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SEAT HAVING ADJUSTABLE BACK

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Fig. 1

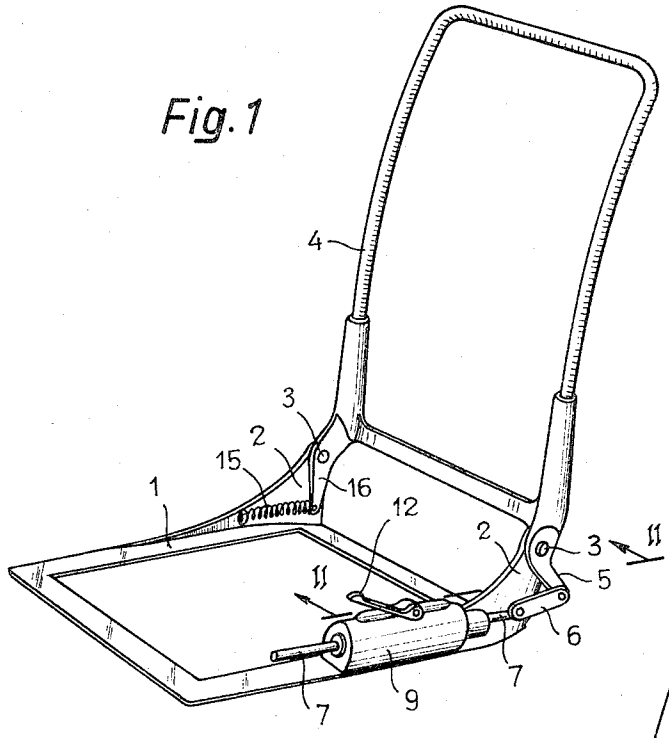
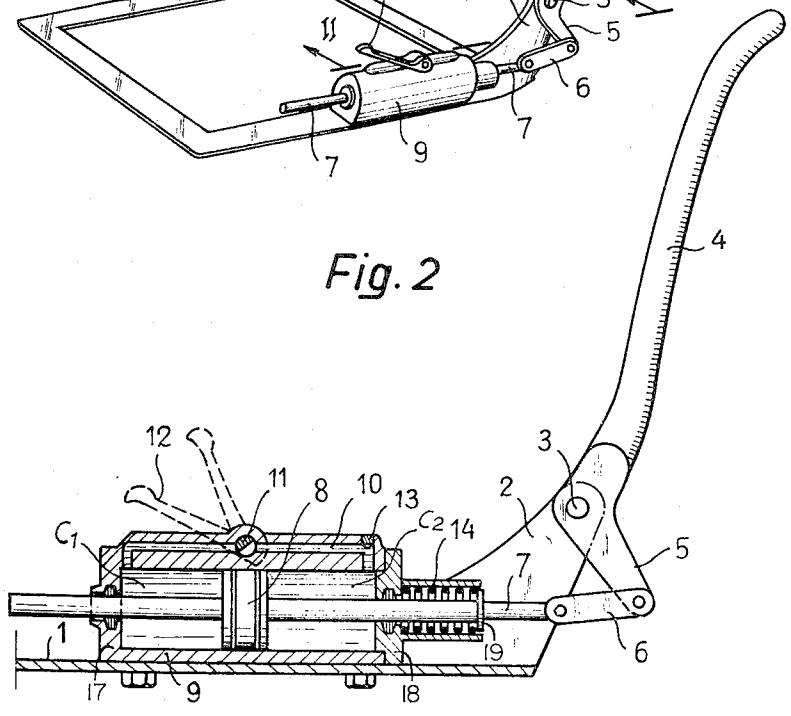


Fig. 2



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SEAT HAVING ADJUSTABLE BACK

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This invention relates to seats equipped with a device for adjusting the inclination of the back of the seat.

The improved device comprises hydraulic means affording a continuous adjustment of the inclination of the seat back throughout a predetermined inclination range.

According to an embodiment of the invention the device comprises a hydraulic cylinder secured to either the seat frame or the back, the piston of which has a piston rod operatively connected to either the back or seat frame, respectively, the two opposite chambers in the hydraulic cylinder being interconnected by an external cock-controlled conduit, opening of the cock allowing the hydraulic fluid to flow from one to the other chamber, whereby the piston is displaced in the cylinder and the inclination of the back is varied.

