Dec. 27, 1966 J. F. OHRBERG 3,293,667

ADJUSTABLE, AMBULATING, TILTING AND RECLINING BED

Filed Oct. 20, 1965 2 Sheets-Sheet 1

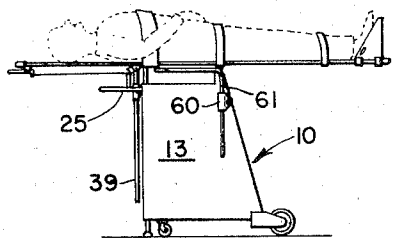


FIG. 1

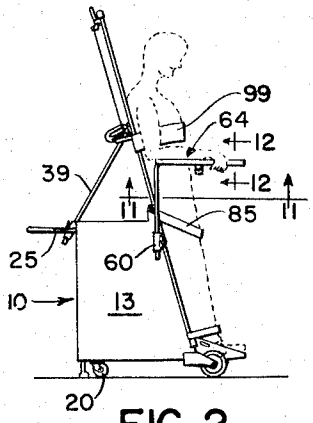


FIG. 2

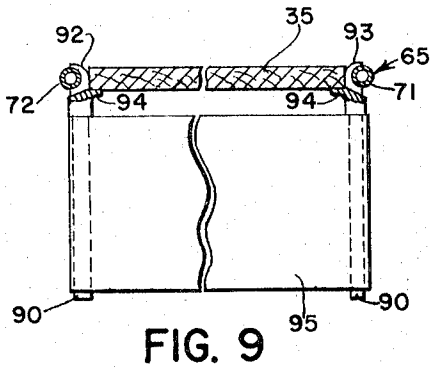


FIG. 9

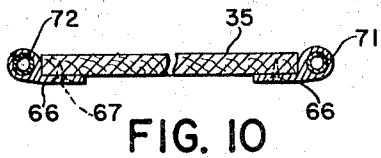


FIG. 10

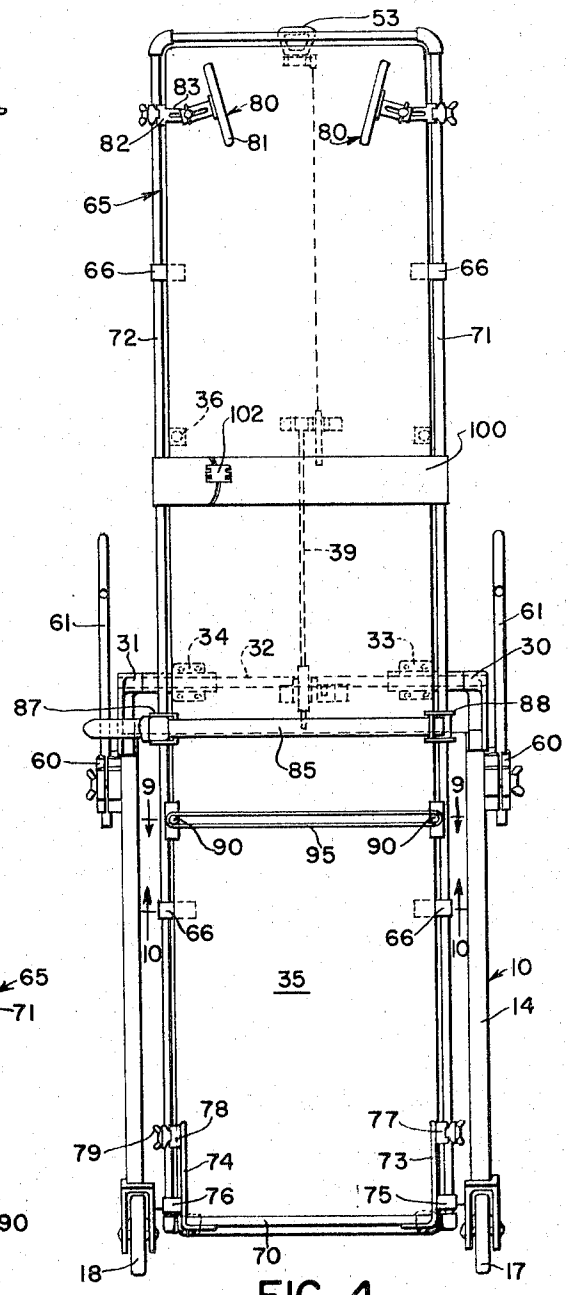


FIG. 4

INVENTOR.
JOHN F. OHRBERG

BY William A Murray

ATTORNEY

Dec. 27, 1966 J. F. OHRBERG 3,293,667

ADJUSTABLE, AMBULATING, TILTING AND RECLINING BED

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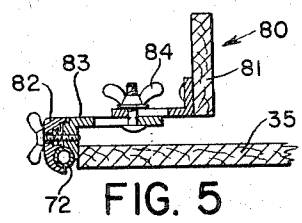


