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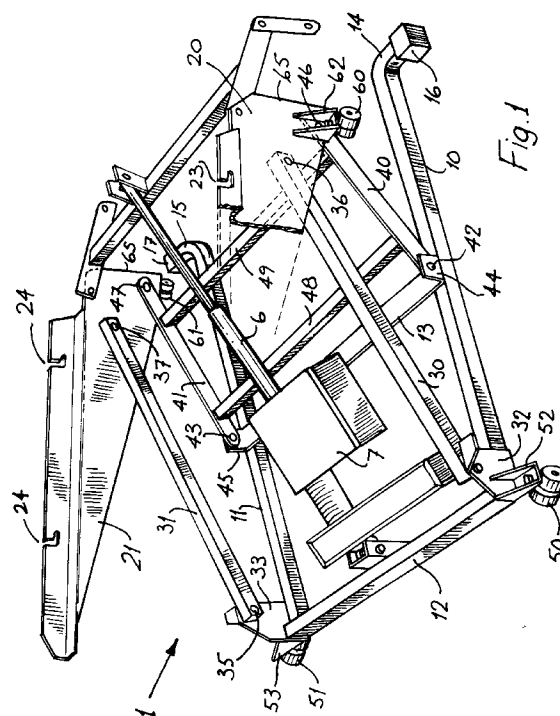
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(54) **Reclining elevator chair with castors disengageable from the ground.**

(57) A support frame 1 for an elevator chair 2 comprises a ground engaging base frame 10, 11, 12, 13 and side supports 20, 21 to which a seat portion 3 of the chair 2 is mounted. Upper and lower linkage arms 30, 31, 40, 41 extend between the base frame 10, 11, 12, 13 and the side supports 20, 21. The linkage is operated by a ram 6 to raise the seat portion 3 of the chair 2 to assist a user in exiting from the chair. A pair of rear castors 50, 51 and a pair of front castors 60, 61 are provided. When a user is resting on the chair the castors 50, 51, 60, 61 engage the ground. When a user operates the ram 6 the front castors 60, 61 are raised and the chair is supported on front ground engaging legs which prevent the chair from moving as a user is exiting from the chair.



The invention relates to improvements in and relating to chairs and more particularly to improvements in and relating to elevator chairs particularly reclining elevator chairs having a tiltable back portion, an extendable leg rest portion and actuating means for raising the seat and simultaneously tilting it forwardly to assist a user in rising from the chair.

One such reclining elevator chair is described in US Patent Specification No. 4007960 (Gaffney). The chair described in this US Patent Specification has been extremely successful and is widely used throughout the world for assisting arthritic or other partially disabled persons. It provides a very comfortable chair to sit on from which a user can relatively easily rise.

Chairs of this type generally have ground engaging legs which, although essential for fixing the chair in position for safety, particularly when the user is rising from the chair, mean that the chair cannot be readily adjusted in position.

This invention is directed towards providing a support frame for an elevator chair which will overcome this difficulty.

Statements of Invention

According to the invention there is provided a support frame for a chair having a seat portion which may be raised or tilted, the support frame comprising a base frame and actuating means for raising and/or tilting the seat portion, the support frame having castors, at least one of which is disengaged from the ground on operation of the actuating means to raise and/or tilt the seat portion.

The term "castor" as used in this specification refers to a wheel, roller or the like element which rides relatively freely over a surface.

In one arrangement the support frame comprises a pair of side supports on which at least the seat portion of a chair is supported, and a linkage extends between the base frame and the side supports to raise the side supports and hence the seat portion on operation of the actuating means to raise and/or tilt the seat portion, at least one pair of castors being mounted for disengagement from the ground as the side supports are raised.

According to a particular aspect of the invention, there is provided a support frame for an elevator chair of the type comprising a back portion, a seat portion and actuating means for raising and/or tilting the seat portion forwardly to assist a user in rising from the chair, the support frame comprising a ground engaging base frame, a pair of side supports on which at least the seat portion of the chair is supported, and a linkage extending between the base frame and the side supports to raise the side supports and hence the seat portion on operation of the actuating means, wherein castors are provided on the support frame, at

least one pair of castors being mounted for disengagement from the ground as the side supports are raised on operation of the actuating means.

In a particularly preferred embodiment of the invention, a first pair of castors are provided at one end of the base frame and a second pair of castors are provided at the opposite end of the linkage or side supports so that the second pair of castors disengage from the ground as the side supports are raised.