Further characteristic features of this invention will be understood from the detailed description appended hereto referring to the accompanying drawing which shows an embodiment thereof.

FIGURE 1 is a schematic perspective view of a seat having an adjustable back, and

FIG. 2 is a sectional view on an enlarged scale on line II—II of FIGURE 1.

The frame 1, which is a stationary seat portion, is provided with a pair of upstanding rear lugs 2 to which the back frame 4 is pivoted by means of pivots 3.

The back frame 4 is provided with a crank 5 fast therewith articulated by means of a link 6 to a rod 7 extending through both fore and aft cylinder covers 17, 18 thereby avoiding the need of employing other volume compensating devices indispensable in cylinders having a rod extending through one overplate only. The rod 7 carries a piston 8 sealingly slidable in a hydraulic cylinder 9 secured to the seat frame 1.

The two chambers C_1, C_2 in the cylinder 9 on opposite sides of the piston 8 are filled with a liquid, such as oil and are interconnected by an external by-pass conduit 10 having interposed therein a cock 11 operable by means of an operating lever 12. A plug 13 serves for filling the cylinder 9 with the liquid.

The piston rod 7 is moreover acted upon by a pressure spring 14 which counter balances the back in order to maintain the latter in a constantly balanced position. The spring 14 is mounted concentrically on the extension of the piston rod 7, and located between the aft cylinder cover 18, and an abutment 19, secured to the said extension piston rod passing through the said cover 18.

A tension spring 15 is tensioned between the frame 1 and a depending arm 16 on the back frame 4, cooperates with the above mentioned spring 14 for balancing the back frame and moreover urges the back frame towards its fully extended position.

When the cock 11 is in its closed condition oil is prevented from flowing from one to the other of the chambers C_1, C_2 in the cylinder, thereby hydraulically locking the piston 8 and back frame 4.

In order to vary the inclination of the back frame the cock 11 is opened by acting on its operating lever 12. The fluid can then freely flow from one to the other chamber C_1, C_2 in the cylinder 9, whereby the piston 8 connected with the back frame can be displaced by acting on the back frame 4. Once the desired adjustment has been made, the cock 11 is closed again by means of the lever 12, whereby the back frame is hydraulically locked in the desired position.

In the construction described above the cylinder 9 is secured to the stationary seat frame 1, its piston rod 7 being connected to the back frame 4.

Alternatively, the cylinder can be carried by the back frame 4, when its piston rod 7 is connected to the frame 1. Two or a plurality of hydraulic cylinders on opposite sides of frame 1 can be used instead of a single cylinder as shown. Operative connections can be employed between the piston rod 7 and back frame 4 (or seat frame 1) other than the leverage shown by way of example.

What I claim is:

1. In a seat structure comprising a seat frame and a tiltable back frame, a hydraulic cylinder fixed to one of said frames, a piston sealingly slidable in the cylinder and subdividing the said cylinder into a pair of chambers on opposite sides of the piston, a piston rod extending through both fore and aft cylinder covers and having one end connected to the other of said frames, whereby the tilting movement of the back frame displaces the piston in the cylinder, a by-pass conduit connecting the chambers, a cock on said by-pass conduit for manually closing or opening of said by-pass conduit, resilient means counter-balancing the weight of the back frame when tilted backwards and resilient means urging the back frame towards the rearmost tilted position.

2. In a seat structure comprising a seat frame and a tiltable back frame, a hydraulic cylinder fixed to one of the said frames, a piston sealingly slidable in the cylinder and subdividing the said cylinder into a pair of chambers on opposite sides of the piston, a piston rod extending through both fore and aft cylinder covers and having one end connected to the other of said frames, whereby the tilting movement of the back frame displaces the piston in the cylinder, a by-pass conduit connecting the chambers, a cock on said by-pass conduit for manually closing or opening said by-pass conduit, resilient means counterbalancing the weight of the back frame when the latter is tilted backwards comprising a compression spring mounted concentrically on the piston rod extension fixed to said other frame and biased between the cylinder cover and an abutment secured to said piston rod extension, and resilient means urging the back frame towards the rearmost tilted position comprising a tensioning spring interconnecting said seat frame and back frame.

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