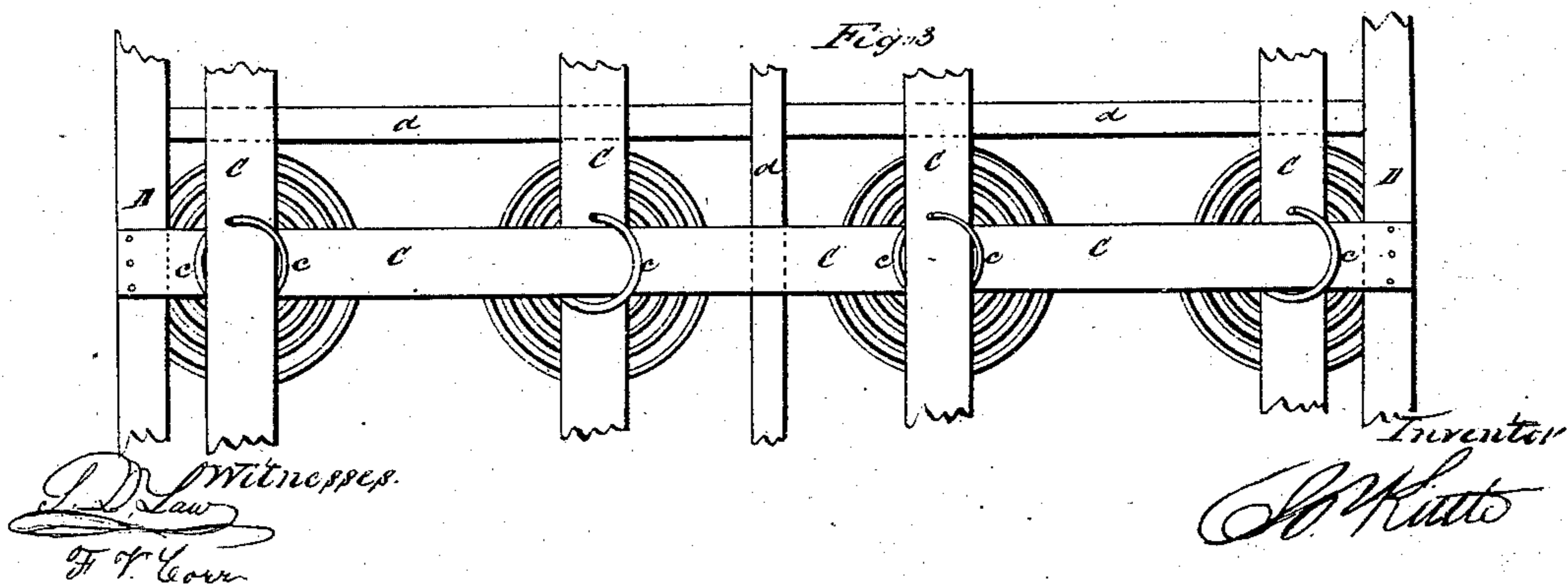
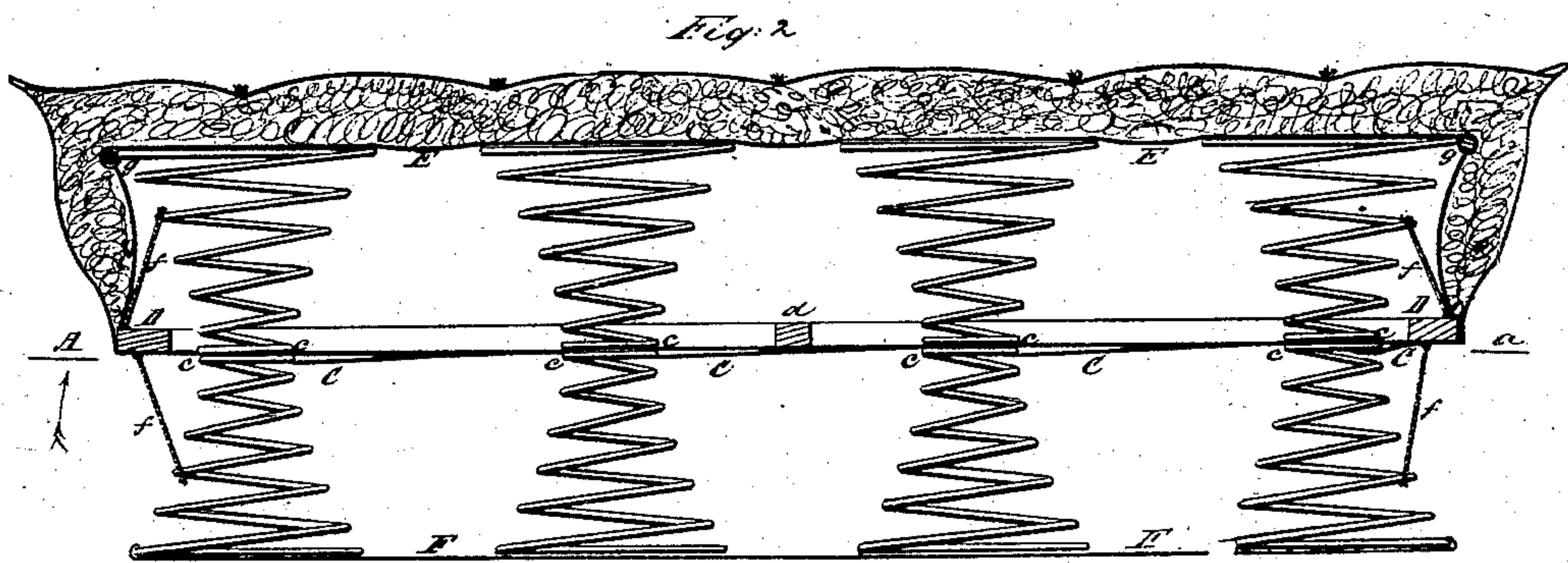
