

Description

The present invention relates to a seating arrangement and in particular to a seating arrangement adapted to act as a vehicle seat and also permit use in a wheelchair mode.

DE-A-3804282 discloses a seating arrangement, having a seat which lifts off from a wheelchair chassis. A disadvantage of the apparatus disclosed in DE-A-38040282 is that the user must load the wheelchair chassis into the vehicle subsequently.

An improved seating arrangement has now been devised.

According to the invention, there is provided a seating arrangement including:

- i) a rotatable mount for the interior of a vehicle, the mount having first elongate guide means; and
- ii) a seat provided with a frame including:

- a) attachment means for releasable attachment to a pair of wheels disposed one on either side of the seat permitting the seat to function in a wheelchair mode; and,
- b) second elongate guide means arranged to slidably cooperate with the first elongate guide means provided for the rotatable mount, such that the seat may be backed, from a position supported on the wheels externally of the vehicle, into a supported position on the mount in the interior of the vehicle.

It is preferred that the rotatable mount permits the first elongate guide means to be re-orientated from a loading position through substantially a right angle to a driving position. Preferably, stop means is provided, arranged to stop the rotatable mount with the first elongate guide means orientated in the loading position and/or the driving position.

Desirably the rotatable mount further comprises height adjustment means for raising and lowering the first elongate guide means. This permits the level of the guide means to be adjusted which is important in view of the fact that the seat, in wheelchair mode may rest upon a surface at different level to the surface upon which the vehicle rests (such as a pavement). Desirably the adjustment means is manually accessible by the user from a seated position in the seat in wheelchair mode. The height adjustment means may comprise a mechanical linkage such as, for example, a scissors linkage or the like.

Desirably the rotatable mount comprises a base portion arranged to be secured to the vehicle floor. The rotatable mount preferably comprises a rotatable turntable, which turntable carries the first elongate guide means. Typically the turntable is mounted on bearings, desirably ballbearings mounted in a suitable race. It is preferred that the first and second guide means com-

prise respective pairs of spaced elongate guide elements (typically 'U' section channel elements). Respective guide elements comprising the first and second guide means are arranged to slidably receive and engage one another as the seat is backed to the supported position of the mount in the interior of the vehicle.

The first and second guide means are preferably slidably engageable such that, in backing the seat from a position supported on the wheels external of the vehicle to a supported position on the mount, an intermediate position is reached in which the main wheelchair wheels can be removed from the frame of the seat. When the wheelchair wheels are removed, the seat is supported at the rear by the first guide means provided on the mount, and at its forward end, by one or more stabilising wheels (such as "jockey" wheels) which are preferably carried by the seat.

Typically a pair of stabilising wheels are provided at the forward end of the seat, one being provided on either side of the seat.

In one embodiment the stabilising wheels may be fully removable to permit the seat to be fully backed into position on the mount.

In an alternative embodiment, the stabilising wheels are movable from an in use ground engaging position to a stowed position lying adjacent respective sides of the seat. In this embodiment, it is preferred that the stabilising wheels are carried by legs arranged to swing pivotally upwardly from the in use position to the stowed position, in order that the seat may be fully backed into position on the rotatable mount.

The invention will now be further described in a specific embodiment by way of example only and with reference to the accompanying drawings, in which:

- Figure 1 is a schematic perspective view of a seating arrangement according to the invention;
- Figure 2 is a perspective view of the seat of the seating arrangement in wheelchair mode;
- Figures 3 and 4 are schematic side views of the seat of Figure 3 in alternative configurations;
- Figure 5 is a schematic side view of the rotatable mount of the seating arrangement in a lowered configuration;
- Figure 6 is a schematic side view of the mount of Figure 5 in a raised configuration;
- Figure 7 is a schematic plan view of the rotatable mount shown in Figures 5 and 6; and
- Figure 8 is a schematic side view of the seating arrangement of Figure 1 showing the seat in position on the rotatable mount.

Referring to the drawings, there is shown a seating arrangement (generally designated 1) comprising a rotatable mount 2 fixed in the interior of a vehicle 3 for supporting a seat 4.

The rotatable mount comprises a turntable 5 mounted by means of a rotatable ballbearing race 6 to a height

adjustable base portion 7. Turntable 5 carries spaced elongate 'U' shaped guide channels 9,10 the purpose of which is described in more detail hereafter.

