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W. S. SAUNDERS ET AL
ADJUSTABLE SUPPORTING MEANS

2,235,237

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FIG. 1.

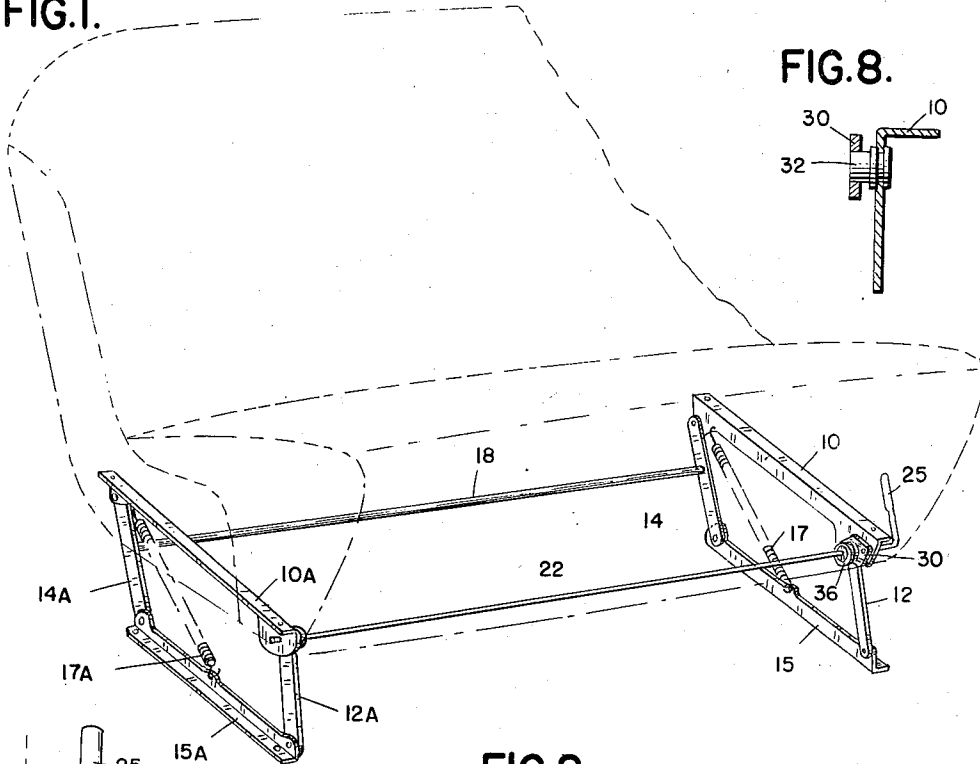


FIG. 8.

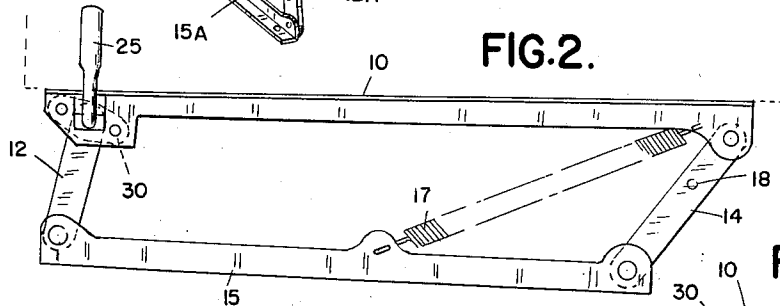


FIG. 2.

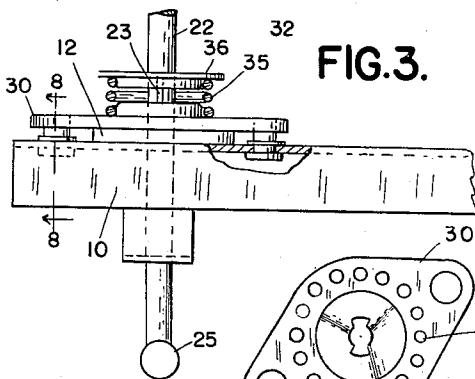


FIG. 3.