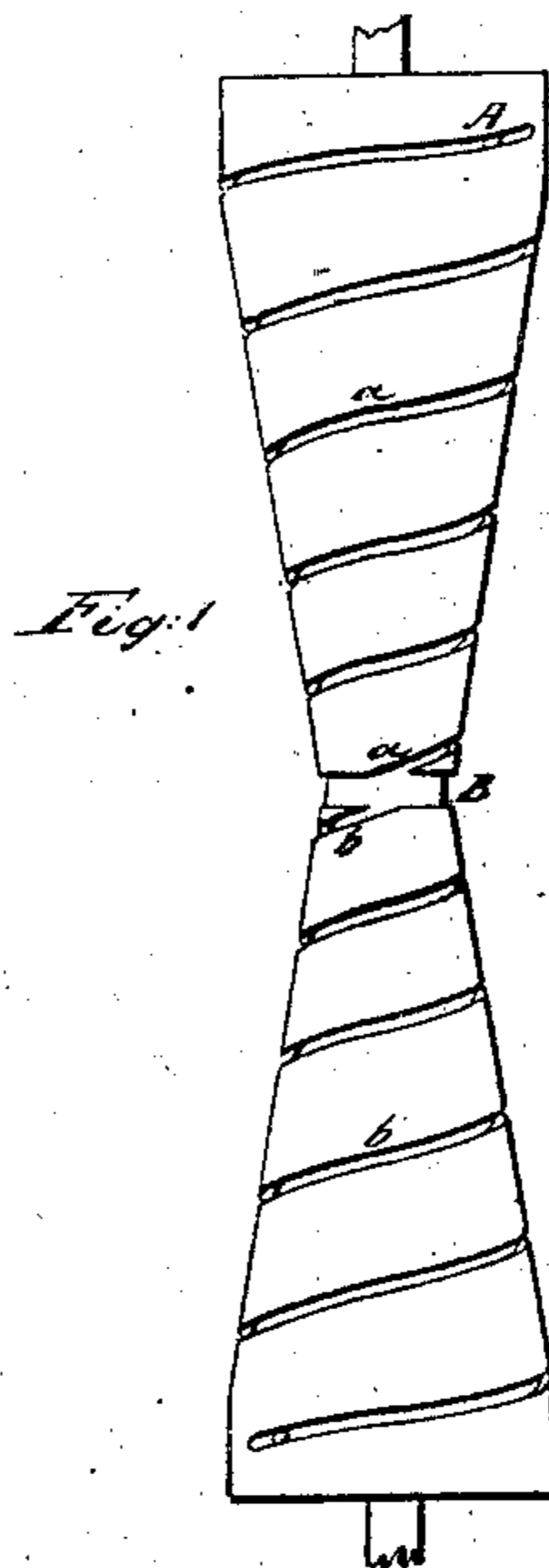


