

Oct. 23, 1962

J. J. WETZLER

3,059,248

ADJUSTABLE BED

Filed Oct. 17, 1956

3 Sheets-Sheet 1

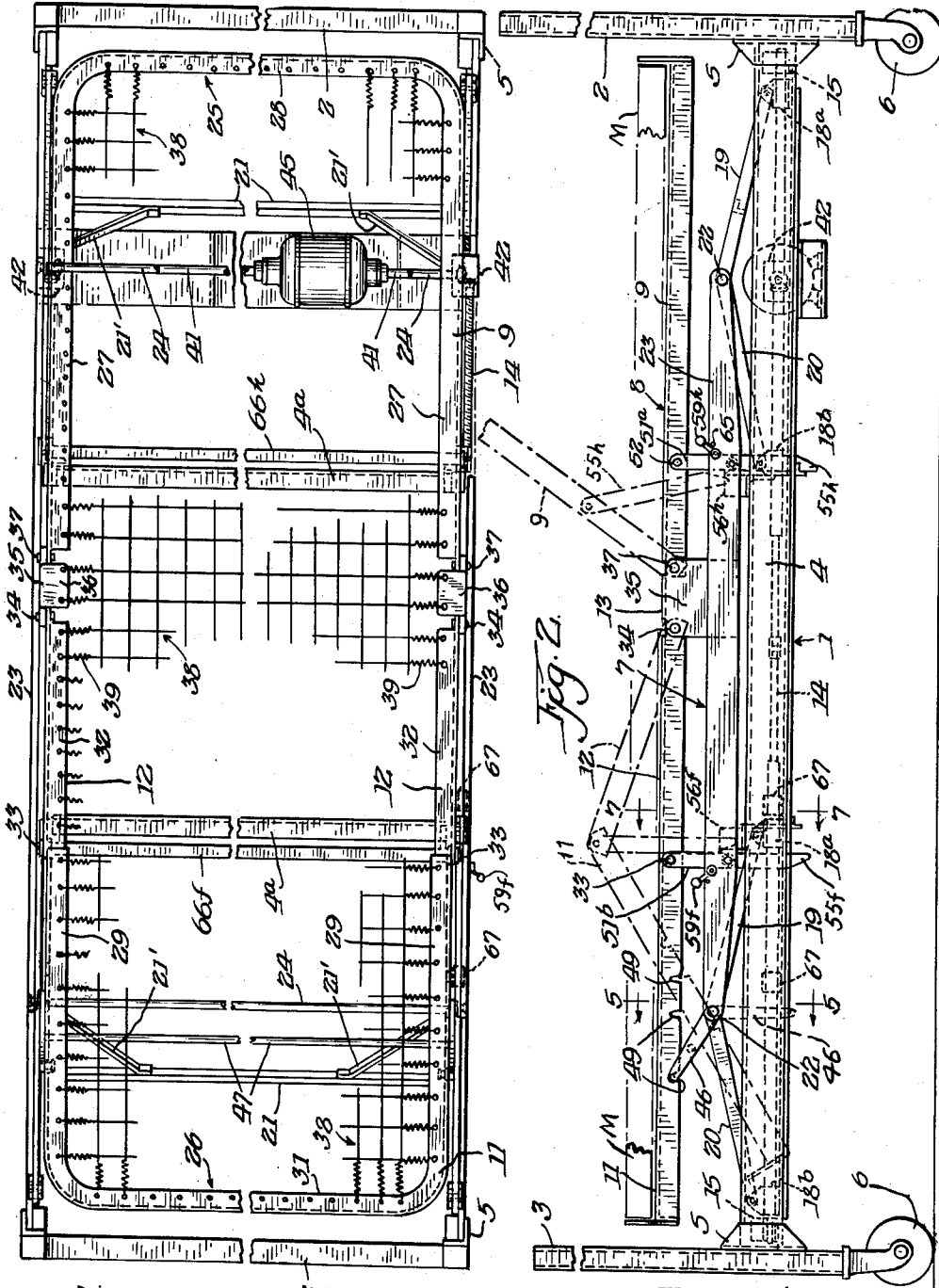


Fig. 1

Fig. 2

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Oct. 23, 1962

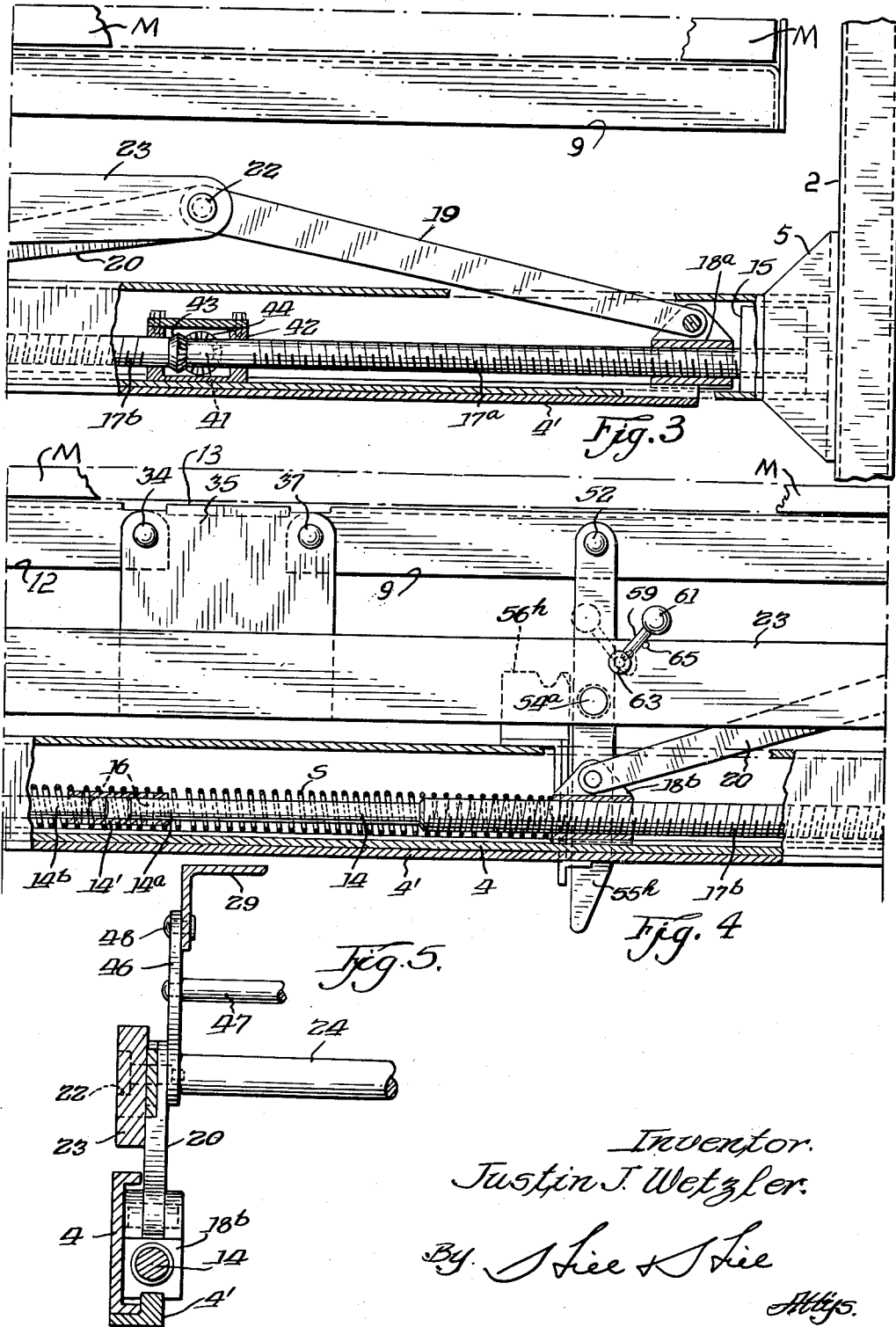
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3 Sheets-Sheet 2



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ADJUSTABLE BED

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3 Sheets-Sheet 3

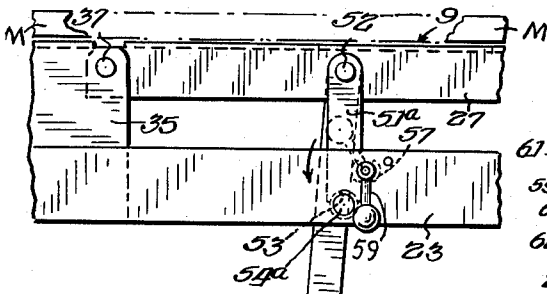


Fig. 6.

