

Feb. 8, 1966

R. L. PROPST
BED CONSTRUCTION

3,233,255

Filed May 22, 1961

4 Sheets-Sheet 1

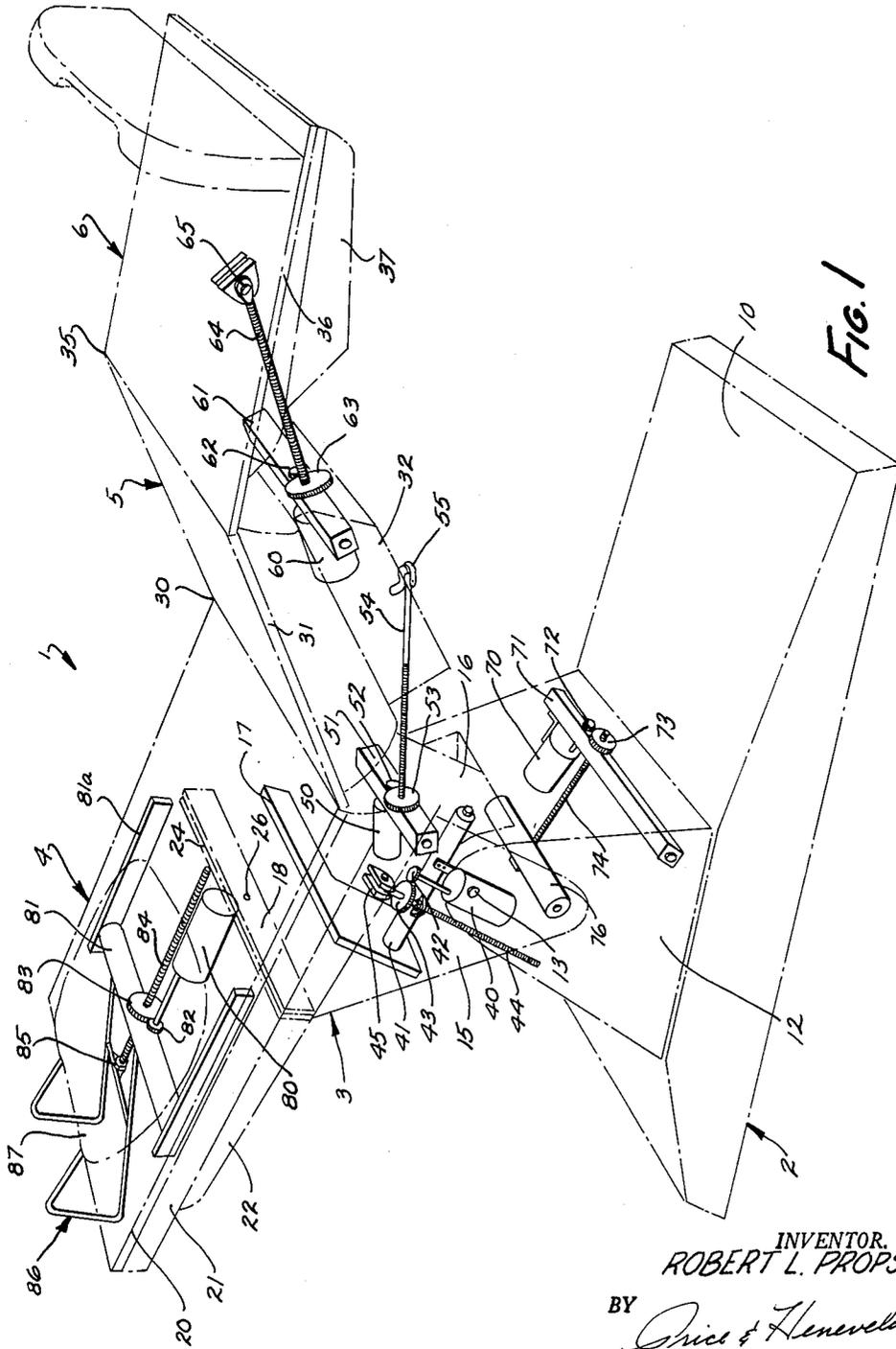


FIG. 1

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4 Sheets-Sheet 3

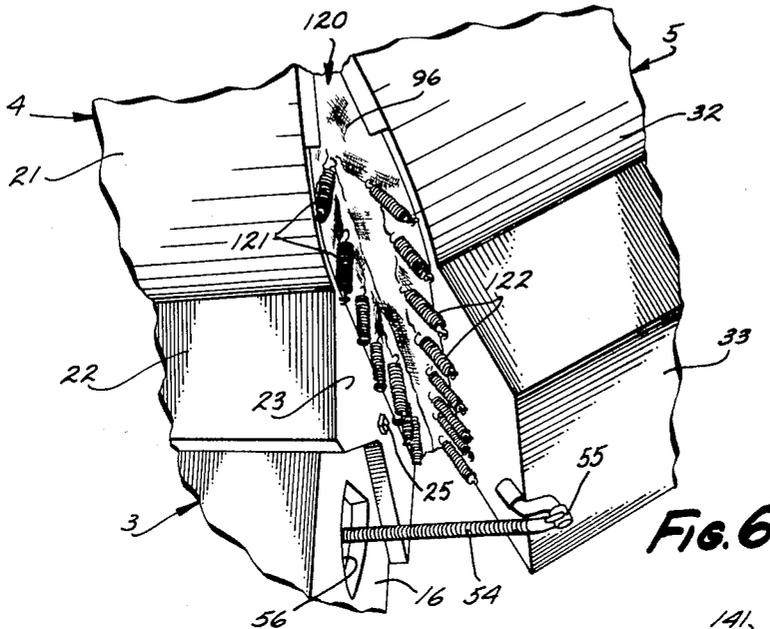


FIG. 6

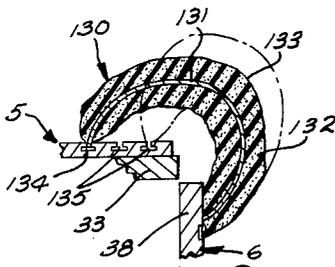


FIG. 9

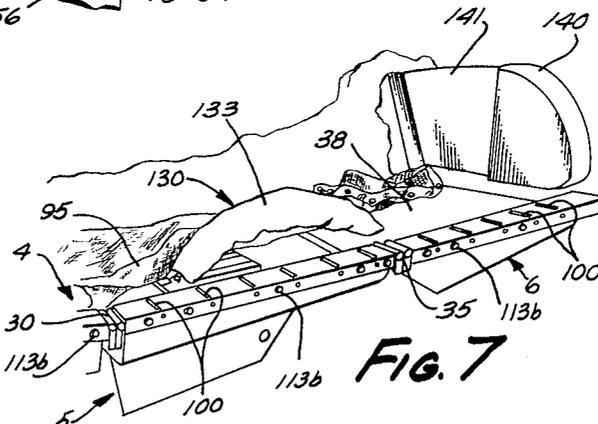


FIG. 7

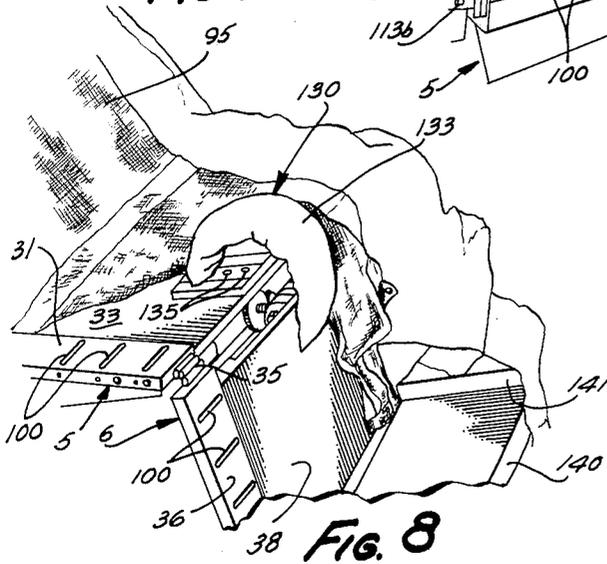


FIG. 8

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4 Sheets-Sheet 4

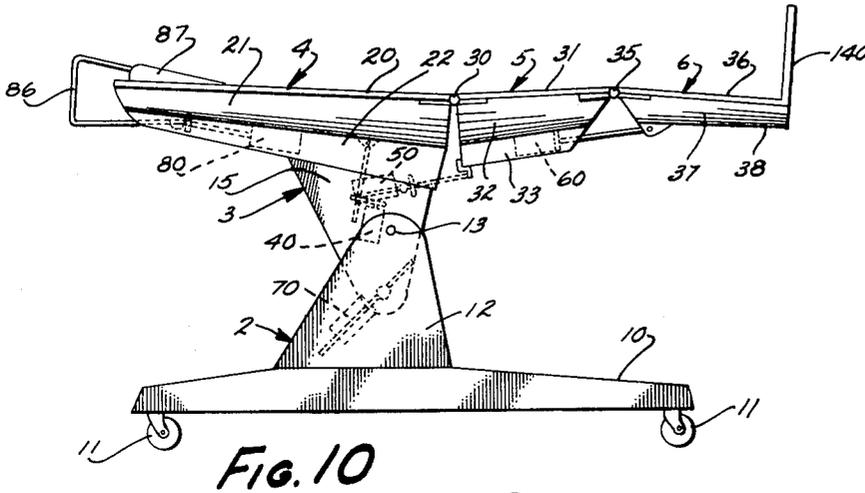


FIG. 10

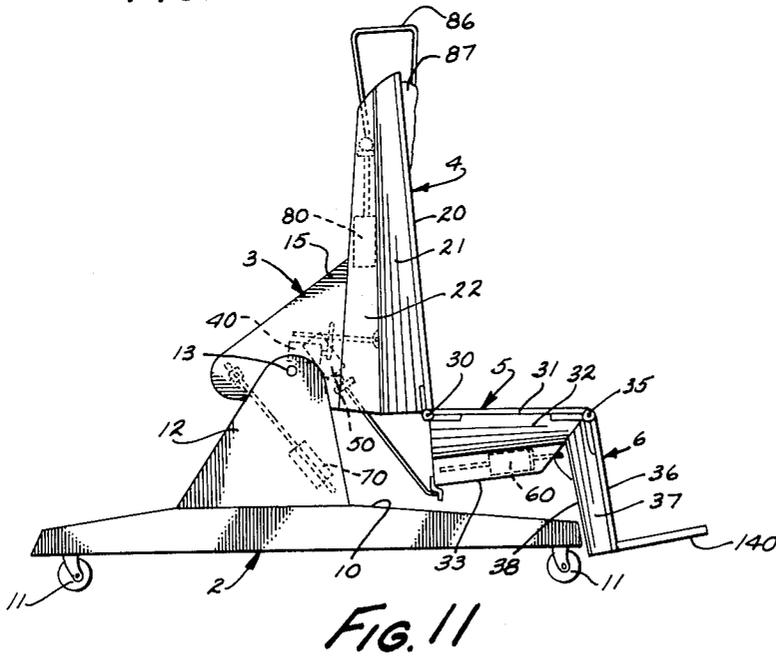


FIG. 11

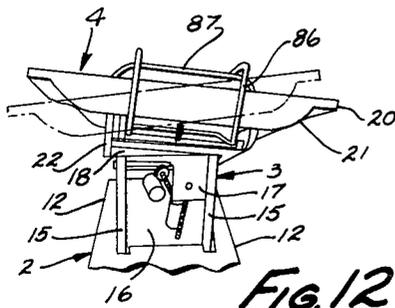


FIG. 12

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3,233,255

BED CONSTRUCTION

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 Filed May 22, 1961, Ser. No. 111,594
 8 Claims. (Cl. 5-66)

This invention relates to an articulated or adjustable bed construction. More particularly, this invention relates to a bed construction which utilizes powered means for adjusting the occupant to an almost infinite number of positions, and further relates to associated improvements in patient handling and care.

Patients who are continuously bedridden need constant care by attendants. This is not only a matter of assuring proper comfort for the patient, rather, it is also absolutely necessary to move the patient and shift his position for health preservation. Consequently, the cost to hospitals and other institutions caring for bedridden patients is greatly increased due to the number of attendants necessary to properly handle and care for the patients. Powered beds and chairs are old and well-known. However, such constructions presently in existence are extremely cumbersome in appearance and operation. Further, the powered movements provided are not sufficient for proper patient comfort and care. The bed of the present invention is an improvement over such constructions and is designed for complete operation