameter thereof so that inserting the neck or restricted portion 16 into the loop 21 through the passage 22 the terminal coil 19 must be rotated or turned at an angle, as shown in Fig. 2.

The loops 21 on the upper terminal coil are bent downwardly, as shown more clearly in Fig. 2. In order to interlock the loops 15 and 21 it is necessary not only to rotate the terminal loop 13, but also to tilt the same in a plane at an angle to the plane of the terminal loop 19.

After the restricted or neck portion 16 has passed through the passage 22 the loop 13 may then be moved to the position shown

in dotted lines in Fig. 2 and in which position the loops are interlocked and form a universal connection between the two terminal coils.

When the parts are in the position shown in Fig. 1 they are interlocked and cannot be released unless the terminal coil 13 be again rotated and tilted to the full line position shown in Fig. 2, and in the normal or even abnormal use of the assembly the parts will not be moved to this position and consequently the various connections between the spirals will remain in interlocked position.

The form of construction shown in Fig. 4 differs from that shown in Figs. 1 to 3 in that the spirals are duplicates of each other. In the arrangement shown in Fig. 4 each spiral 23 has its terminal coil 24 provided with a pair of loops 25 similar to the coils 14 of Fig. 1, arranged at 180° apart. This coil is also provided with a pair of open loops 26 similar to the loops 21. These loops are arranged 180° apart and are preferably spaced 90° from the loops 25.

Since the construction of the loops and their interlocking connection are substantially the same as that shown in Fig. 1 it is not thought necessary to repeat this description.

In assembling the springs, they are preferably, though not necessarily, first connected in rows and the springs of adjacent rows are connected together. The springs may be easily distorted sufficiently to permit the interlocking of the springs of one row with the adjacent springs of adjacent rows.

The parts are readily assembled, as will be evident from an inspection of Fig. 2. After the loops are brought in proper position, as shown in said figure, the loop 15 is moved toward the loop 20 to cause the connecting portions 16 to pass in tandem through the passageway 22. The curved or concave portion of the coil 19 at each side of the passage 22 will constitute guides for conducting the neck 16 into said passage, thereby greatly facilitating the assembly of the device.

It is thought from the foregoing taken in connection with the accompanying drawings that the construction and operation of my device will be apparent to those skilled in the art, and that changes in size, shape, proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim as my invention:

1. In a spring assembly, a plurality of spiral springs arranged in rows, the terminal coils of said springs being provided with interlocking distorted members extending outwardly therefrom, each of said interlocking members comprising a loop having a restricted portion adjacent its base, one of said loop portions embracing the restricted portion of the other of said members to form a flexible connection between said terminal coils, the outer portion of each loop being bent downwardly.

2. In a spring assembly, a plurality of spiral springs arranged in rows, interlocking connecting members between the terminal coils of adjacent springs, one of said members comprising a loop and a neck portion formed from the terminal coil and the other a loop portion extending about the neck portion of the other member, said loop portion having a restricted passage leading into the loop, the width of said passage being greater than the diameter of the wire of the adjacent cooperating coil but less than twice the diameter thereof, whereby said loops may be engaged by turning one at an angle to the other and will be normally held in interlocking connection after being interlocked.

3. In a spring assembly, a plurality of terminal coils arranged in rows, interlocking connecting members for connecting a terminal coil of one spring to that of an adjacent coil, one of said members comprising a loop and a restricted portion between said loop and its terminal coil and the other comprising a loop extending about said restricted portion, the sides of said last named loop being spaced apart a distance less than twice the diameter of the wire forming said restricted portion but greater than the diameter of said wire whereby said loops may be connected by turning one at an angle to the other and will be normally held in interlocking connection after being interlocked.

4. In a spring assembly, a plurality of spiral springs arranged in rows, said springs having their terminal coils provided with loops interlocking with corresponding loops of an adjacent coil, said interlocking loops being substantially the same length and each comprising a head and a neck portion, the head portion of one loop extending about the neck portion of a loop of an adjacent spring, the planes of said loops being arranged at an angle to each other and to the plane of the terminal coils of said springs.

5. In a spring assembly, a plurality of spiral springs arranged in rows, the terminal coils of said springs being provided with integral loops, the plane of said loops being arranged at an angle to the plane of said terminal coils and said loops being detachably interlocked with each other, said loops having restricted portions whereby the springs cannot be separated without moving one at an angle to its normal operating position.

6. In a spring assembly, a plurality of spiral springs arranged in rows, the terminal coils of said springs being distorted to form interlocking loops angularly arranged about said coils, one of said loops having a

passage through which the cooperating loops of an adjacent spring may be inserted when one of said loops is tilted and arranged at an angle to the other, said loops when interlocked being incapable of release without first moving one of the coils angularly from its normal operating position.

7. In a spring assembly, a plurality of spiral springs arranged in rows, the terminal coils of said springs being provided with interlocking connections, each connection comprising a loop integral with the terminal coil of one spring and arranged at an angle thereto and having a passage therein and the other a loop integral with the terminal coil of an adjacent spring and arranged in a plane at an angle thereto, and having a restricted neck portion insertible through said passage only when the same is tilted and turned angularly from its normal operative position.

8. In a spring assembly, a plurality of spiral springs arranged in rows, each spring having its terminal coil provided with loops having connecting portions, arranged at 90 degrees about said coil and interlooped with the loops of the terminal coils of adjacent springs, said loops being arranged at an angle to the planes of said coils, the connecting portions of each of certain of said loops being adjacent to each other to form a neck portion and each of those of the other loops being spaced to form a passageway through which said neck portion may be inserted only when the connecting portions of said loops are so arranged as to pass through in tandem.

9. A spring mat assembly comprising in combination a plurality of springs having end turns of wire in a common substantial plane, a locking lug formed on each end turn of the respective springs and each comprising a radially extending integral projection including a pair of inwardly converging legs and each inclined out of the substantial plane of the respective end turn of wire, the locking lugs so arranged as to be mutually interlocked and so that when interlocked the end turns may lie in the substantial common plane.

10. In a spring mat assembly, a spring having an end turn in a substantial plane, a plurality of substantially identical locking lugs formed on the end turn, each lug comprising a radially extending projection having a pair of inwardly converging legs and each lug inclined out of the substantial plane of the end turn and also out of a plane perpendicular to the plane of the end turn.

In testimony whereof I affix my signature.

CHARLES D. KARR.