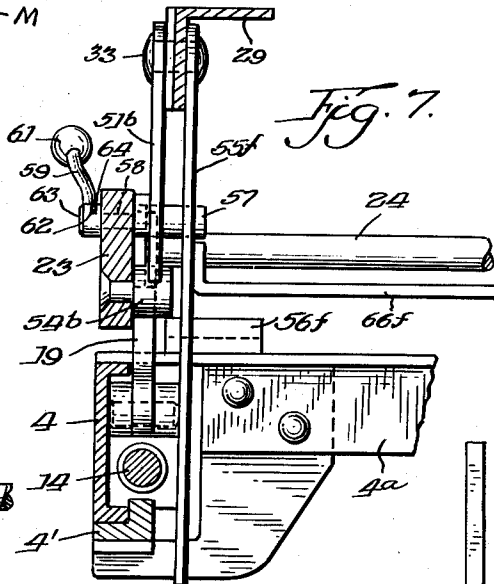


Fig. 7.

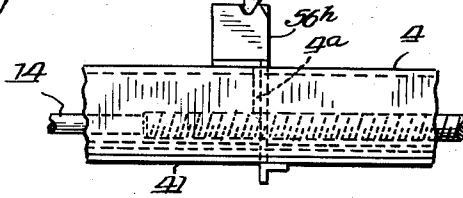


Fig. 8.

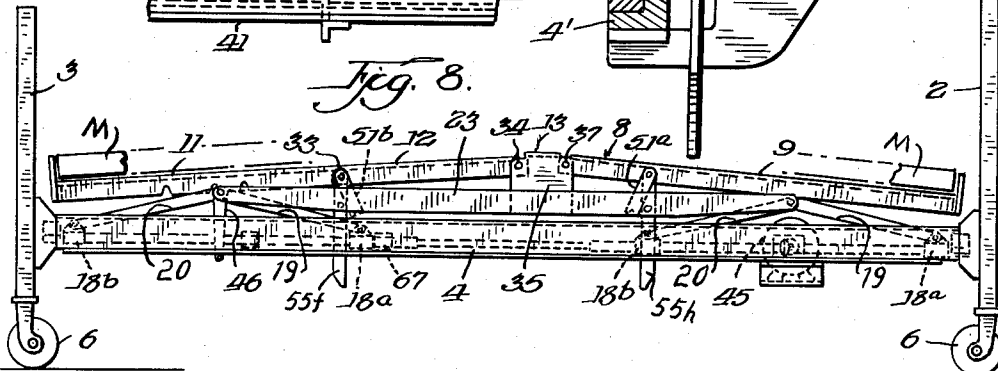


Fig. 9.

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**ADJUSTABLE BED**

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Filed Oct. 17, 1956, Ser. No. 616,418

12 Claims. (Cl. 5—63)

This invention relates generally to bed structures and the like, and more particularly to an adjustable bed in which portions of the mattress supporting structure may be moved into angular relation when desired.

In the past, adjustable beds of this type have been extensively utilized in hospitals and the like, as various sections of the bed may be adjusted to enable the patient or occupant to assume a more or less sitting position, as well as permit other adjustments of the leg and head portions of the mattress supporting structure to meet specific requirement. Numerous designs have been utilized in connection with such type of bed structures, many of which have utilized hand cranks or the like to effect adjustment of the various bed sections. In such beds, the top of the mattress is usually at a much greater height than conventional beds. More recently the so-called high-low bed structures have been increasing in popularity, wherein the entire mattress supporting structure may be positioned either in a relatively high or elevated position, or moved into a relatively low or retracted position, enabling the bed to be utilized with the mattress at normal bed height, or to permit the mattress to be positioned at an elevated or hospital height commonly utilized in hospitals and the like. Until the appearance of the high-low type of bed, most adjustable or hospital type beds utilized a mattress which was positioned over 30 inches above the floor surface as compared with the usual bed structure wherein the mattress is usually positioned considerably lower relative to the floor surface.

While attempts have been made to motorize adjustable bed structures, until the advent of the high-low bed arrangement, usually the motor structure merely comprised the substitution of an electric motor for the original hand cranks often times necessitating several motors. However, due to the power requirements of the high-low bed arrangement, the latter usually incorporates motor drive means for elevating and lowering the bed structure. In beds of this type, if it is desired to motorize the adjusting mechanism for moving the head and foot sections of the mattress supporting structure, it has been necessary either to provide additional motor means for effecting such adjustment in the same manner as heretofore employed in connection with prior motorized adjustable bed structures, or to utilize more or less complicated and expensive clutch mechanisms for transferring power from one part of the bed structure to another. Consequently structures which utilized power on both the high-low movement and the head and foot adjusting movements were both complicated and expensive, and due to their high price have not been extensively employed.

The present invention therefore has among its objects the production of a relatively simple bed structure which may provide both a power actuated high-low adjustment as well as power actuated adjustment of the head and foot sections.

Another object of the invention in the production of an adjustable bed structure in which a single power means, such as an electric motor, may be utilized for both adjustment from high and low positions as well as adjustment of the head and foot sections of the bed structure, at the same time providing a very simple and efficient arrangement for the transmission of power to the adjustable bed sections, eliminating complicated clutch mechanisms and other equivalent structures.

Another object of the invention is the production of

such an adjustable bed structure in which the power means may merely raise or lower the bed in the respective high-low positions, and simple means is provided for utilizing the relative movement of a portion of the movable bed structure with respect to a relatively fixed portion of the bed structure, to transmit motion to the adjustable head and foot sections of the bed structure.

A further object of the invention is the production of such an adjustable bed structure wherein the control means for the head and foot sections of the bed may be easily actuated even by a patient who is relatively weak, whereby manual force or effort is not necessary to control the action of the bed structure.

A further object of the invention is the production of such an adjustable bed mechanism which may be readily utilized in connection with existing bed structures, with relatively small conversion expense.

A further object of the invention is the production of such an adjustable bed structure which readily adapts itself to electrical control mechanisms whereby the entire operation of the bed may be controlled by simple push button switches or the like, and at the same time which if desired, may be so arranged that only an on and off motor control switch may be actuated by the operator to control the position of the bed structure, either in high or low position or to effect adjustments of the foot and head sections.

In the drawings, wherein like reference characters indicate like or corresponding parts:

FIG. 1 is a top plan view of a bed structure constructed in accordance with the present invention, central portions of the same being broken away and with the mattress removed;

FIG. 2 is a side elevational view of the structure illustrated in FIG. 1 with the mattress in place, with certain of the bed sections shown in dotted lines in adjusted positions;

FIG. 3 is a side elevational view of one end portion of the bed structure illustrated in FIGS. 1 and 2, with the mattress in place and with portions of the side rail and operating parts broken away to show the details of construction;

FIG. 4 is a side elevational view similar to FIG. 3 of the central portion of the bed structure;

FIG. 5 is a sectional view taken approximately on the line 5—5 of FIG. 2;

FIG. 6 is a side elevational view of the head section adjusting structure illustrated in FIG. 4, but showing the same in actuating position;

FIG. 7 is an enlarged sectional view taken approximately on the line 7—7 of FIG. 2;

FIG. 8 is a side elevational view similar to FIG. 2, with the mattress in place and illustrating the head and foot sections in still a different position; and

FIG. 9 is a side elevational view similar to FIGS. 2 and 8, with the mattress in place and illustrating the mattress supporting structure in the "high" position.