FIG. 5

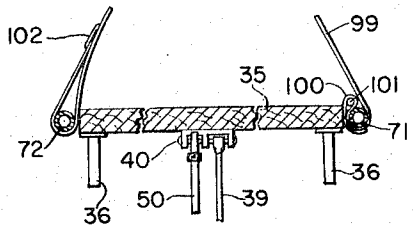


FIG. 6

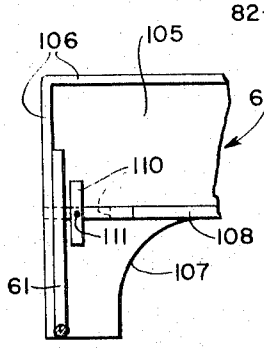


FIG. 11

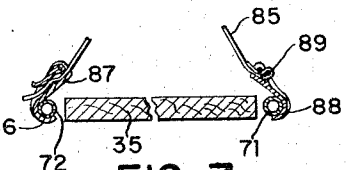


FIG. 7

FIG. 3

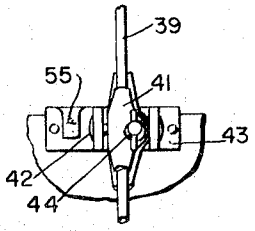


FIG. 8

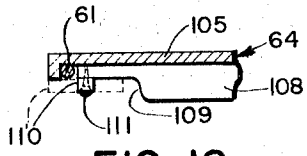


FIG. 12

INVENTOR.
JOHN F. OHRBERG

BY William A. Murray

ATTORNEY

United States Patent Office

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ADJUSTABLE, AMBULATING, TILTING AND RECLINING BED

John F. Ohrberg, 316 5th Ave., Moline, Ill. 60610

Filed Oct. 20, 1965, Ser. No. 498,717
15 Claims. (Cl. 5—62)

This invention relates to an adjustable, ambulating, tilting and reclining platform or bed provided for the comfort and relaxation of a person afflicted with cerebral palsy, muscular ailment, spastics, and for those in casts or braces than cannot be made comfortable in wheel chairs.

In many instances patients having ailments of the nature listed above are unable to sit or to sit for long lengths of time. Often their body parts will not support other body parts in a normal manner. Also, in many instances certain muscles and/or nerves have weakened or deteriorated to an extent that they can no longer support or control portions of the body. Consequently it is desirable to provide a bed or platform that completely supports all the body parts so that the patient may be raised to and from a standing or vertical position and while in such a position be adequately protected and supported with a minimum amount of supervision.

With the above in mind, it is the primary object of the invention to provide a supporting structure for an invalid that provides adequate protection for a patient while he is reclined on a supporting platform that may be inclined to a substantial vertical position, and to further provide means on the platform that supports individual body parts on the platform.

Specifically it is an object of the invention to provide a cabinet supported on a mobile base and having an inclined front side and a horizontal top side, and a transverse hinge at the juncture of the two sides. A body supporting platform is supported on the hinge and may be swung thereon to various inclined positions as well as the horizontal position. Lock means is provided on the platform and cabinet to positively lock the platform in any selected position.

The platform is provided with a peripheral rod just outwardly of its edges and various and numerous body supporting and retaining members are carried on the rod. The members are adaptable for movement along the rod so that they may be adjusted to accommodate various parts of the body as well as various body sizes.

Other objects and advantages of the invention will become apparent to those skilled in the art as the nature of the invention is better understood from the description and as shown in the accompanying drawings.

FIG. 1 is a side view of the reclining platform with a patient supported thereon.

FIG. 2 is side view similar to FIG. 1 and showing the platform in a different position.

FIG. 3 is an enlarged side view of the platform.

FIG. 4 is a front view of the platform.

FIG. 5 is an enlarged sectional view taken substantially along the line 5—5 of FIG. 3.

FIG. 6 is an enlarged sectional view taken substantially along the line 6—6 of FIG. 3.

