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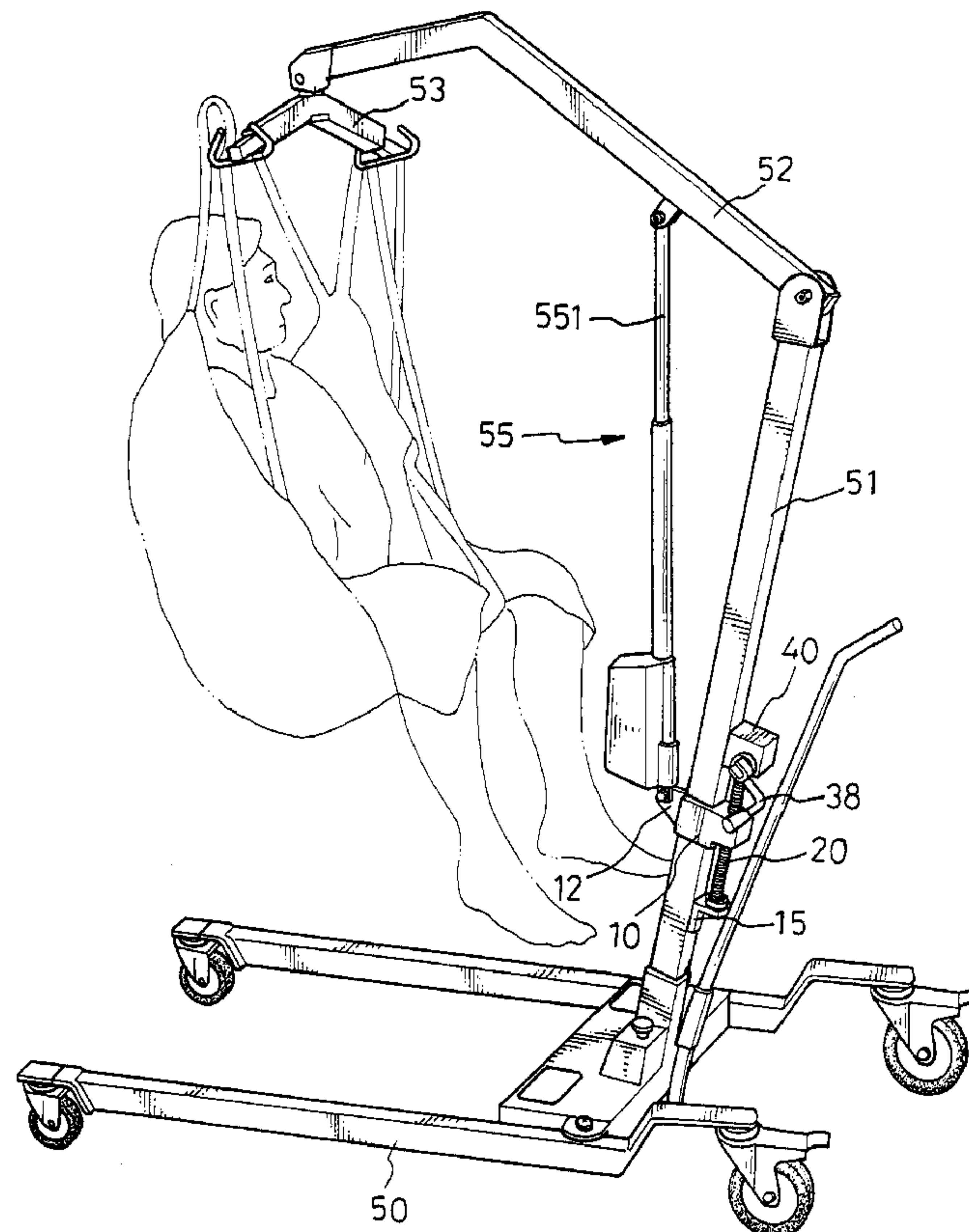
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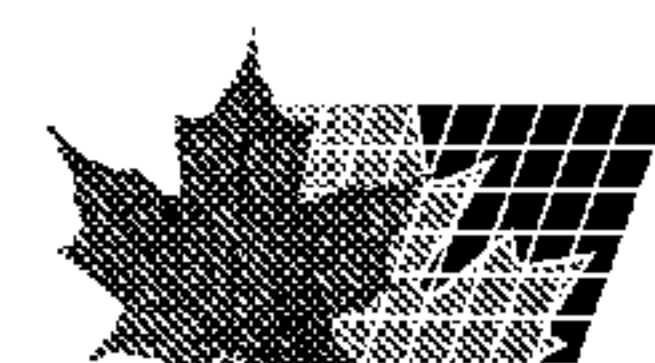
(54) Titre : DISPOSITIF MANUEL POUR LEVER/BAISSER UN MALADE, DESTINE A UN APPAREIL POUR LE
DEPLACEMENT DES MALADES

