Jan. 17, 1967 H. A. DANIELSON 3,298,042

PATIENT HANDLING DEVICE

Filed Oct. 8, 1964 2 Sheets-Sheet 1

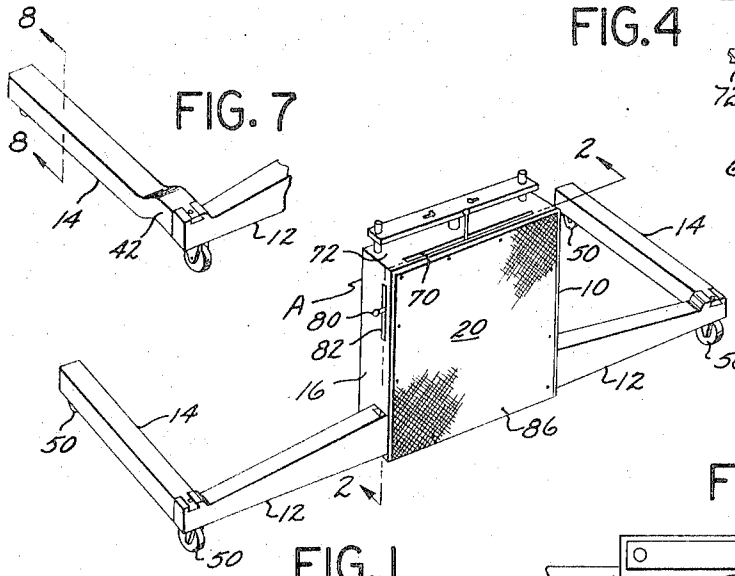


FIG. 7

FIG. 1

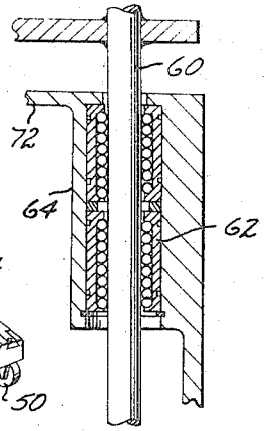


FIG. 4

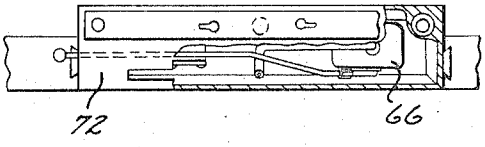


FIG. 3

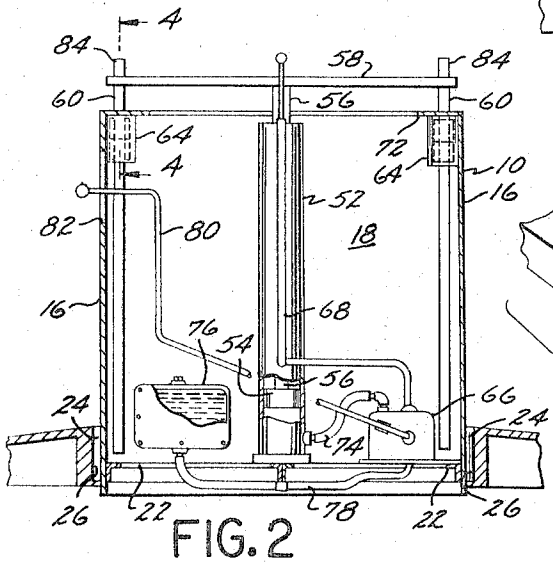


FIG. 2

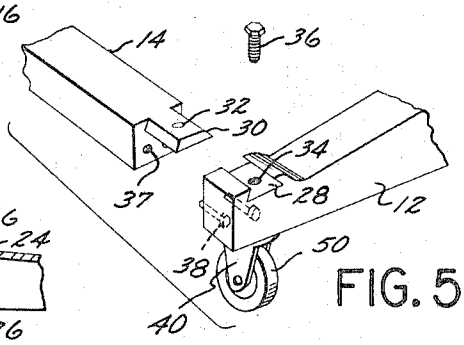


FIG. 5

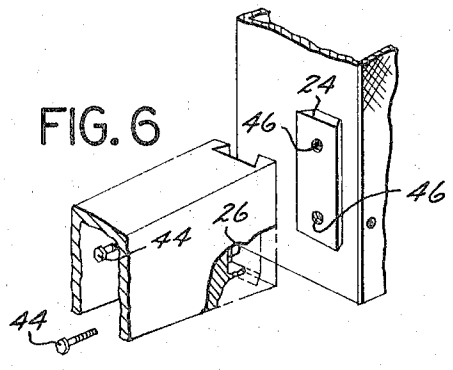


FIG. 6

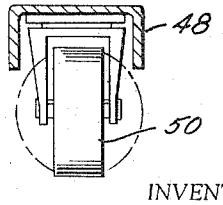


FIG. 8

INVENTOR.
HARRY A. DANIELSON

BY
William C. Babcock
ATTORNEY

Jan. 17, 1967 H. A. DANIELSON 3,298,042

PATIENT HANDLING DEVICE

Filed Oct. 8, 1964 2 Sheets-Sheet 2

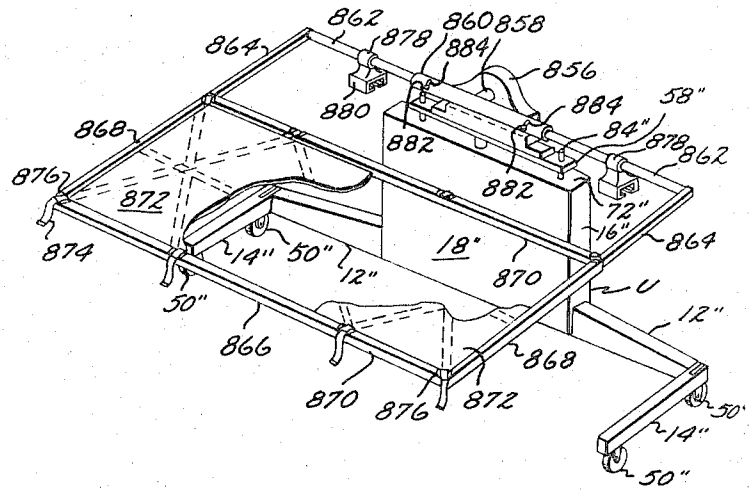


FIG. 9

INVENTOR.
HARRY A. DANIELSON
BY
William C. Babcock
ATTORNEY

United States Patent Office 3,298,042 Patented Jan. 17, 1967

3,298,042

PATIENT HANDLING DEVICE

Harry A. Danielson, Monterey Park, Calif.
(2021 N. Central, Phoenix, Ariz. 85004)

Filed Oct. 8, 1964, Ser. No. 402,397
2 Claims. (Cl. 5—83)

The present invention relates generally to the field of patient and invalid supporting devices, and more particularly to a movable support that may be used to raise a patient from, or lower a patient onto a bed, hold a patient at any desired elevated position, transport him to and from an operating room, as well as subject the supported patient to a rocking motion.

In hospitals, sanitariums, homes for the elderly, and the like, one of the most difficult problems in the handling of patients is that of lifting them from a bed to a transporting device and then again lifting them off such device, without frightening the patient. This type of handling is necessary when a patient is to be bathed, raised to a desired elevated position, transported to and from an operating room, or subjected to a rocking motion.