FIG. 7 is an enlarged sectional view taken along the line 7—7 of FIG. 3.

FIG. 8 is an enlarged rear view of a portion of a latch mechanism taken along the line 8—8 of FIG. 3.

FIG. 9 is an enlarged sectional view taken along the line 9—9 of FIG. 4.

FIG. 10 is an enlarged sectional view taken along the line 10—10 of FIG. 4.

FIGS. 11 and 12 are enlarged sectional views taken along the lines 11—11 and 12—12 respectively of FIG. 2.

The patient supporting device includes a main support in the form of a cabinet 10 having a floor portion 11, left

and right hand upright sides 12, 13, and an inclined transverse front side 14 that interconnects the front edges of the sides 12, 13. An upper horizontal shelf or ledge 15 connects the upper edges of the sides 12–14 and serves as a top of the cabinet. A mid-shelf 16 extends between and is connected to the sides 12–14 intermediate the floor 11 and top 15. The cabinet 10 is generally open at its rear for access thereto and is utilized for storing attachable parts.

The cabinet 10 receives mobility by front wheels 17, 18 fixed to the cabinet at the front lower corners, and rear wheels 19, 20 fixed to the cabinet at the rear lower corners. A braking device is provided at the rear lower corners and includes a pair of upright rods 21 supported for vertical movement and connected at their lower ends to vertical shafts 22 supported for vertical movement in vertical guides 23 that are fixed to the respective side walls 12, 13 at their lower rear corners. The lower ends of the shafts 22 have rubber tips 24 that frictionally engage the floor. A pair of levers 25 is supported on transverse horizontal pivots 26 and have a crossbar interjoining their rear ends so that both the levers and tips 24 are raised in unison. The levers are on the side walls 12, 13 for vertical movement at the top and rear of the cabinet 10, the levers being provided for gripping and pushing by a nurse or other person caring for a patient. The upper ends of the rods 21 connect to the levers 25 so that upon raising the levers the tips 24 are raised from the floor. The weight of the levers 25, when released, in conjunction with the weights of the rods 21 and shafts 22 creates sufficient downward load to maintain a strong frictional resistance to movement between the tips 24 and the floor.

A pair of transversely aligned hinge brackets 30, 31 is fixed to and projects upwardly from the cabinet 10 at the front uppen corner thereof or at the juncture between the inclined side 14 and tip 15. The brackets carry a transverse horizontal hinge rod 32 on which is carried a pair of hinge plates 33, 34 that is bolted or fixed to the underside of a body supporting platform 35 the midportion thereof. The platform 35 is therefore permitted vertical movement between a vertical position, although slightly inclined, as shown in FIGS. 2 and 3, and a horizontal position as shown in FIG. 1. A pair of abutment rods 36 depend from the underside of the platform so as to engage the top 15 adjacent its rear transverse edge and when in engagement therewith supports the platform in a substantially horizontal position.

Locking means are provided between the platform 35 and cabinet 10 and includes in one part a rod 39 pivoted at 40 to the underside of the platform 35 and in a second part of a clamp 41 pivoted at 42 to a bracket 43 fixed to the rear edge of the top 15. The clamp 41 receives and serves as a guide for the rod 39. A clamping bolt 44 may be adjusted to fix the rod 39, and consequently the angle of inclination of the lateral inclination of the platform 35 to the desired location.

A latching device is further provided to lock or latch the platform in its horizontal position and includes a latch element 50 pivoted on the pin 40 to the underside of the platform. Connected to the latch element 50 is a control rod 52 that is guided for lengthwise movement on the underside of the platform 35 and terminates adjacent the upper or head end of the platform. The rod has a finger grip 53 at its end for convenience of an operator. A spring 54 extends between the element 50 and platform 35 for biasing it toward the lower end of the platform. Provided on the bracket 43 is a latch catch or abutment 55 that is complementary to the latch element 50 and engages it as the platform approaches the horizontal. In operation, therefore, the spring 54 will cause the latch element 50 to seat beneath the latch catch 55 when the

platform is in the horizontal position. The rod **52** may be pulled for purposes of releasing the latch.

Provided on the cabinet sides **12, 13** are vertical guides **60** that receive the vertical legs of a pair of L-shaped rods **61, 62**. The horizontal legs are adapted to extend above and forwardly of the platform when the latter is in either its respective horizontal and vertical positions. Identical marking indicia **63** is alongside the vertical legs so that the horizontal leg portions may be adjusted to identical heights. The horizontal portions serve as basic supports for such items as a table **64** (FIG. 2) that require a substantial horizontal disposition. The rods **61, 62** are clamped against movement in the guides **60**.