(54) Title: MANUAL LIFTING/LOWERING DEVICE FOR A PATIENT TRANSLOCATION APPARATUS



(57) Abrégé/Abstract:

A manual lifting/lowering device for a patient translocation apparatus, which makes the apparatus effective even when a power source or a piston means of the apparatus works abnormally, is disclosed. The patient translocation apparatus includes a base,



(57) Abrégé(suite)/Abstract(continued):

a boom supported by a mast mounted on the base, a hanger engaged with the boom for suspending the patient and a piston means driving the boom to raise or lower the patient. The manual lifting/lowering device comprises a slide, a lifter and a driving member. The slide is engaged with the piston means and defines a screw hole therein and a through hole adjacent to the screw hole for movably receiving the mast. The lifter is movably received in the screw hole of the slide. The driving member is provided for driving the slide up or down.

1 **ABSTRACT**

2

3 A manual lifting/lowering device for a patient translocation apparatus,
4 which makes the apparatus effective even when a power source or a piston
5 means of the apparatus works abnormally, is disclosed. The patient translocation
6 apparatus includes a base, a boom supported by a mast mounted on the base, a
7 hanger engaged with the boom for suspending the patient and a piston means
8 driving the boom to raise or lower the patient. The manual lifting/lowering
9 device comprises a slide, a lifter and a driving member. The slide is engaged
10 with the piston means and defines a screw hole therein and a through hole
11 adjacent to the screw hole for movably receiving the mast. The lifter is movably
12 received in the screw hole of the slide. The driving member is provided for
13 driving the slide up or down.

1 **MANUAL LIFTING/LOWERING DEVICE FOR A PATIENT**

2 **TRANSLOCATION APPARATUS**

3 BACKGROUND OF THE INVENTION

4 1. Field of the Invention

5 The present invention relates to a manual lifting/lowering device, and
6 more particularly to a manual lifting/lowering device for a patient translocation
7 apparatus, which makes the apparatus be effective even when a power source or
8 a piston means of the apparatus works abnormally.

9 2. Description of Related Art

10 Patient translocation apparatuses are widely used in hospitals and other
11 medical institutions for moving a patient from one place to another. Many
12 patients may not have ability to walk well, so that the patient translocation
13 apparatus becomes a very important medical instrument. A conventional patient
14 translocation apparatus typically has a structure as shown in FIG. 5. The
15 apparatus substantially includes a base 50, a mast 51 mounted on the base 50, a
16 boom 52 supported by the mast 51, a hanger 53 engaged with the boom 52, a
17 sling 54 suspended by the hanger and provided for the patient to be seated there-
18 in, and a piston means 55 with a piston 551. The piston means 55 is operated by
19 remote control and has power source provided to raise or lower the boom 52,
20 thereby lifting/lowering up the patient from one place and lowering the patient
21 in an other place.

22 This conventional patient translocation apparatus has a disadvantage that
23 the patient may be suspended for a long period of time in the case where the
24 piston means 55 or its power source works abnormally, because the piston
25 means 55 is operated by remote control. Accordingly, there is a need for the
26 apparatus to be effective in a state of emergency.

27 The present invention provides a manual lifting/lowering device for the
28 patient translocation apparatus to mitigate and/or obviate the aforementioned
29 problems.

SUMMARY OF THE INVENTION

One object of the present invention is to provide a manual lifting/lowering device for a patient translocation apparatus which makes the apparatus effective even when a power source or a piston means of the apparatus works abnormally.

In accordance with one aspect of the present invention, a manual lifting/lowering device is used in a patient translocation apparatus, the patient translocation apparatus includes a base, a boom supported by a mast mounted on the base, a hanger engaged with the boom for suspending the patient and a piston means to raise or lower the boom. The manual lifting/lowering device comprises a slide, a lifter and a driving member. The slide is engaged with the piston means and defines a screw hole therein and a through hole adjacent to the screw hole for movably receiving the mast. The lifter is movably received in the screw hole of the slide. The driving member is provided for driving the lifter up or down.

In accordance with another aspect of the present invention, the lifter is configured to be a screw stem having a plain portion integrally formed thereon. The plain portion has a diameter smaller than that of the screw stem and defines a radial through hole for engagingly receiving the driving member.

