March 10, 1942. W. S. SAUNDERS 2,275,656

ADJUSTABLE SUPPORT

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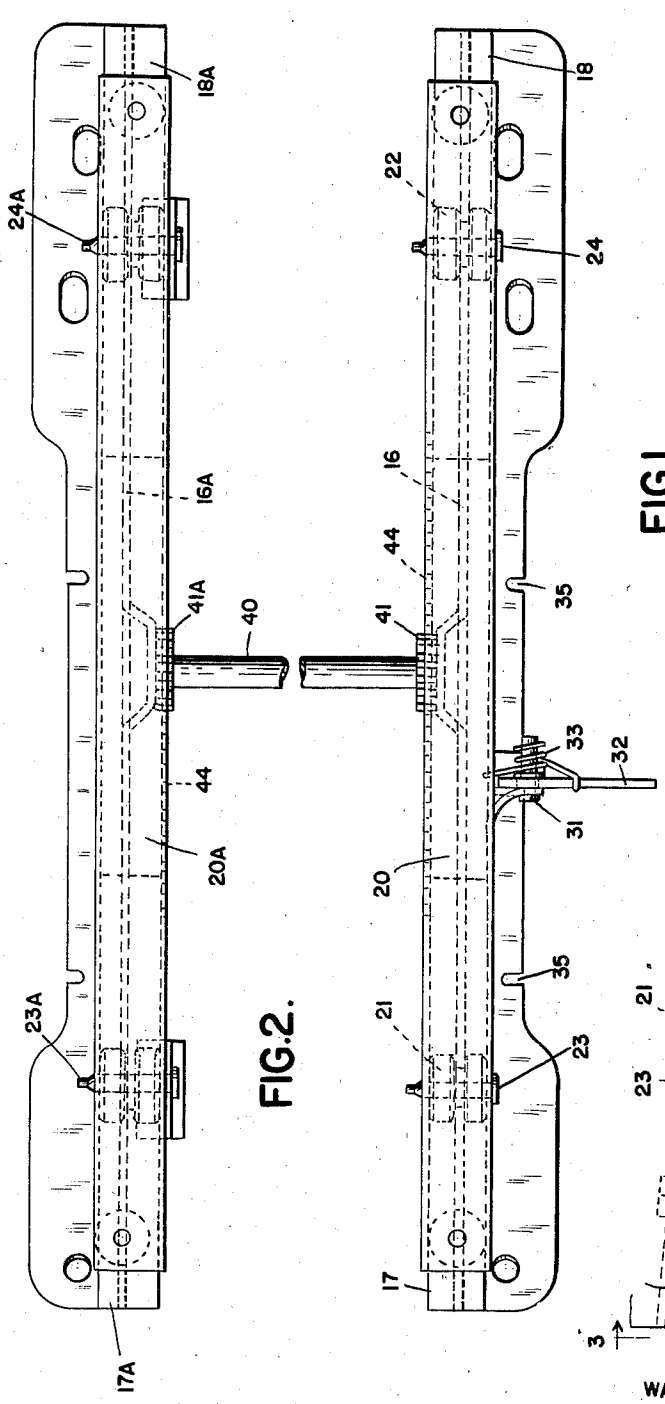

FIG.2.

