

No. 720,956.

PATENTED FEB. 17, 1903.

F. P. O'BRIEN.
UPHOLSTERY SPRING.
APPLICATION FILED MAY 1, 1902.

NO MODEL.

Fig. 1

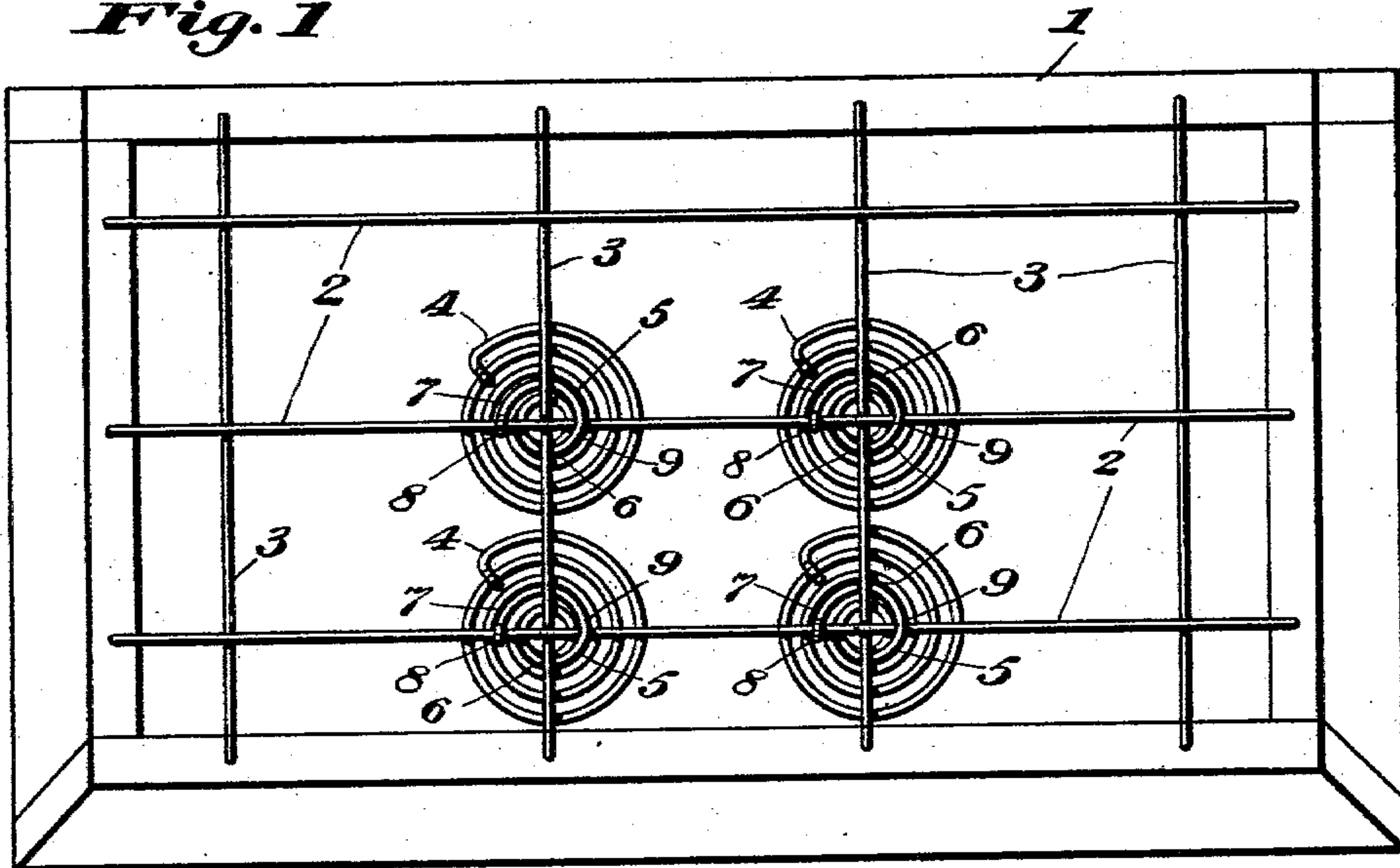


Fig. 2

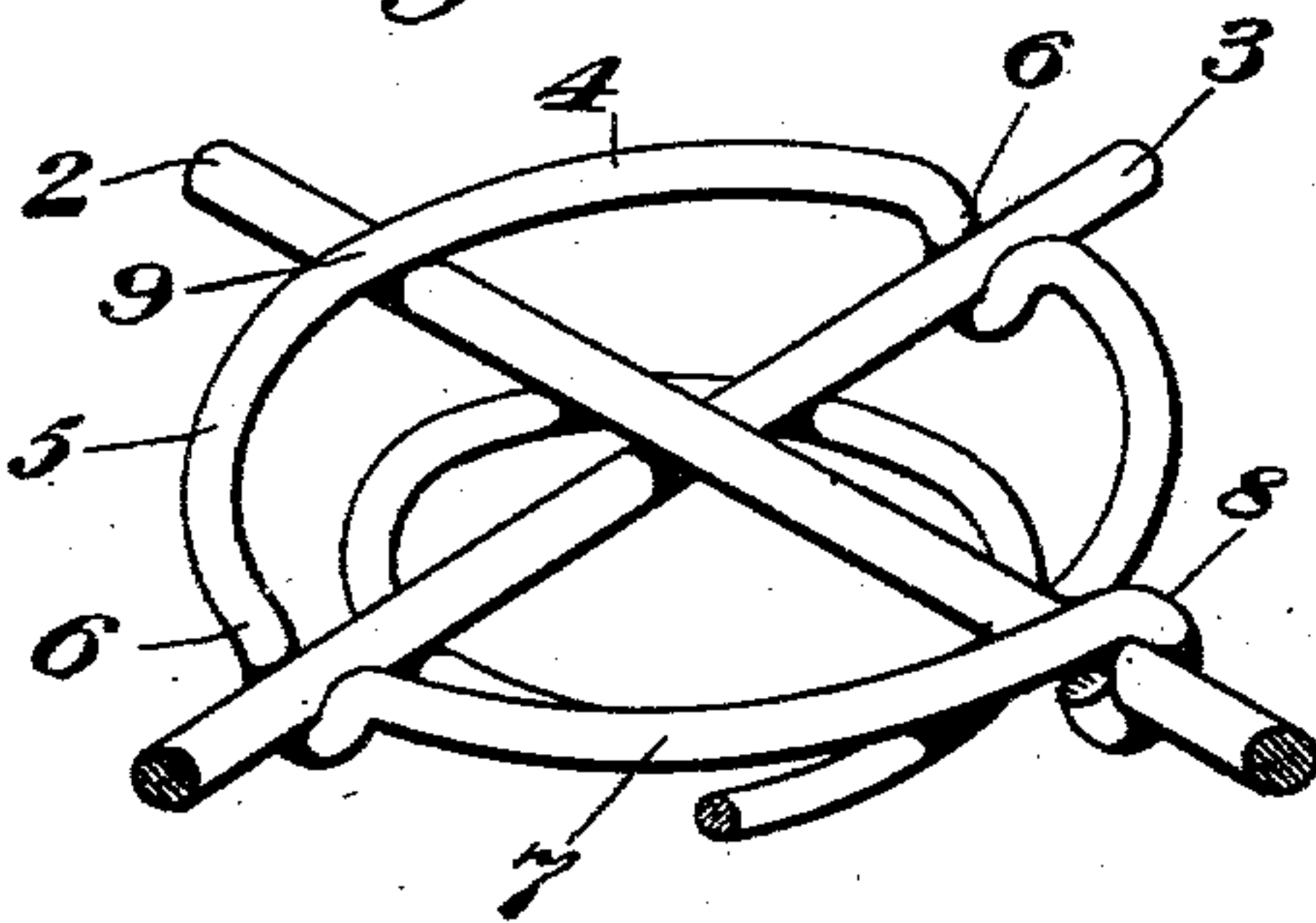