In accordance with a further aspect of the present invention, the manual lifting/lowering device further includes a bracket mounted to an outer surface of the mast and under the slide. The bracket comprises a horizontal plate and a vertical plate. The horizontal plate defines a blind hole therein aligning with the screw hole of the slide and has a thrust bearing disposed in the blind hole for receiving and securing a bottom end of the screw stem.

In accordance with still a further aspect of the present invention, the driving member includes a slave element and a driving element. The slave element includes a helical gear, a plate formed on the helical gear and a pillar extending upward from the plate. The slave element further defines an axial hole for the plain portion of the lifter to be extended therethrough. The pillar

1 defines a radial cutout aligning with the radial hole of the plain portion of the
2 lifter and in communication with the axial hole, such that a pin can be extended
3 through the cutout and the radial through hole of the plain portion to engage the
4 slave element with the lifter. The driving element is configured as a worm with
5 differential serrations.

6 Other objects, advantages and novel features of the invention will become
7 more apparent from the following detailed description when taken in
8 conjunction with the accompanying drawings.

9 BRIEF DESCRIPTION OF THE DRAWINGS

10 FIG. 1 is a perspective view showing a manual lifting/lowering device for
11 a patient translocation apparatus in accordance with the present invention;

12 FIG. 2 is an exploded perspective view of the manual lifting/lowering
13 device of FIG. 1;

14 FIG. 3 is a sectional side view of the manual lifting/lowering device of
15 FIG. 1;

16 FIG. 4 is a sectional side view showing the operation of the manual
17 lifting/lowering device of FIG. 1; and

18 FIG. 5 is a perspective view showing a conventional patient translocation
19 apparatus.

20 DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

21 Referring to FIG. 1, a manual lifting/lowering device in accordance with
22 the present invention is used in a patient translocation apparatus and comes into
23 effect when power source or a piston means of the apparatus has abnormally
24 failed. The patient translocation apparatus has a structure substantially same as a
25 conventional apparatus, which comprises a base 50, a boom 52 supported by a
26 mast 51 mounted on the base 50, a hanger 53 engaged with the boom 52 for
27 suspending the patient and a piston means 55 with a piston 551 driving the
28 boom 52 up or down. The manual lifting/lowering device in accordance with a
29 preferred embodiment of this invention is mounted to the mast 51 of the patient

1 translocation apparatus.

2 Referring to FIG. 2, the manual lifting/lowering device as the above
3 mentioned comprises a slide 10, a lifter 20 and a driving member 30. The slide
4 10 has a block 12 integrally formed at one side thereof to be pivotally engaged
5 with the piston means 55 of the patient translocation apparatus. A longitudinal
6 through hole 13 is defined in the slide 10 for movably receiving the mast 51 of
7 the translocation apparatus. The slide 10 further defines a longitudinal screw
8 hole 11 adjacent to the through hole 13 to threadingly receive the lifter 20
9 therein. The lifter 20 is configured to be a screw stem (not numbered) having a
10 plain portion 21 integrally formed thereon. The plain portion 21 has a diameter
11 slightly smaller than that of the screw stem and defines a radial through hole 211
12 therein. The driving member 30 is composed of a slave element 31 and a driving
13 element 37. The slave element 31 includes a helical gear (not numbered), a plate
14 32 formed on the helical gear and a pillar 34 extending upward from the plate
15 32. An axial hole 33 is defined in the slave element 31 for the plain portion 21
16 of the lifter 20 to be extended therethrough. In addition, the pillar 34 defines a
17 radial cutout 341 corresponding to the radial hole 211 of the plain portion 21 of
18 the lifter 20 and in communication with the axial hole 33 of the slave element
19 31, such that a pin 22 can be extended through the cutout 341 and the radial hole
20 211 of the plain portion 21 to engage the slave element 31 with the lifter 20
21 when the radial cutout 341 is aligned with the radial hole 211. The driving
22 element 37 of the driving member 30 can be configured as a worm with
23 differential serrations engaged with the helical gear. The driving element 37
24 further includes a crank 38 for driving the driving element 37 and thereby
25 driving the slide 10 up or down. Furthermore, the manual lifting/lowering
26 device has a bracket 15 mounted to an outer surface of the mast 51 and under
27 the slide 10. The bracket 15 comprises a horizontal plate (not numbered) and a
28 vertical plate(not numbered). The horizontal plate defines a blind hole (not
29 numbered) therein aligning with the screw hole 11 of the slide 10 and has a

1 thrust bearing 151 disposed in the blind hole for receiving and securing a
2 bottom end of the screw stem extending through the slide 10.

