Jan. 5, 1943. W. S. SAUNDERS ET AL 2,307,305

ADJUSTABLE SUPPORT

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FIG.1.

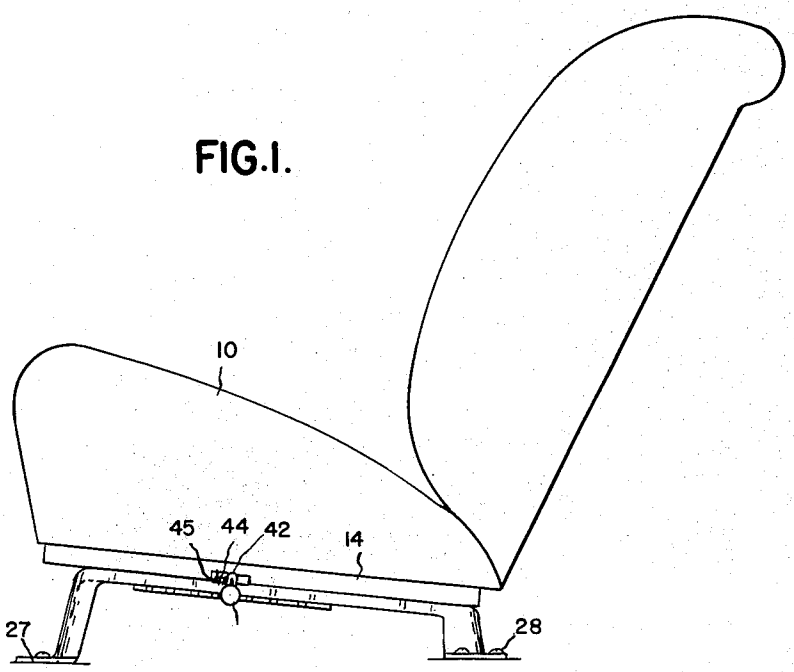


FIG.2.

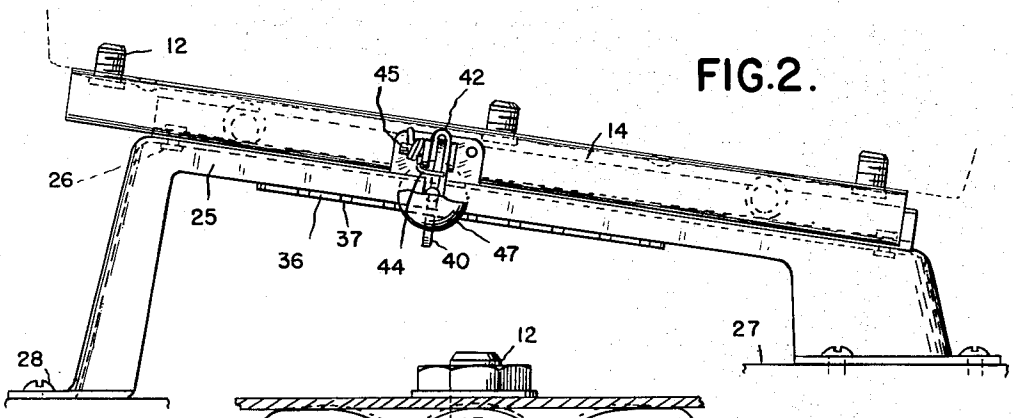
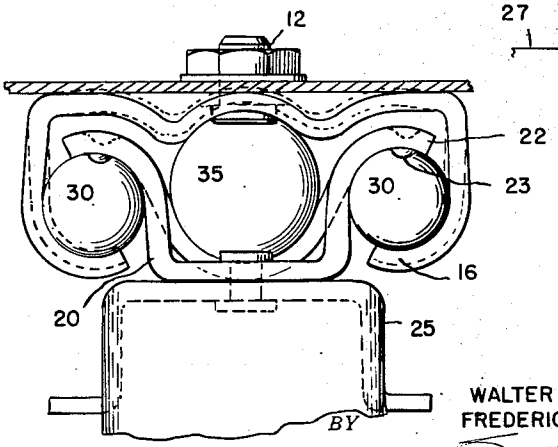


FIG.3.



