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Harder, Jr. et al.

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[54] **ELEVATION-ADJUSTING ASSEMBLY FOR SEAT**

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[21] Appl. No.: **876,397**

[52] **U.S. Cl.**.....**248/400**, 267/117, 297/345

[51] **Int. Cl.**.....**B60n 1/02**

[58] **Field of Search**.....248/400, 399, 372, 378, 157; 267/131, 117; 188/88; 297/345

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[57] **ABSTRACT**

Seat for vehicle operator is mounted on an assembly which automatically moves seat vertically to a selected elevation corresponding to a setting on an elevation selector. Seat is automatically maintained at the selected elevation regardless of changes in the external load on the platform.

24 Claims, 11 Drawing Figures

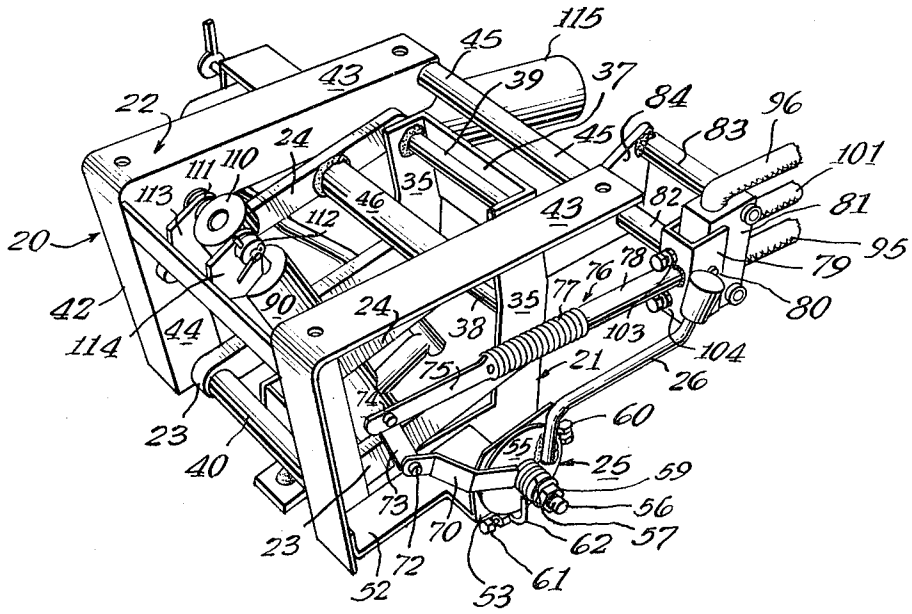

Fig. 1

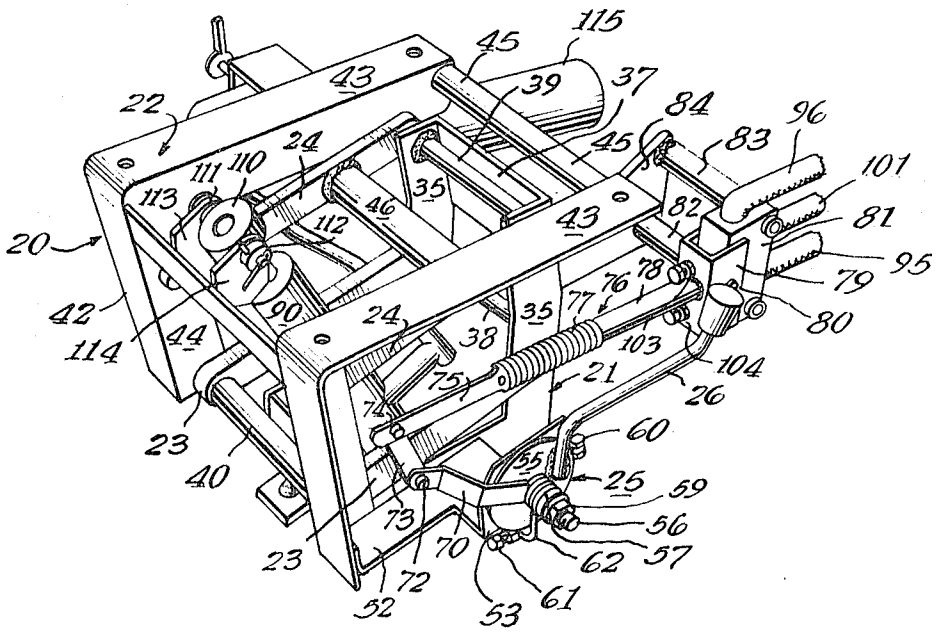
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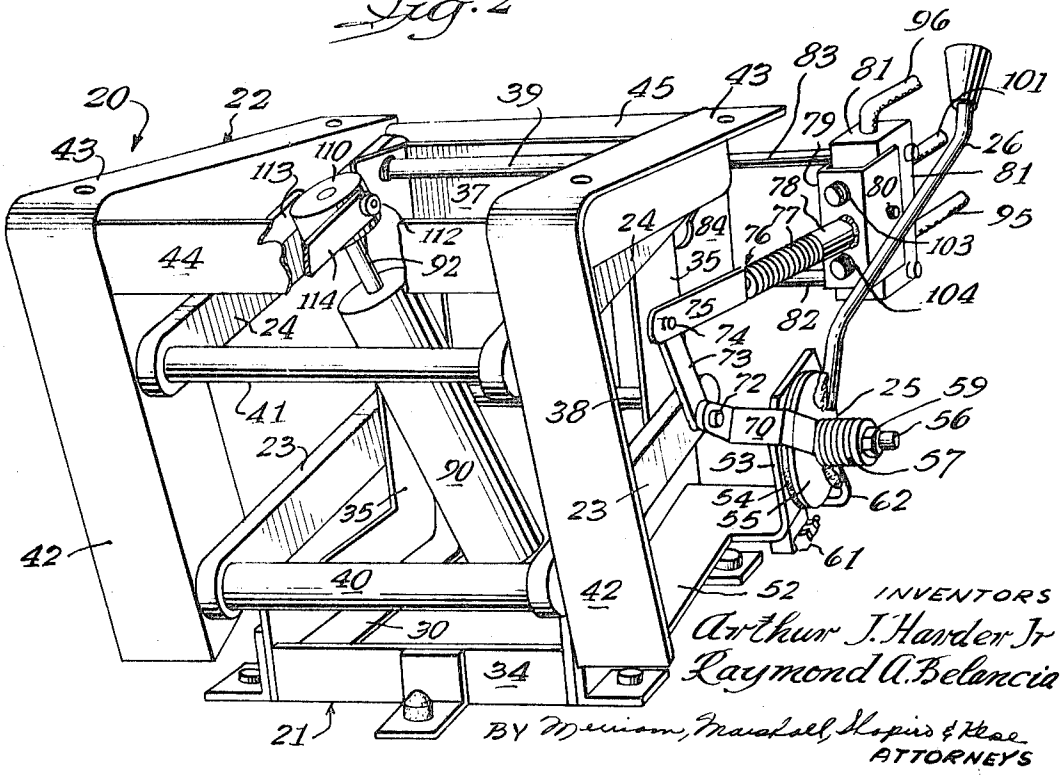
Fig. 2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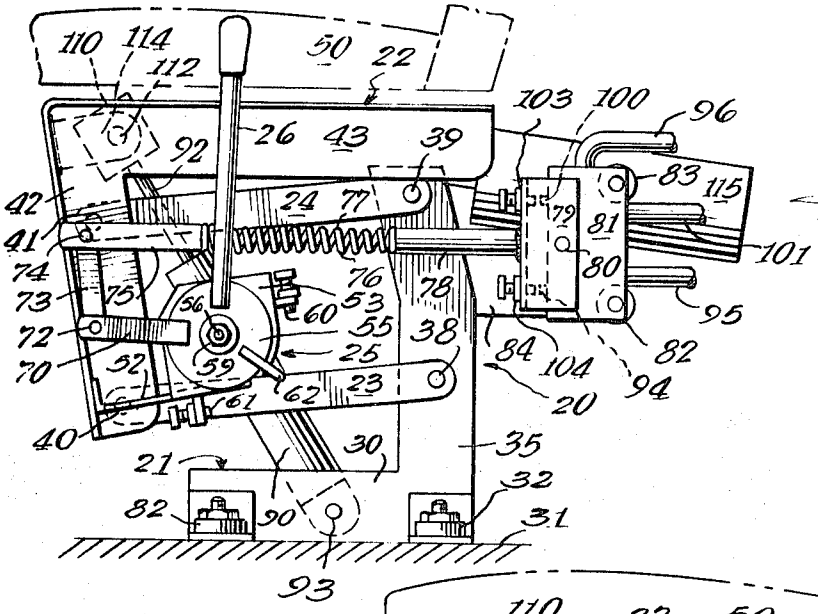