The platform **35** is of rectangular shape and is bordered by a continuous pipe or rod **65** means spacedly outwardly of and adjacent the edges of the platform. The pipe **65** is supported on the platform by spaced apart brackets **66** that are screwed at **67** to the underside of the platform adjacent the edges and extend outwardly thereon and rigidly mount the pipe **65** on the platform **35**.

Carried on the pipe **65** is a series of body supporting parts that project from the pipe over the upper surface of the platform. One of the body supporting parts is a footrest that includes a rigid plate **70** projecting perpendicularly from the upper surface of the platform **35** and across the platform. The plate is supported on side rods **71, 72**, which are longitudinal sections of the pipe **65**, by a pair of end brackets **73, 74** having lower tubular portions **75, 76** riding on the pipe or rod sections **71, 72** and upper clamps **77, 78** on the rods **71, 72** that may lock the foot support at the desired position on the platform **35**. Thumb nuts **79** are used to tighten the clamps **77, 78** on the rods **71, 72**. Small slots are provided in the end plates or brackets **73, 74** to receive ends of a fabric wrap that may be passed over the ankles of a patient. As is clearly obvious, the foot support may be adjusted along the rods **71, 72** to the desired position in accordance with the height of the patient.

A second body supporting part is a plate device **80** composed in part of a small plate, in a preferred form of a short wooden block **81**, that lies in a normal relation to the platform surface and is carried on a two-piece clamp **82** that is adjustable along the rod section. An adjustable two-piece bracket **83** connects the clamp **82** to the block **81** and the bracket **83** is adapted for articulation so that the two pieces may be adjusted both lengthwise and angularly relative to one another. A clamping bolt **84** is provided to lock the bracket **83** against articulation. The plate devices **80** normally operate in pairs with their being disposed on opposite sides of the body. In the positions as shown in FIGS. 3 and 4, they will engage and support the sides of the head. In a lower position along the rods **71, 72** the plate devices **80** may be turned on the brackets **83** so that the long dimension of the plates **81** extend from the face of the platform and consequently serves as arm rests for a patient.

A further body supporting means is in the form of a flexible fabric or tape **85** that is adapted to extend over the body. One end of the tape **85** is connected to a hook device **88** that is adapted to sit behind one of the rods **71**. A bite is provided in the fabric **85** and a pin **89** inserted to comfortably engage a body part. Also, as tension is aptends through a buckle **87** which in turn is fixed to a second hook **86**. The latter is adapted to hook or sit behind the other track **72**. Takeup of the tape may be made through the buckle **87** until the tape is sufficiently tight to comfortably engage a body part. Also, as tension is applied to the tape, the hooks **86, 88** are locked behind the rods **71, 72** so that they will not accidentally disengage the rods.

A further form of body supporting means includes a pair of rods **90** that project forwardly from opposite edges of the platform **35** and are supported in cantelever fashion from bifurcated arcuate lugs **92, 93** that hook behind the rods **71, 72** and an inwardly extending flat surfaced lug **94** that bears against the edge and top surface of the plate or platform **35**. A roll of fabric **95** extends between the rods **90** and is disposed substantially perpendicular to the platform **35** and may be utilized as a soft undersupport of a patient's feet or may be utilized for sitting purposes by a patient. As weight is applied to the fabric **95** the lugs **92–94** bite into the rods **71, 72** and the platform **35** and frictionally holds the rods **90** against movement. The bifurcated lugs **92, 93** may also be placed on opposite sides of the connecting brackets **66** between the platform **35** and pipe **65** so as to lock it against any movement.

A further form of body supporting means is a relatively wide fabric binder **99** that extend across a patient's body and is connected to the rods **70, 71** in a manner best shown in FIG. 6. The fabric has a sewn loop **100** in one end thereof that extends in the spacing between the rod **71** and edge of the platform **35**. A pin **101** extends through the loop **100** above the rod and platform so as to lock the loop end of the fabric **99** on the rod. The fabric binder **99** extends outwardly of an around the rod **71** and then upwardly and over the patient to the opposite rod **72**. The opposite end of the binder is looped around rod **72** and connected to itself by a conventional type fabric connector **102**.

