

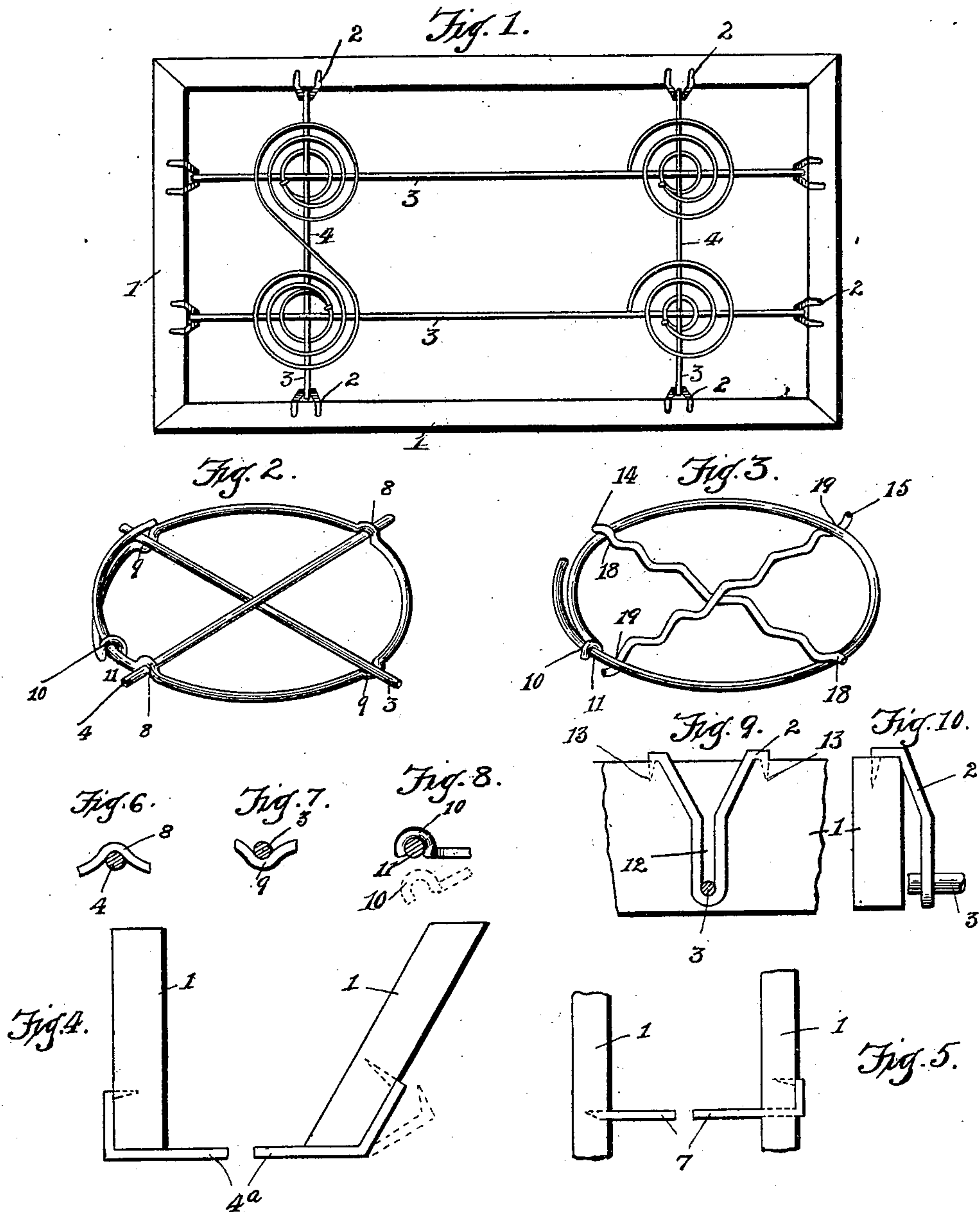
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Patented Aug. 13, 1901.

W. H. BATES.  
CUSHION SPRING AND SUPPORT WIRE.

(Application filed Oct. 8, 1900.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## CUSHION-SPRING AND SUPPORT-WIRE.

SPECIFICATION forming part of Letters Patent No. 680,215, dated August 13, 1901.

