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(54) **Seating device with rising aid**

Sitz-Vorrichtung mit Aufstehhilfe

Dispositif d'assise avec support de montant

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## Description

### BACKGROUND OF THE INVENTION

**[0001]** The invention relates to a seating device including holder, a seat borne by the holder and at least one armrest, wherein the seat is transferable between a normal position of use and a forwardly tilted rising position. The invention particularly relates to a chair having such a seat.

**[0002]** Chairs with a seat that can be tilted forward in order to assist a user in rising from the chair are known in many designs. An example is given in WO 85/00006, which shows a chair wherein the armrest is hinged at the rear to the backrest and is hinged at the front to a first rod of a pair of rods, the second rod of which is hinged to the frame of the chair and with one end is connected to the seat so as to slide. At the front the seat is furthermore hinged to another rod, which at the rear is connected to the frame and forms a kind of scissors with the said second rod. By pressing the armrests downwards the end of the second rod pushes the rear side of the seat upwards and then slides forward below along the seat so that the seat tilts to the fore, wherein the front end of the other rod with the front edge of the seat also rises to some extent.

**[0003]** WO 2011/141617 as well shows a chair having an operable seat, wherein by pressing the armrest downwards a four-rod mechanism forming the connection between seat and frame is operated in order to lift the seat and tilt it forward to some extent.

### SUMMARY OF THE INVENTION

**[0004]** It is an object of the invention to provide a seating device, particularly a chair, of the type mentioned in the preamble, that is ergonomically advantageous.

**[0005]** It is an object of the invention to provide a seating device, particularly a chair, of the type mentioned in the preamble, that facilitates its user to rise from it.

**[0006]** It is an object of the invention to provide a chair of the type mentioned in the preamble, having an operation mechanism for the seat suitable to be accommodated in the usual chair components for a large part so that the look of the chair remains regular to a large extent.

**[0007]** For achieving at least one of these objects the invention, according to one aspect, provides a seating device according to claim 1.

**[0008]** Because the armrest can be placed in a higher position for starting the operation, the user's hands can remain at a higher level during the process of pressing down the armrests, thus enhancing the user's stability while rising. When designing there will moreover be more freedom of choice in the movement path of the armrest, as the motion is not restricted by the frame parts at the level of the seat in the horizontal position. In the regular position of use the armrest will usually extend substantially horizontally.

**[0009]** It is noted that the holder in case of a chair will be a chair frame. However it is also possible that the holder is composed, for instance a wall to which the armrest is attached and a floor on which the seat is supported.

Toilet arrangements and shower seating arrangements can also be considered. The armrests can in that case also be attached to a support for seat, which support is attached to the floor, such as a toilet bowl.

**[0010]** In one embodiment the armrest can be pressed downwards into an end operation position corresponding with the position of use. The user's hands are thus in a stable end position, corresponding with that of a normal seating device, in particular a chair, and not (much) lower as is the case in the said known chairs.

**[0011]** In a simple embodiment the armrest is hinged to the holder. In the starting position the armrest can extend upwardly inclined from the hinge.

**[0012]** In one embodiment the armrest is attached to the holder near its rear end, as a result of which at the location where the user engages the armrest, in many cases at the front, the stroke can be large.

**[0013]** In a simple embodiment the seat is hinged to the holder near its front edge.

**[0014]** In case of two armrests, they can be connected to each other to form an armrest set that can be moved as one unity, as a result of which the user's stability when rising can be enhanced. Alternatively both armrests are each individually hinged to the holder. In one embodiment the operation mechanism is disposed on one side only, preferably however on both sides, in which case both armrests are part of operation mechanisms.

**[0015]** The seating device can be provided with a locking device for locking the armrest in the position of use and with operation means for unlocking the locking device. The operation means may then comprise an operation member in the front end of the armrest. Thus inadvertent activation of the operation mechanism is prevented. The armrest cannot be lifted then.

**[0016]** In a further development of the seating device according to the invention the operation mechanism comprises an operation rod, which with its upper end is rotatably connected to the armrest and with its lower end is rotatably connected to a further part of the operation mechanism. In a safe embodiment, in the normal position of use of the seating device, the further part of the operation mechanism can be accommodated in a chamber provided in the holder, adjacent the seat, thus reducing the risk of injury. The upper end of the operation rod can be transferable along the armrest between a passive position and an active position, wherein in the active position of the upper end of the operation rod, the operation rod takes up an active orientation with an angle relative to the vertical that is larger than in the passive orientation of the operation rod in which the upper end is in the passive position. In that way the operation rod is placed in an orientation that is advantageous for transmission of forces during rising. The rearwardly opening angle between the operation rod and the armrest preferably al-

ways exceeds 90 degrees. In the position of use, wherein the forces on the armrest are small, the operation rod can form a support for the armrest.

**[0017]** In an ergonomically advantageous embodiment the active position of the upper end of the operation rod is situated closer to the front end of the armrest than the passive position thereof.

**[0018]** Said locking device can be active in locking the upper end of the operation rod in the passive position, in order to prevent inadvertent operation.

**[0019]** For promoting reliability of operation the seating device can be provided with a retaining member for keeping the upper end of the operation rod in the active position, wherein the upper end preferably comprises a retaining pin that can be moved in and out of the retaining member. In that case the seating device can be provided with release means for urging the upper end of the operation rod out of the retaining member, so that the upper end is able to move back again to the passive position for normal use or for a next rising action.

**[0020]** In a compact embodiment the release means comprise a release member that is prebiased at accommodation of the upper end/retaining pin of the operation rod in the retaining member for generating a force urging said upper end, in particular the retaining pin, out of the retaining member. In that way it can be achieved that immediately following a rising action the operation mechanism is able to return to a passive orientation again.

**[0021]** In another embodiment the release means are operable by means of an auxiliary operation mechanism, which auxiliary operation mechanism comprises the armrest. The auxiliary operation mechanism may in a further compact embodiment comprise an auxiliary operation rod movable along, in particular in, the armrest. In one embodiment the release means are operable by the auxiliary operation mechanism for after reaching the position of use of the armrest urging the upper end of the operation rod out of the retaining member. In that way it can be achieved that immediately following a rising action the operation mechanism is able to return to a passive orientation again.

**[0022]** The other end, the lower end, of the operation rod can be rotatably connected to the one leg of a rocker lever, having two legs and in between is rotatably attached to the holder, and with the other leg is movably connected to the seat. The downward motion of the armrest and thus the operation rod is converted by the rocker lever into an upward tilting motion of the seat. In that case the rocker lever with its other leg, through intermediary of a sliding joint, can be connected to the seat so as to slide, wherein the sliding joint is attached to the seat by means of a hinge joint. In order to decelerate the seat dropping back, a shock absorber, which can be part of the sliding joint, can be placed between the other leg and the seat.

**[0023]** As already noted in case of a chair the holder will be formed by a chair frame, wherein the chair frame furthermore comprises a back part, wherein the armrests

are hinged to the back part. The back part can be formed by upright frame parts, in between which for instance a cloth is stretched, or by a rigid backrest also functioning as a frame. In the said connection between both armrests the armrests can be connected to each other by a transverse member situated behind the back part, which transverse member preferably is at least locally spaced apart from the back part. In that way a grip is provided for moving the chair.

**[0024]** The back part can furthermore be provided with a stop for the armrest against its downward movement relative to the normal position of use.

**[0025]** According to further aspect the invention provides a chair comprising a frame, a seat and at least one armrest, wherein near its front side the seat is hinged to the frame, for transfer between a substantially horizontal seating position and a forwardly tilted rising position, furthermore comprising an operation mechanism for the transfer of the seat from the seating position to the rising position, wherein the armrest is part of the operation mechanism and for that purpose is attached to the frame so as to move, in particular so as to hinge, in particular so as to move in a vertical plane, for transferring it downwards between a starting position and a lower end operation position while urging the seat into the rising position. As discussed above the starting position can be situated higher than the normal position of use and the end operation position can correspond with the normal position of use. The lower The operation mechanism can be built in accordance with the embodiments thereof described above.

**[0026]** According to a further aspect the invention provides a seating device comprising a holder, a seat and at least one armrest, wherein near the front side the seat is hinged to the holder for transfer between a substantially horizontal seating position and a forwardly tilted rising position, further comprising an operation mechanism for the transfer of the seat from the seating position to the rising position, wherein the armrest is part of the operation mechanism and for that purpose above the rear side of the seat is attached to the holder so as to move, in particular so as to hinge, in particular so as to move in a vertical plane, for by exerting pressure thereon transferring it downwards between a starting position and a lower end operation position while urging the seat into the rising position. As discussed above the starting position can be situated higher than the normal position of use and the end operation position can correspond with the normal position of use. The lower The operation mechanism can be built in accordance with the embodiments thereof described above.

**[0027]** The seating device according to the invention, designed like a chair, can be designed lightweight and can be compact. Contrary to motor-driven rising chairs, the invention is particularly suitable for use in dining room chairs, waiting room chairs and meeting room chairs.

**[0028]** It is noted that in US 2005/040688 a wheelchair is shown, having a seat that can be forwardly tilted up

and situated on either side thereof handles that can be rotated upwards and forwards, in the vertical plane, by which the motion mechanism for the seat can be activated. In US 2005/0039302 the operation of the handles is described, thus that they are provided with control members that can be manually engaged at several locations of the handles. By manually squeezing a part of the control members suiting the user, a lever mechanism is operated, by which a gas jack is unblocked, which gas jack lets the seat tilt.

**[0029]** US 3.259.427 shows a chair without armrests, the seat of which is provided with projecting rods at the front side, which rods form levers for allowing the seat to tilt upwards, in one embodiment by exerting downward pressure on the levers, in another embodiment by exerting an upward pull on the levers.

**[0030]** In GB 2.460.685 a chair is shown having a seat that can be adjusted relative to the frame, wherein the seat can be tilted rearward by means of a gas jack that is activated by means of a lever that is hinged to the armrest.

**[0031]** FR 2.639.807 shows a chair having armrests that are able to tilt forward over a small distance about a hinge situated below the seat, for releasing a gas jack for tilting the seat forward.

**[0032]** US 2010/0141003 describes a chair having an armrest that can be vertically pushed down with which a cable-pulley system is operated for tilting the seat forward.

