

E. H. WOOD.

SPRING.

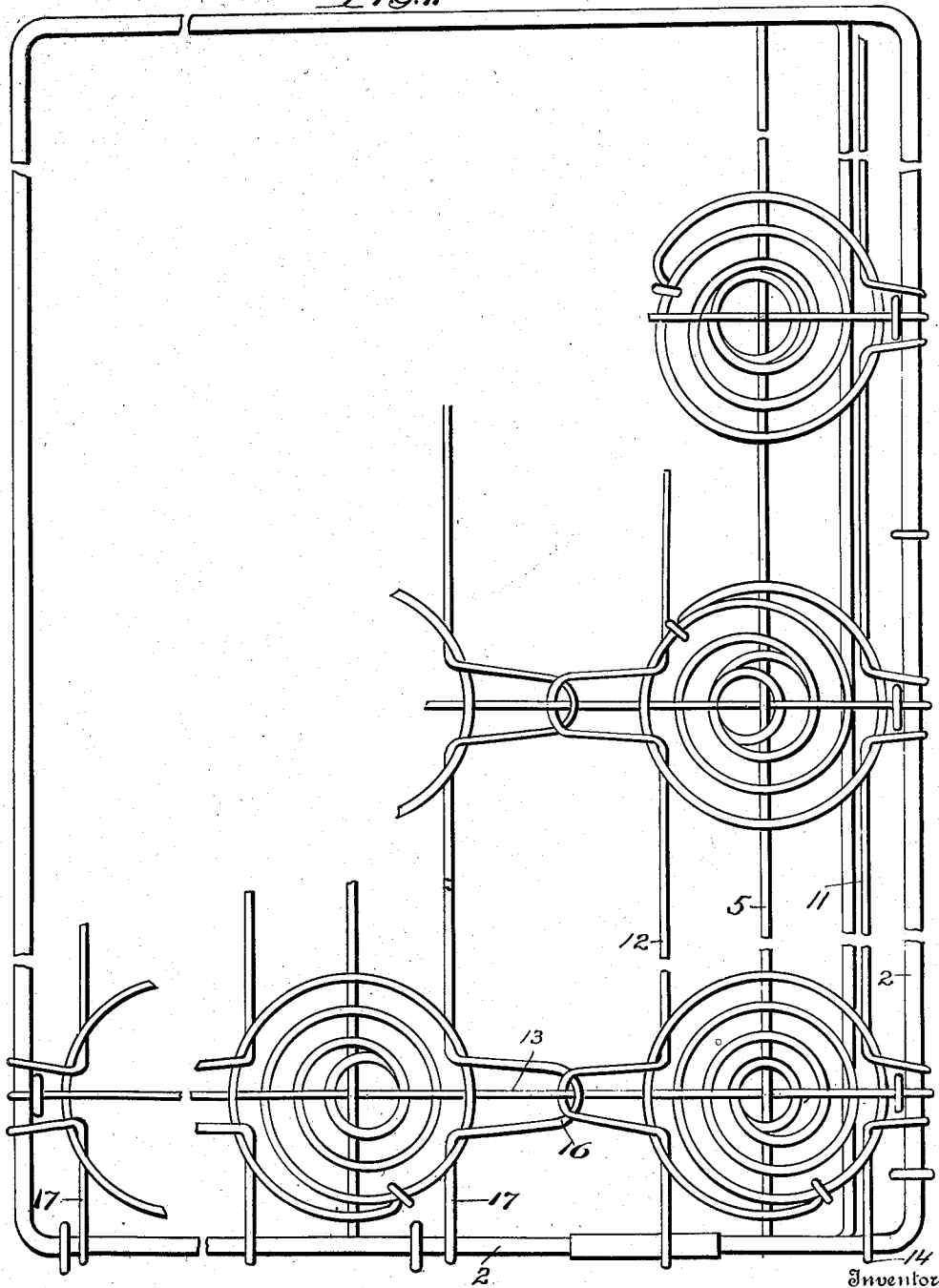
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936,971.

