No. 742,117. PATENTED OCT. 20, 1903.

E. A. HOEFER.

SPRING STRUCTURE.

APPLICATION FILED APR. 7, 1903.

NO MODEL.

Fig. 1.

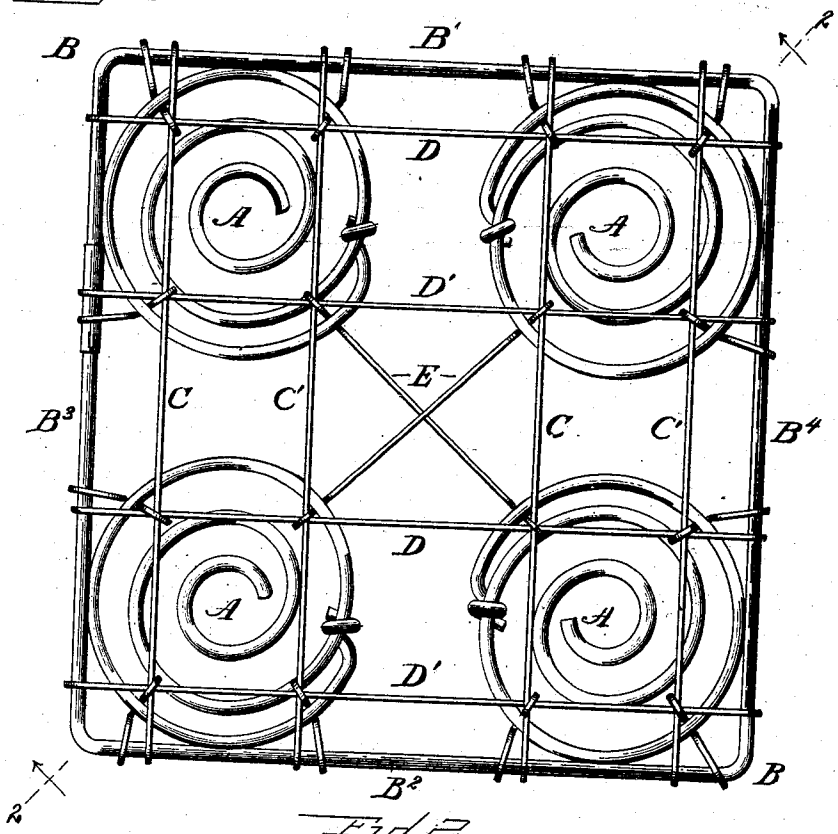



Fig. 2.

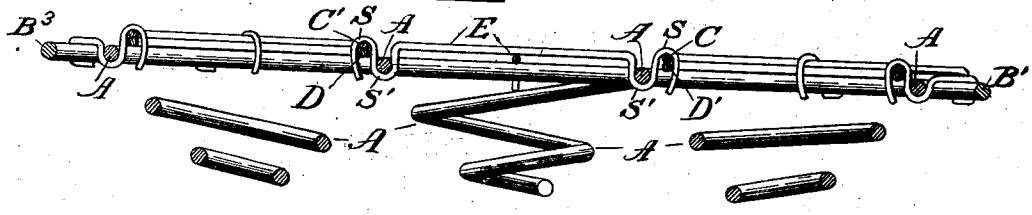



Fig. 3.

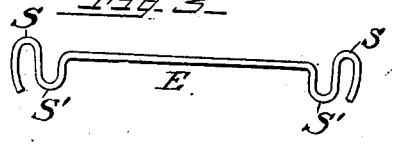
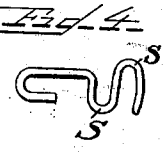



Fig. 4.




Witnesses.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 742,117. Patented October 20, 1903.

# UNITED STATES PATENT OFFICE.

EMIL A. HOEFER, OF FREEPORT, ILLINOIS, ASSIGNOR TO FREEPORT SPRING COMPANY, OF FREEPORT, ILLINOIS, A CORPORATION OF ILLINOIS.

## SPRING STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 742,117, dated October 20, 1903.

Application filed April 7, 1903. Serial No. 151,554. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL A. HOEFER, a citizen of the United States of America, residing at Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Spring Structures, of which the following is a specification.

The object of my invention is the production of a spring structure wherein a plurality of spiral springs arranged at equal distances from each other in rectilinear rows are secured to a rectangular frame provided with transversely-crossed strand-wires fastened at their ends to such frame by means of tie-rods extending from the intersection of each strand of wire with each strand it crosses and terminating at each end in an S-hook, the terminal loops of which engage the intersecting strand-wires, and the remaining and adjacent loops of which engage the upper coils of the spiral springs; and it consists of a structure formed of the elements enumerated above when fashioned, arranged, and secured together in the manner set forth.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a top plan view of a spring structure embodying my invention. Fig. 2 is a section at the dotted line 2 2 in Fig. 1 of parts there shown. Fig. 3 is a view of one of the tie-rods of the structure. Fig. 4 is also a view of the same with one end shortened and modified in form to adapt it for connection with the rectangular framework of the structure.

In actual use a much larger number of springs and a larger inclosing frame are used; but the structure illustrated in Fig. 1 is sufficient to clearly set forth my invention.

Like letters of reference indicate corresponding parts throughout the several views.

A represents a plurality of spiral springs arranged at equal distances from each other and in rectilinear rows.

B is a rectangular frame of substantially the same length and width as the rows of springs A.

C C′ are two strands of wire extending across the ends of each row of springs A and secured to two opposite and parallel sides $B'$ $B^2$ of the rectangular frame B. D D′ are two other strands of wire, also extending at right angles to the first-mentioned strands C C′ across the ends of each row of springs A and secured to the two remaining opposite and parallel sides $B^3$ $B^4$ of the rectangular frame B.

E represents tie-rods extending from the intersection of each strand of wire with each strand it crosses and terminating at each end in an S-hook, the terminal loops S of which engage the intersecting strand-wires, and the remaining and adjacent loops S′ of which engage the upper coils of the spiral springs A, thereby securing each spring A to four intersecting strand-wires and the strand-wires together at all their intersections.

This structure will be found to be very useful for lounge-seats, mattresses, and other constructions of wire where it is either desirable or necessary to firmly secure spiral springs together and at the same time furnish a bearing whereon a cushion, soft mattress, or the like may be supported.

I claim and desire to secure by Letters Patent—

In a spring structure of the class described, in combination, a plurality of spiral springs, arranged at equal distances from each other and in rectilinear rows, a rectangular frame of substantially the same length and width as the rows of springs, two strands of wire, extending across the ends of each row of springs and secured to two opposite and parallel sides of the rectangular frame, two other strands of wire also extending, at right angles to the first-mentioned strands, across the ends of each row of springs and secured to the two remaining opposite and parallel sides of the rectangular frame, tie-rods, extending from the intersection of each strand of wire with each strand it crosses and terminating, at each end, in an S-hook, the terminal loops of which engage the intersecting strand-

wires, and the adjacent loops of which engage the upper coils of the spiral springs, thereby securing each spring to four intersecting strand-wires and the strand-wires together at all their intersections, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMIL A. HOEFER.

Witnesses:
F. W. HOEFER,
A. G. HOEFER.