by the patient himself. If the patient can move as much as one finger, he can maneuver the bed completely without the aid of an attendant. Not only can the patient shift himself from a flat position to a sitting position, he can also manipulate the positioning of individual parts of the bed, giving himself the proper comfort and circulation necessary for all parts of his body.

One of the reasons that adjustable beds presently in existence are mechanically cumbersome and uncomfortable for the patient is the construction of the platform of the bed itself. Conventionally, springs and mattresses are utilized to provide proper patient comfort. However, these springs and mattresses greatly complex any adjustable movement of the bed and therefore are inherently incapable of providing proper comfort and mobility for the patient. The present invention utilizes only a frame having a netting tensioned thereacross, thereby giving the bed a much greater flexibility. Further, much greater comfort is given to the patient.

In present constructions, when the beds are moved to reposition the patient, discomfort arises in the seat and knee areas, thus irritating the patient even though he has been repositioned. Further, the beds are in no way adjustable to compensate for patients of varying size, therefore especially short or tall people experience added discomfort.

Present constructions provide no simple means of attaching and removing sheets. An attendant or nurse must take care of this for the patient. When patients are bedridden, yet able to sit up with support and use their hands, it is mandatory that they have a certain degree of control of the sheets for removing and reattaching them without aid from an attendant.

In summary, it is therefore an object of this invention

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to provide a bed especially adapted for patients who are bedridden for a long duration.

