

G. G. POWERS.  
BED SPRING.  
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Patented Sept. 28, 1915.

2 SHEETS—SHEET 1.

1,154,936.

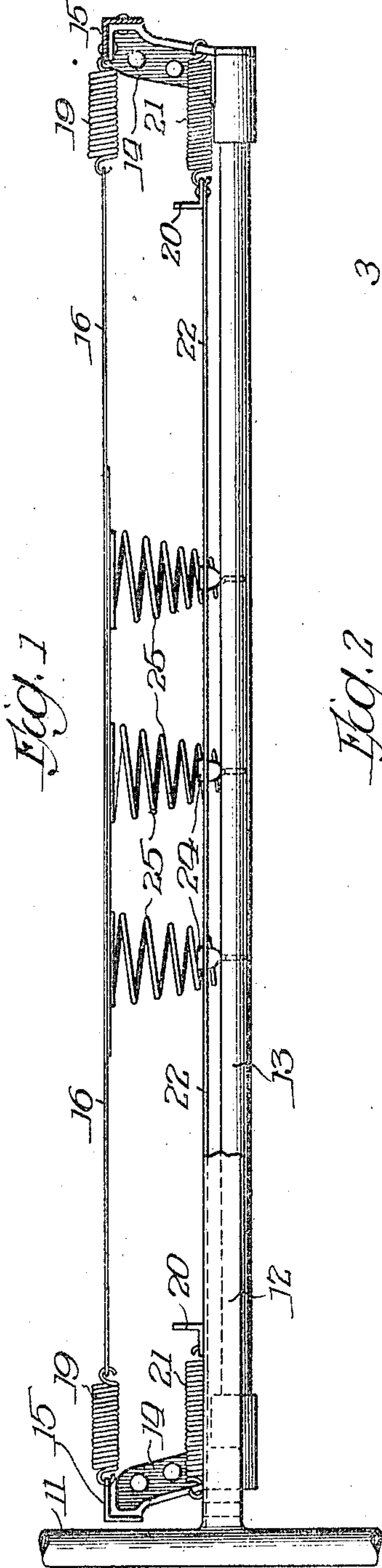


Fig. 1

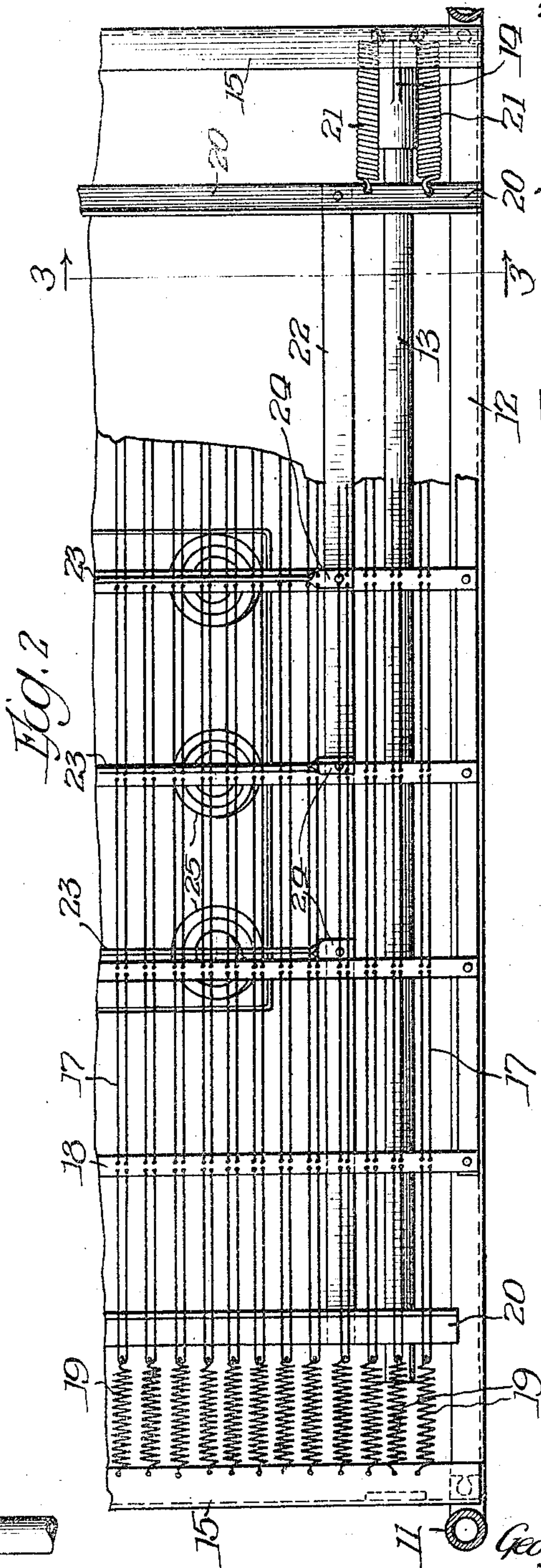


Fig. 2

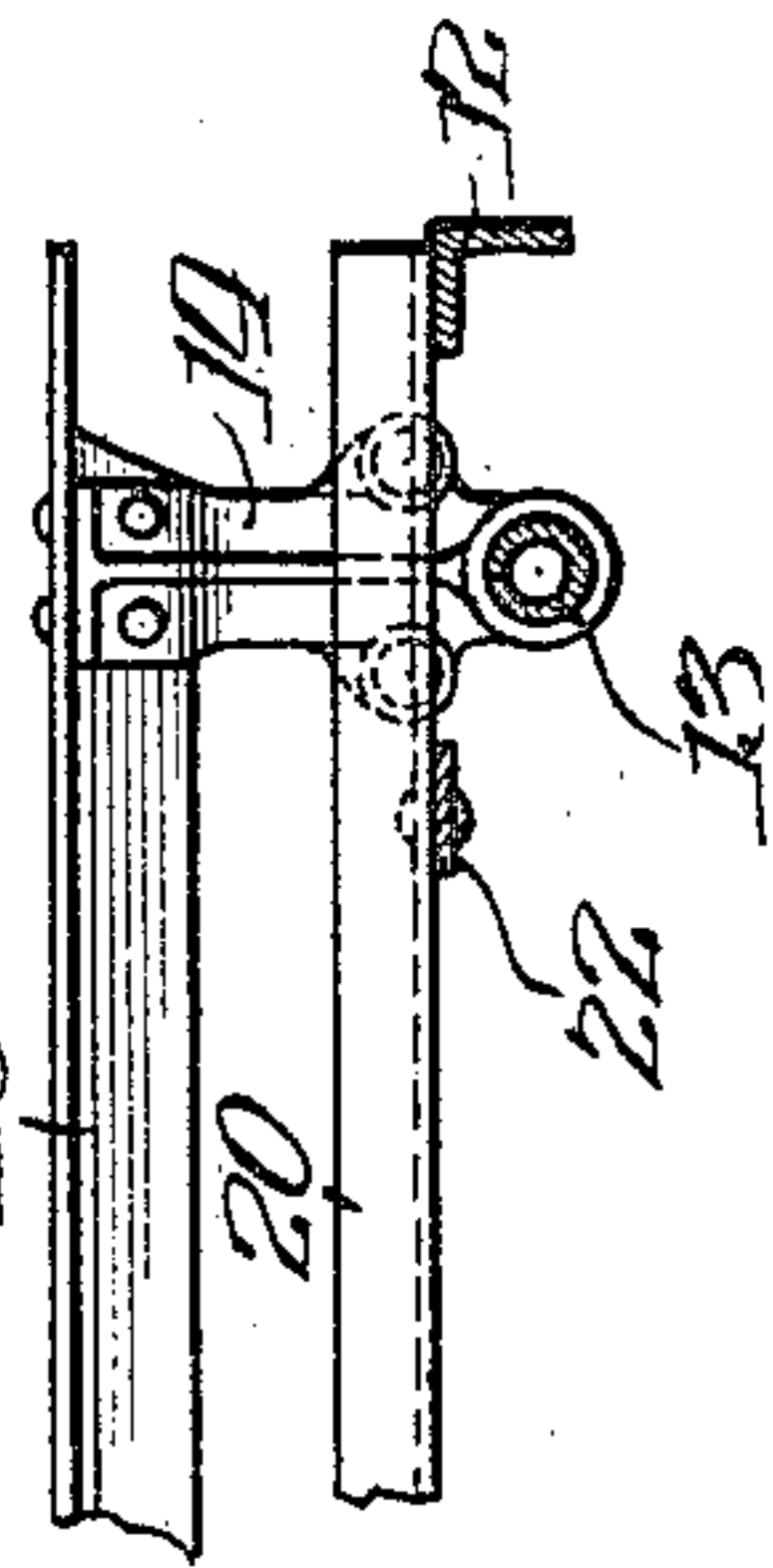


