



(22) Date de dépôt/Filing Date: 2000/03/23

(41) Mise à la disp. pub./Open to Public Insp.: 2001/09/23

(51) Cl.Int.⁷/Int.Cl.⁷ A61G 7/10

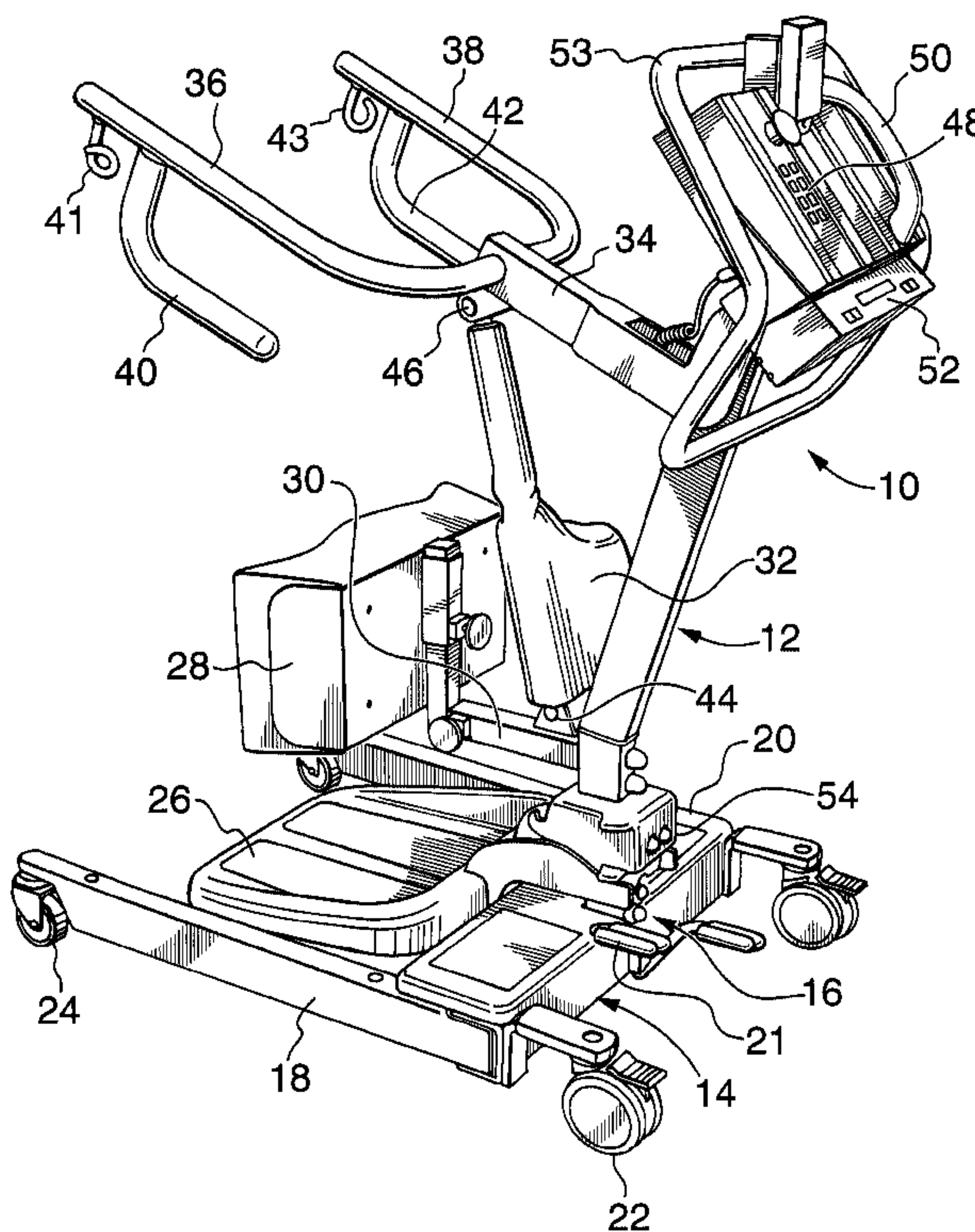
(71) Demandeur/Applicant:
MEDI-MAN REHABILITATION PRODUCTS INC., CA

(72) Inventeur/Inventor:
CZEMERES, KELVIN, CA

(74) Agent: MOFFAT & CO.

