

No. 714,495.

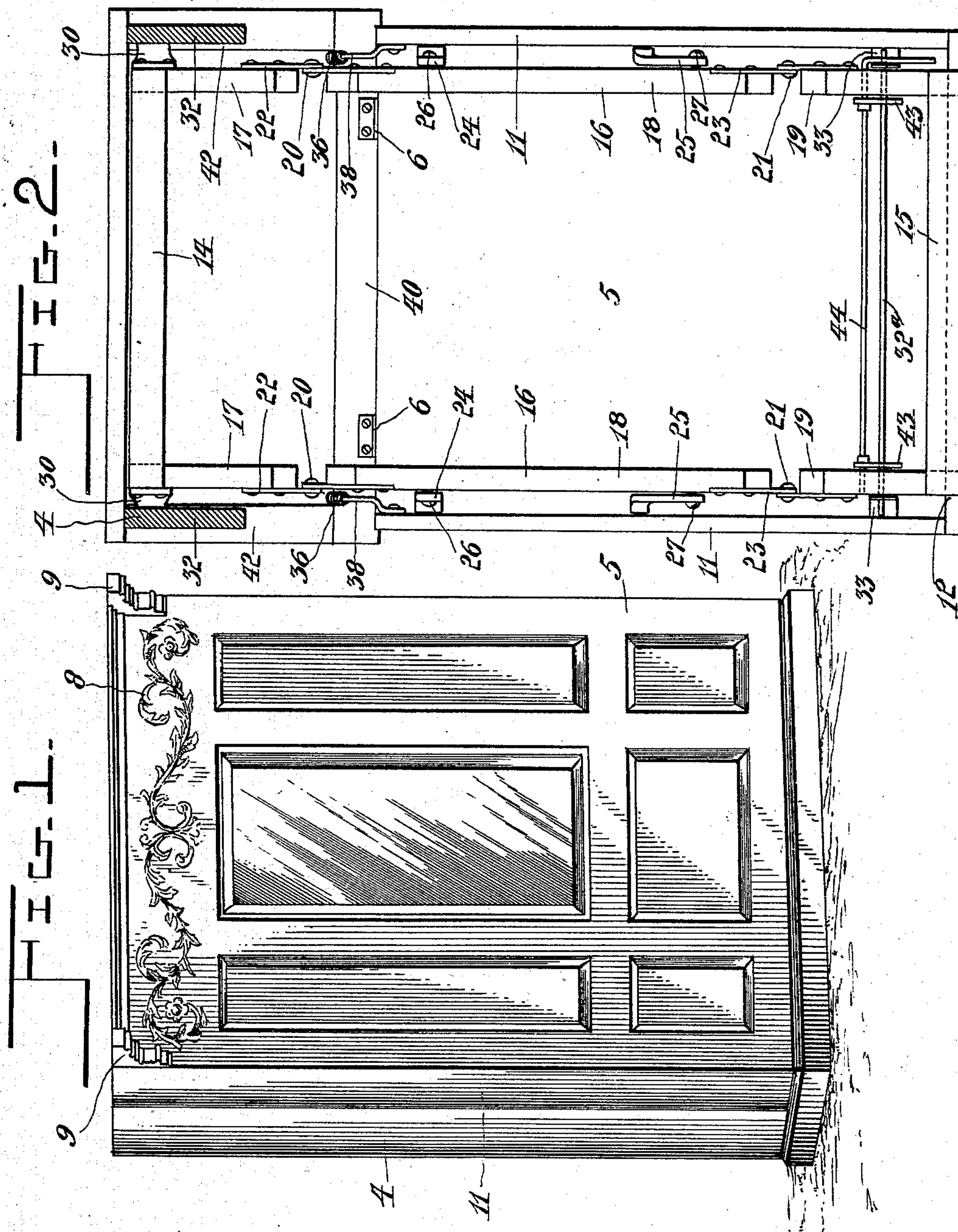
Patented Nov. 25. 1902.