Fig. 3

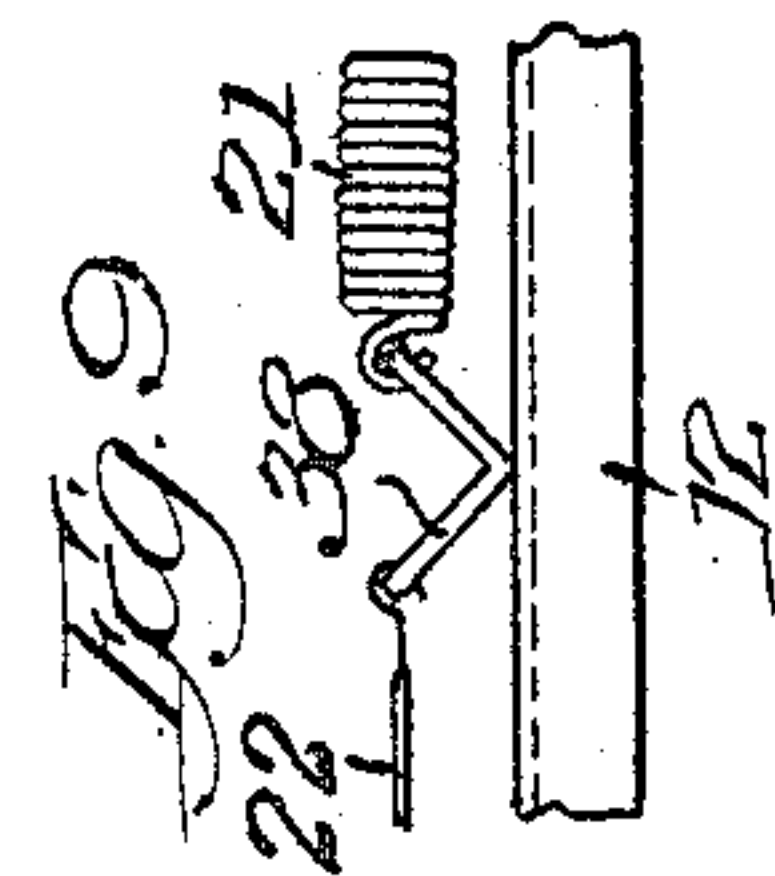


Fig. 4

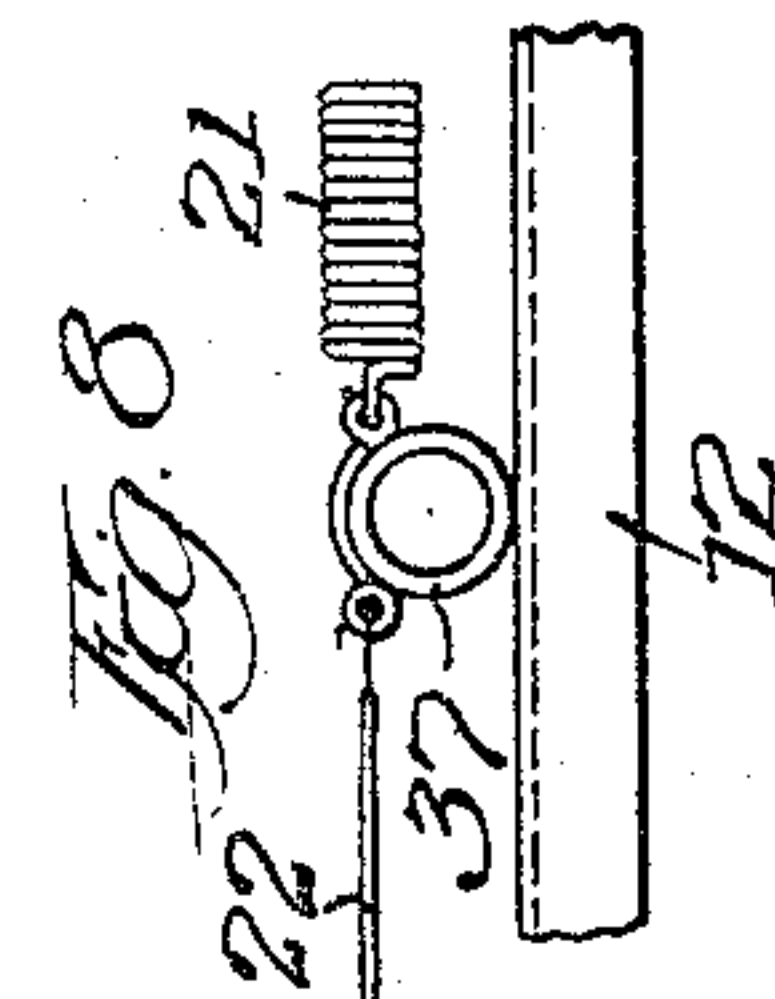


Fig. 5