(54) Titre : APPAREIL DE LEVAGE ET DE PESAGE POUR PATIENTS

(54) Title: PATIENT HOIST AND WEIGHING APPARATUS



(57) Abrégé/Abstract:

A patient hoist and weighing apparatus having a base, dual load sensors mounted on the mast, including an electrically actuated elevation arm and a body support member, a foot plate connected to the scale on the mast and a display operatively coupled to the load sensors for displaying the patient's weight while the patient is assisted to a standing position. The device is sturdy, efficient, easy to use and ergonomically designed.

ABSTRACT

5 A patient hoist and weighing apparatus having a base, dual load sensors mounted on the mast, including an electrically actuated elevation arm and a body support member, a foot plate connected to the scale on the mast and a display operatively coupled to the load sensors for displaying the patient's weight while the patient is assisted to a standing position. The device is sturdy, efficient, easy to use and ergonomically designed.

PATIENT HOIST AND WEIGHING APPARATUS

The present invention relates generally to the field of patient hoists incorporating lifting devices used in association with treatment or therapy systems for physically challenged patients, and more particularly, relates to a way to accurately determine the weight of a patient supported by the hoist.

BACKGROUND Of THE INVENTION

It is well known to provide mechanical aids to assist physically challenged patients to a standing or suspended position. To assist in supporting these patients, it is common to have a patient hoist which acts as a lift or a stand. Some devices have been developed that are dual-purpose or even multi-purpose in their design, incorporating one or various functions. Although there exists today on the market complicated and expensive systems for moving patients, such systems may not be practical or efficient for use in weighing patients when necessary. Furthermore, some prior art devices are quite expensive, complicated to use and potentially frightening to the patients, as well as often left unused by the caregivers due to the fact that they are often too complex and cumbersome to use thereby leading to potential injuries to the caregivers and/or the patients.

In addition to helping support and transport patients, facilities have a need to accurately weigh patients on a regular basis. If the weighing activity can conveniently be combined with the patient transfer, an extra step is therefore eliminated which reduces the discomfort of the patient, saves the caregiver time and labour and finally reduces chances of injuries to both patient and caregiver.

It has been known to incorporate weighing systems or scales into a patient lift where the hoist is used to assist the patient from a generally sitting position to a generally standing position and vice-versa. Such a stand is illustrated in US Patent No. 5,892,180.

operatively coupled to said sensors.

In accordance with a further object of the present invention there is provided a method of weighing a patient, comprising the steps of: fitting the patient with a sling; positioning a patient hoist in close proximity to the patient; suspending the patient from a mast assembly with the patient's feet positioned on a foot plate; and determining the patient's weight via dual load sensors mounted to said mast assembly and operatively coupled to display means.

Further objects and advantages of the present invention will be apparent from the following description, wherein preferred embodiments of the invention are clearly shown.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be further understood from the following description with reference to the drawings in which:

Figure 1 is a perspective view of a preferred embodiment in accordance with the present invention;

Figure 2 is a partial enlarged view of the base portion of the apparatus of Figure 1;

Figure 3 is a partial enlarged view of the top portion of the apparatus of Figure 1; and

Figure 4 is a side elevational view of the base portion of the apparatus of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The hoist of the present invention, generally 10, allows a caregiver to assist a patient from a generally sitting position to a generally standing position or even to completely suspend the patient if and when necessary and incorporates load sensors to accurately and conveniently measure the patient's weight while the patient is being supported by the hoist 10. Indeed, the hoist 10 bridges the gap between lifting, positioning and weighing.

