

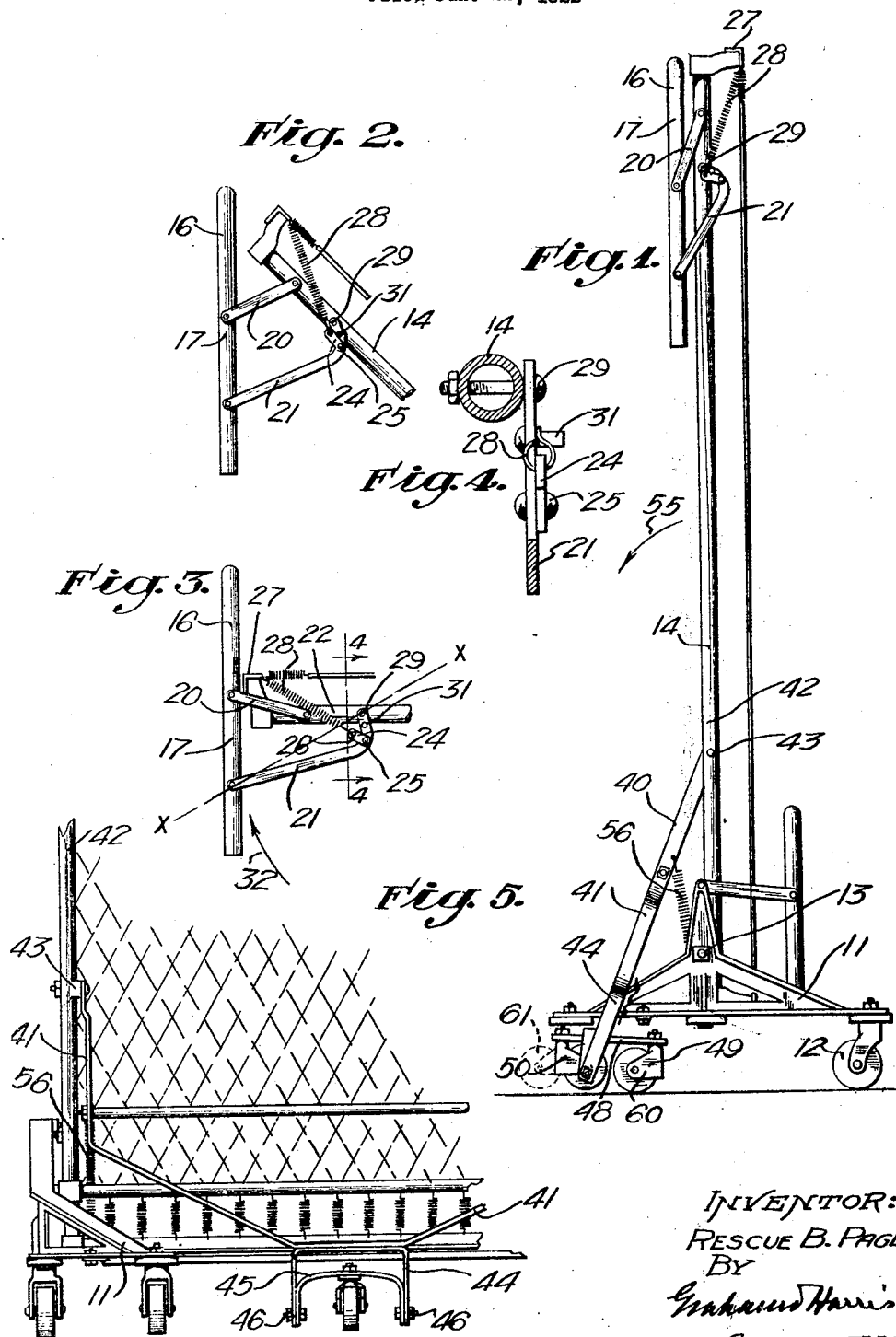
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R. B. PAGE

COUNTERBALANCED FOLDABLE FOOT STRUCTURE FOR FOLDING BEDS

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COUNTERBALANCED FOLDABLE FOOT STRUCTURE FOR FOLDING BEDS.

