

No. 639,226.

Patented Dec. 19, 1899.

J. F. GAIL.
SPRING BED AND SEAT BOTTOM.

(Application filed Jan. 16, 1899.)

(No Model.)

Fig. 1.

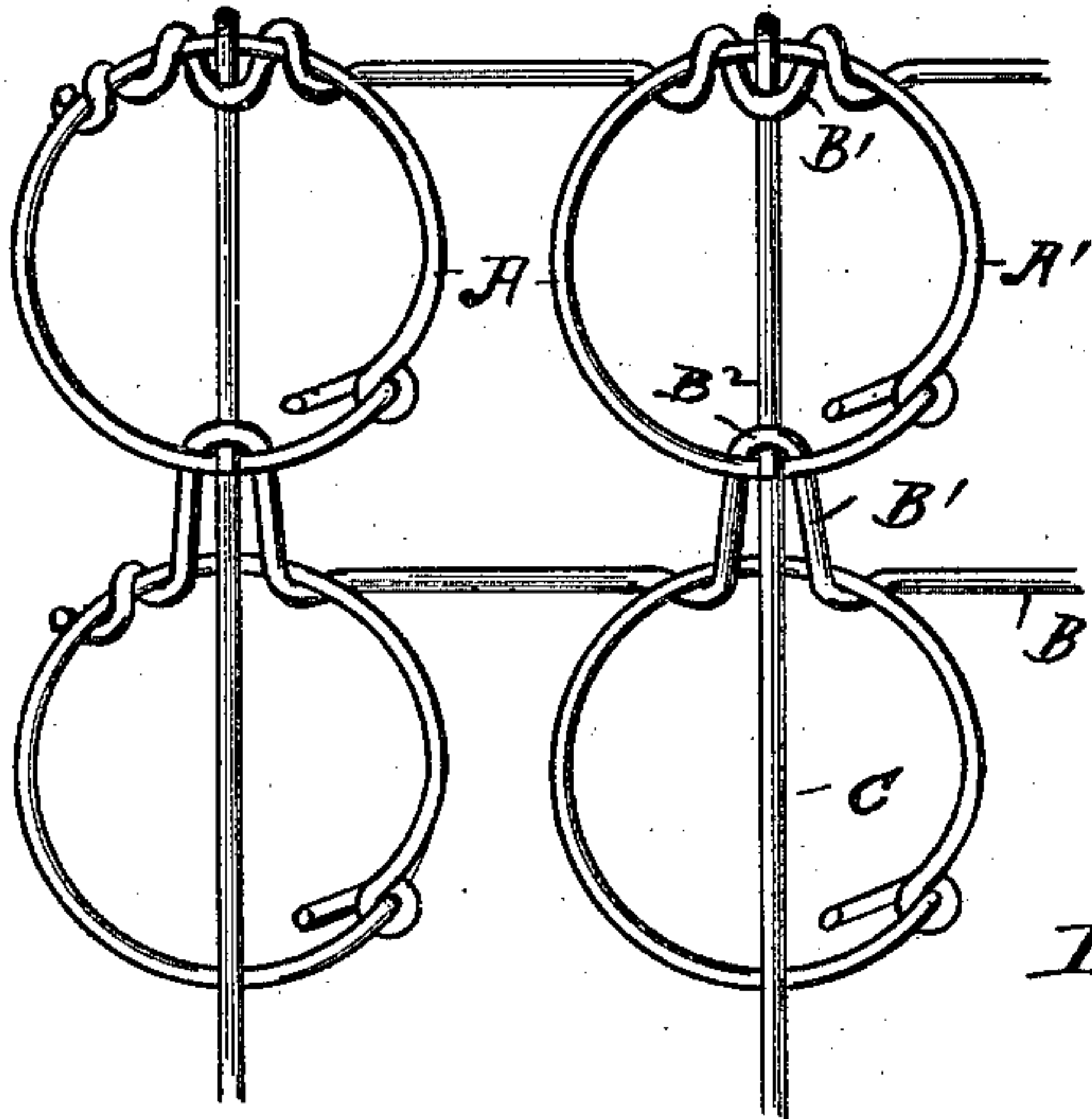


Fig. 2.