The base portion 7 is height adjustable by means of a scissors linkage mechanism 8 operable by an axially rotatable lead screw 11 provided with turning handle 12. The base portion 7 is mounted to the standard seat receiving rails 13. The position of the base 7 on rails 13 is adjustable by means of conventional sliding and locking mechanism 14.

As shown most clearly in Figure 7, the turntable 5 is rotatable through 90 degrees relative to base 7 by means of the ballbearing race 6 (such that the rails 9,10 take up the position shown in ghost detail). Stop formations 15,16 are provided for the turntable 5 to ensure that the turntable and guide rails 9,10 stop in the desired 90 degree spaced orientations.

Seat 4 comprises a frame 18 carrying a pair of spaced elongate runners 19,20 which are spaced to be received in respective elongate guide channels 9,10 provided on rotatable mount 2. A standard wheelchair support wheel 21,22 is provided on either side of seat 4 and mounted at fixing 23 such that the respective wheels 21,22 are conveniently demountable from the seat 4.

A respective leg 25,26 is provided on either side of seat 4 proximate its forward edge; each leg 25,26 carries a respective jockey wheel 27,28 (and may also carry a respective footplate 29,30 shown in the embodiment of Figure 1). Each leg 25,26 is pivotally connected to the seat 4 such that it may be re-orientated from an in use position (shown in ghost detail in Figure 3 and bold in Figure 4) to a stowed position adjacent the respective side of seat 4 (as shown in bold in Figure 3).

In use, the seat in wheelchair mode (as shown in Figure 2) is backed up toward the rotatable mount 2 which is accessible via the open door of the vehicle (as shown in Figure 1). The turntable 5 is rotated to its "loading" position in which the respective axes of the guide channels 9,10 extend outwardly through the open door of the vehicle. The seat is then manoeuvred such that runners 19,20 align with respective guides 9,10. The height of turntable 5 (and thereby guide channels 9,10) may be adjusted if necessary by means of handle 12 and lead screw 11/scissors linkage 8.

When respective runners 19,20 aligned with respective guide channels 9,10 the seat, in wheelchair mode, is backed such that respective ends of runners 19,20 slidably engage with respective guide channels 9,10. Following partial engagement (as shown in Figure 1) the major support wheels 21,22 are demounted from the seat and may be stowed in the vehicle. At this stage, the seat 4 is supported on jockey wheels 28 at its forward end and upon the tips of guide channels 9,10 at its rear. Thereafter the chair is backed into position fully supported on mount 2, and legs 25,26 swung into the stowed position to permit entry of the seat fully into the interior of the vehicle 3. Rotatable mount 2 is then rotated

to be re-orientated through 90 degrees to the driving position in which the passenger, seated in seat 4, faces forwardly in the vehicle 3.

The procedure for the user leaving the vehicle is that reverse of that described above.

The apparatus may be provided with suitable stops selectively actuable by the user to ensure that, when slidably engaging runners 19,20 in guide channels 9,10 the seat is halted in the correct position relative to the mount for the major wheels 21,22 to be removed, or replaced.

Claims

1. a seating arrangement including:

- i) a rotatable mount for the interior of a vehicle, the mount having first elongate guide means; and
- ii) a seat provided with a frame including:

- a) attachment means for releasable attachment to a pair of wheels disposed one on either side of the seat permitting the seat to function in a wheelchair mode; and,
- b) second elongate guide means arranged to slidably cooperate with the first elongate guide means provided for the rotatable mount, such that the seat may be backed, from a position supported on the wheels externally of the vehicle, into a supported position on the mount in the interior of the vehicle.

2. A seating arrangement according to claim 1, wherein the rotatable mount permits the first elongate guide means to be re-orientated from a loading position through substantially a right angle to a driving position.

3. A seating arrangement according to claim 2, further comprising locking means arranged to lock the rotatable mount with the first elongate guide means orientated in the loading position and/or the driving position.

4. A seating arrangement according to any preceding claim, further comprising height adjustment means for raising and lowering the first elongate guide means such that the height thereof is adjustable.

5. A seating arrangement according to claim 4 or claim 5, wherein the height adjustment means comprises a mechanical linkage.