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3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 2

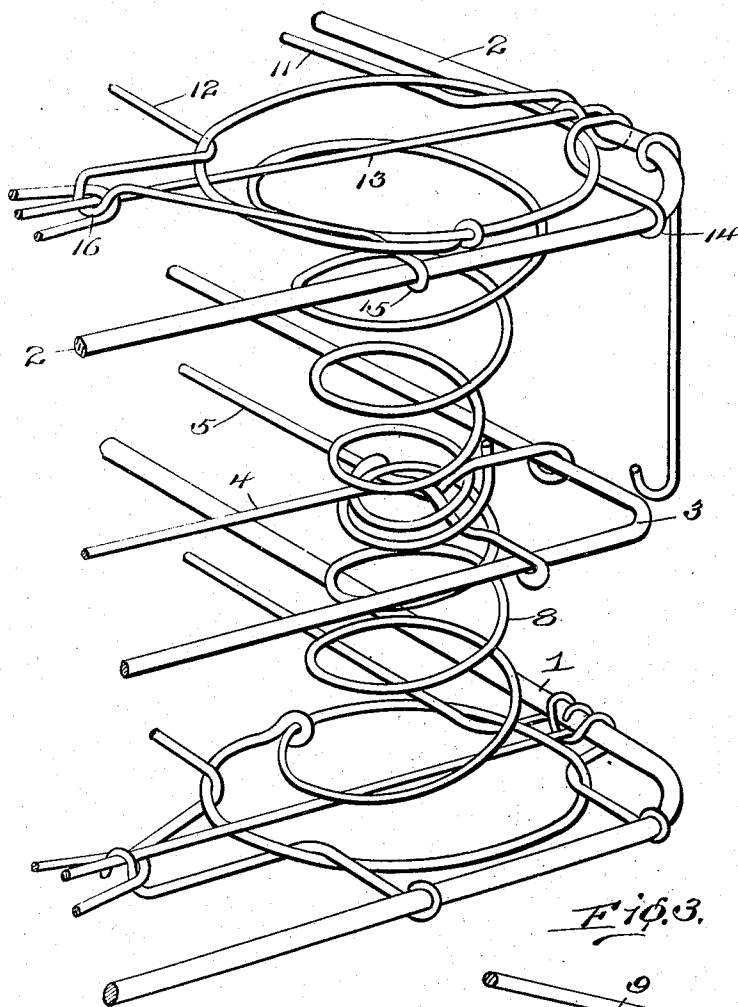
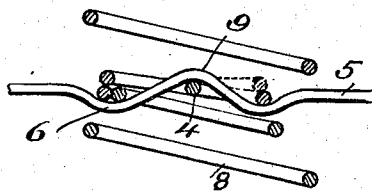


Fig. 3



Witnesses

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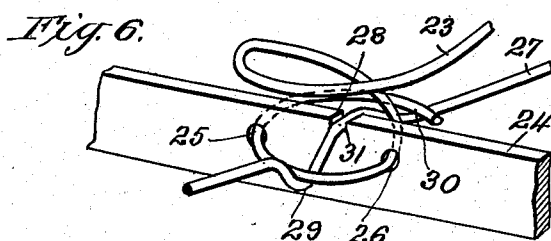
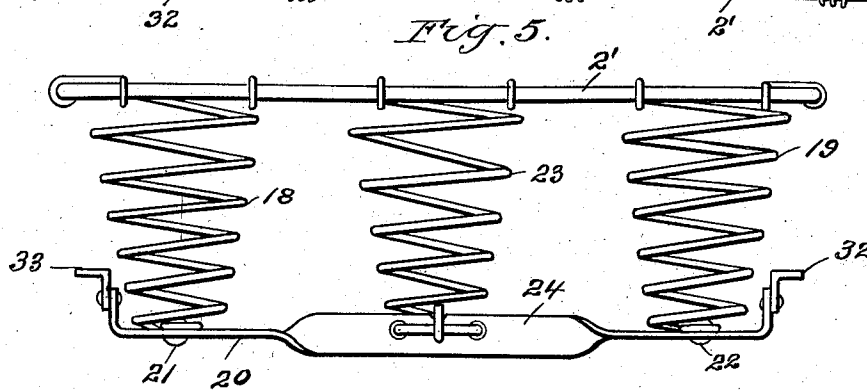
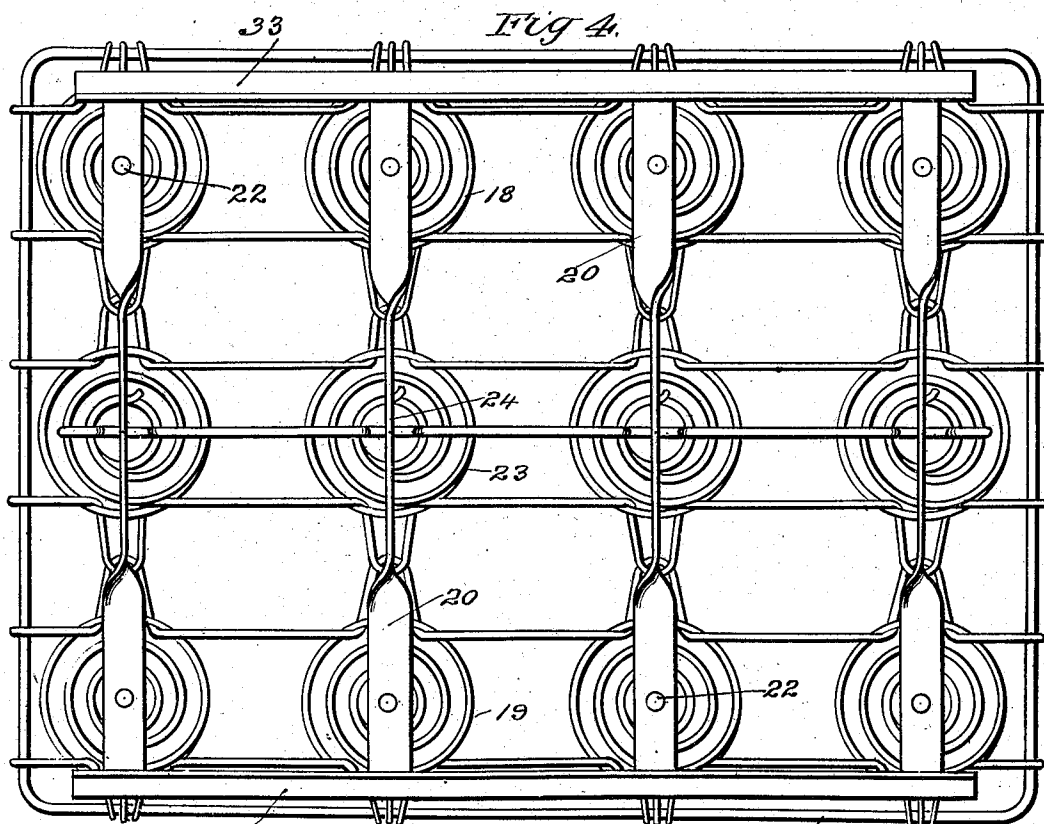
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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SPRING.

