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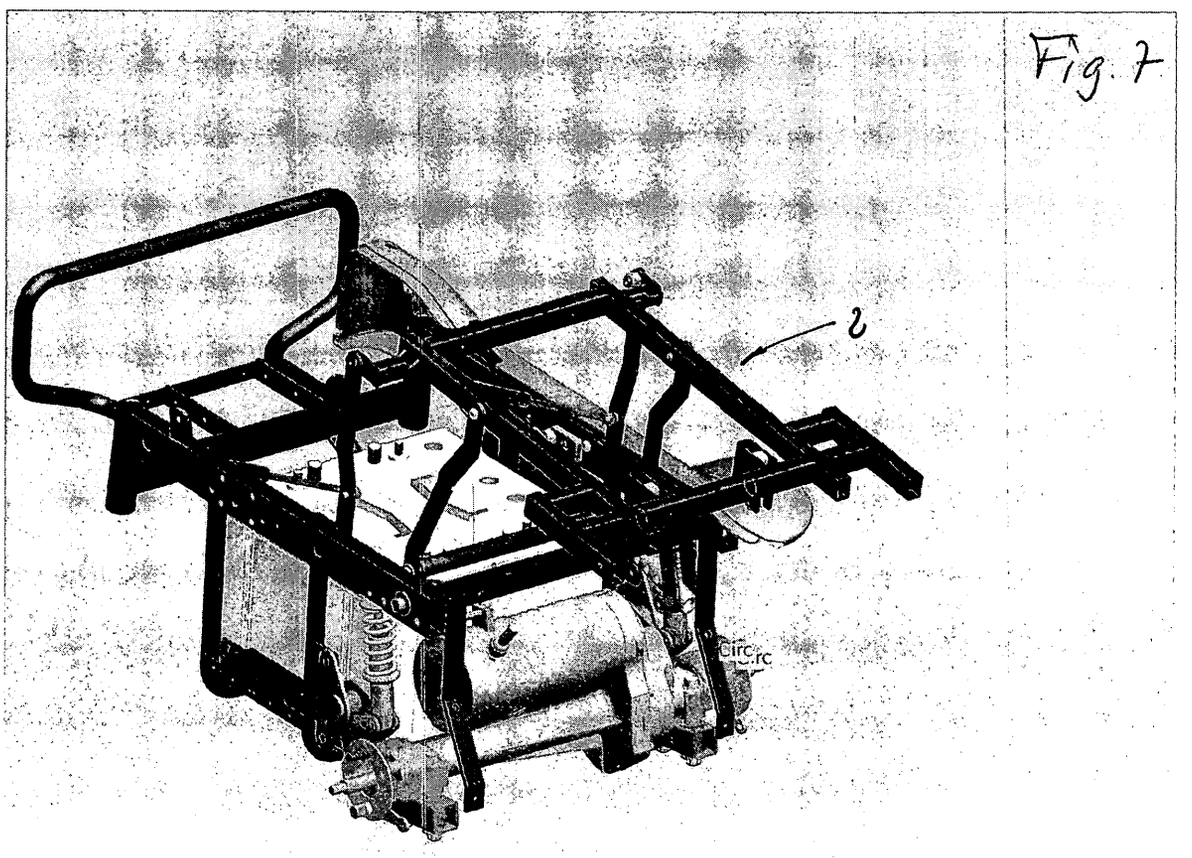
(54) Motorised wheelchair

(57) The wheelchair comprises a chassis (3), which is mounted on wheels, and a seat fixed on a seat frame (2), mounted on the chassis, so as to be movable between a driving position of the seat and a service position of the seat allowing access to the chassis. In this view, the seat frame is mounted on the chassis through a trapezium type device (18, 21, 6, 3) arranged to displace the seat according to a slightly curved translation movement.



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Description

TECHNICAL FIELD

[0001] The present invention relates to a motorised wheelchair comprising a chassis, which is mounted on wheels, and a seat fixed on a seat frame mounted on the chassis so as to be movable between a driving position and a service position allowing access to the chassis.

BACKGROUND OF THE INVENTION

[0002] A motorized wheelchair of the above mentioned type is known from GB 2269143. The seat of the wheelchair described in this prior art document is mounted on the chassis so as to be pivotable about a generally horizontal axis located in front of the chassis. Such an arrangement is useful with regard to servicing or installing/removing the battery, or the motor(s) which are located in the chassis, under the seat when the same is in the driving position. Although the arrangement described in this document allows access to the motors and battery located in the chassis, it has several disadvantages. In particular, when the seat is pivoted, any object or accessory present in the seat and not securely fixed to the seat will fall from the seat. Further, such an arrangement is only suitable for a wheelchair where the legrest is secured to the chassis itself, but not for wheelchair where the legrest is secured to the seat.

SUMMARY OF THE INVENTION

[0003] Hence it is a general object of the present invention to provide a motorised wheelchair of the above-mentioned type that avoids, in particular, these disadvantages.

[0004] With this end in view, the motorised wheelchair according to the present invention concerns a motorised wheelchair as defined in claim 1. Important features of the wheelchair according to the present invention are further defined in the claims depending on claim 1.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] An embodiment of a motorised wheelchair according to the invention will be described hereafter by way of example and with reference to the appending drawing.

Figs 1 to 3 are respectively a three-quarter front view, a side view and a rear view of an example of a wheelchair according to the present invention,

Fig. 4 is a partial schematic perspective view of the seat frame and of the chassis of the wheelchair of Fig. 1 in the driving position of the seat,

Fig. 5 is a partial schematic perspective view of the seat frame and of the chassis of the wheelchair of Fig. 1, after the first displacement step of the seat frame,

Fig. 6 is a partial schematic perspective view of the seat frame and of the chassis of the wheelchair of Fig. 1, after a subsequent displacement step of the seat frame,

Fig. 7 is a partial schematic perspective view of the seat frame and of the chassis of the wheelchair of Fig. 1, in the service position of the seat after the last displacement step of the seat frame,

Fig. 8 is a side view of the seat frame and of the chassis of the wheelchair of Fig. 1, in the driving position of the seat,

Fig. 9 is a side view of the seat frame and of the chassis of the wheelchair of Fig. 1, after the first displacement step of the seat frame,

Fig. 10 is a side view of the seat frame and of the chassis of the wheelchair of Fig. 1, in a subsequent (but not last) displacement step of the seat frame, and

Figs 11 to 13 are partial schematic views of the locking system of the seat frame in the driving position of the seat.

DESCRIPTION OF AN EMBODIMENT

[0006] The wheelchair represented on Fig. 1 comprises a seat 1 secured to a seat frame 2 mounted on a chassis 3, said chassis being itself mounted on wheels 4. The legrest 26 is secured to the seat frame 2.