A further object of this invention is to provide such a bed which utilizes unique powered means, thereby allowing the patient himself to vary his body to an almost infinite number of positions on the bed, thereby eliminating the necessity of the attendant's constant attention.

Another object of this invention is to provide such a bed which utilizes unique construction enabling the patient to move himself or be moved from both a flat position to a sitting position as well as any positioning therebetween.

Another object of this invention is the provision of such a bed which utilizes a net which is adjustably tensioned across the frame of the bed, providing both comfort to the patient and adding to the flexibility of movement of the bed.

A still further object of this invention is to provide an adjustable unit of furniture such as a bed utilizing a unique spring means in association with the net described for providing comfort for the seat portion of the occupant during movements and in all positions.

Another object of this invention is to provide an adjustable unit of furniture, such as a bed, with a unique biasing means utilized in association with the net described for providing additional comfort below the knees of the occupant and facilitating an adjustment of the size of the bed so that patients of different height may be accommodated.

Yet another object of this invention is the provision of a means for attaching sheets to a unit of furniture such as a bed. One aspect of this attachment means allows a patient to disengage the sheet from the bottom of the bed without getting out of the bed. A novel means for attaching sheets to the side of a unit of furniture such as a bed is also provided, this attachment means also eliminating the hard edges often found at the sides of hospital beds.

A further object of this invention is to provide such a unit of furniture which exhibits a neat, pleasing appearance and functions smoothly and positively during operation.

