

Nov. 18, 1969

W. A. BURKE

3,479,087

PNEUMATIC POWERED SEAT ERECTOR FOR AN INVALID

Filed Aug. 28, 1967

2 Sheets-Sheet 1

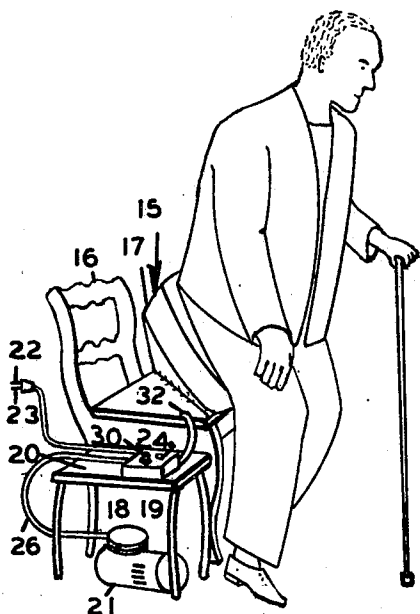


FIGURE 1.

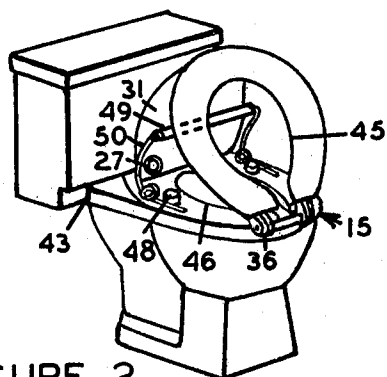


FIGURE 2.

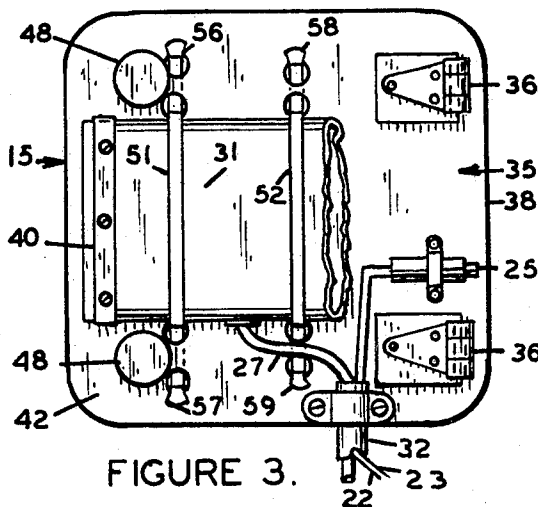


FIGURE 3.

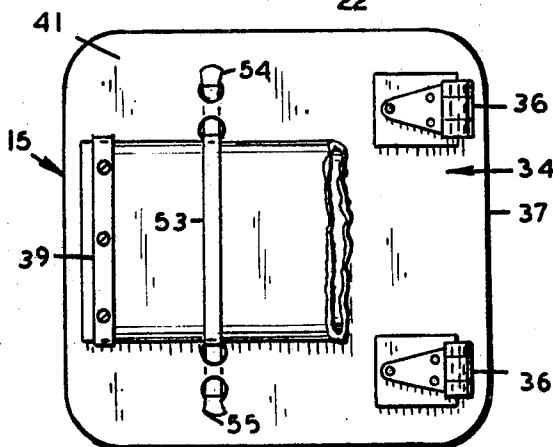


FIGURE 4.

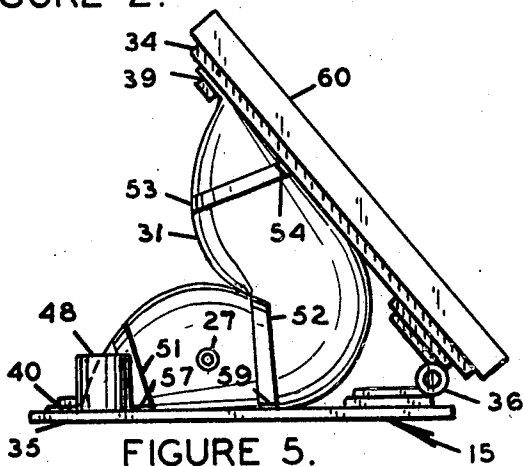


FIGURE 5.