[0007] As illustrated on Figs 4 to 7, the seat frame 2 mainly comprises two longitudinal elements 5 and 6 and two transversal elements 7 and 8. Said seat frame is mounted on the chassis 3 so as to be movable between a driving position as shown on Figs 4 and 8 and a service position as shown on Fig. 7 allowing access to the battery and motors located in the chassis. In that purpose, the seat frame 2 is connected to the chassis through a trapezium type device comprising two pairs of lateral members 18, 21. Since the structure of the seat frame and of the chassis is symmetrical with regard to a medium longitudinal vertical plan of the wheelchair, only one side of the device, i.e. the side situated on the left in Figs 4 to 7, will be described. As mentioned above (see in particular Figs 5 and 6), the trapezium type device comprises two lateral members 18, 21, said first lateral member 18 being on one of its ends 20 hinged to the chassis 3 at a location corresponding approximately to the middle of the length of the seat frame when the seat frame is in the driving position of the seat, and on its other end 19 hinged at the free end of an element 24 protruding out of the seat frame

2 in the prolongation of the element 7. The second lateral member 21 is hinged on one of its ends 22 on the lateral element 6 of the seat frame, at about one third of its length from the rear part of the seat frame, and on its other end 23 is hingedly mounted on the ends of a transversal horizontal bar or tube 15. Said transversal horizontal bar or tube 15 is in its turn hingedly mounted to be translated in rotation parallely to an axis 16, 16' parallel to said horizontal bar or tube 15, and which can be secured to said chassis or to a tilt mechanism 17 of the seat, when the seat is provided with such a tilt mechanism.

[0008] The trapezium type device allowing the displacement of the seat from a driving position to a service position is arranged in a manner to avoid any increase of height of the wheelchair when the seat is in the driving position. To this end, as illustrated on Figs 4 and 8, due to their arrangement, the lateral members 18 and 21 do not move in a same plan, since the spaced apart of the two longitudinal elements 5 and 6 of the seat frame, on which are hinged the lateral members 21 is smaller than the internal width of the chassis.

[0009] As illustrated on Figs 11 to 13, the locking of the seat frame in the driving position of the seat illustrated in Figs 4 and 8 is obtained on the one part by the action of two claws 11, 11' fixed to the front element 8 of the seat frame 2, said claws being clampled on the horizontal bar or tube 15, and on the other part by the action of two screws 25, 25' which fix the seat frame to the chassis through the transversal axis 30 (see also Fig. 4).

[0010] For moving the seat frame from the driving position of the seat to the service position of the seat, first the screws 25, 25' must be removed from their fixing position on the chassis. Secondly, as shown in Figs 11 to 13, a bowden cable 33 crossing the rear element 7 of the seat frame and connected at its two ends 34, 34' to the claws 11, 11' must be pulled in the direction of the arrow 35 on Fig. 11, which opens the claws 11, 11' and thereby disconnects the transversal element 8 of the seat frame 2 from the transversal bar or tube 15. By pulling the seat to slightly recline the same in the direction of the arrow 30 on Fig. 9, the claws are completely disconnected from the transversal bar or tube 15 (see also Fig. 5). Then, by pulling the seat in the up direction, the lateral members 18, 21 will pivot toward the above, bringing the seat frame again in a substantially horizontal position (Figs 6 and 10) to reach a final advanced position as shown in Fig. 7, allowing an easy access to the batteries and motor(s) located into the chassis. The forward movement of the seat is facilitated by two gas springs 24, 24' fixed to the internal side of the chassis and acting on the lateral members 18.

[0011] Since, apart from the first reclining movement of the seat in the first step of the displacement, the seat frame remains substantially horizontal during the whole movement (that is why the movement of the seat has been called a slightly curved translation movement), avoiding any important forwards inclination of the seat.

[0012] Further, due to the action of the two lateral gas springs 24, 24', the displacement movement of the seat can be easily handled by a single person, said gas springs ensuring the positioning of the seat in the service position once displaced.

[0013] Further, it is to be noted that the device is provided with a safety means for disabling the drive mode of the wheelchair when the seat is removed from its driving position. Such safety means can comprise a micro switch or any other suitable switch placed on any suitable part of the seat frame.

Claims

1. A motorised wheelchair comprising a chassis (3), which is mounted on wheels (4), and a seat fixed on a seat frame (2) mounted on the chassis so as to be movable between a driving position and a service position allowing access to the chassis, **characterised in that** it comprises a trapezium type device (18, 21, 6, 3) arranged to displace said seat according to a slightly curved translation movement.

2. Wheelchair according to claim 1, **characterised in that** said trapezium type device comprises two pairs of lateral members (18, 21) disposed on both sides of the wheelchair, each of said first lateral members (18) being mounted on its first end (20) to hinge on the chassis (3) and on its second end (19) to hinge on the seat frame (6), each of said second lateral members (21) being mounted on its first end (22) to hinge on said seat frame (6) and on its second end (23) to hinge on a transversal horizontal axle (15), said axle being mounted to be translated in rotation around an axis (16, 16') secured to a tilt mechanism (17) of the seat.

3. Wheelchair according to claim 1, **characterised in that** said trapezium type device comprises two pairs of lateral members disposed on both sides of the wheelchair, each of said first lateral members being mounted on its first end to hinge on the chassis and on its second end to hinge on the seat frame, each of said second lateral members being mounted on its first end to hinge on said seat frame and on its second end to hinge on a transversal horizontal axle, said axle being mounted to be translation in rotation around an axis secured to said chassis.

4. Wheelchair according to any one of claims 1 to 3, **characterised in that** the displacement of said trapezium type device is assisted by two spring means (24, 24') supported on one of there ends by said chassis (3).

5. Wheelchair according to claims 2 or 3 and 4, **characterised in that** each of said spring means act on its other end on one of said first lateral member (18,

21).

6. Wheelchair according to any one of the preceding claims, **characterised in that** it comprises a locking means to secure said seat frame to the chassis in the driving position of the seat.

7. Wheelchair according to the preceding claim, **characterised in that** said locking means comprise two screws (25, 25') including head screws able to be hand manipulated.

8. Wheelchair according to claim 6 or 7, **characterised in that** said locking means comprise two claws (11, 11') mounted on the front part (8) of the seat frame (2).

9. Wheelchair according to any one of the preceding claims, **characterised in that** it comprises a safety means arranged to disable the driving mode when the seat frame is removed from its driving position.

10. Wheelchair according to the preceding claim, **characterised in that** said safety means comprise at least one switch.