J. A. LESPÉRANCE.  
FOLDING BED.

(Application filed Jan. 20, 1902.)

(No Model.)

2 Sheets—Sheet I.



Witnesses:

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By *Marion Marion*

Attorneys



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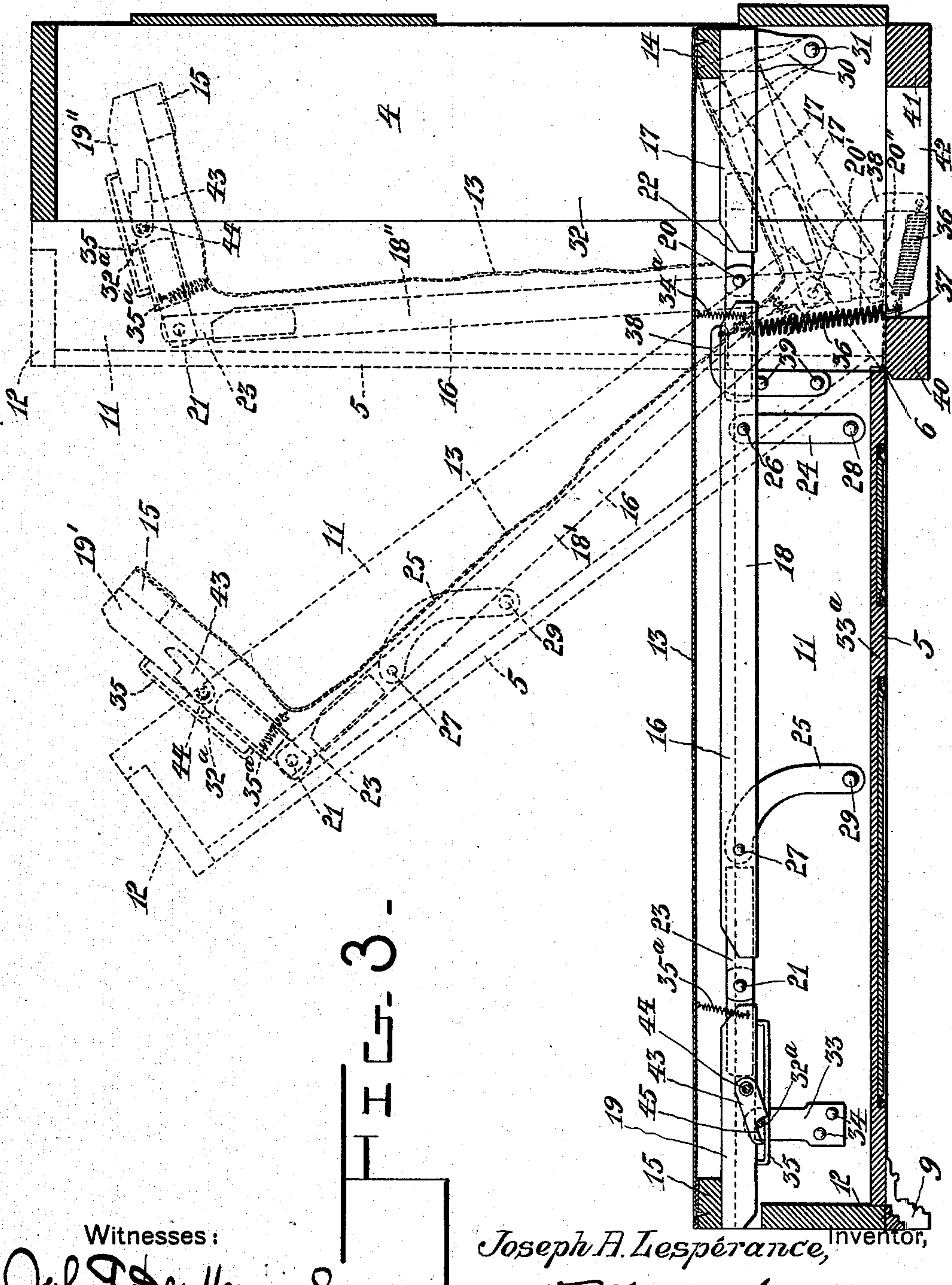
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3 -

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# UNITED STATES PATENT OFFICE.