3 With reference to FIG. 3, in assembly, the slide 10 is firstly mounted
4 around the mast 51 of the translocation apparatus. Then the stem of the lifter 20
5 is threaded into the screw hole 11 of the slide 10 and the lifter 20 is secured by
6 the thrust bearing 151 of the bracket 15. Next, the slave element 31 of the
7 driving member 30 is mounted to the lifter 20 and the pin 22 extends through
8 the radial cutout 341 and the radial through hole 211. To secure the driving
9 element 37 of the driving member 30, a casing 40 can be welded to the mast 51
10 to enclose the slave element 31 and the driving element 37, except for the crank
11 38. The casing 40 has a shaft sleeve 39 securely disposed therein for locating a
12 distal end of the driving element 37.

13 In the situation where the piston means 55 works abnormally or the power
14 source thereof is out, the piston 551 of the piston means 55 will be in a non-
15 moving state. Therefore, the boom 52 can not be driven up or down due to the
16 malfunction of the piston 551. At this time, the user may operate the crank 38
17 manually to drive the driving element 37. In this way, the slave element 31 will
18 drive the lifter 20 to rotate, enabling the slide 10 to make an up or down
19 movement along the length of the mast 51.

20 It is to be understood, however, that even though numerous characteristics
21 and advantages of the present invention have been set forth in the foregoing
22 description, together with details of the structure and function of the invention,
23 the disclosure is illustrative only, and changes may be made in detail, especially
24 in matters of shape, size, and arrangement of parts within the principles of the
25 invention to the full extent indicated by the broad general meaning of the terms
26 in which the appended claims are expressed.

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

1. A manual lifting/lowering device for a patient translocation apparatus, said patient translocation apparatus including a base, a boom supported by a mast mounted on the base, a hanger engaged with the boom for suspending a patient and a piston means for driving the boom up or down, said manual lifting/lowering device comprising:

a slide suitable for engaging with the piston means, said slide defining a screw hole therein and a through hole adjacent to the screw hole, the through hole being so configured that when the mast is received in the through hole, the mast is able to move within the through hole;

a lifter rotatably received within the screw hole of the slide;

a driving member with a crank provided for driving the lifter to rotate thereby allowing an up or down movement of the slide; and

a bracket adapted to be mounted to an outer surface of the mast and under the slide, said bracket comprising a horizontal plate and a vertical plate, said horizontal plate defining a blind hole aligned with the screw hole of the slide and having a thrust bearing disposed in the blind hole for receiving and securing a bottom end of a screw stem;

wherein said lifter has a plain portion integrally formed on the screw stem, said plain portion having a diameter smaller than that of the screw stem and defining a radial through hole for engagingly receiving the driving member.

2. A manual lifting/lowering device as claimed in claim 1, wherein said slide has a block integrally formed at one side thereof for pivotedly connecting with a power source of the piston means.

3. A manual lifting/lowering device as claimed in claim 1, wherein said lifter is configured as a screw stem.

4. A manual lifting/lowering device as claimed in claim 1, wherein said driving member includes a slave element and a driving element.
5. A manual lifting/lowering device as claimed in claim 4, wherein said slave element includes a helical gear, a plate formed on the helical gear and a pillar extending upward from the plate, and defines an axial hole for the plain portion of the lifter to be extended therethrough, wherein said pillar defines a radial cutout aligning with the radial hole of the plain portion of the lifter and in communication with the axial hole, such that a pin can be extended through the cutout and the radial hole of the plain portion to engage the slave element with the lifter.
6. A manual lifting/lowering device as claimed in claim 5, wherein said driving element is configured as a worm with differential serrations.
7. A manual lifting/lowering device as claimed in claim 1, further including a casing enclosing the driving member, except for the crank, said casing having a shaft sleeve disposed therein for securing the driving element.