Fig. 1

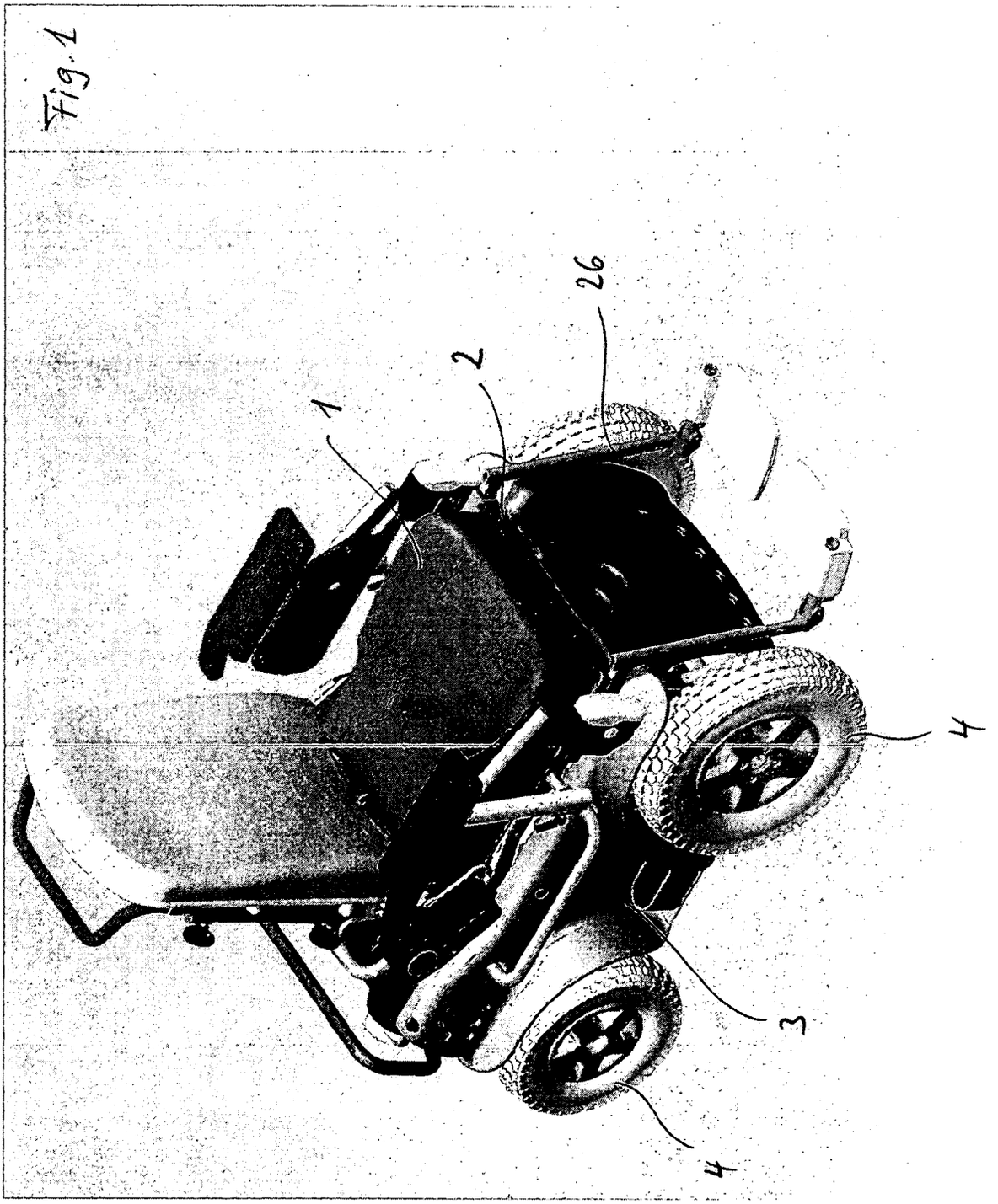


Fig.2

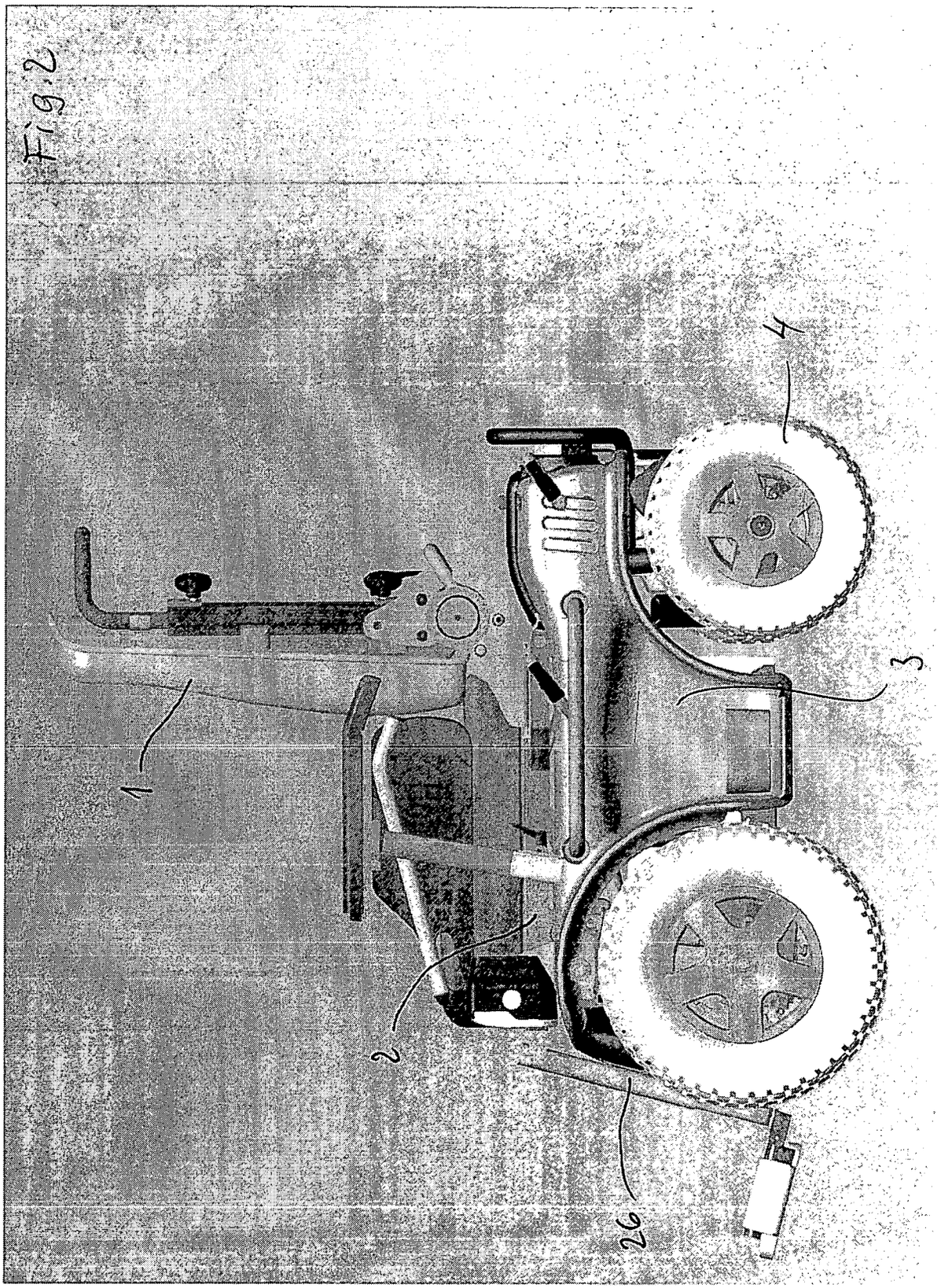


Fig 3.