These and other objects of this invention will become obvious to those skilled in the furniture and bed art upon reading the following specification in conjunction with the accompanying drawings, wherein:

FIG. 1 is a perspective view of the adjustable bed of this invention, the bed itself being shown somewhat schematically in phantom, the mounting of the various powered means in association with the bed being shown in detail;

FIG. 2 is a perspective view of the bed of this invention, the various components being shown in detail;

FIG. 3 is a cross-sectional view taken along the plane II-II of FIG. 2;

FIG. 4 is a perspective view of the foot end of the bed of this invention, showing a sheet and the means for attaching the sheet to the bottom thereof;

FIG. 5 is a side view of the bottom of the bed of this invention;

FIG. 6 is a perspective view of a portion of the bottom of the bed shown in FIG. 2, showing the relationship of the back portion to the seat portion;

FIG. 7 is a perspective view of the bottom of the bed

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in flat position, the netting being moved to show the structure therebeneath;

FIG. 8 is a view similar to FIG. 7, except that the bed has been moved to an upright, sitting position;

FIG. 9 is a cross-sectional view showing the detail of a biasing means used in association with the seat and leg portion of the bed of this invention;

FIG. 10 is a somewhat schematic side view of the bed of this invention, showing the bed in a flat position and the various powered means associated therewith in phantom;

FIG. 11 is a side view somewhat similar to FIG. 10, the bed being shown in an upright, seating position; and

FIG. 12 is an end view of the bed showing the movement thereof when rocked from side to side.

Briefly, this invention relates to an adjustable bed comprising a base, a back portion, a seat portion and a leg portion. The back portion is pivotally secured to the seat portion and the seat portion is pivotally secured to the leg portion. A net is adjustably secured to and extends across the back, seat and leg portions for supporting a patient thereon. One of these portions is pivotally secured to the base and powered means are provided for moving the portions relative to one another and the base.

In a more limited aspect of this invention, a tensioning means is operably secured between the net and adjacent ends of the back and seat portions of the bed (or other unit of furniture) for holding the net in position during movement thereof. Further, a biasing means is operably secured between adjacent ends of the seat and the leg portions, the biasing means positioned below the net generally midway between the sides of the seat and leg portions and biasing the net upwardly. In addition, an elongated member is secured along the edges of the furniture unit, the elongated member having at least one slit extending generally along its length with the mouth of the slit normally closed and requiring force to be biased open, whereby a sheet may be forceably inserted into and retained within the slit. Also, a rail member is provided at its bottom whereby a sheet with a plurality of loops along its bottom edge may be secured thereto, enabling the occupant to flip the sheet and slide the loops along the rail member to one side and thus move the sheet from the bottom of the bed.

Referring more specifically to the drawings, the reference numeral 1 (FIGS. 1 and 2) designates the adjustable bed of this invention. It is to be specifically understood that certain aspects of this invention may be utilized in units of furniture other than beds and consequently these aspects of the invention are in no way to be construed as being limited only to beds. In the embodiment shown, the bed 1 includes a base 2, a supporting member 3, a back portion 4, a seat portion 5 and a leg portion 6. The interrelation of these components, together with their associated structure, will now be explained in detail.

The base 2 includes an enlarged platform 10 having wheels 11 mounted at the bottom thereof to provide mobility for the entire bed unit. The platform 10 is of sufficient size and weight such that the bed is properly supported during all its movements and in all of its positions. A pair of legs 12 extend upwardly from the platform 10, the supporting member 3 pivotally secured therebetween. The supporting member 3 includes a pair of generally V-shaped side walls 15, these side walls joined together by means of a front wall 16. The lower portions of the side walls 15 are pivotally secured between the upstanding legs 12 for pivotal movement about the points 13. An L-shaped brace 17 is mounted between the side walls 15 rearwardly of the front wall 16, the purpose of which will be explained hereinafter.

The back portion 4 is mounted on the supporting member 3 (FIGS. 1, 2, 6 and 12). The back portion 4 is a shell-like member including side flanges 20, downwardly sloping side walls 21 and a lower boxlike portion 22. The lower portion 22 of the back portion 4 envelops the

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supporting member 3 and means are provided for pivotally securing this lower boxlike portion thereto for rocking movement. Cross members 23 and 24 of the boxlike portion are pivotally secured at points 25 and 26 to the front wall 16 (FIG. 6) of supporting member 3 and a back brace 18 (FIGS. 1 and 12) respectively. Thus, the back portion 4 is free to rock from side to side with respect to the supporting member as shown in FIG. 12.

Pivotally secured to the back portion 4 by means of the hinged connections 30 is the shell-like seat portion 5 (FIGS. 2 and 10). The seat portion 5 includes side flanges 31 inwardly and downwardly sloping side walls 32 and a bottom 33. Pivotally secured to the seat portion 5 by means of the hinged connections 35 is the shell-like leg portion 6. The leg portion 6 includes side flanges 36, downwardly and inwardly sloping side walls 37 and a bottom 38. It will be noted that the leg portion 6 is longitudinally movable with respect to the seat portion 5 and the seat portion 5 is longitudinally movable with respect to the back portion 4. Since the back portion 4 is mounted on the supporting member 3 such that it is free to rock from side to side, the seat and leg portions 5 and 6 will rock from side to side with the back portion 4. Further, since the supporting member 3 is pivotally secured to the base 2, the back portion 4 and thus the seat and leg portions are also movable longitudinally with respect to the base 2.