JOSEPH ALPHONSE LESPÉRANCE, OF MONTREAL, CANADA.

## FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 714,495, dated November 25, 1902.

Application filed January 20, 1902. Serial No. 90,419. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH ALPHONSE LESPÉRANCE, a subject of the King of Great Britain, residing in the city and district of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Folding Beds; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved folding bed of that type wherein the body of the bed is raised and lowered as a whole and folds into an upright case standing upon the floor, so as to have the appearance of a cabinet or similar piece of furniture when not in use.

The principal feature of my invention lies in a bed which does not fold in the middle, as is the case with many such beds, but has a folding piece at each end—that is to say, a short pivoted piece at the head and foot of the bed, which is bent to a position at right angles to the center of the bed when the latter is raised and folded into the case.

Other features of my invention will appear from the accompanying description and are particularly set forth in the claims.

A preferred form of my improved bed is shown in the accompanying drawings, wherein—

Figure 1 is a perspective view showing the appearance of the bed when folded into the case. Fig. 2 is a plan view of the body, and Fig. 3 is a longitudinal section through the center of the bed when the latter is stretched for use.

The same numerals of reference denote like parts in all the figures of the drawings.

The bedstead consists of two main portions—to wit, a case 4 and a body portion 5—which are shown as pivoted or hinged to each other at 6—that is to say, at the bottom front corner. The lower or front side of the body portion 5 may be suitably ornamented by panels 7 and scrollwork 8 or in any other suitable manner, and from the upper corners project brackets or corbels 9, which form legs to support the lower or foot end of the body portion when the latter is turned down upon the floor.

The body portion of the bed has sides 11

and a foot-board 12, which inclose the folding mechanism and form a pivotal support therefor.

The bed-bottom is shown as a sheet of flexible material 13, which is secured at its ends to a stretcher-frame formed of head and foot rails 14 and 15 and compound side rails 16, to which the head and foot rails are attached, so as to stretch the bottom sheet 13. The side rails 16 are formed in three sections 17, 18, and 19, which are pivoted together at their ends, as shown at 20 and 21, thus forming a linked compound side rail, which when it is stretched out, having the separate sections thereof in line with one another, is of the proper length to extend and stretch to the requisite extent the bottom sheet 13, as shown in full lines in Fig. 3, while when the bed is folded up the two end sections 17 and 19 are bent or folded upon their pivots relatively to the section 18, so as to occupy a less length in the case 4. I have herein shown the stretcher-rails as conveniently formed of wooden bars, to whose adjacent ends are bolted or otherwise securely attached iron hinge-pieces 22 and 23, in which the pivots 20 and 21 are formed; but of course it will be understood that any other form of hinge may be employed, or, on the other hand, the rail-sections 17, 18, and 19 may be formed entirely of iron castings or wrought-iron, as may be desired, although the form herein shown is deemed preferable on account of lightness, strength, and ease of manufacture.

To support the side rails 16 in proper relation to be stretched upon the bedstead and to fold into compact relation in the case when not in use, I provide parallel links 24 and 25, which support the central rail-sections 18 upon pivots 26 and 27 and are pivoted to the lower portions of the sides 11 at 28 and 29. These links are of such a form as to support the rail-section 18 horizontal and parallel to the body 5 of the bedstead when the latter is let down into operative position, as shown in Fig. 3; but these two links 24 and 25 are not of the same form, nor are they parallel to one another. The link 24 when the bed is in its lowered position will stand vertical, and thus support its end of the rail-section 18 in its highest position; but the link 25 will stand obliquely in its position, so that the pivot 27



will be a considerable distance forwardly of the pivot 29. The link 25 is shown, for the sake of convenience, as curved into arc form to prevent it from catching or becoming engaged with the side rail; but it will be understood that it might be formed straight, if desirable. The object in having the line of the pivots 27 and 29 oblique to the side rail and to the link 24 is to cause the lower end of the side rail to descend more than the upper end when the bed is folded up, as indicated by the dotted positions in Fig. 3.