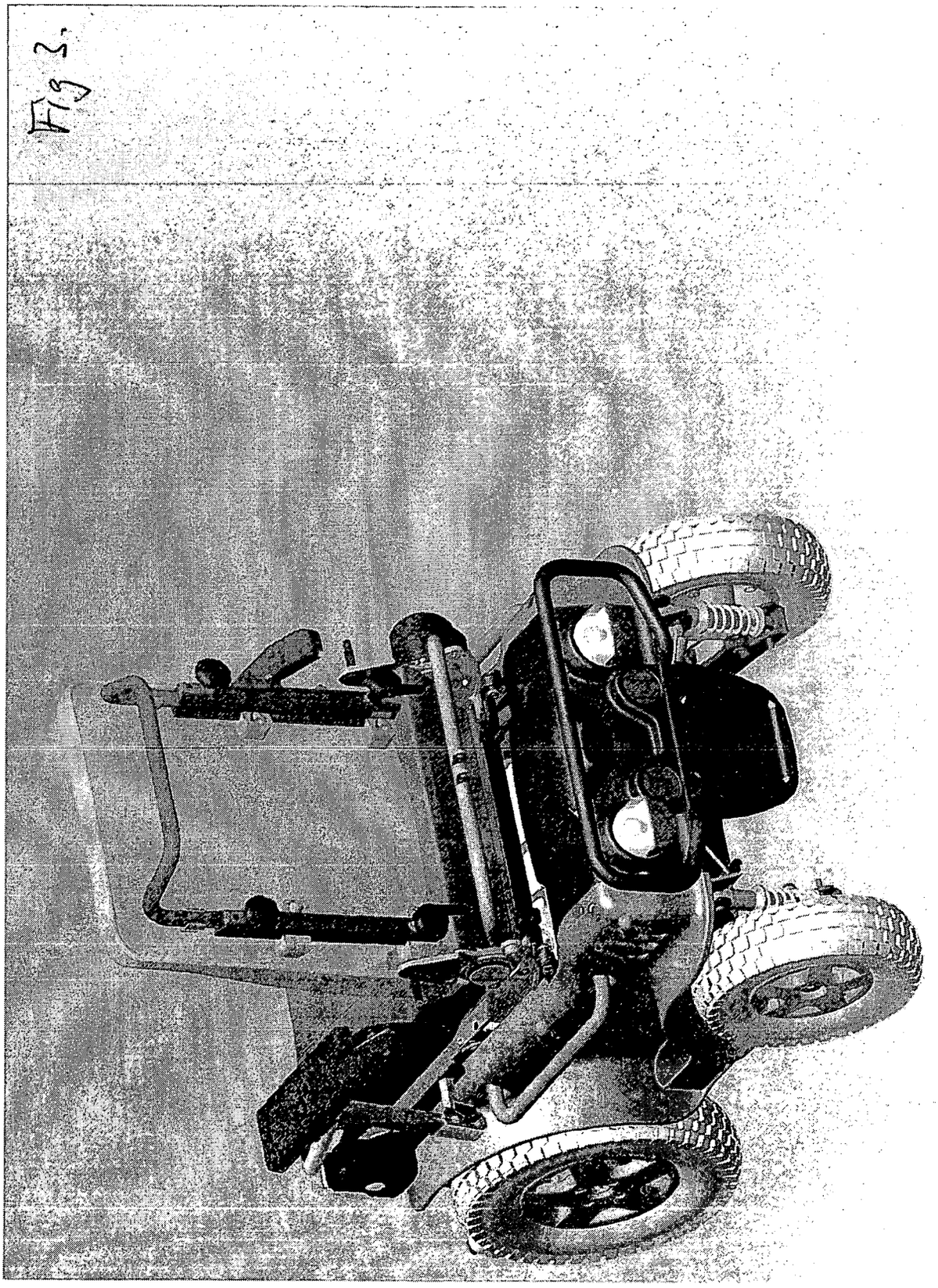


Fig. 4

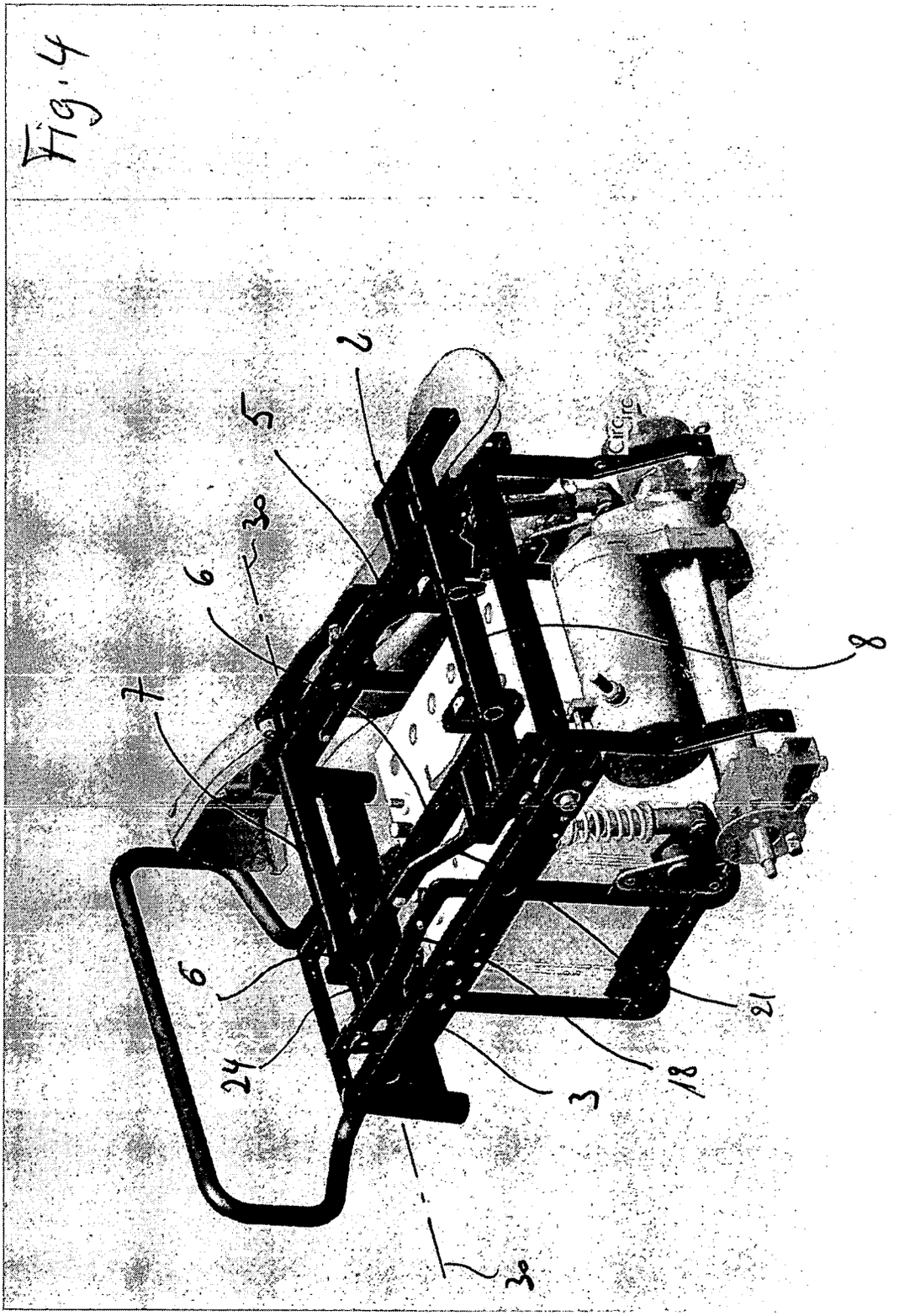