In a particularly preferred embodiment of the invention the second pair of castors are mounted on the side supports.

In one embodiment of the invention, the first pair of castors are mounted to first cleats which are attached to the base frame and the second pair of castors are mounted to second cleats which are attached to the side supports.

Typically, the base frame comprises a pair of side rails which are interconnected by a rear cross member and an intermediate cross member, the first pair of castors being mounted at the junction between the side rails and the rear cross member.

In one embodiment of the invention, the linkage comprises a pair of upper linkage arms extending between the rear of the base frame and the side supports and a pair of lower linkage arms, forward of the upper linkage arms and extending between the base frame and the side support members.

Preferably, the second pair of castors are mounted at the forward end of the side supports and the side supports are strengthened in the region of the attachment between the side supports and the castors.

In one embodiment of the invention, the side supports comprise a plate member having an intumed lip portion adjacent the forward end thereof to strengthen the support member in the region of the attachment of the castors to the support members.

The invention also provides an elevator chair incorporating a support frame according to the invention.

Detailed Description of the Invention

The invention will be more clearly understood from the following description thereof given by way of example only with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view of a support frame for an elevator chair according to the invention,

Fig. 2 is a side view of the support frame in a lowered position of use,

Fig. 3 is a side view of the support frame in a raised position of use, and

Figs. 4 and 5 are diagrammatic side views illustrating the various positions of a chair incorporating the support frame, in use.

Referring to the drawings, there is illustrated a support frame according to the invention and indicat-

ed generally by the reference numeral 1 for an elevator chair 2 of the type comprising a back portion 3, a seat portion 4 and a leg rest portion 5. Actuating means are provided for raising and tilting the seat portion 4 forwardly to assist a user in rising from the chair. In this case, the actuating means is provided by a ram 6 operated by an electric motor 7 in response to user input from a push button control unit (not shown).

The support frame comprises a ground engaging base frame formed from a pair of side rails 10, 11 which are interconnected by a rear cross member 12 and an intermediate cross member 13. Forward ends of the side rails 10, 11 are turned outwardly at 14, 15 respectively, and are provided with end-caps 16, 17 to which ground engaging legs are mounted. The support frame also comprises a pair of side supports, in this case provided by side support members 20, 21 having support lugs 23, 24 to which the seat portion 3 of the chair 2 is mounted.

A linkage extends between the base frame and the side support members 20, 21. The linkage operates on actuation of the ram 6 to raise the side supports 20, 21 and hence the seat portion 3 of the chair 2 to assist a user in rising from the chair. In this case, the linkage comprises a pair of upper link arms 30, 31 extending between mounting plates 32, 33 provided at the rear of the base frame and a forward end of the side support members 20, 21. The upper linkage arms 30, 31 are pivotally mounted by pivot connections 34, 35, 36, 37 to the mounting plates 32, 33 and side support members 20, 21 respectively. The linkage also comprises a pair of lower link arms 40, 41 which are pivotally mounted at 42, 43 to upwardly extending flanges 44, 45 provided at opposite sides of the intermediate cross member 13 and are pivotally mounted by pivot connections 46, 47 to the respective side support members 20, 21. Reinforcing cross members 48, 49 extend between the lower linkage arms 40, 41.

A pair of rear castors 50, 51 are mounted to cleats 52, 53 respectively which in turn are mounted to the mounting plates 32, 33 at the rear of the base frame. A pair of forward castors 60, 61 are mounted on cleats 62 which in turn are mounted to the side support plate members 20, 21 adjacent the forward end thereof, in use. The side support members 20, 21 are reinforced in the region of the mounting of the cleats 62 by providing an intumed lip portion 65 at the forward end of the plate members 20, 21, in use.

In use, when a user is resting in the chair either in the inclined or upright position as illustrated in Fig. 2, the upper and lower linkages are collapsed downwardly and the castors 50, 51, 60, 61 engage the ground, as illustrated in Fig. 2. In this position, the user or another person may easily manoeuvre the chair into a desired position.

When a user wishes to rise from the chair he op-

erates a push button which actuates the motor 7 to extend the ram 6 and cause the linkages 30, 31, 40, 41 to rise upwardly through the intermediate position illustrated in Fig. 1 to a fully raised position illustrated in Figs. 3 and 5. It will be noted that as soon as the linkages are raised, the front castors 60, 61 are raised out of engagement with the ground so that the front part of the chair is supported on ground engaging legs which do not allow the chair to be moved as the seat portion is being raised into the positions illustrated in Figs. 3 and 5 to assist a user in exiting from the chair. When a user has risen from the chair the motor 7 is again operated to retract the rams 6 collapsing the linkages 40, 41, 30, 31 downwardly until the castors 60, 61 engage the ground at which point the chair may again be manoeuvred as required.

