M. F. BAYER.

WALL BED.

APPLICATION FILED JAN. 6, 1919.

1,418,054. Patented May 30, 1922.

4 SHEETS—SHEET 1.

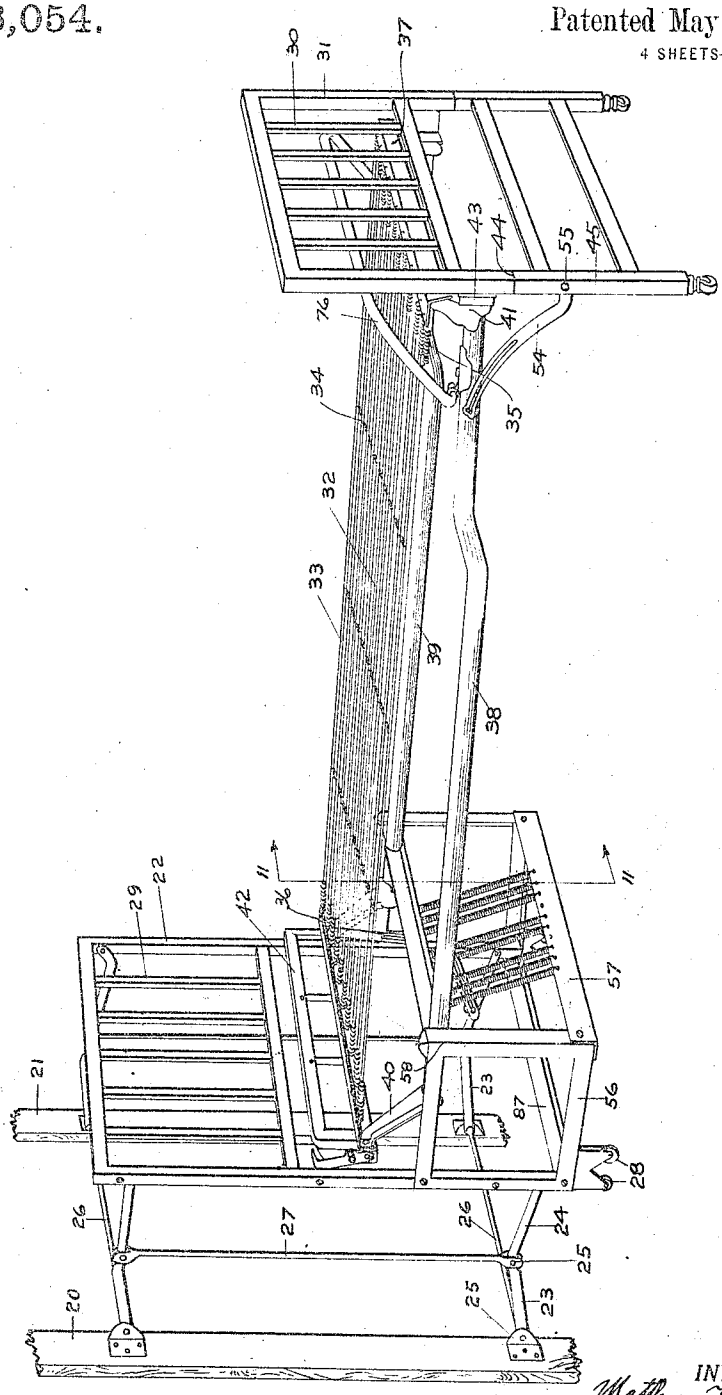


Fig. 1.

