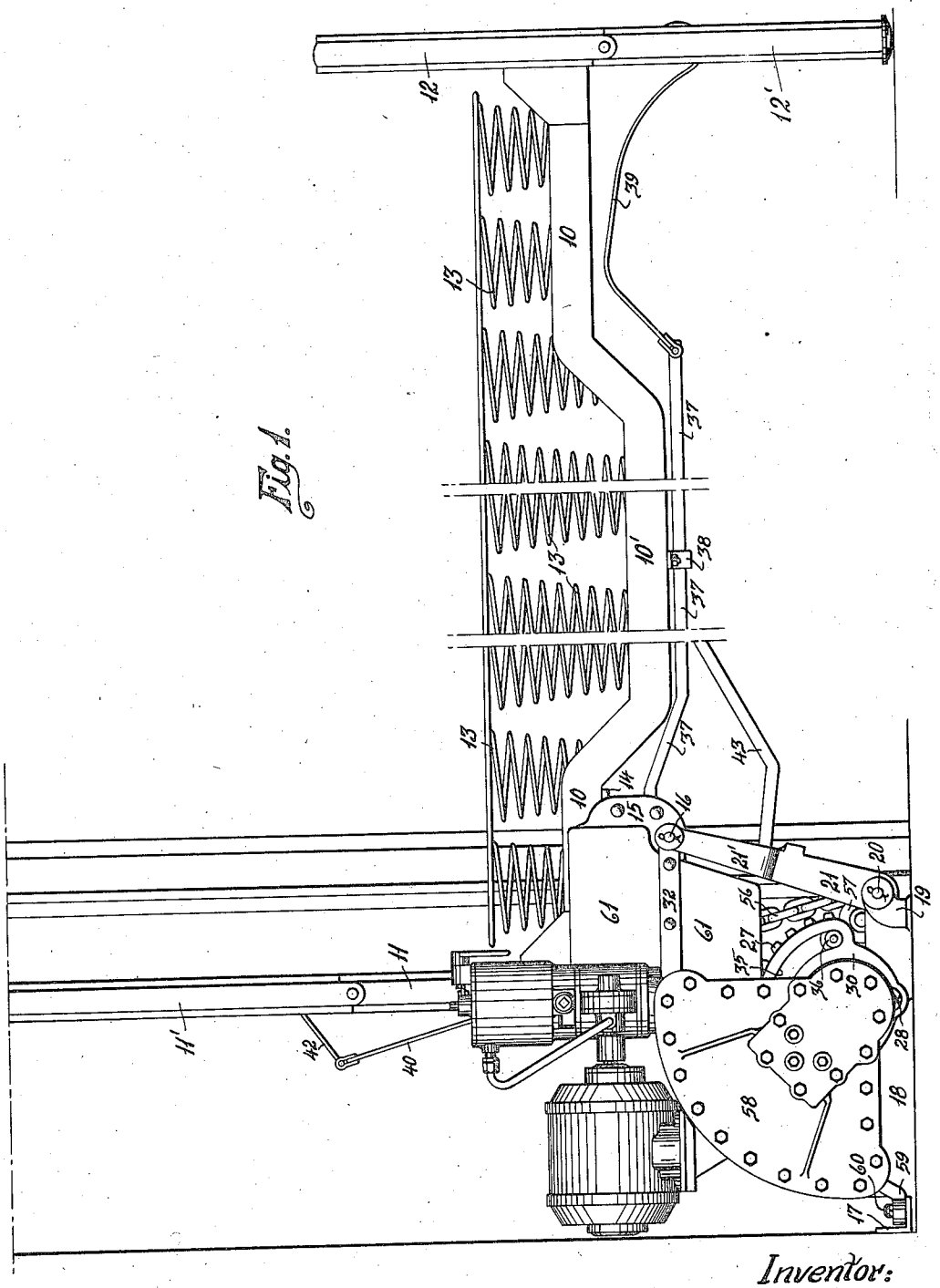
April 21, 1936. E. H. BRIDENBAUGH 2,038,410

WALL BED ACTUATING MECHANISM

Filed April 28, 1934 3 Sheets-Sheet 1

Fig. 1.



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WALL BED ACTUATING MECHANISM

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Fig. 2.