**[0033]** The aspects and measures described in this description and the claims of the application and/or shown in the drawings of this application may where possible also be used individually. Said individual aspects may be the subject of divisional patent applications relating thereto. This particularly applies to the measures and aspects that are described per se in the sub claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0034]** The invention will be elucidated on the basis of an exemplary embodiment shown in the attached drawings, in which:

Figure 1 shows a schematic side view of a seating device according to an exemplary embodiment of the invention, as a chair, in a normal position of use;

Figure 1A shows a schematic side view of an armrest of the chair of figure 1;

Figure 2 shows the chair of figure 1 in a starting position for a rising motion;

Figure 2A shows a schematic side view of an armrest of the chair of figure 2;

Figures 2B and 2C show a schematic detail of the area near the connection of the armrest to the back

part of the chair of figure 1, in the situations of figure 1 and figure 2, respectively;

Figure 3 shows the chair of figure 1 at the beginning of the rising motion;

Figure 4 shows the chair of figure 1 at the end of the rising motion;

Figure 4A shows a schematic side view of an armrest of the chair of figure 4;

Figure 5 shows the chair of figure 1 during the return to the position of figure 1 after carrying out a rising motion;

Figure 5A shows a schematic side view of an armrest of the chair of figure 5; and

Figures 6A-D show a part of an alternative embodiment of a seating device according to the invention.

#### DETAILED DESCRIPTION OF THE DRAWINGS

**[0035]** The chair 80 of figure 1 comprises a frame 81 having legs 82, a backrest 18, a seat 21 and armrests 1.

**[0036]** At the front edge the seat 21 is attached to the frame 81 by means of hinges 14 for a swinging motion in directions F and with its rear edge it freely supports on a stop 19 that is fixed to the frame 81.

**[0037]** At the rear end the armrests 1 are attached by hinges 10 to the backrest 18 (or a part of the frame 81 if it is situated there to support a backrest attached thereto) and they can be swung in directions A. Behind hinges 10 and behind backrest 19 the armrests 1 can be connected to each other by a transverse member 1a, so that they form one U-shaped unity. Alternatively they can be attached by means of a hinge to an armrest end portion, that is stationarily attached to the backrest. Behind the backrest 18, the transverse member 1a may form a free grip for a hand. At locations further to the fore the armrests 1 are supported by a link rod or operation rod 8, yet to be discussed. In the operation position shown, the armrests 1 near the backrest 18 rest on fixed stops or support surfaces 20. The rearwardly opening angle  $\gamma$  between each rod 8 and armrest 1 is obtuse.

**[0038]** In each of the armrests 1 a slot 6 is accommodated in which slot a pin-shaped upper end 5 of the rod 8 is accommodated so as to slide in directions C1,2. As can be seen in figure 1A the slot 6 is provided with an upwardly turned retaining end 7, in which the pin 5 can be retained.

**[0039]** In both (preferably hollow) armrests 1 is furthermore accommodated (preferably in a chamber formed in the armrest) a release mechanism for urging the said pin 5 out of the retaining end 7. Said release mechanism comprises an unblocking pull rod 9, which at the one end is provided with a spring lip 9a and at the other end with

a drive plate 9b which at the location of 9d is hinged (directions B) to the armrest 1 and on which a pin 9e is attached extending in stationary slot 9f in backrest 18 and can be slid in there in directions K. At hinge point 10 each armrest 1 thus has a facility to extend the stroke length of the respective unblocking pull rod 9 with springy element 9a. The rod 9 can be transferred within the said armrest 1 in the directions G.

**[0040]** In each armrest 1 is furthermore accommodated a locking/unlocking rod 3, which is tiltable about hinge 4 in directions H1,2 and at the one end, the front end, is provided with an operation knob 2 and at the opposite rear end is provided with a stop 3a for in the locking position securing the pin 5 in the rear end of the slot 6, the passive position.

**[0041]** With its lower end the rod 8 is rotatably attached by hinge 8a to the front arm 11a of a rocker lever 11, which at the location of 12 is attached to the frame 81 so as to hinge in directions E. The right arm 11b of the rocker lever 11 is provided with a pin 13, which is slidable in directions J in a slot 15 provided on the seat 21. The pin 13 is furthermore rotatably attached to the end of a shock absorber 16, which at the other end is attached to the seat 21 by a stationary hinge 17. In the normal position of use of figure 1 the hinge 8a, the rocker lever 11 and the shock absorber 16 can be accommodated in a chamber (not shown) in the frame 81.

**[0042]** In the position of use or rest of figure 1 both seat 21 and armrests 1 are blocked because the locking 3a in question blocks pin 5 in slot 6 of the rod 8. The armrests 1 cannot be moved downwards because of stopping against stops or support surfaces 20. The seat 21 cannot be moved upwards because the rods 8 stop the rocker levers 11 from rocking so that the arms 11 b and thus the pins 13 retain their positions.

**[0043]** When the user wishes to rise from the chair 80, see figures 2 and 2A, he or she simultaneously lifts both armrests 1 by rotation about hinges 10, direction A1. By pulling up knobs 2, the user will simultaneously allow the locking rods 3 to tilt (H1) to release the stops 3a from pins 5. The pins 5 are then able to slide to the fore, direction C1, through slots 6.

**[0044]** When moving the armrests 1 upwards, see figures 2B and 2C, each drive plate 9b will furthermore move the respective unblocking pull rod 9 with springy element 9a forward (G1, figure 2C) by rotating (B1) the drive plate 9b about hinge point 9d on armrest 1, urged by fixed pin 9e which will follow the slot 9f in the backrest 18. The springy element 9a on unblocking pull rod 9 will now release the retaining end 7 in armrest 1, so that the pin 5 is able to get in front of or in the retaining end 7. The pins 13 remain in their places in the rear end of the slots 15 and the seat 21 remains supported on stop 19.

**[0045]** Finally the starting position of figure 2 is reached. The operation mechanism is loaded as it were. The rearwardly opening angle  $\gamma$  between each rod 8 and armrest 1 is still obtuse. The process of actually rising can now begin. For that purpose the user pushes the

armrests 1 downwards again, direction A2, see figure 3, using his/her hands/arms.

**[0046]** While moving the armrests 1 down using downward pressure, see figure 3, each pin 5 reliably, direction C3, arrives in its active position in retaining end 7 and due to downward rotation (A2) of the armrests (which as a result of the transverse member 1a move as one unity and therefore synchronously) on both sides, via operation rod 8, the rocker lever 11 in question will be rotated about hinge point 12, direction E1. The forwardly tilted, more vertical orientation of the rods 8 here enhances the transmission of forces. Due to the tilting of the rocker lever 11 the seat 21, and with it (via shock absorber 16) pin 13, will be moved upwards from the seating position of figure 1, tilt, about hinge point 14, direction F1. Because pin 13 is able to move forwards (J1) in slot 15 the connection between hinges 12 and 17 may increase in length in order to permit a rotation of the seat 21 about hinge 14. Due to the forward motion of pin 13 in slot 15, pin 13, pulls out the shock absorber 16 that is also attached to seat 21 via attachment point 17.

**[0047]** If each armrest 1 contacts blocking surface 20 because of the downward force, see figures 4 and 4A, the unblocking pull rod 9 with springy element 9a is pulled into blocking recess 7 above blocking cam 5 of pressure rod 8 via drive plate 9b. At reduction or ending the downward force on armrests 1 exerted by the user, each springy element 9a will push (C4) blocking cam 5 of pressure 8 out of the blocking recess 7.

**[0048]** The maximum stroke of seat 21 has now been reached wherein both armrests 1 support on stops or support surfaces 20, in an orientation corresponding with that of the position of use. The path of pressing the armrests 1 down is in this case above the position of use of the armrests, so that the user when rising does not need to go down with his/her arms too much, as is the case in the known chairs, which would be disadvantageous for the transmission of forces and the user's posture.

**[0049]** The pin 5 of pressure rod 8 is now able to move freely rearward in slot 6 of armrest 1, direction C2, see figure 5 and 5A, which is induced by the seat 2 tilting back as a result of gravity and urges the stop 3a out of the way (H1) which after the pin 5 has arrived at the end of the slot 6 snaps back again, H2. At the rocker lever 11 swinging back (E2) the pin 13 is moved back in slot 15 (J2) so that the shock absorber 16 becomes active and the seat 21 is able to hinge back about hinge point 14 in a cushioned manner to the initial position or resting orientation of figure 1.

**[0050]** Also in case of an attempt to rise that has gone wrong the user will be returned to the seating position in a cushioned manner. The user can subsequently give it another try.

**[0051]** Figures 6A-D show another, simple release mechanism in an armrest 101, preferably in both armrests, of a seating device, in this case chair, according to the invention. Said release mechanism comprises an elongated leaf spring 109 having a free end 109a and an

end 109b that in a clamped manner is attached in the armrest 101. The leaf spring 109 is elastically deformable in the plane of the drawing, wherein figure 6A shows the relaxed position.

**[0052]** Accommodated within the armrest 101 is a locking/unlocking rod 103 tiltable about hinge 104, corresponding to rod 3 of the above-mentioned embodiment, so with operation knob 102 and a stop end 103a for securing the pin-shaped upper end 105 of the operation rod 108 in the locking position. The pin 105 can be slid in the directions C1,2 within the slot 106 in the armrest 101. At its upper end, the end of the slot 106 that is distal relative to the backrest 118 is provided with a retaining end 107 having an inclined run-in edge 107a and an upright stop edge 107b for stopping the pin 105 in proximal direction.

**[0053]** When the user wishes to rise from the chair he or she will lift both armrests 101 (A1, figure 6A) and by pulling up the knobs 102 will allow the locking rods 103 to tilt (H1) in order to release the stops 103a from the pins 105. Pins 105 are then able -in this example as well- to slide to the fore, direction C1, through slots 6, until they have arrived in the distal end of the slot 106.

**[0054]** When the user, see figure 6B, subsequently from the starting position exerts a downward pressure on the armrests 101, the pins 105 can be accommodated in the retaining end 107, direction C3, in that case guided over distance S by run-in edges 107a, and abut the stop edges 107b. The free end 109a of the leaf spring 109 is then resiliently bent upwards, direction L1. During the downward tilting, direction A2, of the armrests 101 the pins 105 remain reliably retained in the retaining end 107, as a result of which a reliable transmission of forces can be realised. The motion of the operation rod 108 and the seat of the chair is in accordance with the example discussed above.