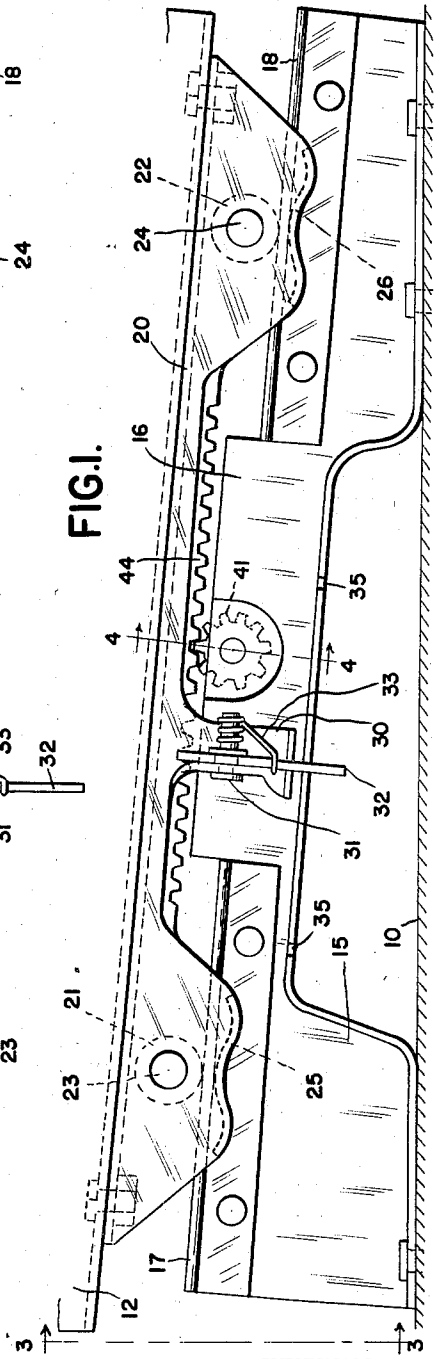

FIG.1.

INVENTOR.

WALTER S. SAUNDERS

BY Swan, Pyle & Hardesty

ATTORNEYS

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FIG.5

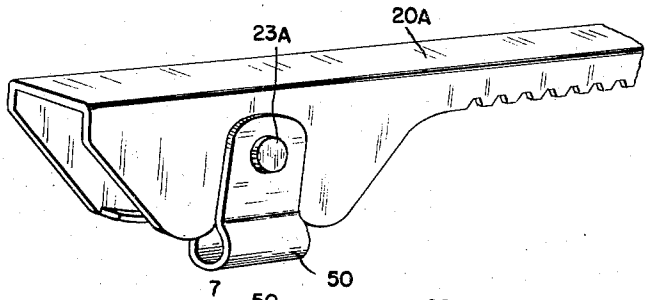
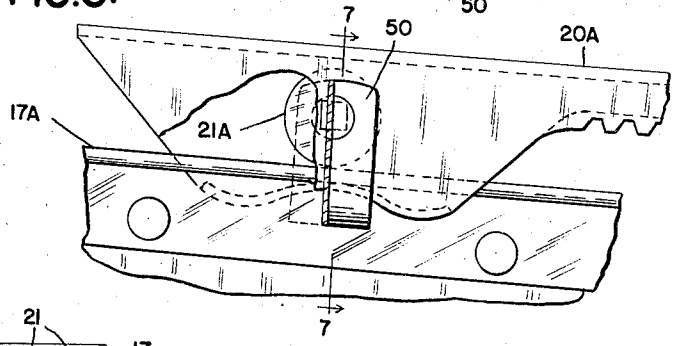


FIG.6.



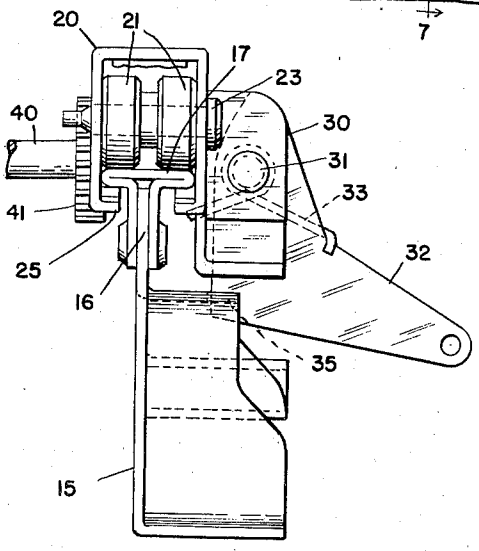


FIG.3.

FIG.4.

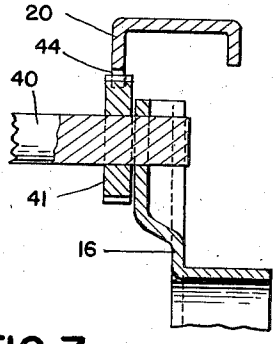
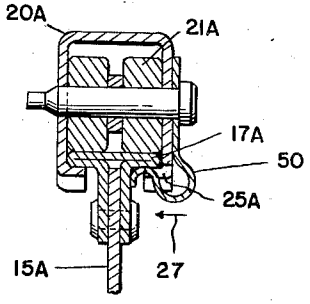


FIG.7.



INVENTOR.
WALTER S. SAUNDERS

BY Sarau, Frye & Hardesty
ATTORNEYS

March 10, 1942. W. S. SAUNDERS 2,275,656

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FIG.8.