Fig. 3

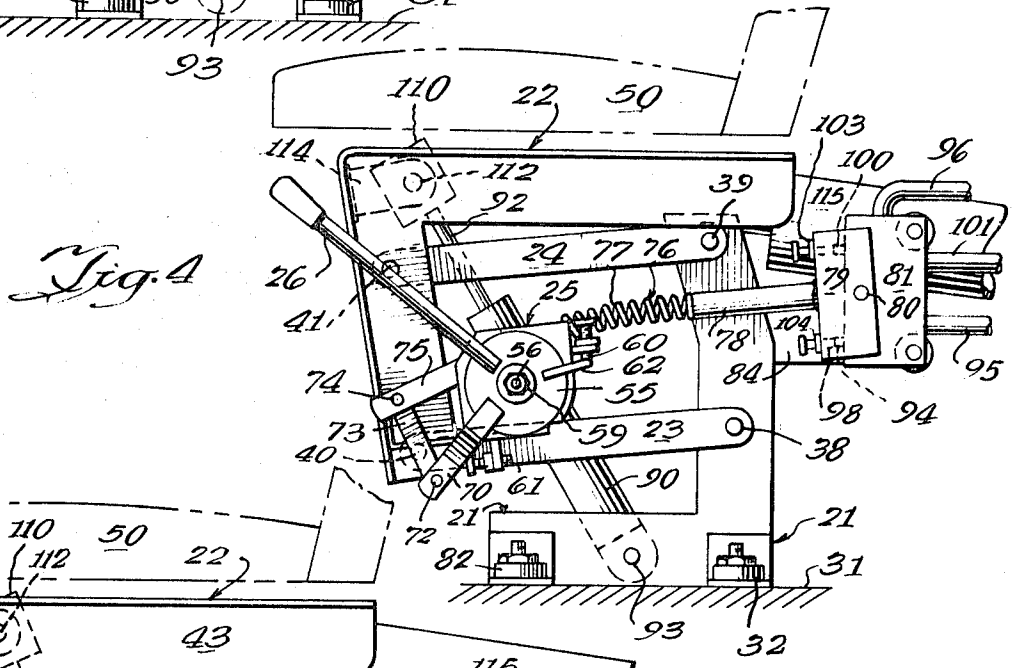

Fig. 4

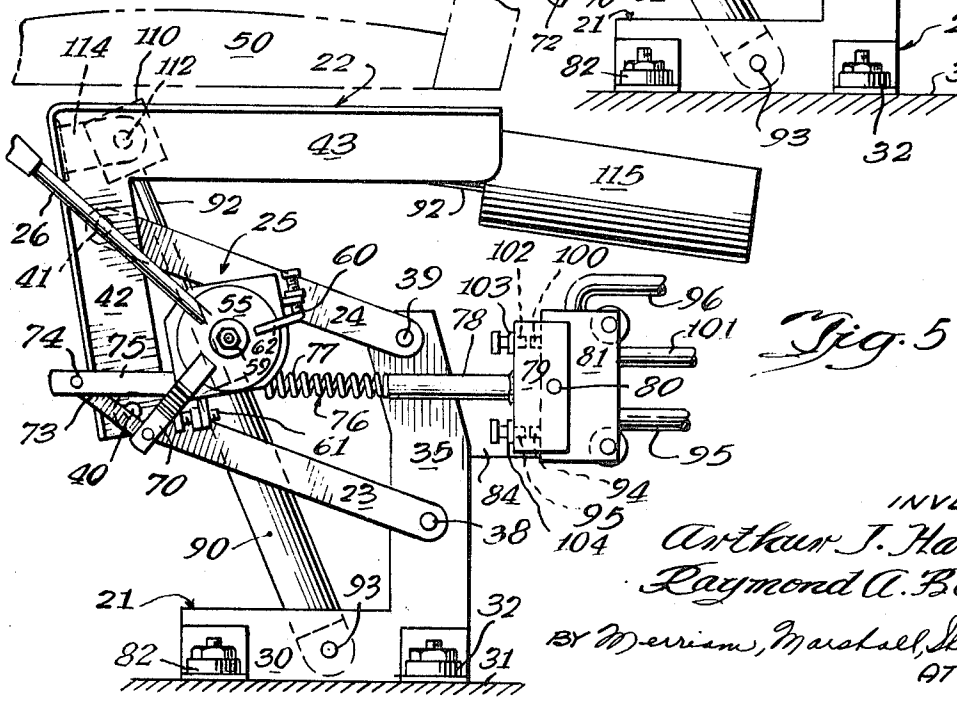

Fig. 5

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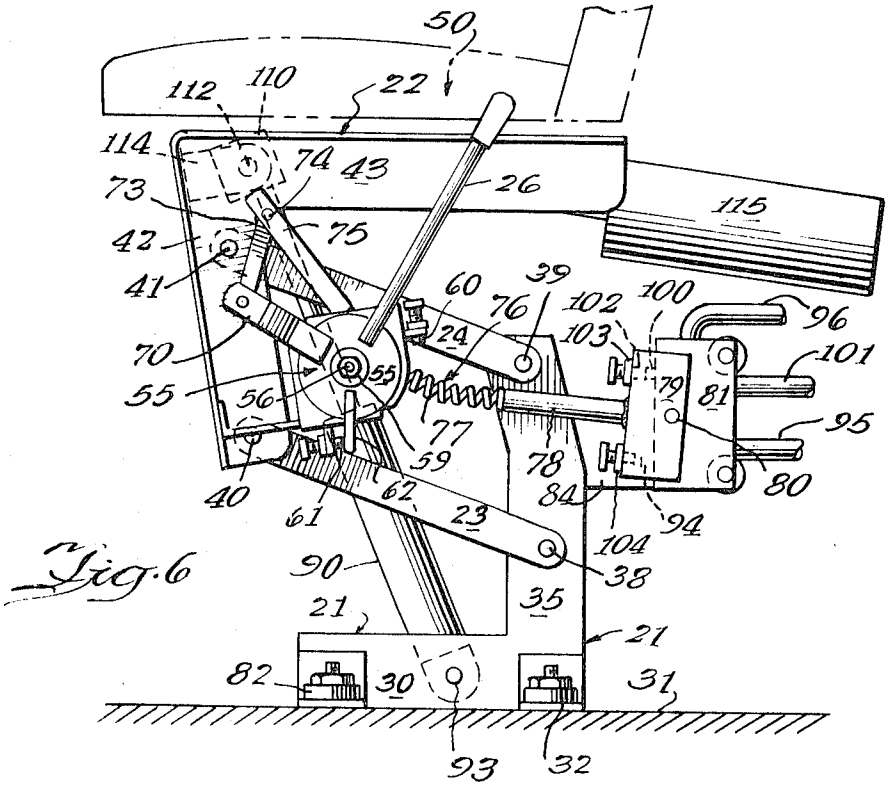