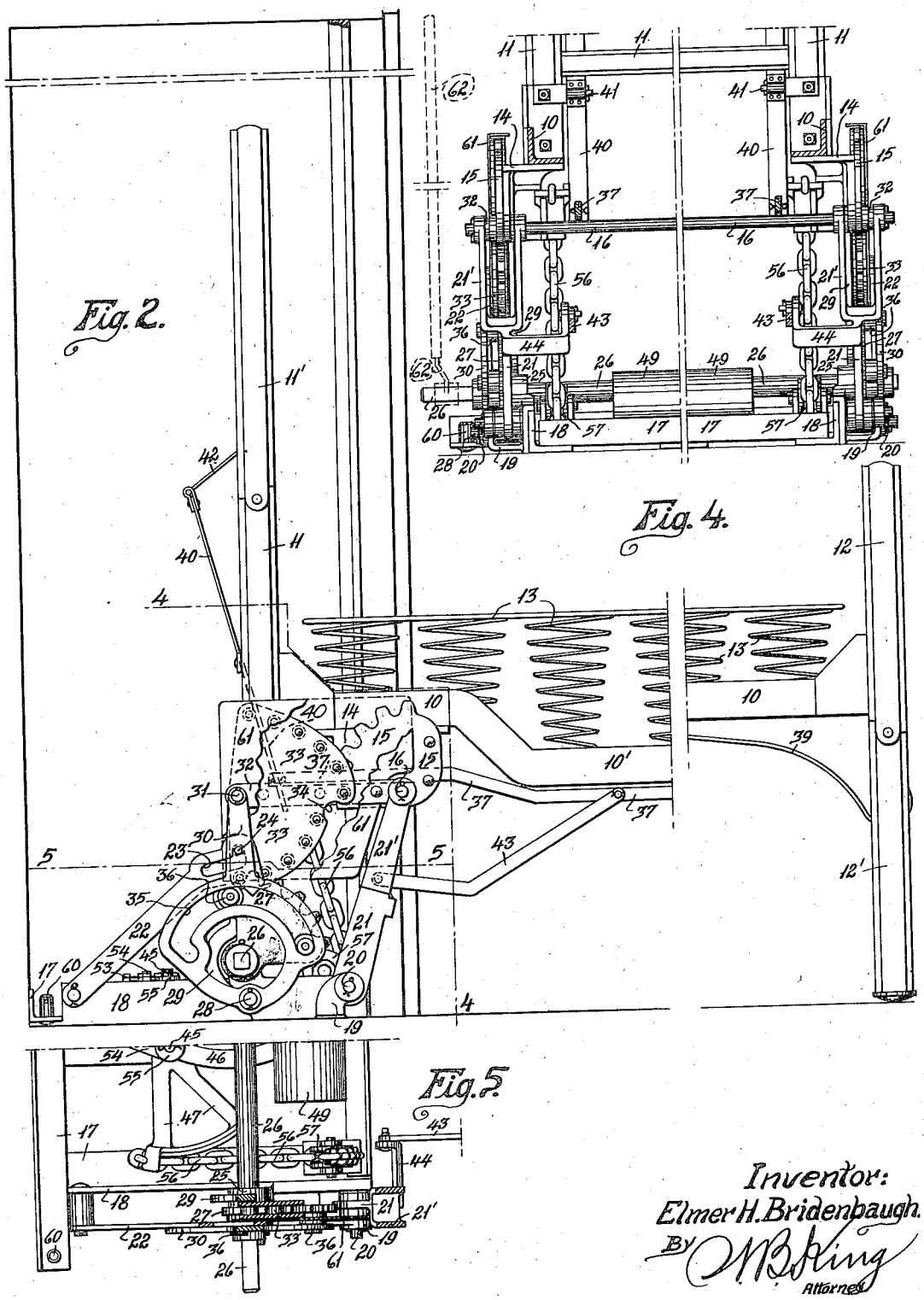


Fig. 4.

Fig. 5.

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WALL BED ACTUATING MECHANISM

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Fig. 3.