The invention provides an improved support frame and an elevator chair incorporating such a support frame which allows the chair to be manoeuvred safely while also allowing a user to exit from the chair safely, without any risk of the chair moving as the seat portion is being raised to assist a user in rising from the chair.

Claims

1. A support frame (1) for a chair (2) having a seat portion (4) which may be raised or tilted, the support frame (1) comprising a base frame (10, 11) and actuating means (6) for raising and/or tilting the seat portion (4) characterised in that the support frame (1) has castors (50, 51, 60, 61), at least one (60, 61) of which is disengaged from the ground on operation of the actuating means (6) to raise and/or tilt the seat portion (4).
2. A support frame (1) as claimed in claim 1 characterised in that the support frame includes a pair of side supports (20, 21) on which at least the seat portion (4) of a chair is supported, and in that a linkage (30, 31, 40, 41) extends between the base frame (10, 11) and the side supports (20, 21) to raise the side supports (20, 21) and hence the seat portion (4) on operation of the actuating means (6) to raise and/or tilt the seat portion (4), at least one pair of castors (60, 61) being mounted for disengagement from the ground as the side supports (20, 21) are raised.
3. A support frame (1) for an elevator chair (2) of the type comprising a back portion (3), a seat portion (4) and actuating means (6) for raising and/or tilting the seat portion (4) forwardly to assist a user in rising from the chair (2), the support frame (1) comprising a base frame (10, 11), side supports (20, 21) on which at least the seat portion (4) of the chair (2) is supported, and a linkage (30, 31,

40, 41) extending between the base frame (10, 11) and the side supports (20, 21) to raise the side supports (20, 21) and hence the seat portion (4) on operation of the actuating means (6) characterised in that castors (50, 51, 60, 61) are provided on the support frame (1), at least one pair of castors (60, 61) being mounted for disengagement from the ground as the side supports (20, 21) are raised on operation of the actuating means (6).

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4. A support frame (1) as claimed in claim 3 characterised in that a first pair of castors (50, 51) are provided at one end of the base frame (10, 11) and a second pair of castors (60, 61) are provided at the opposite end of the linkage (30, 31, 40, 41) or side supports (20, 21) so that the second pair of castors disengage (60, 61) from the ground as the side supports (20, 21) are raised.

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5. A support frame (1) as claimed in claim 4 characterised in that the second pair of castors (60, 61) are mounted on the side supports (20, 21).

6. A support frame (1) as claimed in claim 4 or 5 wherein the first pair of castors (50, 51) are mounted to first cleats (52, 53) which are attached to the base frame (10, 11) and the second pair of castors (60, 61) are mounted to second cleats (62) which are attached to the side supports (20, 21).

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7. A support frame (1) as claimed in any of claims 4 to 6 characterised in that the base frame (10, 11) comprises a pair of side rails (10, 11) which are interconnected by a rear cross member (12) and an intermediate cross member (13), the first pair of castors (50, 51) being mounted at the junction between the side rails (10, 11) and the rear cross member (12).

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8. A support frame (1) as claimed in any of claims 3 to 7 characterised in that the linkage (30, 31) comprises a pair of upper linkage arms (30, 31) extending between the rear of the base frame (10, 11) and the side supports (20, 21) and a pair of lower linkage arms (40, 41), forward of the upper linkage arms (30, 31) and extending between the base frame (10, 11) and the side support members (20, 21).

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9. A support frame (1) as claimed in any of claims 3 to 8 characterised in that the second pair of castors (60, 61) are mounted at the forward end of the side supports (20, 21) and the side supports (20, 21) are strengthened in the region of the attachment between the side supports (20, 21) and the castors (60, 61).

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10. A support frame (1) as claimed in claim 9 characterised in that the side supports (20, 21) comprise a plate member (20, 21) having an intumed lip portion (65) adjacent the forward end thereof to strengthen the support member in the region of the attachment of the castors (60, 61) to the support members (20, 21).

