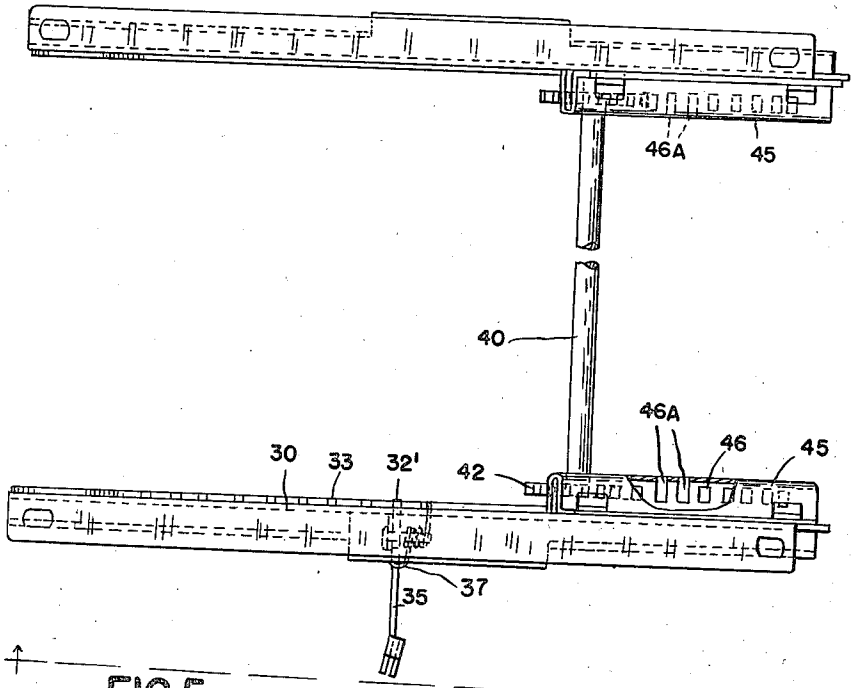
Dec. 2, 1941. W. S. SAUNDERS 2,264,860

ADJUSTABLE SUPPORT

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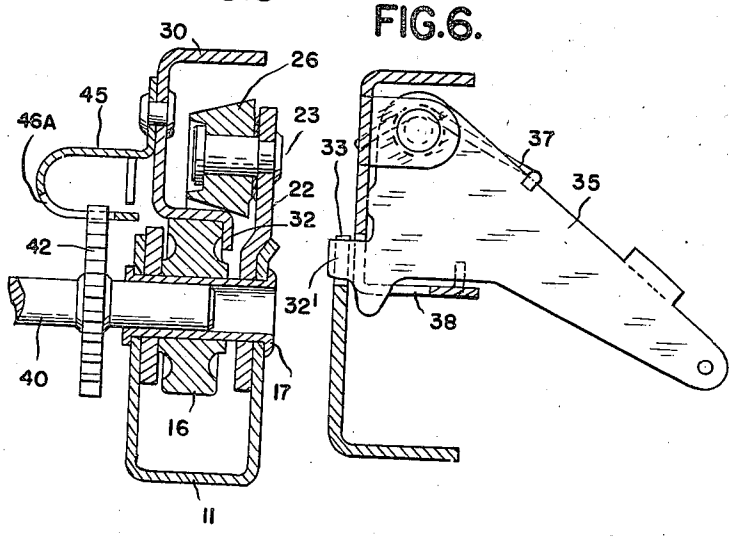
FIG.1.



2 2

FIG.5.

FIG.6.



INVENTOR
WALTER S. SAUNDERS

BY Susan Page Hardesty

ATTORNEYS

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FIG. 2.