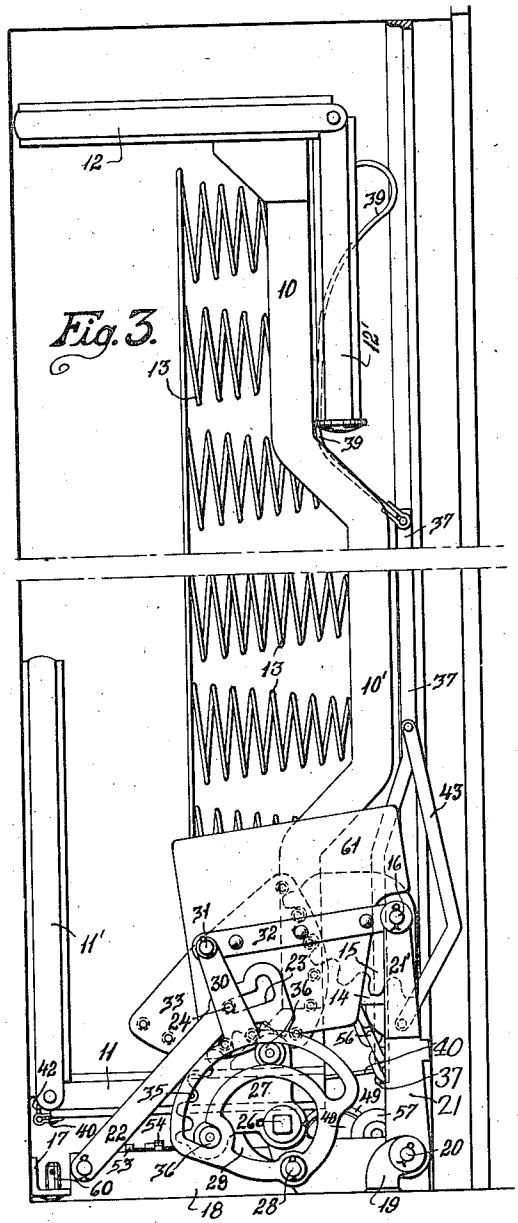


Fig. 6.

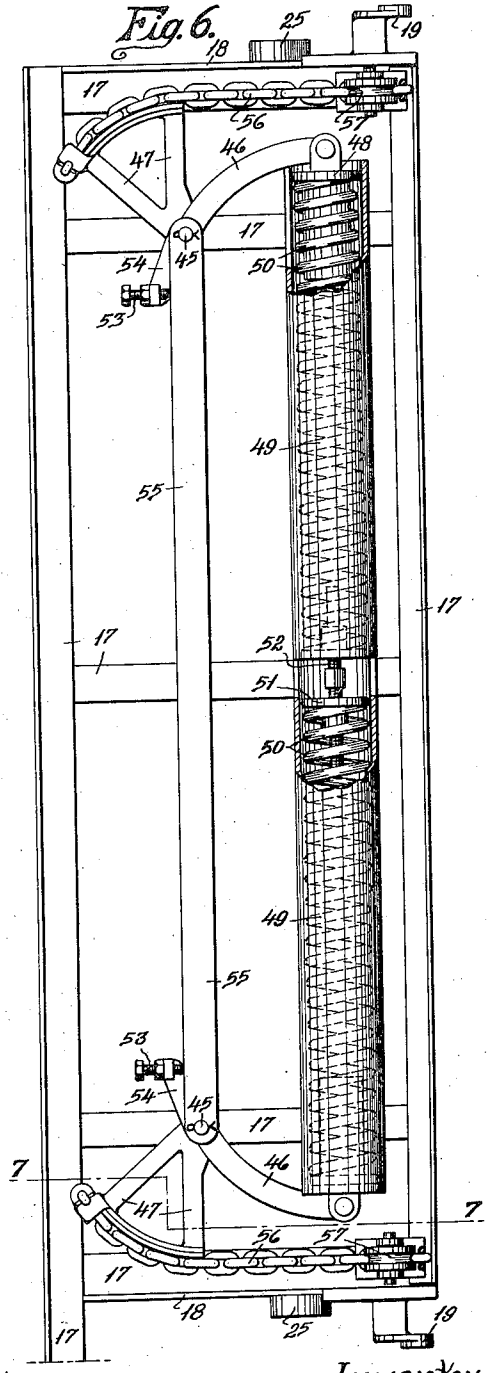
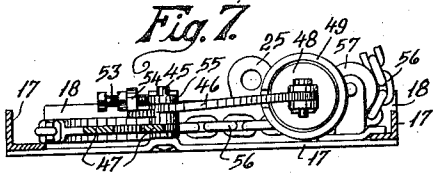


Fig. 7.



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UNITED STATES PATENT OFFICE

2,038,410

WALL BED ACTUATING MECHANISM

Elmer H. Bridenbaugh, Denver, Colo., assignor, by mesne assignments, to Standard Power Bed Company, a corporation of Colorado

Application April 28, 1934, Serial No. 722,940

14 Claims. (Cl. 5—133)

This invention relates to beds of a type arranged for concealed storage when not required for use and for ready extension from such storage to usable position when desired, and has as an object to provide an improved construction of and arrangement of operative elements in such a bed.

A further object of the invention is to provide an improved bed construction foldable into a wall recess or closet.

A further object of the invention is to provide an improved foldable, wall-type bed arranged for storage cooperation with a relatively small recess or closet.

A further object of the invention is to provide an improved bed construction foldable into vertically-disposed frame position above and extensible into horizontally-disposed frame position from a base frame fixed within a wall recess or closet.

A further object of the invention is to provide an improved foldable, wall-type bed arranged for either manual or power actuation.

A further object of the invention is to provide an improved mounting for a foldable, wall-type bed.

A further object of the invention is to provide an improved combination of a foldable, wall-type bed with supporting means operable to effect extension or retraction of said bed.

A further object of the invention is to provide improved supporting means for a foldable, wall-type bed operable to transmit limited shaft rotation to effect complete extension or retraction of said bed.

A further object of the invention is to provide improved means for pivotally supporting a foldable, wall-type bed, said means being operable through limited shaft rotation to rotate said bed on its pivotal mounting and subsequently impart arcuate motion to said pivotal mounting.