The present invention contemplates the utilization of the movement and relative positioning of an elevatable portion of the bed structure with respect to a stationary or fixed portion of the structure to selectively actuate various sections of the mattress supporting structure into any of their adjusted positions. In the embodiment of the invention illustrated, this result is achieved by providing suitable stop members which may be selectively positioned to restrict movement of portions of the adjustable mattress supporting structure with respect to the stationary or fixed portion of the bed structure, whereby upon relative movement of the movable structure, the desired adjustments may be achieved.

Referring to the drawings, and more particularly to FIGS. 1 to 4, inclusive, the reference numeral 1 indicates

generally a stationary bed structure having head and foot end boards or frames 2 and 3, respectively, which are operatively connected by longitudinally extending side rails 4, of more or less common construction, having end fittings 5 adapted to detachably engage the end boards or rails 2 and 3, forming a rigid structure supported on the floor or other surface by suitable caster wheels 6 or the like adapted to facilitate movement of the bed when desired.

Suitably mounted on the fixed frame structure 1 and vertically movable relative thereto is a movable frame structure indicated by the numeral 7, which in turn is adapted to support a mattress M on a mattress supporting structure indicated generally by the numeral 8 and comprising a head section 9, an end foot section 11, an intermediate foot section 12 and a relatively fixed central section 13.

The movable frame structure 7 may be movably supported on the fixed frame structure 1 by any one of a number of different mechanical structures, that illustrating utilizing a toggle type structure for the lifting function.

Extending along each side rail 4 is a shaft or screw 14, journaled at its ends in bearing blocks or bearing means 15, the latter being suitably mounted on the associated side rail 4. As shown in FIG. 4, the shaft 14 may be constructed in two sections 14a and 14b connected by a sleeve 14', the sections 14a and 14b being rigidly connected to the sleeve 14' by suitable means such as pins 16. Each section 14a and 14b of the shaft 14 is provided with oppositely threaded portions 17a and 17b on which are carried threaded members in the form of threaded nuts or collars 18a and 18b to which are pivotally mounted respective links or arms 19 and 20. At least one of each pair of links or link means may be connected to the corresponding link at the opposite side of the bed by suitable reinforcing means such as transverse member 21 and diagonally extending braces 21', thereby providing lateral rigidity in the movable structures. The links 19 and 20 in turn may be pivoted together at their free ends by means of a shouldered bolt or screw 22 which may pass through longitudinally extending members 23, forming a part of the movable frame structure 7, and into a suitable cross member or rod 24 operatively connecting oppositely disposed longitudinal members 23. The respective threaded portions 17a are threaded in the same direction and in like manner the threaded portions 17b are threaded in the same direction, whereby rotation in one direction of the screws 14 will result in travel of each cooperable pair of nuts or collars 18a and 18b toward one another, producing pivotal action in the links 19 and 20 and upward vertical movement of the common pivotal axis therebetween, resulting in upward movement of the movable frame structure 7. Similarly, on rotation of the screws 14 in the opposite direction the cooperable pairs of nuts or collars 18a, 18b will separate, lowering the movable frame structure 7. As illustrated in FIG. 5, guide rail 4' suitably secured to its side members 4 may be provided, on which the nuts 18a and 18b may travel, or if desired similar rails may be incorporated as in integral part of the side member 4.

In the embodiment illustrated, the mattress supporting structure comprises four sections 9, 11, 12 and 13, having an annular sectional frame structure, extending across which is suitable mattress supporting fabric of metal or textile, as the case may be. Thus, the head section 9 and the end foot section 11 are each defined by U-shaped frame members 25 and 26, the former having oppositely disposed substantially parallel side rail portions 27 connected at their outermost ends by an intermediate or cross portion 28, and in like manner the frame 26 is provided with oppositely disposed side rail portions 29 connected by an intermediate portion 31, each of the sections being formed from a single piece of material suitably formed to the desired shape. The intermediate leg section 12 is defined by spaced substantially parallel extending side rails

32 pivoted at their outer ends to the adjacent ends of the side rail portion 29 by rivets 33 or other suitable means, and the opposite ends of the rails 32 are pivoted by means of rivets 34 or the like to the upwardly extending member 35, terminating in its upper edge in a flange 36 forming the relatively stationary section 13 of the mattress supporting structure. The free ends of the side rails 27 of the head section 9 likewise are pivotally supported from the members 35 by means of rivets 37, the members 35 in turn being rigidly secured to the corresponding longitudinally extending member 23 of the movable frame structure 7. The mattress supporting structure is completed by suitable fabric indicated generally by the numeral 38, only an illustrative portion of which is shown in FIG. 1, the fabric 38 being of the wire link type and adapted to be connected with the side and end rails of the associated sections by suitable means, as for example small helical springs 39 in a manner commonly employed in mattress supporting structures.

It will be apparent that rotation of the screws 14 will result in movement along the guide rails 4' of the respective collars 18a and 18b, either toward or away from one another, as the case may be. Rotation of the screws 14 on opposite sides of the bed is synchronized through a transverse connecting shaft 41 operatively connected to the shaft 14 through gear boxes 42 carried by the side rails and having suitable gears such as bevel gears 43 and 44 carried by the shaft 14 and the connecting shaft 41. Assuming the gears 43 and 44 are suitably arranged to rotate both shafts in the same direction, the latter may be similarly threaded. The shaft 41 is adapted to be actuated by suitable power means such as an electric motor 45, the armature of which is rotatable on the axis of the shaft 41, which may either be formed integrally with the motor drive shaft or operatively connected thereto. The motor 45 may be the reversible type whereby it may drive the screws 14 in the desired directions to accomplish the raising or lowering of the movable frame structure 7, the threads of the shafts and collars 18a and 18b being right or left handed accordingly.

The sections 9, 11, 12 and 13 may be supported in a common plane by suitable means which are illustrated employing a pair of similar stop members at each side of the bed for the sections 9 and 12, the details of which are illustrated in FIGS. 6 and 7, respectively. In addition thereto the end foot section 11 may be further supported by a disengageable link or link means 46 at each side which are pivoted to the respective members 23 of the movable frame structure 7 by the same pivot 22 which secured the adjacent pair of arms 19 and 20 to the longitudinally extending member 23, with the link 46 at each side of the bed being operatively connected by a suitable cross member 47 whereby the two links may move in unison. Each of the links 46 may be provided adjacent its free end with a stud 48 engageable with any one of a series of notches 49 in the side rail 29 of the section 11, forming a brace member for maintaining the section in corresponding adjusted position.

As illustrated in FIGS. 2, 6 and 7, the head section 9 may be provided with a suitable stop member or stop means 51a each pivotally connected at one end to a respective rail 27 of the section 9 by a suitable rivet 52 or the like, the lower end of each member 51a being provided with a semi-circular notch 53 therein adapted to engage and seat upon a cylindrical stud 54a carried by the respective member 23 as illustrated in FIG. 6, and in like manner the foot sections 11 and 12 may be provided with similar stop members or stop means 51b adapted to engage respective studs 54b carried by the corresponding longitudinal members 23, the stop members 51b each being pivotally connected to the sections by the same respective rivets 33 which connect the two sections 11 and 12 together. As will be apparent from the drawings, the stop means or members 51a and 51b and studs 54a and 54b are of similar construction and

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arrangement and function to limit the pivotal action of the sections 9 and 12 with respect to their connection with the intermediate stationary section 13. In like manner, the brace members 46 support the end section 11 as shown in FIG. 1.

