No. 801,658. PATENTED OCT. 10, 1905.

G. C. FULLER.

FOLDING BED.

APPLICATION FILED OCT. 3, 1904.

3 SHEETS—SHEET 1.

Fig. 4.

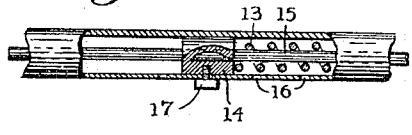


Fig. 1.

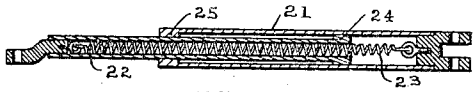


Fig. 2.

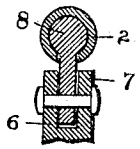
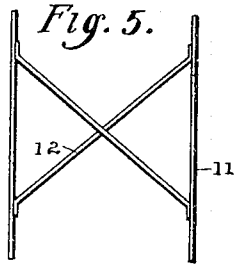


Fig. 3.

Fig. 5.



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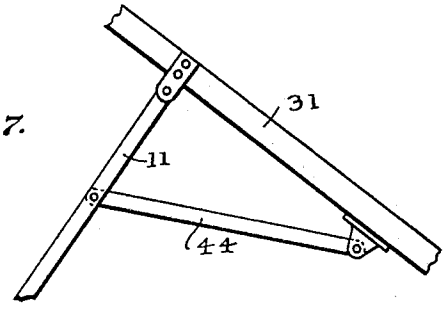
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3 SHEETS—SHEET 2.

Fig. 7.



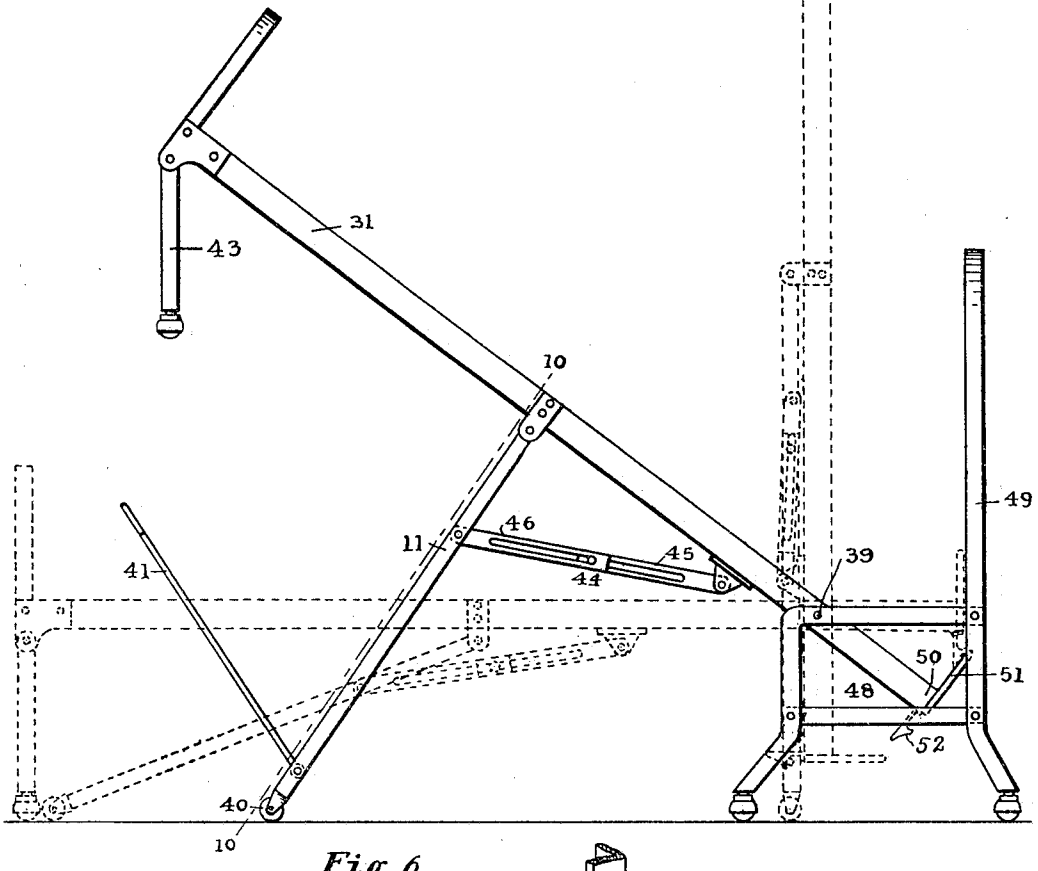


Fig. 6.

