

J. A. STAPLES.
SPRING WORK.

Application filed Nov. 9, 1900.

(No Model.)

2 Sheets—Sheet 1.

FIG. 1

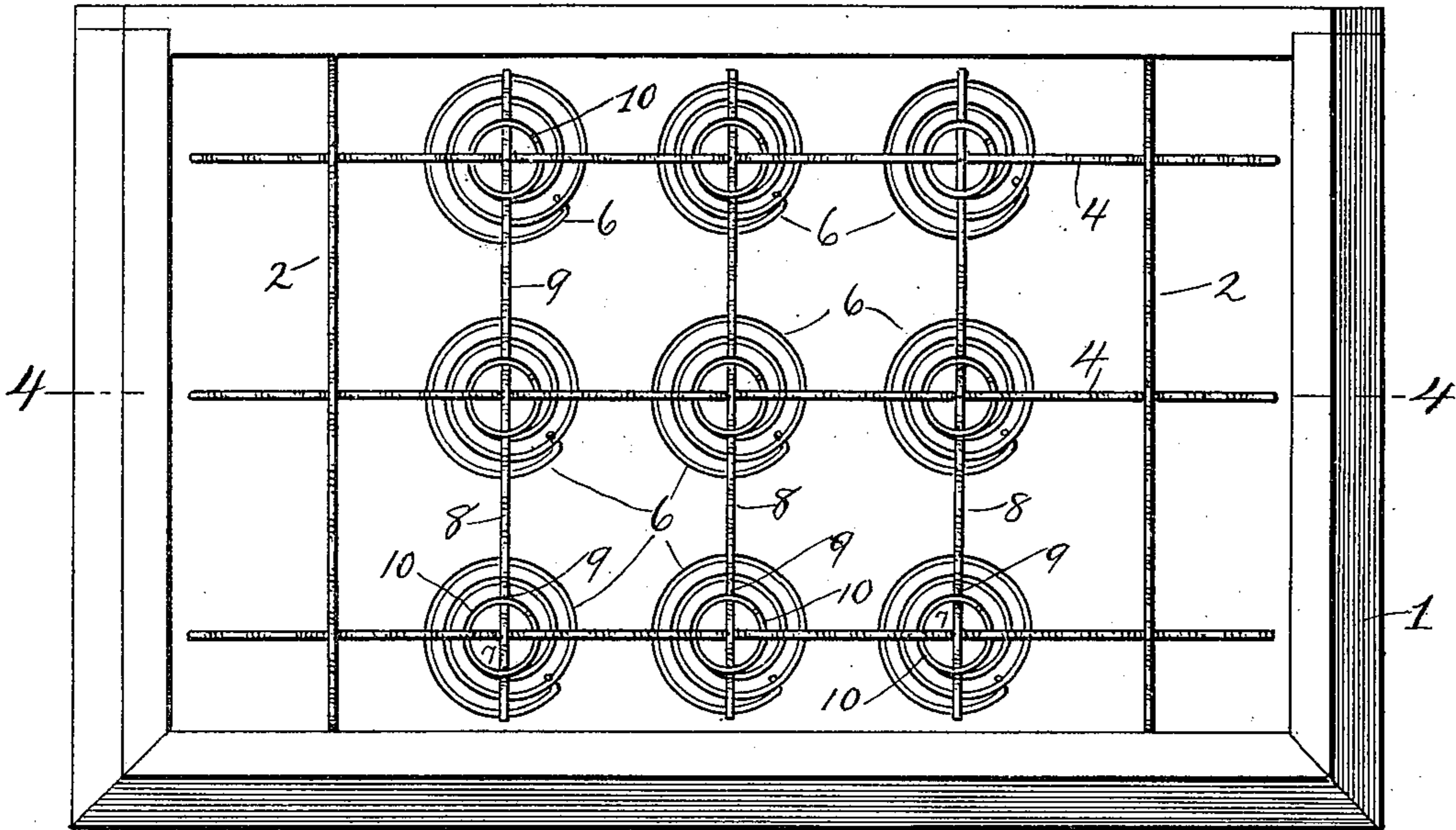


FIG. 2

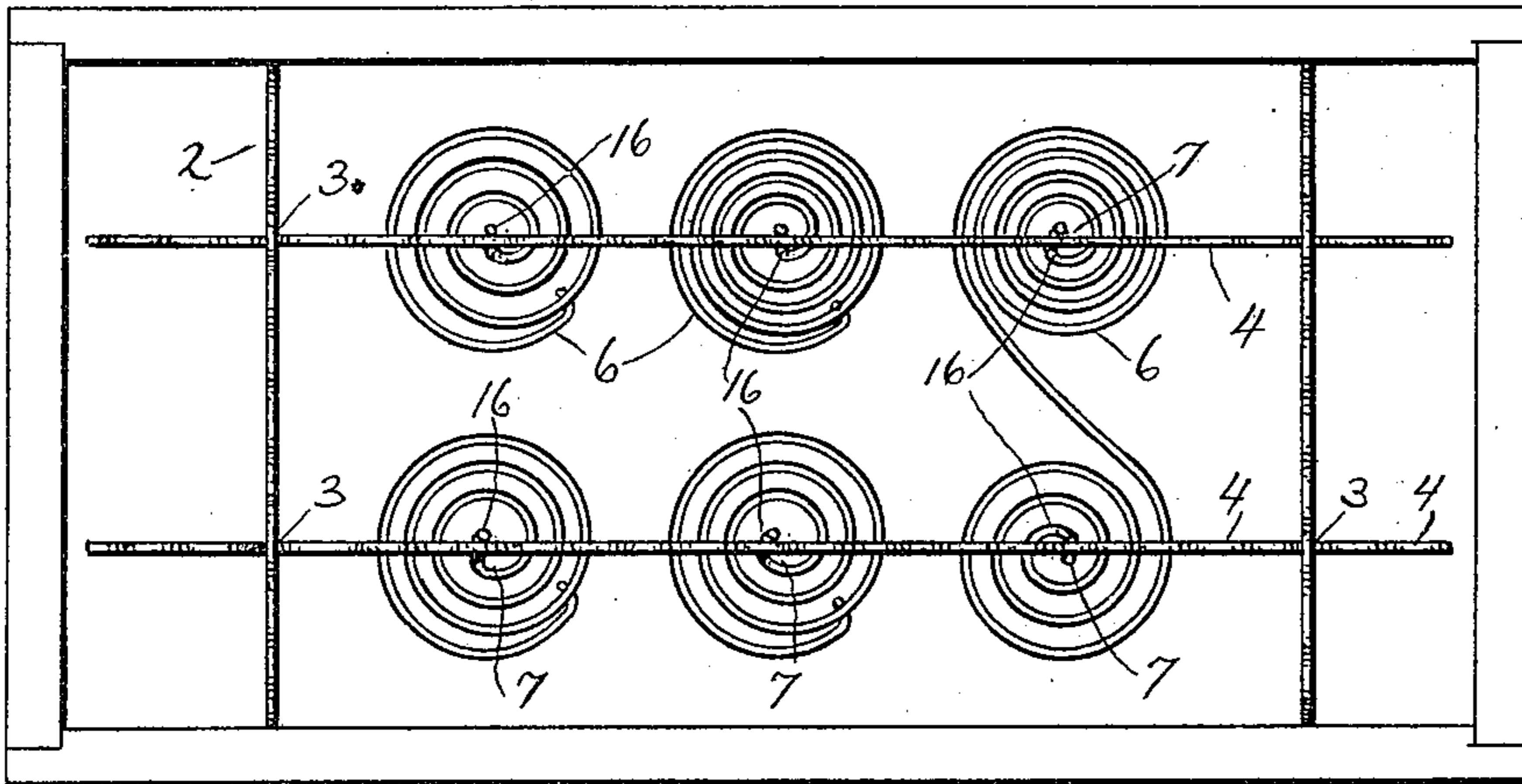
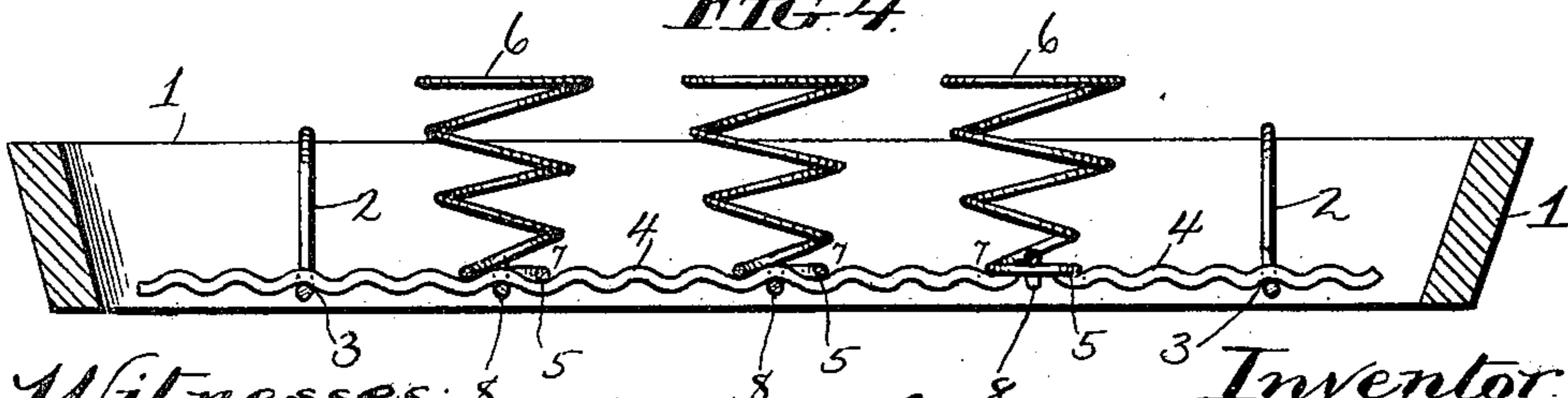