Fig. 6

Fig. 7

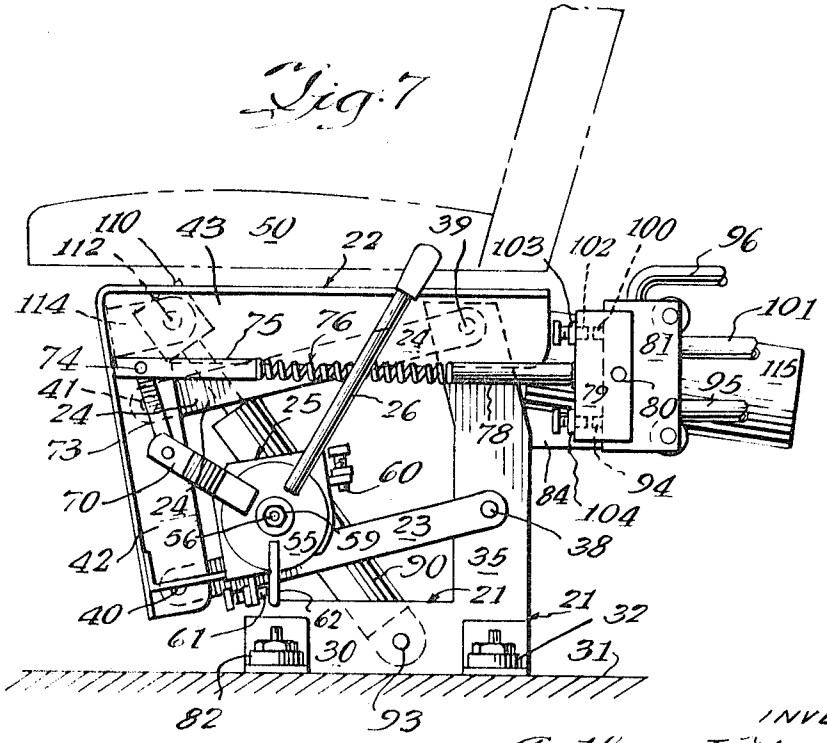

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Fig. 8

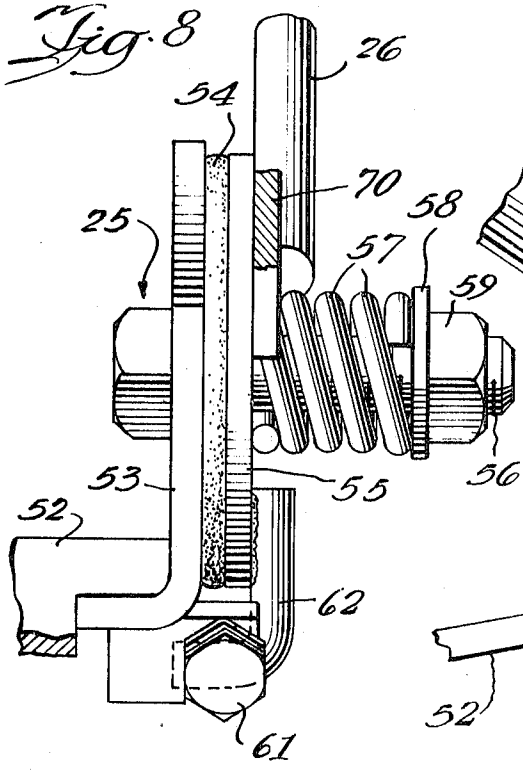


Fig. 9

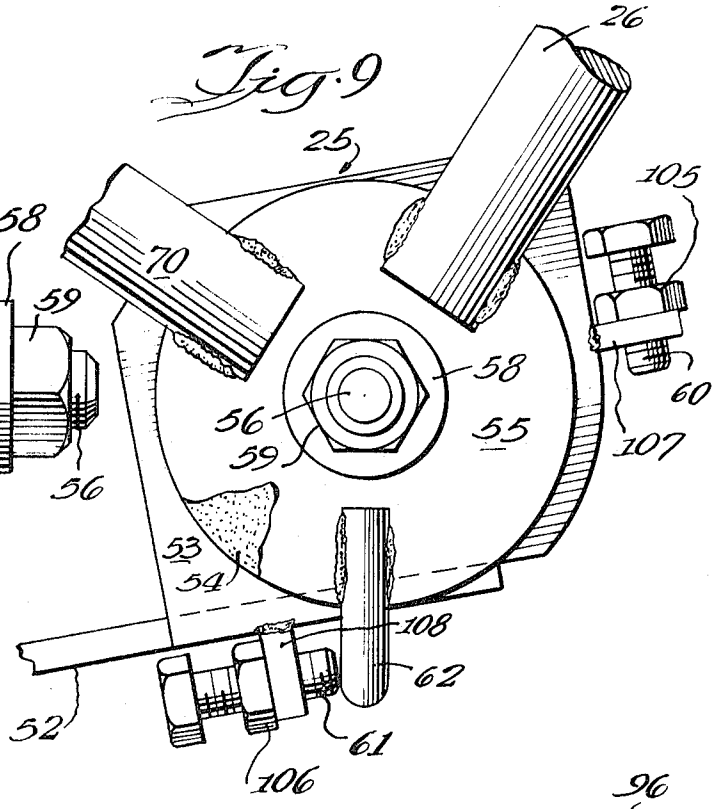


Fig. 10

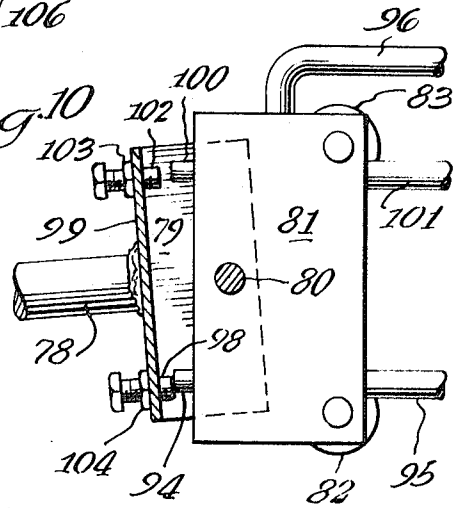
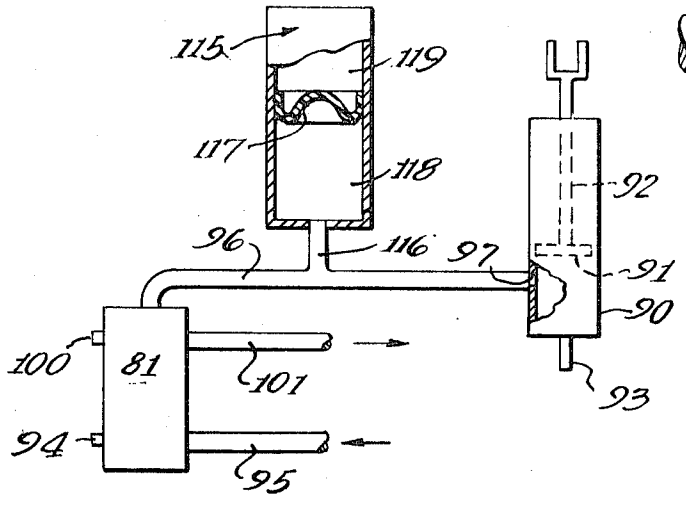


Fig. 11



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ELEVATION-ADJUSTING ASSEMBLY FOR SEAT

BACKGROUND OF THE INVENTION

The present invention relates generally to elevation-adjusting assemblies, and more particularly to elevation-adjusting assemblies for seats on vehicles such as tractors or self-propelled farm equipment, for example.

A vehicle operator's seat adjustable to various elevations is desirable because different operators are comfortable at different elevations and, for a given operator, the optimum operating elevation changes in accordance with changes in operating conditions.

Conventional vertically adjustable seats utilize an assembly comprising a base, a seal platform located above the base and vertically movable relative to the base, a shock absorber for the seat platform, and a hydraulic cylinder having its bottom mounted to the base and containing a piston movable in the cylinder and connected to the bottom of the seat platform. Oil is introduced into or withdrawn from the bottom of the cylinder to respectively raise or lower the piston, inturn raising or lowering the seat platform.

The conventional elevation-adjusting assembly has a number of drawbacks. In order to change the elevation of the seat, the operator must manually open a valve through which the oil passes toward or away from the hydraulic cylinder and then manually close the valve when the seat attains the desired elevation. If the operator's attention is distracted so that he does not close the valve at the instant the desired elevation is attained, the seat will move past the desired elevation.