A further object of the invention is to provide improved mounting and actuating means for a foldable, wall-type bed, which means operate to positively limit travel of said bed when in either extreme of its range of travel.

A further object of the invention is to provide improved means in a mounting for a foldable, wall-type bed automatically engageable and releasable to positively latch said bed against accidental displacement from its folded position.

A further object of the invention is to provide improved means automatically operable to effectively counterbalance the variable moment produced by arcuate motion of a foldable, wall-type bed relative to its mounting.

A further object of the invention is to provide improved means automatically operable for effective control of hinged head and foot frame sections in a foldable, wall-type bed.

A further object of the invention is to provide an improved, operative, foldable, wall-type bed assembly that is positive and efficient in operation, arranged for either manual or power actuation, susceptible of ready operative combination with power units or appliances of various types, simple of installation in a minimum of space, and substantially unlimited in its adaptability to specific uses and installations.

For an example of power actuating mechanism which is readily combinable with the present invention, I refer to my application filed contemporaneously herewith for improvements in Hydraulic actuating mechanism.

My invention consists in the construction, arrangement and combination of elements hereinafter described, pointed out in my claims and illustrated by the accompanying drawings, in which:

Figure 1 is a side elevation of a power-equipped bed installation embodying the principles of the invention, portions of the structure being broken away to conserve space.

Figure 2 is an elevation similar to Figure 1 with the power unit removed and certain elements broken away to conserve space and to better illustrate otherwise concealed construction.

Figure 3 is an elevation similar to Figure 2 illustrating the elements of the latter figure in folded or retracted relation.

Figure 4 is a vertical transverse section taken on the indicated line 4—4 of Figure 2.

Figure 5 is a fragmentary, detail section taken on the indicated line 5—5 of Figure 2.

Figure 6 is a plan view of the base frame and counterbalancing mechanism employed in the invention, bed supporting and actuating elements connectible with said base frame being omitted.

Figure 7 is a detail section taken on the indicated line 7—7 of Figure 6.

In the construction of the improved bed as shown, the numeral 10 designates a bed frame side rail, two of which are employed in spaced, parallel relation, one end of said rail being secured in fixed relation with and extending perpendicularly from a head frame portion 11 and the other end of said rail being secured in like manner to a foot frame portion 12, the two frame portions and rails thus cooperating to form a complete

and rigidly interconnected bed frame. The rails 10 are preferably formed with midportions 10' offset beneath the normal top plane of the bed frame, and said rails carry and suitably support a spring assembly 13 which preferably includes longer spring elements arranged to receive and support the major weight of a bed occupant and shorter spring elements adjacent end portions of the assembly.

The head frame 11 is provided with an extension 11' hinged to its upper margin and arranged to fold toward and in overlying relation with a portion of the spring assembly 13, and the foot frame 12 is provided with an extension 12' hinged to its lower margin and arranged to fold toward and in underlying relation with said spring assembly, the rigid portions of said head and foot frames having substantially equal extension on the spring side of and relative to the rails 10 and very little extension on the other side of their attachment with said rails, the extension 12' having a length sufficient, when alined with the fixed portion 12, to position the spring assembly 13 at conventional elevation above a supporting surface, and the extension 11' having such projection above the spring assembly, when alined with the fixed portion 11, as may be desired in a given design or installation.

Fixed to the rails 10 adjacent and spaced somewhat from the head frame 11, frame elements, such as angle blocks 14, project laterally from opposite sides of said rails, said frame elements being alined transversely of the bed frame and being provided with vertically-depending web portions to which are rigidly secured identical, eccentric gear quadrants 15 arranged with their toothed margins directed toward the head frame 11. Registering holes are formed through the vertical webs of the elements 14 and through the gear quadrants 15 to receive a shaft 16, thus positioned transversely of the head end of the bed frame beneath the rails 10.

A suitable base frame 17 including spaced, parallel, upstanding flanges or ribs 18 is fabricated, preferably in skeleton form, of suitable elements, and is arranged with the flanges 18 rigidly interconnected in a spacing somewhat in excess of that separating the rails 10, said frame 17 being adapted to be suitably positioned on and secured to the floor of a wall recess, closet, or the like, wherein the bed assembly is to be folded for storage.

Brackets 19 are provided on and extend laterally from forward portions of the flanges 18 to support pins 20 whereon levers 21 are pivoted for actuation through vertical arcs, said levers 21 being formed with yoked upper portions 21' between the arms whereof are received the assemblies of elements 14, 15, the shaft 16 engaging through holes in said yoke arms to pivotally link the bed frame with the base 17.