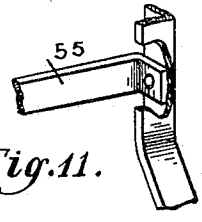


Fig. 11.

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3 SHEETS—SHEET 3.

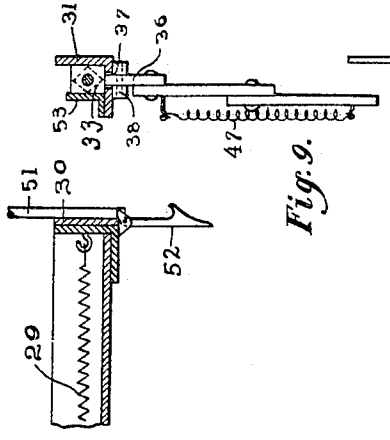


Fig. 9.

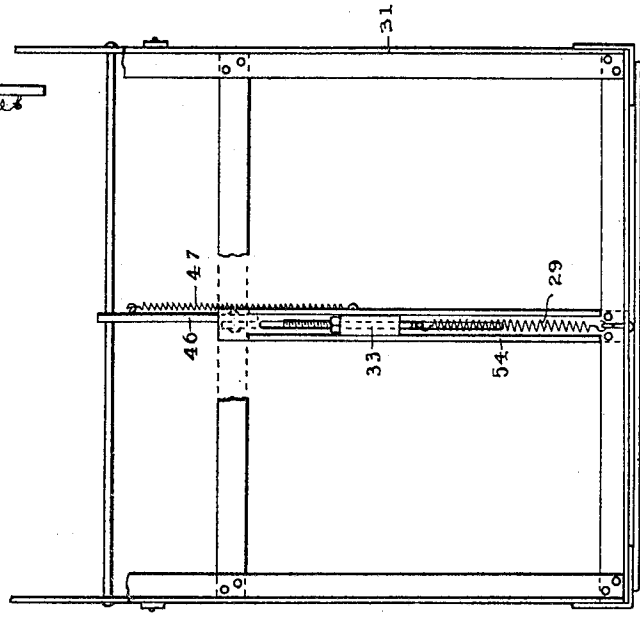


Fig. 12.

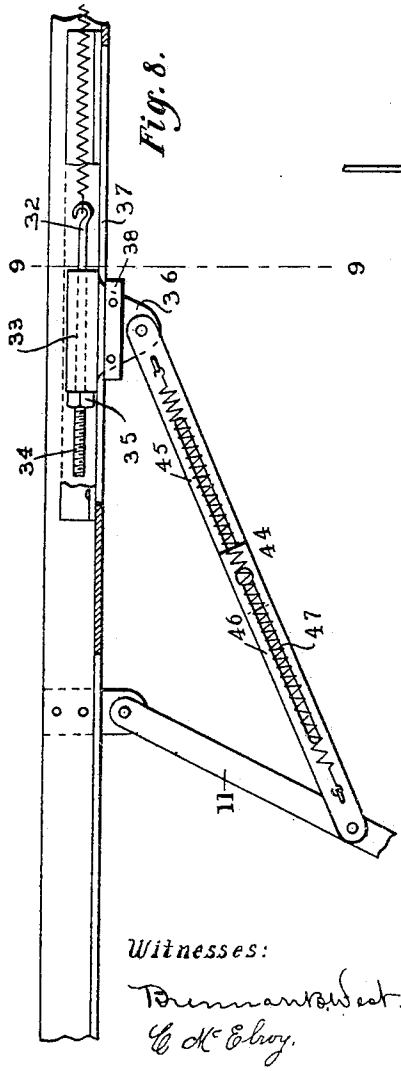


Fig. 8.