Fig. 3

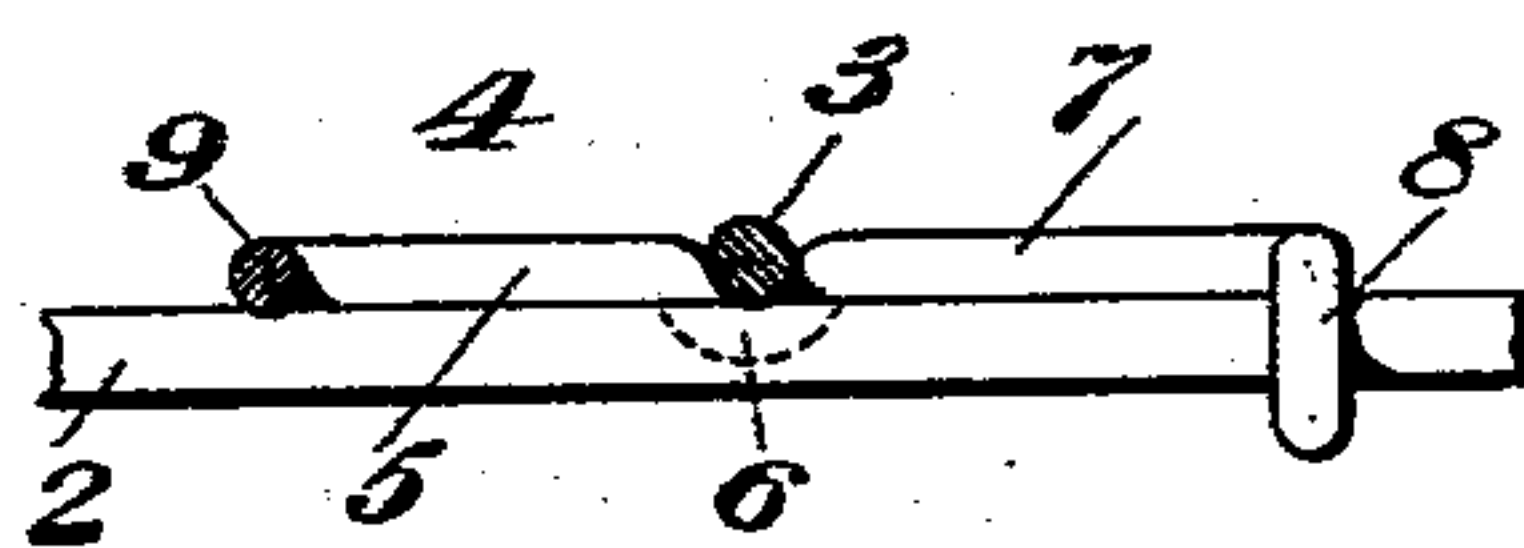
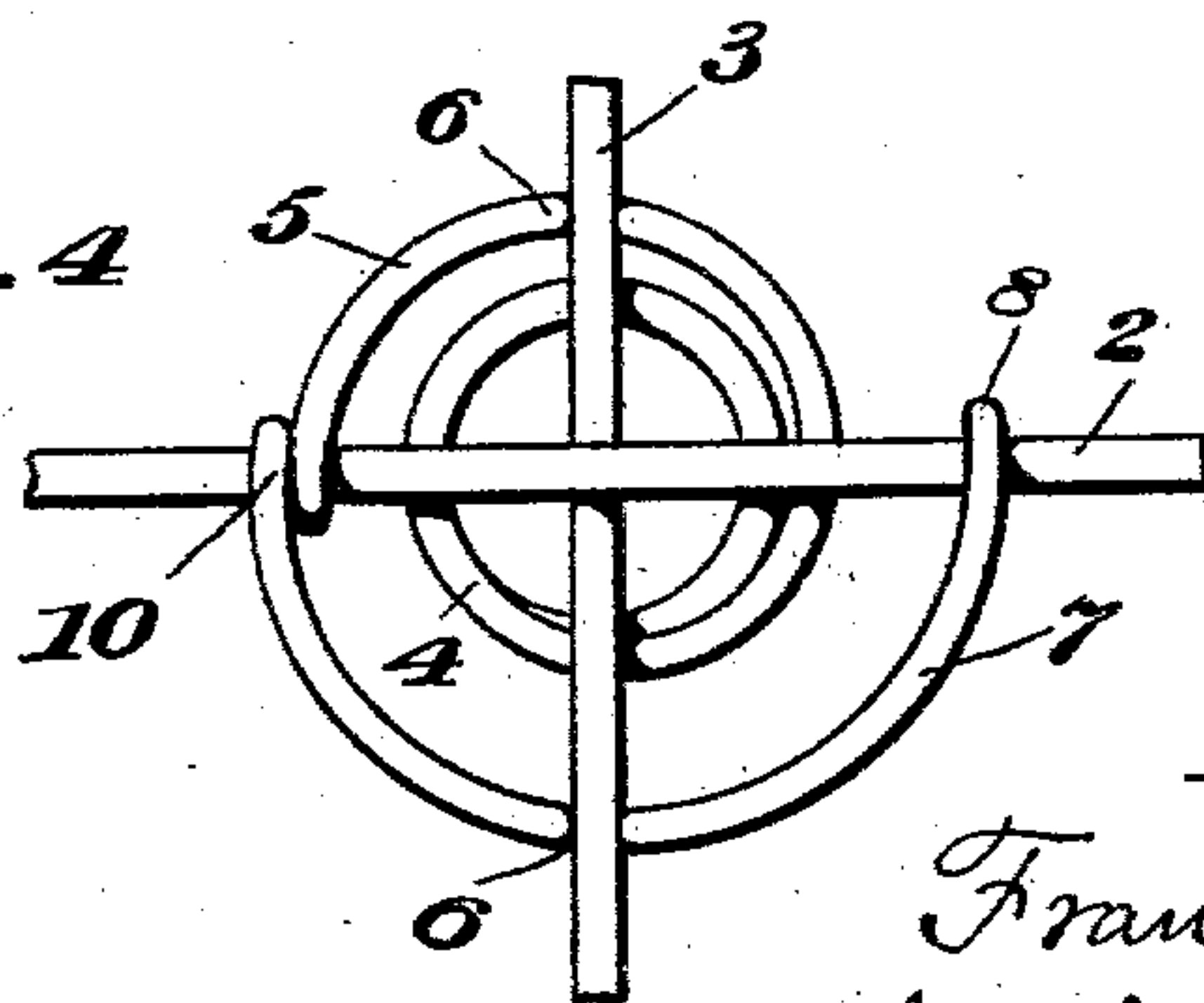