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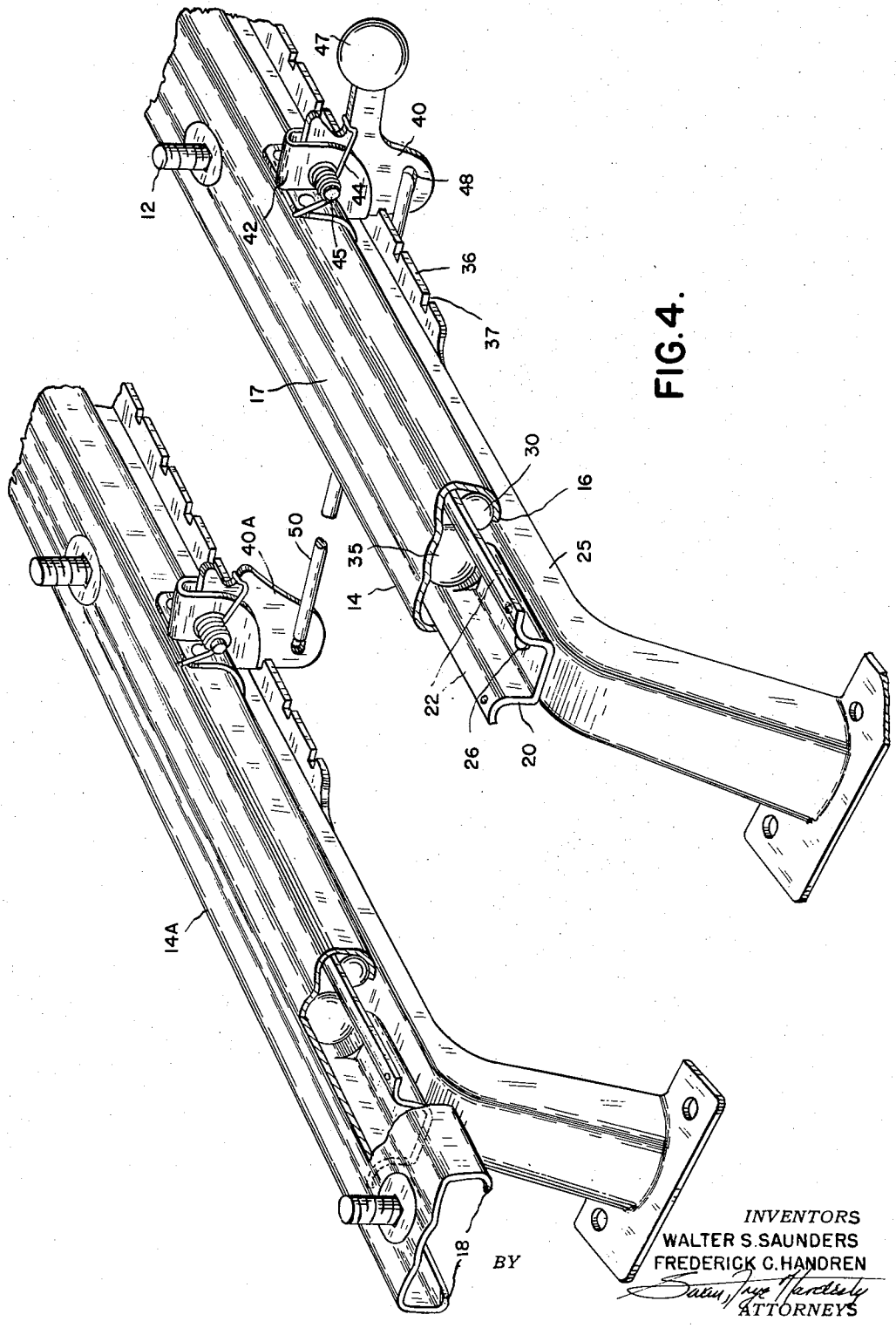


FIG. 4.