WITNESS

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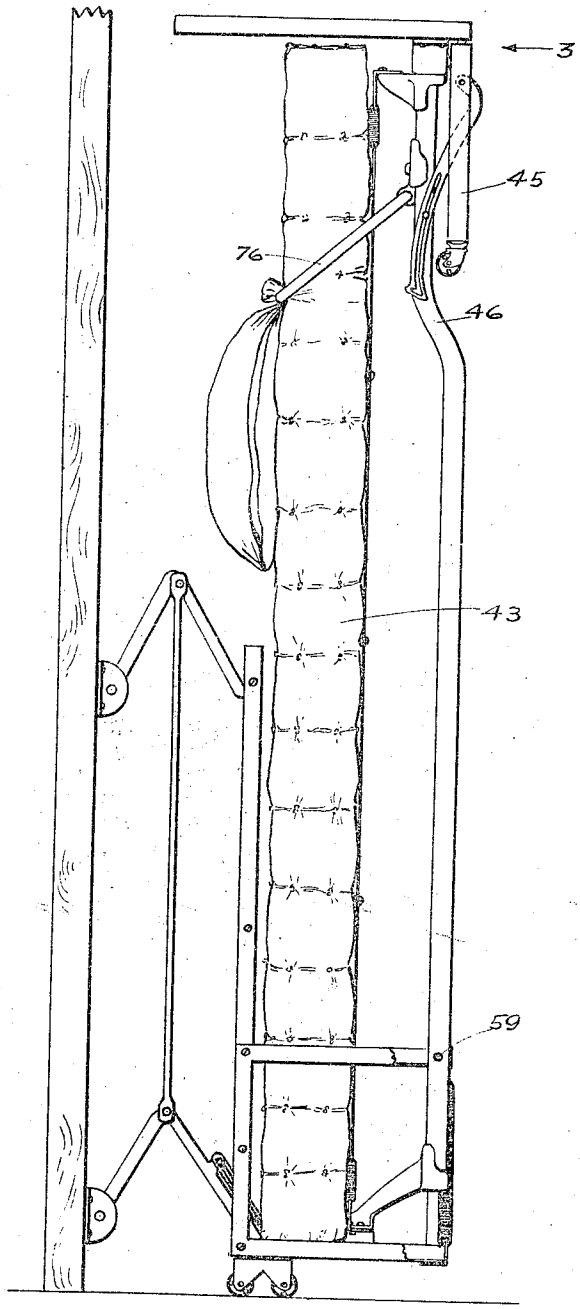


Fig. 2

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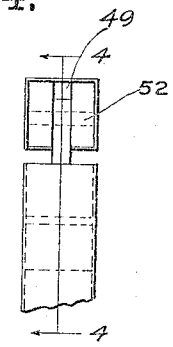