Many devices have been devised and marketed in the past to accomplish certain of the operations mentioned above, but the principal disadvantage of such previously available equipment is that they can usually be used for but a single specific purpose. In addition, they have been heavy, bulky, and cumbersome to operate, and so expensive that they have been used only in those situations where there is no other alternative.

A major object of the present invention is to provide a basic power-operated unit that may be used to raise a patient from, or lower a patient onto a bed, and transport a patient to a desired location.

Another object of the invention is to provide a portable, dependable support for a patient that is of relatively simple mechanical structure, requires little maintenance attention, is simple and easy to operate, and can be fabricated from readily available commercial materials, whereby it can be retailed at a sufficiently low price as to encourage its widespread use by hospitals, sanitariums, and the like.

These and other objects and advantages of the invention will become apparent from the following description of a first and certain other forms thereof, and from the accompanying drawings, in which:

FIGURE 1 is a perspective view of a portion of a first patient handling apparatus;

FIGURE 2 is a fragmentary, vertical cross-sectional view of the apparatus shown in FIGURE 1, taken on the line 2—2 thereof;

FIGURE 3 is a top plan view of the apparatus shown in FIGURE 2, with a portion thereof broken away to show the interior thereof;

FIGURE 4 is a fragmentary vertical cross-sectional view of the apparatus shown in FIGURE 2, taken on the line 4—4 thereof;

FIGURE 5 is a fragmentary perspective view of a portion of the movable support shown in FIGURE 1;

FIGURE 6 is a fragmentary enlarged perspective view of the support shown in FIGURE 1;

FIGURE 7 is a perspective view of the components shown in FIGURE 5, illustrated in an assembled position;

FIGURE 8 is a vertical cross-sectional view of the first form of apparatus, taken on the line 8—8 of FIGURE 7; and

FIGURE 9 is a perspective view of the apparatus.