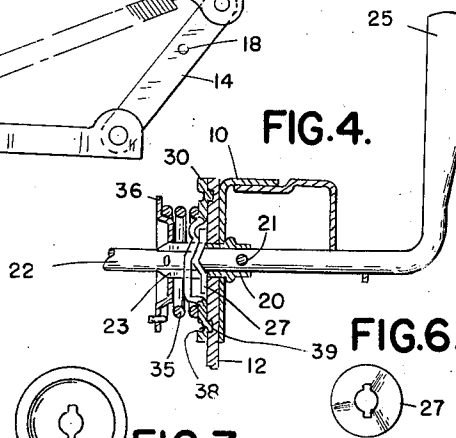


FIG. 4.

FIG. 6.

FIG. 7.

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ADJUSTABLE SUPPORTING MEANS

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8 Claims. (Cl. 155—14)

This invention relates to adjustable supporting means, particularly for vehicle seats, and aims to provide an improved and simplified supporting construction of this character, which effects simultaneous adjustment of the height and longitudinal positioning of the seat. An important object of the invention is to provide such a construction which is of extremely simple and inexpensive nature, which is easily releasable and movable yet firmly holds the seat against all lost motion, play and rattling when locked in any set position.

A further object is to provide in such a supporting mechanism means for counterbalancing the load to a desired extent, whereby adjustment is rendered easier and the parts are held against rattling.

Another object is to provide such a mechanism having unitary locking and cross-connecting means for securing both ends of the seat in any set position by independent holding portions which are nevertheless connected to operate as a unit under the control of a single operating handle.

Other objects and advantages will be apparent from the following description wherein reference is made to the accompanying drawing illustrating a preferred embodiment of my invention and wherein similar reference numerals designate similar parts throughout the several views. In the drawing:

Figure 1 is a perspective view of a seat supporting assembly constructed in accordance with the present invention, indicating in dotted lines the position occupied by a seat carried thereby.

Figure 2 is a side elevational view of the assembly viewed from the end carrying the locking operating handle.

Figure 3 is a fragmentary plan view of the corner of the assembly carrying the operating handle, showing one of the locking assemblies.

Figure 4 is a vertical and substantially central section through the locking portion at said end of the assembly.

Figure 5 is a plan view of the dogging or lock plate.

Figure 6 is a plan view of the operating cam for the dogging plate; and

Figure 7 is a plan view of the sheet metal spring retainer.

Figure 8 is a section on the line 8—8 of Fig. 3. Referring now to the drawing, the opposite ends of the seat will be seen to be carried by longitudinally disposed angular rails 10, 10A, swingably supported upon parallelogram-type

linkage. The front links are designated 12—12A, and the rear links 14—14A, these being pivotally attached at their lower ends to floor rails 15—15A, fastened to the floor or other support. The links are normally inclined rearwardly, so that forward movement of the seat also causes it to rise, and vice versa.

Tension springs 17—17A extend angularly between the floor and seat rails, tending to draw the seat forwardly and upwardly, and so to counterbalance the load to a desired extent. A torque rod or tube 18 connects the rear links and acts to force the opposite ends of the seat to move simultaneously and uniformly. Short pins 13 connect the links to the rails at all points of articulation except at the upper ends of the front links, which are pivotally connected to the seat rails by hollow bushings 20. These are rotatable independently of the links and seat rails, and the two bushings at the opposite ends of the seat are connected by a rod 22 which forces them to turn together, being secured thereto by pins 21.

The rod 22 projects through and from the outside of one of the assemblies, and is bent upwardly to form a handle 25 by which it may be turned. A portion of the rod adjacent and inside each link is provided with radially projecting flutes 23, which may be integrally pressed from the body thereof to serve as keys. A cam disc 27 is fitted upon each such keyed portion of the rod to turn therewith, lying against the inside of the link 12. Each cam is engageable with and shaped to actuate a locking or dogging plate 30, carried by the inside of each seat rail and movable toward and from the same. Each dogging plate is slidably mounted upon studs 32 projecting from the inner face of the rail. The central opening in the plate through which the rod projects is provided with slots for the keying ribs 23. Such slots are wide enough to allow the ribs, and therefore the rod, to turn independently of the dogging plate to a desired extent, although limiting its rotating movement. A spring 35 trapped between the dogging plate and a spring retainer 36 pinned or otherwise held in place on the rod, urges each dogging plate inwardly against its cam and link.