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To all whom it may concern:

Be it known that I, RESCUE B. PAGE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented a new and useful Counterbalanced Foldable Foot Structure for Folding Beds, of which the following is a specification.

My invention relates to folding beds and is more particularly a counterbalanced foldable foot structure for use upon folding beds.

It is the principal object of my invention to provide a foot structure for folding beds which may be collapsed and unfolded without danger of it falling and injuring the person of the manipulator.

The specific advantages of my invention and further objects thereof will be made evident hereinafter.

Referring to the drawing which is for illustrative purposes only:

Fig. 1 is a side elevation of an upright positioned folding bed equipped with a foot structure of my invention.

Fig. 2 is a fragmentary elevation of the upper end of the bed, shown in Fig. 1, when the bed is partly lowered and the foot structure is being swung into open position.

Fig. 3 is a fragmentary elevation showing the disposal of the parts constituting the foot structure when the foot structure is in position to support the foot of the reclined bed.

Fig. 4 is a section taken upon a plane represented by the line 4—4 of Fig. 3.

Fig. 5 is a fragmentary front elevation of the bed showing the features of construction of the stabilizing device I employ.

As shown in the drawing, I employ a carriage 11, provided with swiveled wheels 12 and supporting upon a pivot 13 a spring frame 14. This structure constitutes my standard form of closet bed and is adapted to being conveniently moved about when the spring frame is in the upright position shown in Fig. 1 and it may also be moved when the spring frame is lowered into horizontal position as indicated by Fig. 3.

A foot structure 16 in which the principal feature of my invention is embodied is comprised of any standard foot frame 17 which is adapted to be maintained in a retracted position against the underside of the frame 14 when the frame is in raised position and which may be swung upon co-

operating primary and secondary links 20 and 21 through the position shown in Fig. 2 to the position in which it is shown supporting the foot end 22 of the frame 14 when frame is in horizontal position.

As hereinbefore stated, the principal object of my invention is to provide a means for counterbalancing the foot structure so that it may be conveniently folded or unfolded without danger to the person of the one manipulating the bed. To accomplish the attainment of this object I have devised the herein disclosed construction. It will be perceived that the secondary link 21 is curved rearwardly or downwardly from the axis of the line $x-x$ extending between the pivots of the link shown in Fig. 3, so as to provide a mounting for the lever 24 which is pivoted to the link 21 at 25 below said line $x-x$. Between the free end 26 of the link 24 and the angle 27 of the frame 14 a spring 28, in tension, is placed. Intermediate between the pivot 25 and the point of pivot 29 at which the link 21 is attached to the frame 14 a fulcrum pin 31 is placed.

When the foot structure 16 is disposed in the open position shown in Fig. 3, the tension of the spring 28 is applied with its greatest leverage with respect to the different positions of the link 21, and imparts a rotative tendency to the link 21 in the direction of the arrow 32, which holds the foot structure 16 firmly in the position shown in Fig. 3 with the link 20 resting against the angle 27. As the frame 14 is lifted and the foot structure 16 swung towards the retracted position, as indicated in Fig. 2, the lever 24 comes against the fulcrum pin 31 and is thereby prevented from swinging further inward toward the point of pivot 29, and the end 26 of the lever 24 is maintained in a position relative to the point of pivot 29 which provides a forward leverage action of the spring 28 upon the link 21 until the foot frame 17 has nearly reached the retracted position shown in Fig. 1, in which retracted position the tension of the spring is exerted slightly to the rear of the point of pivot 29 and thus holds the structure in the retracted position.

It will be perceived that if it were not for the provision of the fulcrum pin 31, the line of force upon which the tension of the spring is applied to the link 21 would extend through the point 29 when the foot

frame 17 is in the position shown in Fig. 2, and being upon dead center would furnish no sustaining force to the foot structure to prevent it from dropping forcibly against the underside of the spring frame 14.

It will therefore be recognized that this form of construction provides a means for maintaining a forwardly acting leverage upon a structure through a greater period of movement than would be possible were the spring 28 connected directly to the link 21.

With the arrangement shown, the rotative force created by the spring 28 decreases in substantially direct ratio to the decrease of the collapsing moment due to the weight of the foot frame 17 exerted at the end of the link 21, and by such arrangement the foot structure is counterbalanced so that it will not change from any position in which it is placed, due to its own weight. Therefore, it is impossible for the structure to fall upon the person operating the bed and to cause injury thereto as commonly occurs in the handling of the ordinary types of foot structures.