INVENTOR.

WILBUR A. BURKE

BY

Marvin B. Davis
ATTORNEY

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W. A. BURKE

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PNEUMATIC POWERED SEAT ERECTOR FOR AN INVALID

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2 Sheets-Sheet 2

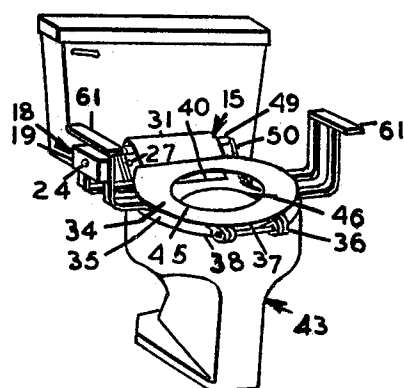


FIGURE 6.

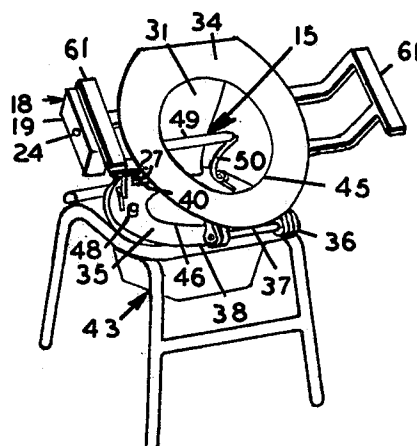


FIGURE 7.

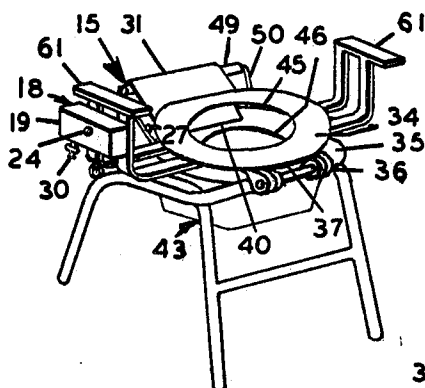


FIGURE 8.

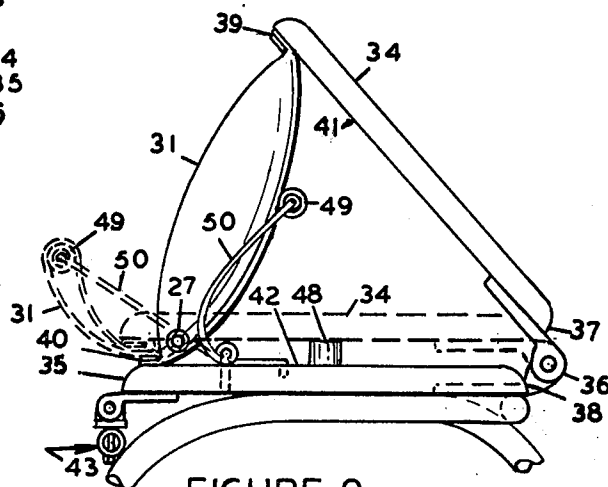


FIGURE 9.

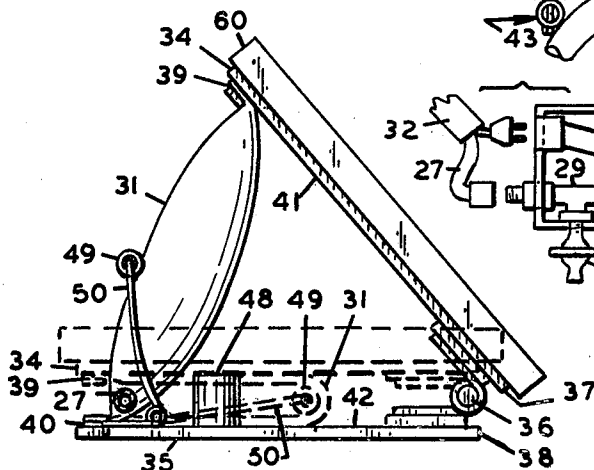


FIGURE 10.