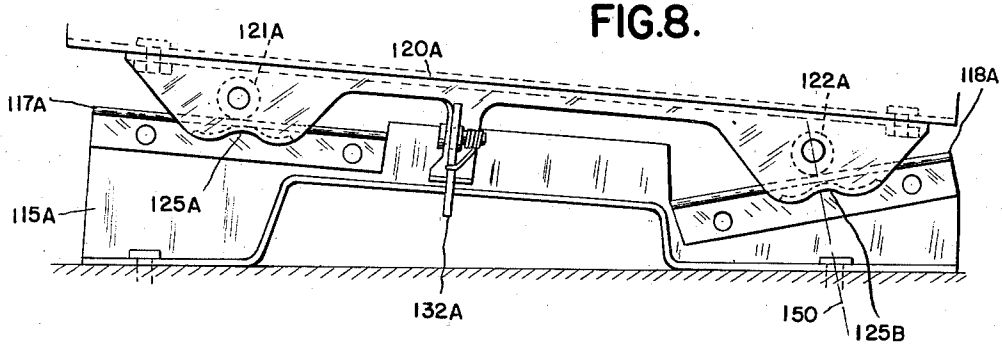


FIG.9.

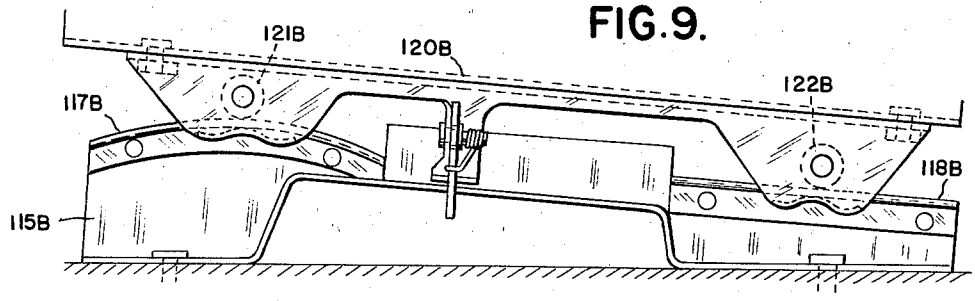
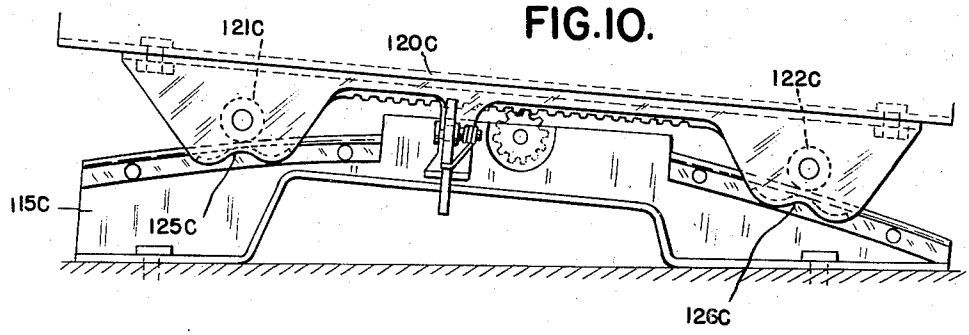


FIG.10.



INVENTOR.
WALTER S. SAUNDERS
BY
ATTORNEYS

Patented Mar. 10, 1942 2,275,656

UNITED STATES PATENT OFFICE

2,275,656

ADJUSTABLE SUPPORT

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

Application May 15, 1939, Serial No. 273,607

6 Claims. (Cl. 155—14)

This invention relates to improved adjustable supporting means, particularly for objects, such as vehicle seats, which are normally required to be held rigidly in place, but which must be quickly and easily adjustable to different positions to suit the convenience of occupants.

Where such supporting devices are to be manufactured and used in large quantities, as in the production of automobiles and the like, considerations of economy virtually necessitate the use of sheet metal construction. While the use of sheet metal construction in devices of this character imparts great strength and resistance to breakage, it entails difficulties in the elimination of weaving, rattling and lost motion, due to the resiliency of this type of metal and the relatively thin cross sections which must be used if the benefits of economy are to be retained.

The present invention aims to provide an improved and greatly simplified sheet metal support construction of the character indicated, which allows the use of thin gauge metal, yet is extremely rigid and strongly resists distortion. A further object is to provide improved means for interconnecting the parts of such an adjustable support and for eliminating all lost motion between and rattling of the movable parts.

Another object of the invention is to provide improved anti-rattling and take-up means for adjustable supports of the character indicated, which means is very easily releasable, interposes very little resistance to movements of the parts during adjustment, and is not apt to become jammed or stuck.