Fig. 5

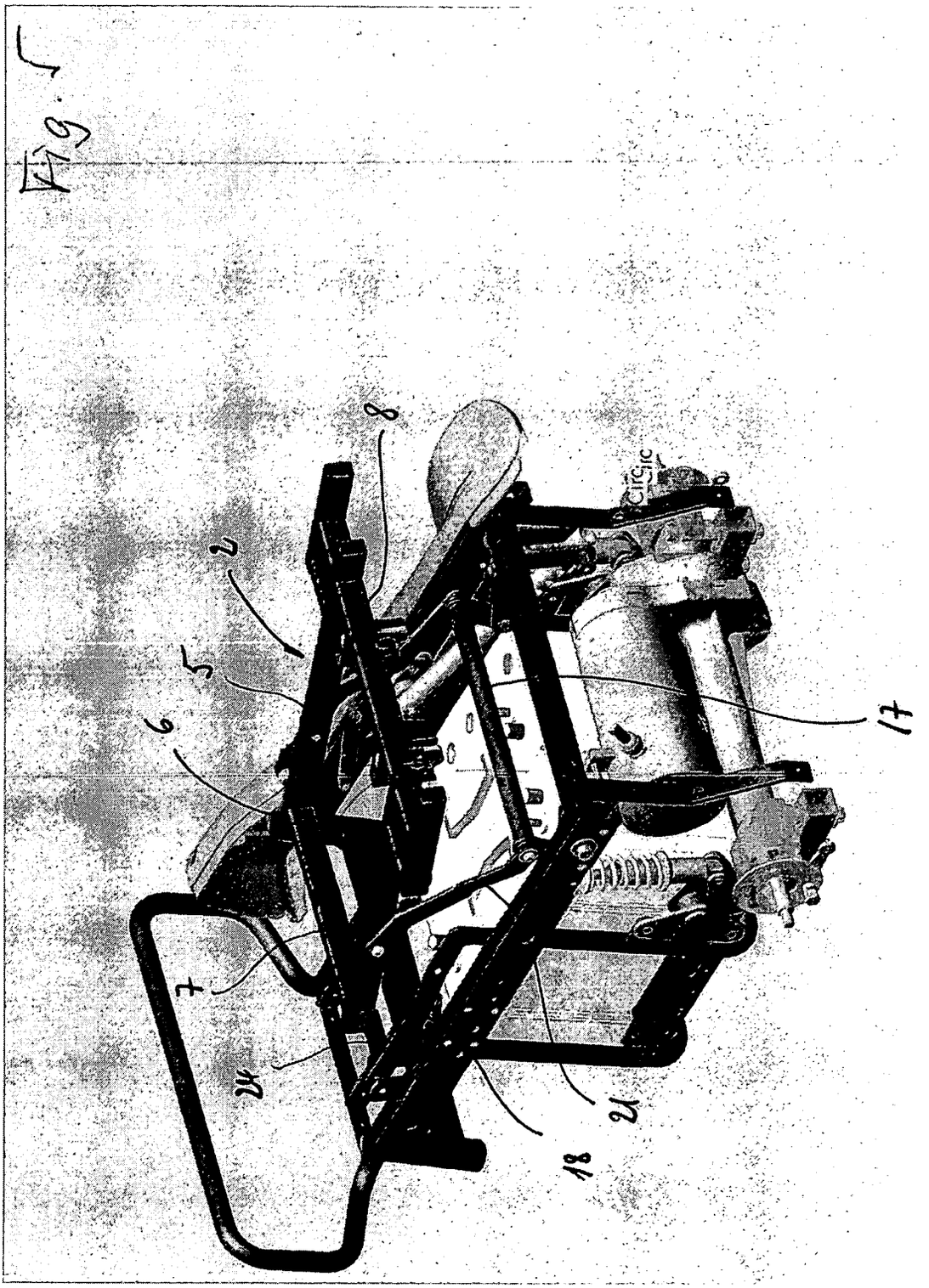


Fig 6.