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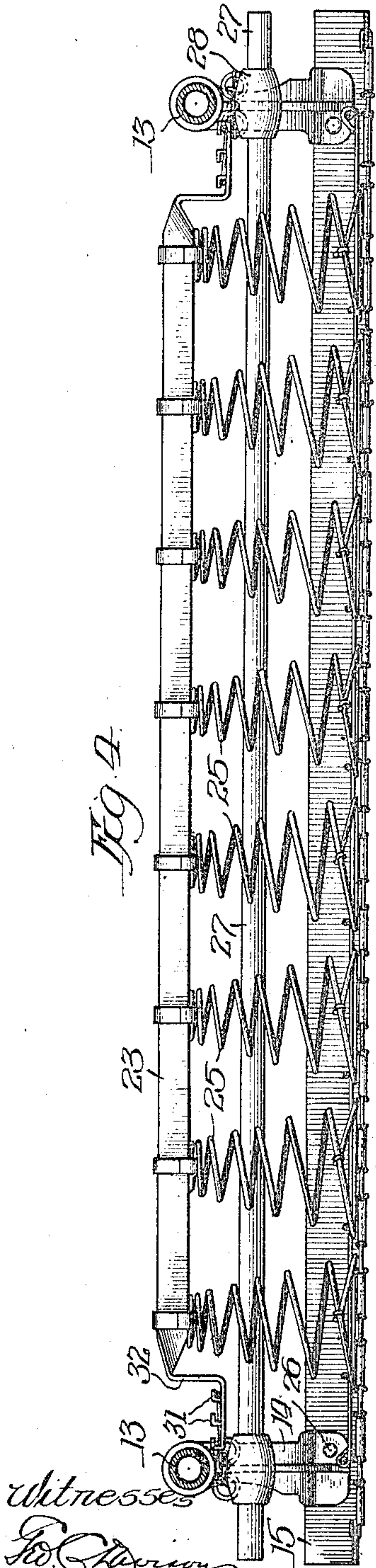
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