It will be apparent from the above description that the structure thus far described provides a high-low bed construction in which the mattress supporting structure may be elevated or lowered with respect to the floor surface on which the bed stands, power means being provided to perform the motivating force for the raising and lowering action. It will be appreciated, however, that one of the shafts 14 could be extended adjacent the foot of the bed and suitable means arranged on the free end thereof for engaging a crank or the like whereby the structure could be manually raised or lowered if desired. Due to the use of a screw type lifting structure, braking means or the like for retaining the structure in any of its adjusted positions is not required as a result of the locking action between the threaded screws and the collars 18.

Suitable means may be provided for equalizing or counterbalancing the weight of the movable structure, such means comprising a compression spring S encircling each shaft 14, with the ends of the springs bearing on the collar 18b associated with the link 20 at the head end of the member 23, and the collar 18a associated with the link 19 adjacent the foot end of the side rail 23, whereby the springs tend to urge the collars in directions operative to elevate the movable structure and counterbalance the weight thereof, thereby reducing frictional losses between the shafts 14 and the respective collars and reducing the load on the motor 45.

The actuating mechanism for effecting adjustments in the foot and head portions of the mattress supporting structure 8 are similar in construction and operation and details of the actuating means for the head section are illustrated in FIGS. 4 and 6, while FIG. 7 illustrates a sectional view showing the relationship of the parts of the mechanism for controlling the adjustment of the foot sections, and to facilitate the explanation thereof the corresponding portions of the respective mechanisms will be similarly numbered with the elements pertaining to the head section having a suffix letter *h* and those with the foot sections having a suffix letter *f*.

As previously mentioned, the actuation of the sections is derived from the relative movement of the movable section 7 with respect to a stationary point, which in the present instance is associated with the stationary frame structure 1. Thus in the structure illustrated, movement of certain portions of the head and foot sections may be so restricted with respect to the stationary frame structure 1 that desired movement of the respective sections may be achieved when the movable frame structure 7 is raised or lowered with respect to the stationary frame structure 1.

Pivotaly secured to the side rails 27 of the head section 9 are respective control or actuating stop arms or members 55 which are designated 55b and 55f for the respective head and foot sections. The arm 55h is pivotaly supported from the leg 27 of the head section by the rivet 52 which also supports the stop arm 51a, and in like manner the arm 55f is pivotaly supported from the foot sections 11 and 12 by the rivet 33 which supports the arm 51b and connects the rails 32 to the respective rail portions 29 of the end foot section.

Supported by the respective frame members 4 through braced cross members 4a are suitable arm engaging members or blocks 56h and 56f positioned along the associated frame member 4 to be operatively engaged by the free lower ends of the respective members 55h and 55f as will be clearly seen from a reference to FIGS. 2 and 6. It will be particularly noted that the members 55 are so positioned with respect to their respective block 56 that when the mattress supporting structure 8 is in a

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horizontal position, as shown in solid lines in FIG. 2 or in FIG. 9, the members 55 will be positioned longitudinally adjacent to the blocks 56 providing complementarily formed and cooperable means operatively carried by the fixed supporting structure formed by the stationary bed structure 4, but out of operative engagement therewith so that in such position the members 55 will have no effect upon the action of the sections of the mattress supporting structure. However, by pivoting either or both of the arms about their connection with the mattress supporting structure, the free ends of the arms may be brought into position for engagement with the respective blocks 56, assuming of course that the movable frame structure 7 has been elevated to a point which will permit movement of the arms 55 into such position.

FIG. 2 illustrates in dotted lines the relative positions of the head and foot sections of the bed at the extreme limit of their adjusted positions, the head section 9 being pivoted about the connection 37 thereof with the member 35 to a point where it extends upwardly at an acute angle with respect to the horizontal, forming a back rest for a patient in a semi-sitting position. At the same time the juncture of the sections 11 and 12 is elevated with respect to their opposite ends whereby the section 12 is inclined upwardly from its connection with the section 13, and the end foot section 11 is inclined downwardly from its connection with the section 12 to position a patient's legs in a more or less normal sitting position, and cooperating with the head section to support a patient in such a sitting position.

Adjustment of the structure to such position and to any intermediate positions with respect thereto may be accomplished by elevating the movable frame structure 7 and thus the mattress supporting structure 8 with respect to the stationary frame structure 1 until the lower ends of the arms 55h and 55f are positioned above their cooperable blocks 56h and 56f, permitting the former to be rotated until the free ends thereof are positioned directly above their cooperable block so that upon downward movement of the frame structure 7 the arms 55 will engage their respective blocks 56, preventing normal downward movement of the arms with respect to the blocks 56 and stationary frame structure 1. Under such conditions, as the movable frame structure 7 moves downwardly and with it the intermediate section 13, the pivoted ends of the side members 27 and 32 of the sections 9 and 12 will pivot about the axes of the respective pins 37 and 34, such movement resulting in rotation of the head section 9 in a counterclockwise direction about the axis of the pins 37 and rotation of the section 12 in a clockwise direction about the axis of the pivot pins 34. Such movement of the variable frame structures in turn will result in rotation of the end foot section 11 in a counterclockwise direction about the axis of the pivot pins or rivets 33, and, if the brace structure 46 is disconnected from the end foot section, the latter will approach the position illustrated in dotted lines in FIG. 2. Any intermediate positions of the respective sections may be achieved by varying the height of the movable frame structure 7 with respect to the stationary frame structure 1, so that any position of the sections intermediate that illustrated in solid and dotted lines in FIG. 2 may be achieved.

In some cases it may be desired to utilize adjustment of only the head section, or only the foot section, in which case only the arms associated with the section to be adjusted would be moved into engaging relation with respect to the associated blocks.

Movement of the arms 55h or 55f to place them in position to produce adjustment of the associated sections, may be achieved by various means, one illustrative means being shown in FIGS. 2, 6 and 7 of the drawings, wherein the means associated with the member 55h is identical in operation to the means illustrated for the arms 55f. In this construction, associated with each arm 55h or 55f is

a cam member or cam means 57 rigidly carried by a shaft 58 rotatably supported in a cooperable bore in the associated frame member 23 of the movable frame structure 7, the cam or eccentric 57 being so shaped that in one position it is out of operative engagement with the associated arm 55 and when rotated to another position, it will move the associated arm 55 about its pivotal connection with the mattress supporting structure to position the free end of the arm over its associated block 56. As the arms 55 cannot be moved into operative adjusting position until the free end of the arm is positioned above the cooperable member 56, provision may be made whereby the movement of the arm to adjusting position may be accomplished by suitable means when the arm has cleared its cooperable block. Preferably the mechanism under the operator's control or actuation should be such that a selection may be made at any time for the adjustment of the arms 55, irrespective of whether or not the arms are in a position to be moved into position for engagement with the respective blocks.