Disposed longitudinally of the frame 17 in spaced parallelism with the shaft 16 and journaled for rotation in suitable bearings 25 carried in fixed relation by the flanges 18, an actuating shaft 26 is mounted just above the upper margins of said flanges 18, said shaft being provided with identical gear quadrants 27 fixed on each end thereof coplanar with the corresponding gear elements 15, in spaced relation with the latter and with their toothed margins directed, when the bed is in open position, toward said elements 15.

Pivotally mounted on fixed pins 28 extending oppositely from the flanges 18 adjacent and beneath and forwardly out of vertical alinement with end portions of the shaft 26, pairs of spaced levers rise on opposite sides of each of the gear quadrants 27, the inner lever of each pair, indicated at 29, being curved to pass about and over the shaft 26, rearwardly thereof, and the outer lever of each pair, indicated at 30, being formed with a large central web apertured for free passage of said shaft therethrough. The upper ends of the levers 29 and 30 are formed with registering holes wherein is mounted a pin 31 positioned, when the bed is in open position, in the same horizontal plane with and spaced rearwardly of the shaft 16, said pins 31 and shaft 16 being pivotally interconnected by means of links 32 to preserve the spacing therebetween.

A gear unit 33 is mounted on each pin 31 for free rotation relative thereto, each said unit comprising an eccentric marginal portion engaged by and adapted to mesh with the corresponding gear element 15 and a concentric marginal portion engaged by and adapted to mesh with the corresponding gear quadrant 27, the junction between said marginal portions being formed as a notched offset 34.

With the arrangement thus far described, it is obvious that, referring to Figure 2, rotation of the shaft 26 in a counterclockwise direction carries the gear quadrant 27 on each end of the said shaft in the corresponding direction, which motion acts to rotate each unit 33 about its pin 31 in the opposite direction, thereby actuating the gear elements 15 to rotate the bed frame assembly about its pivotal mounting on the shaft 16 through a vertical arc upwardly and into folded relation within the recess or closet containing the base frame 17.

To move the shaft 16 rearwardly into the recess or closet subsequently to the pivotal motion of the bed frame about said shaft, and to provide means automatically operable to latch the movable assembly against accidental displacement from folded position, the web portion of each lever 30 is formed with an arcuate slot 35 concentric with the shaft 26 and extending ninety degrees from the longitudinal axis of said lever in a rearward and downward direction and slightly less than ninety degrees in a forward and downward direction from said axis, and each gear quadrant 27 is provided with a pair of spaced rollers 36, mounted for free rotation on spindles projecting perpendicularly from the outer face of said quadrant in position to engage within and move through portions of the corresponding arcuate slot 35, said rollers being spaced ninety degrees apart and so arranged as to position the forward of said rollers in end engagement with the forward portion of its slot 35 when the bed is in open position, the rearward of said rollers consequently having less than ninety degrees to travel to effect end contact with the rearward portion of said slot. With the arrangement just above described, when the bed assembly is actuated and moved into folded position, the rollers 36 travel freely through their respective portions of the slot 25 until the bed frame has traveled almost ninety degrees of arc, at which time contact is effected between the rearward roller and the corresponding end of the slot 35, which contact acts, through continued rotation of the shaft 26, to move the paired, linked levers 29 and 30 about their common pivot, swinging the upper ends of said levers and the pin 31 supported thereby rearwardly of the recess or closet, and, by virtue of the links 32, drawing the shaft 16 and all elements mounted

thereon, including the bed frame assembly, rearwardly into said recess or closet.

The rearward end of the slot **35** has an arcuate notch offset toward the shaft **26** to receive the rearward of the rollers **36** when the lever **30** carrying said slot is moved eccentrically relative to said shaft and rollers, the engagement of said roller within said notch acting as a latch to securely hold the assembly in folded relation save when reverse motion is imparted to the shaft **26**.

To positively limit arcuate travel of the linked levers **21** and **30**, thereby limiting movement of the bed frame assembly relative to the base frame **17** and wall recess or closet, a link **22** is pivotally secured at one end to a rearward portion of each base flange **18** and rises forwardly from such connection to overlapping relation of its free end with that portion of the corresponding lever **30** above the slotted web portion of the latter.

The free end of the link **22** is formed with an L-shaped slot **23** disposed with its longer member approaching the horizontal and its shorter member directed upwardly toward the pin **31**, which slot slidingly embraces a pin or roller element **24** projecting in fixed relation with and laterally from the lever **30**, so that end engagement of the slot **23** with said element **24** acts to positively limit arcuate travel of the lever **30** in either direction, and, through the link **32**, correspondingly limit arcuate travel of the lever **21**, the longer member of said slot **23** being so disposed and having such length as to position said lever **21** somewhat forwardly of the vertical when the bed frame is in open position and somewhat rearwardly of the vertical when the said frame is in folded position, the weight of the bed frame elements thereby acting to retain said lever **21** against accidental displacement from either of its extreme positions, intentional displacement of said lever requiring an intial upward impulse applied to the weight supported thereby.