With continued reference to the drawings, and particularly to FIGURES 1 and 2 thereof, for the general arrangement of a first form of apparatus A for use in raising and lowering a patient, it will be seen to include

a centrally disposed housing **10** having two first legs **12** extending oppositely from the sides thereof. Two second legs **14** are provided that are removably attachable to the extremities of the first legs **12**.

The housing **10** is defined by two end walls **16**, a side **18** (FIGURE 2), and a side plate **20**. The bottom **22** of housing **10** extends between the lower interior surfaces of the end walls **16**. Two vertically disposed gibs **24** are mounted on the lower exterior surfaces of the end walls **16** and removably engage vertically disposed recesses **26** formed on the most adjacent ends of the first legs **12**.

A transverse groove **28** is formed in each leg **12** that has upwardly and inwardly sloping side walls, and these grooves **28** are capable of slidably engaging tongues **30** formed on first end portions of the second legs **14**, as shown in FIGURE 5. Vertically disposed openings **32** are formed in tongues **30** that are axially alignable with vertically extending tapped cavities **34** formed in the first legs **12** (FIGURE 5).

Each opening **32** is adapted to receive a bolt **36** which projects downwardly therethrough to engage a tapped recess **34** and removably hold a second leg **14** in rigid engagement with a first leg **12**, as shown in FIGURE 1. To further assure that each first leg **12** will remain rigidly connected to one of the second legs **14**, each second leg has one or more longitudinally extending tapped recesses **37** formed therein adjacent the tongue **30**, and each recess is axially alignable with a bore formed in one of the legs **12** through which a bolt **38** extends to engage the tapped recess, as shown in FIGURE 5.

Each of the legs **14** adjacent the groove **28** rotatably supports a conventional caster assembly **40** (FIGURE 5). The first end portions **42** of the legs **14** are solid, as can best be seen in FIGURE 6, and longitudinally extending bores (not shown) are formed therein through which bolts **44** can be extended to engage longitudinally aligned tapped recesses **46** formed in the gibs **24**. The bolts **38** serve to removably hold the second legs **14** on the outer ends of the first legs **12**. If desired, each set of first and second legs **12** and **14** can be formed as an integral unit. Likewise, each set of legs **12** and **14** can be connected to an end wall **16** by conventional means such as welding or the like (not shown).

Outwardly from the end portions **42** thereof, the second legs **14** develop into inverted channel-shaped sections **48**, as can best be seen in FIGURE 8. At the rear extremity of section **48**, each leg **14** pivotally supports a conventional caster assembly **50**. A vertically disposed hydraulic cylinder **52** is positioned inside the housing **10**, as shown in FIGURE 2. A piston **54** is slidably mounted in cylinder **52**, which is rigidly connected to a piston rod **56** that extends upwardly from the cylinder **52**. The upper end of piston **56** is rigidly connected to a horizontal support **58**. Two vertically positioned guide rods **60** are welded or otherwise affixed to the end portions of the support **58**, and are slidably movable in bearings **62** located in upper interior portions **64** of the end walls **16**.

A hand-operated pump **66** is mounted within the housing **10** on the bottom **22**. The pump **66** is actuated by reciprocal movement of a lever **68** that extends upwardly through an elongate slot **70** formed in the top **72** of the housing **10**. When the lever **68** is reciprocated, hydraulic fluid is discharged through a conduit **74** to the lower interior portion of the cylinder **52**. The suction of pump **66** is connected to a fluid reservoir **76** by a conduit **78**. A valve (not shown) is disposed in the interior of pump **66**, the opening and closing of which is controlled by a pivotally movable lever **80** that extends outwardly through a vertical slot **82** formed in one of the end walls **16**.

When it is desired to move the support **58** downwardly relative to the housing **10** the lever **80**, due to

weight imposed on the support, is manually moved to a first position where communication between conduits **74** and **78** is established and fluid flows from the cylinder **52** through conduits **74** and **78** to the reservoir **76**. After the lever **80** has moved to a second position, communication between the conduits **74** and **78** is obstructed and the support **52** will remain at the elevation in which it is disposed, for the hydraulic fluid in the cylinder **52** below piston **54** is unable to escape from the cylinder. Two engageable members **84** project upwardly from the support **58**, as best seen in FIGURE 2, which may be used to engage and hold a patient support that does not form a part of the present invention. The side plate **20** is removably held on the forward faces of the end walls **16**, top **72** and bottom **22** by screws **86** that extend through openings formed in the side plate and engage tapped recesses (not shown) formed in the forward portion of the end walls, top and bottom.

A block **856** is rigidly secured to a support **58''**, as shown in FIGURE 9. A transverse shaft **858** is rotatably mounted in this block, which projects forwardly therefrom. A tubular member **860** is secured to the forward end of shaft **858**. Two oppositely extending tubes **862** are rotatably supported in tubular member **860**. Two legs **864** of square or rectangular cross section project forwardly from the ends of tubes **862**.