**[0055]** When each armrest 101 contacts the blocking surface 120 due to the downward force, and the user reduces or ends the downward pressure on the armrest the leaf spring 109, which was in fact prebiased towards the extended, relaxed position shown in figure 6A, will urge the pin 105 out of the retaining end 107, direction C4, figure 6C. At tilting back of the seat, in accordance with the previous example, the pin 105 is able to move back in direction C2 through the slot 106, and get into engagement again with the stop end 103a of the unlocking/locking rod 103, see figure 6D.

**[0056]** The above description is included to illustrate the operation of preferred embodiments of the invention and not to limit the scope of the invention. Starting from the above explanation many variations that fall within the scope of the present invention will be evident to an expert.

## Claims

1. Seating device (80) comprising a holder (81), a seat (21) and at least one armrest (1), wherein the seat is movably attached to the holder for transfer be-

tween a substantially horizontal seating position and a forwardly tilted rising position, furthermore comprising an operation mechanism (1, 5, 6, 8, 8a, 11, 12) for the transfer of the seat from the seating position to the rising position, wherein the armrest (1) is part of the operation mechanism, **characterized in that** for the purpose of being part of the operation mechanism, the armrest (1) is attached to the holder (81) so as to move in a vertical plane, for transfer between a normal position of use and a starting position that is situated higher for starting the operation of the transfer of the seat from the seating position to the rising position, and from that starting position, can be pressed downwards into an operation position that is situated lower than the starting position while transferring the seat (21) into the rising position.

2. Seating device according to claim 1, wherein the armrest (1) can be pressed downwards into an end operation position that corresponds with the said position of use.
3. Seating device (80) according to claim 1 or 2, comprising two such armrests (1), wherein the two armrests are connected to each other to form an armrest set that can be moved as one unity.
4. Seating device (8) according to any one of the preceding claims, provided with a locking device (3, 3a, 4) for locking the armrest (1) in the said position of use and with operation means (2) for unlocking the locking device, wherein the operation means comprise an operation member (2) in the front end of the armrest (1).
5. Seating device according to any one of the preceding claims, wherein the operation mechanism (1, 5, 6, 8, 8a, 11, 12) comprises an operation rod (8), which with its upper end is rotatably connected to the armrest (1) and with its lower end (8a) is rotatably connected to a further part (11) of the operation mechanism, wherein preferably, in the normal position of use of the seating device, the further part (11) of the operation mechanism is accommodated in a chamber provided in the holder (81), adjacent the seat (21).
6. Seating device according to claim 5, wherein the upper end of the operation rod (8) is also transferable along the armrest (1) between a passive position and an active position, wherein in the active position of the upper end of the operation rod, the operation rod takes up an active orientation with an angle relative to the vertical that is larger than in the passive orientation of the operation rod in which the upper end is in the passive position, wherein preferably the active position of the upper end is situated closer to the

front end of the armrest than the passive position thereof, wherein preferably, the rearwardly opening angle between the operation rod and the armrest always exceeds 90 degrees.

7. Seating device according to claim 4 and claim 6, wherein the locking device (3, 3a, 4) is active in locking the upper end of the operation rod in the passive position.
8. Seating device according to claim 6 or 7, provided with a retaining member (7) for keeping the upper end of the operation rod (8) in the active position, wherein the upper end preferably comprises a retaining pin (5) that can be moved in and out of the retaining member (7).
9. Seating device according to any one of the claims 5-8, wherein the lower end (8a) of the operation rod (8) is rotatably connected to the one leg (11a) of a rocker lever (11) that is rotatably attached to the holder (81) and with the other leg (11b) is movably connected to the seat, wherein preferably the rocker lever with the other leg (11b), through intermediary of a sliding joint (13, 15), is connected to the seat (21) so as to slide, wherein the sliding joint is attached to the seat by means of a hinge joint (17), wherein preferably between the other leg (11b) and the seat (21) a shock absorber (16) is placed, which in particular is part of the sliding joint.
10. Seating device according to any one of the preceding claims, wherein the holder (81) is formed by a chair frame, wherein the chair frame furthermore comprises a back part (18), wherein the seating device has two armrests (1), wherein the armrests (1) are hinged to the back part.
11. Seating device according to claim 10, when depending on claim 3, wherein the armrests (1) are connected to each other by a transverse member (1a) situated behind the back part (18), which transverse member preferably is at least locally spaced apart from the back part.
12. Seating device according to any one of the preceding claims, wherein the holder (81), in particular, if present, a chair back part (18), is provided with a stop (20) for the armrest against downward movement thereof relative to the normal position of use.
13. Seating device according to any one of the preceding claims, designed as a dining room chair or designed as a meeting room chair.
14. Seating device according to any one of the preceding claims, wherein the seat (21) near its front edge is hinged (14) to the holder.

15. Seating device according to any one of the preceding claims, wherein the armrest (21) is attached to the holder near the rear end of the armrest.

- 5 16. Seating device according to any one of the preceding claims, wherein the armrest (1) is hinged to the holder so that in the starting position the armrest extends upwardly inclined from the hinge (10).
- 10 17. Seating device according to any one of the preceding claims, wherein the normal position of use of the armrest (1) is a substantially horizontal position of use.

## 15 Patentansprüche

1. Sitzvorrichtung (80), umfassend eine Halterung (81), einen Sitz (21) und mindestens eine Armlehne (1), wobei der Sitz zum Übergang zwischen einer im Wesentlichen horizontalen Sitzposition und einer nach vorne geneigten Aufwärtsposition beweglich an der Halterung befestigt ist, ferner umfassend einen Betätigungsmechanismus (1, 5, 6, 8, 8a, 11, 12) für den Übergang des Sitzes von der Sitzposition in die Aufwärtsposition, wobei die Armlehne (1) Teil des Betätigungsmechanismus ist, **dadurch gekennzeichnet, dass** die Armlehne (1), um Teil des Betätigungsmechanismus zu sein, an der Halterung (81) befestigt ist, um sich in einer vertikalen Ebene zu bewegen, zum Übergang zwischen einer normalen Gebrauchsposition und einer höher gelegenen Ausgangsposition, um den Betrieb des Übergangs des Sitzes von der Sitzposition in die Aufwärtsposition zu beginnen, und von dieser Ausgangsposition aus nach unten in eine Betriebsposition gedrückt werden kann, die niedriger als die Ausgangsposition liegt, während der Sitz (21) in die Aufwärtsposition gebracht wird.
2. Sitzvorrichtung nach Anspruch 1, wobei die Armlehne (1) nach unten in eine Endbetriebsposition gedrückt werden kann, die der Gebrauchsposition entspricht.
3. Sitzvorrichtung (80) nach Anspruch 1 oder 2, umfassend zwei derartige Armlehnen (1), wobei die beiden Armlehnen miteinander verbunden sind, um einen Armlehnenatz zu bilden, der als eine Einheit bewegt werden kann.
4. Sitzvorrichtung (8) nach einem der vorhergehenden Ansprüche, versehen mit einer Verriegelungsvorrichtung (3, 3a, 4) zum Verriegeln der Armlehne (1) in der Gebrauchsposition und mit Betätigungsmitteln (2) zum Entriegeln der Verriegelungsvorrichtung, wobei die Betätigungsmittel ein Betätigungselement (2) am vorderen Ende der Armlehne (1) umfassen.

5. Sitzvorrichtung nach einem der vorhergehenden Ansprüche, wobei der Betätigungsmechanismus (1, 5, 6, 8, 8a, 11, 12) eine Betätigungsstange (8) umfasst, die mit ihrem oberen Ende drehbar mit der Armlehne (1) und mit ihrem unteren Ende (8a) drehbar mit einem weiteren Teil (11) des Betätigungsmechanismus verbunden ist, wobei vorzugsweise der weitere Teil (11) des Betätigungsmechanismus in der normalen Gebrauchsposition der Sitzvorrichtung in einer in der Halterung (81) vorgesehenen Kammer neben dem Sitz (21) untergebracht ist. 5
6. Sitzvorrichtung nach Anspruch 5, wobei das obere Ende der Betätigungsstange (8) auch entlang der Armlehne (1) zwischen einer passiven Position und einer aktiven Position übertragbar ist, wobei die Betätigungsstange in der aktiven Position des oberen Endes der Betätigungsstange eine aktive Ausrichtung mit einem Winkel relativ zur Vertikalen annimmt, der größer ist als in der passiven Ausrichtung der Betätigungsstange, in der sich das obere Ende in der passiven Position befindet, wobei vorzugsweise die aktive Position des oberen Endes näher am vorderen Ende der Armlehne angeordnet ist als die passive Position derselben, wobei vorzugsweise der rückwärtige Öffnungswinkel zwischen der Betätigungsstange und der Armlehne immer mehr als 90 Grad beträgt. 10
7. Sitzvorrichtung nach Anspruch 4 und Anspruch 6, wobei die Verriegelungsvorrichtung (3, 3a, 4) aktiv ist, um das obere Ende der Betätigungsstange in der passiven Position zu verriegeln. 15
8. Sitzvorrichtung nach Anspruch 6 oder 7, versehen mit einem Halteelement (7) zum Halten des oberen Endes der Betätigungsstange (8) in der aktiven Position, wobei das obere Ende vorzugsweise einen Haltestift (5) umfasst, der in das und aus dem Halteelement (7) bewegt werden kann. 20
9. Sitzvorrichtung nach einem der Ansprüche 5-8, wobei das untere Ende (8a) der Betätigungsstange (8) drehbar mit dem einen Schenkel (11a) eines Kipphebels (11) verbunden ist, der drehbar an der Halterung (81) und mit dem anderen Schenkel (11b) beweglich mit dem Sitz verbunden ist, wobei vorzugsweise der Kipphebel mit dem anderen Schenkel (11b) durch Zwischenschaltung eines Gleitgelenks (13, 15) mit dem Sitz (21) gleitend verbunden ist, wobei das Gleitgelenk über ein Scharniergelenk (17) am Sitz befestigt ist, wobei vorzugsweise zwischen dem anderen Schenkel (11b) und dem Sitz (21) ein Stoßdämpfer (16) angeordnet ist, der insbesondere Teil des Gleitgelenks ist. 25
10. Sitzvorrichtung nach einem der vorhergehenden Ansprüche, wobei die Halterung (81) durch einen Stuhlrahmen gebildet ist, wobei der Stuhlrahmen ferner ein Rückenteil (18) umfasst, wobei die Sitzvorrichtung zwei Armlehnen (1) aufweist, wobei die Armlehnen (1) an dem Rückenteil gelenkig gelagert sind. 30
11. Sitzvorrichtung nach Anspruch 10, wenn abhängig von Anspruch 3, wobei die Armlehnen (1) durch ein hinter dem Rückenteil (18) angeordnetes Querelement (1a) miteinander verbunden sind, das vorzugsweise zumindest lokal vom Rückenteil beabstandet ist. 35
12. Sitzvorrichtung nach einem der vorhergehenden Ansprüche, wobei die Halterung (81), insbesondere, wenn vorhanden, ein Stuhlrückenteil (18) mit einem Anschlag (20) für die Armlehne gegen deren Abwärtsbewegung gegenüber der normalen Gebrauchsposition versehen ist. 40
13. Sitzvorrichtung nach einem der vorhergehenden Ansprüche, die als Esszimmerstuhl oder als Besprechungszimmerstuhl ausgeführt ist. 45
14. Sitzvorrichtung nach einem der vorhergehenden Ansprüche, wobei der Sitz (21) nahe seiner Vorderkante an der Halterung gelenkig gelagert (14) ist. 50
15. Sitzvorrichtung nach einem der vorhergehenden Ansprüche, wobei die Armlehne (21) an der Halterung nahe dem hinteren Ende der Armlehne befestigt ist. 55
16. Sitzvorrichtung nach einem der vorhergehenden Ansprüche, wobei die Armlehne (1) an der Halterung gelenkig gelagert ist, so dass sich die Armlehne in der Ausgangsposition vom Scharnier (10) nach oben geneigt erstreckt.
17. Sitzvorrichtung nach einem der vorhergehenden Ansprüche, wobei die normale Gebrauchsposition der Armlehne (1) eine im Wesentlichen horizontale Gebrauchsposition ist.