The shorter member of the slot **23** acts as a latch to hold the bed frame actuating elements in open or extended frame position, since upon engagement of the element **24** with the forward end of the slot **23**, the shorter member of said slot is positioned in potential embracing relation with and above said element **24** and automatically moves into such embracing relation therewith under the influence of gravity acting on the link **22** to engage said element **24** and prevent arcuate travel of the lever **30** in either direction, as clearly illustrated in Figure 2.

To release the latching engagement between the element **24** and link **22** for bed-folding actuation of the operating elements, the link **22** must be moved upwardly about its fulcrum to bring the element **24** into the longer member of the slot **23**, which may be automatically accomplished by means of a depending extension on the free end of said link **22** terminating in a beveled extremity positioned in the path of the rollers **36**, the forward of said rollers engaging said beveled extremity as said roller is moved rearwardly of the arcuate slot **35** through the agency of the shaft **26** and lifting the free end of said link **22** for release of the latching effect on the element **24**, thereby permitting subsequent actuation of the levers **30** and **21** in the manner previously described.

A further limitation of rotation of the bed frame in a folding direction about the shaft **16** is provided by the offset notch **34** of the unit **33**, which offset engages against the foremost of the rollers **36** to prevent further relative travel between the meshing elements **27** and **33** when the bed frame has reached its vertical position.

It is of course obvious that rotation of the shaft **26** in a clockwise direction will act to reverse the cycle above described and extend the bed assembly from folded position within its recess or closet to extended usable position.

To automatically position the hinged head and foot frame portions **11'** and **12'** and to maintain said portions in parallel, substantially vertical relation irrespective of the relative position of the other bed frame elements, a drag link **37** is positioned adjacent and beneath each of the rails **10** and is mounted for free reciprocation parallel with said rails in a slide bearing **38** carried by an adjacent rail portion **10'**. The forward end of each link **37** pivotally supports one end of a relatively flexible spring link **39**, the forward end of which latter pivotally engages a rigid element of the foot frame portion **12'**. The rearward end of the link **37** is pivotally engaged by one end of a relatively flexible lever **40**, which latter rises past operative engagement with a fulcrum **41** fixed to the rigid head frame portion **11** to pivotal engagement of its other end with a short link **42** behind said head frame, said short link **42** being pivotally connected with a rigid element of the head frame portion **11'**. An operating link **43** pivotally connects the midportion of the drag link **37** with a bracket **44** extending laterally from the lever **21** below the pivotal connection of said lever with the shaft **16** and acts, as the bed assembly is moved to folded position, to move the drag link rearwardly of its rail **10** and fold, through the spring link **39** and lever **40**, the hinged frame portions **11'** and **12'** toward the bed frame proper and into the relative positions shown in Figure 3, unfolding motion of the bed assembly acting through the same agencies to extend the hinged frame portions into alinement with their respective cooperating fixed frame portions.

Since arcuate travel of the bed frame assembly produces a variable moment which reaches its maximum as the said assembly reaches its horizontal position, it is desirable to provide means effective to maintain the torque load on the shaft **26** reasonably constant during actuation of said assembly, one such means being illustrated in operative combination with the bed assembly and hereinafter described. As best shown in Figure 6, fixed pins **45** rise in parallel, spaced relation from rigid elements of the base frame **17** adjacent each end of the latter and support bell-crank assemblies comprising each a longer arm **46** and a shorter arm **47** for actuation of said arms through parallel horizontal arcs. The bell-crank assemblies are arranged in opposition on their respective pins **45** with their longer arms **46** diverging forwardly of the frame **17** to pivotally support alined plunger elements **48** slidably engaging within opposite ends of a tubular housing **49**, which latter is thus positioned and supported independently of and for motion relative to the base frame **17**. The plunger elements **48** are urged apart by means of expansive coil spring elements **50** loosely mounted within the housing **49** and each bearing at its inner end against a stop plate **51** freely slidable within said housing, said stop plates being adjustably interconnected by means of a coupling bolt **52** having oppositely threaded ends operative engaging axially through said plates, an angular boss on the bolt **52** between the engaged plates **51** providing for tool engagement of said bolt and consequent adjustment of the spring pressure exerted

on the plungers 48, an opening being preferably formed in the housing 49 to permit of such adjustment. Travel of the plunger elements 48 outwardly of the housing 49 is limited by means of adjustable stops 53 carried in the free ends of radial arms 54 extending from the bell-crank assemblies in position for end engagement of said stops with a fixed link 55 interconnecting the pins 45.

Flexible connections, such as cables or chains 56, are fixed at one end each to outer extremities of the bell-crank arms 47 and extend therefrom forwardly of the base frame 17, under and partially about pulleys 57 fixed adjacent outer, forward corners of said base frame, and upwardly from said pulleys to attachment of their other ends in fixed relation with frame elements rigidly secured to the rails 10 rearwardly of the shaft 16, the point of such attachment being in substantially the same horizontal plane as, and rearwardly of, the shaft 16 when the bed assembly is in extended position.