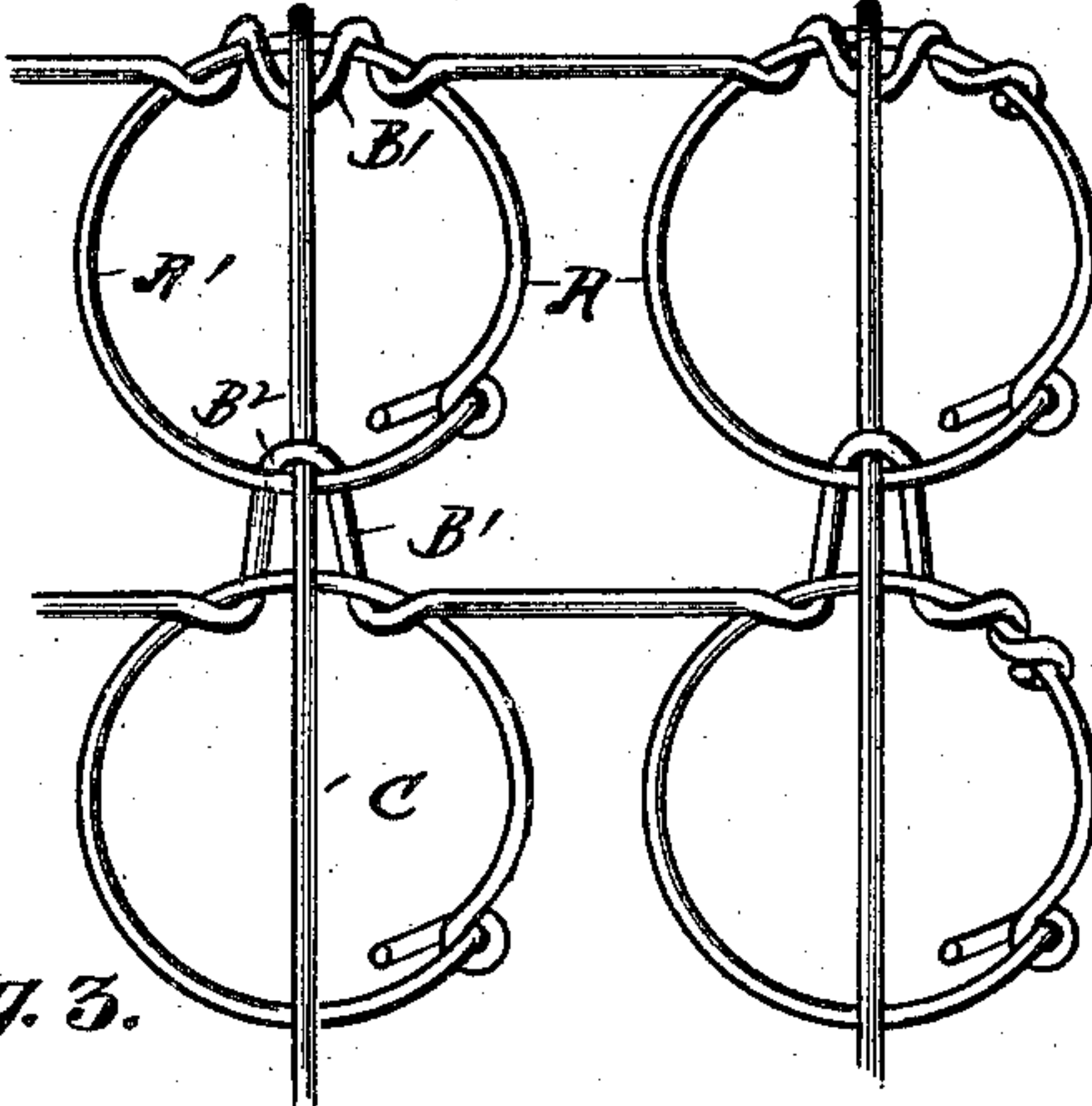


Fig. 3.