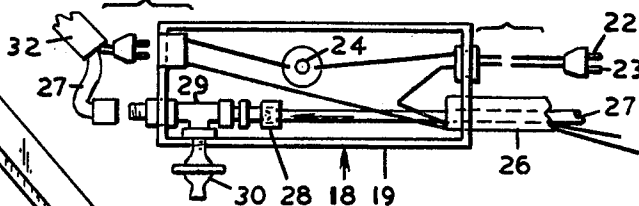


FIGURE 11.

INVENTOR
WILBUR A. BURKE
BY *Merrill B. Davis*
ATTORNEY

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3,479,087

**PNEUMATIC POWERED SEAT ERECTOR
FOR AN INVALID**Wilbur A. Burke, 5901 Reeds Road,
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U.S. Cl. 297—339

3 Claims

ABSTRACT OF THE DISCLOSURE

A pneumatic tube with sealed flattened end portions to act as hinges secured to respective end portions of opposed faces of seat plates. Hinges connecting the opposite end portions of the seat plates. Selective means to inflate or deflate and fold the pneumatic tube through the mid-length portion thereof with a spring actuated roller. Stop members to space seat plates for the folded tube.

This invention relates to an improvement in a pneumatic seat erector controlled by an invalid for assisting him from a seated position to a walkable position and later return him at his will to a seated position.

This improved pneumatic seat erector includes a pair of normally horizontal plates hinged or pivoted at one end thereof to be folded with one mentioned plate spaced above the other plate. The mentioned plates may be solid for a resting seat or have sufficient opening therethrough for a toilet seat. Padding may be added for the comfort of an invalid. Covering may be added for appearance.

My improved flexible non-elastic tube is impervious to air, has each end portion flattened and sealed.

The flexible non-elastic tube flattened end portions are secured to the opposed faces of the seat plates to act as hinges; and are spaced in parallelism on the opposite end portions of the seat plates from the longitudinal axis hinged or pivoted end portions thereof.

The length of the flexible non-elastic tube is sufficient to allow the plates' opposed faces to open on the hinge or pivot thereof to a sufficient angle to raise an invalid from a seated position to a walkable position.

Broadly means for selectively inflating and deflating the flexible non-elastic tube are provided.

Improved means are provided to control the folding of the flexible non-elastic tube through the mid-length portion thereof when being deflated.

Stop means are provided to space the pair of plates when in a sitting position to relieve undue pressure of the weight of an invalid on the tube when folded therebetween.

More specifically the flexible non-elastic tube has an air hose connected therein. The hose is extended to a remotely placed air check valve located between the flexible non-elastic tube and a motored compressor unit with the hose being connected to the air compressor to hold air pressure in the flexible non-elastic tube. A relief valve is located in the hose line between the air check valve and the flexible non-elastic tube for an invalid to deflate the flexible non-elastic tube, for the purpose of lowering the upper seat plate from a walkable position to a seated position.

More specifically an electric motive force is conducted: to a switch near the pneumatic seat erector; and an electric motor powered air compressor for an invalid to selectively inflate the flexible non-elastic tube.

An advantage of this invention is: that the simple inexpensive pneumatic powered seat erector includes a seat position for an invalid to rest; that the invalid may operate the controls of the seated position to raise himself to a walkable position; walk to a similar pneumatically con-

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trolled toilet seat; be seated thereby; be assisted by the controls of the seat to return him at his will to a walking position; so that he may walk to his former mentioned resting seat.

Another advantage of this invention is that in many invalid cases an assistant or extra nurse is not required for helping an invalid to a seat and later helping him to rise to a walkable position. This advantage reduces the cost and burden for extra care of the invalid; and increases the privacy of the patient at the toilet seat.

Another advantage of this invention is that the selective means to control the folding of the flexible non-elastic tube is to fold the flexible non-elastic tube through the mid-length portion thereof between the seat plates of a resting seat erector to eliminate excessive wrinkles therein.