6. A seating arrangement according to any preceding claim, wherein the rotatable mount comprises a

base portion arranged to be secured to the vehicle floor; and/or a rotatable turntable, which turntable carries the first elongate guide means.

7. A seating arrangement according to any preceding claim, wherein the first elongate guide means comprises a pair of spaced elongate guide elements, the second elongate guide means comprising a corresponding pair of spaced elongate guide elements, guide elements comprising the first and second guide means respectively being arranged to slidably receivingly engage one another as the seat is backed into the supported position on the mount in the interior of the vehicle. 5 10 15
8. A seating arrangement according to any preceding claim, wherein, the first and second guide means are slidably engageable such that in backing the seat from a position supported on the wheels externally of the vehicle, into a supported position on the mount in the interior of the vehicle, an intermediate position is reached in which the wheels can be removed from the frame of the seat. 20
9. A seating arrangement according to any preceding claim, wherein the second elongate guide means is provided on the underside of the seat. 25
10. A seating arrangement according to any preceding claim, wherein the first and second elongate guide means are selectively securable in predetermined positions of relative sliding. 30

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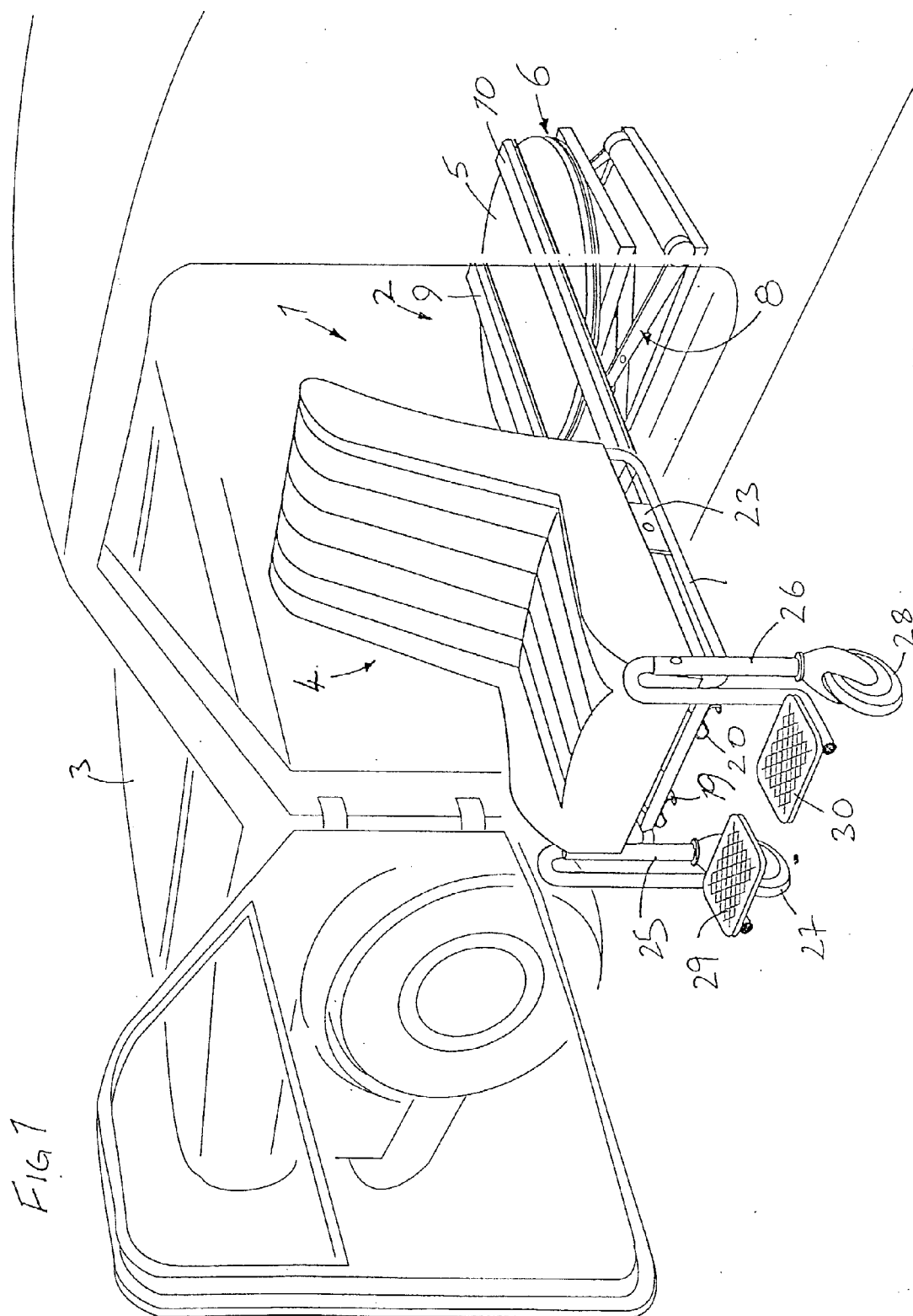
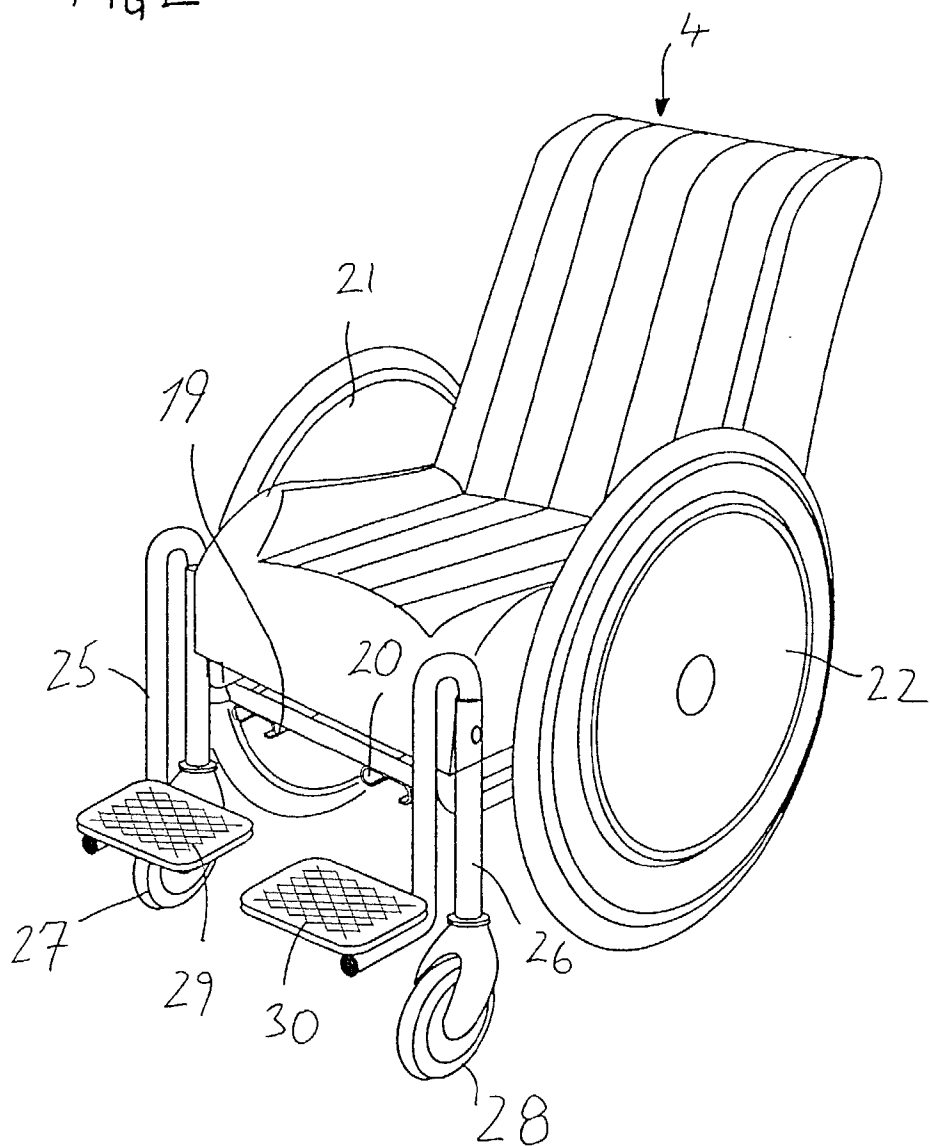