Another drawback is that the desired elevation cannot be obtained when the operator is off the seat. This is because, when the operator sits on a seat previously adjusted to a desired elevation with the operator off the seat, the seat is depressed by the weight of the rider to a lower elevation.

A further drawback is that, when the operator gets off the seat, thereby reducing the external load on it, the seat springs or rebounds to a higher elevation. When the seat rebounds to a higher elevation it crowds the space between the seat and the steering wheel of the vehicle, and this is undesirable to an operator who is temporarily standing in this space while steering.

The rebound of the seat to a higher elevation also causes problems for a short operator who has to climb up on a seat which has rebounded to a higher elevation.

Changes in seat elevation in response to changes in the external load on the seat resulted from the conventional provision of a shock absorber for the seat (e.g., an accumulator connected to the hydraulic cylinder). To return the conventional vertically adjustable seat to the selected elevation required a manual manipulation of the elevation controls by the vehicle operator.

SUMMARY OF THE INVENTION

A seat with an elevation adjustment assembly, in accordance with the present invention, eliminates the drawbacks of conventional assemblies.

The desired elevation for the seat may be selected with the operator either on or off the seat, and the seat will automatically adjust to the selected elevation. The operator is not required to manually close a valve at the instant the seat reaches the desired elevation. A selector is manually set at the desired elevation, and this is the only manual operation required. Once the selector is set, the assembly automatically adjusts to the selected elevation; and the selected elevation will be automatically maintained regardless of changes in the external load on the seat.

If the elevation is selected and the adjustment occurs while the operator is off the seat, and the operator then sits on the seat, there is a momentary descent of the seat, but the selected elevation is automatically reattained. When the operator gets off the seat, there is a momentary upward rebound, but the seat is automatically returned to the selected elevation. Therefore, an operator standing between the seat and the steering wheel is not crowded by a seat which has rebounded to a higher elevation. Similarly, a little man doesn't have to climb up to a seat which has rebounded to a higher elevation.

Other features and advantages are inherent in the structure claimed and disclosed or will become apparent to those skilled in the art from the following detailed description in conjunction with the accompanying diagrammatic drawing.

BRIEF DESCRIPTION OF DRAWING

FIG. **1** is a perspective of an elevation-adjusting assembly for a seat, in accordance with an embodiment of the present invention;

FIG. **2** is another perspective of the assembly, partially cut away;

FIG. **3** is a side elevational view illustrating the assembly at an intermediate elevation with an elevation selector positioned to maintain the assembly at the intermediate elevation;

FIG. **4** is a side elevational view of the assembly at an intermediate elevation with the selector positioned to increase the elevation;

FIG. **5** is a side elevational view showing the assembly at a relatively high elevation with the selector positioned to maintain the relatively high elevation;

FIG. **6** is a side elevational view showing the assembly at a relatively high elevation with the selector positioned to lower the elevation;

FIG. **7** is a side elevational view showing the assembly at a relatively low elevation with the selector positioned to maintain the assembly at the relatively low elevation;

FIG. **8** is a fragmentary front view, partially in section, showing an elevation selector constituting part of the elevation assembly;

FIG. **9** is a fragmentary side view showing the elevation selector;

FIG. **10** is a fragmentary side view showing valve structure constituting part of the assembly; and

FIG. **11** is a schematic diagram of a hydraulic system used in the assembly.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Referring initially to FIGS. **1–3**, indicated generally at **20** is an embodiment of an elevation-adjusting assembly for a seat, in accordance with the present invention.

Assembly **20** includes a base **21**, a seat platform **22** located above the base and means, including pairs of upper and lower pivotal links **23,24**, respectively, mounting platform **22** for vertical movement relative to base **21**. Assembly **20** also includes an elevation selector indicated generally at **25** and a handle **26** for setting the selector **25** at any one of a multiplicity of positions each corresponding to a different selected elevation for platform **22**. In response to the setting of selector **25** at one of these positions, platform **22** is automatically vertically moved to the elevation selected and is automatically maintained at the selected elevation regardless of changes in the external load on platform **22**.

Base **21** comprises a pair of horizontally extending, L-shaped members **30**, attached to a vehicle floor **31** (FIG. **3**) by fasteners **32**. Extending between the front end of base members **30, 30** is a crossmember **34** (FIG. **2**). Extending upwardly from the back ends of horizontal base members **30, 30** are vertical base members **35, 35**; and extending between the upper ends of vertical base members **35, 35** is a crossmember **37**. Also extending between vertically disposed base members **35, 35** are a pair of vertically spaced horizontal rods **38, 39**.

Each pivotal link **23, 24** has its back end pivotally mounted on a respective rod **38, 39** and its front end pivotally mounted on a respective one of a pair of vertically spaced rods **40, 41** extending between a pair of vertically disposed platform members **42, 42** each depending from the front end of a horizontally disposed platform member **43, 43**. Extending between the upper ends of vertically disposed platform members **42, 42**

is a crossmember 44, and extending between the back ends of horizontally disposed platform members 43, 43 is a crossmember 45. Extending between upper links 24, 24 is a stabilizing member 46 (FIG. 1).

Resting atop horizontally disposed platform members 43, 43 is a seat shown in phantom lines at 50 in FIG. 3.

Referring to FIGS. 1–3 and 8–9, elevation selector 25 is fixed to movable seat platform 22 by a bracket member 52 having a vertically disposed portion 53 to which is fixed a vertically disposed selector friction member 54 composed of material conventionally used on clutch discs. Engaging friction member 54 is a movable selector member 55 to which handle 26 is attached. A bolt 56 extends horizontally through vertically disposed bracket portion 53, through selector friction member 54 and through selector movable member 55. Selector movable member 55 is rotatable, relative to selector friction member 54, about the axis of bolt 56.

