

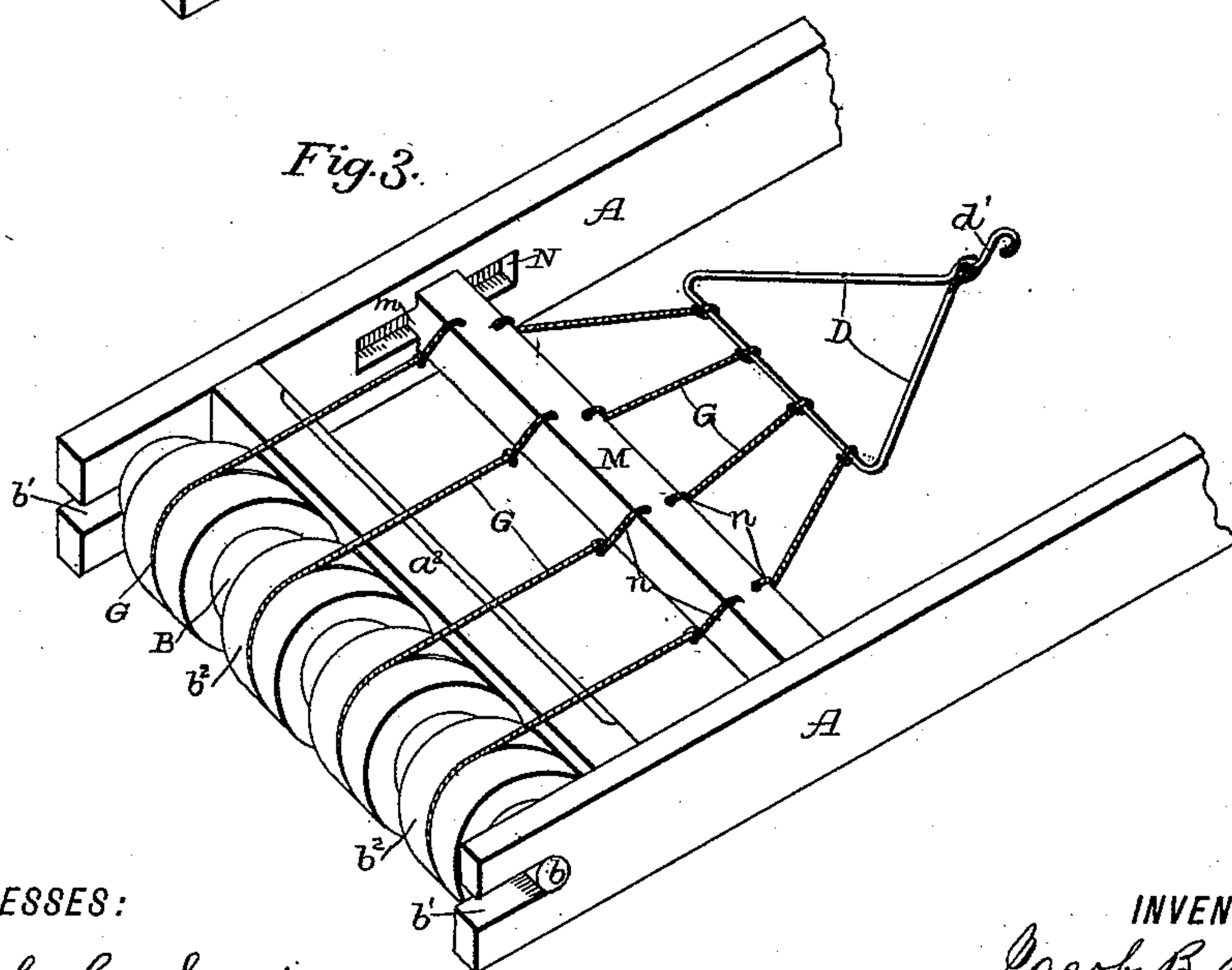
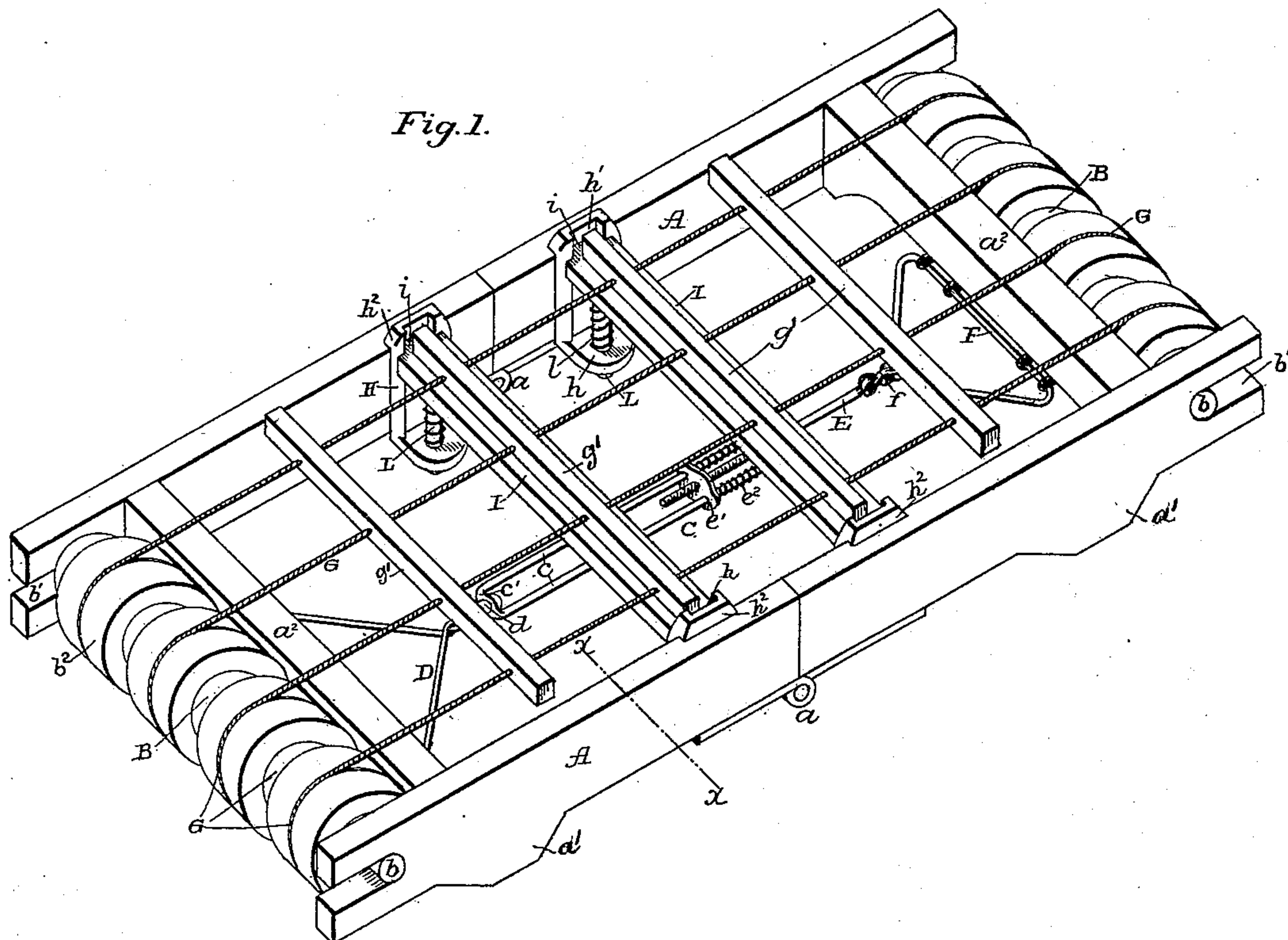
(No. Model.)