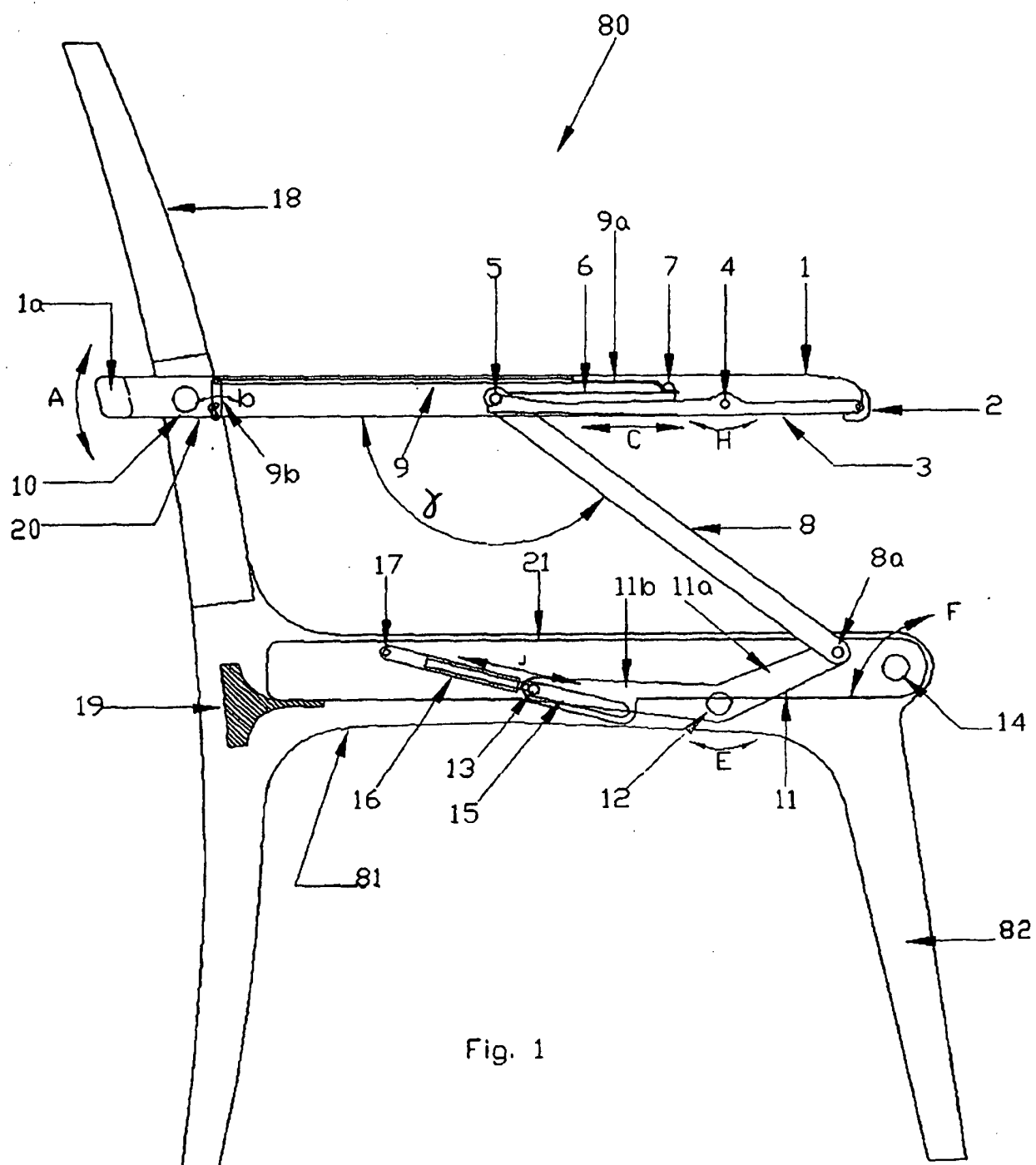
## Revendications

1. Dispositif d'assise (80) comprenant un support (81), un siège (21) et au moins un accoudoir (1), dans lequel le siège est attaché de façon déplaçable au support afin d'exécuter un transfert entre une position assise sensiblement horizontale et une position de levage inclinée vers l'avant, comprenant en outre un mécanisme de commande (1, 5, 6, 8, 8a, 11, 12) pour le transfert du siège de la position assise à la position de levage, dans lequel l'accoudoir (1) constitue une partie du mécanisme de commande, **caractérisé en ce que**, dans le but de faire partie du mécanisme de commande, l'accoudoir (1) est attaché au support (81) de manière à se déplacer dans



- un plan vertical, en vue d'effectuer un transfert entre une position d'utilisation normale et une position de départ qui est située plus haut afin de commencer l'exécution du transfert du siège de la position assise vers la position de levage, et à partir de cette position de départ, il peut être pressé vers le bas dans une position d'actionnement qui est située plus bas que la position de départ pendant le transfert du siège (21) dans la position de levage.
2. Dispositif d'assise selon la revendication 1, dans lequel l'accoudoir (1) peut être pressé vers le bas dans une position de fonctionnement finale qui correspond à ladite position d'utilisation.
  3. Dispositif d'assise (80) selon la revendication 1 ou 2, comprenant deux accoudoirs (1) de ce type, dans lequel les deux accoudoirs sont connectés l'un à l'autre de manière à former un ensemble d'accoudoir qui peut être déplacé comme une unité.
  4. Dispositif d'assise (80) selon l'une quelconque des revendications précédentes, comprenant un dispositif de verrouillage (3, 3a, 4) pour verrouiller l'accoudoir (1) dans ladite position d'utilisation, et des moyens de commande (2) pour déverrouiller le dispositif de verrouillage, dans lequel les moyens de commande comprennent un élément de commande (2) dans l'extrémité avant de l'accoudoir (1).
  5. Dispositif d'assise selon l'une quelconque des revendications précédentes, dans lequel le mécanisme de commande (1, 5, 6, 8, 8a, 11, 12) comprend une tige d'actionnement (8), qui est connectée de façon rotative par son extrémité supérieure à l'accoudoir (1) et qui est connectée de façon rotative par son extrémité inférieure (8a) à une partie supplémentaire (11) du mécanisme de commande, dans lequel, de préférence, dans la position d'utilisation normale du dispositif d'assise, la partie supplémentaire du mécanisme de commande est logée dans une chambre prévue dans le support (81), à proximité du siège (21).
  6. Dispositif d'assise selon la revendication 5, dans lequel l'extrémité supérieure de la tige d'actionnement (8) peut également être transférée le long de l'accoudoir (1) entre une position passive et une position active, dans lequel dans la position active de l'extrémité supérieure de la tige d'actionnement, la tige d'actionnement adopte une orientation active avec un angle par rapport à la verticale qui est plus grand que dans l'orientation passive de la tige d'actionnement dans laquelle l'extrémité supérieure se trouve dans la position passive, dans lequel la position active de l'extrémité supérieure est de préférence située plus près de l'extrémité avant de l'accoudoir que la position passive de celle-ci, dans lequel, de préférence, l'angle d'ouverture vers l'arrière entre la tige d'actionnement et l'accoudoir dépasse toujours 90 degrés.
  7. Dispositif d'assise selon la revendication 4 et la revendication 6, dans lequel le dispositif de verrouillage (3, 3a, 4) est actif pour verrouiller l'extrémité supérieure de la tige d'actionnement dans la position passive.
  8. Dispositif d'assise selon la revendication 6 ou 7, comprenant un élément de retenue (7) pour maintenir l'extrémité supérieure de la tige d'actionnement (8) dans la position active, dans lequel l'extrémité supérieure comprend de préférence une broche de retenue (5) qui peut être déplacée dans et hors de l'élément de retenue (7).
  9. Dispositif d'assise selon l'une quelconque des revendications 5 à 8, dans lequel l'extrémité inférieure (8a) de la tige d'actionnement (8) est connectée de façon rotative à une première branche (11a) d'un levier basculant (11) qui est attaché de façon rotative au support (81) alors que l'autre branche (11b) est connectée de façon déplaçable au siège, dans lequel de préférence le levier basculant, par l'intermédiaire d'une articulation coulissante (13, 15), est connecté par son autre branche (11b) au siège (21) de façon à coulisser, dans lequel l'articulation coulissante est attachée au siège au moyen d'une articulation à charnière (17), dans lequel de préférence un absorbeur de choc (16), qui en particulier fait partie de l'articulation coulissante, est placé entre l'autre branche (11b) et le siège (21).
  10. Dispositif d'assise selon l'une quelconque des revendications précédentes, dans lequel le support (81) est formé par un cadre de chaise, dans lequel le cadre de chaise comprend en outre une partie arrière (18), dans lequel le dispositif d'assise comprend deux accoudoirs (1), dans lequel les accoudoirs (1) sont articulés sur la partie arrière.
  11. Dispositif d'assise selon la revendication 10, lorsqu'elle dépend de la revendication 3, dans lequel les accoudoirs (1) sont connectés l'un à l'autre par un élément transversal (1a) qui est situé derrière la partie arrière (18), ledit élément transversal étant de préférence au moins localement espacé de la partie arrière.
  12. Dispositif d'assise selon l'une quelconque des revendications précédentes, dans lequel le support (81), en particulier, si elle est présente, une partie arrière de chaise (18), est pourvue d'un arrêt (20) pour l'accoudoir contre un déplacement vers le bas de celui-ci par rapport à la position d'utilisation normale.