FIG. 4



Witnesses:
A. J. Bell.
R. L. Laffoon

Inventor:
John A. Staples
By Joseph M. Roberts
his Atty.

J. A. STAPLES.
SPRING WORK.

(No Model.)

Application filed Nov. 9, 1900.

2 Sheets—Sheet 2.

FIG. 3.

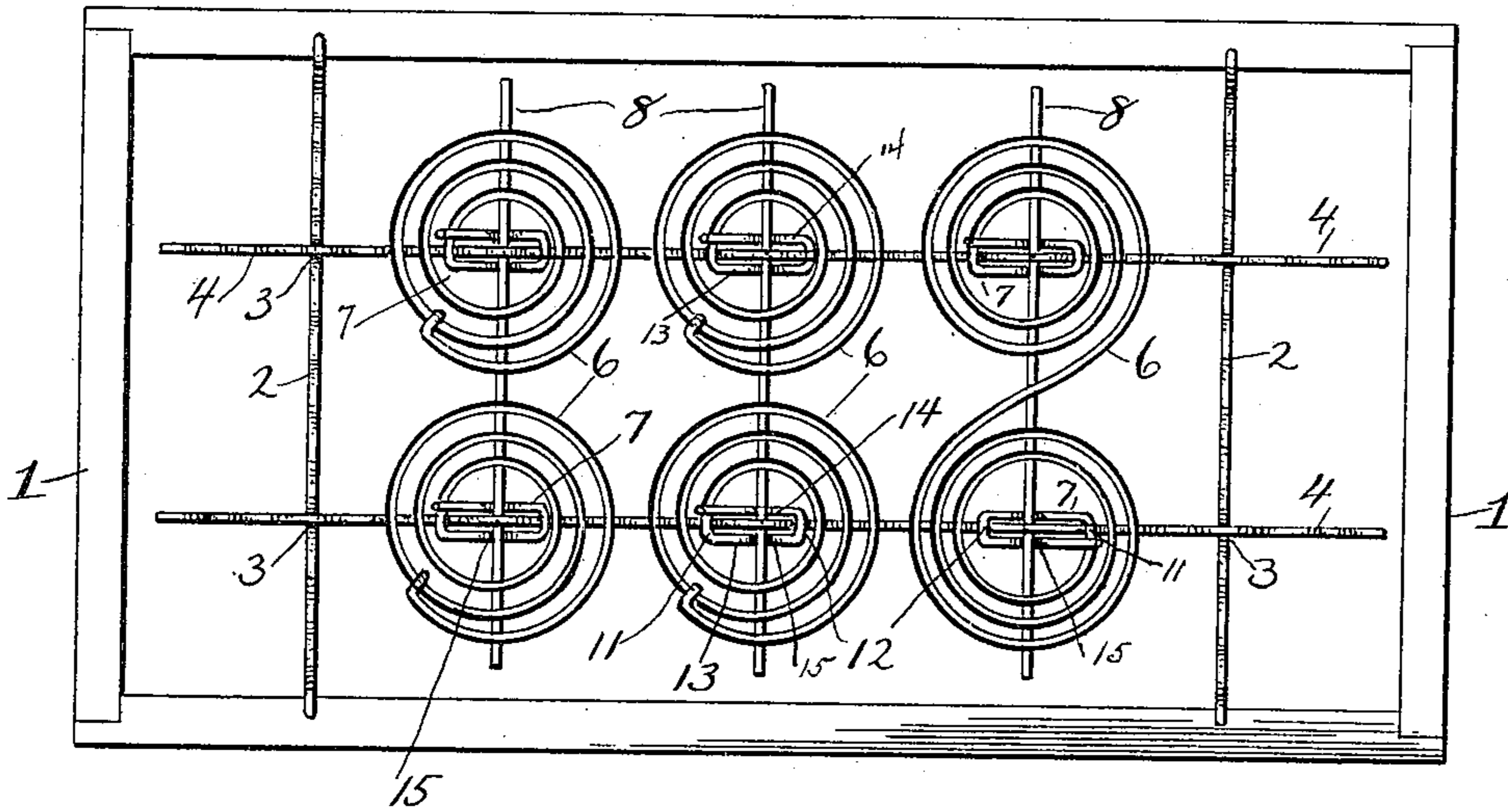


FIG. 5.