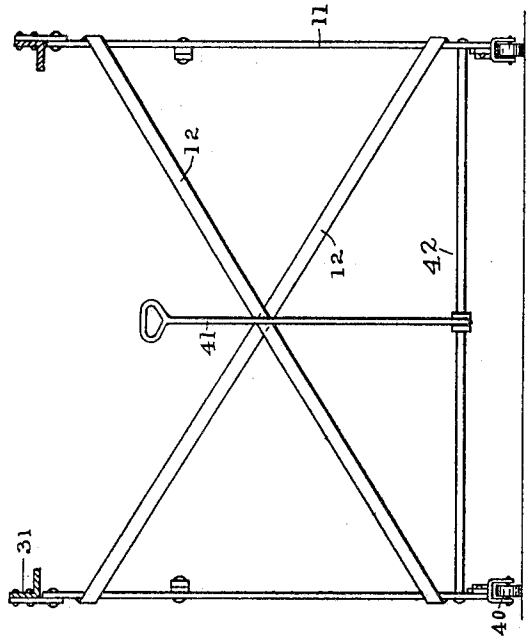


Fig. 10.

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UNITED STATES PATENT OFFICE.

GAIUS C. FULLER, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO ELISE FULLER, OF CLEVELAND, OHIO.

FOLDING BED.

No. 801,658. Specification of Letters Patent. Patented Oct. 10, 1905.

Application filed October 3, 1904. Serial No. 226,983.

To all whom it may concern:

Be it known that I, GAIUS C. FULLER, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Folding Beds, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to folding beds, and particularly to beds of this kind which are made of metal, and has for its objects the construction of a bed of this type that shall be light and durable, that shall be simple and cheap of construction, that may be conveniently folded into small compass and may be unfolded with comparatively slight exertion on the part of the operator, and that shall be safe and reliable in operation.

The invention may be generally defined as consisting of the combinations of elements embodied in the claims hereto annexed.

Referring to the drawings, Figure 1 represents a side elevation, partly in section, of one form of bed constructed in accordance with my invention. Figs. 2, 3, and 4 represent sectional details of certain parts of said bed. Fig. 5 represents a reduced front elevation of the transverse frame. Fig. 6 represents a side elevation of a modified form of the bed shown in Fig. 1. Fig. 7 represents a detail in elevation, showing a modification of the arm or link which connects the arm of the transverse frame with the spring or other elevating means. Fig. 8 represents a longitudinal sectional view of a rail, showing the manner in which the elevating mechanism is applied thereto. Fig. 9 represents a section on the line 9 9 of Fig. 8. Fig. 10 represents an elevation of a modification of the transverse elevating-frame, taken on the line 10 10 of Fig. 6, the handle being shown in elevation. Fig. 11 represents a perspective detail of a portion of the supporting member, showing the location of the cross-brace thereof; and Fig. 12 represents a plan view of one end of the frame, showing how my frame-elevating device may be applied to a single longitudinal rail or member.

In the drawings, 1 represents the frame of the bed, said frame comprising side rails 2 and end rails. (Not shown.) 3 and 4 designate, respectively, the head and foot ends of the bed. Adjacent one end of said bed, preferably the head end, is a supporting member 5, to which the frame is pivoted for folding up or down. This supporting member is preferably connected with the adjacent end of the bed, as shown, and forms with it an extended support for the frame and its attached parts, preventing them from toppling over when folded up. The supporting member comprises, preferably, an upright 6 at each side, having a pair of lugs 7, between which is pivoted a block 8, slidably fitting within the side rail 2 for a purpose to be hereinafter explained, each of said rails being slotted for the passage of the shank of the block.

The end of the frame opposite the pivoted end is provided with one or more downwardly-extending lugs 9, adapted to fit into a corresponding recess or recesses, (shown in dotted lines at 10.)

To each side rail there is pivoted the end of an arm 11, said arm being of sufficient length to extend to the floor during the greater portion, at least, of the folding movement of the bed. Antifriction-rollers 120 are provided to prevent injury to the floor or carpet by such arms. These rollers may be the ordinary rollers or casters carried by the end 4 of the bed, to which said arms may be pivoted, as shown in Fig. 1, or they may be connected directly to said arms, as is shown in Figs. 6 and 10. The opposite arms 11 are preferably connected by diagonal braces 12, (see Figs. 5 and 10,) forming a stiff transverse frame extending under and across the bed-frame.