Referring to Figures 1 to 4, there is generally shown an apparatus 10 for assisting in the lifting and moving about, to a certain extent, of a physically challenged patient. The substantially upwardly extending frame of the apparatus 10, which is made out of generally sturdy material, comprises an upstanding support column or mast assembly 12 mounted on a mobile base 14, generally parallel to the ground, having a front member 16 to which are connected a pair of parallel offset legs 18 and 20, with front wheels 22 and rear wheels 24, said rear wheels 24 being attached to said mobile base 14 thereby maintaining a wider foot print thus making the apparatus 10 a more stable platform, which wheels may all be brake equipped, rotatably mounted thereof. Thus, the base 14 is generally U-shaped and open at the rear between leg members 18 and 20. A foot-operated leg spreader handle 21 is pivotally mounted and engaged to spreader bars which are further engaged to legs 18 and 20 for extending or narrowing the spread between said legs 18 and 20. Rotatably connected to the front member 16 of lower base 14 portion is the upwardly extending mast assembly 12, to which is itself connected a foot plate 26 for receiving the patient. The mast assembly 12 further comprises abutment means 28, vertically and horizontally adjustably connected to said mast assembly 12 via crossbar 30, for further positioning the patient in a comfortable position, a drive member 32, which may be an electric powered ball screw actuator, which should not be seen as exhaustive of the types of drive that could be used in combination with the apparatus 10, attached to crossbar 30 and to support means 34, said support means 34 including a pair of spaced apart stabilizing arms 36 and 38, handles 40 and 42 connected to said arms 36 and 38 and sling hooks 41 and 43 for securing the patient.

Attachment brackets 44 and 46 ensure smooth and efficient operation of the drive member 32 which is operated either from a hand held controller or the control means 48 as illustrated thereby allowing the caregiver to remain in close proximity with the patient. Control means 48 is programmed, and may also be onsite programmable, to deliver accurate and repeatable weight and power data measurements, measuring the amount of weight to be raised and lowered when the apparatus 10 is in use thereby allowing for efficient performance of the apparatus 10 drive member 32 and preventing overuse of the energy reserves. To that effect, removable and rechargeable battery packs 50 are used in order to run the apparatus 10 thereby allowing for continuous operation of the lifting and weighing ability of the apparatus 10 when one battery pack is discharged by merely replacing it with a fresh pack. The apparatus 10 is also provided with an emergency manual override thereby ensuring that the patient may be lowered safely at all times if and when necessary when facing mechanical difficulties in operating the apparatus 10. The drive member 32 is therefore used to extend or retract support means 34 thereby raising or lowering arms 36 and 38.

Load display 52 is mounted on the upper section of mast assembly 12 in close proximity to steering handle 53 and is operatively coupled by wiring to the dual load sensors 54 which are located at the lower section of mast assembly 12 thereby ensuring greater accuracy and better long term reliability. It can be seen therefore that by having dual load sensors 54 intricately connected to the foot plate 26 scale via connector 55 in direct relationship with the mast assembly 12 supporting the patient through support means 34 that greater, repeatable accurate measurement would be achieved since less parts, as are ordinarily required to interact, are involved in achieving a resulting weight display.

The use of various types of load sensors 54 is possible in combination with the apparatus 10 of the present invention, with the preferred sensors being load cells. As for the load display per se, it will preferably have a digital readout for greater accuracy of measurements.

In operation, a patient sitting, possibly in a wheelchair, is securely fitted with a sling, or other similar means adapted to receive a patient. The apparatus 10 is then positioned in front and in close proximity to the patient with the base in a stable position so that the sling may be suspended from sling hooks 41 and 43. The patient's feet are then positioned on the
5 foot plate 26 step area, knee abutment means 28 adjusted, and once the patient is securely adjusted and positioned, the caregiver will selectively operate the apparatus 10 drive member or elevation arm 32. As the drive member 32 is engaged, the support means 34 is either extended (raised) or retracted (lowered) about a pivot point 46. This is continued until the patient is completely supported by the foot plate 26 and the desired height is achieved. At this
10 point, the patient's weight is completely supported by the mast assembly 12 which engages the dual sensors 54 connected to the foot plate 26 scale. As the load display 52 is operatively coupled to the load sensors 54, the resulting weight measurement can be displayed for the caregiver to note.