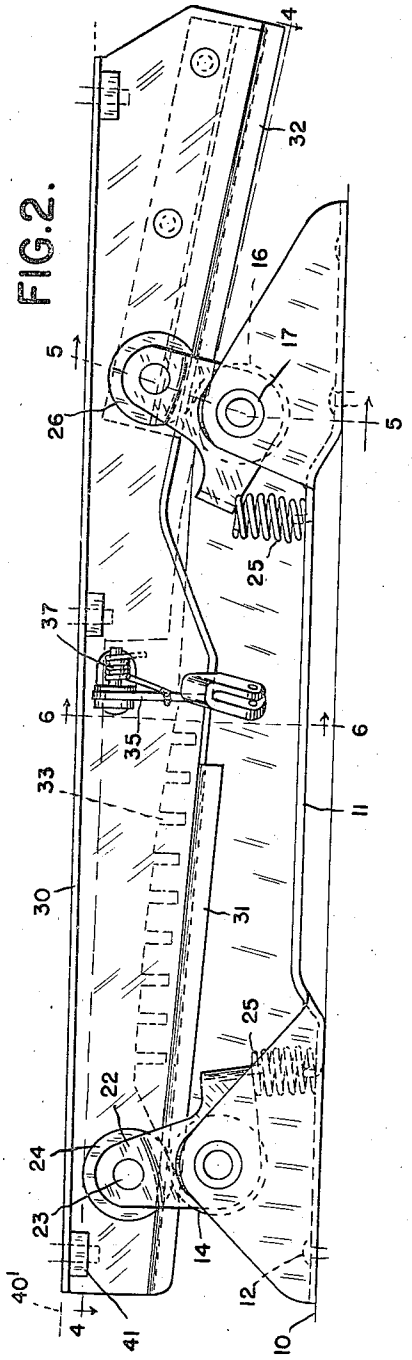


FIG. 3.

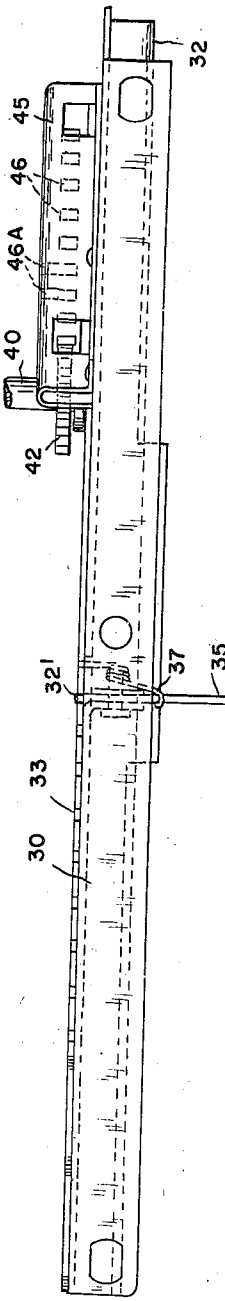
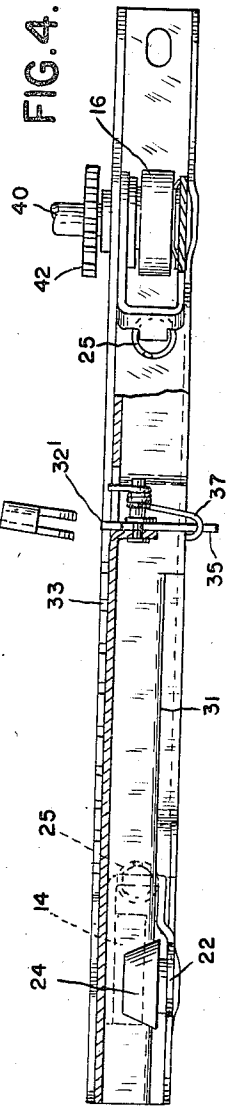


FIG. 4.



INVENTOR
WALTER S. SAUNDERS

BY Swan, Pope & Hardesty
ATTORNEYS

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ADJUSTABLE SUPPORT

Walter S. Saunders, Pontiac, Mich., assignor to The American Forging and Socket Company, Pontiac, Mich., a corporation of Michigan

Application April 7, 1939, Serial No. 266,576

10 Claims. (Cl. 155—14)

This invention relates to supporting devices for the adjustable mounting of objects, such as vehicular seats, which must be held very rigidly in position, yet must be easily and quickly movable at will to another adjusted position.

In the quantity production of automobiles, constant effort to improve the product as a whole, and to incorporate improved features in increasing numbers, forces the greatest economy in the construction of individual units. The use of relatively thin gauge stamped sheet metal, in the fabrication of seat supports is a practical necessity, therefore, although this material presents certain difficulties in preventing unwanted movement and rattling of the seat due to distortion of the sheet metal parts.

The present invention aims to incorporate in an adjustable seat supporting mechanism improved means for taking up tolerances and lost motion between moving parts, and for constantly urging the parts into closer engagement, to eliminate the effects of looseness, whether due to wear, or whatever its causes.

Another object is to provide such a seat supporting mechanism in which sliding friction is virtually eliminated, and freely working rollers are arranged to carry the entire load, and which is of great rigidity despite the fact that the rollers are carried by a relatively thin gauge sheet metal structure.