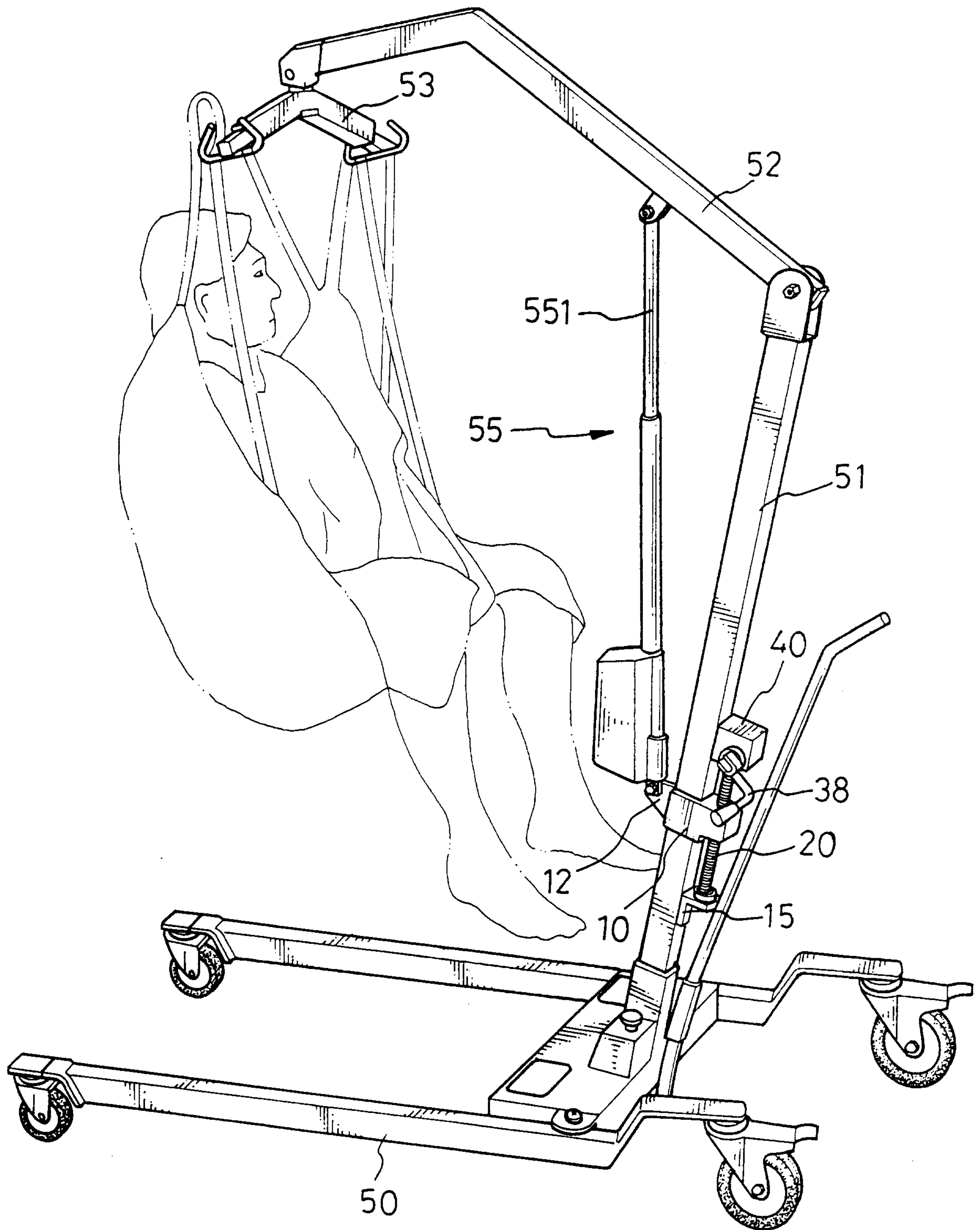


FIG. 1