13. Dispositif d'assise selon l'une quelconque des revendications précédentes, conçu comme une chaise de salle à manger ou comme une chaise de salle de réunion. 5
14. Dispositif d'assise selon l'une quelconque des revendications précédentes, dans lequel le siège (21) est articulé (14) sur le support à proximité de son bord avant. 10
15. Dispositif d'assise selon l'une quelconque des revendications précédentes, dans lequel l'accoudoir (21) est attaché au support à proximité de l'extrémité arrière de l'accoudoir. 15
16. Dispositif d'assise selon l'une quelconque des revendications précédentes, dans lequel l'accoudoir (1) est articulé sur le support de telle sorte que, dans la position de départ, l'accoudoir s'étende incliné vers le haut à partir de la charnière (10). 20
17. Dispositif d'assise selon l'une quelconque des revendications précédentes, dans lequel la position d'utilisation normale de l'accoudoir (1) est une position d'utilisation sensiblement horizontale. 25
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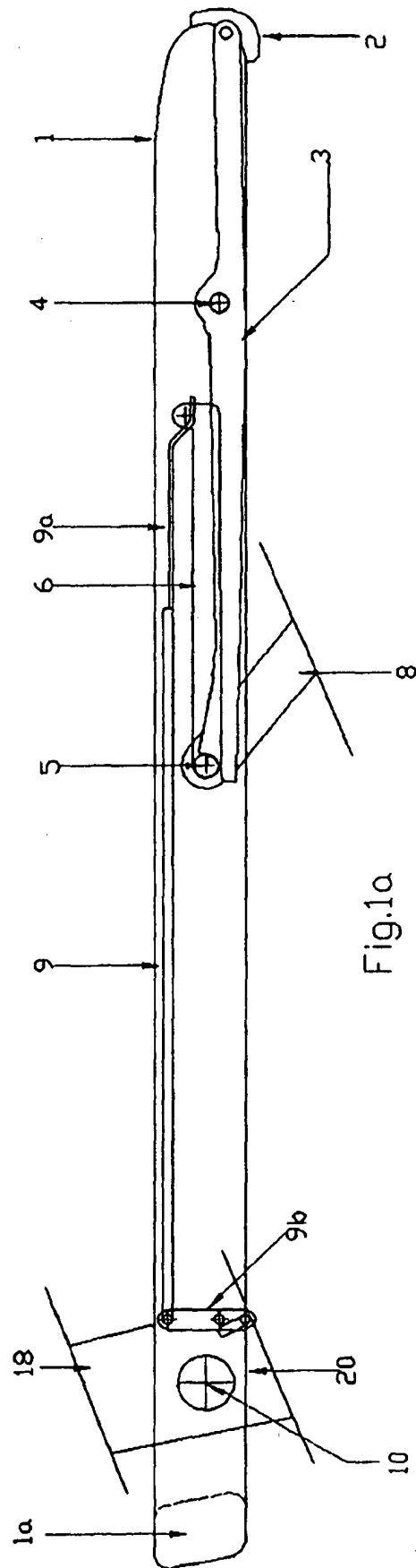
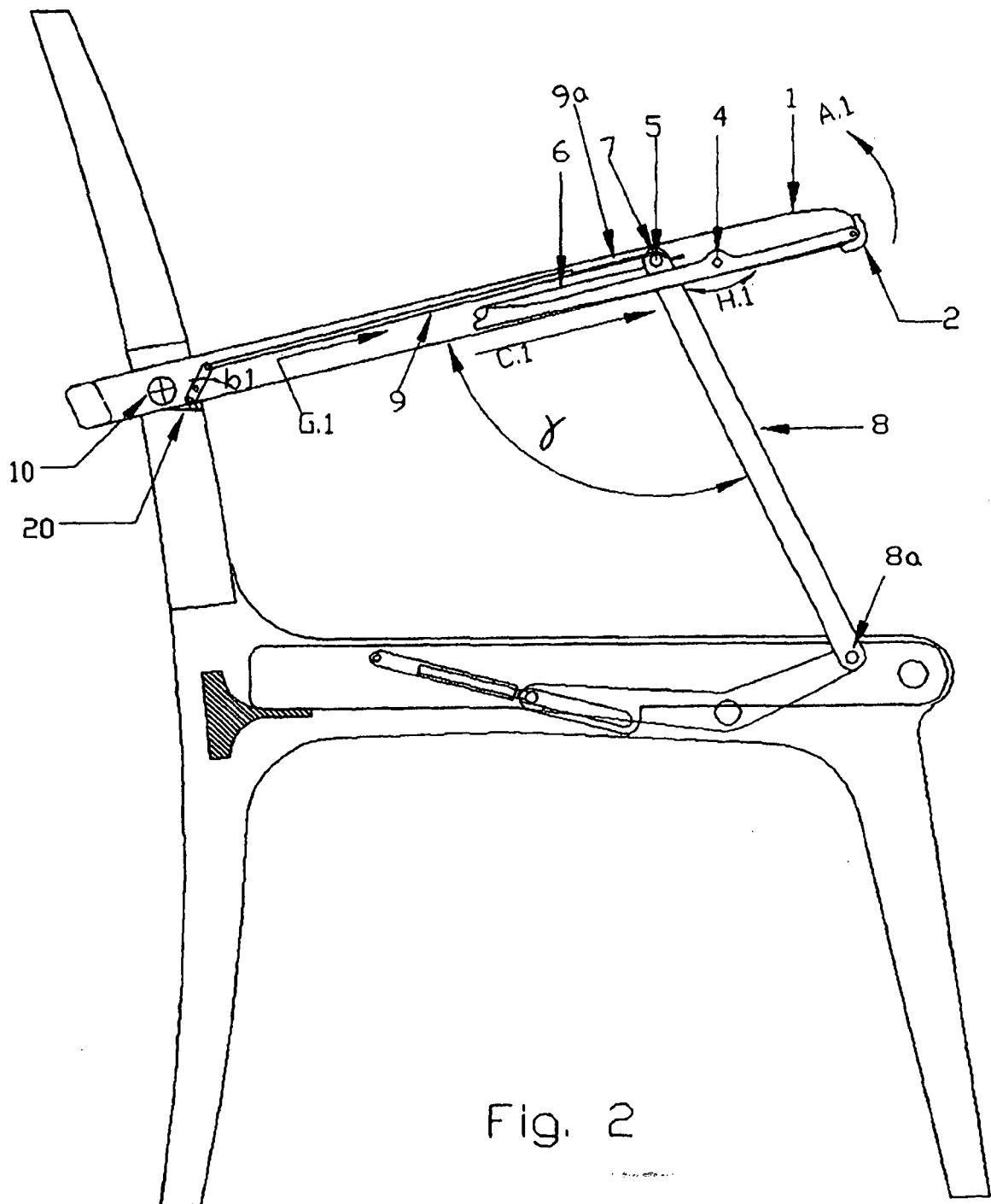
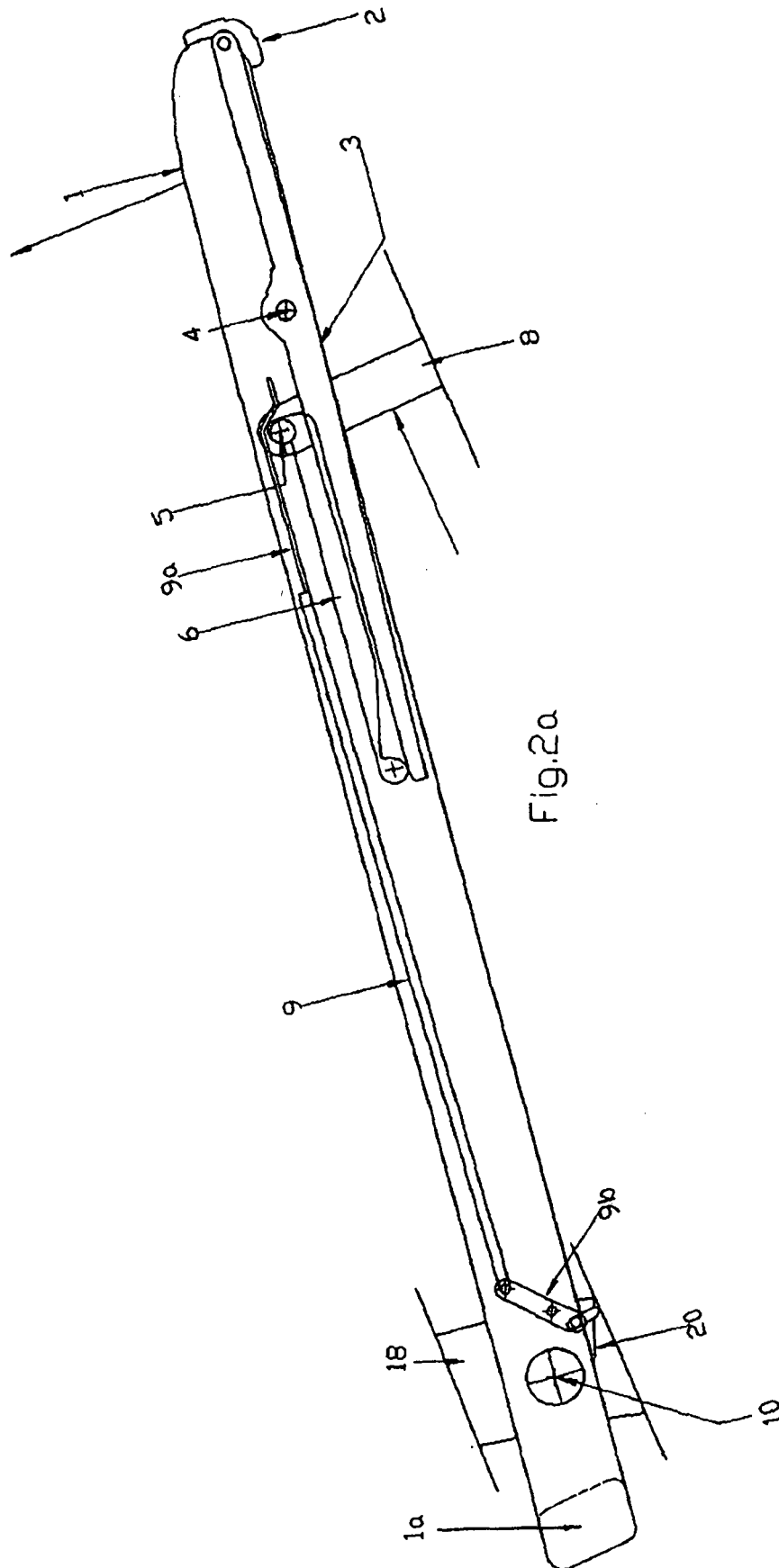
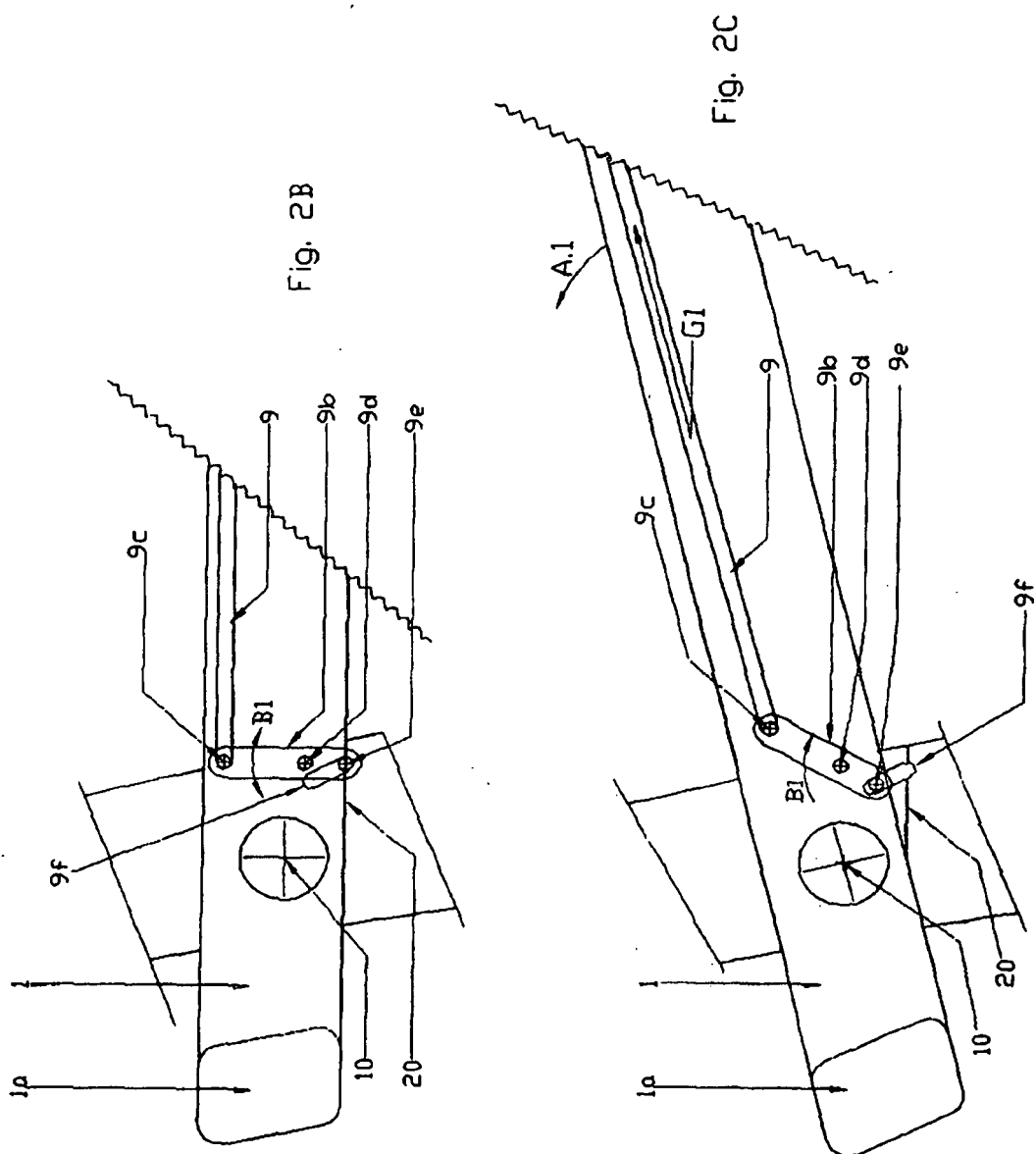