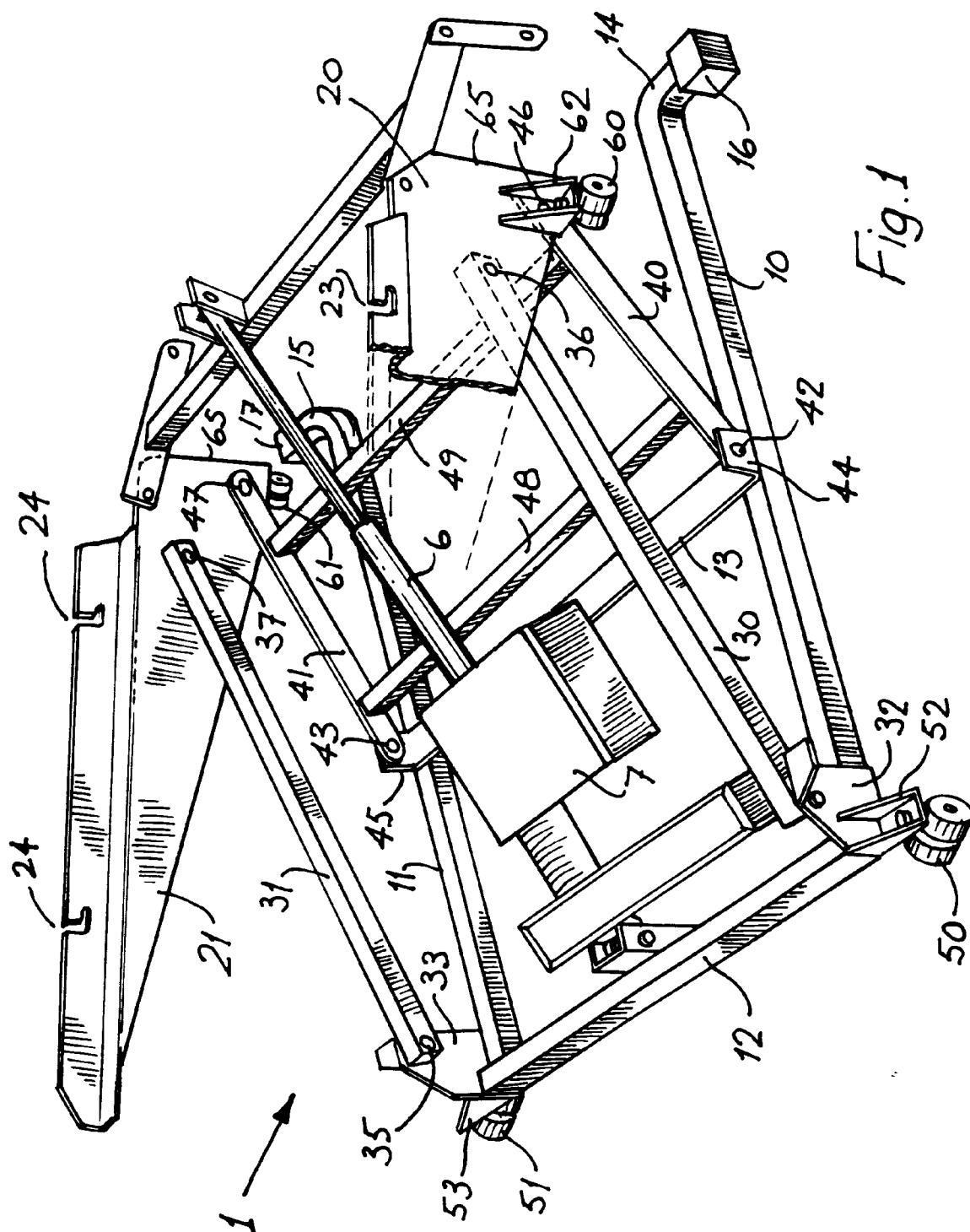