In the embodiment of the invention illustrated, the movement of the cam or cam means 57 is adapted to be operated by forces derived from the action of gravity, comprising a handle 59 having a weighted free end 61, the handle being rotatable about the axis of the shaft 58 and rotatable relative to the shaft. The handle 59 and/or 59f and 59h and associated parts provide control means for the actuating stop arms or members 55f and 55h. The amount of rotation of the handle relative to the shaft is determined by the length of a slot 62 in the hub 63 of the handle, in which extends a radially disposed pin 64 rigidly connected to the shaft 58, whereby the handle 61 is free to move with respect to the shaft through an arc determined by the circumferential length of the slot 62. The position of the slot 62 in the handle 59 and the pin 64 on the shaft 58 is so selected that when the cams 57 are in non-operative position with respect to the arms 55 the respective handles 59 will be in the positions illustrated in FIG. 2, the handles 59 associated with the head section 8 being reversed, however, with respect to the handles associated with the foot sections as each actuating structure is positioned at the side of its associated arm 55 opposite to that of its cooperable block 56. When in such positions the respective handle members 59 are at substantially the ends of their free travel in directions away from their arms 55, or in other words, as viewed in FIG. 2, the handle 59h is at the extreme clockwise movement with respect to the pin 64 and in like manner the handle 59f is at the extreme counterclockwise movement of its travel with respect to its associated pin. Further movement of the handles in such directions may be restricted by suitable means, such as pins 65 rigidly extending from the frame member 23 and forming a stop for the adjacent handle. The length of the slots 62 is such that the handles may be rotated through an arc substantially as illustrated in dotted lines in FIG. 4 independently of movement of the shaft 58, the handle, however, applying a torque force to the shaft 58 through the pin 64, tending in the case of the handle 59h, illustrated in FIG. 4, to rotate the shaft 58 in a counterclockwise direction due to the action of gravity on the weighted end of the handle. Consequently, assuming that the handle has been rotated to the dotted position illustrated in FIG. 4, as the free end of the arm 55h clears the block 56h, upon elevation of the movable frame structure, rotation of the arm in a clockwise direction about its pivotal connection with the head section may take place so that the cam 57 and shaft 58 may rotate in a counterclockwise direction under the action of gravity on the weighted handle to the approximate position illustrated in dotted lines in FIG. 6, rotating the shaft 58 and cam 57 with it, whereby the latter will move the arm 55h into the angular position illustrated in FIG. 6. Operation of the arm 55f and handle 59f is the same with the exception that the rotational movements of the elements are in the

opposite directions to that described with respect to the arm 55h. It will be noted that this construction permits the handles 59 to be rotated independently of the movement of the arms 55 so that the handles may be moved into position for actuating the adjustable structure at any time and may be readily accomplished with a minimum of effort as the only force required is that required to move the handle from the position illustrated in FIG. 4 to the dotted position therein illustrated and enabling even a weak patient to control the adjustment.

It will be readily apparent to those skilled in the art that the actuation of the arms 55 from an inoperative position to an operative position may be accomplished in any one of a number of different ways, for example, electrically through the actuation of suitable solenoids or the like, or by means of suitable elements which may be responsive to travel of the movable frame structure 7 with respect to the stationary frame structure 1. Thus, for example, in such case, successive movements of the movable frame structure to the extreme elevated position thereof could be utilized to shift the arm 55 from operative to inoperative positions and vice versa, whereby the entire operation could be controlled by start-stop switching means for the motor 45.

It will be appreciated that when the mattress supporting structure 8 is in a horizontal position and the remaining elements are in the general relationships illustrated in FIG. 2, by actuation of the motor 45, the movable frame structure 7 and with it the mattress supporting structure 8 may be raised or lowered as desired from an extensive low position such as that illustrated in FIG. 2, to an extreme raised position, as for example, illustrated in FIG. 9, without adjustment of the head and foot sections, the bed structure thus functioning in a manner similar to the general high-low type of structure currently in use. However, when the operator of the bed desires to adjust one or both sections, the appropriate handle or handles 59 are moved from the positions illustrated in FIG. 2 to their intermediate positions corresponding to that illustrated in dotted lines in FIG. 4. If such movement takes place when the movable frame structure 7 and mattress supporting structure 8 are in an elevated position permitting the free ends of the actuating arms 55 to move, the handle 59 after passing through a vertical position, will immediately rotate downward under the action of gravity to its actuated position as illustrated in FIG. 6, moving the associated arm 55 into operable position, and upon downward movement of the frame structure 7, engagement of the selected arm 55 with the associated block 56 will result in adjustment of the associated section. On the other hand, if the frame structure 7 and mattress supporting structure 8 is in a lowered position such as that illustrated in FIG. 2, the selected handle will merely rotate to the approximate position illustrated in dotted lines in FIGS. 4 and 6, and will remain in such position until elevation of the movable frame structure 7 and mattress supporting structure 8 is sufficient to permit clearance of the free ends of the selected arms 55 with respect to their associated blocks, whereupon the handle 59 will rotate and actuate the associated arm. As illustrated in FIG. 7, the arm 55f may be rigidly connected by a suitable cross member 66f and in like manner the arms 55h are connected by a similar cross member (not shown), so that each pair of arms may rotate as a unit and actuation of a handle 59 at one side of the bed structure will thereafter actuate both of the arms associated with the particular section.

Referring to FIGS. 2, 4, 6 and 7, it will be noted that the blocks 56h and 56f may be of different heights, as illustrated, or the relative lengths of the arms 55h and 55f may be varied as may be desirable to provide different amounts of travel between the sections as the movable frame structure 7 is moved relative to the stationary frame structure 1.

The electric motor, in addition to a suitable on-off switch preferably may be controlled by suitable limit

switches 67 indicated in dotted lines in FIG. 2, which are adapted to be actuated by the adjacent collars 18a or 18b at extreme up or down positions of the mattress supporting structure, automatically stopping the motor at such time.

In some cases it may be desirable to have both the head and foot sections of the bed inclined downwardly toward their free ends in a manner as illustrated in FIG. 8, wherein the head section 9 extends downwardly toward the head board 2, while the sections 11 and 12 are illustrated as being positioned substantially in a common plane which slopes downwardly from the stationary section 13 toward the foot or front frame 3 of the bed structure. This may be accomplished by disconnecting the brace member 46 which may then drop into a vertical position such as that illustrated in FIG. 8, and at the same time rotating the stop member 51b out of engagement with the stud 54b, the sections 11 and 12 of the mattress supporting structure being elevated slightly with respect to the movable frame structure 7 to disengage the stop member 51b from the stud 54b so that the sections 11 and 12 may assume the position illustrated in FIG. 8. The side members 32 and leg portions 29 of the sections 12 and 11, respectively, preferably are so constructed at their junctures with the pivots 33 that the sections 11 and 12 cannot pivot about the pins 33 in directions to permit the juncture to drop below the common plane of the sections as illustrated in FIG. 8. This may be readily accomplished, for example, by providing engageable end portions on the adjacent sections which will permit the sections to be rotated from a common plane into positions corresponding to that illustrated in dotted lines in FIG. 2, but will not permit rotation in the opposite directions about the pivot pin 33.

The head section 9 may be readily dropped to the position illustrated in FIG. 8 by slightly rotating the section upward about its connection with the intermediate section 13 to disengage the stop members 51a from the cooperating pins 54b, following which the section may be dropped to the position illustrated in FIG. 8. It will be apparent that when the head and foot sections are in such positions the free end portions thereof are supported on their respective cross bars 24 extending between the side frame members 23.

It will also be appreciated by those skilled in the art that the invention is not limited to bed structures designed especially for it, but may also be applied to existing beds utilizing a high-low structure. For example, some of the high-low adjustable beds utilize extensible leg members at the corners of the bed structure, whereby upon actuation of the raising elements, the entire bed structure is raised or lowered with respect to vertically stationary elements in each leg terminating in floor engaging means. Thus in such constructions, the movable structure may travel along a rack member or may travel along a screw element located at each corner of the bed, and, in such case, the present invention may be provided with a relatively stationary frame structure corresponding to the frame structure 1, illustrated in the drawings, which would be operatively connected to a vertically fixed or stationary portion of the high-low bed structure, as for example, supported by floor engaging casters or other equivalent elements of the bed structure, and means associated therewith for operatively connecting the mattress supporting sections of the low bed to the stationary frame structures so provided, when the bed is in its high position, following which, upon lowering of the bed structure, portions of the mattress supporting structure will be restricted in such movement to provide an adjustment of either or both the head and foot sections thereof, in substantially the same manner as that heretofore described in connection with the structure illustrated in the drawings.