S. P. KITTLE.

Bed Bottom.

No. 98,505.

Patented Jan. 4, 1870.



UNITED STATES PATENT OFFICE.

SAMUEL P. KITTLE, OF BROOKLYN, NEW YORK.

IMPROVED SPIRAL SPRING FOR MATTRESSES AND FURNITURE.

Specification forming part of Letters Patent No. 98,505, dated January 4, 1870.

To all whom it may concern :

Be it known that I, SAMUEL P. KITTLE, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Spiral Spring, suitable for Use in Mattresses, Furniture, and for other purposes; and I do hereby declare that the following is a full, clear, and exact description thereof, and of its mode or manner of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and making a part of this specification.

The nature of my invention consists in the production of a new and improved spring, suitable for use in mattresses and other furniture, and which gives and secures a greater uniformity and certainty of action, is more durable than the springs heretofore used, and by the use of which mattresses are rendered both lighter and pleasanter for use.

To enable others to make and use my invention, I will describe its construction and operation.

The springs ordinarily used in mattresses, and for like uses, are made of steel or iron wire, wound upon a suitable former, and with a continuous spiral inclination from one end to the other. The center of such springs is contracted, like an hour-glass, but the spiral inclination or direction of the wire is substantially preserved throughout its length. An exception or variation to such form of construction is, however, sometimes made, by winding the wire, at the ends of the springs, for a single revolution, at right angles to the axis of the spring, so as to secure at each end a horizontal bearing-surface without bending the ends of the spring by hand.

Such springs are also generally supported, when used in mattresses, from or by their ends, and are very liable, as are all springs so supported, to "bag out" in the middle, when subjected to pressure, whereby they very soon become useless, and require to be replaced by new ones.

Efforts have been made to support or sustain such springs from the middle or center, so as to avoid and prevent "bagging," but their construction, or the continuous spiral inclination of their coils, has rendered it

difficult, if not practically impossible, to so support such springs, and also give or secure to them their proper vertical position. For such purpose a frame or lattice work has been contrived and used, coming around or near to the sides of the spring, at its middle or center, and to such frame the spring was secured, and in such a manner as to secure, as far as possible, the proper vertical position. Such an arrangement adds, however, considerably to the cost, and also makes the article cumbersome and heavy.

It has also been attempted to cord, in various ways, the spring, so as to support it from the middle, and particular modes of cording have been devised to secure such end. But these, as well as other methods of supporting or sustaining such springs from the middle, and so that they should have their proper vertical position, have proved practically insufficient for the purpose intended.

My improved spring is so constructed that it can be easily and effectually supported or sustained, from its middle, simply by the use of webbing, or any suitable thin, strong material, being passed through between the central coils of the spring, and held taut by a slight frame arranged for that purpose, and when so supported, will naturally take and hold its proper vertical position.

In springs, as ordinarily constructed, with the wire wound in a continuous spiral, if it were to be attempted to support them by passing anything through or between their coils, the springs would at once, from the very spiral inclination of their coils, be thrown out of a vertical position, and thereby the tendency to "bag" would be increased.

I overcome or remove such tendency or liability by so constructing the spring that one or more of its central coils, instead of being wound spirally, like the rest of the spring, shall be wound at right angles to the axis of the spring, so as to be substantially horizontal, and if there are two or more coils so wound they will be parallel horizontally, so that when a piece of webbing, or the like, is passed through the middle of the spring, between such coils, and the spring is supported by the webbing being fastened to any

suitable frame, the natural tendency of the spring will be, instead of being thrown out of its proper vertical position, to more certainly and naturally take and retain it, and thus render "bagging" far less likely, and almost, if not wholly, impossible.