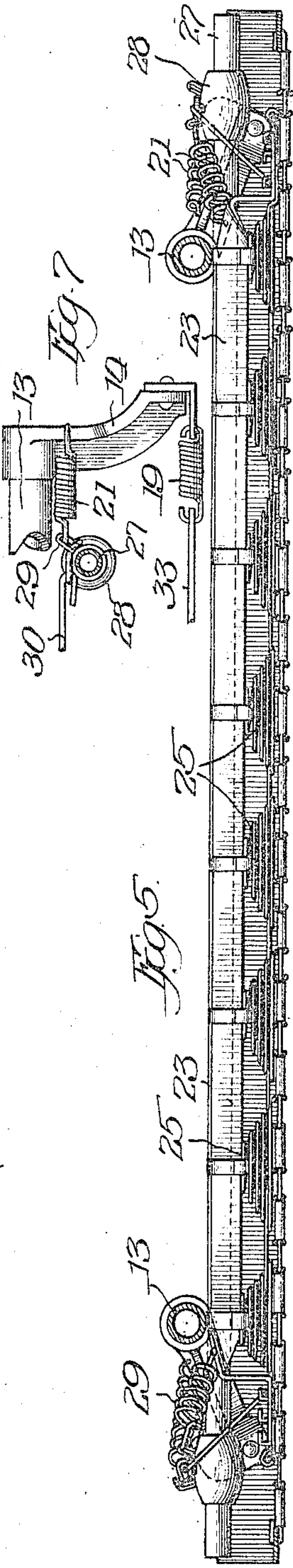
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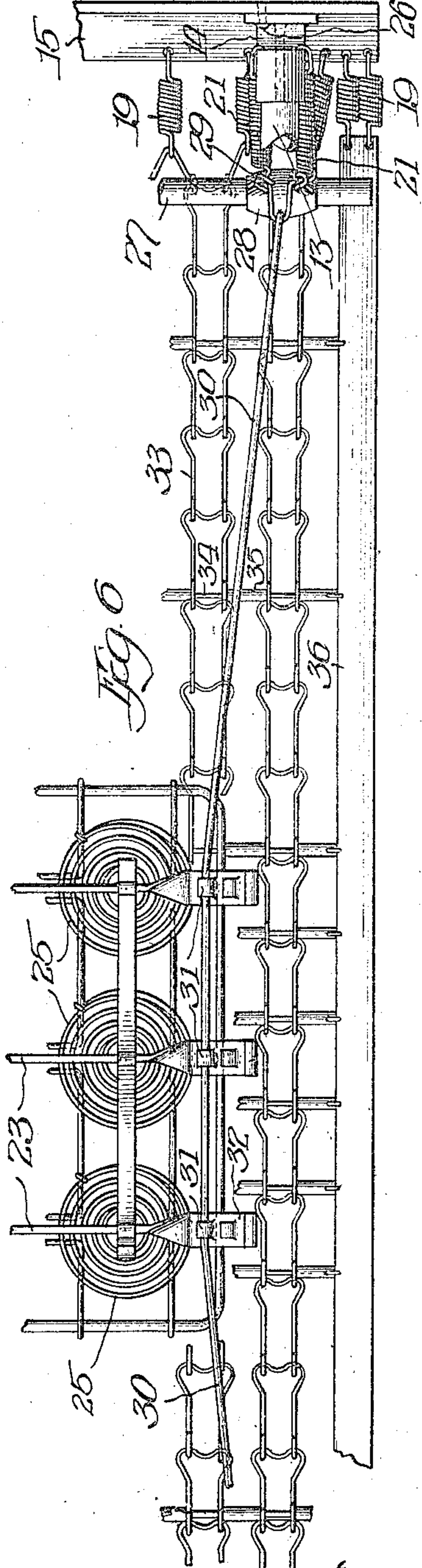
2 SHEETS—SHEET 2.