936,971.

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To all whom it may concern:

Be it known that I, ELISHA H. WOOD, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Springs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in cushion springs, and particularly to those in which spiral springs are employed.

The object in view is the provision of a cushion spring proper having a plurality of spirally wound springs that are formed in a plurality of parts with means for firmly holding the same together and against removal.

Another object of the invention is the provision in a cushion spring proper of a plurality of springs wound conically, in combination with cross bars for holding the spring proper together and the respective conical springs in pairs.

A still further object of the invention is the provision of a plurality of springs and a plurality of means for holding the same correctly in position, some of said means acting centrally thereof.

With these and other objects in view the invention comprises certain novel constructions, combinations and arrangement of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a fragmentary top plan view of a bed spring embodying the invention. Fig. 2 is an enlarged perspective view of one corner of the bed spring disclosing the arrangement of the springs and securing or bracing means therefor. Fig. 3 is a section through Fig. 2 approximately on line 3—3. Fig. 4 is a bottom plan view of a slightly modified form of spring. Fig. 5 is an end view of the spring shown in Fig. 4. Fig. 6 is an enlarged detail fragmentary perspective view showing how some of the springs are secured in position.

In the construction of cushion spring having spirally wound springs for forming supporting and resilient means of the spring proper single spiral conical springs are used, or double conical springs formed of a single

piece of material. In forming the double conical shaped springs of a single piece of material considerable time and expense are involved, and in arranging the same in a framework for forming a bed spring proper more or less difficulty has been experienced in securing the same in position so as not to readily become displaced.

In the present invention these various objections are aimed to be overcome by the provision of a double conical spring formed in two parts or in two ordinary conical springs which have associated therewith retaining and bracing rods engaging the springs centrally and at each end for not only holding the springs together so as to act as substantially a continuous spring, but to retain the opposite ends of the spring correctly in the frame of the cushion spring proper.