Selector movable member 55 is urged against selector friction member 54 by a coil spring 57 located between movable selector member 55 and a washer 58 held in place by a nut 59 screwed onto bolt 56. Nut 59 may be tightened or loosened to compress or expand coil spring 57 to adjust the pressure urging rotatable selector member 55 against selector friction member 54. The pressure on rotatable selector member 55 is adjusted to permit rotation of of member 55 by manually moving handle 26, while holding member 55 in place against rotational movement, relative to selector friction member 54, in the absence of manual movement of handle 26 to select a new elevation setting.

Immovably attached to vertically disposed bracket portion 53 and bracket member 52 respectively, are a pair of angularly spaced stops 60, 61. Radially extending from movable selector member 55 is a projection 62 for engaging stops 60, 61 to define the opposite limits of rotation for rotatable selector member 55.

Referring to FIG. 9, stops 60, 61 are in the form of bolts threaded through nuts 105, 106 respectively fixed to small projections 107, 108 extending respectively from vertically disposed bracket portion 53 and from bracket member 52. This arrangement permits adjustment of the distances stops 60, 61 extend inwardly from projections 107, 108, in turn permitting adjustment of the angle through which rotatable member 55 may be rotated.

Movable selector member 55 is connected by a linkage to elevating mechanism actuable to raise or lower platform 22. The elevating mechanism comprises a valve 81 mounted on base 21 by a pair of rods 82, 83 having outer ends attached to valve 81 and inner ends attached to a bracket 84 fixed to vertically extending base member 35. Valve 81 is actuable to introduce or withdraw hydraulic fluid into a hydraulic cylinder 90 to raise or lower a piston 91 (FIG. 11) from which upwardly extends a piston rod 92 connected to seat platform 22. As piston 91 and piston rod 92 move upwardly or downwardly, seat platform 22 moves correspondingly. Cylinder 90 is pivotally mounted on base 21 at 93 (FIG. 3).

The linkage connecting elevation selector 25 to the elevating mechanism will now be described, with reference to FIGS. 1–3. Fixed to rotatable selector member 55 is a radially extending projection 70 having an outer end pivotally connected at 72 to one end of a link member 73 having another end pivotally connected at 74 to a rigid first end portion 75 of a flexible rod 76 having a coil spring center portion 77 integral with rigid first end portion 75 and with a rigid second end portion 78 connected to a channel-shaped valve actuator 79 pivotally connected at 80 to valve 81.

Referring to FIGS. 10 and 11, valve 81 is of conventional construction and comprises a first button 94 depressible to cause valve 81 to direct fluid from a fluid supply (not shown) via a supply line 95 through valve 81 to hydraulic cylinder 90 via a line 96 communicating valve 81 with a passageway or opening 97 in cylinder 90 below piston 91. Button 94 is depressed by a first projection 98 extending inwardly from the web 99 of channel-shaped valve actuator 79.

Valve 81 also includes a second bottom 100 depressible to cause valve 81 to direct fluid from cylinder 90 via line 96 through valve 81 to the fluid supply via a return line 101. Button 100 is depressed by a second projection 102 extending inwardly from web 99 of channel-shaped valve actuator 79.

Projections 98 and 102 are in the form of bolts threaded through nuts 103, 104 fixed to the outside of web 99. This arrangement permits adjustment of the distances projections 98 and 102 extend inwardly from web 99 toward their respective depressible buttons.

Structure for connecting piston rod 92 to seat platform 22 is illustrated in FIGS. 1 and 2. At the top of upwardly extending piston rod 92 is a head 110, and on opposite sides of head 110 are a pair of pivotal connections 111, 112 having a common axis and connecting head 110 to the inner ends of a pair of links 113, 114 having outer ends attached to crossmember 44 of platform 22.

The operation of the election adjusting assembly can be conveniently understood by referring to FIGS. 3 through 7.

FIG. 3 shows seat 50 and platform 22 at an intermediate elevation corresponding to the setting of elevation selector 25 shown in FIG. 3. At an intermediate elevation setting, selector projection 62 is located between stops 60, 61.

To elevate seat platform 22 and seat 50, handle 26 is pushed forwardly from the position shown in FIG. 3 to the position shown in FIG. 4, for example. The position of handle 26 in FIG. 4 is that which will cause raising of seat platform 22 to its highest elevation, it being noted that, in FIG. 4, limit projection 62 on rotatable selector member 55 engages stop 60. When handle 26 is moved to the position of FIG. 4, rotatable selector member 55 and radially extending linkage projection 70 are rotated from the positions shown in FIG. 3 to the positions shown in FIG. 4, and this causes a change in the position of the linkage 73, 76, 79 connecting elevation selector 25 to valve 81. Flexible rod 76 is bent downwardly, from the straight position shown in FIG. 3 to the bent position of FIG. 4. As flexible rod 76 bends, valve actuator 79 is pivoted in a counterclockwise sense about axis 80 until actuator projection 98 engages and depresses button 94 on valve 81. Depression of valve button 94 causes flow of hydraulic fluid from the fluid supply through line 95, through valve 81, through line 96 and through passageway 97 into hydraulic cylinder 90 below piston 91 (FIG. 11). Flow of fluid into cylinder 90 forces piston 91 and piston rod 92 upwardly, in turn elevating seat platform 22 connected to the top of piston rod 92.

As illustrated in FIG. 11, hydraulic fluid flowing through line 96 also passes through a connector conduit 116 into a conventionally constructed accumulator 115 which serves as a shock absorber for seat platform 22. Accumulator 115 includes a bladder 117 separating an accumulator lower compartment 118, for containing hydraulic fluid, from an accumulator upper compartment 119 for containing a gas such as air. The flow of fluid into lower accumulator compartment 118 urges flexible bladder 117 upwardly into upper compartment 119 compressing the gas therein.

As seat platform 22 is elevated from the position shown in FIG. 4 it eventually reaches the position shown in FIG. 5 in which flexible rod 76 is in a straight unbent position. As flexible rod 76 is returned to its unbent position, valve actuator 79 is pivoted in a clockwise sense about axis 80 until projection 98 no longer engages button 94, as shown in FIG. 5. When this occurs, the flow of fluid from the fluid supply to cylinder 90 stops.