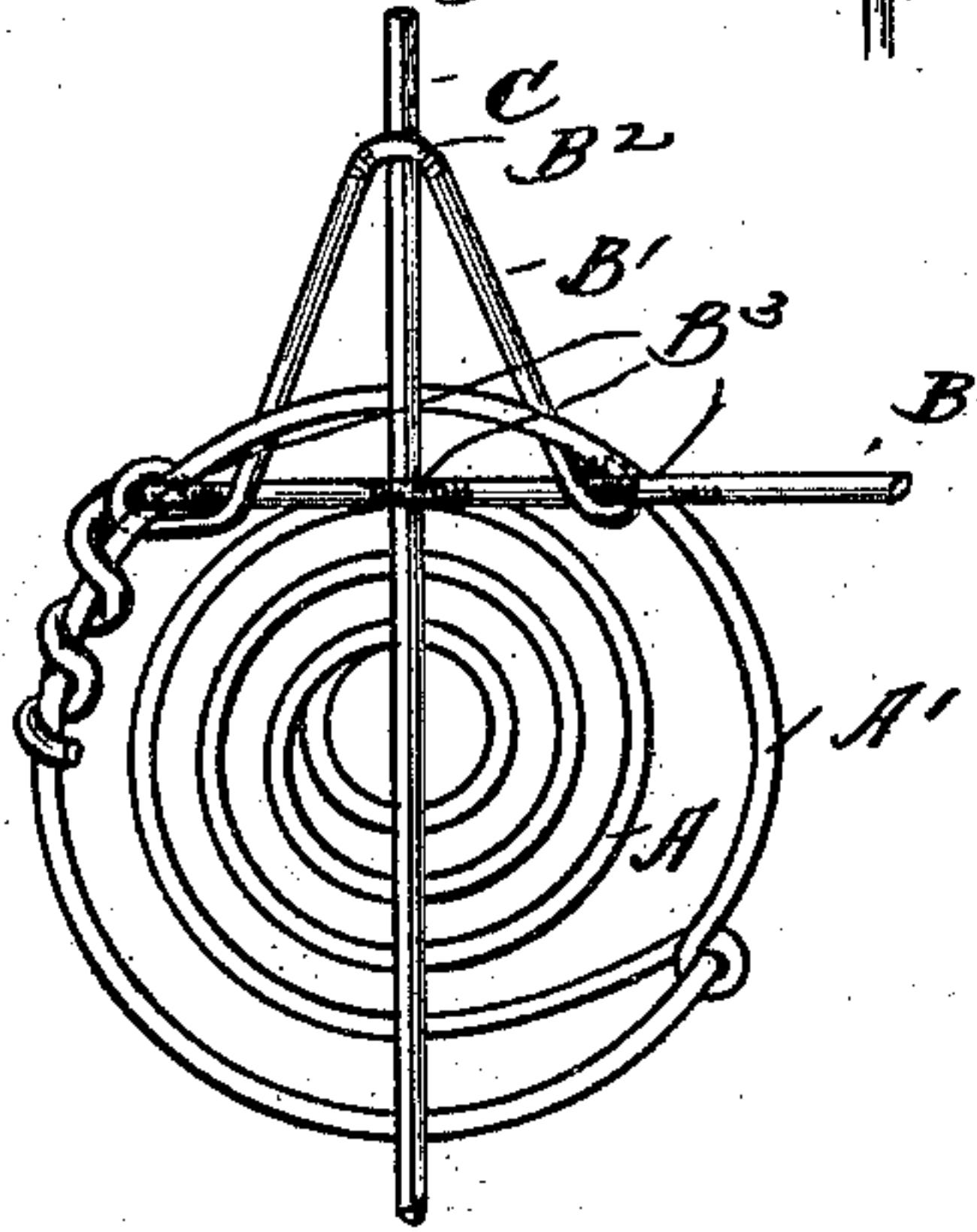
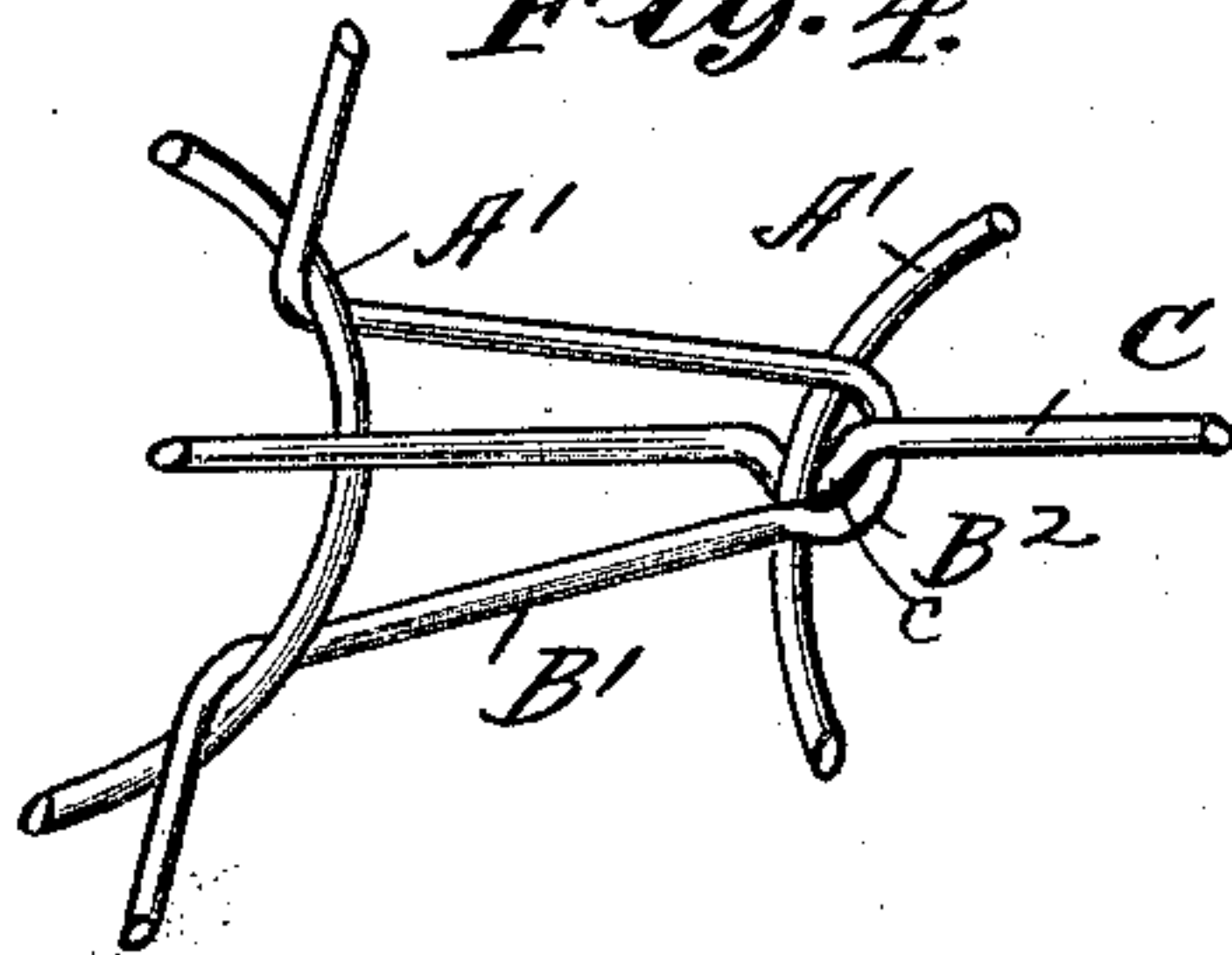