Fig.1a







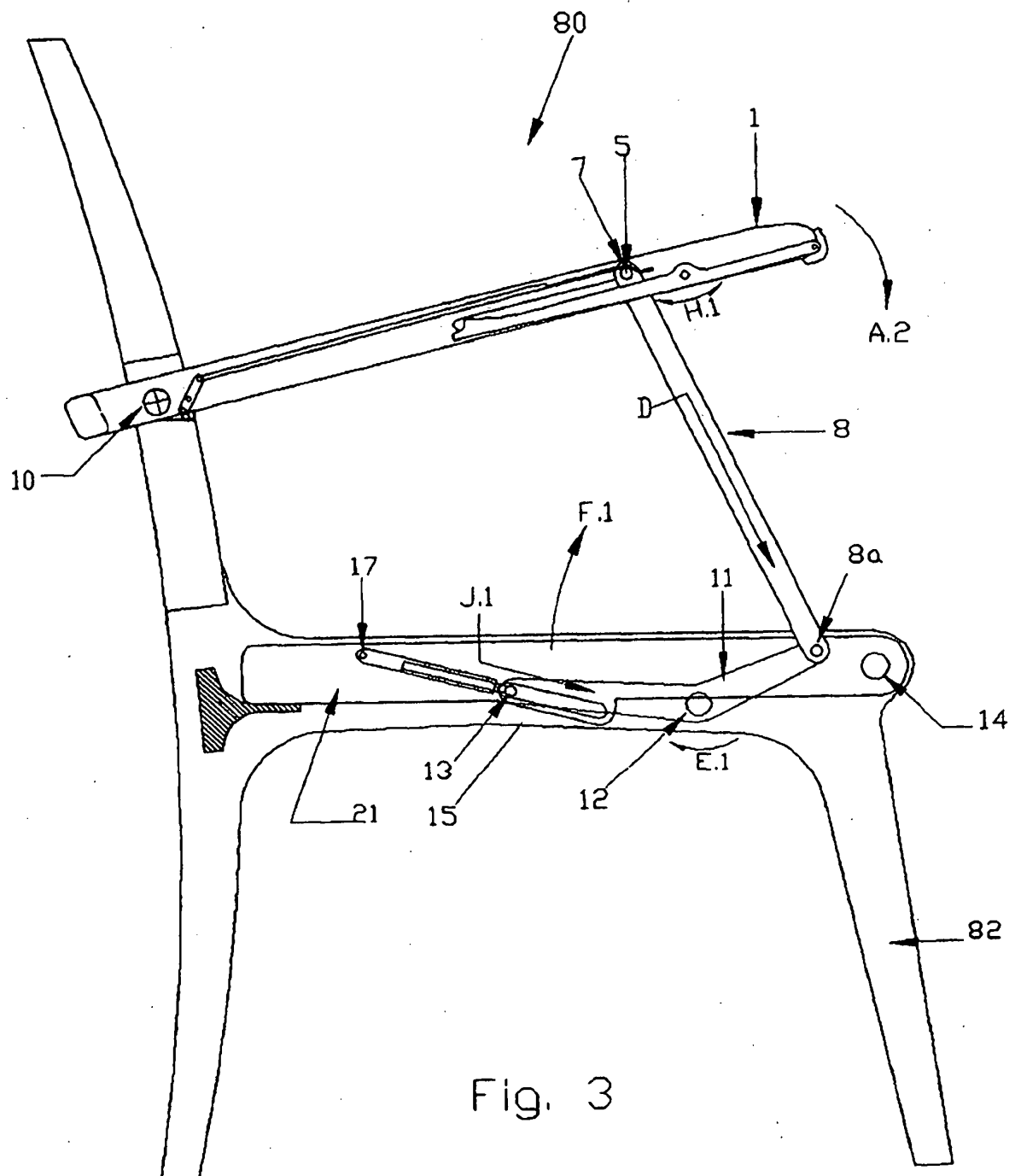
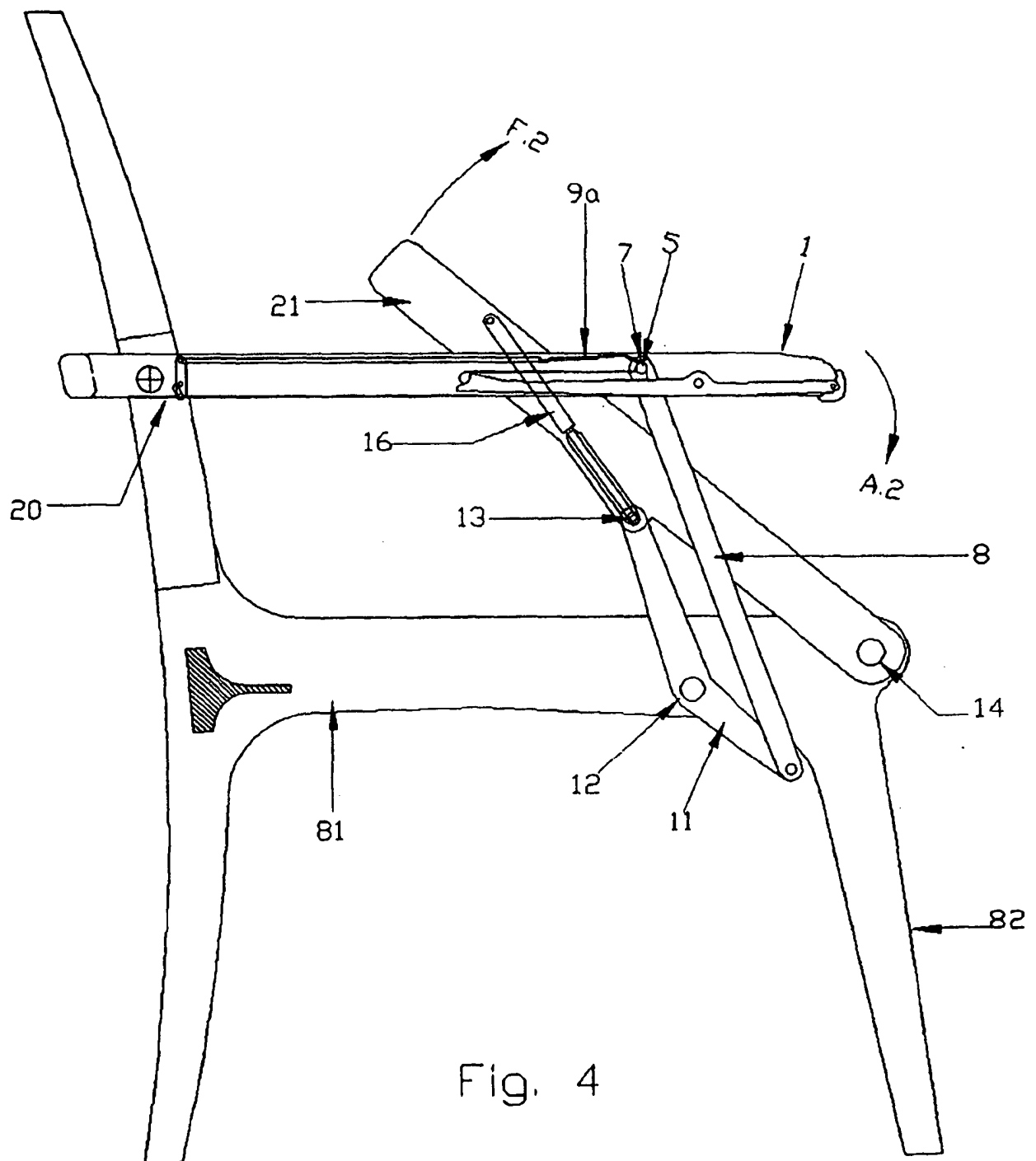