Fig 3

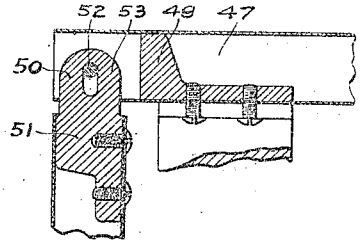


Fig. 4

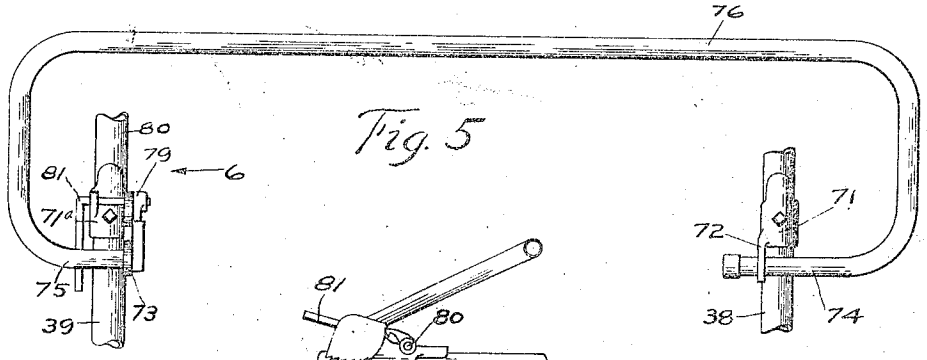


Fig. 5

Fig. 6

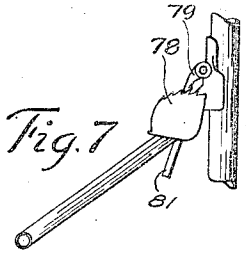


Fig. 7

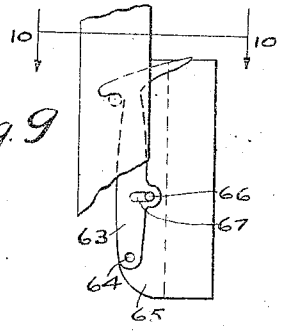


Fig. 9

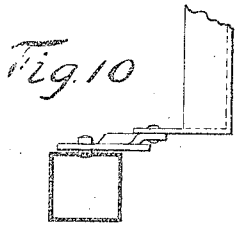


Fig. 10

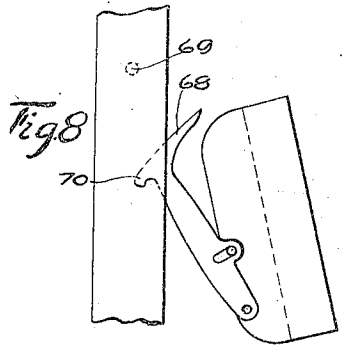


Fig. 8

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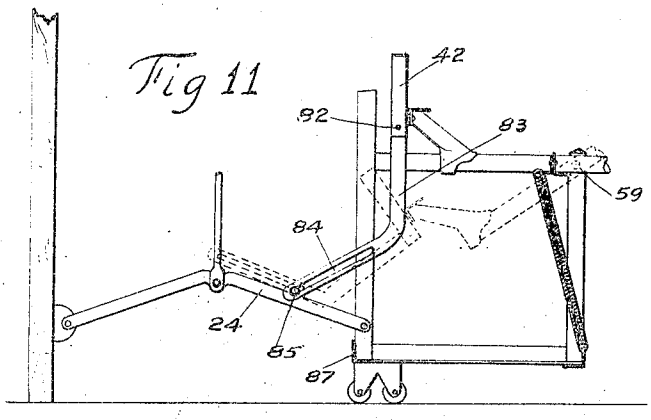
WALL BED.

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4 SHEETS—SHEET 4.

Fig 11



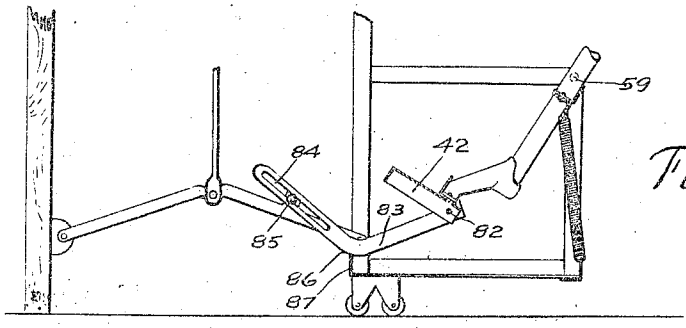


Fig 12

Fig 13

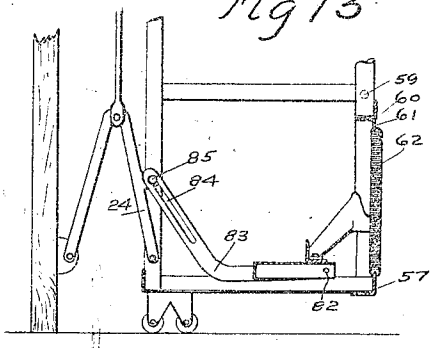
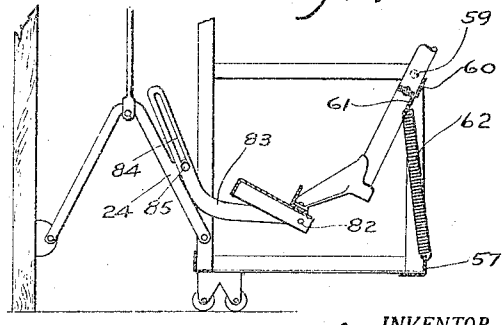


Fig 14



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UNITED STATES PATENT OFFICE.

MATTHEW F. BAYER, OF KENOSHA, WISCONSIN, ASSIGNOR TO SIMMONS COMPANY, OF KENOSHA, WISCONSIN, A CORPORATION OF DELAWARE.

WALL BED.

1,418,054. Specification of Letters Patent. Patented May 30, 1922.

Application filed January 6, 1919. Serial No. 269,768.

To all whom it may concern:

Be it known that I, MATTHEW F. BAYER, a citizen of the United States, residing in the city of Kenosha, county of Kenosha, and State of Wisconsin, have invented certain new and useful Improvements in Wall Beds, of which the following is a specification.