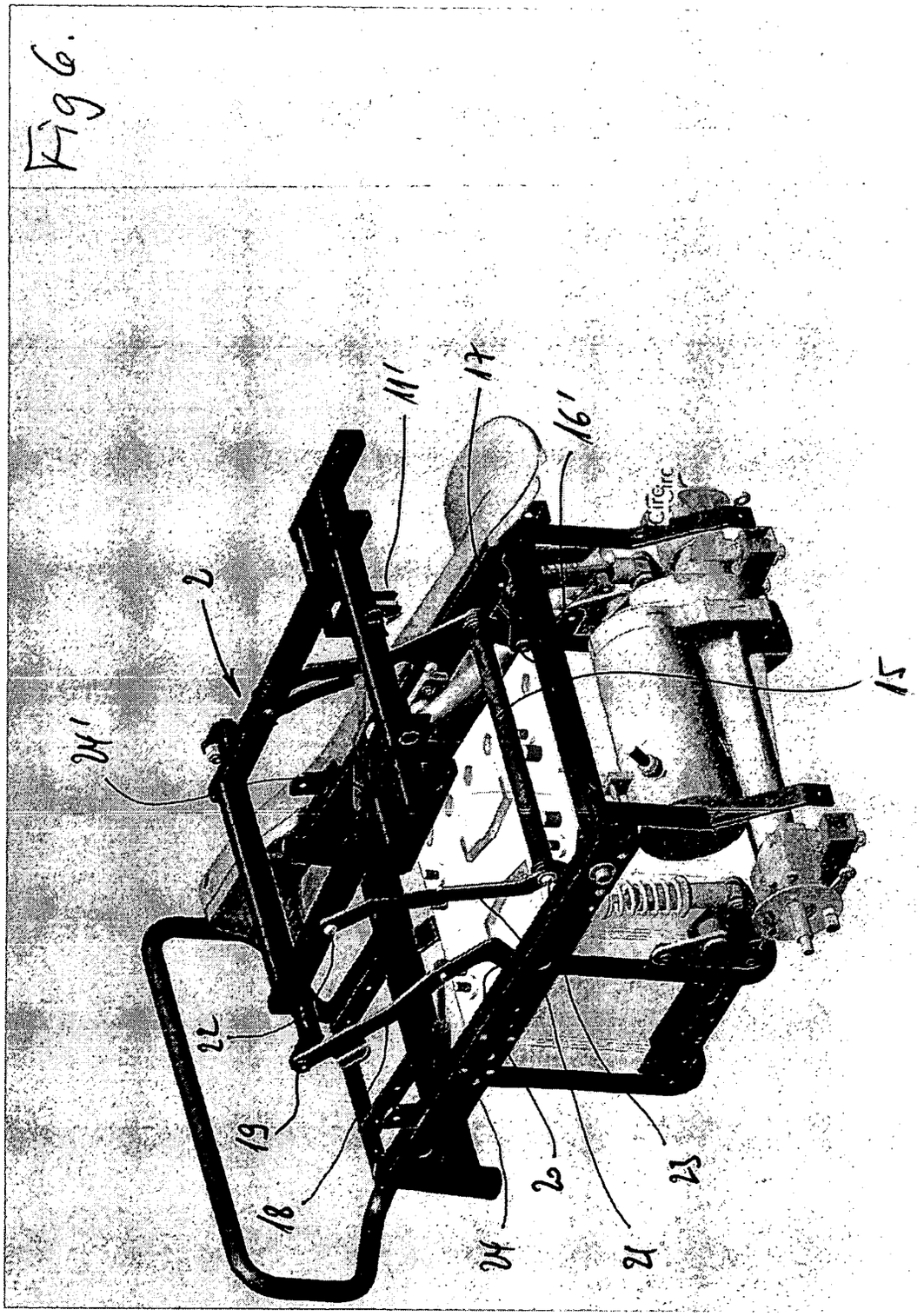


Fig. 7

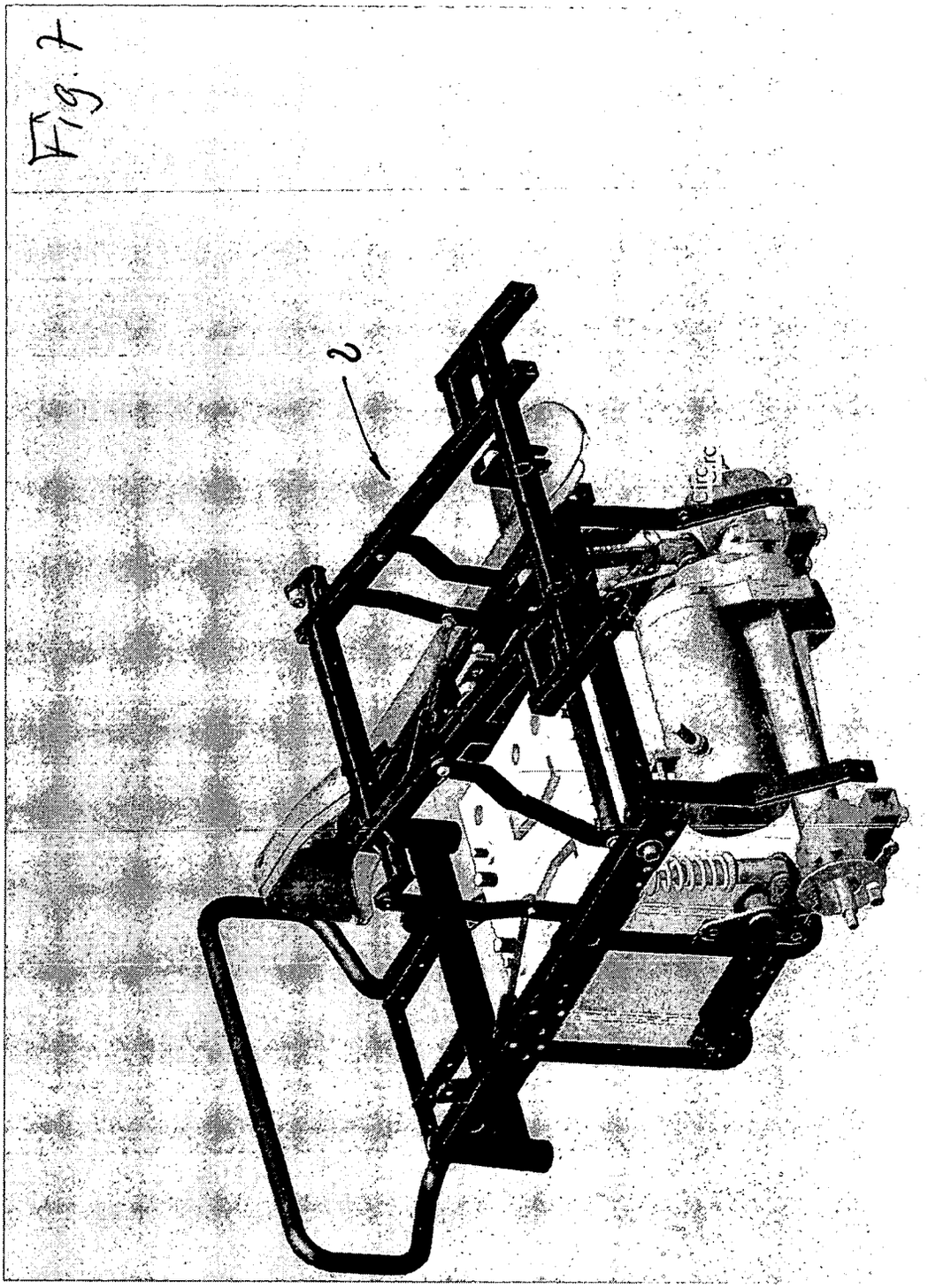