It is readily apparent that as the bed assembly is moved from folded to open position, rotation of the bed frame about the shaft 16 exerts tension on the flexible connections 56 which acts to rotate the bell-crank arms 47 forwardly of the frame 17, such rotation moving the arms 46 inwardly to compression of the spring elements 50 as the bed frame is lowered, such compression being progressive and proportioned to the moment produced by the descending bed frame so as to substantially counter-balance said moment and leave a substantially uniform torque load on the shaft 26. The spring elements 50 remain under compression so long as the bed is extended in open position and act to aid return of the bed assembly to its folded position, the force exerted by said spring elements decreasing as the arms 46 move outwardly relative to the housing 49.

One end of the shaft 26 is preferably extended beyond the bed actuating elements and is formed with an angular section for convenient connection with manual or power means whereby rotation may be imparted to said shaft, it being immaterial in the instant invention what shaft actuating means may be employed, one such means in the form of an electrically-driven, hydraulic transmission unit being illustrated at 58 in Figure 1 in operative relation with the shaft 26 and anchored by means of an apertured lug 59 fixedly engaging a pin 60 rising from the base frame 17.

While the bed assembly is preferably arranged for operation through actuation of the shaft 26, it is obvious that force may be manually applied directly to the bed frame to effectively move the latter between its extended and folded positions, the counterbalancing effect of the arrangement provided for that purpose minimizing the amount of force required for effective actuation of the assembly.

At 62 in Figure 4 is indicated in dotted lines a conventional hand lever arranged for operative association with an angularly sectioned end of the shaft 26, which lever may be employed in place of the power unit 58 for actuation of the bed mechanism or may be utilized in engagement with the opposite end of the shaft 26 to supplement said power unit. With the bed frame suitably counterbalanced, said frame may be actuated between its extreme positions through rotation of the shaft 26 produced by application of manual power to said lever 62, or the said frame may be manually moved between horizontal and vertical positions and the said lever 62 employed for extension or retraction of the bed frame axis relative to the closet or recess, the specific manner in which power is applied to the shaft 26 or bed frame assembly in no way altering or modifying the operative relation of the actuating elements previously described.

A shield plate 61 is preferably mounted on outer of the links 32 in covering relation with the gear elements 15 and 33 to prevent catching of bed clothing or operator's fingers between said gear elements.

Since many changes, modifications and variations in the specific form, construction and arrangement of the elements shown and described may be had without departing from the spirit of the invention, I wish to be understood as being limited solely by the scope of the appended claims rather than by any details of the illustrative showing and foregoing description.

I claim as my invention—

1. In a wall bed, a bed frame pivotally mounted for actuation about a transverse axis, means pivotally supporting said axis for limited arcuate motion thereof, and actuating means engaging said frame and axis and progressively operable to successively rotate said frame about said axis and to vary the position of the latter.

2. In a foldable wall bed having a bed frame pivotally mounted for actuation through a vertical arc between open and folded positions and frame actuating means including a rotatable operating element, an actuating element operable by and concentric with said operating element, a lever pivoted eccentrically with and adjacent said operating element and arcuate guide means fixedly carried by said lever in normally concentric relation with said operating element in position to be engaged by and traversed by said actuating element, means automatically operable to latch said bed frame in and against accidental displacement from its folded position, said means comprising an end limit of said arcuate guide means positioned for engagement by said actuating element as said bed frame approaches closed position, which end engagement acts to swing the guide-supporting lever into eccentric relation of said arcuate guide with said operating element, and a notch adjacent the end limit of said arcuate guide opening into and offset inwardly of said arcuate guide in position to be moved into latching relation about and over said actuating means during eccentric disposition of said arcuate guide relative to said operating element.

3. A foldable wall bed comprising a bed frame pivotally mounted for actuation through a vertical arc, means engaging said bed frame operable to rotate the latter relative to its mounting, and supplemental means engageable for actuation by said first means adjacent one limit of said bed frame actuation and operable to vary the position of said pivotal frame mounting.

4. A foldable wall bed comprising a pivotally mounted bed frame, means operable to rotate said frame relative to its mounting, and supplemental means operable through engagement with said first means adjacent one limit of said frame rotation to vary the position of said frame mounting.

5. A foldable wall bed comprising a pivotally mounted bed frame and bed frame supporting means progressively operable to vary the position of said pivotal frame mounting and to rotate said frame relative thereto; together with actuating means engaging said supporting means and frame operable to effect rotation of the latter and

vary the frame mounting position adjacent one limit of said frame rotation.