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

In the drawings:

Figure 1 is a plan view of a seat supporting assembly constructed in accordance with the principles of this invention, the synchronizing shaft being centrally broken away.

Figure 2 is a side elevational view of one of the supporting units, taken as indicated by the line and arrows 2—2 of Figure 1.

Figure 3 is an enlarged plan view of one of the supporting units.

Figure 4 is a horizontal section thereof taken substantially on line 4—4 of Figure 2, and looking in the direction of the arrows.

Figures 5 and 6 are vertical sections taken substantially on lines 5—5 and 6—6, respectively of Figure 2, and looking in the direction of the arrows.

Referring now to the drawings, in which reference character 10 designates a floor or other suitable supporting platform upon which the assembly is mounted, as by means of screws 12, it will be seen that the fixed or track portion 11 of the assembly, attached to the floor, is of L-section except at its ends, where it is of U-form to support the front and rear rollers 14, 16. The rollers are journaled upon tubular shafts 15, 17 respectively, the ends of which are expanded to secure them in the side flanges of the track portion 11.

The carriage portion 30 which serves to support the seat 40' is generally in the form of a channel turned upon its side, so that one of its side webs rests upon and rolls over the rollers 14, 16. Downturned flanges 31, 32 project from the free edge of such side web of the carriage channel, and lie beside the rollers 14, 16 to limit lateral displacement of the carriage in one direction. As best shown in Figure 2, the bottom flange of the carriage channel, which rests upon the rollers, is so shaped longitudinally as to cause the carriage, during movement, to change its angularity with respect to the floor, thus tilting the seat in a desired fashion during adjustment. The seat, indicated only fragmentarily in dotted lines, is secured to the carriage by means of bolts and clinch nuts 41.

Additional rollers 24, 26, arranged to overengage the bottom flange of the carriage, are so mounted and spring-urged that they act both to hold the carriage down, and to urge it to one side, taking up both vertical and lateral tolerances and lost motion. Each of the rollers 24, 26 is carried by a bellcrank 22, to an upwardly extending arm of which it is rotatably attached by a stub shaft 23. The bellcranks in turn are pivoted upon the respective roller shafts 15, 17, and constantly urged in one direction by compression springs 25, trapped between their laterally projecting arms and the bottom of the track. The rollers 24, 26, of frusto-conic form, as best indicated in Figure 5, act, by virtue of the downward force applied to them by the springs 25, both to urge the carriage downwardly against the rollers 14, 16, and to force the carriage laterally in such direction as to press the flanges 31, 32 against the sides of the rollers 14, 16, taking up all clearance between the parts in question.

The side web of the track overlaps the carriage, and a series of notches 33 cut in its top, are adapted to receive and hold a detent tooth 32, integrally carried by a latch arm 35 pivoted upon the carriage and constantly urged toward locked position by a torsion spring 37. The arm will be

seen to be pivoted upon the inside of the carriage, and the toothed portion thereof projects through a slot 38 which serves to brace the holding portion of the detent as well as to permit movement thereof into and from engagement with the notches when the arm is swung.

The description has been confined to one of the supporting assemblies, in view of the fact that the two units, one of which is of course adapted to support each end of the seat, may be of like (but symmetrically opposite) construction, except for the locking mechanism, which need be carried by one only.

The locking effect is transmitted to the opposite unit, and movement of the carriage is synchronized, by means of a transverse shaft 40 geared to the two carriages and journaled in the track portions. The synchronizing shaft 40 is journaled at its ends in the aligned hollow rollers shafts 17 of the opposed units, and a gear 42, fast on the shaft near each end, meshes with a sheet metal rack assembly 45, in which teeth are formed by a series of punched holes 46. The rack is formed of spring steel, bent to U-section. As best shown in Figure 5, one flange is riveted to the carriage, while the perforated bottom flange which meshes with the gear 42 is free. The bottom flange is stressed sufficiently to exert downward pressure upon the gear 42 and take up all clearance between the rack and pinion portions, and in the shaft mounting. Certain of the perforations in the rack, designated 46A, are extended inwardly far enough to permit the gear to be slid into mesh therewith from the side when the end of the shaft is fitted into the tube 17 during assembly. It will be seen that this is only possible when the slots 46A are lined up with the axis of shaft 40.