The form of stabilizer 40 which I employ to prevent the spring frame 14 from toppling from the position in which it is shown and to assist in supporting the weight of the spring frame, consists of a bifurcated leg 41 which is pivoted to the side bars 42 of the frame 14 at 43 and has centrally attached thereto an inverted yoke 44 in which is pivoted a bow 45 by means of bolts 46. Mounted centrally within the bow 45 is a bar 48 having casters 49 and 50 mounted at each end thereof. The bow is attached to the bar 48 at a point slightly forward of the center so that when the leg 41 is lifted, as occurs when the bed is raised, the preponderance of weight is disposed in that portion of the bar 48 toward the caster 49 and causes the caster 50 to be raised free from the floor and therefore permitted to be swung into the position shown in Fig. 1.

As the spring frame 14 is lowered in the direction of the arrow 55 in Fig. 1, the casters 49 and 50 travel outwardly along the floor and a pull is exerted upon springs 56 which are connected between the leg 41 and the bed structure. This tension of the spring has a tendency to prevent the outward travel of the leg 41 and serves as a means for stabilizing the frame 14 as it is being raised and lowered, and also assists in supporting the weight of the frame. It will be perceived that as the casters 49 and 50 are swiveled to the bar 48 it is possible to move the bed about after it has been lowered into horizontal position.

When the bed frame 14 is being raised, the casters naturally assume the trailing position indicated at 60 and 61 so that the caster 50 extends beyond the confines of the

carriage 11 when the withdrawn position of the leg 41 is reached, but the feature of raising this caster 50 from the floor when the bed is in erect position, permits the caster to be swung into the position in which it is shown in full lines and in which position it is within the confines of the carriage 11.

I claim as my invention:

1. In a foldable foot structure for beds the combination of: a foot frame; primary and secondary links adapted to so attach said foot frame to a bed structure that said frame may be swung between the opened position perpendicular to the extension of said bed structure and the closed position against said structure; and springs connected by means adapted to vary the leverage thereof, interposed between certain of said links and said bed structure, for resisting the movement of said foot frame from opened to closed position.

2. In a foldable foot structure for beds the combination of: a foot frame; primary and secondary links adapted to so attach said foot frame to a bed structure that said frame may be swung between the opened position perpendicular to the extension of said bed structure and the closed position against said structure; and springs connecting between certain of said links and said bed structure for resisting the movement of said foot frame from opened to closed position; and means for varying the lever arm of said spring at which the force thereof is applied to balance said foot frame in its various positions.

3. In a foldable foot structure for beds the combination of: a foot frame; primary and secondary links adapted to so attach said foot frame to a bed structure that said frame may be swung between the opened position perpendicular to the extension of said bed structure and the closed position against said structure; springs connected at one end to said structure for resisting the movement of said foot frame from opened to closed position; levers connecting between certain of said links and said springs; and means for limiting the swing of said levers so as to influence the lever arm at which the force of said spring is applied to said links.

4. In a foldable foot structure for beds the combination of: a foot frame; primary and secondary links adapted to so attach said foot frame to a bed structure that said frame may be swung between the opened position perpendicular to the extension of said bed structure and the closed position against said structure; springs connected at one end to said structure for resisting the movement of said foot frame from opened to closed position; levers connecting between certain of said links and said

springs; and fulcrum pins on said links for limiting the swing of said levers as said frame is moved from opened to closed position.

5 5. In a foldable foot structure for beds the combination of: a foot frame; primary and secondary links adapted to so attach said foot frame to a bed structure that said frame may be swung between the opened
10 position perpendicular to the extension of said bed structure and the closed position against said structure; springs connected at one end to said structure for resisting the

movement of said foot frame from opened to closed position; a lever mounted upon each of said secondary links upon a pivot situated below a line passing through the pivots of said secondary links, and having the free end thereof connected to one of said springs; and fulcrum pins for limiting
15 the swing of said levers as said frame is moved from opened to closed position. 20

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 16th day of June, 1922.

RESCUE B. PAGE.