My invention relates to improvements in wall beds and has particular reference to that type of wall bed which, when folded into vertical position, is capable of being concealed in a suitable recess.

The principal objects of the invention are to provide a wall bed of the class described which, when unfolded or adjusted in horizontal or effective position has the appearance of an ordinary bedstead and is located with reference to the wall of the room in a location permitting free access of the necessary air for proper ventilation; to provide a wall bed of the class described which may be quickly and conveniently shifted or adjusted into either of its two positions; to provide a wall bed of the class described having improved means for securing the bedding to the bedstead so that the mattress, pillow, or other bedding will not become displaced when the bed is adjusted in vertical or folded position; to provide improved means for automatically causing the various parts to assume their proper positions; to provide improved means for locking the operative parts of the bed in the desired adjusted position; to provide a device embodying a comparatively few mechanical parts and those parts being of simple and rugged construction; to provide a construction of the class described which shall be comparatively inexpensive to manufacture and practically fool-proof and in general, to provide an improved efficient wall bed of the character referred to.

In the drawings which illustrate a preferred embodiment of my invention, Fig. 1 shows a wall bed constructed according to my invention and in its horizontal, unfolded or effective positions;

Fig. 2 is a view showing the same wall bed adjusted in vertical or folded position;

Fig. 3 is a view looking in the direction of the arrow 3 in Fig. 2;

Fig. 4 is a section taken on the line 4—4 of Fig. 3;

Fig. 5 is a plan view of parts employed to secure the bedding in position;

Fig. 6 is a view looking in the direction of the arrow 6 in Fig. 5;

Fig. 7 is a view similar to Fig. 6 but showing the parts in another position;

Fig. 8 is a side elevation of a device for locking the bedstead in horizontal position;

Fig. 9 is a view similar to Fig. 6 but showing the parts in locked position;

Fig. 10 is a section taken on the line 10—10 of Fig. 9;

Fig. 11 is a side elevation of parts employed for controlling the horizontal movement of the supporting frame, and

Figs. 12, 13 and 14 are views similar to Fig. 11 but showing the parts in different positions.

The bedstead shown in the drawings is arranged when not in use to enter a suitable recess in the wall of the room, the opening into the recess being closed by a door, or a pair of doors when the bedstead is in the recess. The rear of said recess is equipped with a pair of suitable spaced apart uprights 20 and 21 to which the supporting frame 22 for the bedstead is connected by means of a suitable parallel motion which will permit horizontal movement of the supporting frame 22 out of the recess when maintaining the said frame 22 in vertical position. Such means comprises a set of four pairs of links 23 and 24 said links being of equal length and pivoted together at their adjacent ends as shown at 25. The opposite ends of the said links 23 and 24 are pivoted respectively to small brackets 25 secured to the uprights 20 and 21 and to points of the vertical supporting frame 22. The links 23 and 24 on opposite sides of the supporting frame 22 are caused to move in unison by horizontal rods 26 rigidly uniting the rear ends of the lengths 23 adjacent or at their pivotal connections with the brackets 25 and the upper links and the lower links are caused to move in unison by a pair of vertically extending rods or links 27, the ends of which are pivotally connected to the pivots between the links 23 and 24. Each side of the vertical frame 22 is equipped with a pair of supporting wheels or rollers 28 which enable the bedstead and its frame to be moved in or out of the recess without injury to the rug or floor of the room.

It will be understood that the lengths of the links 23 and 24 are such that the verti-

cal frame 22 may be moved bodily outwardly from the back of the recess a substantial distance thereby to secure free access of air to the head of the bedstead, the head of the bedstead comprising in part the upper portion of the frame 22. It will be noted that in order to conform to present day standards of bedstead designs, the upper portion of said vertical frame 22 is constructed with suitable pillar rods 29 matching the filler rods 30 of the foot end 31 to the bedstead.