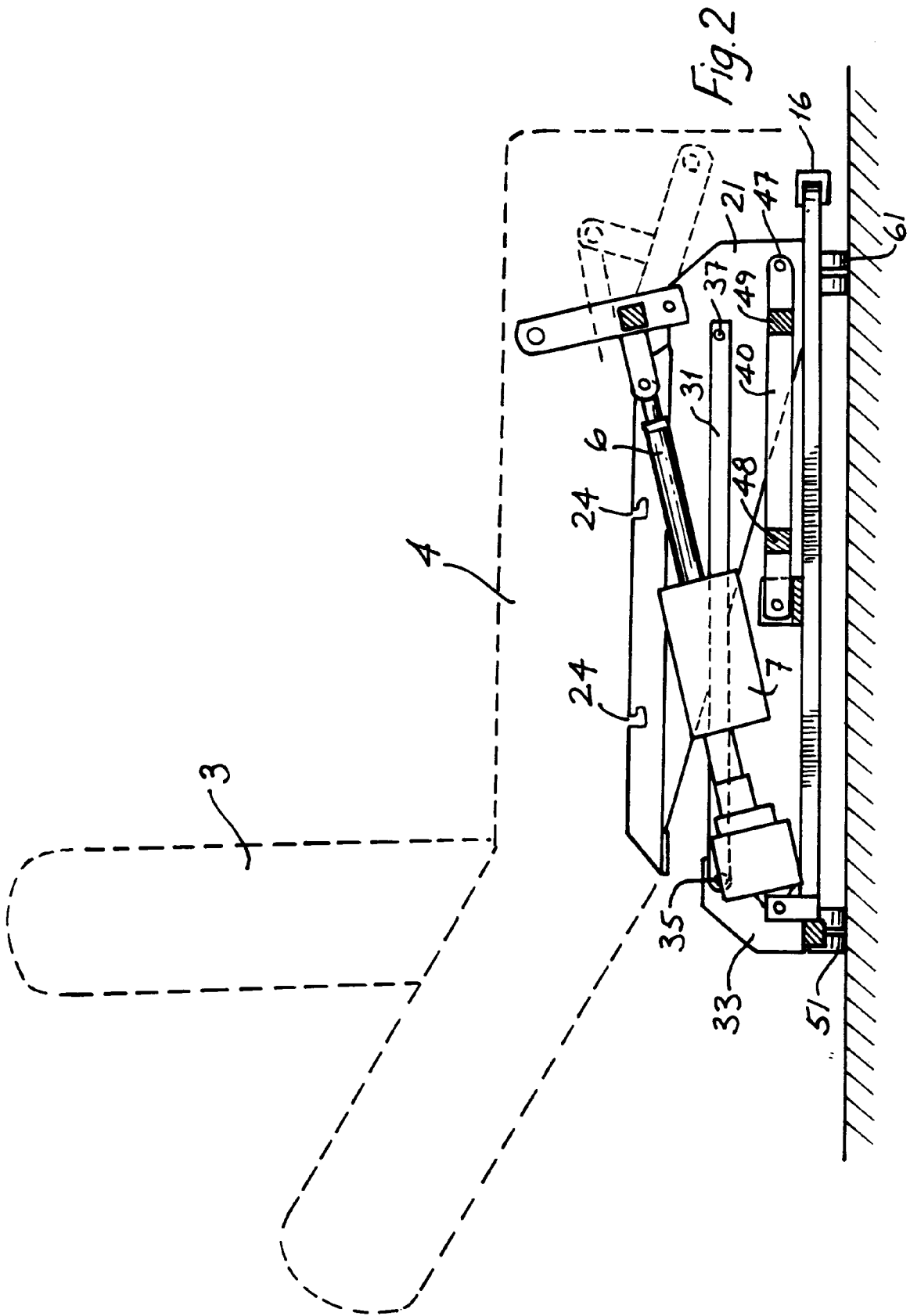