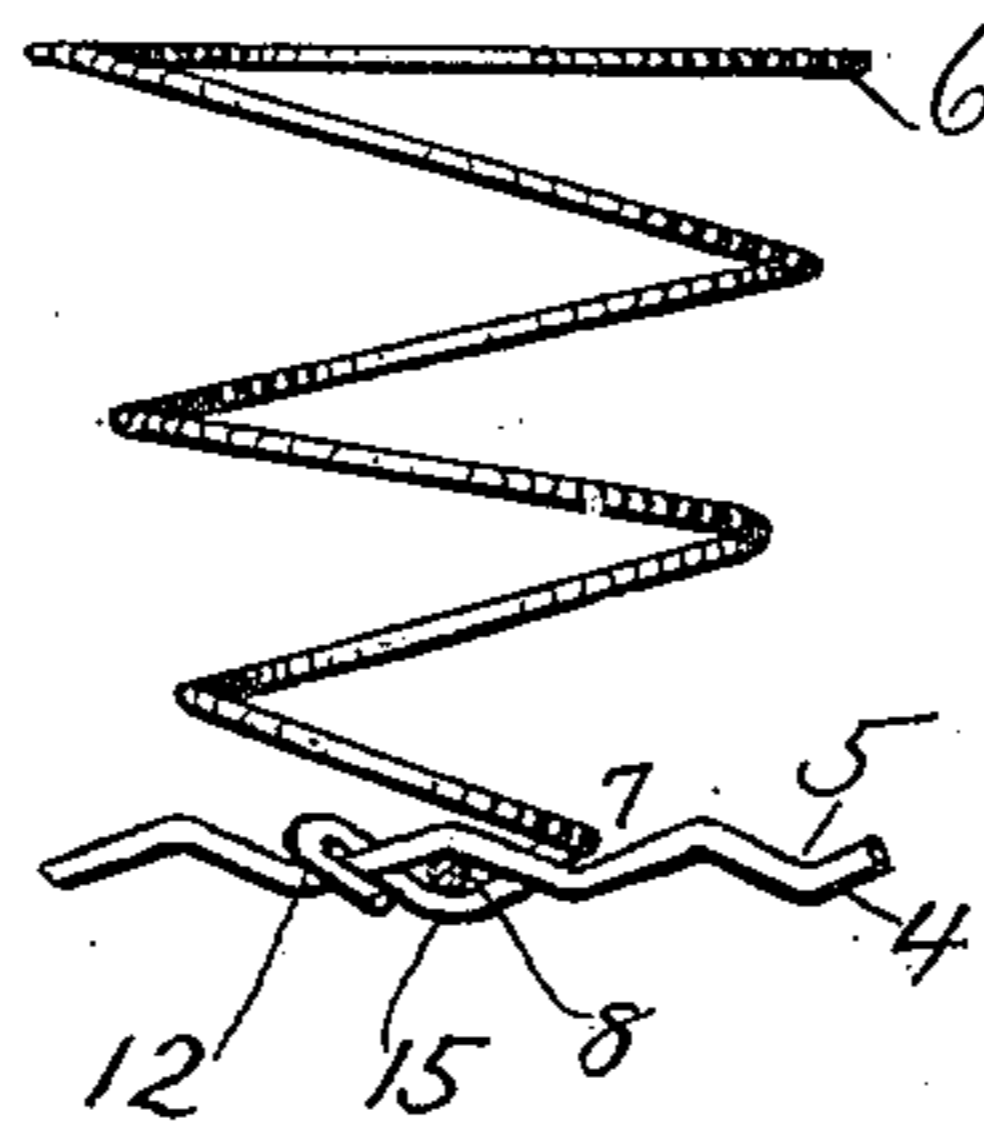


FIG. 6.