A plurality of projections 38, spaced on a circle concentric with the axis of rod 22 and projecting from one face of each of the dogging plates, are engageable with similarly spaced and disposed depressions 39 in the adjacent face of the link. When the projections and depressions are interengaged, the links are held against turning and the position of the seat rails with respect

to the floor rails is fixed. When the handle is turned with relation to the seat rail, the cams force the dogging plates away from their links, freeing the projections 38 from the depressions 39 and allowing the links to swing, thereby freeing the seat for adjustive movement, while when the handle is released and allowed to return to its normal position, the dogging plates are moved inwardly to locked position by the springs 35, which also tend to return the handle, by the camming action between the dogging plates and the cam plates 27.

It will be appreciated that the two similar but oppositely acting assemblies at the opposite ends of the seat, being actuable by the same rod 22, are simultaneously releasable yet provide similar independent locking means for each end of the seat.

What we claim is:

1. Means for adjustably supporting a seat or the like including a pair of links of substantially the same length, spaced from each other and supported at their lower ends to swing in parallel relation about the same extended axis, frame portions pivotally connected to the upper ends of said links, means pivotally connecting the upper end of each of said links to the frame portion, including a cross-connecting member extending coaxially through the points of pivotal connection of said links and frame portions and rotatable independently thereof, and separate latching means releasably securing each of said links against rotation with respect to the frame portion to which it is connected, both of said latching means being operatively connected to and actuable by rotation of said cross-connecting member.

2. Means as set forth in claim 1 in which each of said pivotal connecting means comprises a hollow sleeve, and said cross-connecting member comprises a rod journaled in and extending through both of said sleeves, and said latching means includes a dogging element movable to and from an interlocked position in which it holds each link against movement with respect to the frame portion to which it is connected, and cam means for actuating each dogging element in response to rotation of said rod, the cam means being interposed between the link and dogging element.

3. Means for adjustably supporting a seat or the like comprising in combination with a suitable support and a pair of links of substantially equal length articulated at one end thereto in spaced parallel and substantially coaxial relation, a frame pivoted to the outer end of each of said links, and latching means for releasably holding said links against swinging movement, including a rod member extending through and between corresponding points of pivotal connection of said links, a dogging member comprising a plate adjacent each link and frame assembly and movable toward and from such assembly, the rod being rotatable independently of the links, and cam means actuable by the rod for actuating the dogging members.

4. Means as set forth in claim 3 in which said rod forms at least a part of the pivot means articulating said links and frame, said dogging

plates being held against rotation with respect to the frame and movable into and out of gripping engagement with the links, spring means urging said dogging plates into such gripping relation, and cam means operable by independent rotation of the rod to simultaneously move said plates out of such gripping engagement.

5. Means as set forth in claim 3 in which said rod forms at least a part of the pivot means articulating said links and frame, said dogging plates being held against rotation with respect to the frame and movable into and out of gripping engagement with the links, spring means urging said dogging plates into such gripping relation, cam means operable by independent rotation of the rod to simultaneously move said plate out of such gripping engagement, said dogging plates encircling said rod, and said cam portions for actuating the same being carried by the rod.

6. Means as set forth in claim 3 in which said rod forms at least a part of the pivot means articulating said links and frame, said dogging plates being held against rotation with respect to the frame and movable into and out of gripping engagement with the links, spring means urging said dogging plates into such gripping relation, cam means operable by independent rotation of the rod to simultaneously move said plate out of such gripping engagement, said dogging plates encircling said rod, and said cam portions for actuating the same being carried by the rod, and interengageable abutment portions carried by said dogging plates and links and concentrically spaced about the axis of said rod.

7. Adjustable supporting means comprising a pair of links of substantially the same length, spaced from each other and supported to swing in parallel relation about the same extended axis, frame portions pivotally connected to the outer ends of said links, and adapted to support a seat or the like, a rod extending across the space between said links and through the axis of pivotal connection of each link and the frame portion to which it is connected, a dogging element straddling said rod adjacent each of said links and on the opposite side thereof from the frame portion to which such link is connected, each dogging element being keyed to such frame portion against rotation with respect thereto, each dogging element being axially movable to and from interlocked engagement with the adjacent link, thereby selectively preventing or permitting swinging movement of the link with relation to the frame portion, means for turning the rod, and means actuable by rotation of said rod for simultaneously moving said dogging elements to and from such interlocked engagement with said links.

8. Means as set forth in claim 7 in which said last named means comprises a cam portion carried by said rod adjacent each of said dogging elements and between such dogging element and the link, and spring means also carried by the rod and urging said dogging elements into such interlocked engagement with the adjacent link.

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