

No. 639,225.

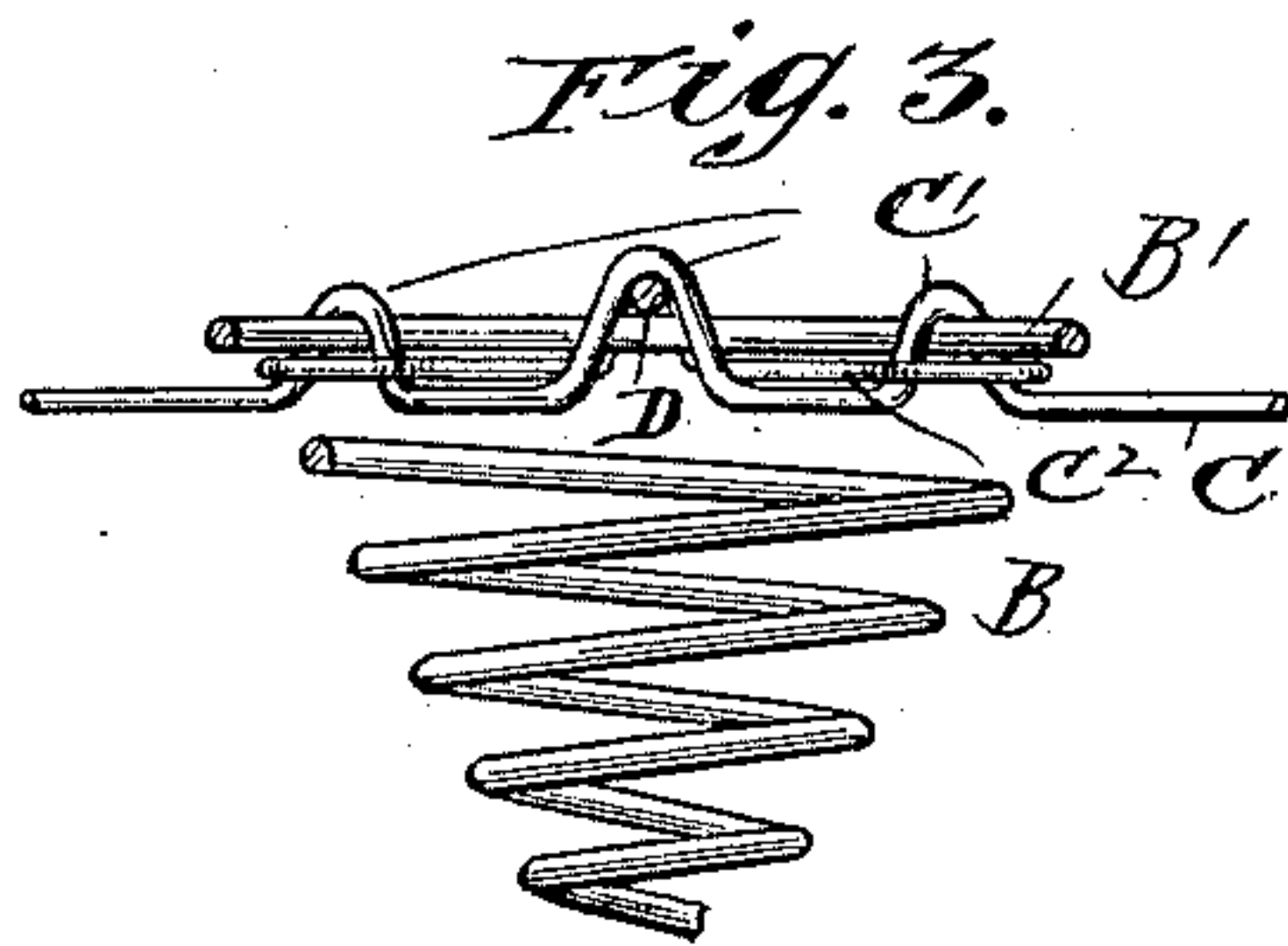
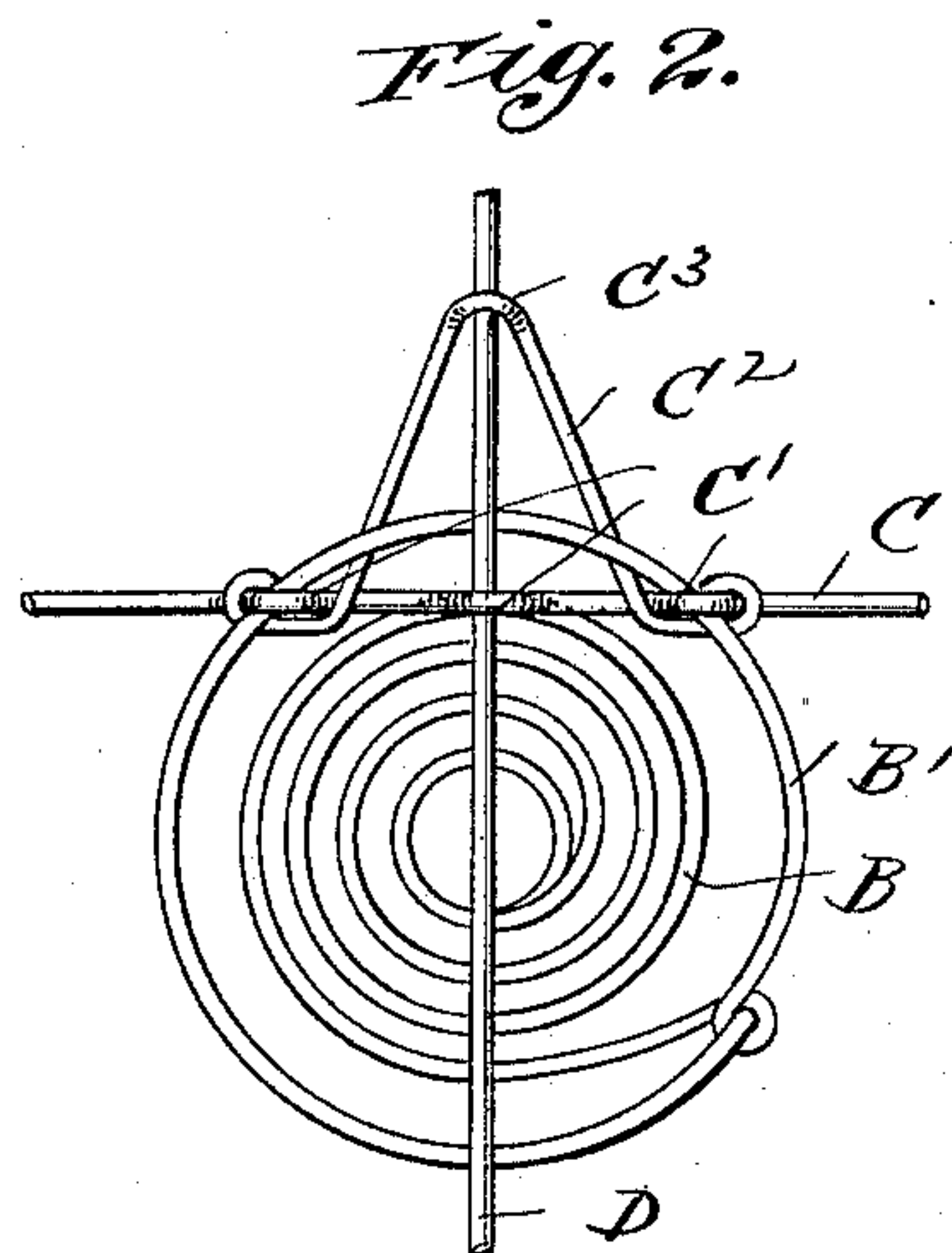