Another advantage of this invention is that the selective means to control the folding of the flexible non-elastic tube is to fold the mentioned tube of the toilet seat outward from the plates to prevent soiling the mentioned tube by an invalid.

This invention will be more fully understood with reference to the accompanying drawings:

FIGURE 1 is a view in perspective illustrating the pneumatic tube seat erector. The position shown of the person is also taken when he is erected to a walkable position or is about to be seated by the seat erector. The seat erector is shown mounted on an ordinary chair. A side table is preferably shown for the convenient support of the means of control for inflating and deflating the pneumatic tube seat erector. The motor powered air compressor is shown below the table with conductors leading to the controls and pneumatic seat erector.

FIGURE 2 is a view in perspective illustrating the pneumatic tube seat erector applied to a toilet seat. The inflatable tube has raised the top seat plate on the hinges thereof for receiving a person that is desirous of being gradually seated.

FIGURE 3 is a view illustrating a plan of the lower seat plate showing the lower portion of the flexible non-elastic tube in a deflated condition and secured to one end portion of the seat plate. Hinges are spaced on the opposite end portion of the seat plate. A control switch with electrical conductors, and hose connected into the flexible non-elastic tube, are shown leading to a portion of a cable anchored on one side portion of the lower seat plate shown. Elastic bands are shown to hold the flexible non-elastic tube in position on the seat plate. A pair of stops are shown to limit the lowering of the upper seat plate.

FIGURE 4 is a view illustrating an inverted plan of the upper seat plate. The tube is shown secured to one end portion of the plate. Hinges are shown on the opposite end of the plate. An elastic band is shown holding the flexible non-elastic tube on the plate.

FIGURE 5 is a view illustrating a side elevation of the seat erector with the cover removed. The seat erector upper plate is shown opened on the pivot of the hinges. The flexible non-elastic tube is shown inflated and held in position by the elastic bands as a selective means of control of the flexible non-elastic tube.

FIGURE 6 is a view illustrated in perspective form of the flexible non-elastic tube seat erector applied to a toilet. The upper seat plate is shown in lowered position. Hand supports are shown to aid an invalid.

FIGURE 7 is a view illustrating a perspective of the pneumatic seat erector opened on the hinges thereof and applied to a toilet of the commode type.

FIGURE 8 is a view illustrating a perspective similar to FIGURE 7 with the exception that the upper seat plate is lowered on the hinges thereof.

FIGURE 9 is a view illustrating a side elevation of the pneumatic seat erector applied to a toilet seat. The upper seat plate is shown opened on the hinges in full lines and lowered in dash lines. A roller with spring arms folds the tube outward from the seat plates when the upper plate is being lowered.

FIGURE 10 is a view illustrating a side elevation of pneumatic seat erector when used as a resting seat. The upper seat plate is shown raised on the pivot of the hinges in full lines and lowered in dash lines. A roller is spring operated and selectively folds the tube inward between the seat plates as shown in dash lines. A stop member 48 spaces the plates to relieve the pressure of the weight of an invalid on the tube. This view shows the selective means similar to FIGURE 9.

FIGURE 11 is a view illustrating the general means for control of the pneumatic tube, preferably mounted in a box. The cover of the box is omitted for illustrative purposes.

The pneumatic seat erector 15 illustrated in FIGURES 5 and 10 vary by the selective means of folding the pneumatic flexible non-elastic tube 31 on the pneumatic seat erector 15 when used only as a seat.

The pneumatic seat erector 15 shown in FIGURES 1, 3, 4, 5 and 10 uses the selective means to fold the pneumatic flexible non-elastic tube 31 inward between the folded seat plates to preferably eliminate the visibility of the portions of the pneumatic flexible tube 31.

The pneumatic seat erector 15 when lowered and applied to toilets 43, FIGURES 2, 6, 7, 8, and 9, uses the selective means to fold the pneumatic tube 31 outward away from the seat plates 34 and 35 to avoid soiling the pneumatic tube 31 thereof.