It should be recognized that all of the body supporting parts have the adaptability of adjustment along the rods **71, 72**. Also, while not shown, the body supporting parts may be supported on the transverse portion of the pipe **65** that extends across the head end of the platform **35**. Further, the pipe **65**, both at the top and along the sides operates as a hand gripper to aid in raising and lowering the platform.

Referring now to FIGS. 11 and 12, the table **64** is formed of a rectangular shaped top piece **105**, preferably of wood, with a wooden depending border board **106**. The piece **105** has an arcuate recess **107** conforming to the shape of a body so that it may fit around and relatively close to the body. The horizontal legs of the L-shaped rods **61** fit respectively between a downwardly opening notch formed on one side by the depending border **106** and on the other side by an end of transverse wooden bar **108** on the underside of the top piece **105**. Opposite ends of the bar **108** are reduced at **109**. A latching bar **110** is pivoted at **111** on the reduced end **109** of the bar **108** to swing under the rod **61** and lock the rod in the aforesaid notch and prevent accidental tipping or lifting of the table **64**.

The table **64** may be utilized as a table for reading, or arm rest, or as a tray for supporting food. Since it is supported on the cabinet **10** it will always be in a horizontal position regardless of the inclination of the platform **35**.

While the preferred form of the invention has been shown, it is recognized that other forms and variations will occur to those skilled in the art. Therefore, while the preferred form has been shown and described for the purpose of clearly and concisely illustrating the principles of the invention, it should be understood there is no intention to limit or narrow the invention beyond the broad concept set forth in the appended claims.

What is claimed is:

1. An invalid supporting structure comprising: a cabinet supported for transport on wheel elements and including a base, table top, a forward inclined side between the base and top, and a pair of fore and aft extending upright side walls joining the respective edges of the base, top and inclined side; a transverse horizontal hinge supported on the cabinet adjacent the juncture of the top and inclined side; an elongated body supporting platform supported at a midportion on the hinge to swing vertically thereon between an inclined upright position alongside and substantially at the angle of the inclined side, and a horizontal position above the top of the cabinet; means between the cabinet and platform for locking the

platform in the aforesaid positions; rod means disposed outwardly of the edges of the platform and lengthwise thereof; means supporting the rod means spacedly outwardly of and on the platform; and body supporting members supported on and for movement along the rod means and extending over the platform for engaging and supporting parts of a body lying on the platform and means on the respective upright side walls adapted to project forwardly of the platform when in its inclined position and outwardly of the respective edges of the platform for supporting a horizontally disposed member forwardly of the platform.

2. The invention defined in claim 1 further characterized by push arms pivotally supported on the cabinet for vertical movement and adjacent the top thereof and projecting rearwardly; a brake supported on the cabinet adjacent the floor for preventing movement of the cabinet on the wheel elements; and interconnecting means between the brake and push arms for releasing the brake as the push arms are moved vertically.

3. The invention defined in claim 1 in which the body supporting members are in part composed of a plate disposed longitudinally of the platform and adapted to project outwardly of the top surface and normal to the platform and to engage a side of a body part on the platform for limiting movement of the body part against sidewise motion on the platform.

4. The invention defined in claim 3 in which the plate is connected to the rod means alongside the platform by means of a clamp and an articulate linkage between the clamp and plate that permits angular adjustment of the plate in respect to the platform.

5. The invention defined in claim 1 in which part of the body supporting members includes a pair of brackets fixedly attached to the rod means on opposite sides of the platform and the brackets have rod elements extending outwardly and substantially perpendicular in respect to the platform, and a flexible body support disposed substantially perpendicular to the platform and across the platform with opposite ends adapted for connection to the rod elements.

6. The invention defined in claim 5 in which the body support is a fabric type material with ring portions at opposite ends thereof adapted to slide over the rod elements and to be suspended in catenary fashion between the rod elements.

7. The invention defined in claim 6 further characterized by the pair of brackets being adapted for adjustment lengthwise along the rod means whereby the body support may be located to support the body selectively from beneath the feet or from a sitting position beneath the buttocks.

8. The invention defined in claim 1 further characterized by a pair of vertical guides on opposite sides of the cabinet and a pair of L-shaped members having their vertical leg portions supported in the respective guides for vertical movement and their horizontal leg portions adapted to extend above the platform when it is in a horizontal position and to extend forwardly of the platform when in its inclined position; tray means adapted for support on the horizontal portions; and lock means for fixing the L-shaped members in the vertical guides at selective positions.