Powered means are provided on the bed 1 so that the patient has complete control of the bed. These powered means are shown best in FIG. 1. The first powered means comprises a motor 40 secured to a mounting shaft 41 which is pivotally secured between the front wall 16 and the L-shaped brace 17 of the supporting member 3. The motor 40 drives a first gear 42 which in turn drives a second gear 43. The second gear 43 is fixed to the mounting shaft 41 for rotatable movement with respect thereto. A threaded rod 44 extends through a threaded connection in the second gear 43, one end 45 thereof being pivotally secured to the underside of the bottom of the lower boxlike portion 22 of the back portion 4. It will be seen that as the motor 40 drives the first gear 42, the second gear is rotated which in turn moves the threaded rod 44 along a line defined by its longitudinal axis. As the threaded rod 44 moves in opposite directions, the back portion 4 is rocked from side to side as shown in FIG. 12. Since the mounting shaft 41 is pivotally mounted within the supporting member 3, the motor and gears are given the necessary freedom of movement to accomplish this rocking motion.

A second motor 50 is secured to a mounting shaft 51 which is pivotally secured between the side walls 15 of the supporting member 3. The motor 50 drives a first gear 52, which in turn drives a second gear 53, the second gear attached in association with the mounting shaft 51 such that the gear is free for rotation. Extending through the second gear 53 by means of a threaded connection is a threaded rod 54, one end thereof being pivotally connected at 55 to the bottom 33 of seat portion 5 (FIGS. 1 and 6). An opening 56 is provided in the front wall 16 of the supporting member 3 to accommodate the threaded rod 54. It will be seen that as the motor 50 drives the first and second gears 52 and 53, the threaded rod 54 will move along a line defined by its longitudinal axis and pivot the seat portion 5 with respect to the back portion 4 about the hinged connections 30. Thus, relative longitudinal movement is provided between the back portion 4 and the seat portion 5, the pivotal mounting shaft 51 providing the necessary freedom of movement for this relative motion.

A motor 60 is secured to the mounting shaft 61 which is pivotally secured between the side walls 32 of the seat portion 5. The motor 60 drives a first gear 62 which in turn drives a second gear 63, the second gear being secured to the mounting shaft 61 such that it is free to rotate with respect thereto. Threaded through the second gear 63 is a threaded rod 64 having one end thereof

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pivotaly secured at 65 to the bottom 38 of the leg portion 6. Thus, as the motor 60 drives the first and second gears 62 and 63, the threaded rod 64 moves along a line defined by the longitudinal axis. This movement of the rod 64 pivots the leg portion 6 with respect to the seat portion 5 about the hinged connections 35.

A motor 70 is mounted on the mounting shaft 71, the mounting shaft being pivotaly secured between the up-standing legs 12 of the base 2. The motor 70 drives a first gear 72, which in turn drives a second gear 73, the second gear mounted on the mounting shaft 71 and free to rotate with respect thereto. By means of a threaded connection, a threaded rod 74 extends through the second gear 73, one end thereof being pivotaly secured to a shaft 76 pivotaly secured between the lower ends of the V-shaped side walls 15 of the supporting member 3. It will be seen that as the motor 70 drives the first and second gears 72 and 73, the threaded rod 74 will move along the line defined by its longitudinal axis. As the rod 74 so moves, the shaft 76 and thus the supporting member 3 are pivoted about the base 2 at pivot points 13, thus pivoting the entire bed 1. The pivotal securement of the mounting shaft 71 and the shaft 76 allow freedom of movement for this relative motion.

A motor 80 is mounted on the mounting shaft 81, the mounting shaft 81 pivotaly secured between a pair of supports 81a affixed within the back portion 4. The motor 80 drives a first gear 82 which in turn drives a second gear 83. Extending through the second gear 83 by means of a threaded connection is the threaded rod 84, one end thereof being secured to the pivotal member 85. The pivotal member 85 is in turn secured to the frame 86 which extends around the back portion 4 and is adapted to support a pillow 87. It will be seen that as the motor 80 drives the first and second gears 82 and 83, the threaded rod 84 moves along a line defined by its longitudinal axis. This in turn moves the pivotal member 85 which in turn pivots the frame 86. Movement of the frame 86 provides movement of the pillow 87 for proper head comfort of the occupant of the bed.

Each of the motors 40, 50, 60, 70 and 80 is controlled by the patient by suitable means, such as simple spring return, center off switches 90 mounted within the control box 91 which is secured to the bed 1 adjacent the patient's normal hand position (FIG. 2). Thus, if the patient has only the use of one hand, by pressing one of the appropriate switches 90 he is able to completely control the operation of the bed. Two extreme positions of the bed 1 are shown in FIGS. 10 and 11, FIG. 10 showing the bed positioned for supporting a patient in horizontal position. Upon pressing the proper switch 90 to operate the motor 70, the entire bed is pivoted about the base 2. Upon the movement of another switch to operate the motor 50, the seat portion 5 is pivoted with respect to the back portion 4. The movement of a third switch to operate the motor 60 pivots the leg portion 6 with respect to the seat portion 5. Upon manipulation of the remaining two switches, the patient's head may be adjusted through movement of the frame 86 (motor 80), or the bed may be rocked from side to side (motor 40). It will thus be noted that the bed may be moved all the way to the sitting position shown in FIG. 11.