Such a construction and form of spring are shown in Fig. 2.

Figure 1 is a representation of a former by or upon which to make or form a spring such as I have described.

The wire of which the spring is to be made is wound from one end, A, of the former, in a spiral direction, and in the groove *a* toward and to the center B, where the former is cut away, as shown in Fig. 1, to a depth about equal to that of the spiral grooves *a b*, and at right angles with its axis, for a sufficient space to receive one or more revolutions or coils of the wire before it again takes into the spiral groove *b*, on the other end of the former, and is again wound or coiled in a spiral direction. The central coil or coils being thus wound at right angles to the axis of the spring, are substantially horizontal, (differing from being exactly horizontal only to the extent of the diameter of the wire,) and are parallel horizontally with each other.

The space B in the middle of the former varies in breadth according as it is desired to have one, two, or more coils wound at right angles, as described. After the spring is coiled, it is compressed in the usual manner.

Figs. 2 and 3 show a spring, constructed as I have described, applied to a mattress, and illustrate how it may be suspended or supported from the center or middle, instead of from its ends. Fig. 3 is a central horizontal section through the line A *a* of Fig. 2.

Strips of webbing or similar material, C C, are passed through between the central horizontal coils *c c* of the spring, as shown more plainly in Fig. 3, in opposite directions, each webbing passing alternately over and under the webbing passing in the opposite direction, and to such pieces of webbing the springs are properly and securely fastened.

If the spring has but a single coil at right angles to its axis, then such webbing will pass on each side of such coil.

Such pieces of webbing are supported at their ends by being fastened to a slight frame, D, of the size of the mattress, which may be stayed by central cross-pieces or braces *d d*. This frame does not require to be made heavy or very strong, as it has only to support the webbing and the springs, no particular pressure coming upon it in the use of the mattress.

The winding of the central coil or coils of the spring in the manner described—that is, at right angles to the axis of the spring—so that such coil or coils are substantially and almost exactly horizontal, causes the spring, when supported from its center, by means of the webbing C C, or its equivalent, to stand in

a vertical position, and any variation from an exact vertical position, caused by such coils not being exactly horizontal, is overcome by having the webbing pass through the spring in opposite directions.

Such method of supporting the springs preserves, continually, the middles of all the springs in the same relative position with respect to each other, and effectually prevents them "bagging out" in any direction.

The full elasticity of the spring is thus continually effective, and, at the same time, the spring will be much more durable. No other support is required to sustain the springs and keep them in their proper vertical position; but the springs may be additionally corded at their ends, or at top and bottom, if desired.

The cords *f f*, attached to the outer springs, act as stays against the natural inward thrust of the ends of the springs when the mattress is in use.

The top and bottom linings or sackings E and F are kept in proper form and shape, so that the ends of the springs attached thereto will be preserved in proper relative position to each other by being secured to a rattan or other light frame, *g*, running round, and of about the size with the frame D.

The drawings represent a mattress having a stuffing only on the upper side, and the lower half of the springs is not inclosed, except on the bottom. The springs may, however, be entirely protected, and the mattress can be stuffed on both sides, in which case it can be reversed or turned over, when desired, thereby greatly increasing the durability of the mattress.

Springs constructed as I have described may be cut in two parts, (see Fig. 3,) and are then well adapted to be used in furniture of all kinds using springs.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A spiral spring, for use in mattresses, furniture, &c., so constructed that its central coil or coils are wound at right angles to its axis, substantially as and for the purposes set forth.

2. The combination of a spiral spring, when constructed as described, with the cross-webbing C C and frame D, or their equivalent, when arranged to support such spring, substantially as and for the purposes set forth.

3. In a spring mattress, having the springs supported from or at their centers, the arrangement of a rattan or like flexible border, attached to the outer edges, at bottom and top, of the outside rows of springs, to furnish a suitable support to keep the ticking in line, but which will also yield as any spring or part of the mattress is compressed.

S. P. KITTLE.

Witnesses:

S. D. LAW,
F. V. CORR.