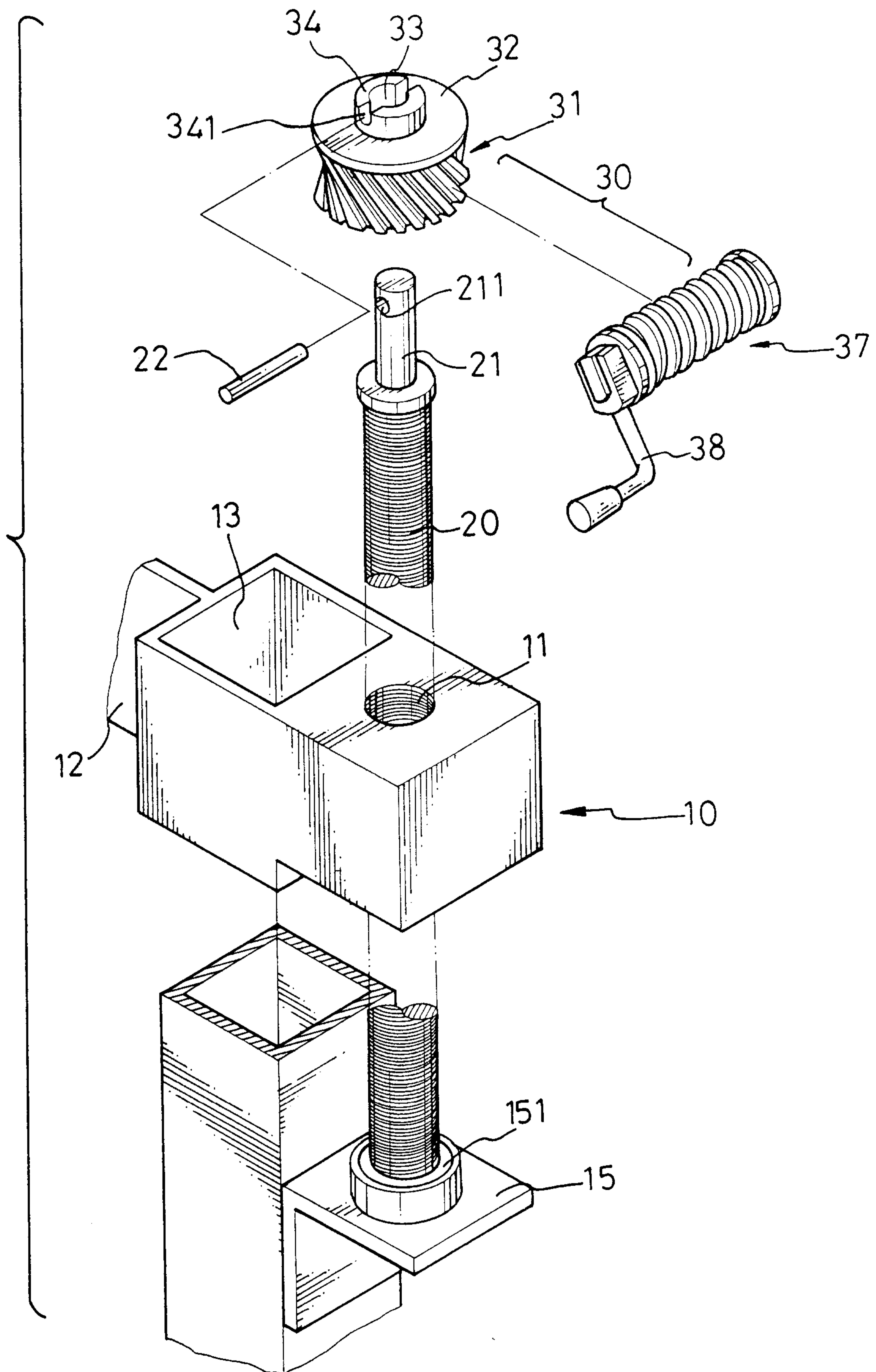


FIG. 2

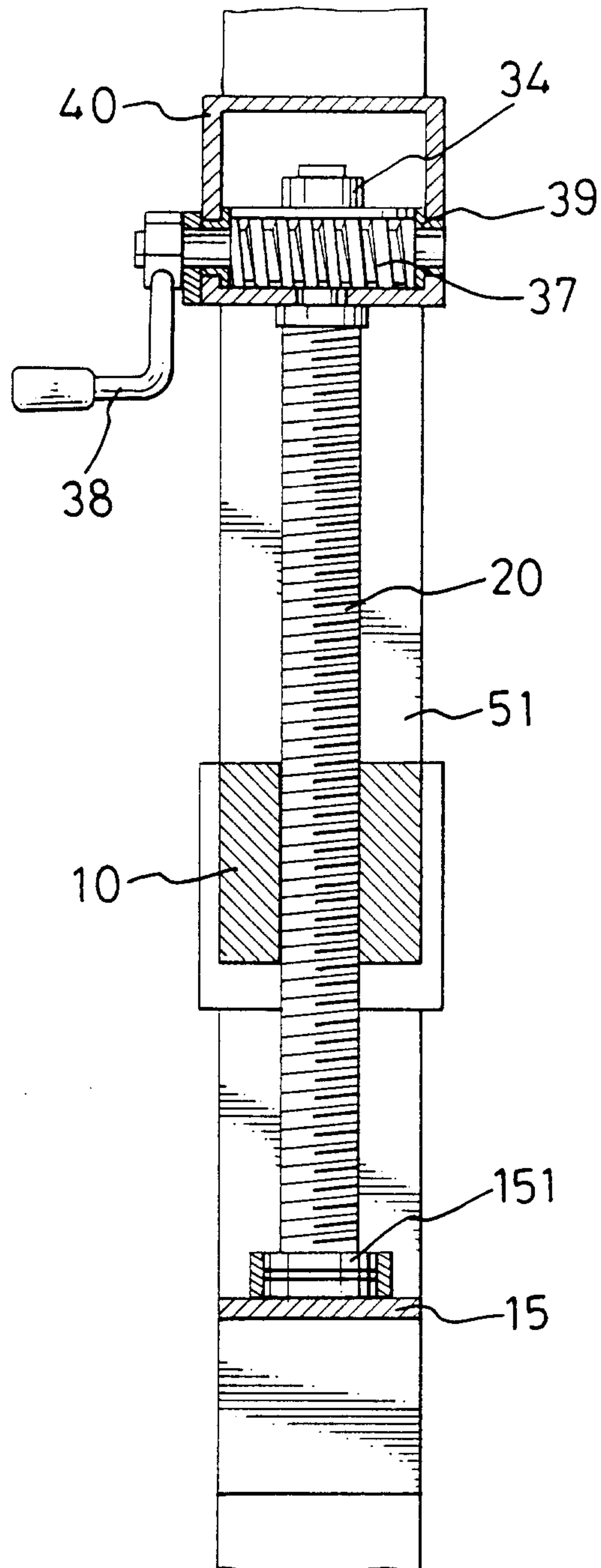