The object of the arm 11 and the frame of which they form a part is to assist the operator in folding and unfolding the bed. This result is accomplished as follows: Mounted in a longitudinal member of the bed-frame, as one or both of the side rails 2, is a spring 13. This spring is arranged to exert its force in the direction of the pivoted end of the frame, one end of said spring abutting against a collar 14, slidably surrounding the rod 15, which forms a guide and support for the spring. By means of holes 16 in the rail and a threaded bolt 17 engaging the collar the tension of the spring may be adjusted in an obvious manner to suit varying weights of frames, bedding, &c. The other end of the spring abuts against a block or plunger 18, secured to the end of the rod 15. This block or plunger is provided with a lug or extension projecting through a slot 19 in the bottom of the rail and pivotally connected to the link 20,

which is in turn pivotally connected to the arm 11. There is thus provided an effective connection between the spring 13 and the arm 11, tending to force the latter toward the pivot on which the frame is folded and unfolded.

The link 20, as shown more particularly in Fig. 2, is composed of tubes 21 22, the latter tube telescoping within the former, a spring 23 being employed to assist in the telescopic movement as the arm 11 moves toward the pivoted end of the frame and stops 24 25 being provided to limit the extension of said tubes. A rod 26 is pivotally connected to the bed-frame near the end of each side rail 2, the other end of said rod being pivotally connected to the adjacent bed end near the floor. When the frame is in its normal position, (shown in dotted lines in Fig. 1,) this rod is nearly vertical and prevents the frame from being accidentally folded up. When the frame is being folded up, the rods force it bodily away from the bed end 3, permitting the frame and the mattress, bedding, &c., thereon to clear said end, the rails sliding on the blocks 8 during such movement.

When it is desired to fold up the bed, it is only necessary to lift the end of the frame remote from the pivots to disengage the lugs 9 from their seats. The operator then grasps the end 4 and pushes the same toward the other end of the bed, as shown in full lines in Fig. 1. The spring or springs 13 through the connections 8, 21, and 22 assist in this operation, and the arm or arms 11 elevate the frame in an obvious manner. Said arm or arms, together with the rollers 12, should be of sufficient length to engage the floor until the frame is nearly or completely folded up. By selecting springs of proper strength and adjusting the tension thereof to suit the particular type of bed, bedding, &c., but little exertion will be necessary on the part of the operator to fold up the frame and its accessories. When the frame is lowered, the spring or springs support nearly the entire weight of the same, and the operations of folding and unfolding may be performed with ease by a child. A shoulder 28 engages the arm 11 and insures the lugs 9 engaging their recesses 10 when the frame is folded down. A latch 260 at each side of the supporting member engages the end of the bed when folded to retain the same in place.

I have shown in Figs. 6, 8, and 9 a modification of the bed illustrated in Figs. 1 to 5. In this modification I employ angle-irons for the ends, supporting member, and bed-frame, thereby producing a particularly cheap and durable bed. The springs 29 may be attached at one end to the end rail 30, said springs being mounted in the angle-iron side rails 31. The opposite ends of said springs are secured to the hook 32, carried by the block 33. This hook may have its shank extended through said block and provided with a thread 34 and a nut 35, by means of which the tension of the spring may be adjusted. The block is provided with a lug 36, extending through a slot 37 in the bottom of the rail, said block being prevented from vertical displacement by the plate or keeper 38, secured to the lug below said slot.

Instead of connecting the arms 11 with the end of the bed opposite the pivot 39 I may extend such arms and provide them with separate rollers 40, as shown in Figs. 6 and 10. In this event I employ a handle 41 for manipulating said arm. Where a pair of such arms is employed, connected by the diagonal braces 12 to form a transverse frame, the handle may be connected to the bottom cross-brace 42 of such frame. The legs 43 of the end of the bed remote from the pivot 39 may then be pivoted to the side rails 31, as shown in Fig. 6.

Instead of telescoping tubes I may employ another form of collapsible link between the arm 11 and the rail 31—as, for instance, the link 44, made of two metal straps 45 46, having a pin-and-slot connection, a spring 47 being employed to assist in the collapsing movement of said straps as the arm 11 is moved toward the pivoted end of the bed. In the modification just described the rod 26 and the sliding connection between the rails 31 and the base structure 48 may be omitted by merely leaving an open space in the end 49 of the bed adjacent to the end 50 of the frame. A transverse rod 51, secured at its ends to the rails 31, assists in supporting the mattress and bedding in place on the frame, and a gravity-latch 52, preferably secured to the end of the frame adjacent the pivot 39, engages the bottom brace of the transverse frame to lock the bed in the folded position. The cross-brace 55 at the lower part of the supporting member engages the transverse frame and obviates any danger of the said frame and the bed-frame being accidentally unfolded when so latched together.