Fig. 4.



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JOHN F. GAIL, OF KENOSHA, WISCONSIN, ASSIGNOR TO THE SIMMONS MANUFACTURING COMPANY, OF SAME PLACE.

SPRING BED AND SEAT BOTTOM.

SPECIFICATION forming part of Letters Patent No. 639,226, dated December 19, 1899.

Application filed January 16, 1899. Serial No. 702,352. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. GAIL, a citizen of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented a new and useful Spring Bed and Seat Bottom, (Case E,) of which the following is a specification.

For convenience in making cross-reference this application is designated "Case E," and four other applications for Letters Patent for bed-bottoms executed by me of even date herewith are designated, respectively, "Case A," "Case B," "Case C," and "Case D."

This invention relates particularly to spring bed-bottoms formed of vertical spiral springs united horizontally by tie-rods.

The improvement involves the use of a new form of tie-rod, which permits the use of the simplest form of vertical spiral springs and which allows the ready assembling of the parts of the bed-bottom to constitute the finished structure. There is economy in the ready assembling of these parts, and there is also economy in the use of a simple form of the spiral spring.

My improvement results in a structure which has a high degree of strength, a distribution of strain applied at any particular point, and an even surface.

In the accompanying drawings, Figure 1 is a plan of a portion of a bed-bottom embodying my improvement. Fig. 2 is a similar view embodying a modification of the tie-rods and assemblage of the parts of the bed-bottom. Figs. 3 and 4 illustrate other modifications.

Inasmuch as the general construction of bed-bottoms of this class is well known, I deem it sufficient to illustrate only portions of bed-bottoms showing the application of my improvement.