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

In the drawings:

Figure 1 is a side elevational view of a seat-supporting assembly constructed in accordance with the present invention, fragmentarily indicating a floor and a seat carried thereby.

Figure 2 is a plan view of the assembly, with the seat removed and with the synchronizing shaft centrally broken away.

Figure 3 is a front elevational view taken substantially as indicated by the line and arrows 3—3 of Figure 1.

Figure 4 is a vertical section taken substantially on the line 4—4 of Figure 1, and looking in the direction of the arrows.

Figure 5 is a perspective view of the front portion of one of the carriage assemblies.

Figure 6 is a side elevational view of the same carriage portion, and the adjacent track section upon which it is mounted, partly broken away.

Figure 7 is a vertical section taken substantially on the line 7—7 of Figure 6, and looking in the direction of the arrows.

Figure 8 is a view similar to Figure 1, on a somewhat smaller scale, showing a modified construction, and;

Figures 9 and 10 are similar elevational views showing further modifications.

Referring now to the drawings:

Reference character 10 designates a floor, shown as formed of sheet metal, and which may be that of a vehicle. A seat 12 carried by my improved supporting means is shown fragmentarily in Figure 1. A pair of supporting assemblies are provided, one beneath each end of the seat and extending longitudinally thereof. The construction of the assemblies being similar, only one thereof will be described in full, whereafter the differences between the assembly described and the other will be noted. It will be understood that the two supporting assemblies are symmetrically opposite in their general arrangement.

Describing first the supporting assembly which carries the locking means; it will be seen that a track member 15 is riveted or otherwise firmly attached to the floor 10 in upstanding relation. The central portion 16 of the track is higher than the ends, and comprises a vertical sheet metal panel portion, without a head. The front and rear portion will be seen to be somewhat lower, and to carry the T-shaped track heads 17, 18, fitted over and attached to the vertical supporting flange.

The carriage member 20 is in the form of an inverted channel, the webs of which are somewhat deeper near the ends. In such deeper web portions rollers 21, 22, are journaled upon pins 23, 24 respectively. One roller travels over each of the track sections 17, 18, during adjustment of the seat. The lower ends of the roller supporting flanges are turned inwardly, as at 25, 26, to underlie the track heads and retain the carriage against vertical displacement. Each such retaining flange is curved upwardly longitudinally, in such manner as to engage the bottom of the track head only on a line directly below the roller. The resilience of the metal of the carriage is utilized to maintain such engagement with a definite pressure which takes up all clearance between the track and carriage, and in the

roller bearings. Due to the small area of contact, however, there is relatively little room for the development of undue friction due to corrosion, dust and dirt. The rubbing parts are effectively self-cleaning and the calculated friction which is incorporated in these parts remains constant and does not interfere with sliding movement of the carriage.

An integral, downwardly projecting lock bracket portion 30, carried by the shallower central portion of the outer web of the carriage 20, outlies the track and pivotally supports, upon a pin 31, a locking detent 32 which, by means of a spring 33, is normally urged into engagement with one of a series of notches 35 formed in the out-turned base flange of the track. The central portion of such base flange will be seen to be raised to accommodate such notches as well as to stiffen the assembly. By lifting the detent lever to free it from the notches, the carriage may be freely slid to a new position, and thereafter locked by allowing the detent to re-engage the nearest notch.

In the opposite assembly, corresponding parts have been given like reference characters, distinguished by the addition of the letter A to each. Such opposite assembly need incorporate no locking means. The locking effect is transmitted to its carriage 20A by a cross shaft 40, which also serves to synchronize the movements of the two carriages. The shaft is journaled at its ends in the opposite central portions 16, 16A of the tracks, and carries near each end a gear, 41, 41A, one gear being aligned and meshing with each of the rack portions 44, 44A, cut in the bottom edges of the central portions of the inner carriage flanges. A positive geared connection between the carriages is thus provided.

The raised central portion 16 of the track assembly will be seen to be engageable by the rollers at the extremes of carriage movement, a positive stop being thus provided.

To hold the seat assembly against unwanted lateral play, additional spring means is provided in the form of leaf spring elements 50, one carried by each of the roller pin members 23A, 24A of carriage 20A. The spring members 50 are shaped to extend downwardly around the bottom flanges 25A, 26A, and through suitable notches (undesignated) in the edges of such retaining flanges, to bear laterally against the track heads. The spring pressure thus provided is principally exerted in the direction indicated by the arrow 27 of Figure 7, the lateral effort thus exerted supplementing the downward effort of retaining flanges 25, 25A, 26, 26A, and the seat being thus effectively held, and lost motion being taken up, in all directions of possible movement.