2 Sheets—Sheet 1.

J. B. RUSSEL.  
BED SPRING.

No. 488,030.

Patented Dec. 13, 1892.



**WITNESSES:**

Ella L. Gerhart  
Geo. A. Lane

**INVENTOR**

INVENTOR  
Jacob B. Russel  
BY  
Wm. R. Gerhart  
ATTORNEY.

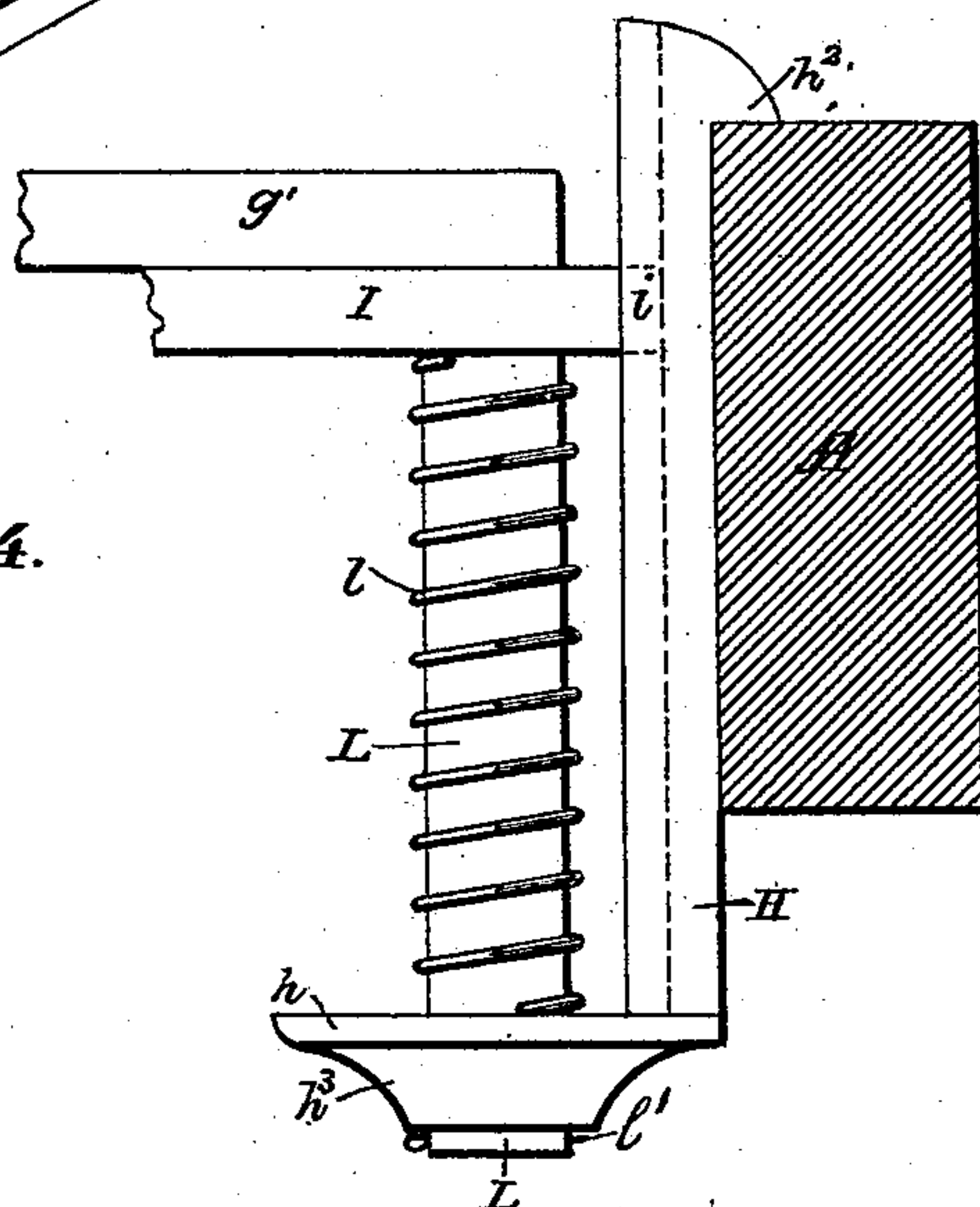
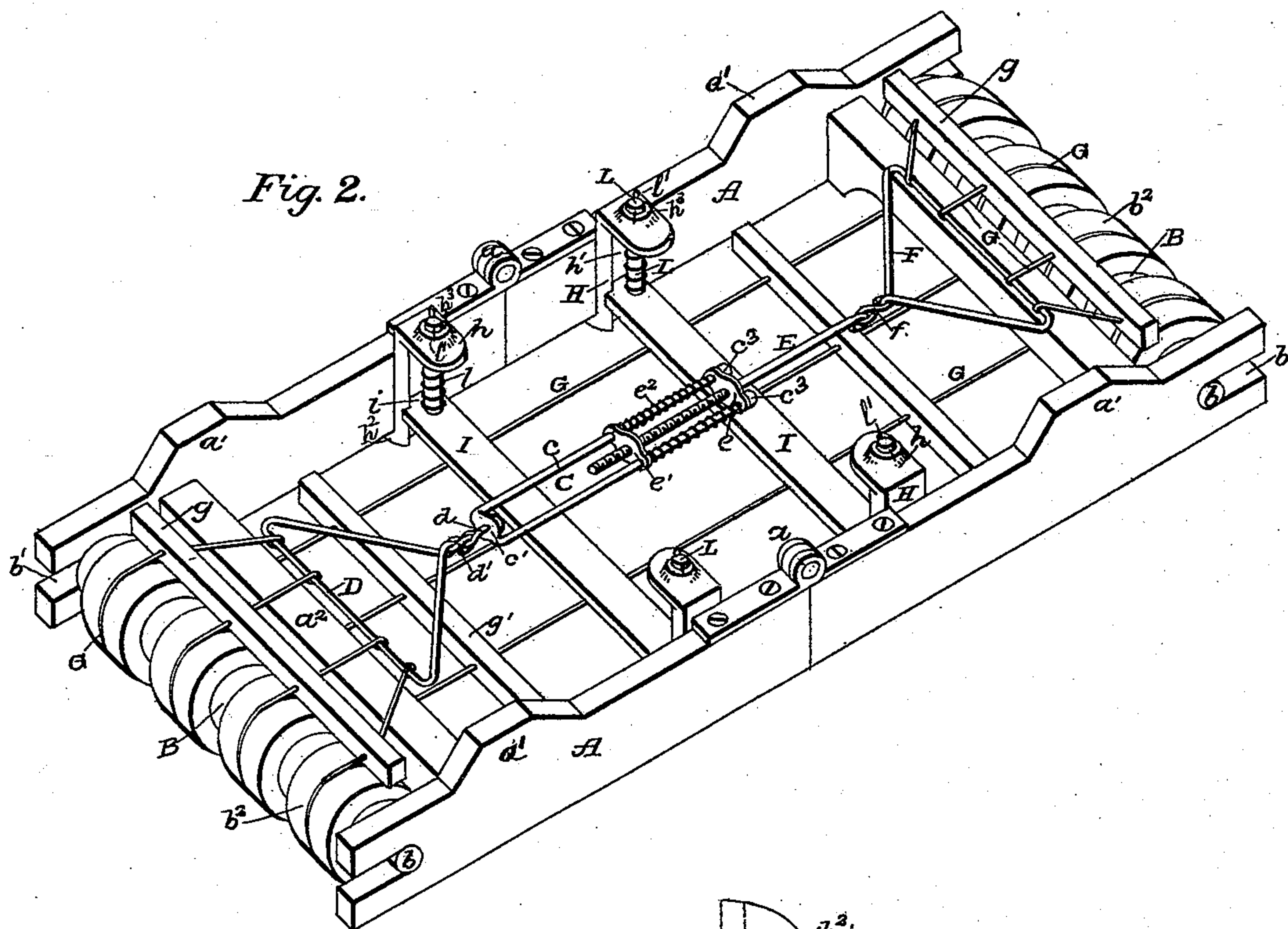
(No Model.)