The bed bottom 32 may be of any approved construction, although in the present instance I have shown a spring mattress composed of a series of horizontal strap members 33 connected transversely by individual helicals 34, the slats at their ends being connected by means of longitudinal helicals 35 to a pair of opposed transverse angle iron members 36 and 37. The said angle iron members 36 and 37 are connected together and spaced apart by means of a pair of side tubes 38 and 39 which are equipped with suitable risers 40 and 41. I prefer to equip the head end of the bedstead with a low sub-head 42 for the purpose of supporting the matress 43 when the bedstead is swung up into vertical or folded position. Said sub-head 42 is secured to the vertical flange of the cross angle 36 by any desired means such as bolts or rivets.

It will be noted that the foot end 31 of the bedstead is rigidly secured to the risers 41 by means of joint connections 43 which need not be described in detail. The said foot end 31, which in the present instance, is constructed of rectangular tubing, is jointed substantially midway of its vertical height as shown at 44 so that the bottom portion 45 of the said foot end may be folded down to lie parallel with the bed bottom or mattress frame as shown in Fig. 2. It will also be observed that in order to conserve space the side tubes 38 of the mattress frame are offset at their foot ends as shown at 46 so that the foldable portion 45 of the foot end of the bedstead will not project outwardly beyond the said tubes 38 when the bed is in folded position.

The details of the pivotal connection between the upper portion of the foot end 31 and the lower portion 45 thereof are shown in Figs. 3 and 4, upon examination of which it will be seen that the hollow post 47 of the upper portion of the bed end 31 is equipped with a cast iron filler 48 vertically slotted as shown at 49 in order to admit a tongue or lug 50 on a corresponding cast iron filler member 51 secured in the upper end of the post of the foldable portion 45 of the foot end. A transverse pin 52 rigidly secured across the slot 49 serves to pivotally connect the filler 48 and 51, the lug 50 being suitably slotted as shown at 53 to loosely receive the said pivot pin 52 while allowing a sufficient bodily longitudinal movement of the bottom section of the foot end to cause the edges of the leg parts to come together when the bedstead is in horizontal position. When the bedstead is in effective position the leg portion 45 of the foot end is locked in vertical position by means of a small link 54 one end of which is pivoted to one of the legs as shown at 55, the other end being slotted to engage a headed pin fixedly secured in the tube 38.

The supporting frame 22 at each side thereof has a rectangular lower outwardly projecting portion 56, the lower outer corners of said extension 56 being connected by means of a length of angle iron 57. The upper outer corners 58 constitute supports in which the matress frame is pivotally mounted on a horizontal axis. Such pivotal mounting comprises a pair of pins 59 fixedly secured in the frame corners 58 and projecting inwardly to loosely fit corresponding apertures formed in the side tubes 38 and 39 of the mattress frame. The said mattress tubes 38 and 39 are united together adjacent to the pivotal axis by means of a pair of transversely extending angle irons 60 and 61 placed back to back and riveted together through their adjacent flanges. The angle iron 61 and the angle iron 57 are perforated at intervals to accommodate the hooked ends of a series of coil tension springs 62, the purpose of which is to assist in the raising of the outer end of the bedstead when it is desired to swing the same upwardly into folded position.

In Figs. 1, 8 and 9 I have shown a device for automatically locking the bed in horizontal or extended position so as to prevent it from folding accidentally when the weight is unevenly distributed. Such device comprises a small locking dog 63, the lower end of which is loosely pivoted on a pin 64 fixed in a flange 65 projecting from one side of the subhead 42 heretofore referred to.

The pivotal movement of said locking dog 63 is limited by a pin 66 also securely fixed in the said flange 65, said pin 66 fitting loosely within a suitable slot 67 punched in the locking dog 63, as shown best in Figs. 8 and 9. The upper end of said locking dog is formed with an inclined limb 68, the function of which is to engage a pin 69 fixed in the frame 22 when the bed is being unfolded. It will be manifest that when said inclined portion 68 engages said fixed pin 69 as the subhead rises during such pivotal movement, the locking dog 68 will be forced outwardly on its pivot (the slot 67 permitting such movement of the dog) until the inner or lower end of the inclined portion 68 moves past and above the fixed pin 69 whereupon the said dog 63 will drop back and assume the position shown in Fig. 9

thereby positively locking the bed against a reverse pivotal movement.