Fig. 8

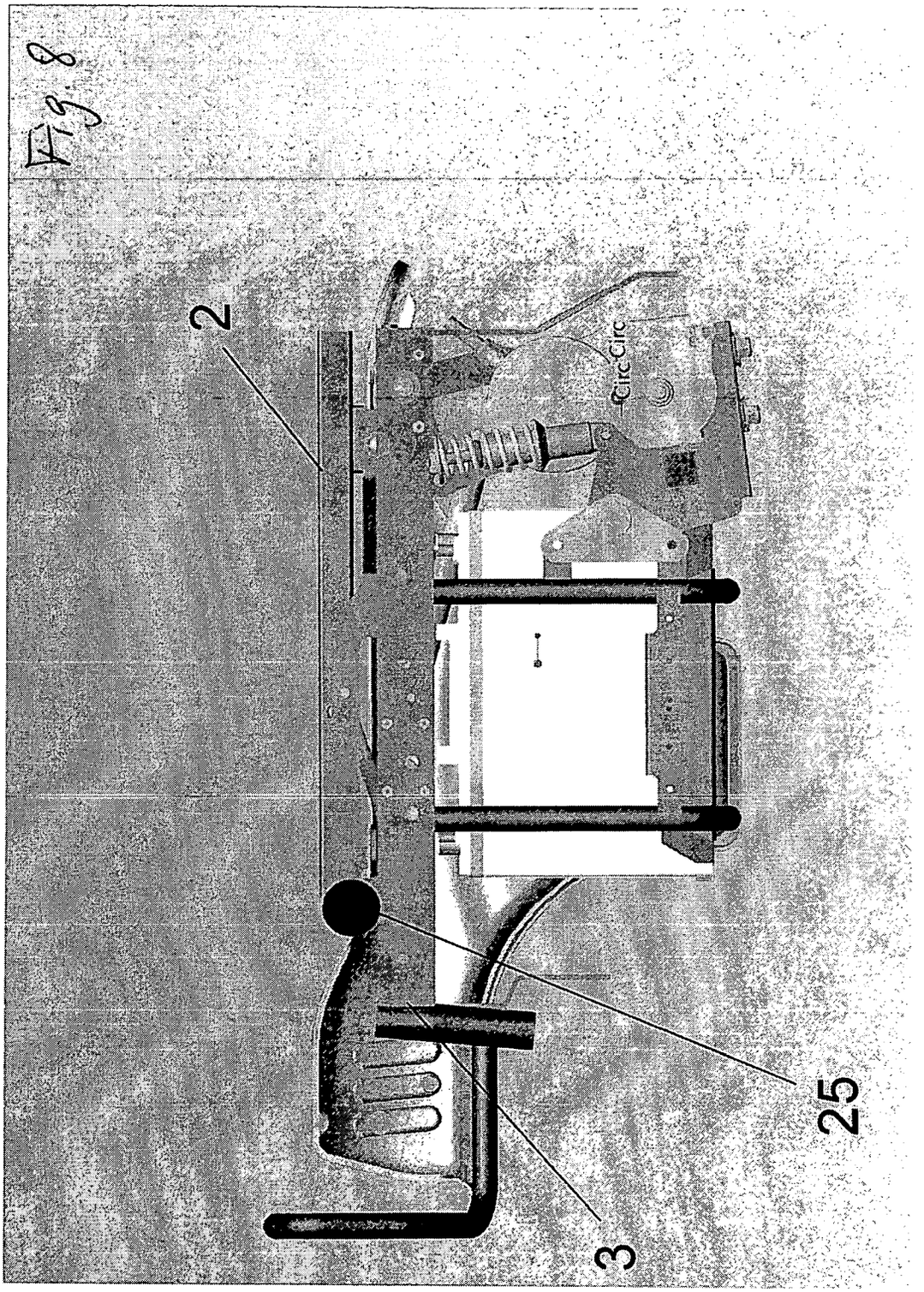
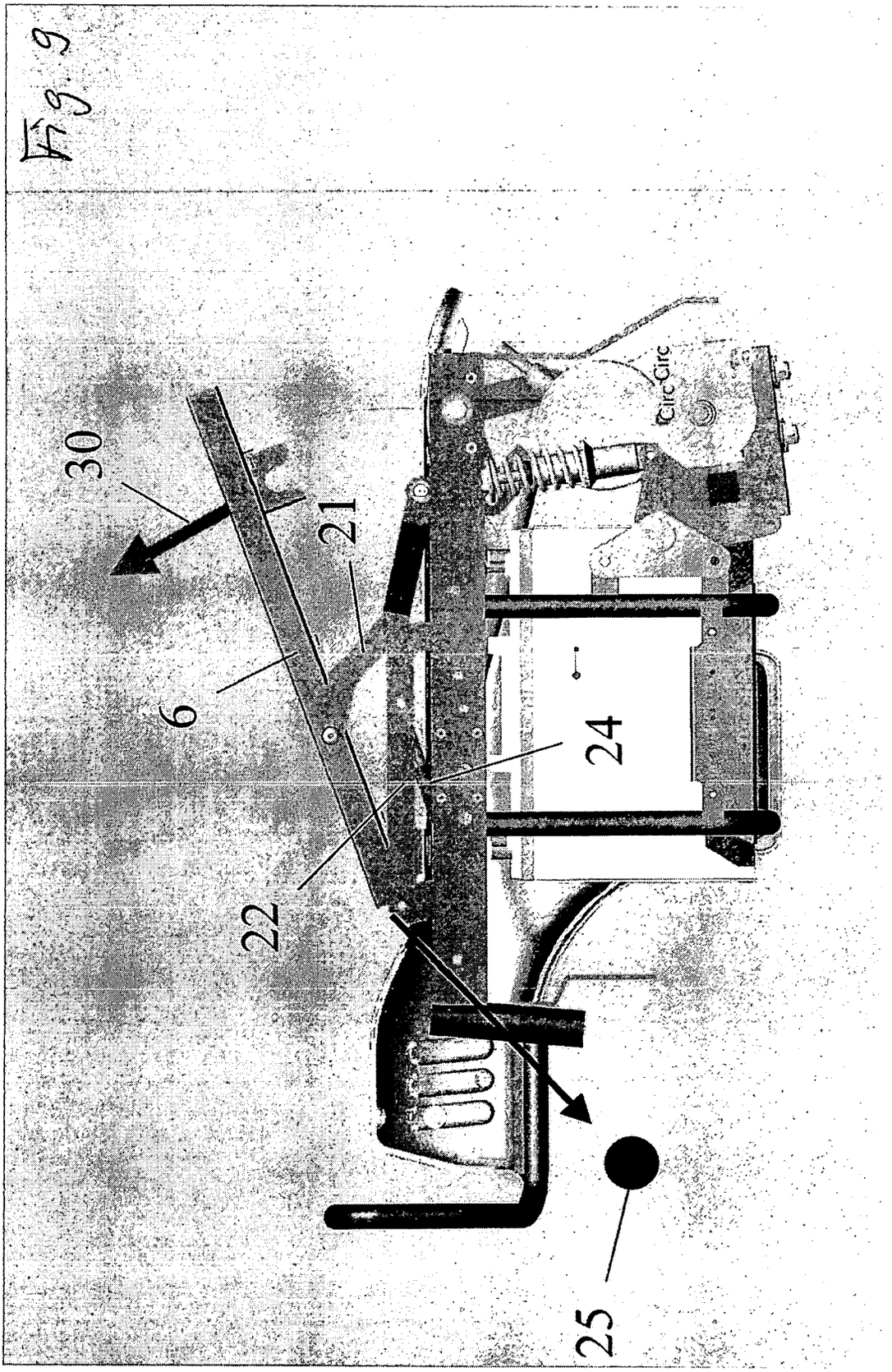


