No. 752,783. PATENTED FEB. 23, 1904.

M. D. KILMER.

SPRING CONSTRUCTION.

APPLICATION FILED DEC. 13, 1901.

NO MODEL.

Fig. 1.

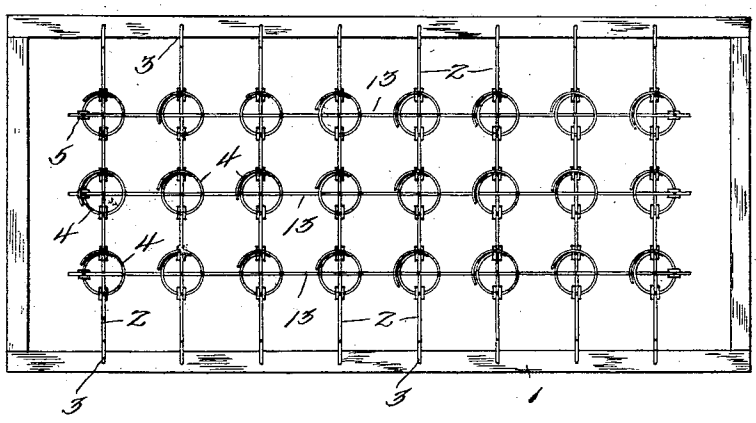


Fig. 3.

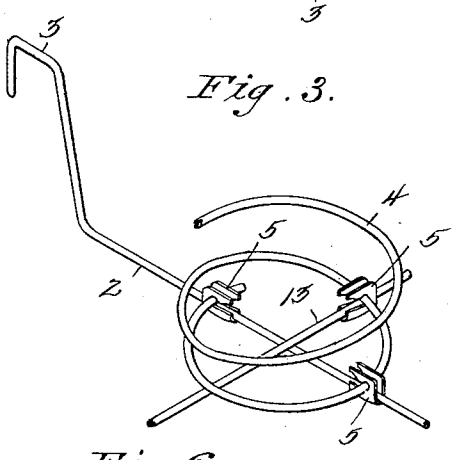


Fig. 2.

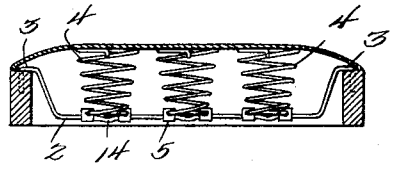


Fig. 5.

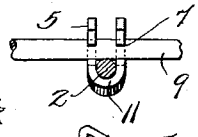


Fig. 4.

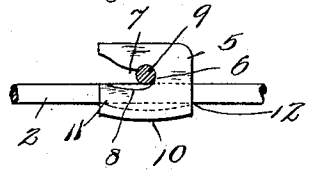


Fig. 6.

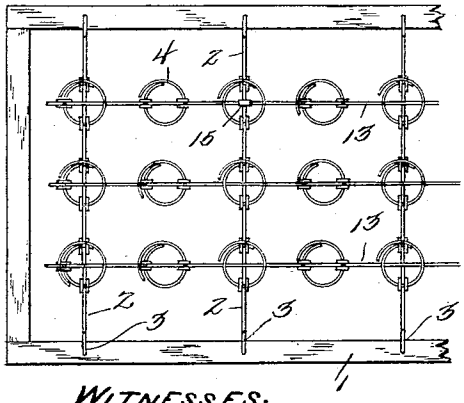


Fig. 7.

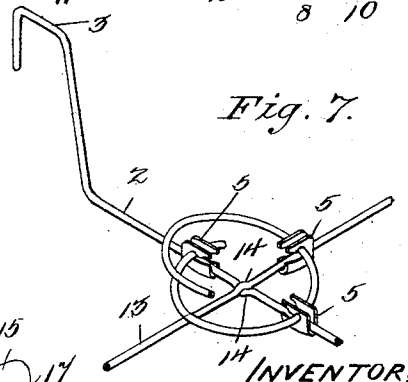
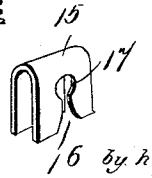


Fig. 8.



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No. 752,783. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

MELVIN D. KILMER, OF CLEVELAND, OHIO.