Fig. 4



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UNITED STATES PATENT OFFICE.

FRANK P. O'BRIEN, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO
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UPHOLSTERY-SPRING.

SPECIFICATION forming part of Letters Patent No. 720,956, dated February 17, 1903.

Application filed May 1, 1902. Serial No. 106,478. (No model.)

To all whom it may concern:

Be it known that I, FRANK P. O'BRIEN, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Upholstery-Springs, of which the following is a specification.

This invention relates to certain improvements in spring structures such as are commonly employed in carriage-seats, chair-seats, bed-bottoms, and the like; and the object of the invention is to provide a structure of this general character wherein are employed helical springs and supporting-wires therefor and in which is provided improved means for supporting the helical springs upon said supporting-wires and also for holding said springs against displacement.

The invention consists in certain novel features of the construction, combination, and arrangement of the several parts of the improved spring structure whereby certain important advantages are attained and the device is made simpler, cheaper, and stronger and is otherwise better adapted and made more convenient for use, as will be all hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate my improvements, Figure 1 is an under side view of the frame of a carriage-seat having supporting-wires and helical springs combined according to my invention, and Fig. 2 is a perspective detail view drawn to a larger scale and showing portions of a spring and its supporting-wires to illustrate the improved means for holding said spring in position. Fig. 3 is an inverted partial section also drawn to an enlarged scale and showing certain features of construction to be hereinafter referred to. Fig. 4 is a fragmentary under side view showing a modified construction of the spring structure also embodying my improvements.

Referring first to Figs. 1 to 3, 1 indicates as a whole the frame of the carriage-seat to which my improved spring structure is applied, and 2 2 indicate supporting-wires extended lengthwise along the open bottom of

the seat-frame 1, parallel with each other, while 3 3 indicate other supporting-wires arranged in a series parallel with each other, but extended across the open bottom of the seat-frame at right angles to and intersecting the wires 2. The wires 2 2 are beneath the wires 3 3, as herein shown; but this is immaterial to my invention, as is also the spacing or distancing of the wires of the respective series, which spacing may be varied at will to suit different cases and for different kinds of work.

4 4 indicate the springs of the structure, which springs may be of any well-known kind, being herein shown as formed with their lower portions of less diameter than their upper parts and provided with lower end coils 5 5 for engagement with the supporting-wires 2 and 3, above referred to.

The end coil 5 of each spring 4 has at diametrically opposite points upward bends or bights 6 6, of a size adapted to fit snugly over and rest upon the corresponding wire 3 in such a way as to prevent the spring, when placed in position in the structure, from movement laterally with respect to such wire 3. In arranging the springs in the structure they are placed, as shown in the drawings, at the intersections of the respective wires of the series 2 and 3. The end coil of each spring 4 is also formed with a free extremity or arm 7, in which is produced a loop or eye 8, which is usually produced by a circular bend at the end of said free arm, as shown in the drawings, and the corresponding wire 2 of the longitudinal series of supporting-wires is adapted to be slipped or passed through said loop or eye 8 in such a way as to hold the spring when in place in the structure against movement laterally with respect to said wire 2. As shown on the drawings, the loop or eye 8 in the arm or extremity 7 of the end coil 5 is arranged at a point about central with relation to the bends or bights 6 6, by means of which said end coil has engagement with the wire 3, and at the side of the end coil 5 diametrically opposite to said loop or eye 8 the wire 2 in the assembling of the structure, after being passed through said loop or eye 8 and beneath the wire 3, is passed above said end coil, as indicated at 9, in order to hold

the bends or bights 6 6 securely pressed down in engagement with the wire 3.