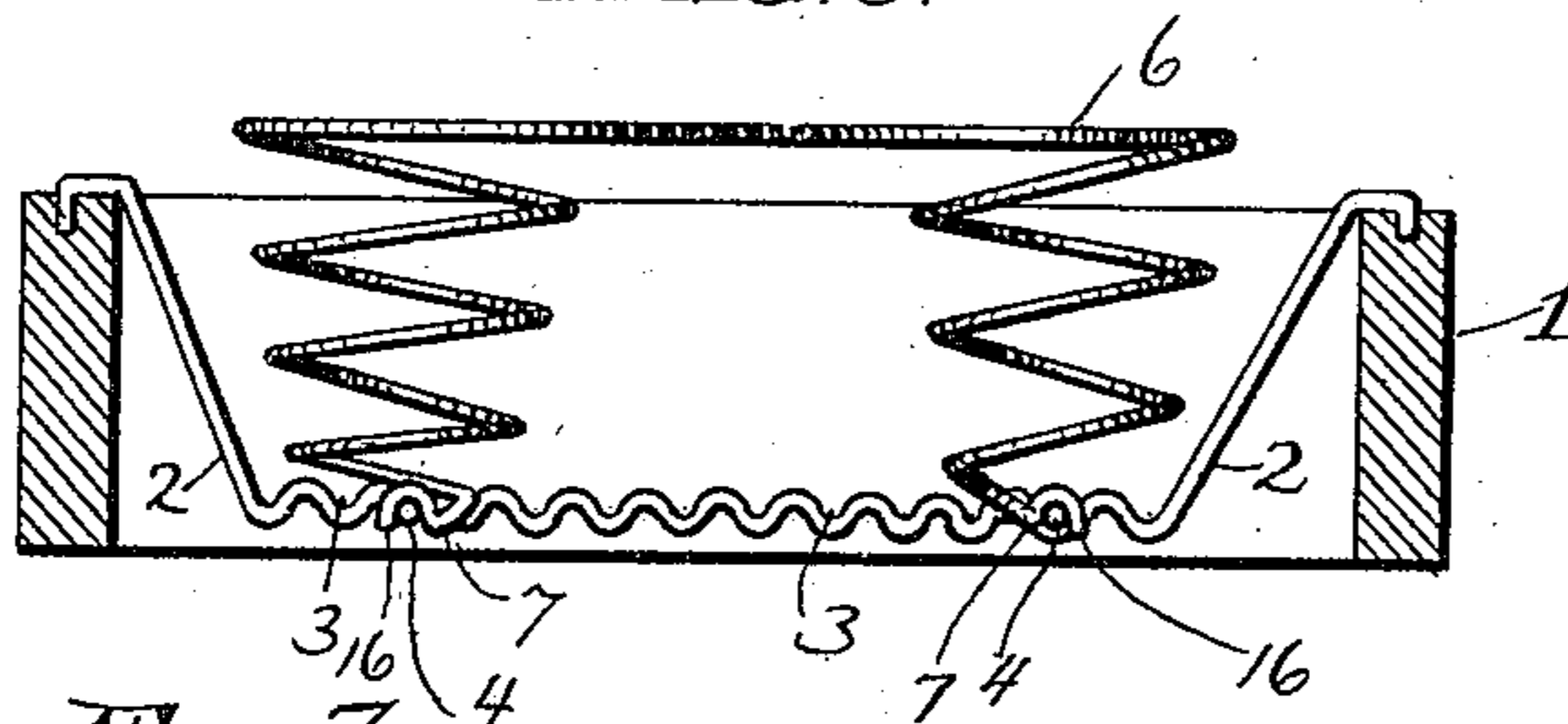
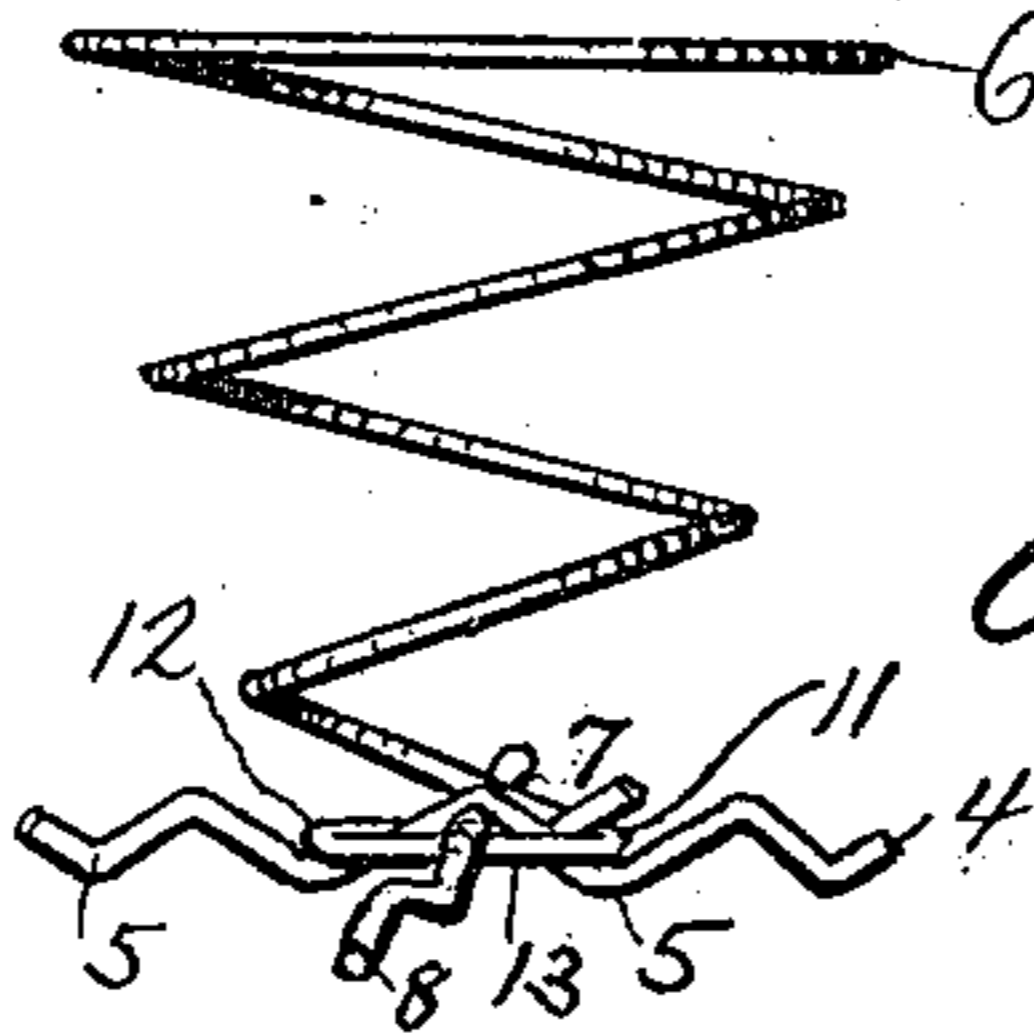


FIG. 7.



Witnesses:
A. J. Bell.
R. J. Patterson

Inventor:
John A. Staples
By Joseph M. Roberts
his Atty.

UNITED STATES PATENT OFFICE.

JOHN A. STAPLES, OF NEWBURGH, NEW YORK.

SPRING-WORK.

SPECIFICATION forming part of Letters Patent No. 670,211, dated March 19, 1901.