It will be particularly noted by those skilled in the art that in some cases it may be desirable to reverse the control or actuating members, such as the members 55f and 55h

so that instead of being carried by the mattress supporting structures and operatively engageable with elements on the fixed frame structure, equivalent members could be provided on the fixed frame structure, detachably or otherwise engageable with respect to the sections of the mattress supporting structure to accomplish the same general results, and likewise it may be desirable in some instances to have the arms operatively engageable with other relatively fixed elements, as for example with the floor surface, etc.

While I have illustrated the raising and lowering mechanism as comprising a screw driven structure, obviously other types of raising and lowering mechanisms could be utilized, at the same time utilizing the features of the present invention, whereby the adjustment of the mattress supporting sections may be accomplished in connection with the raising or lowering of the movable bed structure.

It will be appreciated from the above description that I have provided a novel bed structure which provides a simple and efficient adjustment of the various sections of the mattress supporting structure, with a minimum of mechanism and which, in the case of power actuated structures, may utilize the same motor for effecting adjustment of the head and foot sections, and also, if desired, controlling the disengagement of the adjustable actuating means. It will also be particularly noted that the present invention provides maximum flexibility in design of bed structures of this type and may be utilized with almost any type of bed structures which are capable of being elevated or lowered. While in most cases the invention will probably be utilized in connection with power actuated bed structures, it will be obvious that the invention also adapts itself for use with manually actuated structures, in which case the adjustment may still be effected by manually raising and lowering the bed structure.

Those skilled in the art will also appreciate the fact that while I have illustrated manually operated mechanical means for setting the control members from inoperable to operable relation in connection with the adjustment of the bed structure, as pointed out, the present invention readily adapts itself to electrical or other actuation.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described.

I claim:

1. In an actuating mechanism for an adjustable bed structure including a relatively fixed frame structure, a vertically movable frame structure operatively mounted for movement with respect to the fixed frame structure, and said movable frame structure comprising a plurality of sections including normally horizontal adjustable head and foot mattress supporting sections, and an intermediate horizontal section rigidly carried by said movable frame structure, said head and foot mattress supporting sections and said intermediate horizontal section adapted for operatively supporting a mattress thereon, said head and foot sections being movable for moving corresponding portions of a mattress supported thereon relative to that portion of said mattress carried by said intermediate section, the combination of means including complementally formed and cooperable means carried by said relatively fixed frame structure and actuating stop arms carried by said movable frame structure and operatively related to the respective adjustable head and foot mattress supporting sections for selectively effecting non-uniform vertical movement of certain portions of said adjustable head and foot mattress supporting sections relative to other portions thereof for effecting movement of a selected section into angular relation relative to the intermediate horizontal section upon the movable frame structure being vertically moved so that the actuating stop arms operatively engage said complementally formed and co-



operable means carried by said fixed frame structure, and adjustable means operatively associated with said movable frame structure and movable relative to and in operable engagement with said actuating stop arms of said first means for controlling the operation of the aforesaid first means.

2. In an adjustable bed, the combination of a relatively fixed frame structure, a movable frame structure operatively mounted for vertical movement with respect to the fixed frame structure, a normally horizontal mattress supporting structure operatively mounted on said movable frame structure and movable as a unit in a vertical direction to selectively position a mattress supported by said mattress supporting structure in a relatively high horizontal plane or a relatively low horizontal plane, means for moving said mattress supporting structure between said planes, said mattress supporting structure comprising a plurality of sections including a movable head section and a movable foot section, each of which are movable for moving corresponding portions of a mattress supported thereby into angular positions relative to the horizontal, and means including actuating stop arms operatively related to said movable head and foot sections for selectively and independently restricting movement in a vertical direction of portions of said movable head and foot sections during movement of other portions thereof, and adjustable means operatively associated with said movable frame structure and movable relative to and in operable engagement with said actuating stop arms of said means including said actuating stop arms for controlling the operation of the aforesaid means including said actuating stop arms whereby the selected movable section or sections may be moved into an angular position relative to the horizontal plane of the normally horizontal mattress supporting structure as the mattress supporting structure is moved in a vertical direction between said relatively high horizontal plane and said relatively low horizontal plane.

3. In an actuating mechanism for an adjustable bed structure including a relatively fixed frame structure, a vertically movable frame structure operatively mounted for movement with respect to the fixed frame structure, and said movable frame structure comprising a plurality of sections including normally horizontal adjustable head and foot mattress supporting sections operatively carried by and vertically movable as a unit with said vertically movable frame structure, portions of said adjustable head and foot sections being movable relative to said vertically movable frame structure into angular positions relative to the plane of the normally horizontal adjustable head and foot mattress-supporting sections, the combination of means including complementally formed and cooperable means carried by said relatively fixed frame structure and actuating stop arms operatively related to the respective adjustable head and foot mattress-supporting sections for selectively restricting vertical movement of portions of said head and foot mattress-supporting sections to effect angular movement of the selected section relative to the movable frame structure upon the movable frame structure being vertically moved so that the actuating stop arms operatively engage said complementally formed and cooperable means carried by said fixed frame structure, and operator-operated control means operatively associated with said movable frame structure and said actuating stop arms and movable relative to and in operable engagement with said actuating stop arms of said first-mentioned means for controlling the operation of the first-mentioned means.

4. In an adjustable bed, the combination of a relatively fixed frame structure, a movable frame structure operatively mounted for vertical movement with respect to the fixed frame structure, a normally horizontal mattress-supporting structure operatively mounted on said movable frame structure and including a movable head section and a pair of movable foot sections, and an intermediate horizontal section rigidly carried by said mov-

able frame structure, said head and foot sections being movable relative to one another into angular positions with respect to the horizontal, each of the foot sections of said mattress-supporting structure being pivotally connected together and said head and one of said foot sections contiguous to said intermediate horizontal section also being pivotally connected to said intermediate horizontal section on horizontally extending parallel axes, said relatively fixed frame structure having floor engaging elements, and including foot and head end-frames and spaced side rails operatively connecting the end-frames, said movable frame structure having spaced longitudinally extending side members, said mattress-supporting structure being operatively supported by said movable frame structure for movement therewith as a unit, connecting means including link means operatively connecting said fixed and movable frame structures for relative movement therebetween in a vertical direction, actuating stop members operatively related to said movable sections and complementally formed and cooperable means operatively carried by said fixed frame structure and adapted for engagement with the actuating stop members as the movable frame structure is raised and lowered with respect to the fixed frame structure and actuating means operatively carried by said fixed frame structure for selectively effecting non-uniform movement of portions of said movable head and foot sections relative to said fixed frame structure upon engagement of the actuating stop members with said complementally formed and cooperable means as the movable frame structure is raised and lowered with respect to the fixed frame structure, and adjustable control means for independently controlling the operation of said actuating stop members, whereby upon relative movement of the movable frame structure with respect to the fixed frame structure, the adjustment of the head and foot mattress supporting sections is obtained with the adjustable control means operated for positioning the actuating stop members in operative engagement with said complementally formed and cooperable means.