FIG. 3

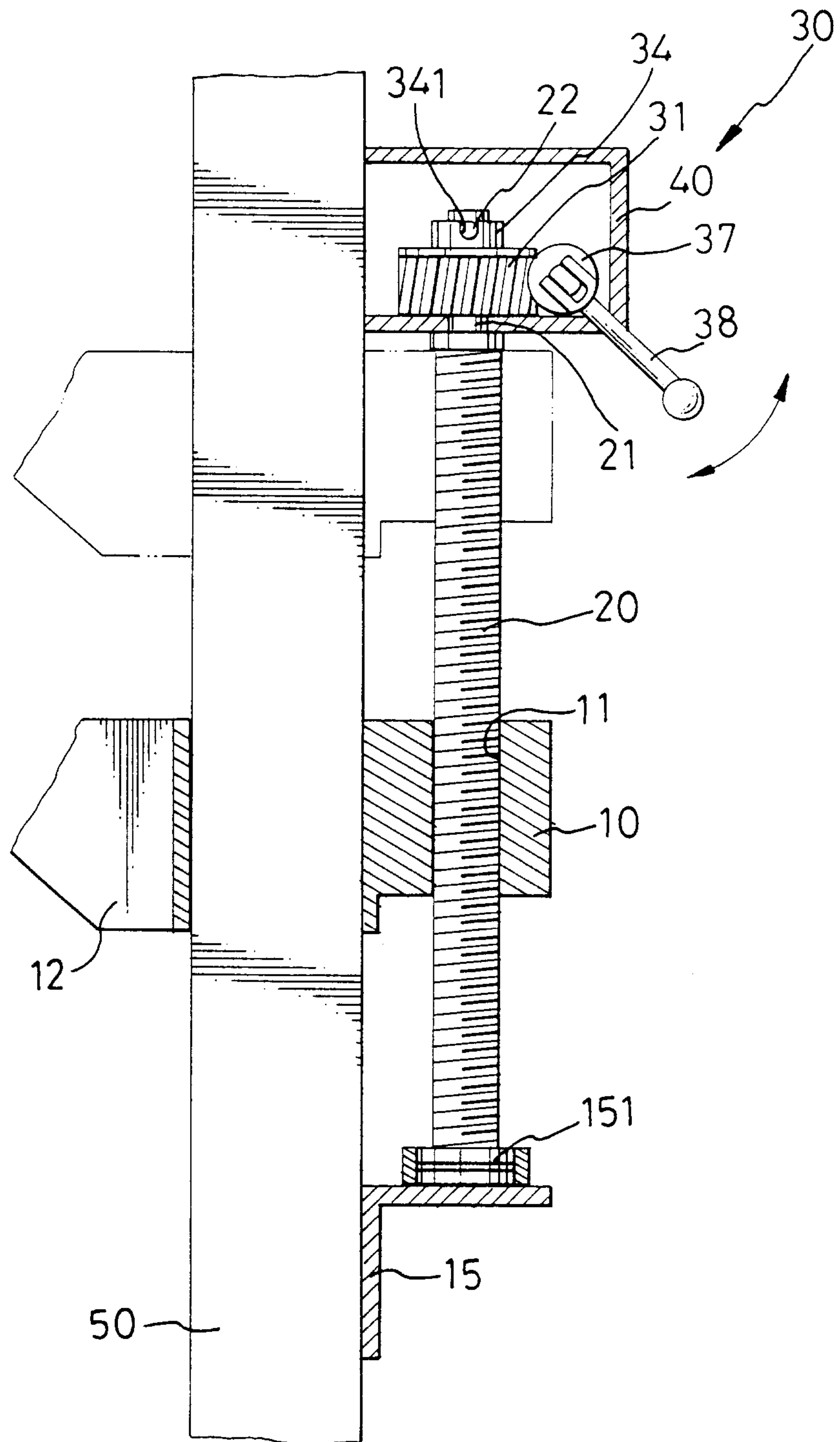