Witnesses  
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# UNITED STATES PATENT OFFICE.

GEORGE G. POWERS, OF CHICAGO, ILLINOIS, ASSIGNOR TO UNION WIRE MATTRESS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## BED-SPRING.

1,154,936.

Specification of Letters Patent.

Patented Sept. 28, 1915.

Application filed February 5, 1914. Serial No. 816,869.

*To all whom it may concern:*

Be it known that I, GEORGE G. POWERS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bed-Springs, of which the following is a specification.

The invention has for its principal objects the provision of a bed spring or wire mattress so constructed and supported that, while possessing the highest degree of resiliency, the effect of a weight resting thereon will not be locally confined but will be distributed in such manner as to disturb the flat or horizontal relation of the bed to a less extent than has heretofore been the case; also to provide for the compact association of a number of such mattresses for shipment or storage.

Other advantageous features of novelty will be apparent as the description proceeds.

In order that the invention may be readily understood two embodiments of the same are set forth in the accompanying drawings and in the description based thereon. The invention is, moreover, susceptible of embodiment in other constructional forms and the description and drawing are to be taken in an illustrative and not in an unnecessarily limiting sense.

In the drawing—Figure 1 is a side elevation of a wire mattress embodying the invention, a fragmentary portion of a bed being shown in assembled relation therewith; Fig. 2 is a top plan view of the wire mattress shown in Fig. 1; Fig. 3 is a fragmentary section taken on the line 3—3 of Fig. 2; Fig. 4 is a transverse section through a slightly modified form of the invention showing the same in inverted position; Fig. 5 is a view similar to Fig. 4 showing the spring mattress collapsed and compacted for shipment or storage; Fig. 6 is a fragmentary top plan view of Fig. 4; Fig. 7 is a fragmentary side elevation of one end of the mattress shown in Fig. 4; and Figs. 8 and 9 are respectively detail views showing different constructions of supporting cross bars.

Having reference to Figs. 1 to 3 inclusive, the reference numeral 11 designates the bed end and 12 the bed rail upon which the wire mattress is adapted to rest. The frame of the mattress consists generally of the side rail 13, riser brackets 14 and end

rails 15 connecting the brackets 14. The fabric 16 of the mattress is shown as consisting in the present case of wires 17 connecting spaced transverse members 18 and joined at their ends by means of springs 19 with the end rails 15 of the frame.

Instead of resting directly upon the bed as a rigid support the wire mattress is provided with a yielding support constructed in the following manner: Supporting cross bars 20, 20 are arranged adjacent each end of the mattress frame and extend transversely thereof. Each of these bars is connected to the riser brackets 14 by means of tension springs 21, 21, the point of connection with the brackets being in their lower portion and adjacent the side rails 13, preferably slightly above the latter. The two supporting bars are in turn connected by means of flexible supporting straps 22 extending longitudinally of the mattress. A series of cross rods 23 are arranged transversely of the mattress with their ends 24 resting upon and connected to the supporting straps 22 and these cross rods serve as a lower support for coiled compression springs 25 which underlie the fabric 16. When placed in position upon the bed the outer ends of the cross bars 20 rest upon the bed rail 12, whereby the mattress frame is suspended within the space bounded by the bed end and rails for free resilient movement in a vertical direction, the entire weight of the wire mattress resting upon the cross bars 20.

It will be observed that the fabric 16 is supported at its ends by tension springs 19 and in its medial portion by the compression springs 25, the load upon the latter springs being transmitted through the cross rods 23 to the supporting straps 22 and thence to the tension springs 21 and the cross bars 20. The result of this arrangement is that the effect of the weight of a person resting upon the fabric above the springs 25 is not confined locally so as to form a depression at the one point, but by reason of the weight being supported eventually by the cross bars 20 the entire wire mattress including the frame sinks bodily within the supporting bed, both sets of tension springs 19 and 21 yielding as the supporting straps 22 sag beneath the weight. The springs 21 will thus be drawn out of their horizontal position and their outer ends at the point of connection



tion with the brackets 14 will be lower than their inner ends at their point of connection with the cross bar 20 which is supported on the bed rail. In effect the frame of the mattress is flotatively mounted within the bed and yields bodily under the weight of a person resting thereon to supplement the local yielding of the spring fabric under the weight.