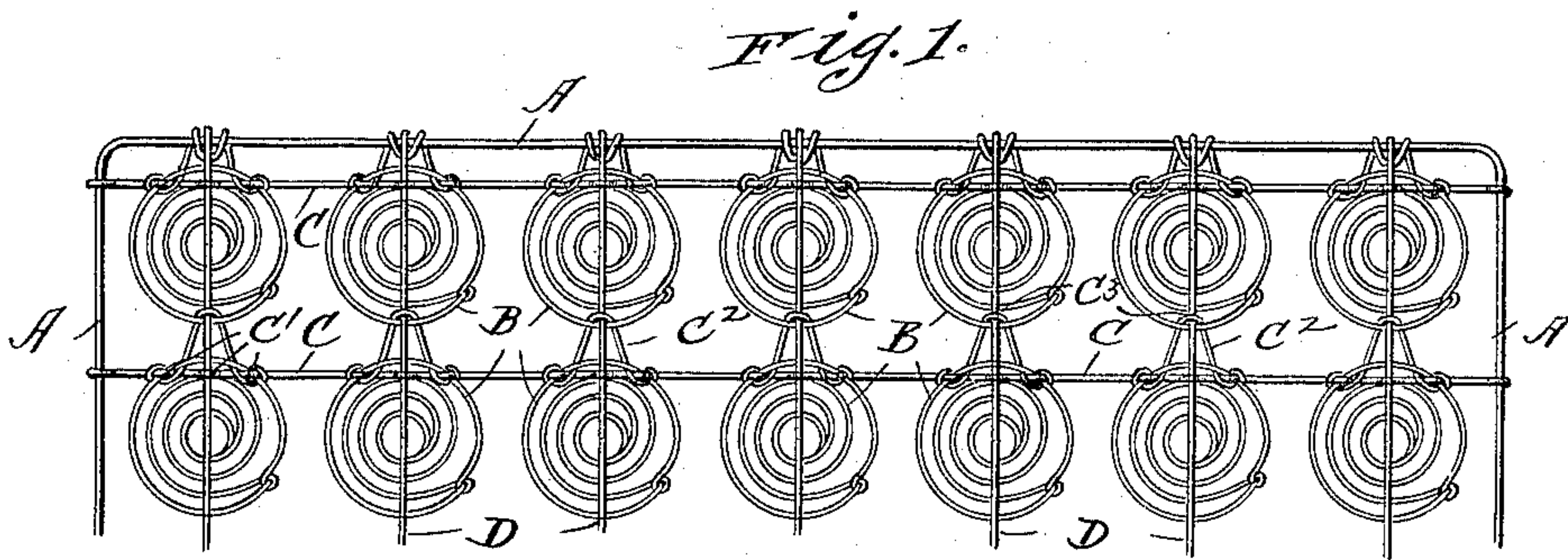
Patented Dec. 19, 1899.