Seat platform 22 and seat 50 are maintained in a selected elevation corresponding to the setting of elevation selector 25 regardless of changes in the external load on the seat. For example, assuming the seat is at the elevation shown in FIG. 5 and the load on seat platform 22 is increased by a heavier operator sitting on the seat, there is initially a momentary descent of platform 22 and of all the elements connected thereto including elevation selector 25 and link 73 connecting selector 25 to flexible rod 76. This causes a bending of flexible rod 76 downwardly, to a position like that of flexible rod 76 in

FIG. 4. When this occurs, projection 98 on valve actuator 79 is pivoted into engagement with depressible button 94 on valve 81, causing hydraulic fluid to be introduced into cylinder 90 to raise platform 22. Raising of platform 22 continues until depressible button 94 is no longer engaged by projection 98 on valve actuator 79. This occurs when flexible rod 76 has been returned to its unbent position illustrated in FIG. 5; and that happens when seat platform 22 has been returned to the elevation illustrated in FIG. 5. 5.

On the other hand, if a load is removed from seat platform 22, for example by an operator getting off the seat, seat platform 22 would momentarily rebound upwardly due to the urging of the compressed air in upper compartment 119 of accumulator 115 (FIG. 11). More specifically; the compressed air forces flexible bladder 117 downwardly in turn forcing hydraulic fluid out of lower accumulator compartment 118 through connector conduit 116 and line 96 into the bottom of cylinder 90, thereby causing piston 91 and piston rod 92 to move upwardly and raise seat platform 22.

However, as seat platform 22 is being raised there is an accompanying upward movement of all the elements connected to seat platform 22 including elevation selector 25 and line 73; and this bends flexible rod 76 upwardly from the position shown in FIG. 5. That is, the rod's first rigid end portion 75 is substantially higher than the rod's second rigid end portion 78, connected to valve actuator 79, with the rod's central coil spring portion 77 curved upwardly from right to left (e.g., as in FIG. 6).

When rod 76 is bent upwardly, valve actuator 79 is pivoted about axis 80 in a clockwise sense until projection 102 thereon engages depressible button 100 on valve 81. Depression of button 100 causes hydraulic fluid to flow from cylinder 90 through the opening 97 therein, through line 96, through valve 81 and through line 101 back to the fluid supply. As fluid is withdrawn from cylinder 90, the weight of seat platform 22 and the elements attached thereto pushes piston 91 downwardly causing the platform to drop and flexible rod 76 to unbend. As flexible rod 76 unbends, valve actuator 79 rotates about axis 80 in a counterclockwise sense until projections 102 no longer engages depressible button 100, and this occurs when flexible rod 76 is in the unbent position of FIG. 5. When depressible button 100 is no longer engaged by projection 102, fluid no longer flows out of hydraulic cylinder 90, and the downward movement of seat platform 22 stops.

To lower seat platform 22, handle 26 is moved rearwardly, for example from the position of FIG. 5 to the position illustrated in FIG. 6. When handle 26 is moved rearwardly, the linkage connecting elevation selector 25 with flexible rod 76 causes the rod to be bent upwardly as illustrated in FIG. 6, in turn rotating valve actuator 79 about axis 80 in a clockwise sense and causing projection 102 to engage depressible valve button 100 in turn causing the flow of fluid from cylinder 90 back to the fluid supply, as previously described. As fluid is withdrawn from cylinder 90, seat platform 22 drops; and, as the platform drops, flexible rod 76 is returned to its unbent position. As rod 76 unbends, valve actuator 79 rotates about axis 80 in a counterclockwise sense until projection 102 no longer engages depressible valve button 100; and, when this occurs, withdrawal of fluid from cylinder 90 ceases. Projection 102 is disengaged from depressible button 100 when flexible rod 76 has returned to its unbent position, as illustrated in FIG. 7. At the same time, seat platform 22 has descended to the elevation corresponding to the setting of elevation selector 25. In FIG. 7, the elevation is the lowest one for the platform because projection 62 on movable selector member 55 engages lower limit stop 61.

From the foregoing, it will be noted that, whenever flexible rod 76 is bent, there is an automatic adjustment of the elevation of seat platform 22. If flexible rod 76 is bent as a result of a change in the setting of elevation selector 25, there will be a change in the elevation at which seat platform 22 is maintained. If flexible rod 76 is bent while the setting of the elevation selector remains unchanged, as occurs when there is a change in the external load on seat platform 22 changing the elevation thereof, seat platform 22 will be automatically returned to the elevation corresponding to the setting of elevation selector 25.

The mechanism for changing the elevation of the seat platform is actuated in response to a bending of flexible rod 76 and is deactuated in response to a return of the flexible rod to its unbent position. When flexible rod 76 is bent upwardly (FIG. 6), the elevation mechanism is actuated to lower seat platform 22; whereas, when flexible rod 76 is bent downwardly (FIG. 4) the elevation mechanism is actuated to raise platform 22. Flexible rod 76 is normally urged to its unbent position by coil spring central portion 77.

What is claimed is:

1. An elevation-adjusting assembly comprising:
- a base;
- a platform vertically spaced in relation to said base;
- means mounting said platform for vertical movement relative to said base;
- an elevation selector;
- means for setting said selector at any one of a multiplicity of positions each corresponding to a different selected elevation for said platform;
- and means, responsive to the setting of said selector, for automatically vertically moving said platform to the elevation selected;
- said last recited means comprising:
  - flexible rod means bendable from a first position thereof;
  - said flexible rod means including means normally urging said flexible rod means to its first position;
  - means for bending said flexible rod means from its first position to another position in response to a change in the setting of said selector;
  - an elevator mechanism actuable to raise or lower said platform;
  - means, responsive to the bending of said flexible rod means from its first position, for actuating said elevator mechanism;
  - means for unbending said flexible rod means in response to movement of said platform to said selected elevation;
  - and means, responsive to a return of the flexible rod means to its first position, for deactuating said elevator mechanism.