Fig 2



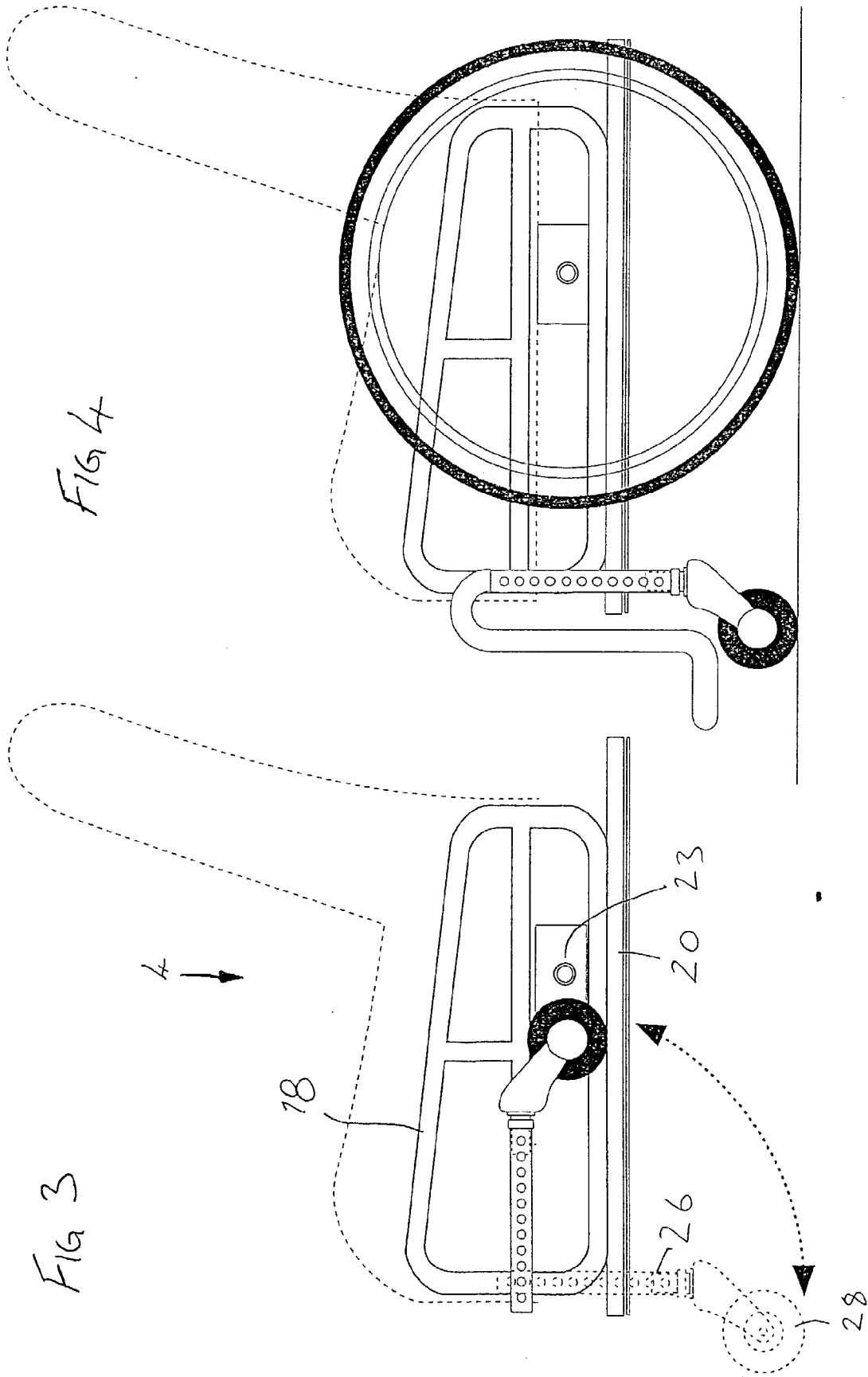


FIG 5

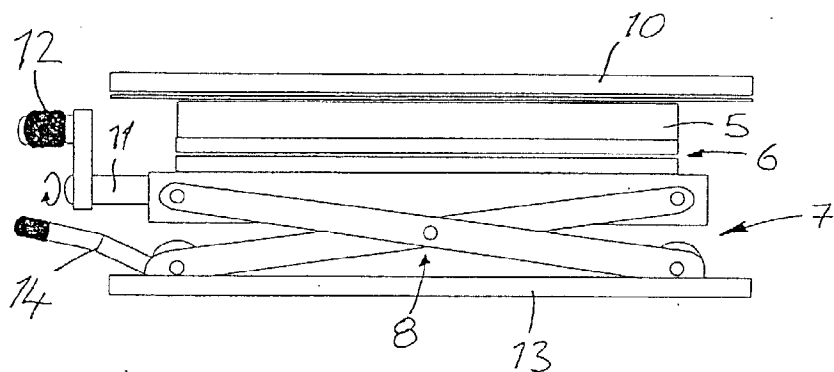


FIG 6