Application filed November 9, 1900. Serial No. 35,998. (No model.)

To all whom it may concern:

Be it known that I, JOHN ATKINSON STAPLES, a citizen of the United States, residing at Newburgh, in the county of Orange and State of New York, have invented certain new and useful Improvements in Spring-Supports for Upholstery, of which the following is a specification.

The object of the invention is to provide a new form of spring-work intended to support springs or ranges of springs for use in upholstering chairs, sofas, and the like, and especially adapted for carriage-cushion work.

The invention consists in the matters hereinafter described in connection with the accompanying drawings, and more particularly pointed out in the appended claims.

In the accompanying drawings, which exemplify my invention, Figure 1 is an inverted plan view of a seat-frame provided with spring-work constructed in accordance with my invention. Figs. 2 and 3 are views similar to Fig. 1, illustrating other exemplifications of my invention. Fig. 4 is a sectional view on the line 4-4 of Fig. 1. Fig. 5 is a detail view showing one means of seating the springs on the wires. Fig. 6 is a sectional view showing a twin-spring structure supported upon the wires, and Fig. 7 is a detail view showing another means of seating the springs.

In the drawings the same reference-numerals designate the same or corresponding parts in the various views.

The frame 1 is of any suitable size and shape according to the character of the article to which the spring-work is to be applied, and is shown herein as designating a carriage-cushion frame, which illustrates the preferred use to which the invention is adapted.

The sustaining-wires 2 are of suitable length to pass from one side of the frame to the other, and preferably consist of lengths of wire, each having a substantially horizontal portion of approximately the measurement of the opening of the frame and end portions extending upward and laterally to rest upon the upper surface of the frame, where they are provided with means to attach them to the frame, preferably in the form of downwardly-projecting points to be driven into the frame, as clearly shown in Fig. 6. These drop-wires may run

either lengthwise or crosswise of the frame, though in the present instance I have shown them as transverse of the frame, one at either end, and they are provided with bends or corrugations, forming seats 3 to receive the supporting-wires 4. These drop-wires may be placed at such distances apart as are suitable for the character of work to which they are to be applied. In the present exemplification only two such wires are shown, which are sufficient for structures of small area; but it is of course understood that where the reach of the direct supporting-wires 4 is more extended the drop-wires 2 may be added at such intervals between transverse rows of springs as may be necessary to give the structure the required firmness and rigidity.

The supporting-wires 4 run at right angles to the sustaining-wires 2 and rest upon and are supported thereby in the seats 3. The wires 4 preferably are corrugated or bent, as at 5, to receive the small ends or bases of the springs 6, the seats at the bases of the springs occupying or resting in the bottoms or recesses of the bends 5, so that all liability of endwise movement of the springs upon the wires may be obviated. In general practice it is usual to provide the bends or corrugations 5 throughout the entire length of the supporting-wires 4 in order that the relative arrangements of the springs may be varied to bring them nearer together or farther apart, according to the character of the work.

In the drawings but nine springs are shown associated with each frame, this number being chosen to allow the different views to better and more clearly show the wire structure and the relative arrangement of parts, it being understood that in practice fifteen springs are usually used, five in each of three longitudinal ranges or rows.

The springs 6 are of the usual spiral type and are provided at their small ends or bases with means for attachment to the wires 4. The attaching means may be in any suitable form and construction adapted to perform the function of retaining the bases of the springs in place upon their supports.

In the form shown in Figs. 1 and 4 the springs are attached to the supporting-wires by means of seats 7, adapted to interlock by interweaving with the wires 4 and keys 8

laid across the supports and resting in the bottoms of the bends therein. The keys 8 of this form are corrugated or bent at 9 in manner corresponding with the bends in the wires 4, and when the keys thus formed are in position in the bends of the supporting-wires 4 the corrugations of the crossed wires receive the circular coils 10 at the bases of the springs which constitute their seats, the wires of the seats passing under one of the corrugations and over the next as the spring is rotated.

In the form shown in Fig. 3 the springs are provided with seats 7, formed by bending the end of the wire of each spring at the base at the points 11 and 12 into two parallel legs 13 and 14. When this form of seat is employed in connection with the supporting-wires, the seats 7 will rest in two of the bends or corrugations at the points or bends 11 and 12, while the intermediate upper bend of the wire 4 will rest between the points 11 and 12 and prevent the spring from moving along the wire. In this form the legs of the seat may be slightly depressed or bent, as at 15, in order to make a deeper seat for the supporting-wire.