A rectangular frame **866** is provided that is defined by two elongate hollow end pieces **868** which slidably engage the legs **864**. End pieces **686** are connected by two side pieces **870**. A patient transfer sheet **872** is provided. A number of tabs **874** extend from the sides and corners of transfer sheet **872** that may be removably engaged by holding members **876** mounted on the frame **866**, as shown in FIGURE 9.

Two collars **878** are slidably mounted on tubes **862**, with each collar having a claw **880** depending therefrom that can slidably engage an end portion of the support **58''**. When the claws **880** are in engagement with support **58''**, the legs **864**, frame **866**, and transfer sheet **872** are held in a horizontal position. Stops are associated with the tubular member **860** that prevent downward rotation of the legs **864** below the horizontal.

The form U of the invention is used by rolling the patient into a position adjacent the edge of the bed, and then placing the transfer sheet **872** on the bed. Thereafter, the patient is rolled onto the transfer sheet. Frame **866** is then lowered to permit tabs **874** to be affixed thereto, and the handle manipulated to raise the patent, transfer sheet **872** and frame **866** above the bed. The invention shown in FIGURE 9, with the transfer sheet **872** in a substantially horizontal position, can then be used to transport the patient to a desired location. The frame **866**, transfer sheet **872** and the patient on the sheet can be moved forwardly or rearwardly on the legs **864**. After a desired location has been reached. This feature is of the utmost importance in handling patients who are in a serious condition and can only sustain a minimum of handling and movement. The stops previously mentioned can be pins **882** affixed to portions of the tubes **862** inside tubular member **860**, and are movable in arcuate circumferentially extending slots **884** formed in the tubular member. When it is desired to return a patient to a bed, the operation just described is simply reversed.

Although the present invention is fully capable of achieving the objects and providing the advantages hereinbefore mentioned, it is to be understood that it is merely illustrative of the presently preferred embodiments thereof, and I do not means to be limited to the details of construction herein shown and described, other than as defined in the appended claims.

I claim:

1. A vertically movable patient supporting device, including:

(a) a housing;

(b) first means for movably supporting said housing on a floor surface;

(c) a horizontal support disposed above said housing;

(d) power means, the major portion of which is in said housing for raising and lowering said support;

(e) a block mounted on said support;

(f) a horizontal shaft rotatably supported in said block and projecting therefrom;

(g) a tubular member affixed to said shaft at substantially a right angle relative to said projecting end thereof;

(h) two longitudinally aligned tubes, the adjacent end portions of which are rotatably supported in said tubular member;

(i) two parallel legs that project from the ends of said tubes in the same direction;

(j) a hollow rectangular frame slidably mounted on said legs;

(k) a transfer sheet;

(l) means for removably attaching said sheet to said frame when said sheet is disposed within the confines thereof;

(m) stop means for preventing said tubes, legs, frame, and transfer sheet from pivoting downwardly relative to said tubular member below a position where said frame is substantially horizontally disposed; and

(n) holding means for removably maintaining said tubular member and shaft in a fixed position relative to said block, with said frame when said shaft and tubular member are so held being substantially horizontal, which frame and sheet are longitudinally movable on said legs when said stop means and holding means maintain said frame and sheet in a horizontal position, with said support, block, shaft, tubular member, tubes, legs, frame and sheet being vertically movable as a unit to a desired elevation when said power means are actuated.

2. A movable patient-supporting device, including:

(a) an elongate vertical housing;

(b) first means for movably supporting said housing on a floor surface;

(c) second horizontal tube means rotatably supported above said housing;

(d) power means, the major portion of which is in said housing for raising and lowering said tube means;

(e) two parallel spaced legs that extend in the same direction from the ends of said tube means;

(f) a hollow rectangular frame defined by side pieces and end pieces, which end pieces are tubular and slidably engage said legs;

(g) a transfer sheet;

(h) third means for removably attaching said sheet to said frame when said sheet is disposed within the confines thereof; and

(i) stop means for preventing said legs, frame and sheet from pivoting below a position where said sheet is substantially horizontal, with said frame and sheet when so horizontally disposed being adapted to be raised and lowered, as well as moved horizontally, to place a patient in a bed or remove a patient therefrom.

References Cited by the Examiner

UNITED STATES PATENTS

2,255,462	9/1941	Cowles	5—86 X
2,416,410	2/1947	Shampaine	5—62 X
2,908,916	10/1959	Fischer et al.	5—86

FRANK B. SHERRY, *Primary Examiner.*

CASMIR A. NUNBERG, *Examiner.*

R. D. KRAUS, *Assistant Examiner.*