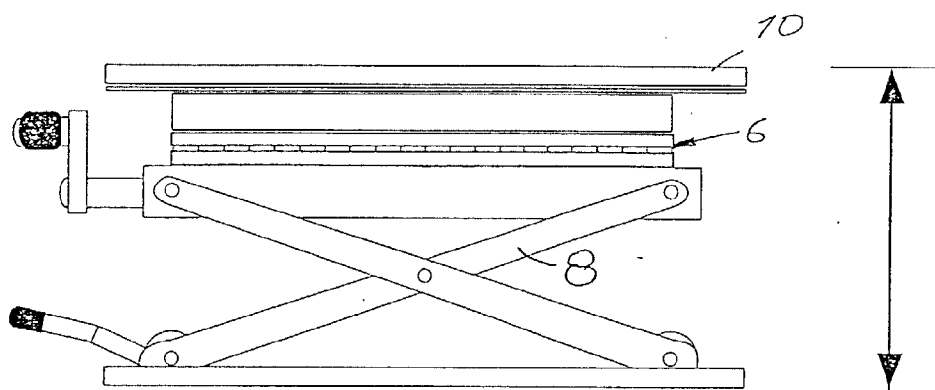
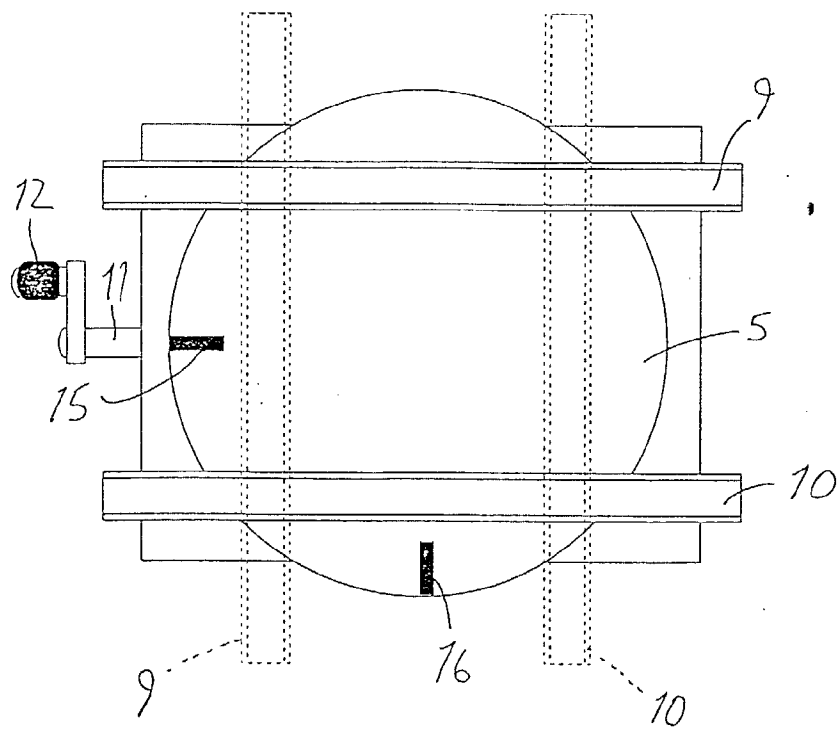


FIG 7



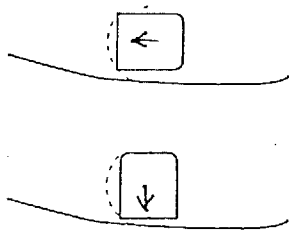


FIG 8