In order that the invention may be more clearly understood an embodiment of the same is shown in the accompanying drawings, in which 1 and 2 indicate frames. Midway between frames 1 and 2 is an auxiliary, or what might be termed a floating, frame 3 arranged to carry bracing and spring supporting bars or rods 4 and 5 which are secured to the frame by having ends turned around the frame. The rod 5 as more clearly seen in Fig. 3 is bent at 6 and 7 for accommodating the upper end of a conical shaped spring 8, and bent at 9 for accommodating rod 4. Rod 4 is arranged to engage or pass above the lower part of conical shaped spring 10 and beneath bent portion 9 of rod 5. By this means rods 4 and 5 are interlocked and the upper end of spring 8 is held supported by bar 5 and the lower end of spring 10 is held down or in engagement with spring 8, whereby a substantially continuous spring is formed. The frame 3 to which rods 4 and 5 are secured is supported by rods 4 and 5 so that any compression on the springs will be easily provided for as the frame is permitted a free up and down movement in unison with the central part of the spring. The upper or enlarged end of spring 10 is held properly in position in frame 2 by rods 11, 12, and 13. Rods 11 and 12 are arranged to extend longitudinally of the frame, and are arranged to prevent any movement at the upper end of the spring. Rod 11 is bent around frame 2 at 14 and extends beneath the upper coil of spring 10 and then over the upper coil and around frame 2. After pass-

ing around frame 2 a second time as clearly shown in Fig. 2 the rod passes over rod 13 and then down and around frame 2 and back beneath the upper coil of spring 10. The rod then extends from the upper coil of spring 10 to the next succeeding coil, where the rod passes in the same manner around and through such coil. Rod 12 is secured to frame 2 at 15 and passes beneath the upper coil of spring 10 in a similar manner to rod 11 from which it extends at substantially a right angle to its general direction and passes beneath rod 13 at 16, from which it extends back to and beneath the upper coil of spring 10. From spring 10 it extends to the next succeeding coil where it is woven in and out similar to spring 10. Another rod 17 is provided for engaging rod 12 at 16, but otherwise is constructed identical with rod 11, and will therefore need no additional description. Rod 17, as shown in Fig. 1, is arranged to engage the next succeeding spring adjacent to spring 10. Various rods similar to rods 11, 12, 13 and 17 are provided to accommodate all of the springs arranged in frames 1 and 2, the number of the rods being only limited by the size of the frame.

The various retaining rods have been described in relation to the upper or enlarged end of spring 10, but as will be evident the lower or enlarged end of spring 8 is provided with similar rods arranged in a similar manner for holding the respective springs 8 in an upright position and against longitudinal movement. By arranging longitudinal and transverse bars for holding the enlarged ends of the springs in position, and by arranging the retaining rods 4 and 5 centrally of the springs the same may be built up or formed of a pair of springs and yet present the same advantages as a continuously wound spring. In addition this form of construction is superior in that it is well braced not only at each end but centrally, but without being stiffened with bracing means.

In Figs. 4 to 6 inclusive, will be seen a slightly modified form of spring in which single conical shaped springs are used. A frame 2' constructed similar to frame 2 of the preferred structure is used, and the spring secured thereto as in the preferred structure. The springs 18 and 19 have their lower ends secured to cross supporting bars

20, preferably by means of rivets 21 and 22. Between springs 18 and 19 may be any desired number of springs 23 which are secured to the turned up portion 24 of bar 20, only one row of springs 23 being shown for the purpose of illustration. The springs 23 are arranged to have their lower ends pass through the apertures 25 and 26 in turned up portion 24 of bar 20. A tie rod 27 is then passed over turned up portion 24 for engaging notch 28 and passing beneath the end of springs 23, but in contact therewith for preventing the same from moving out of apertures 25 and 26. Rod 27 is bent at 29 and 30 for accommodating or receiving the lower ends of springs 23 and is bent upward at 31 for fitting into notch 28.

The cross bars 20 are riveted or otherwise rigidly secured to side bars 32 and 33 preferably of angle iron. By using the side bars of angle iron 32 and 33 and cross bars 20 having turned up or twisted portion 24 a bottom framework is provided which presents a strong and slightly resilient base or support for the springs. The tie rods 27 also are of importance in that they prevent any displacement of the cross bars 20 or of the springs, and thoroughly tie and brace the framework made up of bars 32 and 33 and 20.

What I claim is:

1. In a cushion spring, an upper frame, a lower frame, a plurality of springs secured to the frames, a plurality of cross bars secured to each of the frames, an intermediate resilient frame, and cross bars secured to the intermediate frame for connecting the springs thereto and for securing their ends together.

2. In a cushion spring, an upper frame, a lower frame, cross bars secured to the upper frame for securing a plurality of springs thereto, cross bars for securing the spring to the lower frame, an intermediate resilient frame, and cross bars intersecting at the junction of the springs and arranged over and under the ends thereof to constitute a means for securing the springs together.

In testimony whereof I affix my signature in presence of two witnesses.

ELISHA H. WOOD.

Witnesses:

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