A pneumatic seat erector 15 illustrated in FIGURE 1 is preferably placed on a chair 16. A cover 17 preferably encloses the pneumatic seat erector 15. A selective means of inflating and deflating the tube 31 includes a control 18 preferably contained in a box 19. The box 19 is shown resting on a table 20. A motor-air compressor 21 is shown below the table 20. Electrical conductors 22 and 23 are connectable to any source of electric motive force of adaptable voltage and current, leading to the motor-air compressor 21, and to switches 24 and 25. Switch 25 is an alternate switch for the convenience of an invalid.

A cable 26 contains an air hose 27 leading from the motor-air compressor 21 through the box 19, with a check valve 28 and T 29 preferably located in the box 19 and connected into the air hose 27.

The air hose 27 continues to the pneumatic non-elastic tube 31 through the cable 32 and is connected into the flexible non-elastic tube 31. A relief valve 30 is connected into the T 29 and extends outside of the box 19 for the use of an invalid.

The pneumatic seat erector 15 has an upper seat plate 34 and a lower seat plate 35. Hinges 36 are secured to end portions 37 and 38 of the seat plates 34 and 35 respectively with the upper seat plate 34 normally folded over the lower seat plate 35.

The pneumatic flexible tube 31 is impervious to air and preferably non-elastic. Both end portions 39 and 40 of the pneumatic flexible tube 31 are flattened and sealed. The flattened end portions 39 and 40 are secured to opposed faces 41 and 42 respectively of the seat plates 34 and 35, and are spaced in parallelism with the hinges 36 and located on the opposite end portions of the seat plates 34 and 35 from the hinges 36.

A means for selectively inflating and deflating the flexible tube 31 is preferably accomplished by means of the motor-air compressor 21; switches 24 or 25; electric motive conductors 22 and 23; hose 27; check valve 28 to hold the air pressure on the pneumatic flexible tube 31; and a relief valve 30 located for an invalid to selectively deflate the pneumatic tube 31.

When the pneumatic seat erector 15 is applied to a

toilet 43, central portions of the seat plates 34 and 35 are cut out to form seat openings 45 and 46 respectively adapted for toilets.

The pneumatic flexible tube 31 is selectively folded when the seat plates 34 and 35 are folded on the hinges 36 through the means of opening the relief valve 30, and folded faster with the weight of a person on the upper seat plate 34.

Stop members acting as spacers 48 are located on the upper face of the lower seat plate 35 to allow sufficient space between the upper seat plate 34 and the lower seat plate 35 for the pneumatic flexible tube 31 when folded.

When the pneumatic seat erector 15 is applied to a toilet 43, the selective means of folding the pneumatic flexible tube 31 includes a roller 49 operated by a spring 50. The spring 50 end portions are secured to the upper face of the seat plate 35. The mid-portion of the spring 50 extends through the roller 49. The roller 49 presses against the inward mid-length portion of the pneumatic flexible tube 31 to fold it outward from the seat plates 34 and 35 as the upper seat plate 34 is lowered on the pivot of the hinges 36 by the deflation of the pneumatic flexible tube 31.

When the pneumatic seat erector 15 is used only as a resting seat the selective means for folding the pneumatic flexible tube 31 varies by the roller 49 pressing the mid-length portion thereof inward on the outward side of the flexible tube 31 to fold it inward between the upper seat plate 34 and lower seat plate 35. The roller 49 is activated by the spring 50 pressing the mid-length portion of the tube inward toward the seat plates 34 and 35.

When the pneumatic seat erector 15 is used only as a seat, another selective means of folding the pneumatic flexible tube 31 inward between the seat plates 34 and 35 is illustrated in FIGURES 3, 4, and 5 by means of elastic bands 51, 52, 53, stretched over portions of the pneumatic flexible tube 31 and anchored at 54, 55, 56, 57, 58 and 59 to the seat plates 34 and 35 respectively.

In FIGURES 5 and 10 a seat pad 60 is preferably shown on the upper seat plate 34 when applied to resting seats.