FIG. 4

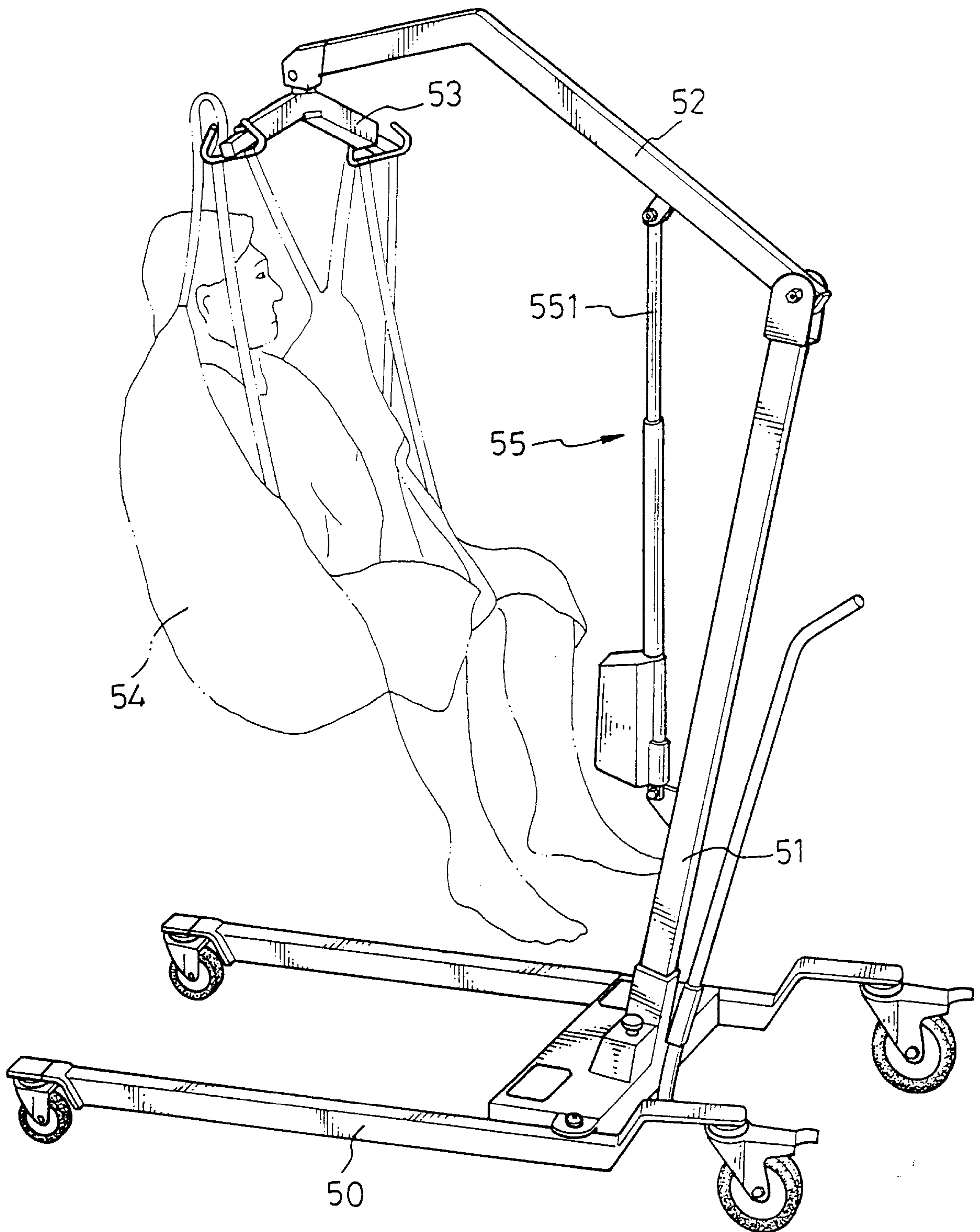


FIG. 5
PRIOR ART