Fig. 3





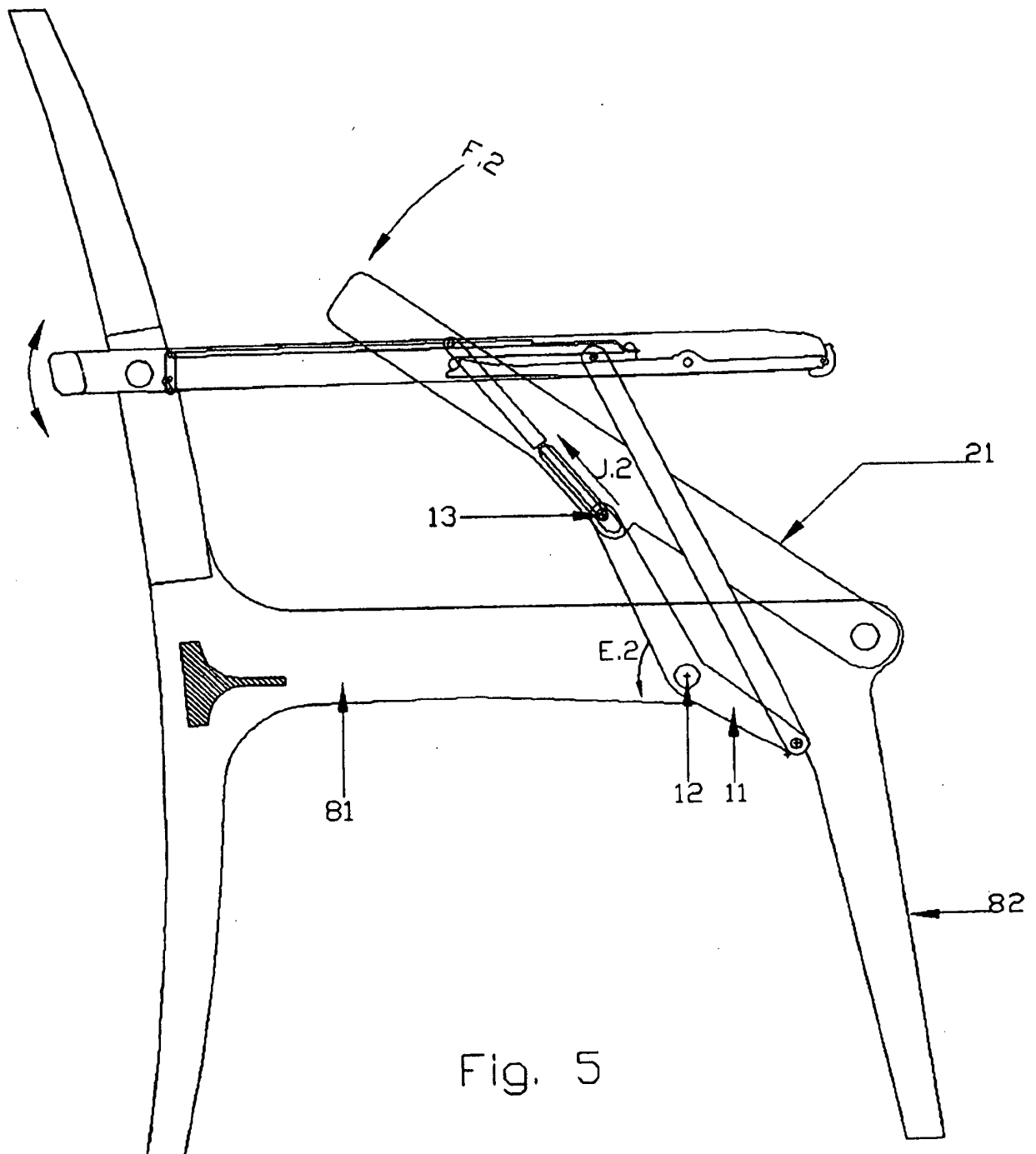
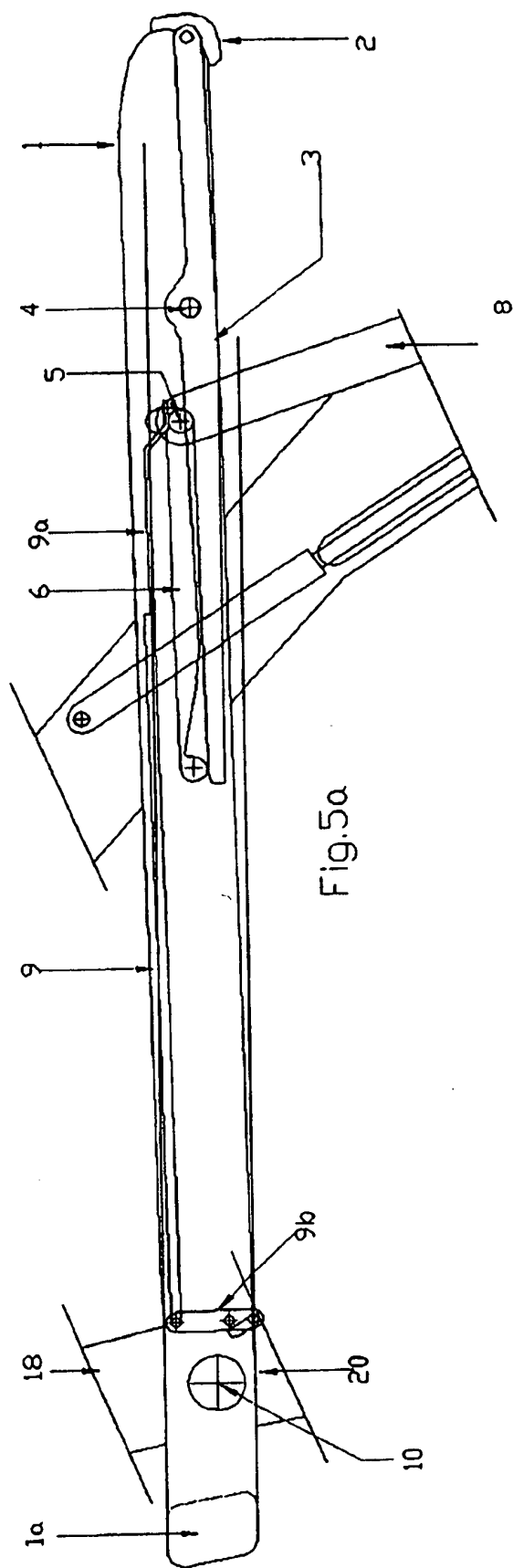
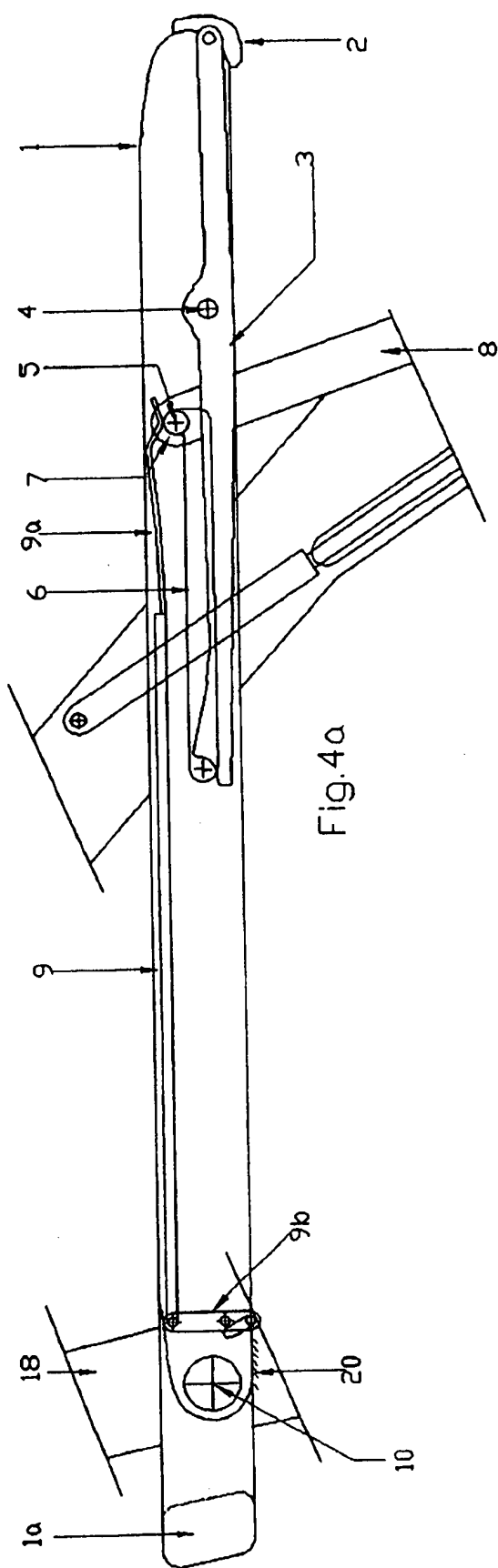
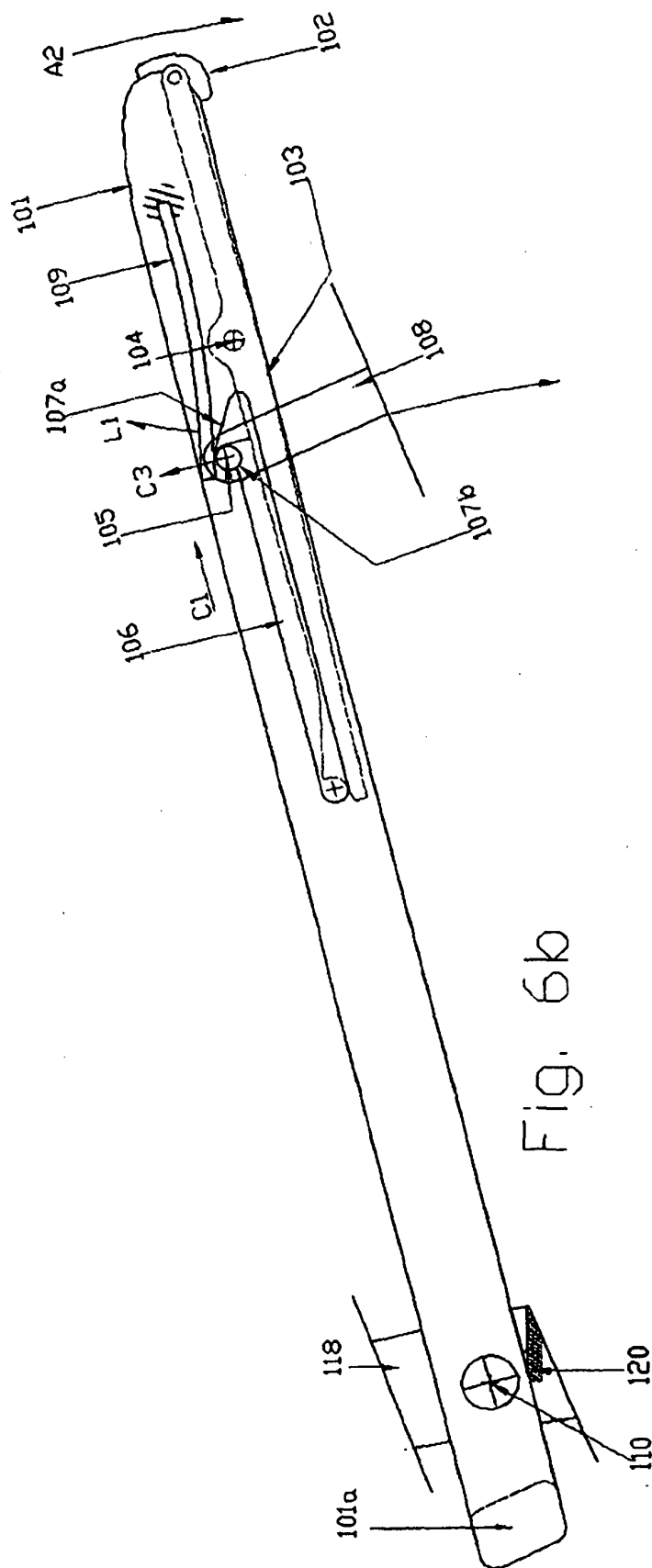
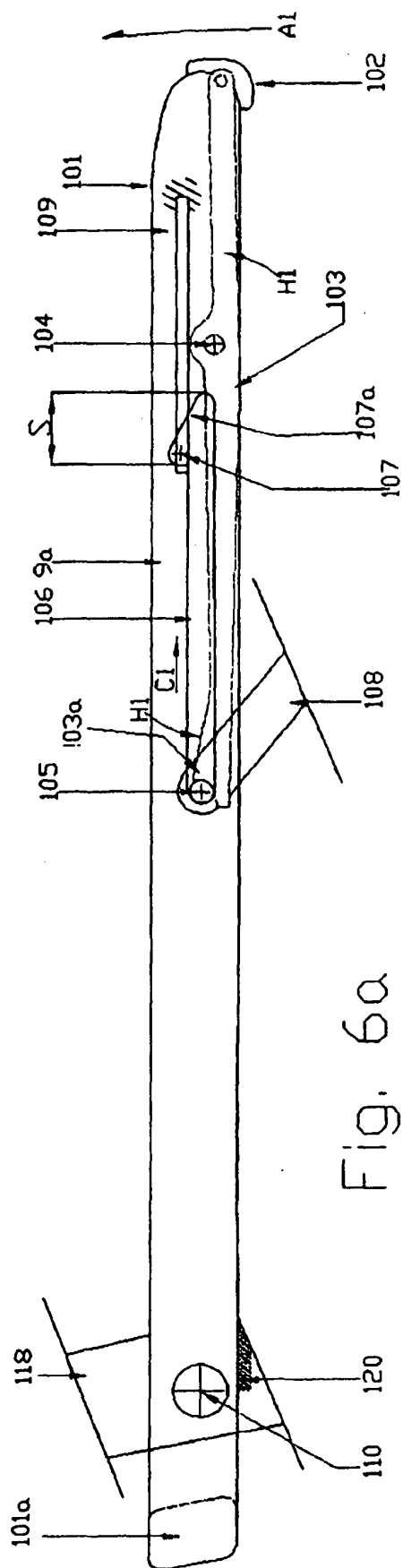