15 It will be appreciated that load display 52 will need to be accurately calibrated in the apparatus 10 unloaded state to compensate for whatever weight the mast assembly 12 might be carrying. It should also be noted that the apparatus 10 could be used as assisting a caregiver for transporting a patient from one place to another without too much effort.

20 The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes that come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A patient hoist, comprising:
 - a) a base;
 - b) a mast assembly;
 - c) dual load sensors mounted to said mast assembly;
 - d) a foot plate connected to a scale on said mast assembly; and
 - e) display means operatively coupled to said sensors.

2. A patient hoist, comprising:
 - a) substantially upwardly extending frame means further including, a base, front and rear wheels, a pair of spaced apart parallel legs, a foot plate connected to a scale, control means, a mast assembly, abutment means and support means;
 - b) a pair of spaced apart stabilizing arms;
 - c) a drive member;
 - d) dual load sensors mounted to said mast assembly; and
 - e) display means operatively coupled to said sensors.

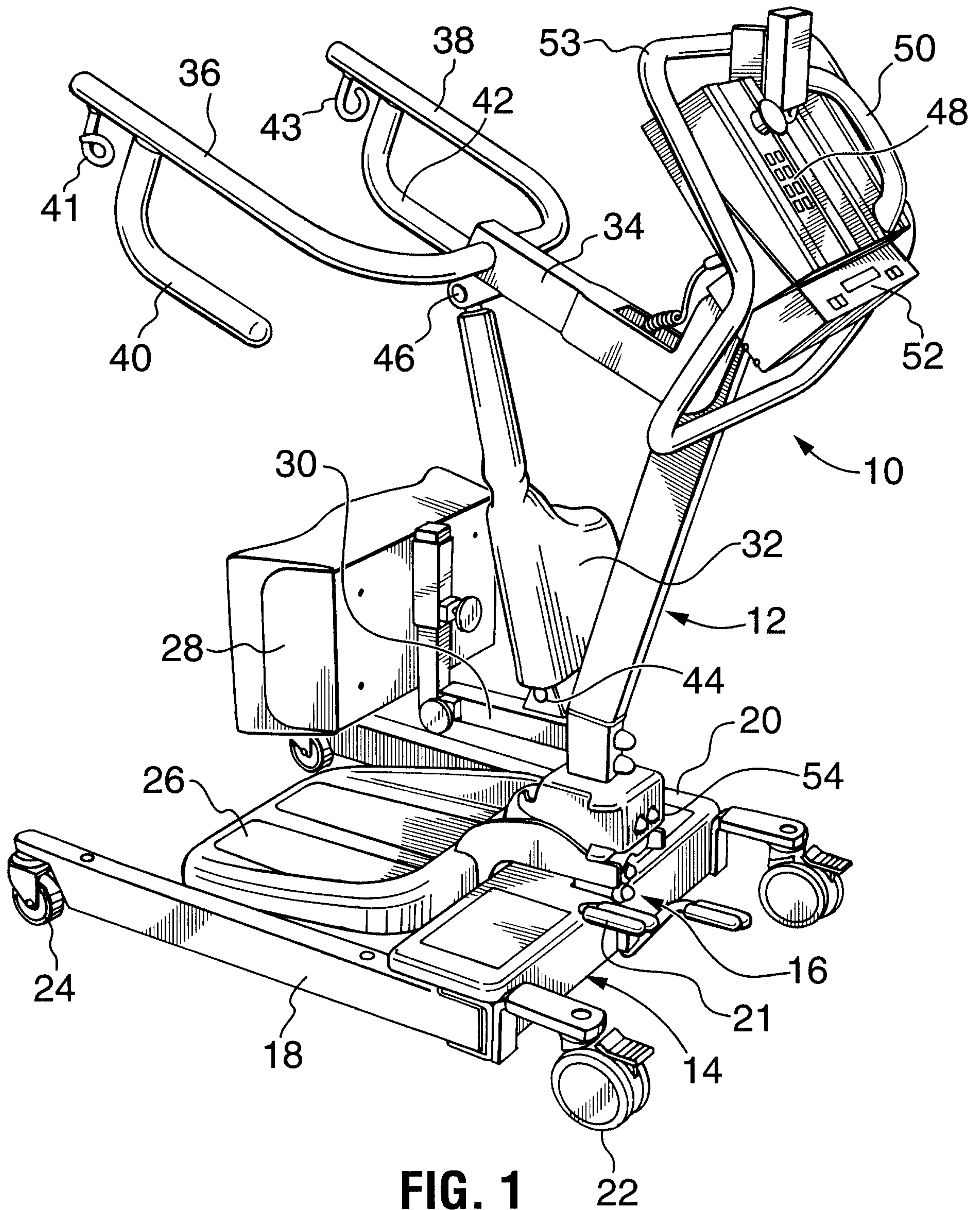
3. An apparatus according to claim 1 or 2 wherein said load sensors are load cells.