Instead of employing a collapsible link between the arm 11 and the frame I may where there is sufficient space in the side rail make such link in one piece, as shown in Fig. 7, thereby dispensing with the necessity for a spring, such as 23 or 47. As the metal of which the bed is to be made is light, I prefer to strengthen the side rails when slotted to permit the passage of the lugs 36 by riveting thereto angle-iron reinforcing members 53, as shown in Fig. 9, such members further serving to guide the blocks 33 in their movements.

Instead of supporting the block 33 and spring 29 in one or both side rails I may employ some other longitudinal member, as a centrally-arranged member 54, (see Fig. 12,) extending a portion only of the length of the frame. This member may be made up of

two angle-irons, as is the case in Fig. 9, or it may be a channel-iron. By using a spring of sufficient strength but one such member need be employed.

While I have necessarily described my invention in detail, it will be apparent that such details may be departed from more or less without affecting the spirit of my invention, and I do not propose to be limited to such details except as they may be included in the claims hereto annexed or rendered necessary by the prior state of the art.

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

1. In a folding bed, the combination of a supporting member, a bed-frame pivoted thereto, an arm pivoted to said frame for raising and lowering the same, and means connected with said arm intermediate of the pivot and the end remote therefrom to assist in operating the same, substantially as specified.

2. In a folding bed, the combination of a supporting member, a bed-frame pivoted thereto, an arm pivoted to said frame and of sufficient length to engage the floor during a portion at least of the folding movement of said frame and having its free end provided with a roller or similar antifriction device, and means connected with said arm intermediate of the pivot and the end remote therefrom for assisting to move the same toward the pivot of the frame to elevate the latter, substantially as described.

3. In a folding bed, the combination of a supporting member, a bed-frame pivoted thereto, an arm pivoted at one end to said frame and at its other end to the end of the bed which is remote from said base member, and means connected to said arm intermediate of the ends thereof for assisting to move the same and the connected end of the bed toward the pivot of the frame to elevate the latter, substantially as specified.

4. In a folding bed, the combination of a supporting member, a bed-frame pivoted thereto, a transverse frame pivoted at one end to said bed-frame and having rollers at its other end for engaging the floor during a portion at least of the closing movement of the bed-frame, and means connected with the transverse frame intermediate of the pivot and the end remote therefrom for assisting to move it toward the pivot of the bed-frame to elevate the latter frame, substantially as specified.

5. In a folding bed, the combination of a supporting member, a bed-frame pivoted thereto, an arm pivoted to said frame and of sufficient length to engage the floor during a portion at least of the folding movement of said frame, and mechanism connected with said arm intermediate of the pivot and the end remote therefrom to assist in moving the same toward the pivot of the frame to raise the said frame, substantially as specified.

6. In a folding bed, the combination of a supporting member, a bed-frame pivoted near one end to said member, a transverse frame pivotally connected at one end to said bed-frame and provided at its other end with rollers, and means connected with said transverse frame intermediate of the pivot and the end remote therefrom to assist in moving the same toward the pivot of the bed-frame to elevate the latter frame, substantially as specified.

7. In a folding bed, the combination of a supporting member, a bed-frame having its side rails pivoted to said member, an arm pivotally connected to each of said rails and being of sufficient length to engage the floor, and means connected to said arms intermediate of the pivots and the ends remote therefrom to assist in moving them toward the pivot of the frame to elevate the latter, substantially as specified.

8. In a folding bed, the combination of a supporting member, a bed-frame pivotally connected to said member and comprising a longitudinal member, an arm pivotally connected to said frame, and mechanism carried by said longitudinal member and connected to said arm intermediate of the pivot and the end remote therefrom to assist in moving the same toward the pivotal connection of the bed-frame to elevate the latter, substantially as specified.

9. In a folding bed, the combination of a supporting member, a bed-frame pivotally connected thereto, an arm pivotally connected to said frame, and a spring connected to said arm intermediate of the pivot and the end remote therefrom and arranged to assist in moving the same in a direction to elevate the bed-frame, substantially as specified.

10. In a folding bed, the combination of a supporting member, a bed-frame pivotally connected thereto and comprising a longitudinal member, an elevating-arm pivotally connected to said frame, a spring carried by said longitudinal member, and an operative connection between said spring and said arm intermediate of the pivot and the end remote therefrom, substantially as specified.