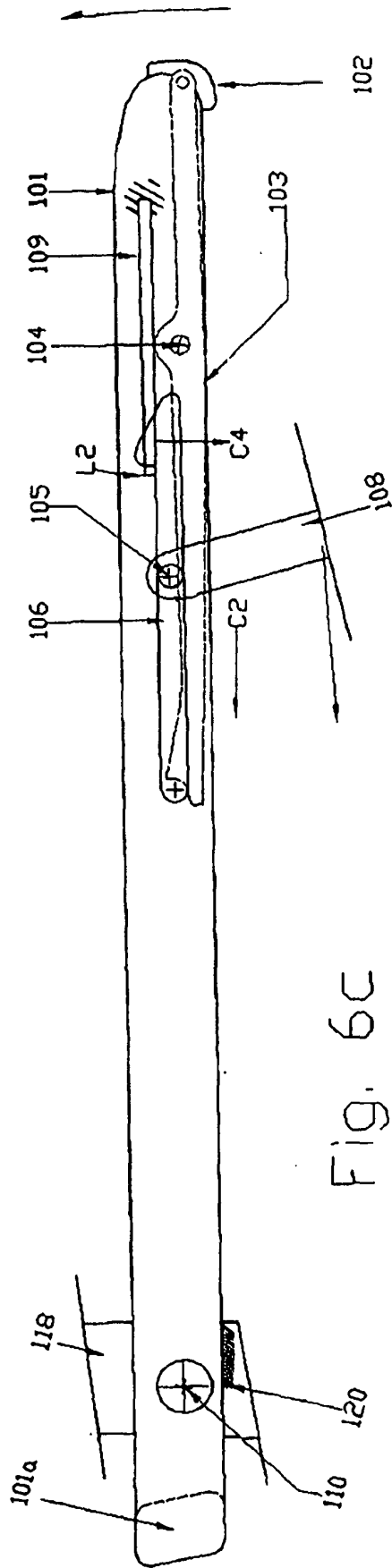


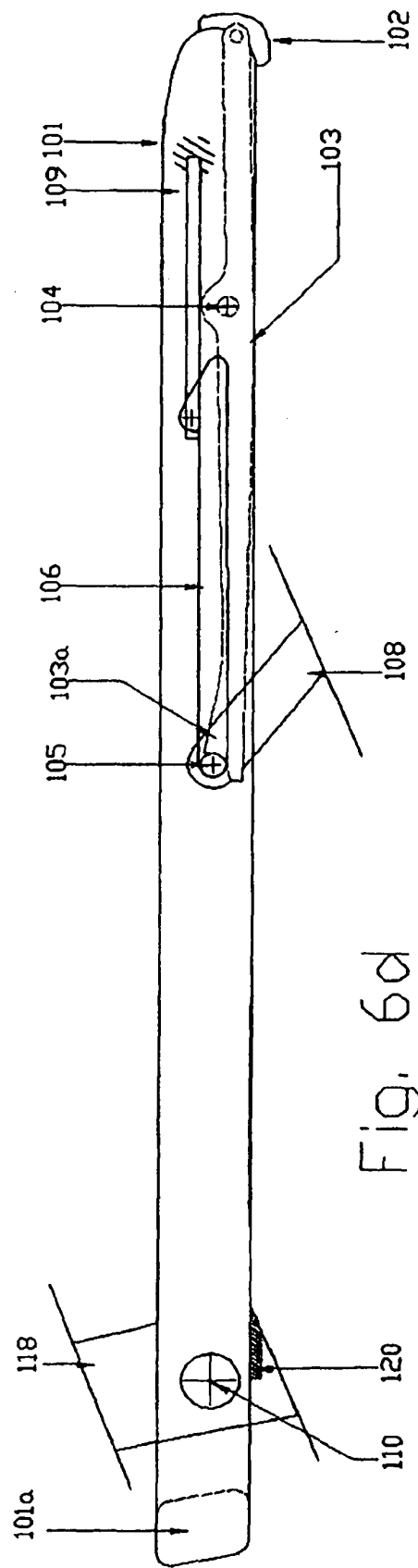
Fig. 5







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**REFERENCES CITED IN THE DESCRIPTION**

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