5. In an adjustable bed, the combination of a relatively fixed frame structure, a movable frame structure operatively mounted for vertical movement with respect to the fixed frame structure, and a normally horizontal mattress-supporting structure operatively mounted on said movable frame structure and including a movable head section and a pair of movable foot sections, and an intermediate horizontal section rigidly carried by said movable frame structure, said head and foot sections being movable for moving corresponding portions of a mattress supported thereon relative to one another into angular positions with respect to the horizontal, each of the foot sections of said mattress-supporting structure being pivotally connected together and said head and one of said foot sections contiguous to said intermediate horizontal section also being pivotally connected to said intermediate horizontal section on horizontally extending parallel axes, said relatively fixed frame structure having floor-engaging elements, and including foot and head end-frames and spaced side rails operatively connecting the foot and head end-frames, said movable frame structure having spaced longitudinally extending side members, said mattress-supporting structure being operatively supported by said movable frame structure for movement therewith as a unit, connecting means including link means operatively connecting said fixed and movable frame structures for relative movement therebetween in a vertical direction, actuating stop members operatively related to said movable sections and complementally formed and cooperable means operatively carried by said fixed frame structure and adapted for engagement with the actuating stop members as the movable frame structure is raised and lowered with respect to the fixed frame structure and actuating means operatively carried by said fixed frame structure for selectively effecting non-uni-

form movement of portions of said movable head and foot sections relative to said fixed frame structure upon engagement of the actuating stop members with said complementally formed and cooperable means as the movable frame structure is raised and lowered with respect to the fixed frame structure, adjustable control means for independently controlling the operation of said actuating stop members, said link means of said connecting means between said fixed and movable frame structures comprising pairs of link members, each pair of link members being pivotally and operatively connected on a common pivot to each other and to a respective longitudinally extending side member of said movable frame structure adjacent respective ends of said movable frame structure, and said actuating means operatively carried by said fixed frame structure for simultaneously moving the free ends of corresponding link members of each pair of link members within a common plane in directions toward or away from the free end of the other link members of said pair of link members to effect vertical movement of the common connections of each pair of link members.

6. In an adjustable bed, the combination of a relatively fixed frame structure, a movable frame structure operatively mounted for vertical movement with respect to the fixed frame structure, and a normally horizontal mattress-supporting structure operatively mounted on said movable frame structure and including a movable head section and a pair of movable foot sections, and an intermediate horizontal section rigidly carried by said movable frame structure, said head and foot sections being movable for moving corresponding portions of a mattress supported thereon relative to one another into angular positions with respect to the horizontal, each of the foot sections of said mattress-supporting structure being pivotally connected together and said head and one of said foot sections contiguous to said intermediate horizontal section also being pivotally connected to said intermediate horizontal section on horizontally extending parallel axes, said relatively fixed frame structure having floor-engaging elements, and including foot and head end-frames and spaced side rails operatively connecting the foot and head end-frames, said movable frame structure having spaced longitudinally extending side members, said mattress-supporting structure being operatively supported by said movable frame structure for movement therewith as a unit, connecting means including link means operatively connecting said fixed and movable frame structures for relatively movement therebetween in a vertical direction, actuating stop members operatively related to said movable head and foot sections and complementally formed and cooperable means operatively carried by said fixed frame structure and adapted for engagement with the actuating stop members as the movable frame structure is raised and lowered with respect to the fixed frame structure and actuating means operatively carried by said fixed frame structure for selectively effecting non-uniform movement of portions of said movable head and foot sections relative to said fixed frame structure upon engagement of the actuating stop members with said complementally formed and cooperable means as the movable frame structure is raised and lowered with respect to the fixed frame structure, adjustable control means for independently controlling the operation of said actuating stop members, said link means of said connecting means between said fixed and movable frame structures comprising pairs of link members, each pair of link members being pivotally and operatively connected on a common pivot to each other and to a respective longitudinally extending side member of the movable frame structure adjacent respective ends of said movable frame structure, said actuating means operatively carried by said fixed frame structure for simultaneously moving the free ends of corresponding link

members of each pair of link members within a common plane in directions toward or away from the free end of the other link members of said pair of link members to effect vertical movement of the common connection of each pair of link members, said actuating means comprising a pair of parallel drive shafts, each extending parallel to an adjacent side rail of said fixed frame structure, bearing means for supporting each drive shaft in operative position, each drive shaft having a pair of oppositely threaded portions adjacent each end thereof, a threaded member on each threaded portion, each of the threaded members having a free end of a respective link means pivotally connected thereto, and power means operatively connected to said drive shafts for simultaneously rotating said drive shafts, whereby upon actuation of said power means and said adjustable control means, the movable head and foot sections of the mattress-supporting structure may be moved relative to one another into angular adjusted positions depending upon the relationship of the actuating stop members with respect to the movable head and foot sections and said fixed frame structure as controlled by said adjustable control means and vertical movement of said movable frame structure with respect to said fixed frame structure.

7. In an adjustable bed, the combination of a relatively fixed frame structure, a movable frame structure operatively mounted for vertical movement with respect to the fixed frame structure, and a normally horizontal mattress-supporting structure operatively mounted on said movable frame structure and including a movable head section and a pair of movable foot sections, and an intermediate horizontal section rigidly carried by said movable frame structure, said head and foot sections being movable for moving corresponding portions of a mattress supported thereon relative to one another into angular positions with respect to the horizontal, each of the foot sections of said mattress-supporting structure being pivotally connected together and said head and one of said foot sections contiguous to said intermediate horizontal section also being pivotally connected to said intermediate horizontal section on horizontally extending parallel axes, said relatively fixed frame structure having floor-engaging elements, and including foot and head end-frames and spaced side rails operatively connecting the foot and head end-frames, said movable frame structure having spaced longitudinally extending side members, said mattress-supporting structure being operatively supported by said movable frame structure for movement therewith as a unit, connecting means including link means operatively connecting said fixed and movable frame structures for relative movement therebetween in a vertical direction, actuating stop members operatively related to said movable head and foot sections and complementally formed and cooperable means operatively carried by said fixed frame structure and adapted for engagement with the actuating stop members as the movable frame structure is raised and lowered with respect to the fixed frame structure and actuating means operatively carried by said fixed frame structure for selectively effecting non-uniform movement of portions of said movable head and foot sections relative to said fixed frame structure upon engagement of the actuating stop members with said complementally formed and cooperable means as the movable frame structure is raised and lowered with respect to the fixed frame structure, adjustable control means for independently controlling the operation of said actuating stop members, said actuating stop members being each pivotally carried by the mattress-supporting structure and adapted for selectively engaging said complementally formed and cooperable means carried by said fixed frame structure, and said adjustable control means for independently controlling the operation of said actuating stop members operatively mounted on said movable frame structure, whereby upon relative movement of the movable frame structure with respect to the

fixed frame structure, the adjustment of the head and foot mattress-supporting sections is obtained with the adjustable control means operated for positioning the actuating stop members in operative engagement with said complementally formed and cooperable means operatively carried by said fixed frame structure.

8. In an adjustable bed, the combination of a relatively fixed frame structure, a movable frame structure operatively mounted for vertical movement with respect to the fixed frame structure, and a normally horizontal mattress-supporting structure operatively mounted on said movable frame structure and including a movable head section and a pair of movable foot sections, and an intermediate horizontal section rigidly carried by said movable frame structure, said head and foot sections being movable for moving corresponding portions of a mattress supported thereon relative to one another into angular positions with respect to the horizontal, each of the foot sections of said mattress-supporting structure being pivotally connected together and said head and one of said foot sections contiguous to said intermediate horizontal section also being pivotally connected to said intermediate horizontal section on horizontally extending parallel axes, said relatively fixed frame structure having floor-engaging elements, and including foot and head end-frames and spaced side rails operatively connecting the foot and head end-frames, said movable frame structure having spaced longitudinally extending side members, said mattress-supporting structure being operatively supported by said movable frame structure for movement therewith as a unit, connecting means including link means operatively connecting said fixed and movable frame structures for relative movement therebetween in a vertical direction, a pair of actuating stop members operatively related to said movable head section and a pair of actuating stop members operatively related to said pair of movable foot sections and complementally formed and cooperable means operatively carried by said fixed frame structure and adapted for engagement with the actuating stop members as the movable frame structure is raised and lowered with respect to the fixed frame structure and actuating means operatively carried by said fixed frame structure for selectively effecting non-uniform movement of portions of said movable head and foot sections relative to said fixed frame structure upon engagement of the actuating stop members with said complementally formed and cooperable means as the movable frame structure is raised and lowered with respect to the fixed frame structure, adjustable control means for independently controlling the operation of said actuating stop members, and said adjustable control means for said pair of actuating stop members for said pair of foot sections pivotally connected to the pair of movable foot sections, at each side of the adjustable bed, on the pivotal axis of connection for said movable foot sections at each side of the adjustable bed, said pair of actuating stop members for said head section pivotally connected to said head section, intermediate the ends thereof at each side of the adjustable bed, and said adjustable control means for each pair of actuating stop members extending from one side of the bed to the other for simultaneously controlling both actuating stop members of the associated pair.