Secured to the side flanges 20, 31 and 36 of the back portion 4, the seat portion 5 and the leg portion 6 respectively is a net 95 (FIG. 2). This net 95 is preferably of a nylon or Dacron knit net fabric, but it should be understood the invention is not limited thereto. It has been found that such net fabrics exhibit unusual comfort factors for a person supported thereby. The use of this net material greatly minimizes the pressure points on a person's body and thereby significantly increases comfort. This is of extreme importance for people who are either bedridden or confined to wheelchairs. In addition, such material is advantageous in that it provides a ventilated surface, is tough and wear resistant, can be easily

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cleaned or laundeed and sterilized and will lend itself especially well to adjustment or motion of the bed 1 of this invention. This net 95 is adjustably secured to the back, seat and leg portions of the bed by a plurality of tensioning means 100 (FIG. 3). These tensioning means 100 are positioned within recesses 101 provided in side flanges 20, 31 and 36 of back portion 4, seat portion 5 and the leg portion 6 respectively. In the embodiment shown, each tensioning means includes a threaded pin 102 movably embedded within holes 103 and 204 in the ends of the recess 101, the hole 103 of each tensioning means being exposed to the outer edges of side flanges 20, 31 and 36 upon removal of sheet retaining means 110 to be explained hereinafter. A nut 105 threadably envelopes and engages the threaded pin 102 and is movable within the recess 101, a fastener button 106 being affixed to the top of the movable nut 105. The net 95 is hooked behind and under the button 106 of each tensioning means 100 about the perimeter of the bed 1. Upon rotating any pin 102 of any tensioning means 100 (by means of inserting a screw driver into the slot 107 at the exposed end of the pin) the nut 105 moves along the pin 102 within the recess 101. The tension on the net 95 may thus be varied throughout and along its perimeter. By simply rotating the pins 102 in the various tensioning means 100, the exact amount of tension necessary for the proper comfort of patients of varying size and weight can be obtained.

Attached to each side of the bed 1 along the net 95 is a sheet retaining means 110 (FIGS. 2 and 3). The sheet retaining means 110 include a soft, resilient core of foam rubber or similar materials 111, enveloped by a suitable cover 112. A leg 113 depends from the elongated sheet retaining means 110 and includes a plurality of snaps 113a along its length, which affixes it to snap receiving means 113b in side edges of the side flanges 20, 31 and 36 of the back portion 4, the seat portion 5 and the leg portion 6 respectively. A pair of slits 114 and 115 are formed along the side of the sheet retaining means 110. Each slit is formed such that it is normally closed; however, due to the resilient core the mouth of each slit may be forced open. It will be noted that a bottom sheet may be inserted into the slit 114 of each sheet retaining means 110, the sheet held firmly along both of its side edges and covering the net 95. A top sheet may then be inserted into slit 115 of each sheet retaining means, again held firmly along each of its sides. Not only does the sheet retaining means 110 provide an improved and simplified means of affixing and retaining sheets to a bed, it also eliminates the hard edges existing along the sides of the bed.

When the seat portion 5 is moved relative to the back portion 4, a means 12 (FIG. 6) is provided to assure that the net 95 will remain properly positioned to provide ideal comfort for the bed's occupant. The means 120 includes a plurality of coil springs 121 secured at one of their ends to the end of the back portion 4 and at their other ends to a piece of netting 96 secured to the net 95 at the juncture of the back and seat portions. A plurality of coil springs 122 are secured at one of their ends along the end of seat portion 5 adjacent the back portion 4, the other ends of the coil springs 122 being secured to the added piece of netting 96. When the seat portion 5 is moved so that it is positioned angularly with respect to the back portion 4, the net 95 ordinarily tends to be distorted and provide pressure against the seat portion of the occupant. However, the springs 121 and 122 of the means 120 assure that the net is held in position at the juncture of the seat portion and the back portion so that the same comfort is provided when the occupant utilizes the bed in sitting position as shown in FIG. 11.

FIGS. 7, 8 and 9 show a biasing means 130 operably secured between the bottom 33 of the seat portion 5 and the bottom 38 of the leg portion 6. This biasing means is comprised of a spring member 131 surrounded by a

soft, resilient material such as foam rubber 132 and enveloped with a suitable covering 133. One end of the biasing means 130 is detachably and adjustably secured to the bottom 35 of the seat portion 4. In the embodiment of the invention shown, a button 134 is provided for insertion into any one of several openings 135. It will be noted that the biasing means 130 biases the net 95 upwardly to a slight degree when the bed is in flattened position (FIGS. 2 and 7). This biasing action is increased as the leg portion 6 is moved with respect to the seat portion 5 as shown in FIG. 8. Thus, in a sitting position, the net is prevented from dipping and is rather held outwardly to provide natural depressions 97 in the net 95 for the legs of the occupant to rest in (FIG. 2). As the biasing means 130 is adjusted to apply more pressure (FIG. 9) to the net 95, a taller person may be accommodated since the grooves formed by the net for supporting the legs are extended forwardly. Thus, when the size of the patient who is to occupy the bed is determined, the biasing means 130 is adjusted accordingly so that when the bed is in a seating position the thighs and calves may be fully and properly supported.

At the bottom of the bed 1 a footrest 140 is adjustably mounted (FIGS. 2, 5 and 6). The footrest 140 is of a soft, resilient material and includes a recessed area or well 141 for receiving the feet of the bed's occupant. This prevents a patient's feet from falling sideways when the patient has no control over them. A frame 142 is affixed to the footrest 140, the ends 143 thereof positioned at the sides of the leg portion 6 of the bed 1. Secured to the underside of the side flanges 36 of the leg portion 6 are brackets 144 supporting an adjustment bar 145. The adjustment bar 145 includes a plurality of openings 146 along its length, the adjustment bar being slidably received within the end 143 of the frame 142. By suitable means, such as a spring loaded pin 147, the footrest 140 may be adjusted to facilitate patients of different height.