2 Sheets—Sheet 2.

J. B. RUSSEL.  
BED SPRING.

No. 488,030.

Patented Dec. 13, 1892.



**WITNESSES:**

Ella L. Gerhart  
Geo. A. Lane

***INVENTOR***

Jacob B. Russel  
BY Wm. R. Gerhart  
ATTORNEY.



# UNITED STATES PATENT OFFICE.

JACOB B. RUSSEL, OF WILLOW STREET, PENNSYLVANIA.

## BED-SPRING.

SPECIFICATION forming part of Letters Patent No. 488,030, dated December 13, 1892.

Application filed December 11, 1891. Serial No. 414,703. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB B. RUSSEL, a citizen of the United States, residing at Willow Street, in the county of Lancaster and State of Pennsylvania, have invented certain Improvements in Bed-Springs, of which the following is a specification.

My invention relates to that class of bed-springs which are connected with a removable frame.

Heretofore springs used for beds have generally been so placed that the mattresses rested directly upon them or upon strips or slats interposed between them and the mattress, with each slat connecting a row of springs. This class of springs has been found to be objectionable in use for the reason that the greater part of the weight is carried by a limited number or part of the springs, the elasticity of which is reduced more rapidly than that of the springs supporting less weight, thus forming depressions in the bed, which make it very uncomfortable for the occupant, while the springs which are not immediately beneath the weight carried have more or less lateral pressure thrown upon them, tending to unduly weaken them.