2. As assembly as recited in claim 1, wherein said means for actuating the elevator mechanism comprises:
- means, responsive to the bending of said flexible rod means in a first direction, for actuating said elevator mechanism to raise the platform;
- and means, responsive to the bending of said flexible rod means in a second direction opposite said first direction, for actuating said elevator mechanism to lower the platform.

3. An assembly as recited in claim 1 and comprising:
- means for maintaining said elevator mechanism in a deactuated condition while said flexible rod means is in its first position.

4. An assembly as recited in claim 1, wherein said elevator mechanism comprises:
- a cylinder;
- a piston within said cylinder;
- means connecting said platform to the top of said piston;
- a fluid passageway in said cylinder below said piston;
- and means communicating said fluid passageway with a fluid supply.

5. As assembly as recited in claim 4 and comprising:
- accumulator means in fluid communication with said fluid passageway.

6. As assembly as recited in claim 4 wherein said elevator mechanism further comprises:
- valve means including first and second depressible buttons;
- and means, including said valve means, for introducing fluid into said cylinder, through said passageway, in response

to depression of said first button and for withdrawing fluid from said cylinder, through said passageway, in response to depression of said second button;

said means for actuating said elevator mechanism comprising means, attached to said flexible rod means, for depressing said first button in response to the bending of the flexible rod means in a first direction from its first position and for depressing said second button in response to the bending of the flexible rod means in a second direction from its first position, opposite said first direction.

7. As assembly as recited in claim 6 wherein said last-recited means comprises:

an element having one end rigidly connected to said flexible rod means and another end pivotally mounted on said valve means;

means on said element for depressing said first button;

and means on said element for depressing said second button.

8. An assembly as recited in claim 1 wherein:

said elevation selector is fixed to said movable platform;

and said flexible rod means has one end connected to said selector and another end connected to said base.

9. An assembly as recited in claim 8 wherein said selector comprises;

an immovable first member attached to said platform;

a second member movably mounted on said first member;

and means connecting said second selector member to said one end of the flexible rod means.

10. An assembly as recited in claim 8 wherein said selector comprises;

a friction member immovably attached to said platform;

a second member;

means mounting said second member for rotation, relative to said friction member, about an axis extending through both of said members;

and spring means normally urging said rotatable selector member against said friction member.

11. An assembly as recited in claim 10 and comprising:

means connecting said rotatable selector member to said one end of the flexible rod means.

12. An assembly as recited in claim 11 wherein said connecting means comprises:

a link member having one end pivotally connected to said one end of the flexible rod means and another end pivotally connected to said rotatable selector member.

13. An assembly as recited in claim 10 wherein said selector further comprises:

a pair of angularly spaced stop means immovably attached to said platform;

and means on said rotatable selector member for engaging said pair of stop means to define opposite limits of rotation for the rotatable selector member.

14. An assembly as recited in claim 1 and comprising:

shock absorber means for said movable platform;

and means for maintaining the platform at the selected elevation regardless of changes in the external load on the platform, said last-recited means including means, cooperating with said shock absorber means, to permit an initial change from said selected elevation in response to a change in said external load;

and means, responsive to a change from said selected elevation, for automatically returning said platform to the selected elevation.

15. As assembly as recited in claim 14 wherein:

said change-permitting means comprises means responsive to an increase in the load on said platform for permitting a descent of the platform below said selected elevation;

and said returning means comprises means responsive to said descent below said selected elevation for automatically raising said platform to said selected elevation.

16. An assembly as recited in claim 14 wherein:

said change-permitting means comprises means responsive to a decrease in the load on said platform for automatically raising said platform above said selected elevation;

and said returning means comprises means responsive to said raising of said platform above said selected elevation for automatically lowering said platform to said selected elevation.

17. A position-adjusting assembly comprising:

a first member;

a second member spaced from said first member;

means mounting said second member for movement to change the position of the second member relative to said first member;

a positioning selector;

means for setting said positioning selector at any one of a multiplicity of settings each corresponding to a position for said second member;

and means, responsive to the setting of said selector, for moving said second member to the position selected;

said last-recited means comprising:

flexible rod means bendable from a first position thereof;

said flexible rod means including means normally urging said flexible rod means to its first position;

means, responsive to a change in the setting of said selector, for bending said flexible rod means from its first position to another position;

means actuable to impart said movement to said second member;

means, responsive to a bending of said flexible rod means from its first position, for actuating said movement-imparting means;

means, responsive to movement of said second member to the selected position, for returning said flexible rod means to its first position;

and means, responsive to a return of the flexible rod means to its first position, for deactuating said movement-imparting means.

18. An assembly as recited in claim 17 wherein said flexible rod means comprises:

a first end portion connected to said positioning selector;

a second end portion connected to said means for actuating the movement-imparting means;

and a third portion, between said two end portions, comprising a coil spring.

19. An assembly as recited in claim 17 wherein said means for actuating the movement-imparting means comprises:

means, responsive to the bending of said flexible rod means in a first direction, for actuating said movement-imparting means to move the second member in one direction;

and means, responsive to the bending of said flexible rod means in a second direction opposite said first direction, for actuating the movement-imparting means to move the second member in another direction opposite said one direction.

20. An assembly as recited in claim 17 and comprising:

means for maintaining said movement-imparting means in a deactuated condition while said flexible rod means is in its first position.

21. An assembly as recited in claim 17 wherein said positioning selector comprises:

a friction element immovably attached to said second member of the assembly;

a rotatable element;

means mounting said rotatable element for rotation, relative to said friction element, about an axis extending through both of said elements;

and spring means normally urging said rotatable element against said friction element.

22. An assembly as recited in claim 21 and comprising:

means connecting said rotatable selector element to one end of the flexible rod means;

and means connecting the other end of the flexible rod means to said first member of the assembly.

23. An assembly as recited in claim 22 wherein said first-recited connecting means comprises:

a link element having one end pivotally connected to said one end of the flexible rod means and another end pivotally connected to said rotatable selector element.

24. An assembly as recited in claim 21 wherein said selector further comprises:

a pair of angularly spaced stop means immovably attached to the second member of the assembly;

and means on said rotatable selector element for engaging said stop means to define opposite limits of rotation for the rotatable selector element.

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