Mounted at the bottom of the footrest 140 is a bar 150 which is bent to the general configuration of the footrest 140. One end of the bar 150 may be detached from the footrest 140 by removing it from the connection 151. According to one aspect of this invention, a sheet 152 is provided having a plurality of loops 153 along its lower edge. Upon removal of one end of the bar 150 from its connection 151 to the footrest 140, the loops 153 of sheet 152 may be threaded thereon. This affixes the sheet 152 to the bottom of the bed 1. The sheet so affixed is the sheet which normally covers the patient. In the event the patient has moved the bed to a sitting position, and does not wish to be covered by the sheet, by merely grasping the sheet from his sitting position and flipping it to one side, the loops 153 will slide along the bar 150 and collect at one end thereof. Thus, the patient has removed the sheet from his feet while in a sitting position. In the event he wishes to re-cover himself with the sheet, a flip of the sheet in the other direction will cause the loops 153 to space themselves once again along the bar 150, thus returning the sheet to its normal attachment along the bottom of the bed.

It will now be seen that this invention has disclosed an adjustable bed which the occupant is able to completely control by means of fingering the switches 90 mounted in the control box 91. Thus, the patient can constantly adjust the bed to his particular requirements and comfort, eliminating constant attention by an attendant. The netting 95, the tension of which may be varied by means of adjustment of any or all of the tensioning means 100 assures proper comfort at all times. The sheets are held along their edges firmly in place by means of the sheet retaining means 110, which also eliminates hard edges along the sides of the bed. The tensioning means 120 and the biasing means 130 assure that the netting is always properly positioned during all motions of the bed. Further, the biasing means 130 may

be adjusted to accommodate occupants of different height. The bottom or footrest 140 may be adjusted to accommodate patients of different height. Further, the novel means of attaching a sheet to the bottom of the bed enables the patient to even remove or replace the sheet over his body.

While only certain embodiments of this invention have been shown and described, it may be possible to practice the invention through the utilization of certain other embodiments without departing from the spirit and scope thereof. Such other embodiments are to be considered a part of this invention unless the following claims specifically state otherwise.

I claim:

1. An adjustable bed, comprising: a base having a pair of upstanding legs; a supporting member pivotally secured to said legs for movement about a first axis defined by said pivotal securement; a back shell pivotally secured to said supporting member for movement about a second axis defined by said pivotal securement, said second axis lying above and generally transverse with respect to said first axis; a seat shell pivotally secured to said back shell for longitudinal movement with respect to said back shell; a leg shell pivotally secured to said seat shell for longitudinal movement with respect to said seat shell and said back shell; a net secured along its edges to and extending across each of said back, seat and leg shells; a first powered means mounted between said legs for movement of said supporting member relative to said base; a second powered means mounted on said supporting member for movement of said back shell relative to said supporting member; a third powered means mounted on said supporting member for movement of said seat shell relative to said back shell; and a fourth powered means mounted on said seat shell for movement of said leg shell relative to said seat shell.

2. An adjustable bed, comprising: a base having a pair of upstanding legs; a supporting member pivotally secured to said legs for movement about a first axis defined by said pivotal securement; a back shell pivotally secured to said supporting member for movement about a second axis defined by said pivotal securement, said second axis lying above and generally transverse with respect to said first axis; a seat shell pivotally secured to said back shell for longitudinal movement with respect to said back shell; a leg shell pivotally secured to said seat shell for longitudinal movement with respect to said seat shell and said back shell; a net secured along its edges to and extending across each of said back, seat and leg shells; a plurality of tensioning springs operably secured between said net and the adjacent ends of said back and seat shells and normally pulling said net downwardly; a first powered means mounted between said legs for movement of said supporting member relative to said base; a second powered means mounted on said supporting member for movement of said back shell relative to said supporting member; a third powered means mounted on said supporting member for movement of said seat shell relative to said back shell; and a fourth powered means mounted on said seat shell for movement of said leg shell relative to said seat shell.

3. An adjustable bed, comprising: a base having a pair of upstanding legs; a supporting member pivotally secured to said legs for movement about a first axis defined by said pivotal securement; a back shell pivotally secured to said supporting member for movement about a second axis defined by said pivotal securement; said second axis lying above and generally transverse with respect to said first axis; a seat shell pivotally secured to said back shell for longitudinal movement with respect to said back shell; a leg shell pivotally secured to said seat shell for longitudinal movement with respect to said seat shell and said back shell; a net secured along its edges to and extending across each of said back, seat and leg

shells; a biasing means operably secured between adjacent ends of said seat and leg shells, said biasing means positioned below said net generally midway between the sides of said seat and leg shells and normally biasing said net upwardly; a first powered means mounted between said legs for movement of said supporting member relative to said base; a second powered means mounted on said supporting member for movement of said back shell relative to said supporting member; a third powered means mounted on said supporting member for movement of said seat shell relative to said back shell; and a fourth powered means mounted on said seat shell for movement of said leg shell relative to said seat shell.