10 In Figs. 4 to 7 inclusive a slightly modified embodiment of the invention is shown whereby the mattress is adapted for compact association with other mattresses for the purpose of storage or shipment. Here-  
15 in the brackets 14 are pivotally mounted upon the end rails 15 by the employment of but one rivet 26 arranged at one side of the bracket axis whereby the side rails 13 may be swung from their normal position, indicated in Fig. 4, inwardly, as indicated in Fig. 5. In this form of construction, instead of a sliding cross bar 20, is employed a rolling cross bar 27, to an enlargement 28 of which is peripherally secured at 29 the  
25 inner ends of the tension springs 21 while the flexible supporting straps 30 are likewise connected to the periphery of the enlargement at 29 and extend longitudinally between the supporting bars 27 and in their medial portion engage over hooks 31 arranged upon the upturned ends 32 of the cross rods 23, a plurality of sets of hooks 31 being employed in order to provide for placing the tension springs 21 and the compression springs 25 under greater or less  
35 normal stress. In this form of construction the fabric is shown as made up of a series of interlinked members 33 joined by cross wires 34 and separated by spacing members 35, wires 34 being joined to longitudinal ribbons 35. The ends of the fabric are secured as before to the end rail 15 by means of a series of tension springs 19.

Under normal conditions the operation of this form of construction is identical with that previously described. When, however, it is desired to store or pack the spring mattress the flexible straps 30 are released from the hooks 31 and the side rails 13 are swung  
50 inwardly as indicated in Fig. 5 so as to bear upon the terminal portions of the cross rods 23 and, pressing the same downwardly, as indicated in said figure, compress the springs 25 as shown. The spring mattress may be held in this compacted condition by any  
55 suitable means such as a crate or a number of mattresses may be arranged side by side within one crate. Immediately when released from the crate or other confining means the springs 29, which were placed under tension when the mattress was collapsed, will immediately throw the side rails 13 to their elevated position and restore the mattress to the condition shown in Fig. 4.

65 In Figs. 8 and 9 are shown two modified

forms of rolling or rocking cross bars adapted to rest upon the bed rail 12 and to be connected by the springs 21 to the end rail of the frame, and upon the other hand to the straps 22. In Fig. 8 a tubular member 37 is employed, the construction being quite similar to that shown in connection with Figs. 4 to 7 inclusive, while in Fig. 9 an angle bar 38 is used somewhat similar to that shown in Figs. 1 to 3 but resting upon the angle so as to rock readily as the fabric and springs yield.

In order to avoid confusion the terms "bars", "straps", "rods", etc., have been employed as defining respectively different portions of the construction but it is to be understood that the use of such terms is not intended to limit such parts to members of any particular shape.

I claim:

1. In a wire mattress, the combination of a frame, a fabric, tension springs connecting the ends of the fabric to the frame, cross bars adapted to rest on the bed, yielding means connecting the bars and frame, supporting straps connecting the bars, and yielding means underlying the fabric and supported by the straps, substantially as described.

2. In a wire mattress, the combination of a frame, a fabric, tension springs connecting the ends of the fabric to the frame, cross bars adapted to rest on the bed rails, tension springs connecting the bars and frame, flexible supporting straps connecting the bars, and yielding means underlying the fabric and supported by the straps, substantially as described.

3. In a wire mattress, the combination of a frame, a fabric, tension springs connecting the ends of the fabric to the frame, cross bars adapted to rest on the bed rails adjacent the two ends of the frame, tension springs connecting the bars and frame, flexible supporting straps connecting the bars, and compression springs underlying the fabric and supported by the straps, substantially as described.