The head-section 17 of the side rail 16 is supported at one end by the upper end of the rail-section 18 by means of the pivot 20, as hereinbefore described, and at its other end it is supported by a strut-bar 30, which is securely bolted to the side rail, or the latter may rest thereupon, and the strut 30 is pivoted at 31 to one of the sides 32 of the bedstead-casing 4. When so supported, it will be seen that the operation of shutting up the bed or raising the body portion 5 by drawing the upper end of the middle rail-section downwardly will cause the head-section 17 to be turned about its pivot 31 into the several positions shown by dotted lines in Fig. 3. The motion of both the upper section 17 and the central section 18, however, is further regulated by the attachment and support of the foot-section 19 of the side rail. This section, as herein shown, is not provided with a pivot; but it rests upon a rod 32<sup>a</sup>, supported between a pair of bracket-lugs 33, bolted to the sides of the body portion 5 at 34. When so supported, the foot-section 19 is adapted to slide back and forth upon the rod 32<sup>a</sup>, according to the position of the bed, and to guide its motion and prevent it from being displaced there will ordinarily be provided on each side rail a guide-rod 35, which runs parallel to the foot-section 19 on the lower side thereof and has both its ends embedded therein. Of course any other means might be adopted for guiding the motion of the section 19 upon the rod 32<sup>a</sup>, as will be readily understood, the essential feature being to provide a support which permits both a reciprocatory and a rotatory motion of the foot-section 19 about the same.

It will be understood that when extended the bed-frame slightly overlaps or covers the footboard 12 of the bedstead, and this might be the case even more than is shown in the drawings—that is to say, the foot-section 19 might project beyond the bottom board, thus shortening the necessary length of the body portion 5 of the bed, because when folded up the section 19 is retracted and caused to turn in such a manner as to uncover the upper side of the footboard 12. Now when the bed is in extended position and it is desired to close the same it will be raised by the lower end, and this motion about the hinge 6 will depress the pivot 20, joining the two rail-sections 18 and 19 by reason of this pivot 20 lying to the right—that is to say, on the opposite side of the hinge 6

from that portion of the bed which is raised. The downward motion of the pivot 20 will cause the section 19 to be turned about its pivot 31, and in so turning the pivot 20 will be pushed forwardly relatively to the body portion 5, so as to occupy the positions 20' 20'' successively. When so pushed forward, the central section 18 will of course carry with it the upper ends of the links 24 and 25 and will turn the latter about their pivots 28 and 29, and thus likewise depress the central section 18 toward the front or bottom board 33<sup>a</sup> of the body portion 5. When so depressed, the link 25 will by reason of its greater length be caused to move downwardly more than the link 24, and the section 18 will thus be turned into oblique position, as shown at 18' in dotted lines. The forward and downward movement of the section 18 thus caused will first push forward the section 19 upon the rod 32<sup>a</sup> and subsequently turn it about the same pin, so that it will occupy the position 19' at an angle to the section 18, and later when the bed is completely folded it will occupy a position 19'' at right angles to the position 18'' of the central section 18 and nearly at right angles to the footboard 12 and will thus be caused to pass easily into the case 4, the bottom sheet 13, mattress, and other clothes lying thereon being thus folded gently at each end thereof.

In order to retain the bottom sheet 13 in proper relation to the side rails when folded and to prevent the same from becoming loose or tangling in the mechanism, I attach the same by loose flexible connections at different points of the side rails along the length of the bed, and these connections are preferably made in the form of springs 34<sup>a</sup> and 35<sup>a</sup>, the upper one of which may be attached to the upper end of the central section 18 and the lower one to the upper section of the foot-section 19 at each side of the bed, so that the head portion of the bottom sheet will be resiliently stretched between the head-piece 14 and the springs 34<sup>a</sup>, and the central section will be likewise held stretched between the springs 34<sup>a</sup> and the springs 35<sup>a</sup>.