In this connection it may be stated that in practice I find it preferable to give the pin 69 a slight amount of play beneath the latch portion 70 when the latter is engaged with said pin 69. By reason of such slight slackness I am able to unlock the said latch or dog 67 without actually manipulating the same manually. This is done in the following manner:

I first lift up the foot end of the bedstead an inch or so, the play between the locking pin 69 and the latch part 70 permitting such movement. I then drop the foot end of the bed, whereupon the jarring action in conjunction with the inertia of the dog 63 will cause the same to jump or swing outwardly a sufficient distance to disengage the pin 69 from the latch part 70. Then by again quickly raising the foot end of the bed several inches before the latch has a chance to drop back again into locked position the dog is prevented from relatching. I am then able to fold up the bedstead without the necessity of manually holding the dog in unlocked position.

Improved means are employed for securing the bedding in position when the bedstead is in folded relation. To this end I mount towards the foot end of the tubes 38 and 39 of the mattress a pair of cast brackets 71 and 71ª, said brackets having apertured lugs 72 and 73 constituting pivotal bearings for the inwardly bent ends 74 and 75 of a tubular bail member 76 extending across the foot of the bedstead. To the inner end of the bail part 75 I rigidly secure a ratchet plate 77, the teeth 78 of which are substantially arranged concentrically with the pivotal axis of the bail member. Said ratchet teeth 78 are arranged to co-operate with a ratchet dog 79 rigidly secured to a small shaft 80 pivotally mounted in the bracket 72 and having its outer end bent at right angles so as to provide a suitable handle 81.

It will be apparent that when the bail 76 is adjusted in the position shown in Fig. 2 of the drawings so as to engage the pillow and other bedding, the ratchet and dog will be in the position shown in Fig. 7 and it will be seen that a reverse or upward movement of the bail 76 will be effectually prevented. After the bedstead has been unfolded it is a simple matter to unlock the ratchet dog 79 by means of the handle 81 whereupon the bail can be swung outwardly into the position shown in Figs. 1, 5 and 6 thus releasing the bedding. It will be observed that when the bail is in such last named position it is so located as to lie in the space between the upper edge of the foot end of the mattress and the foot end of the bedstead and does not interfere with the comfort of the occupant.

In the preferred construction I employ special means for automatically moving the bedstead supporting frame in or out of its sustaining recess when the bedstead is folded or unfolded as the case may be. To this end, and referring particularly to Figs. 11, 12, 13 and 14, it will be noted that to the bottom of the subhead 42, and at one side thereof, I pivotally connect, by means of a pin 82, the outer end of a boomerang shaped link 83, the inner end of said link being slotted as shown at 84 to slidably engage the headed pin 85 fixed in a lug projecting upwardly from one of the links 24. The dimensions of the various parts are such that the operation is as follows:

Fig. 11 shows the bed in a position similar to Fig. 1, that is to say, in full extended relation. When in such position it will be seen that the pin 85 is at the extreme end of the slot 84. In closing the bed the outer end thereof is, of course, elevated which causes the pin 82 to swing around the main pivotal axis 59. Such downward swinging movement of the pin 82 causes relative movement of the pin 85 along the slot 84, said slot 84 made long enough to permit the pins 85, 82 and 59 to be located in a straight line (as shown in dotted lines in Fig. 11), before the opposite end of the slot 84 engages said pin 85. A further upward swinging movement of the bedstead on its main pivotal axis causes the pin 85 to recede relatively to the slot 84 until the parts occupy the position shown in Fig. 12, where it will be seen that the pin 85 is substantially half way along the length of the slot 84 while the outer angle or bend 86 has engaged the upper edge of the angle iron 87.

Upon further upward swinging movement of the bedstead, and consequent depression of the pin 82, the link 83 will operate as a lever upon the upper edge of said angle iron 87, thus causing the pin 85 to move upwardly. Thus by the time that the bedstead approaches its vertical folded position, the pin 85 will have been moved upward to such an extent as to cause a considerable collapsing movement of the links 23 and 24, thus drawing the main bedstead supporting frame toward and into the recess.