4. An apparatus according to claim 2 wherein the control means is programmed to deliver accurate and repeatable weight and power data measurements.

5. An apparatus according to claim 2 wherein the control means is onsite programmable.

6. An apparatus according to claim 2 wherein the drive member is a power-assisted electric drive member.

7. An apparatus according to claim 6 wherein the power is provided by removable and rechargeable battery packs.
8. An apparatus according to claim 2 wherein the foot plate is connected to the scale said scale being connected to the mast assembly.
9. A method of weighing a patient, comprising the steps of:
 - a) fitting the patient with a sling;
 - b) positioning a patient hoist in close proximity to the patient;
 - c) suspending the patient from a mast assembly with the patient's feet positioned on a foot plate; and
 - d) determining the patient's weight via dual load sensors mounted to said mast assembly and operatively coupled to display means.
10. A method according to claim 9 wherein the mast assembly includes an electric power-assisted drive member.
11. A method according to claim 9 wherein the power is provided by removable and rechargeable battery packs.
12. A method according to claim 9 wherein the operation of the mast assembly is controlled through control means.
13. A method according to claim 12 wherein the control means is programmed to deliver accurate and repeatable weight and power data measurements.
14. A method according to claim 13 wherein the control means is onsite programmable.
15. A method according to claim 9 wherein the load sensors are load cells.