Application filed October 8, 1900. Serial No. 32,384. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. BATES, a citizen of the United States, residing at 207 Elm avenue, south, in the city of Jackson, county of Jackson, and State of Michigan, have invented certain new and useful Improvements in Cushion-Springs and Support-Wires; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to spring-seats and their supports and may be used wherever a spring-cushion is desired, as in lounges, chairs, mattresses, carriages, &c., and has special reference to the construction of the springs, the means for mounting them firmly upon the supports, and means for attaching these supports to the frame, the objects being to provide a spring that may be used single or double, as desired, and which is simple, cheap, and durable and has all of the advantages of other springs and may be easily and quickly locked upon plain cross-supports in such manner that it cannot become loose or disengaged therefrom, actually requiring a tool to unfasten it therefrom, and to provide supports consisting of plain straight pieces of wire of the desired length and means for readily attaching said supports to the frame, further objects and advantages being evident from the following description.

In the drawings forming a part of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a top plan view of a frame for a seat with the cover removed to show the arrangement of the springs and their supports. A portion of said springs are shown as double springs and a portion as single springs. Fig. 2 is an isometric projection of the lower portion of a spring, showing the bends therein to form seats to receive straight support-wires and the hook by means of which the springs are locked upon said support-wires and the relative position of said support-wires with reference to each other and with reference to said spring and the seats

therein. Fig. 3 is an isometric projection of the lower portion of a spring, showing a modification in which the bends or seats are made in the support-wires and not in the spring and means for locking said springs upon said support-wires, as in Fig. 2. Fig. 4 shows a modification of support-wires in which the support-wires pass underneath the frame and are bent upward to conform to the shape of the outer edges of the frame and having the ends bent inwardly and adapted to be driven into said frame. Fig. 5 shows another modification of the support-wires in which the wires are driven through one side of the frame and into the frame upon the opposite side. Fig. 6 is a detail view showing the bend in the spring to form a seat adapted to receive the support-wire from below. Fig. 7 is a detail view of that portion of the spring formed into a bend to form a seat to receive the support-wire from above. Fig. 8 is a detail view of the hook at the lower terminus of said spring, which is adapted to engage the next higher coil of said spring after said spring is placed in the desired position upon the support-wires, and thereby locks the springs and supports firmly together. Fig. 9 is a detail view of the hanger shown in Fig. 1. The two ends are driven into the top side of the frame wherever it is desired to attach a support. Fig. 10 is a side view of the hanger shown in Fig. 9.

Referring now to the drawings, the frame is formed of pieces of wood 1 1 1 1, fastened together at the corners. The hangers 2 are driven into the upper surface of said frame at the points desired. Each of said hangers is made from a single piece of wire, with the ends sharpened and bent downward, adapted to be driven into the top of the frame. The main portion of said hangers then extends horizontally to the edge of the frame, and then the parts are bent downwardly and toward each other at any desired angle, and a long loop is formed in the middle at 12 of less dimension than the support-wire which is designed to be placed therein, and at the bottom of said loop is the seat upon which the support-wire rests. The said loop 12 being of less dimension than the wire holds the same very firmly. The support-wires 3 4 are of approximately the length of the opening



in said frame and may be cut from stock, as desired. The ends of said support-wires are forced down into the loops of said hangers until they rest at the bottom of said loops, as shown at Figs. 9 and 10. The hanger being double is very rigid and holds the support-wires from any side or longitudinal movement, and the ends of said support-wires being in contact with the frame or in close proximity thereto also prevent any lengthwise vibration of said supports and tend to steady the same. The springs 5 6 are mounted upon said supports at the crossings thereof, with the seats 9 9 in the lowest convolution thereof underneath the lower of said support-wires and the seats 8 8 thereof above the higher of said support-wires. When so placed upon said supports, the hook 10 occupies the position shown by the dotted lines, Fig. 8, and to lock the spring upon the said supports the hook 10 is raised up and forced over the higher convolution of said spring at 11, as shown in Figs. 2, 3, and 8, and the said hook is of the proper elevation and the seats are of a proper depth, so that at every point of contact between said supports and said springs said support-wires and said spring-wire are bent slightly. The spring tension formed at these points holds the said spring securely to said support-wires and the said support-wires to each other and prevents any play or movement of said parts, and so firmly are the parts locked together that it is impossible to unlock the same without the aid of some tool. By this construction the bottom coil has a large base where it sets upon the support and is held rigidly in an upright position and requires no tying at the top. The method of fastening applies equally well to double springs as to single springs.