To assist in the raising and lowering of the bed and as a counterpoise to the weight of the body portion 5, I have shown a pair of springs 36 of the coiled pattern, which are pivotally attached to staples 37, driven into one of the lower members of the casing 4 and attached at their other ends to brackets 38, which are secured to the sides 11 of the body portion by fastenings 39. While of course a considerable number of modifications of this spring may be devised, and I do not limit myself to any particular form of spring, still that herein shown is thought preferable and gives superior results in practice. It will be seen that the casing 4 is formed with an open bottom formed of two cross-beams 40 and 41, having an interval 42 between them, into which the brackets 38 and springs 36 fold, as shown, and when so folded the end of the bracket 38 is brought nearer to the pivot 37, so as to shorten



the length of the spring; but when the bed is extended this spring will be correspondingly lengthened, according as the body portion 5 approaches a horizontal position. The labor of raising and lowering the bed is thus much reduced, while at the same time there will be no difficulty in pulling it down from its closed position at the upper portion of its movement and no danger of tipping over the whole casing 4, as is the case in many beds wherein the spring does not vary in strength in proper proportion. In my bed the position of the spring will cause its restraining force to be almost zero at the upper limit of movement of the bottom portion 5. Hence there will be no difficulty in lowering the bed.

In order to keep the bed in extended position and prevent any possible tendency to shut up induced either by an excessive weight on the bed above the link 24 or by an excessive tension of the springs 36, I provide a latch device to engage the cross-rod 32<sup>a</sup> and hold the stretcher-frame from moving relatively thereto. This latch device, as herein shown, consists of a cross-rod 44, supported by and turning in suitable bearings in either foot-section 19 and having secured thereto at each side on the inner face of the rail a detent 43, which is notched rectangularly on its lower front end, as indicated at 45. The position of the rod 44 and detents is such that when the bed is fully extended and the foot-section 19 drawn backwardly to its fullest extent the notch 45 will drop over and engage the rod 32<sup>a</sup>, thus preventing any forward or shutting-up motion of the stretcher-frame and keeping it extended.

The mattress and bedclothes will when the bed is in use rest upon the bottom sheet 13, and when the bed is folded they may be secured in position by straps folding over them and attached to the stretcher-rails; but this not being absolutely necessary and being common in folding beds it will not be necessary to show.

Changes within the scope of the appended claims may be made in the form and proportion of some of the parts while their essential features are retained and the spirit of the invention is embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

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

1. A folding bed comprising a casing, a body portion hinged to said casing, and a stretcher-frame having compound stretcher-rails divided into three longitudinal sections pivotally connected movably end to end, said frame being pivoted to said body portion and casing so as to fold together when the body portion is folded into the casing and to be extended in a single plane when in use.

2. A folding bed comprising a casing, a body portion hinged thereto, and a folding stretcher-

frame carrying a bottom sheet stretched thereon and pivotally connected to said body portion and casing, said stretcher-frame being divided into three sections hinged together at their ends and supported by link-rods and guides connected thereto and to said body portion and casing, in folding relation to said body portion and casing.

3. A folding bed comprising a casing, a body portion hinged thereto and adapted to fold thereinto, a compound frame divided into three sections, said frame being adapted to support the bedding and connected pivotally with both the casing and body portion, and means for causing the three sections to be extended in line with one another when the bed is open and to be folded together when the bed is shut up.

4. A folding bed comprising a casing, a body portion hinged thereto, links and guide-pieces connected with said body portion, and compound side rails supported by said casing and body portion and adapted to carry the bedding, said side rails being formed in three sections connected together at their ends of which the head-section is pivotally mounted upon the casing, the central section carried by said links upon the body portion, and the third section reciprocable and rotatable in said guide-pieces.