4. In a wire mattress, the combination of a frame, a fabric, tension springs connecting the ends of the fabric to the frame, cross bars adapted to rest on the bed rails adjacent the two ends of the frame, tension springs connecting the bars and frame, flexible supporting straps connecting the bars, cross rods extending between the straps, and compression springs underlying the fabric above the rods and supported by the straps, substantially as described.

5. In a wire mattress, the combination of a frame including side rails and end members pivotally connected, a fabric, tension springs connecting the ends of the fabric to the end members of the frame, cross bars adapted to rest on the bed rails, tension springs con-



necting the cross bars and end members, flexible supporting straps connecting the cross bars, cross rods extending between the straps and detachably connected thereto, and yielding means underlying the fabric above the rods and supported by the straps, the side rails adapted to swing downwardly upon the rods to compress the yielding means between the rods and fabric, substantially as described.

6. In a wire mattress, the combination of a frame including side rails and end members pivotally connected, a fabric, tension springs connecting the ends of the fabric to the end members of the frame, cross bars adapted to rest on the bed rails adjacent to the two ends of the frame, tension springs connecting the bars and frame, flexible supporting straps connecting the bars, cross rods extending between the straps and detachably connected thereto, and compression springs disposed between the fabric and rods, the side rails adapted to be swung against the tension of their connecting springs downwardly upon the cross rods to compact the compression springs between the fabric and cross rods, substantially as described.

7. In a structure of the character described, the combination of a mattress-frame, a fabric mounted on said frame, a hanger-construction adapted to rest on the bed frame, and springs connected to said mattress frame and to the opposite portions of said hanger construction and supporting said mattress frame from said hanger construction, said springs being mounted to act on said hanger construction in substantially opposite outward directions, substantially as described.

8. In a structure of the character described, the combination of a mattress-frame, a fabric mounted on said frame, a hanger-construction adapted to rest on the bed frame, and coil springs connected to said mattress frame and to the opposite portions of said hanger-construction and supporting said mattress frame from said hanger construction, said springs being mounted to act on said hanger construction in substantially opposite outward directions, the weight of said mattress frame and fabric tending to extend said springs, substantially as described.

9. In a wire-mattress, the combination of a mattress-frame, a fabric mounted on said frame, a hanger construction adapted to rest

on the bed-frame, and coil-springs disposed longitudinally of the mattress-frame and supporting the latter on said hanger-construction, substantially as described.

10. In a wire-mattress, the combination of a mattress-frame having longitudinal side-rails, a fabric mounted on said frame, a hanger construction adapted to rest on the bed-frame, and coil-springs disposed lengthwise of the mattress-frame close to its rails and adapted to support the mattress-frame from said hanger-construction, substantially as described.

11. In a wire-mattress, the combination of a mattress-frame, a yielding-fabric supported on said frame, a hanger construction adapted to rest on the bed-frame, spring-means supporting the mattress-frame from said hanger construction, and yielding-means interposed between the fabric and hanger-construction, substantially as described.

12. In a wire-mattress, the combination of a mattress-frame, a yielding-fabric supported on said frame, a yielding hanger-construction adapted to rest on the bed-frame, spring-means supporting the mattress-frame from said hanger-construction, and yielding-means interposed between the fabric and hanger construction, substantially as described.

13. In a wire-mattress, the combination of a mattress-frame, a yielding-fabric supported on said frame, cross-bars adapted to rest on the bed-frame, flexible connections between said bars, yielding-means supporting the mattress-frame from said cross-bars, and yielding-means interposed between said fabric and connections, substantially as described.

14. In a wire-mattress, the combination of a mattress-frame, a yielding-fabric supported on said frame, cross-bars adapted to rest on the bed-frame, flexible straps connecting said cross-bars, springs supporting the mattress-frame on said cross-bars, and compression springs underlying the fabric and supported by the straps, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE G. POWERS.

Witnesses:

E. M. MAWAY,  
M. LARSEN.