What I claim is:

1. Adjustable supporting means for a seat or other load, comprising a pair of spaced rollers rotatable upon fixed axes, a carriage comprising a channel element disposed with its side webs projecting substantially horizontally, the bottom web of said channel being rollable over said rollers, additional rollers overengaging said bottom web to prevent unwanted vertical displacement of the channel, means urging said additional rollers downwardly against said bottom web, and means for supporting the load upon the top web of the channel.

2. Adjustable supporting means for a seat or other load, comprising a pair of spaced rollers rotatable upon fixed axes, a carriage comprising a channel element disposed with its side webs projecting substantially horizontally, the bottom web of said channel element being rollable over said rollers, additional rollers overengaging said bottom web to prevent unwanted vertical displacement of the channel, means urging said additional rollers downwardly against said bottom web to hold down the carriage, said additional rollers having inclined tread portions which also bear laterally against said carriage to take up unwanted lateral play between the carriage and rollers.

3. Adjustable supporting means for a seat or other load, comprising a pair of spaced rollers rotatable upon fixed axes, a carriage comprising a channel element with its side webs projecting substantially horizontally, the bottom web of said channel being rollable over said rollers, downwardly projecting flange portions carried by said bottom web and extending beside said rollers, additional rollers having tapered peripheral portions overengaging said bottom web to prevent unwanted vertical displacement of the carriage, means urging said additional rollers downwardly against said bottom web, the peripheral taper being such that said rollers thereby also bear laterally against said flange portions to take up unwanted vertical and lateral play between said carriage and rollers and maintain a predetermined friction between said rollers and downwardly projecting flange portions.

4. Adjustable supporting means for a seat or other load, comprising a fixed support, a pair of rollers carried thereby in spaced and generally coplanar relation, the axes thereof being substantially parallel and lying in a generally horizontal plane, a carriage including an elongated web resting upon said rollers and adapted to roll thereover in a path substantially at right angles to said axes, and additional roller means also carried by said fixed support and having portions inclined with respect to both the plane of said first-mentioned rollers and the plane of their axes, said portions bearing angularly against said web upon its side opposite that contacting the first mentioned rollers to yieldably maintain said carriage and rollers in predetermined relation and take up lost motion therebetween and between the rollers and fixed support.

5. Adjustable supporting means for a seat or the like, comprising a pair of spaced supporting rollers, a carriage comprising a channel member disposed on its side with webs projecting substantially horizontally one above the other, the bottom web of said channel being rollable over said rollers, additional roller means bearing downwardly against said channel member and having inclined portions which by cam action also urge the same laterally, to take up lost motion therebetween, a swingable arm supporting said additional roller means, and spring means urging said arm in a predetermined direction.

6. Adjustable supporting means for a seat or other load, comprising a frame of generally U-section, spaced rollers journaled in said frame, a carriage rollable over said rollers and having a downwardly projecting flange portion lying beside said rollers, additional roller means carried by said frame and bearing against said carriage and also having sloping cam portions bearing laterally thereagainst to urge said flange portions against said first mentioned rollers, and supporting means for said additional roller means comprising an arm mounted coaxially with said first mentioned rollers and carrying said additional roller means, said arm being movable to permit movement of the additional roller means toward and from said first-mentioned rollers, and spring means urging said roller means toward said first mentioned rollers.

7. Adjustable supporting means for a seat or the like, comprising in conjunction with a frame of substantially U-section, rollers journaled on spaced axes in said frame, a carriage having a laterally projecting web rollable over said rollers, a downwardly projecting flange portion carried by said web and extending beside said rollers, said frame and carriage having overlapping portions on the opposite side of said rollers from said flange portion, additional take-up roller means movably carried by said frame and overengaging and bearing downwardly against said web and also having sloping portions adapted to urge said flange portion laterally to maintain the carriage against unwanted vertical and lateral

movement with respect to the frame and to take up any looseness in said first mentioned rollers.

8. Means as set forth in claim 7 in which said overlapping portions of the frame and carriage limit rocking movement of the carriage with respect to the frame, and locking means engageable with said overlapping portions to releasably hold the carriage against longitudinal movement.

9. Means as set forth in claim 7 in which said take-up roller means comprises a plurality of rollers of substantially conic form engaging the edge of said web, and spring means urging said take-up rollers toward said first mentioned rollers.

10. Means as set forth in claim 7 in which said take-up roller means comprises a plurality of rollers of substantially conic form engaging the edge of said web, a swingable supporting arm for each of said take-up rollers mounted coaxially with one of said first mentioned rollers, and spring means urging said arms in directions to force said take-up rollers against said web.

WALTER S. SAUNDERS.