In assembling the improved spring structure constructed according to my invention 5 the wires of one series—say the wires 3 3, for example—are first extended parallel with each other, and then a spring 4 is held upon one of said wires 3, with the bights or bends 6 6 of its end coil 5 engaged over said wire at 10 points opposite the point at which it is desired a wire 2 shall intersect said wire 3. The end of the wire 2 is then passed first through the loop or eye 8 on the free arm 7 of the end coil of said spring and is then passed beneath the 15 supporting-wire 3 and afterward above the portion 9 of the end coil 5 opposite to loop or eye 8, in order to lock the end coil 5 of the spring between said wires 2 and 3. When one spring has been thus secured in position 20 in the structure, another is applied either to the same wire 3 at a point at which another wire 2 is desired to intersect therewith, or such next spring may be applied upon the next wire 3 of the series, and the end of wire 2 25 which secures the first spring may be pushed past said first spring until it comes in position for securing such second spring to the second wire 3 of the series.

In the modified form of structure shown in 30 Fig. 4 substantially the same principle is involved, with the exception that the end coil 5 of the spring is provided at a point diametrically opposite end loop or eye 8 with a circular bend or loop 10, through which the wire 35 2 is designed to be passed for securing the spring more firmly to the supporting-wires.

The improved spring structure constructed in accordance with my invention is of an extremely simple and inexpensive nature and 40 is especially well adapted for use, since by its employment the use of bent or crimped supporting-wires is altogether avoided, so that the structure may be very easily and quickly put together, whereby a very considerable and 45 important economy in the manufacture is attained. The springs when in position in the structure are also securely and firmly locked against displacement and also against turning movement by the engagement of the bends 50 or bights 6 6 and loops 8 with the supporting-wires 3 and 2, the portions 9 of the end coils 5 which are passed beneath the wires 2 serving to hold the bends or bights 6 6 against being lifted off of the wires 3 in case the springs 55 should be tilted or moved sidewise at their upper parts. When the structure is assembled, as above described, the ends of the wires 2 and 3 may be secured in any desired manner to the frame 1 of the carriage-seat or to 60 any other supporting-frame in case the structure be employed for use in other articles than carriage-seats. It will also be obvious from

the above description of my improvements that the improved spring structure constructed according to my invention is capable of 65 some modification without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the several parts of 70 the device herein set forth.

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

1. A spring structure comprising intersect- 75 ing supporting-wires and a spring having an end coil formed with bends adapted for engagement with one of the supporting-wires and with a loop through which the other supporting-wire is passed, said loop serving by 80 engagement with the supporting-wire passed through it, to hold the spring against turning movement, substantially as set forth.

2. A spring structure comprising a spring 85 having an end coil formed with oppositely-arranged bends or bights and also with a circular bend or loop, a supporting-wire extended beneath the said end coil and with which said oppositely-arranged bends or bights are engaged and another supporting-wire extended 90 through the circular bend or loop of the end coil, intersecting the first-named supporting-wire at the central part of the end coil and at the side of the end coil opposite to said circular loop having engagement with said end coil 95 to hold the first-named wire engaged in the bends or bights of the said end coil, the engagement of said loop with said supporting-wires also serving to hold the spring against turning movement, substantially as set forth. 100

3. A spring structure comprising intersect- 105 ing supporting-wires and a spring having an end coil with which the intersection of the supporting-wires is centrally located, said end coil being formed with bends oppositely arranged and having its extremity formed with a circular loop or eye, one of said intersecting supporting-wires being extended beneath the end coil in engagement with the oppositely- 110 arranged bends thereof and the other of said supporting-wires being extended through the circular eye or loop of the extremity of the end coil to hold the spring against turning movement and having at the opposite side of 115 said end coil engagement therewith to hold the first-named supporting-wire against displacement from the oppositely-arranged bends of the end coil, substantially as set forth.

Signed at Cincinnati, Ohio, this 26th day of April, 1902.

FRANK P. O'BRIEN.

Witnesses:

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