The details of the form of seat shown in Fig. 3 may be changed. For example, the legs of the seats need not be depressed or bent, as at 15, but may be straight, as shown in Fig. 7, or the leg 14 may be omitted and the wire may terminate in a hook at the bend 12, taking over the support, as shown in Fig. 5. In any variation which may be given to this form the seats will retain the springs upon the supporting-wires. If desired, suitable keys 8 may be inserted between the wires and the legs of the springs to more securely bind the parts together. These keys may be in any suitable form, the simplest being a straight piece of wire, as shown in Fig. 3, though the corrugated form may be employed, as shown in Fig. 7.

In the form shown in Fig. 2 the seats of the springs are constituted by the end of the wire of each spring being bent into hook shape, as at 16, the hook resting in one of the bends of the support 4 when the spring is assembled in place.

The employment of drop-wires having hooked ends in conjunction with supporting-wires resting in the bends of the drop-wires is of advantage, as it enables the upholsterer to run rows or ranges of springs or as many as the character of the work and the size of the frame required with the least possible number of drop-wires, thereby effecting a considerable saving in the cost of material and in the time of the operator. Moreover, this arrangement is particularly well adapted to accommodate springs of the double or twin spring type, as the supports 4 may be disposed at any distance apart along the bends of the drop-wires 2 to accommodate any size of twin spring without the necessity of accurately measuring to ascertain their proper location. As shown at the right in Figs. 2 and

3 and in Fig. 6, the supports 4 receive the ends or seats 7 of the members of the twin springs, the supports having been positioned upon the drop-wires at the proper distance apart to receive springs of standard size, the bends or eyes in the drop-wires serving to interlock the wires at their points of crossing.

In the twin-spring form the supporting-wires are so spaced apart by the eyes or bends of the drop-wires, which are made at proper predetermined points, that the bottoms or seats of the springs snap into place, or in assembling the twin springs the wire of the spring is slightly flexed or bent, so that the resiliency of the wire composing the springs serves to bind the seats securely upon the supports and prevents their accidental displacement. This latter feature will be especially noticeable in the forms wherein the seats are in the shape of hooks. For example, in Fig. 6 the ends of the wire at the bases are oppositely disposed or extend in opposite directions and the resilient nature of the material causes the hooks to firmly engage the supports. Also, in Figs. 3 and 5, the seats are substantially hook-shaped and the assembling of the springs is accomplished in the same manner.

It is of course understood that the tops of the springs are bound together and to the frame by any suitable well-known means, which, however, is not shown herein for convenience of illustration. It is further understood that the special configurations or shapes of the springs at their points of attachment to the supporting-wires or the means of seating the springs thereon may be varied to include any suitable form without departing from the scope of my invention, which contemplates and includes any and all such expedients. The main feature of the invention is the employment of drop-wires or sustaining-wires, which receive the supporting-wires, which in turn receive and support the springs, whereby the springs are not carried directly by the drop-wires. Any variation of this essential matter is within my invention, regardless of the special formation or configuration of parts.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with drop-wires having bends, of corrugated supporting-wires in the bends, and springs having seats at their bases engaging the supporting-wires independent of the drop-wires.

2. The combination, with wire springs in which the end of the wire at the base is formed into seats, of drop-wires having bends, and supporting-wires resting in the bends and bent to receive the seats of the springs between the drop-wires.

3. The combination of drop-wires having bends in their horizontal portions, supporting-wires having bends resting in the bends of the drop-wires, and springs having seats

resting in the bends of the supporting-wires independent of the drop-wires.

5 4. The combination of drop-wires having bends in their horizontal portions, supporting-wires having bends interlocking with the bends of the drop-wires, and wire springs in which the wire at the base is bent into a seat to rest in bends of the supporting-wires independent of the drop-wires.

10 5. The combination with a seat-frame, of drop-wires having bends in their horizontal

portions and terminating in points, corrugated wires resting in the bends of the drop-wires, and springs supported on the corrugated wires between the drop-wires.

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

15

JOHN A. STAPLES.

Witnesses:

JNO. WISE,

JAMES J. FLANAGAN.