9. The invention defined in claim 1 in which the rod means are adjacent opposite edges of the platform and part of the body supporting means includes a fabric adapted to extend over the body and connected to the rod means with one of the connecting means including a loop in the end of the fabric extending through the spacing between the rod means and edge of the platform, and a retainer element removably carried within the loop and of a greater thickness than the aforesaid spacing for preventing the end of the fabric from being withdrawn from the spacing.

10. The invention defined in claim 1 in which the track means are rod elements alongside the edges of the platform and part of the body supporting means includes a pair of hooks adapted to hook behind the respective rod elements and a fabric retainer anchored to one of the hooks and adapted to extend over a body on the platform, and a buckle on the other of the hooks adapted to take up slack in the retainer.

11. An invalid supporting structure comprising: a box cabinet opening rearwardly and supported for transport on floor engaging wheels; a transverse horizontal hinge supported on the cabinet across its upper forward corner; an elongated body supporting platform supported at a midportion on the hinge to swing vertically thereon between upright and horizontal positions; means between the cabinet and platform for locking the platform against movement on the hinge; a pair of rods supported outwardly of the edges of the platform and lengthwise thereof; body supporting members supported on and for movement along the rods and extending over the platform for engaging and supporting parts of a body on the platform; a pair of rearwardly projecting arms pivotally supported on and adjacent the top of the cabinet for normal maneuvering of the structure on a floor; a weighted cross member connecting the rear ends of the arms; a pair of vertical rods supported on the cabinet for vertical and axial movement and having means on their lower ends for frictionally engaging a floor; and means connecting the upper ends of the rods to the respective arms.

12. An invalid supporting structure comprising: a box cabinet opening rearwardly and supported for transport on floor engaging wheels; a transverse horizontal hinge supported on the cabinet across its upper forward corner; an elongated body supporting platform having opposite longitudinal edges supported at a midportion on the hinge to swing vertically thereon between upright and horizontal positions; means between the cabinet and platform for locking the platform against movement on the hinge; body engaging members supported on the edges of the platform and extending over the platform for engaging and supporting parts of a body lying on the platform; a pair of rearwardly projecting push arms pivotally supported on and adjacent the top of the cabinet at opposite sides thereof; a pair of vertical rods supported on the cabinet for vertical movement and having means on their lower ends for frictionally engaging a floor; and means connecting the upper ends of the rods to the respective arms whereby the arms may be utilized to raise the rods out of engagement with the floor in contemplation of pushing the cabinet.

13. An invalid supporting structure comprising: a box cabinet opening rearwardly and having opposite fore and aft upright side walls, and supported for transport on floor engaging wheels; a transverse horizontal hinge supported on the cabinet across its upper forward corner; an elongated body supporting platform supported on the hinge to swing vertically between upper and lower positions; means between the cabinet and platform for locking the platform against movement on the hinge; a pair of rearwardly projecting push arms pivotally supported on the side walls adjacent their upper ends; a pair of vertical links supported on the respective side walls for vertical movement and having means on their lower ends for frictionaly engaging a floor and means at their upper ends for connecting them to the respective push arms whereby the arms may be utilized to raise the rods out of engagement with the floor in contemplation of pushing the cabinet.

14. An invalid supporting structure comprising: a box cabinet opening reardwardly and supported for transport on floor engaging wheels; a transverse horizontal hinge supported on the cabinet across the upper forward corner thereof; an elongated body supporting platform having upper and lower ends and supported on the hinge to swing

vertically; means between the cabinet and platform for locking the platform against movement; a pair of L-shaped guides on opposite sides of the cabinet; a pair of L-shaped members having their vertical leg portions supported in the guides for vertical movement; and horizontal leg portions outwardly of the edges of the platform and projecting forwardly of the platform; table means supported on the horizontal leg portions forwardly of the platform; and lock means for fixing the L-shaped members in the vertical guides at selected positions.

15. The structure as set forth in claim **1** in which the horizontal hinge is supported on the cabinet in vertical spaced relation above the cabinet top, the top has an upper horizontal surface, and further characterized by depending rigid elements extending from the lower surface of the platform and adapted to engage the upper surface upon the platform being disposed horizontally whereby the surface may be utilized to support materials for the aid and comfort of a patient on the platform.

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FRANK B. SHERRY, *Primary Examiner.*

CASMIR A. NUMBERG, *Examiner.*