After the pin 85 has risen a certain distance, due to the said lever action of the link 83, the bend 86 of said link moves beyond the upper edge of the angle iron 87 and into such position that the pin 85 engages the outer end of the slot 84. During the final upward swinging movement of the bedstead, the said link 83 functions purely as a link, bearing outwardly upon the pin 85 and causing a further collapsing movement of the said links 23 and 24. In this connection it should be observed that when the bed is being folded considerable force is

applied to the foot end of the bedstead, which force is obviously applied in a direction tending to cause the bedstead to move into the recess thereby materially assisting the link 83 in moving the frame into the recess.

In addition to its function, when the bedstead is being folded the link 83 and associated parts are effective to extend the links 23 and 24 and move the bedstead out of the recess when the bed is extended or unfolded in the position as shown in Fig. 1. By reference to Fig. 14 it will be observed that during the unfolding or downwardly swinging movement of the bedstead frame, the initial portion of the movement is effective to cause the lower end of the slot 84 to engage the pin 85 whereupon the subsequent unfolding movement which results in an upward movement of the pin 82 exerts a toggling action between the pins 85, 82 and 59, such toggling effect causes the pin 85 to move away from the pin 59 and since said pin is a part of the link 24, the latter is forced to swing about its lower pivotal axis thereby causing a relative opening movement of the links 23 and 24 and a consequent outward movement of the bedstead supporting frame from within the recess.

Since the precise embodiment shown herein is merely illustrative of a single application of my invention, it should be understood that the scope of the invention is not limited thereby but should be determined by reference to the appended claims.

I claim:

1. In a bedstead of the class described, the combination of a stationary structure, a vertical frame, means permitting bodily horizontal movement of said frame away from said structure while maintaining said frame vertical, and a bedstead frame foldably attached to said first frame and means whereby the movement of the vertical frame is controlled by the folding of the bedstead frame.

2. In a bedstead of the class described, the combination of a stationary structure, a vertical frame, means permitting bodily horizontal movement of said frame away from said structure while maintaining said frame vertical, a bedstead frame horizontally pivoted to said first frame whereby it is capable of assuming either an effective horizontal position or a folded vertical position, and means controlling horizontal movement of said frame and operated by the pivotal movement of said bedstead frame.

3. In combination, a pair of horizontally spaced wall members, a frame arranged parallel with the wall and provided with a pair of horizontally spaced uprights respectively opposed to said wall members, parallel linkage systems respectively connecting the uprights with the adjacent wall members, means mechanically connecting the systems for compelling movement thereof in unison whereby the frame is permitted to move bodily horizontally to or from the wall while maintaining said frame vertical and a bedstead supported by said frame.

4. In combination a pair of horizontally spaced wall members, a frame arranged parallel with the wall and provided with a pair of horizontally spaced uprights respectively opposed to said wall members, parallel linkage systems respectively connecting the uprights with the adjacent wall members, means mechanically connecting the systems for compelling movement thereof in unison whereby the frame is permitted to move bodily horizontally to or from the wall while maintaining said frame vertical and a bedstead supported by said frame, and foldably mounted thereon, the arrangement including means whereby the movement of the frame is controlled by the folding of the bedstead.

5. In combination a pair of horizontally spaced wall members, a frame arranged parallel with the wall and provided with a pair of horizontally spaced uprights respectively opposed to said wall members, parallel linkage systems respectively connecting the uprights with the adjacent wall members, means mechanically connecting the systems for compelling movement thereof in unison whereby the frame is permitted to move bodily horizontally to or from the wall while maintaining said frame vertical and a bedstead supported by said frame, and foldably mounted thereon, the arrangement including means whereby the movement of the frame is controlled by the folding of the bedstead, said arrangement comprising a link connecting one of said linkage systems with a point on said bedstead spaced from the pivotal center thereof.

6. In combination a pair of horizontally spaced wall members, a frame arranged parallel with the wall and provided with a pair of horizontally spaced uprights respectively opposed to said wall members, parallel linkage systems respectively connecting the uprights with the adjacent wall members, means mechanically connecting the systems for compelling movement thereof in unison whereby the frame is permitted to move bodily horizontally to or from the wall while maintaining said frame vertical and a bedstead supported by said frame, and foldably mounted on said frame, the arrangement including a link cooperating with said linkage and operable by the foldable movement of the bedstead to lock said vertical frame in extended position when the bedstead is unfolded.

MATTHEW F. BAYER.