J. F. GAIL.

SPRING BED AND SEAT BOTTOM.

(Application filed Jan. 18, 1899.)

(No Model.)



Witnesses,
J. S. Mann,
M. A. Winter.

Inventor,
John F. Gail
By Cyrus Kehr
Att'y.

UNITED STATES PATENT OFFICE.

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. 639,225, dated December 19, 1899.

Application filed January 16, 1899. Serial No. 702,351. (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 D,) of which the following is a specification.

For convenience in making cross-reference this application is designated "Case D," 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 E."

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 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 detail plan showing a single spring. Fig. 3 is a detail sectional elevation.

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 to said drawings, A is a rectangular frame forming the margins of the bed-bottom. This frame may be of wood or metal; but it is preferably made of metal rods or bars somewhat heavier than the metal of the springs and tie-rods.

B B are the springs. These are arranged in rows parallel to the sides of the frame A and are in vertical position and of spiral form, the upper end of each being formed into a complete ring B' by knotting or in any other suitable manner. The springs may be cylindric

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 springs into a bed-bottom of superior quality and the parts of which may be readily made and readily assembled.

C is a tie-rod extending transversely across the bed-bottom and over one row of springs, near the edges of the latter, and having its ends suitably attached to the frame A. At each spring said tie-rod has three upward bends C', two over the ring B' and one midway between said two. Said two upward bends may be so great as to allow the main portion of the tie-rod to rest below the level of the ring B'.

C² are loops extending laterally from the tie-rod C at each spring B to the adjacent spring of the next row or to the side of the frame. Each loop is formed by folding wire into substantially a V shape, the two ends of the wire C³ extending first beneath the ring B' and over the tie-rod and onward again beneath the ring, and thence around the tie-rod in the outer upward bend C'. The apex or portion of the loop the farthest from the tie-rod C is bent into vertical form (marked C³) and passes beneath and then through the ring B' of the adjacent spring of the next row of springs.

The transverse row of springs B adjoining the frame A are united to said frame by one of the tie-rods C, the loops C' extending partially around the said frame.

Another set of tie-rods D D, which, for convenience, I term "key-rods," are arranged at right angles to the tie-rods C. These extend centrally over the longitudinal rows of springs B and through the vertical part C³ of each loop C² in the row of springs traversed by said key-rod. The ends of the key-rod may be suitably secured to the frame A, preferably in engagement with a loop C², engaging the frame at that point, the rod reaching through the loop.