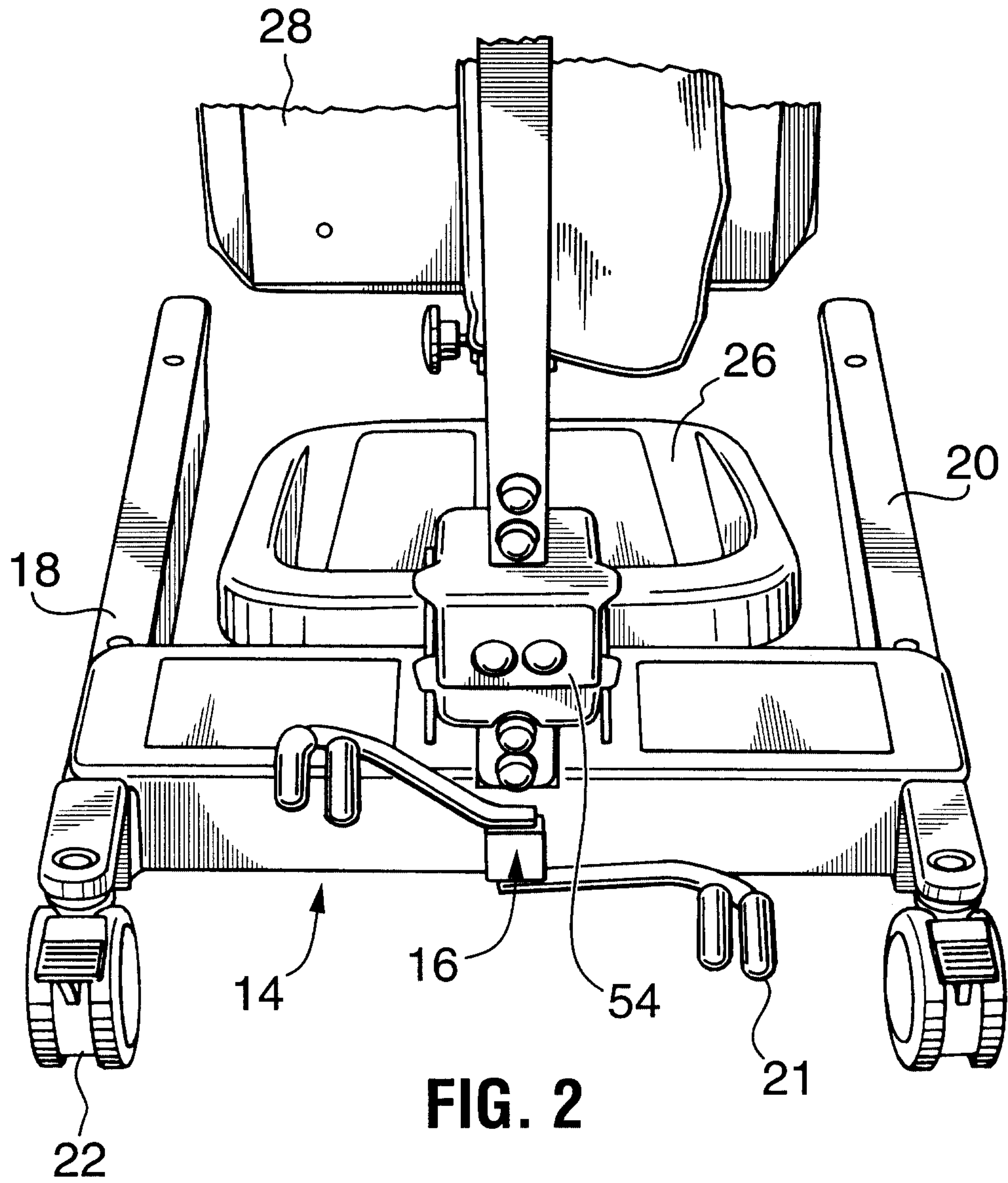


FIG. 2

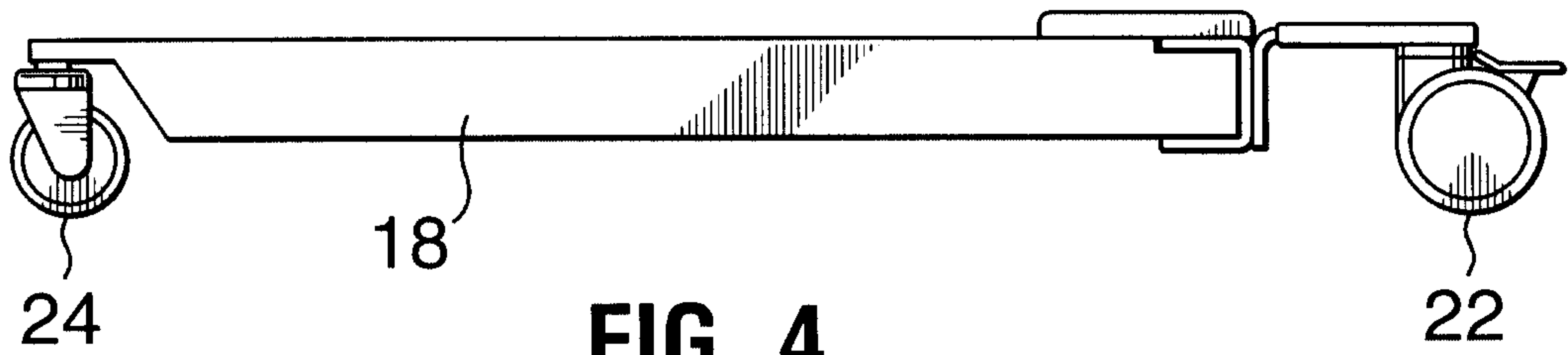