The object of my invention is to provide a bed-spring of such construction that the mattress shall not be brought into contact therewith and that shall be acted upon only by direct pressure by any distribution of weight on the mattress. Such a construction of the spring subjects it only to such strain as it is especially designed to meet and relieves it from any lateral or other abnormal pressure which might tend to weaken it.

The object of my invention is, further, to so construct the spring that any undue sagging of the supporting parts may be taken up without lifting the mattress from the bedstead, thus removing one of the great inconveniences incident to resetting or replacing the springs now in use.

The object of my invention is, finally, to connect the springs to the frame in such manner that said frame may be easily folded together without detaching the springs therefrom.

My invention consists in the construction and combination of the various parts, as here-

inafter fully described, and then specifically pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a perspective top view of a bed-spring embodying my improvements. Fig. 2 is a perspective bottom view of the same. Fig. 3 is a perspective bottom view of one end of the spring, showing a modification in the construction of the spreading-bars. Fig. 4 is a vertical section on the line  $x x$ , Fig. 1.

Similar letters indicate like parts throughout the several views.

Referring to the details of the drawings, A indicates the side bars of the frame, the ends of which extend beyond the transverse bars  $a^2$  of said frame and have horizontal slots  $b'$  formed therein. Each of the side bars of the frame is divided vertically and transversely into two sections connected by hinges  $a$ , fastened to the under side of the sections, the whole frame being supported on the bedstead by feet  $a'$ . A roller B is located at each end of the frame outside of the transverse bars  $a^2$ , with its journals  $b$  engaging the slots in the extended ends of the side bars. Bosses  $b^2$  are formed on each roller at equal distances apart, the bosses on one roller being located directly opposite those on the other. Cords or wires G, on which the mattress rests, extend between the tops of opposite bosses and around and under the same and are secured to the bases of triangular spreading-heads D and F, placed beneath the ends of the frame. The wires G may be wound one or more times around the bosses  $b^2$ , as shown in the drawings, to increase the friction, and to some extent relieve the pressure on the springs  $e^2$ , to be described.

The apex of the spreading-head D is connected by a link  $d'$  with a pin  $d$ , swiveled in a flattened cross-bar  $c'$ , connecting the side rods  $c$  of the turnbuckle C. The free ends of the side rods  $c$  pass loosely through perforations in two cross-heads  $e$  and  $e'$ , between which heads a spiral spring  $e^2$  is coiled about each rod  $c$ , the head  $e$  bearing against bosses  $c^3$ , formed on the ends of rods  $c$ . The apex of the spreading-head F is connected with a screw-rod by a link  $f$ , and the screw end of said rod passes freely through a centrally-lo-



cated opening in the cross-head  $e$  and engages a screw-threaded opening similarly located in the cross-head  $e'$ . By this construction the tension on the wires  $G$  can be regulated simultaneously. If preferable, the ends of each wire may be connected by a separate turnbuckle and springs.

Between the bases of the spreading-heads and the bosses  $b^2$  there are interposed spreading-bars  $g$ , having openings through them opposite the centers of the bosses  $b^2$ , through which pass the wires  $G$ . The parts of the wires  $G$  on which the mattress rests pass through similar bars  $g'$ . These spreading-bars hold the wires at their proper distances apart and also serve to equalize the pressure on said wires and bind them together. The wires fit in the perforations of the spreading-bars with sufficient tightness to prevent any movement of said bars lengthwise of said wires under any ordinary pressure to which they are subjected; but at the same time the perforations in the spreading-bars are large enough to permit said bars to be adjusted lengthwise of the wires.

On the inner faces of both side bars  $A$  there is a bracket  $H$ , secured on each side of the joints between the sections. These brackets have lips  $h^2$  formed on the outer face of the upper end, which lap and engage the tops of the side bars  $A$ , and inwardly-projecting horizontal bases  $h$ , having openings through them, around which are formed bosses  $h^3$  on the bottom of the bases  $h$ . The inner faces of the upright portions of the brackets have vertical channels  $h'$  cut therein and extending from the tops of said portions to the bases  $h$ . Bearing-bars  $I$  extend across the frame between the opposite brackets of each pair and have tongues  $i$  formed on their ends of less width than said bars, which engage the vertical channels  $h'$ . Posts  $L$  depend from the lower sides of the ends of bars  $I$  and pass through the openings in the bases  $h$ . Springs  $l$  are coiled about the posts  $L$ , having one end bearing against the bars  $I$  and the other on the bases of the brackets. Upward movement of the posts  $L$  is limited by pins  $l'$ , passing through the lower ends of said posts below the bosses  $h^3$ . The spreading-bars  $g'$  are so arranged that one of them shall rest upon each of the bearing-bars  $I$ . These spring-supported bearing-bars relieve the strain on the springs  $e^2$  and aid in preventing undue depression of the center of the bed.