Fig. 9



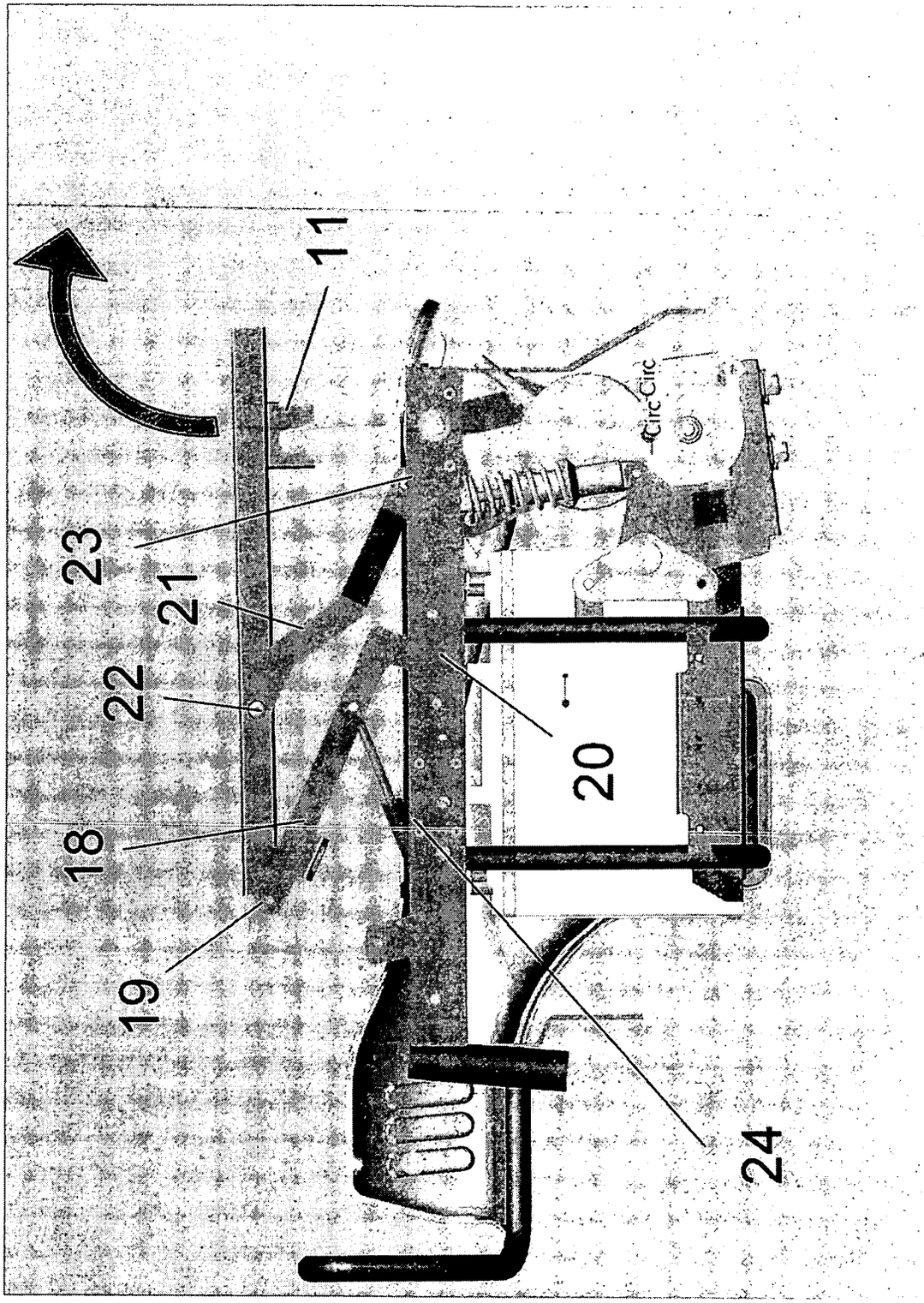


Fig. 10

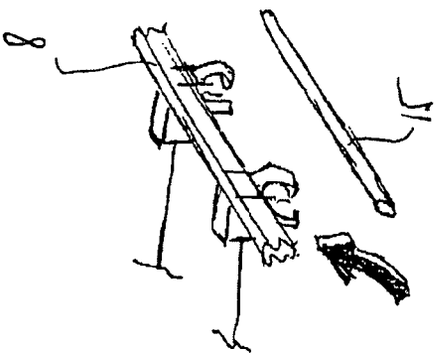


Fig. 13

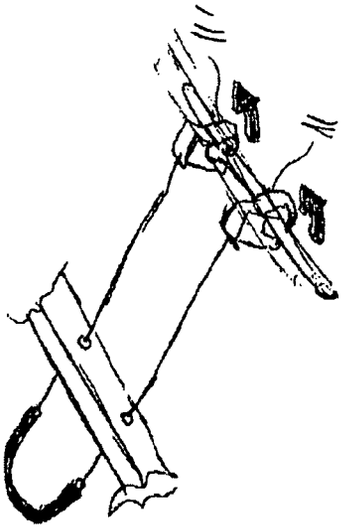


Fig. 12

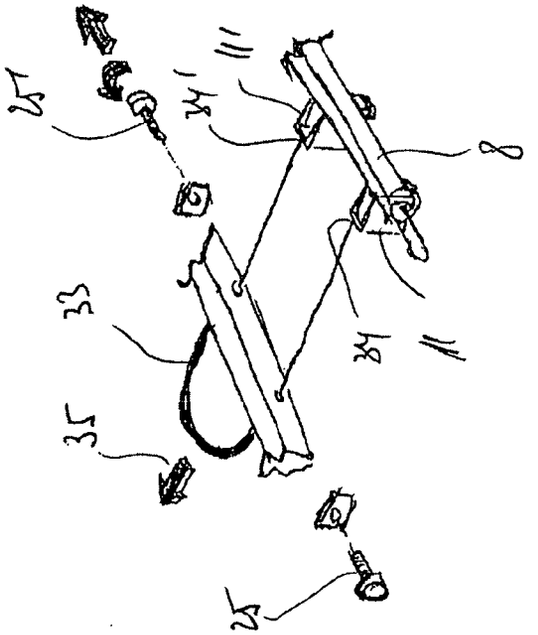


Fig. 11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 40 5579

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Y		6-10	
Y	EP 1 417 948 A (PRIDE MOBILITY PRODUCTS, CORPORATION) 12 May 2004 (2004-05-12) * paragraph [0056] - paragraph [0058] * * paragraph [0067] * * figures 3c,4,5a-5c *	6,8-10	
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			TECHNICAL FIELDS SEARCHED (IPC) A61G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10 March 2006	Ong, H.D.

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

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10-03-2006

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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