Referring first to Fig. 1 of the drawings, A A are springs. These are arranged in parallel rows and are vertical in position and of spiral form, the upper end of each being formed into a complete ring A' by "knotting" or in any suitable manner. The springs may be cylindrical in outline or they may be conical or double conical. As already stated, it is the object of the invention to embody the well-known forms of vertical bed-springs into a bed-bottom of superior quality and the parts

of which may be readily made and readily assembled. B B are tie-rods extending across the bed-bottom parallel to the rows of springs. All these tie-rods, excepting those at the margins of the bed-bottom, engage two rows of springs A.

In Fig. 1 the upper tie-rod is at the margin of the bed-bottom, while the lower one is intermediate to the margins. Referring to the lower tie-rod, it is provided with V-shaped folds or loops B', extending through the ring of the spring to which said rod is applied and through the ring of the adjacent spring of the next row of springs, the rod being vertical, so as to extend through the last-mentioned ring. The upper or marginal tie-rod has the loop B' bent entirely around the spring-ring, there being no other spring to which it may reach.

The ends of the tie-rods B should be suitably secured, as by winding around the rings of the springs A, as shown at the left in Fig. 1.

Another set of tie-rods C C (which for convenience I will term "key-rods") are arranged at right angles to the tie-rods B. These are straight and extend centrally over the longitudinal rows of springs A and beneath the vertical part B² of each loop B' in the row of springs traversed by said key-rod. The ends of the key-rod D may be suitably secured to the spring A, preferably in engagement with a loop B', engaging the spring at that point, the rod reaching through the loop.

It will now be seen that the bed-bottom illustrated by said Fig. 1 consists of only three kinds of parts—namely, springs A, tie-rods B, bearing the loops, and the straight key-rods C—and it will now be understood that the assembling of these parts to form the complete bed-bottom is a simple process involving only the use of the hands and a simple bending-tool for securing the ends of the tie-rods and key-rods. This results in a very positive interconnection of the springs and the forming of such a surface as will not yield unduly at any one point, pressure at any point involving the depression of a considerable area of the bed-bottom surface. The fact is also to be noted that the key-rods C, extending midway over the rings A', prevent the central portion of the spring from

pushing upward through the ring A', as is sometimes the case when the upper portion of the spring is left unprotected.

5 The key-rods C may have lateral bends *c* where they cross the rings A', as shown in Fig. 4, whereby recesses are formed to receive said rings.

10 The form of bed-bottom shown in Fig. 1 differs only from the form shown in Fig. 2 in that the tie-rods B pass beneath the rings A' of the springs A, while the loops B' pass over instead of under the rings of the springs under which said tie-rods pass.

15 The modification shown in Fig. 3 differs only from the form shown in Fig. 2 in that the loop B' is not integral with the tie-rod B, and said loop is attached laterally to said tie-rod by bending the wire of the loop around said tie-rod. At the right-hand side the end 20 of said loop extends beneath the ring A' and is then at once bent around the tie-rod, while at the left-hand side of the figure the end of the loop passes beneath said ring and over the tie-rod and again beneath the ring and 25 then around the tie-rod. The tie-rod is shown as having upward bends B³ where it crosses said ring and the key-rod C.

30 In Fig. 4 the vertical part B² of the loop B' is bent downward instead of upward, and said loop extends over instead of under the adjacent spring, and the key-rod C passes under the adjacent spring of the adjacent spring-ring.

35 It will be seen on making a comparison of these several figures that there is in each variation of form a tie-rod having lateral loops extending through two spring-rings and around key-rods. In all the forms the

loop passes or enters the plane of the spring-ring only far enough to let the key-rod pass 40 under strain.

It will be understood that my invention may be applied to spring-seats and that the foregoing description is applicable to spring-seats as well as to spring bed-bottoms. 45

I claim as my invention—

1. The combination of spiral springs arranged in rows and having the ends formed into rings, single, parallel tie-rods extending across said springs and having their ends 50 secured to a portion of said springs and said rods bearing lateral loops extending through two adjacent springs, and key-rods having lateral bends, *c*, and arranged transversely to the said tie-rods and extending along said 55 springs and through said loops and having their ends suitably secured to one of the said other parts, substantially as shown and described.

2. The combination of spiral springs arranged in rows and having the ends formed into rings, single, parallel tie-rods extending across said springs and having their ends secured to a portion of said springs and said rods bearing lateral loops extending through 65 two adjacent springs, and key-rods having lateral bends, *c*, and arranged transversely to the said tie-rods and extending along said springs and through said loops, substantially as shown and described. 70

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

JOHN F. GAIL.

Witnesses:

DORCHESTER MAPES,
CYRUS KEHR.