Hand grips 61 are attached to the upper seat plates 34 when applied to toilets to assist the invalid in rising or lowering with the seat plate 34. The control box 19 is preferably secured to the hand grips 61 for the use of an invalid.

In FIGURES 2, 6, 7 and 8 the motor-air compressor 21, electrical conductors 22 and 23, air hose 27, are not repeated for the reason that they are the same as used in FIGURE 1 of the drawings.

I claim:

1. An improvement for a seat erector for chairs and toilets for assisting an invalid to a seated position, and being reversible to erect him to a walkable position; the improved seat erector comprising in combination:

- (a) a flexible non-elastic tube impervious to air with sealed flattened end portions;
- (b) a pair of seat plates;
- (c) said flexible tube end portions being secured flatwise and parallel to the end portions of opposed faces of said pair of seat plates;
- (d) hinges;
- (e) said hinges being secured to the opposite end portions of said seat plates;
- (f) means to inflate and deflate said flexible non-elastic tube to relatively pivot said pair of seat plates on said hinges;
- (g) said flexible non-elastic tube having sufficient length to raise one mentioned seat plate, on said hinges, above the other mentioned seat plate to erect an invalid to a walkable position;
- (h) means to fold said non-elastic tube through the mid-length portion thereof when being deflated; and
- (i) stop means being mounted on one mentioned opposed face of said pair of seat plates to space the

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opposite mentioned face of the other mentioned seat plate sufficiently to relieve any pressure on said flexible folded non-elastic tube when deflated and folded.

2. A pneumatic seat erector improvement for chairs and toilets controlled by an invalid for assisting him from a seated position, to a walkable position, and later return him to a seated position; the pneumatic seat erector improvement comprising in combination:

- (a) a pair of plates,
- (b) a hinge,
- (c) said pair of plates being normally positioned horizontally with one mentioned plate being spaced above the other mentioned plate;
- (d) said pair of plates being pivoted at one end thereof with said hinge;
- (e) a flexible non-elastic tube being hermetically sealed,
- (f) said flexible non-elastic tube having each end portion thereof flattened and secured flatwise to a respective opposed face of said pair of plates and spaced in parallelism with the longitudinal axis of said hinge on the opposite end portion of said pair of plates;
- (g) said flexible non-elastic tube having a sufficient length to allow one mentioned plate to rise above the other mentioned plate on said hinge for the erection of an invalid to a walkable position;
- (h) a roller having a length at least equal to the width of the flattened non-elastic tube,
- (i) means being secured to one of said pair of plates to control the folding of said flexible non-elastic tube with said roller; and
- (j) means for inflating and deflating said flexible non-elastic tube.

3. An improved pneumatic seat erector for a toilet controlled by an invalid for assisting him to a seated position, and later erect him to a walkable position; the improved pneumatic seat erector comprising in combination:

- (a) a pair of seat plates,
- (b) a hinge,
- (c) said pair of seat plates being pivoted together with said hinge at one end thereof;
- (d) a flexible non-elastic tube being hermetically sealed with flattened end portions;

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(e) said flexible non-elastic tube flattened end portions being secured to opposed end portions respectively of said pair of seat plates and spaced from said hinge;

(f) said flexible non-elastic tube having a sufficient length to allow one mentioned seat plate to rise above the other mentioned seat plate on said hinge for the erection of an invalid to a walkable position;

(g) said pair of seat plates having a stop means for being normally spaced in a folded position with one mentioned seat plate above the other mentioned seat plate to relieve pressure on said flexible non-elastic tube when folded therebetween;

(h) a roller having a length equal to at least the width of the flattened flexible non-elastic tube;

(i) means being secured to one of said pair of seat plates to control the folding and unfolding of said flexible non-elastic tube outwardly from said pair of plates with said roller;

(j) means for selectively inflating and deflating said flexible non-elastic tube;

(k) each of said pair of seat plates having a sufficient opening through the central portion thereof for a toilet;

(l) hand grips;

said hand grips being secured to opposite sides of the upper mentioned seat plate.

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BOBBY R. GAY, Primary Examiner

45 G. O. FINCH, Assistant Examiner