In Fig. 3 there is shown a modification in the construction of the spreading-bars interposed between bosses  $b^2$  and the spreading-heads. In this construction these bars  $M$  have tongues  $m$  formed on the ends, adapted to engage horizontal slots  $N$ , cut in the inner faces of bars  $A$ . Slots  $N$  are of greater length than the width of tongues  $m$ , so that bars  $M$  may move therein lengthwise of bars  $A$ . The wires  $G$  are tied to or immovably fastened in the bars  $M$ . When it is desired to fold the

ends of the frame together, the screw-rod is freed from the other parts of the turnbuckle, the wires  $G$  and spreading-heads  $D$  and  $F$  being prevented from unwinding from the bosses  $b^2$  or becoming detached from the frame by the engagement of tongues  $m$  with the ends of slots  $N$ . The engagement of bars  $M$  with slots  $N$  serve a similar purpose when the connections between said bars become worn and it is necessary to replace them with others, or when it is necessary to separate said connections to replace worn-out or broken cords or wires. The rollers at the ends of the frame may be supplanted by stationary circular bearings or cylinders, on which the cords or wire  $G$  will have a sliding movement.

I do not limit myself to the use of any particular kind of cord or wire nor to the special construction or arrangement of the tension-adjuster and springs connecting the ends of the cords or wires, nor to the form of bracket attached to the side bars of the frame. Neither do I restrict myself to the use of the spreading-heads, the spreading-bars, or the brackets.

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

1. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, spreader-heads under the frame, cords or wires passing over and beneath the bearings and having their ends fastened to said heads, and a spring connection between the heads, substantially as and for the purpose specified.

2. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, spreader-heads under the frame, cords or wires passing over and beneath the bearings and having their ends fastened to said heads, and a tension-adjusting spring connection between the spreader-heads, substantially as and for the purpose specified.

3. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, spreader-heads under the frame, cords or wires passing over and beneath the bearings and having their ends fastened to said heads, a spring connection between the heads, and spreaders engaging the cords or wires between the rollers, substantially as and for the purpose specified.

4. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, cords or wires passing over and beneath said bearings, a spring connection between the ends of the cords or wires located under the frame, springs supported by the side bars of the frame, and bearing-bars extending under the cords or wires and resting on the springs supported by said side bars, substantially as and for the purpose specified.

5. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, cords or wires passing over and beneath said bearings, a spring-connection be-



tween the ends of the cords or wires located under the frame, springs supported by the side bars of the frame, bearing-bars extending under the cords or wires and resting on the springs supported by said side bars, and spreaders engaged with the cords or wires and resting on the bearing-bars, substantially as and for the purpose specified.

6. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, spreader-heads under the frame, cords or wires passing over and beneath the bearings and having their ends fastened to said heads, a tension-adjusting spring connection between the spreader-heads, springs supported by the side bars of the frame, bearing-bars extending under the cords or wires and resting on the springs supported by the said bars, and spreaders engaged with the cords or wires and resting on the bearing-bars, all constructed and operating substantially as and for the purpose specified.

7. The combination, with a bed-frame having bearings at the ends thereof, of transverse bars engaging slots formed in the side bars of said frame, cords or wires passing over and beneath the end bearings and secured to the transverse bars, and a separable connection between said transverse bars, substantially as and for the purpose specified.

8. The combination, with a bed-frame having side bars divided into sections hinged together, of bearings at the ends of the frame, transverse bars engaging slots formed in the side bars of the frame, cords or wires passing over and beneath said end bearings and secured to the transverse bars, and a separable connection between said transverse bars, substantially as and for the purpose specified.

JACOB B. RUSSEL.

Witnesses:

LYMAN W. TREMANS,  
M. L. STEVENSON.