Fig. 1



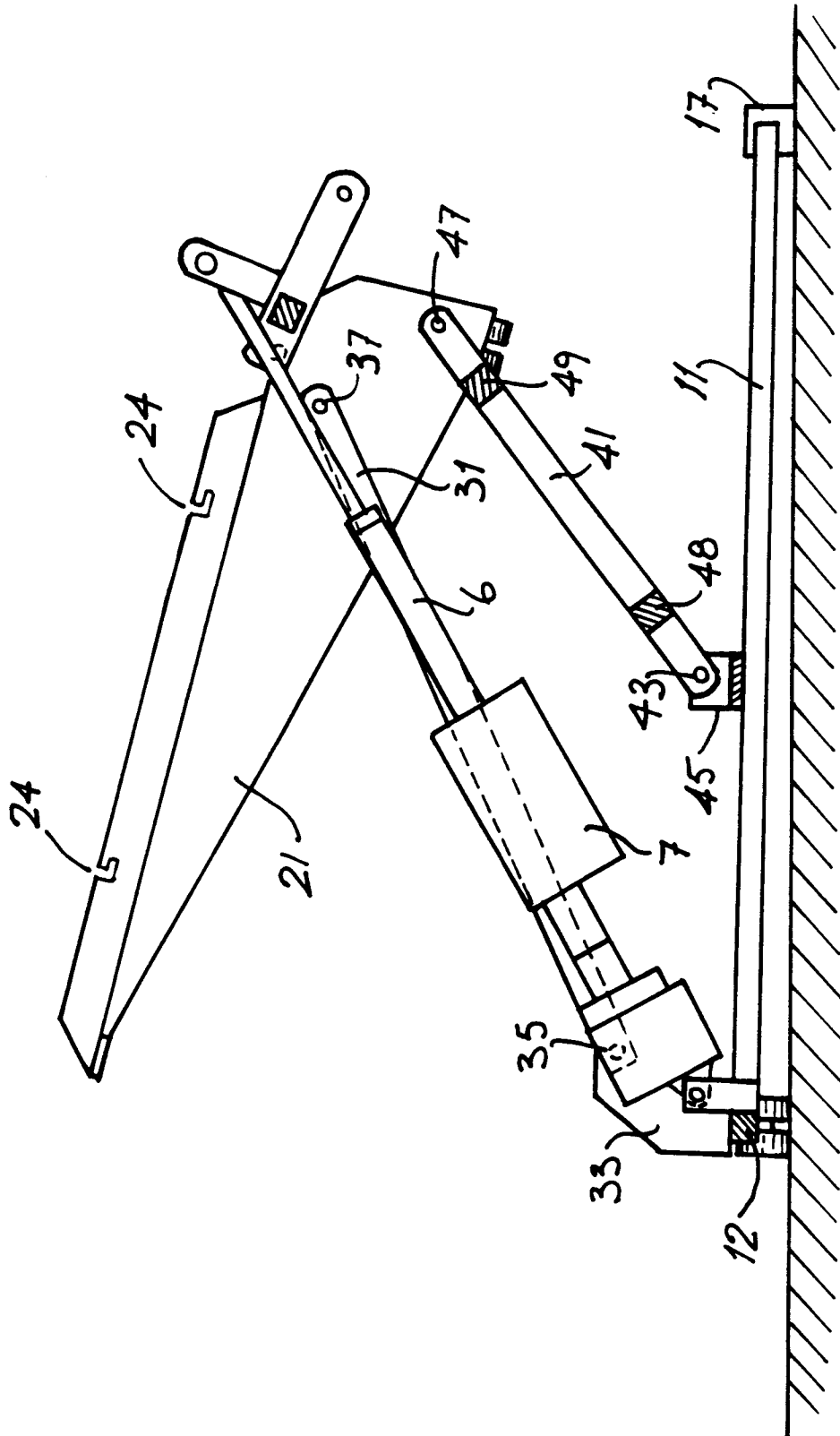
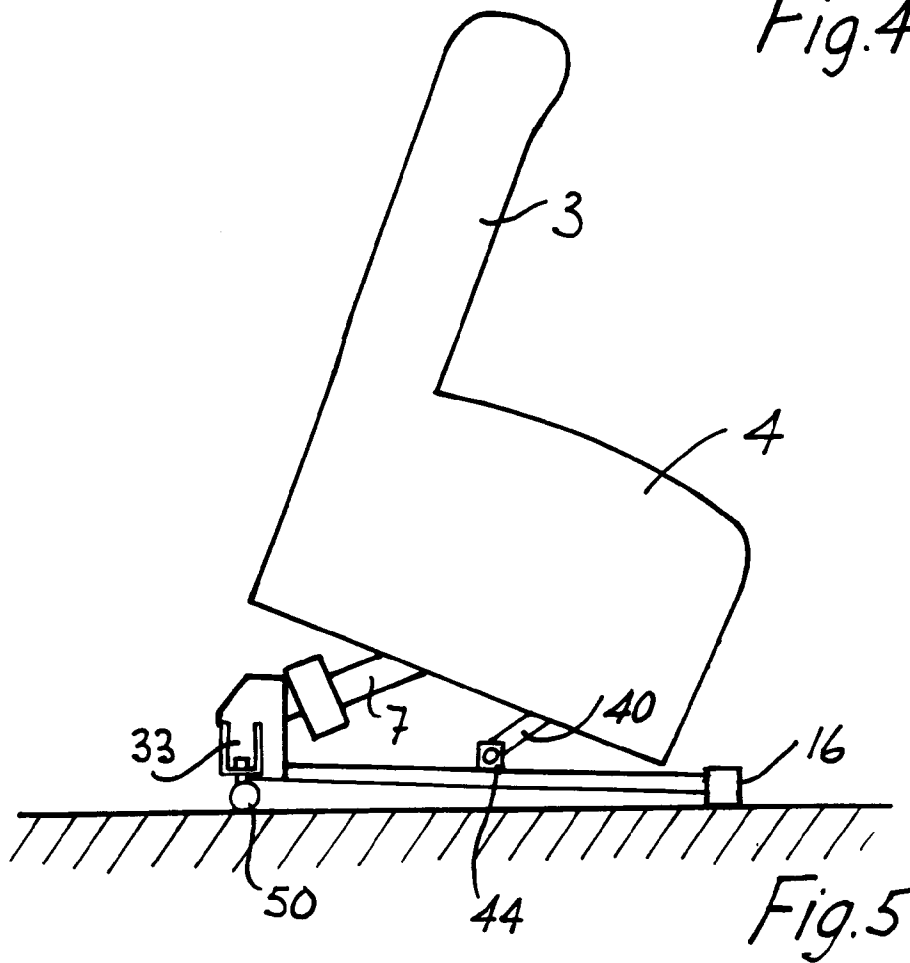
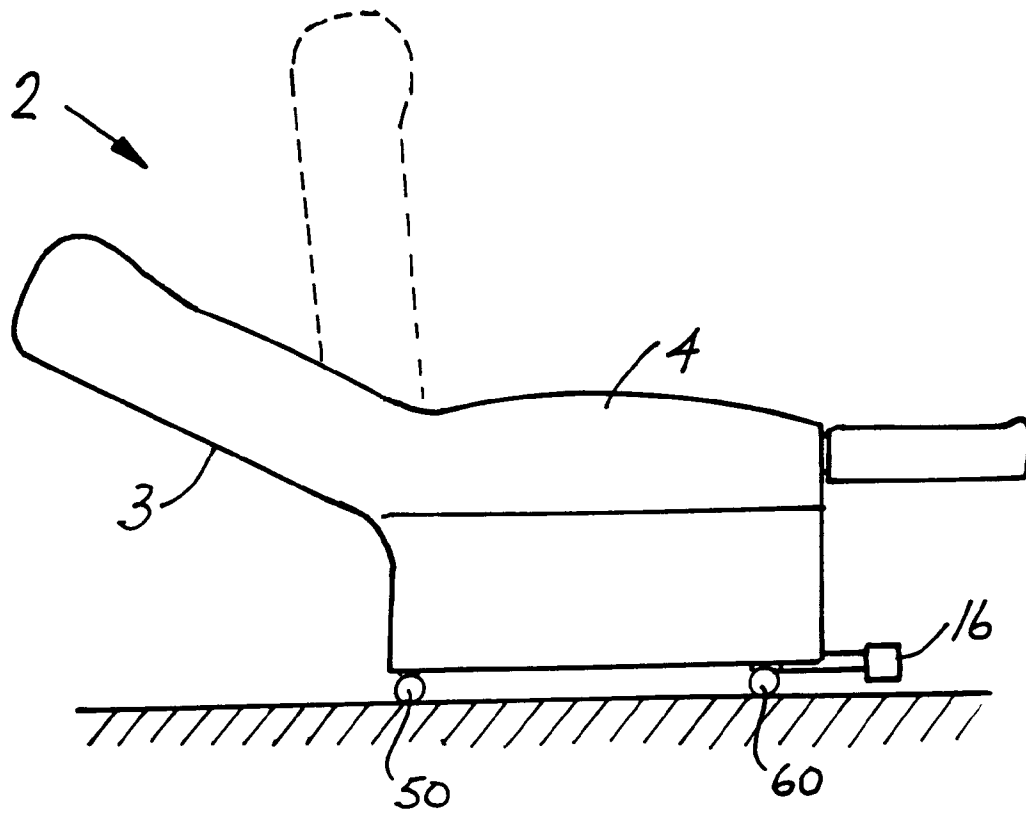


Fig. 3





European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 92 65 0002

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	DE-A-2 716 821 (GAFFNEY) * figures 1-6 *	1-3,8,9	A61G5/14
A	US-A-5 024 486 (AUEL)	-	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A61G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16 DECEMBER 1992	Examiner GODOT T.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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