Figure 8 shows a somewhat modified construction in which the track portions 117A, 118A are inclined at different angles, to cause the seat to change its pitch to a desired extent as it is moved toward the front and rear. The upwardly curved friction holding portion 125B will be seen to be centered upon a line (150) perpendicular to the track drawn through the center of the roller. Other parts will be seen to be equivalent to those already described, and need no detailed redescription.

In the further modification shown in Figure 9, the forward track section 117B is curved about a transverse axis, to vary the pitch of the seat during its travel, while the rear track section 118B is straight. Other corresponding parts requiring no detailed description, are designated by reference characters similar to those of the last described embodiment but distinguished by the addition of the letter "B" to each.

Figure 10 shows a further modification in which the front and rear track sections lie on a common line curved about a common transverse axis, so that during its movement the elevation of the seat is changed both at the front and rear. It will be noted that the friction holding portions 125C, 126C, are located upon a radial line extended through the centers of the rollers 121C, 122C.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiments to be considered in all respects as illustrative and not restrictive; reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. Means for adjustably mounting a seat or the like, comprising an upstanding support, a pair of longitudinally spaced track positions carried by the support, an intermediate portion carried by said support between and in substantially longitudinal alignment with the track portions and having abrupt ends projecting higher than the track portions, a carriage having spaced rollers adapted to travel on said track portions, an intermediate portion of the carriage extending over said higher intermediate portion of the support, and means carried partly by the carriage and partly by said intermediate portion of the support for controlling and limiting movement of the carriage, including abutment portions at each end of said higher intermediate portion of the support adjacent each of said track portions and engageable by said rollers at the ends of their movement to limit the travel of the carriage.

2. Means for adjustably mounting a seat or the like, comprising an upstanding support, a pair of longitudinally spaced track portions carried by the support, an intermediate portion carried by said support and projecting above the track portions, a carriage having spaced rollers adapted to travel on said track portions, an intermediate portion of the carriage extending over said higher intermediate portion of the support, and means carried partly by the carriage and partly by said intermediate portion of the support for controlling movement of the carriage, the end portions of said carriage being of inverted channel form, the webs thereof extending downwardly on either side of the track portions, and the rollers being journaled between said webs, the intermediate portion of the carriage being raised, a rack portion carried by said intermediate portion of the carriage, and gear means meshing therewith and journaled in the intermediate portion of the support.

3. Adjustable mounting means for a seat or the like, comprising a supporting member of generally L section, track portions near either end thereof, means for securing the base flange thereof to a desired platform, the central portion of the base flange between the track portions being raised above the platform and having laterally facing abutment portions serially arranged along its free edge, carriage means rollable over the track portions of said support, and locking means for releasably holding said carriage against unwanted movement, comprising a detent operatively connected to the carriage and having a holding portion laterally movable to and from

selective engagement with said abutment portions carried by said raised portion of the base flange.

4. Means as set forth in claim 3 in which the central portion of said carriage is elevated above the raised portion of the base flange, and a detent hanger carried by and extending downwardly from the carriage to a position adjacent the raised portion of said base flange, said detent being movable to and from a position in which it bridges and is interlocked with both said hanger portion and said base flange.

5. Means as set for in claim 3 in which the central portion of said carriage is elevated above the raised portion of the base flange, a detent hanger carried by said carriage and extending downwardly to a position adjacent the raised portion of said base flange, a detent pivoted upon said hanger and swingable to and from a position in which it bridges said raised portion of the base flange and the hanger, the hanger having a slot therein adjacent the base flange through which the detent extends when in locked position.

6. Means for adjustably supporting a seat or the like, comprising an upstanding support, a pair of longitudinally spaced track portions carried by the support, an intermediate portion carried by said support and projecting above the track portions, a carriage having spaced rollers adapted to travel on said track portions, an intermediate portion of the carriage extending over said higher intermediate portion of the support, and means carried partly by the carriage and partly by said intermediate portion of the support for controlling movement of the carriage, said support is formed of sheet metal, said track portions comprising laterally projecting flanges, said intermediate portion of the support comprising an integral and substantially vertical web having abrupt ends adjacent the inner ends of the track portion, means carried by the carriage for maintaining alignment of the track and carriage, and means carried by the carriage for supporting said rollers in aligned relation with respect to both the track and the abrupt ends of said web, whereby said abrupt ends may limit movement of the rollers and carriage.

WALTER S. SAUNDERS.