5. A folding bed comprising a casing, a body portion hinged thereto, and supporting means for the bedding comprising compound side rails supported by said casing and body portion, said side rails being formed each in three sections, the upper one of which is pivotally mounted upon the casing, a pair of links of which the lower is longer than the upper supporting the central section from said body portion, and means permitting reciprocative and rotative movement connecting the lower section to the body portion.

6. A folding bed comprising a casing, a body portion hinged thereto, and supporting means for the bedding comprising compound side rails supported by said casing and body portion, said side rails being formed each in three sections, the upper one of which is pivotally mounted upon the casing, the central one carried by a pair of links of which the lower is longer than the upper supporting the central section from said body portion, means permitting reciprocative and rotative movement connecting the lower section to the body portion, head and foot pieces carried by the upper and lower sections of the side rails, and a bottom sheet stretched between said head and foot pieces.

7. A folding bed comprising a casing, a body portion hinged thereto, compound side rails supported by said casing and body portion and adapted to carry the bedding, said side rails being formed in three sections connected together at their ends, of which the head-section is pivotally mounted upon the casing, links connecting the central section to the body portion, means permitting reciprocative



and rotative movement connecting the third section to said body portion, head and foot pieces carried by the upper and lower sections of the side rails, and a bottom sheet stretched between said head and foot pieces.

8. A folding bed comprising a casing, a body portion hinged thereto, supporting means for the bedding comprising compound side rails supported by said casing and body portion, said side rails being formed each in three sections, the upper one of which is pivotally mounted upon the casing, a pair of links of which the lower is longer than the upper connecting the central section to said body portion, means permitting reciprocative and rotative movement connecting the lower section to the body portion, a rod upon the body portion of the bedstead, and a latch upon one of the foot-sections adapted to engage therewith to prevent the bed from being raised or folded.

9. A folding bed comprising a casing, a body portion hinged thereto, supporting means for the bedding comprising compound side rails supported by said casing and body portion, said side rails being formed each in three sections, the upper one of which is pivotally mounted upon the casing, a pair of links of which the lower is longer than the upper connecting the central section to said body portion, means permitting reciprocative and rotative movement connecting the lower section to the body portion, a spring connecting the casing and body portion in such manner as to tend to retract the latter into folded position, and a latch pivoted upon said lower section and adapted to engage said supporting means for said lower section to prevent the bed from being folded.

10. A folding bed comprising a casing, a body portion hinged thereto, a frame adapted to support the bedding comprising side rails divided into three longitudinal sections hinged together at their ends and adapted to fold together into said casing, the upper or head section being pivoted upon the casing

of the bedstead at a point below the level of the frame, the central section being pivotally connected to a pair of strut-links which are pivotally mounted in said body portion, the lower of said links being longer than the upper, and a rod projecting from the side of the body portion, the foot-section being mounted to slide and turn upon said rod.

11. A folding bed comprising a casing, a body portion hinged thereto, supporting means for the bedding comprising compound side rails supported by said casing and body portion, said side rails being formed each in three sections, the upper one of which is pivotally mounted upon the casing, a pair of links of which the lower is longer than the upper connecting the central section to said body portion, means permitting reciprocative and rotative movement connecting the lower section to the body portion, a spring connecting the casing and body portion in such manner as to retract the latter into folded position, and a latch pivoted upon said foot-section and adapted to engage the pivot upon which said section turns to prevent the bed from being folded, head and foot pieces connecting the sides of the frame, and a bottom sheet stretched between said head and foot pieces.

12. A folding bed comprising a casing, a body portion hingedly connected thereto and adapted to fold thereinto, a compound three-part stretcher-frame pivotally mounted upon said casing and body portion and adapted to be folded together when the body portion is raised, and a bottom sheet stretched upon said frame and having resilient connections intermediate of its length to the sections of said frame.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOSEPH ALPHONSE LESPÉRANCE.

Witnesses:

J. A. MARION,  
T. MYNARD.