6. In a wall bed, the operative combination with a pivotally mounted bed frame of frame supporting means progressively operable to vary the position of said pivotal frame mounting and to rotate said frame relative thereto, and actuating means engaging said supporting means and frame operable to effect rotation of the latter and vary the frame mounting position adjacent one limit of said frame rotation.

7. In a wall bed, a bed frame pivotally mounted for actuation through eccentrically-related arcs and frame supporting means progressively operable to actuate said frame successively through such arcuate operative range; together with actuating means engaging said supporting means and operable to effect actuation of said frame progressively through the full range of its arcuate travel.

8. In a wall bed, a bed frame pivotally mounted for actuation in an orbit about a transverse axis, means pivotally supporting said axis for limited travel thereof in an arcuate orbit, an operating element in eccentric relation with said frame and axis orbits, connections between said operating element and frame operable to transmit actuation of the former to effect rotation of the latter about its axis, and supplemental connections between said operating element and axis operable to effect arcuate travel of the latter adjacent one limit of the bed frame actuation.

9. In a wall bed, a bed frame pivotally mounted for actuation in an orbit about a transverse axis, means pivotally supporting said axis for limited travel thereof in an arcuate orbit, an operating element in eccentric relation with said frame and axis orbits, connections between said operating element and frame operable to transmit actuation of the former to effect rotation of the latter about its axis, and supplemental connections engaging said axis and actuable by said first connections adjacent one limit of the bed frame actuation to effect travel of said axis.

10. In a wall bed a bed frame pivotally mounted for actuation in an orbit about a transverse axis, means pivotally supporting said axis for limited travel thereof in an arcuate orbit, an operating element in eccentric relation with said frame and axis orbits, intermeshing gear elements interconnecting said operating element and frame and operable to transmit actuation of the former to effect rotation of the latter about its axis, and supplemental connections engaging said axis and actuable by one of said gear elements adjacent one limit of the bed frame actuation to effect travel of said axis.

11. In a wall bed, a bed frame pivotally mounted for actuation in an orbit about a transverse axis, means pivotally supporting said axis for limited travel thereof in an arcuate orbit, an operating element in eccentric relation with said frame and axis orbits, intermeshing gear elements interconnecting said operating element and frame to transmit actuation of the former to effect rotation of the latter about its axis, and eccentrically-pivoted lever means engaging said axis and actuable by one of said gear elements adjacent one limit of the bed frame actuation to effect travel of said axis.

12. In a wall bed, a bed frame pivotally mounted for actuation in an orbit about a transverse axis, a base frame, means pivotally interconnecting said axis and base frame for limited travel of the former in an arcuate orbit, an operating element rotatably mounted on said base frame in eccentric relation with said bed frame and axis orbits, intermeshing gear elements interconnecting said operating element and bed frame to transmit rotation of the former to effect rotation of the latter about its axis, and eccentrically-pivoted lever means carried by said base frame in engaging relation with said axis and actuable by one of said gear elements adjacent one limit of the bed frame actuation to effect travel of said axis.

13. In a wall bed, a bed frame pivotally mounted for actuation in an orbit about a transverse axis, a base frame, means pivotally interconnecting said axis and base frame for limited travel of the former in an arcuate orbit, an operating element rotatably mounted on said base frame in eccentric relation with said bed frame and axis orbits, intermeshing gear elements interconnecting said operating element and bed frame to transmit rotation of the former to effect rotation of the latter about its axis, lever means pivoted to said base frame eccentrically with said operating element and rising adjacent the latter to link connection of its upper end with said axis, an arcuate guide carried by said lever means in concentric relation with said operating element, and actuating means in fixed relation with the gear element carried by said operating element engaged within and adapted to traverse said guide means to end contact therewith adjacent one limit of the bed frame actuation for operation of said lever means to effect travel of said axis.

14. In a wall bed, a bed frame pivotally mount- for actuation in an orbit about a transverse axis, a base frame, lever means pivotally interconnecting said axis and base frame for travel of the former in an arcuate orbit, an operating element rotatably mounted on said base frame in eccentric relation with said bed frame and axis orbits, gear elements in fixed relation with said operating element and bed frame, lever means pivoted to said base frame in eccentric relation with said operating element and rising adjacent the latter to link connection of its upper end with said axis, means on said base frame engaging said latter lever means to limit arcuate travel thereof, a compound gear element rotatably carried by the upper end of said latter means in meshing relation with both gear elements carried by the operating element and bed frame and operable to transmit rotation of the former to effect rotation of the latter about its axis, stop means positively operable to limit relative travel between said gear elements, an arcuate guide fixedly carried by said last named lever means in concentric relation with said operating element, and actuating means in fixed relation with the gear element carried by said operating element engaged within and adapted to traverse said guide means to end contact therewith adjacent one limit of the bed frame actuation for operation of said latter lever means to effect travel of said axis.

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