In Fig. 3 I have shown a construction in which the lower coil of the spring is formed without seats, as heretofore; but seats are formed in the support-wires 14 15 at 18 18 19 19, respectively, and the spring is locked upon these the same as heretofore specified.

As shown in Fig. 4, the support-wire may be formed of one long piece 4<sup>a</sup>, bent upward at its ends and adapted to be driven into the frame from the outside, or it may be formed in the style shown in Fig. 5, in which the support-wire 7 is sharpened at one end and adapted to be driven through one side of said frame and into the wood of the opposite side of said frame. The head thereof may be bent at right angles and adapted to also be driven into the frame, as shown.

The special advantages of my construction over others are: First, the hangers being formed of a short piece of wire doubled are much stronger and having two points driven into the frame are less likely to pull out and are much more rigid and firm; second, by being adapted to use straight pieces of wire for the horizontal portions of said supports they may be purchased in stock from any producer of wire and at a less expense than supports

in which bends are required to be formed, and they may also be cut any desired length as wanted to fit the usual sizes of frames or any odd size, if desired, and may be put at any desired place upon the frame without regard to any bends in the crossing wires, and by using hangers of different lengths the supports may be positioned at any desired height in the frame, and, third, the lock is adapted to lock the spring firmly upon the support-wire and to each other and to the spring, so that there is no rattle, play, or opportunity to wear or work loose, and it is equally adapted to single or double springs and holds the springs firmly and rigidly in an upright position upon a broad base, requiring no tying or fastening at the top and with no possibility of their ever tipping over or becoming displaced or disengaged from said supports. If desired, the springs may be locked upon said support-wires and shipped ready to mount in the frames by simply pressing the ends of the support-wires into the proper hangers upon the frames.

What I claim as new, and upon which I desire to secure Letters Patent, is the following:

1. In a device of the class described the combination with a frame, of conical convolute springs having upwardly and downwardly directed kinks in their lowermost coils; hangers depending from the top of said frame and having loops in their lower ends, supporting-wires crossing each other with the ends thereof resting within the loops of the said hangers and adapted at their points of crossing to support said conical convolute springs therein, said wires interlocking with said kinks.

2. In a device of the class described, the combination with the frame, of hangers carried by the frame and having clamping means, supporting-wires detachably sprung into engagement with said clamping means, and the springs interlocked with the wires.

3. In a device of the class described the combination with a frame; of hangers depending therefrom and having their lower ends formed into clamping-loops; supporting-wires having their ends sprung into the loops of said hangers, and adapted to receive and support springs mounted thereon.

4. In combination with a seat-frame, hangers having their middle portions formed into loops the openings thereof being of a less width than the diameter and adapted to receive and hold firmly and rigidly, support-wires, in the seats at the lower portions of said loops, the portions of said hangers adjacent to said loops extending upward to the top of said frame, with horizontal portions adapted to rest upon the top of said frame, and downwardly-directed ends pointed and adapted to be driven into the top side of said frame, substantially as shown and described.

5. In a device of the class described the combination with a frame; of conical convolute springs having upwardly and down-



wardly directed kinks formed in their lower-  
most coils; hangers depending from the top  
of said frame and having loops formed in  
their lower ends; supporting-wires crossing  
5 each other with the ends thereof resting with-  
in the loops of said hangers, and adapted  
near their points of crossing to register with  
the kinks in the said springs, the lowermost  
coil of the latter being adapted to pass above  
10 and below the supporting-wires alternately,  
and the extreme lower end thereof formed  
into a hook and adapted to engage a higher  
coil whereby the supporting-wires are firmly  
fastened together, and the springs secured  
15 firmly upon said supporting-wires.

6. In a device of the class described the  
combination with a frame; of hangers de-  
pending therefrom and having their lower  
ends formed into resilient parallel guideways;  
and detachable supporting-rods having their 20  
ends sprung into engagement with the guide-  
ways of said hangers and adapted to receive  
and support springs mounted thereon.

In testimony whereof I have affixed my sig-  
nature in the presence of two witnesses.

WILLIAM H. BATES.

Witnesses:

R. D. KNOWLES,  
E. C. GREENE.