11. In a folding bed, the combination of a supporting member, a bed-frame pivotally connected thereto, said frame comprising a longitudinal member, an elevating-arm pivotally connected to said frame, a spring carried by said longitudinal member and exerting its force in the direction of the pivot of the bed-frame, and an operative connection between said spring and said arm intermediate of the pivot and the end remote therefrom, substantially as specified.

12. In a folding bed, the combination of a supporting member, a bed-frame pivotally

connected thereto and comprising a longitudinal member, an elevating-arm pivotally connected to said frame, a spring carried by said longitudinal member, a sliding block engaged by said spring, and a link connecting said block and said arm, substantially as specified.

13. In a folding bed, the combination of a supporting member, a bed-frame pivoted to said member and comprising a hollow longitudinal member having a longitudinal slot therein, a spring mounted in said longitudinal member, a block slidably mounted in said longitudinal member in engagement with said spring and having a shank or extension projecting through said slot, an elevating-arm pivotally connected to said bed-frame and a link connecting said arm and the shank of said block, substantially as specified.

14. In a folding bed, the combination of a supporting member, a bed-frame pivoted thereto and comprising a hollow longitudinal member, said member having a slot therein, a rod supported within said longitudinal member, a collar loosely mounted on said rod, a block or plunger connected to said rod and having a shank extending through the slot in the longitudinal member, a spring on said rod between said collar and block, an elevating-arm pivoted to said frame, and a link connecting the shank of said block and said arm, substantially as specified.

15. In a folding bed, the combination of a supporting member, a bed-frame pivoted thereto, an elevating-arm pivoted to said frame, a spring operatively connected to said arm intermediate of the pivot and the end remote therefrom, and means for adjusting the tension of said spring, substantially as specified.

16. In a folding bed, the combination of a supporting member, a bed-frame pivoted to said member, an elevating-arm pivoted to each of the side rails of said frame, a spring carried within each of said side rails and an operative connection between each of said springs and each of said arms, substantially as specified.

17. In a folding bed, the combination of a supporting member, a bed-frame pivoted to said member, a transverse elevating-frame comprising arms each pivoted at one end to a side rail of the bed and at the other end to the end of the bed remote from the supporting member, springs carried by said rails, and connections between said springs and said arms, substantially as specified.

18. In a folding bed, the combination of a supporting member, a bed-frame formed with chambered side rails each having a longitudinal slot in the lower portion thereof adjacent the supporting member, a block or plunger slidably fitted in each of said rails and having an extension projecting through the slot, and means for pivotally connecting said extension and said supporting member, substantially as described.

19. In a folding bed, the combination of a supporting member, a bed-frame formed with chambered side rails each having a longitudinal slot in the lower portion thereof adjacent the supporting member, a block or plunger slidably fitted in each of said rails and having an extension projecting through the slot, means for pivotally connecting said extension and said supporting member, and means connected with said frame for moving it longitudinally on said blocks or plungers during the folding and unfolding movements of the bed and for resisting the starting of such movements, substantially as specified.

20. In a folding bed, the combination of a supporting member, a bed-frame pivotally connected thereto, an elevating-arm pivotally connected to said frame, and means comprising a collapsible link for assisting to move said arm in a direction to elevate said frame, substantially as specified.

21. In a folding bed, the combination of a supporting member, a bed-frame pivotally connected thereto, an elevating-arm pivotally connected to said frame, a spring, and a collapsible link connecting said spring and said arm to assist in moving the latter in a direction to elevate the frame, substantially as specified.

22. In a folding bed, the combination of a supporting member, a bed-frame pivoted to said member and provided with a longitudinal hollow rail, an elevating-arm pivoted to said frame, and a spring within said rail connected to said arm to move it in a direction to elevate the bed-frame, substantially as specified.

23. In a folding bed, the combination of a supporting member, a bed-frame pivoted to said member and provided with a longitudinal rail, a spring carried by said rail and exerting its force in the direction of the said rail, an elevating-arm pivoted to said frame, and means for connecting said spring to said arm to move it in a direction to elevate said frame, substantially as specified.

24. In a folding bed, the combination of a supporting member, a bed-frame pivoted to said member and provided with a pair of hollow rails, springs mounted in said rails and exerting their force in the direction of the length thereof, elevating-arms pivoted to said frame, and means for connecting said springs to said arms to move them in a direction to elevate said frame, substantially as specified.

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

GAIUS C. FULLER.

Witnesses:
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J. B. HULL.