4. An adjustable bed, comprising: a base having a pair of upstanding legs; a supporting member pivotally secured to said legs for movement about a first axis defined by said pivotal securement; a back shell pivotally secured to said supporting member for movement about a second axis defined by said pivotal securement; said second axis lying above and generally transverse with respect to said first axis; a seat shell pivotally secured to said back shell for longitudinal movement with respect to said back shell; a leg shell pivotally secured to said seat shell for longitudinal movement with respect to said seat shell and said back shell; a net secured along its edges to and extending across each of said back, seat and leg shells; a plurality of tensioning springs operably secured between said net and the adjacent ends of said back and seat shells and normally pulling said net downwardly; a biasing means operably secured between adjacent ends of said seat and leg shells, said biasing means positioned below said net generally midway between the sides of said seat and leg shells and normally biasing said net upwardly; a first powered means mounted between said legs for movement of said supporting member relative to said base; a second powered means mounted on said supporting member for movement of said back shell relative to said supporting member; a third powered means mounted on said supporting member for movement of said seat shell relative to said back shell; and a fourth powered means mounted on said seat shell for movement of said leg shell relative to said seat shell.

5. An adjustable bed, comprising: a base having a pair of upstanding legs; a supporting member pivotally secured to said legs for movement about a first axis defined by said pivotal securement; a back shell pivotally secured to said supporting member for movement about a second axis defined by said pivotal securement, said second axis lying above and generally transverse with respect to said first axis; a seat shell pivotally secured to said back shell for longitudinal movement with respect to said back shell; a leg shell pivotally secured to said seat shell for longitudinal movement with respect to said seat shell and said back shell; a net secured under tension along its edges to and extending across each of said back, seat and leg shells; means for varying the tension on said net; a plurality of tensioning springs operably secured between said net and the adjacent ends of said back and seat shells and normally pulling said net downwardly; a biasing means operably secured between adjacent ends of said seat and leg shells, said biasing means positioned below said net generally midway between the sides of said seat and leg shells and normally biasing said net upwardly; a first powered means mounted between said legs for movement of said supporting member relative to said base; a second powered means mounted on said supporting member for movement of said back shell relative to said supporting member; a third powered means mounted on said supporting member for movement of said seat shell relative to said back shell; and a fourth powered means mounted on said seat shell for movement of said leg shell relative to said seat shell.

6. An adjustable bed, comprising: a base having a pair of upstanding legs; a supporting member pivotally secured to said legs for movement about a first axis defined by said

pivotal securement; a back shell pivotally secured to said supporting member for movement about a second axis defined by said pivotal securement, said second axis lying above and generally transverse with respect to said first axis; a seat shell pivotally secured to said back shell for longitudinal movement with respect to said back shell; a leg shell pivotally secured to said seat shell for longitudinal movement with respect to said seat shell and said back shell; a headrest pivotally secured to said back shell; a net adjustably secured under tension along its edges to and extending across each of said back, seat and leg shells; a plurality of tensioning springs operably secured between said net and the adjacent ends of said back and seat shells and normally pulling said net downwardly; a biasing means operably secured between adjacent ends of said seat and leg shells, said biasing means positioned below said net generally midway between the sides of said seat and leg shells and normally biasing said net upwardly; a first powered means mounted between said legs for movement of said supporting member relative to said base; a second powered means mounted on said supporting member for movement of said back shell relative to said supporting member; a third powered means mounted on said supporting member for movement of said seat shell relative to said back shell; a fourth powered means mounted on said seat shell for movement of said leg shell relative to said seat shell; and a fifth powered means mounted on said back shell for movement of said headrest relative to said back shell.

7. An adjustable bed, comprising: a base having a pair of upstanding legs; a supporting member pivotally secured to said legs for movement about a first axis defined by said pivotal securement; a back shell pivotally secured to said supporting member for movement about a second axis defined by said pivotal securement, said second axis lying above and generally transverse with respect to said first axis; a seat shell pivotally secured to said back shell for longitudinal movement with respect to said back shell; a leg shell pivotally secured to said seat shell for longitudinal movement with respect to said seat shell and said back shell; a headrest pivotally secured to said back shell; a net adjustably secured under tension along its edges to and extending across each of said back, seat and leg shells; a plurality of tensioning springs operably secured between said net and the adjacent ends of said back and seat shells and normally pulling said net downwardly; a biasing means operably secured between adjacent ends of said seat and leg shells, said biasing means positioned below said net generally midway between the sides of said seat and leg shells and normally biasing said net upwardly; an adjustable footrest extending perpendicularly upward from the extreme end of said leg shell; a depression positioned generally in the middle of said footrest; a first powered means mounted between said legs for movement of said supporting member relative to said base; a second powered means mounted on said supporting member for movement of said back shell relative to said supporting member; a third powered means mounted on said supporting member for movement of said seat shell relative to said back shell; a fourth powered means mounted on said seat shell for movement of said leg shell relative to said seat shell; and a fifth powered means mounted on said back shell for movement of said headrest relative to said back shell.

8. An adjustable bed as defined in claim 1, said bed including a means for attaching sheets along its edges, said means comprising: an elongated flexible member detachably secured along the edge of the bed; said member including an inner resilient core; said elongated member having at least one slit extending generally along its outer side edge; and the fourth of said slit normally closed and requiring force to be biased open, whereby said sheet may be forcibly inserted into and retained within said slit.

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