SPRING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 752,783, dated February 23, 1904.

Application filed December 13, 1901. Serial No. 85,781. (No model.)

To all whom it may concern:

Be it known that I, MELVIN D. KILMER, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Spring Constructions, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to spring constructions adapted especially for vehicle-seats and bottoms for beds, chairs, or like articles of furniture; and the primary object of the invention is to provide a spring structure combining strength and durability with the required resiliency in use.

A further object of the invention is to provide improved means for securing together the wires and springs constituting elements of the structure.

The invention comprises a supporting-frame in combination with cross-wires, springs, stay-wires, and locking means, constructed and relatively arranged as hereinafter fully described, in connection with the accompanying drawings, which form part of this specification, and set forth in the appended claim.

In the drawings, Figure 1 is a top plan of a spring structure embodying the invention and designed for use as a vehicle-seat. Fig. 2 is a transverse vertical section of Fig. 1 with a cover applied to the seat. Fig. 3 is a detail perspective, on an enlarged scale, showing the arrangement of the cross-wires, springs, and stay-wires, and their connecting means. Fig. 4 is a detail view showing one of the wires and one of the locking-clips in side elevation and a convolution of one of the springs in section. Fig. 5 is a detail view showing an end elevation of the clip shown in Fig. 4 with the wire in section and the spring in elevation. Fig. 6 is a top plan of a modified embodiment of the invention. Fig. 7 is a detail perspective of a further modification, and Fig. 8 is a view in perspective of a clip for connecting the cross-wires and stay-wires.

The reference-numeral 1 designates a supporting-frame, which may be of any preferred form and size, that shown in Fig. 1 being of rectangular shape to adapt it to serve as a vehicle-seat. To the sides of the frame 1 are secured parallel cross-wires 2, the ends of said wires being bent upward at an incline and terminating in hooks 3, which are driven into the upper edges of the sides of the frame, as best shown in Fig. 2. To each of the cross-wires are secured a plurality of coil-springs 4 by means of the locking devices shown, each of said devices comprising a U-shaped clip 5, having each of its side walls formed with a slot 6. The upper walls of the slots 6 are upwardly inclined and each is formed with a shoulder 7, and the lower walls 8 of said slots are hollowed out, as shown in Fig. 4, to facilitate the passage thereunto of the lower convolution 9 of the spring. The closed side or bend 10 of the clip 5 is of concavo-convex form, so that the wire resting therein bears against the clip only at the points 11 and 12 thereof, which prevents binding of the wire and permits a limited yielding movement of the wires within the clips. As best shown in Fig. 3, the lower convolution of each spring is secured to the cross-wire by two of the clips 5, the latter being oppositely disposed, as shown.

A series of parallel stay-wires 13 is interposed between the springs and cross-wires, said stay-wires crossing the wires 2 at right angles thereto and being secured to the adjacent springs by clips 5.

If preferred, the cross-wires 2 and stay-wires 13 are formed with bends 14 at their points of juncture, thus effecting an interlocked connection.

In the modification shown in Fig. 6 each alternate cross-wire is omitted, and the rows of springs between the cross-wires are secured by clips 5, two clips being provided for each spring.

As a further connecting means for the wires clips of the form shown in Fig. 8 may be employed, each comprising a plate 15, bent to U shape and having its sides formed with registering flaring slots 16, having circular seats 17 to receive one of the wires, while the other

wire extends between the sides of the clip longitudinally thereof. These clips 15 embrace the wires at their meeting points, as indicated in Fig. 6, and serve to connect the wires securely.

The construction above described provides a strong and durable spring structure, and its parts are readily assembled and secured without the aid of tie-wires or undue twisting or other manipulation of the crossed wires.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by the following claim or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention—

In a spring construction, a locking device comprising a U-shaped clip, having its wings formed with slots in horizontal alinement and open at one end, said slots having their upper walls formed with a shoulder and the lower walls hollowed out, and the closed side or bend of the clip being of concavo-convex form, whereby a wire would rest thereon at two points only, as set forth.

Signed by me this 5th day of October, 1901.

MELVIN D. KILMER.

Attest:

A. E. MERKEL,
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