FIG. 4

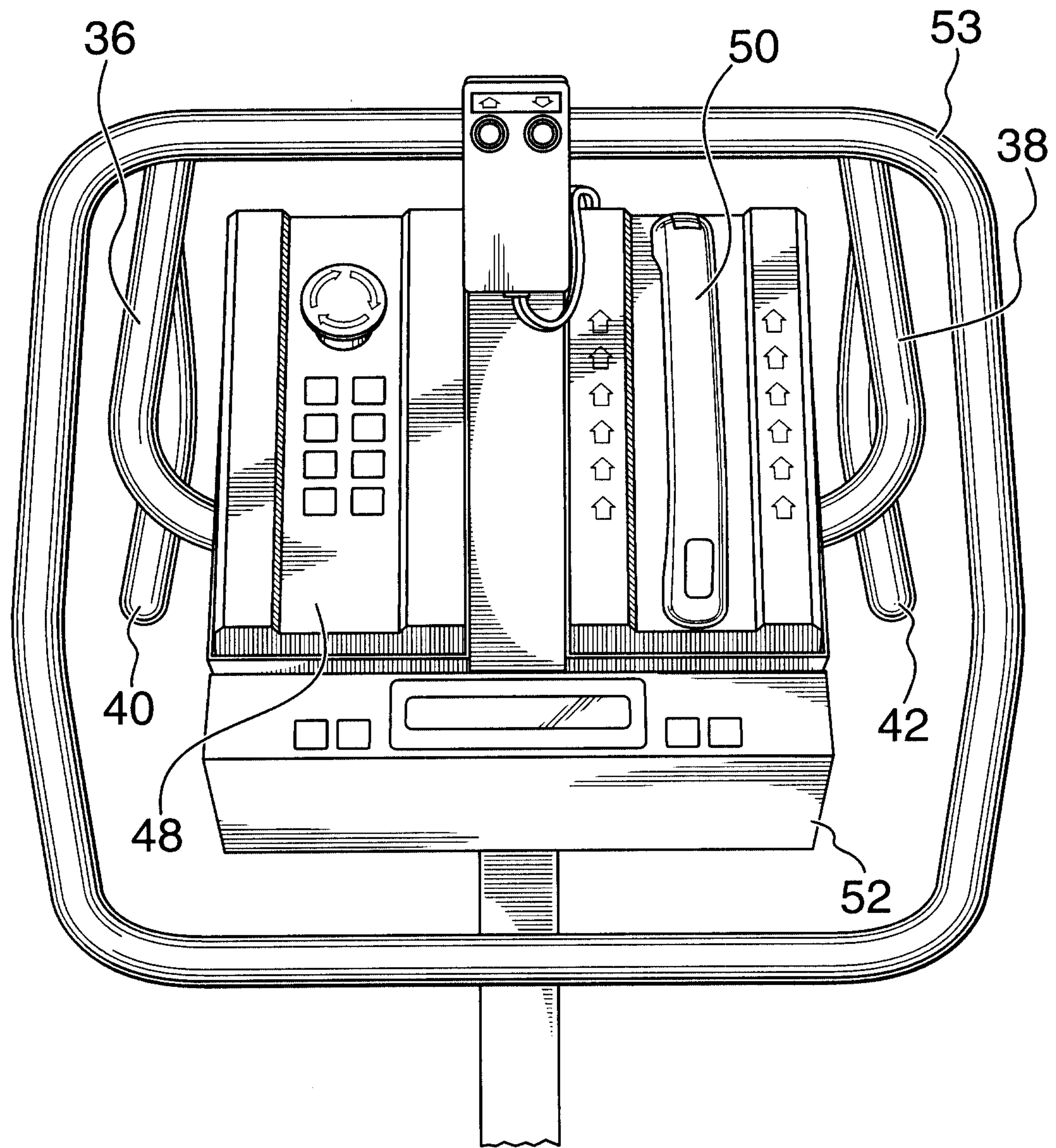


FIG. 3