It will now be seen that the bed-bottom herein described consists of only five kinds of parts—namely, the frame A, the springs B, the tie-rods C, the loops C², and the straight tie-rods D D; and it will now be understood that the assembling of these parts to form a complete bed-bottom is a simple process involving only the use of the hands and a sim-

ple bending-tool for securing the ends of the tie-rods. The frame may be first put into position and the springs then placed in rows within the frame. The tie-rods C are then
 5 put into position with reference to the springs and the frame, and the ends of said tie-rods bent around the frame or secured in any suitable manner. The loops C² are applied to the tie-rods C after the latter are applied to
 10 the frame and springs. The key-rods D are last put into position by passing them over the springs transversely to the tie-rod C and beneath the loops, the ends of said key-rods D being secured, as by bending around the
 15 frame or otherwise. 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
 20 area of the bed-bottom surface. The fact is also to be noted that the key-rods D, extending midway over the rings B, prevent the central portion of the spring from pushing upward through the ring B', as is some-
 25 times the case when the upper portion of the spring is left unprotected.

It should be noted that the loops pass or enter the plane of the spring-rings only far enough to let the key-rods pass under strain.

30 It will be understood that the number of tie-rods C will depend upon the number of rows of springs extending in the direction of said tie-rods. It will also be understood that my invention may be applied to spring-seats
 35 and that the foregoing description is applicable to spring-seats as well as to spring bed-bottoms.

The spring herein described is also described, but not separately claimed, in the
 40 applications designated as "Case A," "Case C," and "Case E," to which reference has been herein made.

I claim as my invention—

1. The combination of spiral springs having their ends formed into rings, tie-rods extending across said springs, lateral loops extending at their apex through the rings of one row of springs and thence laterally to the rings on which said tie-rods rest, the ends of
 50 said loops passing between the tie-rods and said last-mentioned rings, and thence onward again past the rings and thence around said tie-rods, and key-rods engaging said springs, tie-rods, and loops, substantially as shown
 55 and described.

2. The combination of a rectangular frame, spiral springs having their ends formed into rings, tie-rods extending across said springs, lateral loops extending at their apex through
 60 the rings of one row of springs and thence laterally to the rings on which said tie-rods rest, the ends of said loops passing between the tie-rods and said last-mentioned rings,

and thence onward again past the rings and thence around said tie-rods, and key-rods engaging said springs, tie-rods, and loops, substantially as shown and described. 65

3. The combination of spiral springs having their ends formed into rings, tie-rods extending across said springs and having upward bends, C', at each of said springs, lateral loops extending at their apex through the rings on which said tie-rods rest, the ends of said loops passing between the tie-rods and said last-mentioned rings, and thence onward
 75 again past the rings and thence around said tie-rods, and key-rods engaging said springs, tie-rods, and loops, substantially as shown and described.

4. The combination of a rectangular frame, spiral springs having their ends formed into rings, tie-rods extending across said springs, lateral loops extending at their apex around said frame and thence laterally to the rings on which said tie-rods rest, the ends of said
 85 loops passing between the tie-rods and said rings, and thence onward again past the rings and thence around said tie-rods, and key-rods engaging said springs, tie-rods, and frame, substantially as shown and described. 90

5. The combination of spiral springs having their ends formed into rings, tie-rods extending across said springs, lateral loops extending downward at their apex through the rings of one row of springs and laterally to the
 95 rings on which said tie-rods rest, the ends of said loops passing beneath said last-mentioned rings, thence over said tie-rods, thence again beneath the rings, and thence again over and around the said tie-rods, and key-rods arranged
 100 transversely to said tie-rods and extending midway over rows of springs and beneath said loops where the latter extend through the spring-rings, substantially as shown and described. 105

6. The combination of a rectangular frame and spiral springs having their ends formed into rings, tie-rods extending across said frame, lateral loops extending downward at their apex through the rings of one row of
 110 springs and laterally to the rings on which said tie-rods rest, the ends of said loops passing beneath said last-mentioned rings, thence over said tie-rods, thence again beneath the rings, and thence again over and around the
 115 said tie-rods, and key-rods arranged transversely to said tie-rods and extending midway over rows of springs and beneath said loops where the latter extend through the spring-rings, substantially as shown and described. 120

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

JOHN F. GAIL.

Witnesses:

DORCHESTER MAPES,
 CYRUS KEHR.