9. In an adjustable bed, the combination of a relatively fixed frame structure, a movable frame structure operatively mounted for vertical movement with respect to the fixed frame structure, and a normally horizontal mattress-supporting structure operatively mounted on said movable frame structure and including a movable head section and a pair of movable foot sections, and an intermediate horizontal section rigidly carried by said movable frame structure, said head and foot sections being movable for moving corresponding portions of a mattress supported thereon relative to one another into angular positions with respect to the horizontal, each of the foot sections of said mattress-supporting structure being piv-

otally connected together and said head and one of said foot sections contiguous to said intermediate horizontal section also being pivotally connected to said intermediate horizontal section on horizontally extending parallel axes, said relatively fixed frame structure having floor-engaging elements, and including foot and head end-frames and spaced side rails operatively connecting the foot and head end-frames, said movable frame structure having spaced longitudinally extending side members, said mattress-supporting structure being operatively supported by said movable frame structure for movement therewith as a unit, connecting means including link means operatively connecting said fixed and movable frame structures for relative movement therebetween in a vertical direction, actuating stop members operatively related to said movable head section and said pair of movable foot sections and complementally formed and cooperable means operatively carried by said fixed frame structure and adapted for engagement with the actuating stop members as the movable frame structure is raised and lowered with respect to the fixed frame structure and actuating means operatively carried by said fixed frame structure for selectively effecting non-uniform movement of portions of said movable head and foot sections relative to said fixed frame structure upon engagement of the actuating stop members with said complementally formed and cooperable means as the movable frame structure is raised and lowered with respect to the fixed frame structure, adjustable control means for independently controlling the operation of said actuating stop members, and said adjustable control means for said actuating stop members comprising respective manually operable gravity-actuated members for controlling the position of said actuating stop members with respect to said complementally formed and cooperable means carried by the fixed frame structure and operatively engageable with said actuating stop members.

10. In a power-operated adjustable bed, the combination of a fixed supporting structure, a movable frame structure, power-actuated means including motor-actuated drive-shaft means for operatively connecting said fixed supporting and movable structures and for moving said movable frame structure between a relatively low position and an elevated position with respect to said fixed supporting structure, a mattress-supporting structure carried by and movable as a unit with said movable frame structure, said mattress-supporting structure comprising a plurality of sections including adjustable head and foot sections movable relative to one another to move corresponding portions of a mattress-supported thereby into angular positions with respect to the horizontal, said movable frame structure being constructed to normally support said adjustable head and foot sections in a common plane during movement of said movable frame structure, control means including operator-operated actuating stop means operatively related to the respective movable head and foot sections and complementally formed and cooperable means complementally formed to and adapted for engagement with said operator-operated actuating stop means for selectively effecting non-uniform movement of a preselected movable section of said movable head and foot sections, relative to said fixed supporting structure as operative movement of the movable frame structure is effected by said motor-actuated drive-shaft means for imparting angular movement to the sections so non-uniformly moved, said operator-operated actuating stop means including an actuating stop member operatively connecting a portion of said preselected section of said movable head and foot sections, said complementally formed and cooperable means operatively mounted on said fixed supporting structure, and adjustable means operatively associated with said movable frame structure and movable relative to and in operable engagement with said operator-operated actuating stop

means of said control means for controlling the operation of the aforesaid control means.

11. In an adjustable bed, the combination of a relatively fixed frame structure, a movable frame structure operatively mounted for vertical movement with respect to the fixed frame structure, a normally horizontal mattress-supporting structure operatively mounted on said movable frame structure and including a movable head section and a pair of movable foot sections, and an intermediate horizontal section rigidly carried by said movable frame structure, said head and foot sections being movable for moving corresponding portions of a mattress supported thereon relative to one another into angular positions with respect to the horizontal, each of the foot sections of said mattress-supporting structure being pivotally connected together and said head and one of said foot sections contiguous to said intermediate horizontal section also being pivotally connected to said intermediate horizontal section on horizontally extending parallel axes, said relatively fixed frame structure having floor-engaging elements, and including foot and head end-frames and spaced side rails operatively connecting the foot and head end-frames, said movable frame structure including spaced longitudinally extending side members, said mattress-supporting structure being operatively supported by said movable frame structure for movement therewith as a unit, connecting means including link means operatively connecting said fixed and movable frame structures for relative movement therebetween in a vertical direction, a pair of actuating stop members operatively related to said movable head section and a pair of actuating stop members operatively related to said pair of movable foot sections and complementally formed and cooperable means operatively carried by said fixed frame structure and adapted for engagement with the actuating stop members as the movable frame structure is raised and lowered with respect to the fixed frame structure, and actuating means operatively carried by said fixed frame structure for selectively effecting non-uniform movement of portions of said movable head and foot sections relative to said fixed frame structure upon engagement of the actuating stop members with said complementally formed and cooperable means as the movable frame structure is raised and lowered with respect to the fixed frame structure, adjustable control means for independently controlling the operation of said actuating stop members, said pair of actuating stop members for said pair of foot sections pivotally connected to the pair of movable foot sections, at each side of the adjustable bed, on the pivotal axis of connection for said movable foot sections at each side of the adjustable bed, said pair of actuating stop members for said head section pivotally connected to said head section, intermediate the ends thereof at each side of the adjustable bed, said adjustable control means for each pair of actuating stop members extending from one side of the bed to the other for simultaneously controlling both actuating stop members of the associated pair, and said adjustable control means for said pairs of actuating stop members comprises respective rotatable cam members operatively mounted on the movable frame structure and a handle member for each cam member, operatively connected to the respective actuating stop member through a lost-motion

connection, said handle member being movable from an inoperable position to a position wherein force is applied through said handle to said cam member operative to move the cam member and the associated actuating stop member when said actuating stop member is free to be actuated thereby.

12. In a power-operated adjustable bed, the combination of a fixed supporting structure, a vertically movable frame structure operatively mounted for movement with respect to the fixed supporting structure, power-actuated means including motor-actuated drive-shaft means for operatively connecting said fixed supporting and movable structures and for moving said movable frame structure between a relatively low position and an elevated position with respect to said fixed supporting structure, a mattress-supporting structure carried by and movable as a unit with said movable frame structure, said mattress-supporting structure comprising a plurality of sections including adjustable head and foot sections movable relative to one another to move corresponding portions of a mattress supported thereby into angular positions with respect to the horizontal, said movable frame structure being constructed to normally support said adjustable head and foot sections in a common plane during movement of said movable frame structure, means including complementally formed and cooperable means carried by said fixed frame structure and operator-operated actuating stop means operatively related to the respective movable head and foot sections for selectively effecting non-uniform movement of a preselected movable section of said movable head and foot sections relative to said fixed supporting structure as operative movement of the movable frame structure is effected by said motor-actuated drive-shaft means for imparting angular movement to the section so non-uniformly moved, and adjustable means operatively associated with said movable frame structure and movable relative to and in operable engagement with said operator-operated actuating stop means of said means including said operator-operated actuating stop means for controlling the operation of the aforesaid means including said operator-operated actuating stop means, whereby upon relative movement of the movable frame structure with respect to the fixed supporting structure, the adjustment of the preselected movable section of said movable head and foot sections is obtained with the adjustable means operated for positioning the actuating stop means for operative engagement with said complementally formed and cooperable means.

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