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ADJUSTABLE SUPPORT

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Application May 23, 1940, Serial No. 336,770

2 Claims. (Cl. 155—14)

This invention relates to adjustable supporting mechanisms, particularly, although not exclusively, adapted to support the seats of vehicles. An important object of the invention is to provide such an adjustable support which is more rigid in proportion to its weight and its cost of construction than previously known devices of this class.

A further object is to provide such a support which is formed entirely of sheet metal, of relatively thin gauge, yet in which the parts are so designed and arranged that weaving, rattling and lost motion are eliminated, and friction is also reduced to a minimum, none of the sheet metal parts being permitted to slide directly upon one another.

Still another object is to provide such an adjustable seat support constructed of sheet metal and incorporating an improved arrangement of anti-friction balls, which balls are also made to serve as take up elements, imposing predetermined stress upon and taking up all clearance between the sheet metal portions of the structure.

Still another object is to provide such a seat supporting device formed in two sections, one of which is adapted to carry each end of the seat, and each of which sections is provided with improved locking means, whereby both ends of the seat may be held positively against movement, except during adjustments. A further object is to provide improved means whereby both such locking means may be operated by a single control handle.

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 through the several views.

In the drawings:

Figure 1 is a side elevational view of a seat mounted upon adjustable supporting means constructed in accordance with the present invention.

Figure 2 is a side elevational view of one of the seat supporting assemblies, drawn upon a somewhat larger scale.

Figure 3 is a front elevational view thereof, and

Figure 4 is a perspective view of the two assemblies constituting the complete supporting structure, certain of the parts being broken away.

Referring now to the drawings: Reference character 10 designates generally a seat cushion, which is adapted to be secured, as by means of studs 12, to the carriage portions 14—14A of the adjustable supporting structure. The supporting structure, as best shown in Figure 4, comprises two complete assemblies, one adapted to be located beneath each end of the seat. Each carriage is carried by and adapted to travel along a track assembly 20, which is in turn mounted upon a support 25. Since most of the parts of the two assemblies are alike, a description of one only will be given, supplemented by a description of the differences between the two assemblies.

The support 25 will be seen to be formed of channeled sheet metal, being somewhat higher at the front than at the back, and adapted to be secured to the floor 27 by means of screws 28. The track is of channeled form, and may be attached to the top of the support by means of rivets as 26. The track channel is provided with out-turned top flanges 22, the lower surfaces of which are so curved, about longitudinal axes, as to provide raceways for the take-up antifriction balls 30. Additional antifriction balls 35 are arranged in the channel 20, to support the carriage and the load carried thereby.

The carriage will be seen to be formed as an inverted sheet metal channel, having at its lower extremities underbent flanges, 16, which also constitute raceways for and serve to retain the take-up balls 30. The central portion of the top web of the carriage channel is curved conformably to the radius of the balls 35, to provide a raceway for the latter, as indicated at 17, and the studs 12 are secured to and project upwardly from the central raceway portion 17. The central location of the studs 12 serves a purpose which will presently be described.

A flange 36 projects laterally from the edge of the support 25, directly below the carriage, and is provided with a series of notches 37. A sheet metal locking dog 40 is pivoted upon a longitudinal axis in a bracket 42, riveted or otherwise secured to the side of the carriage, and is swingable to and from engagement with notches 37 in flange 36. A torsion spring 44 is wrapped about the pin 45 on which the dog is pivoted, and bears against the latter to urge it into engaged position. A knob as 47 may be provided to enable convenient release of the dog. The dog is extended downwardly below the flange 36, its lower extremity being provided wtih a slot 48 in which one end of a link 50 is pivotally fitted, the other end of the link being similarly con-

nected to the locking dog 40A of the other seat adjusting assembly. Dog 40A will be seen to be similar to dog 40 except that no operating handle is provided, since it is operated by the same handle 47 through the agency of the link 50.

The diameter of the balls 30 slightly exceeds the distance between parts 16—22, so that the flanges by which these parts are carried are slightly flexed, and maintained under stress, by insertion of the balls. The degree of flexure is indicated in Fig. 3, which shows in dotted lines the relaxed position of the carriage flanges 16, and in full lines the normal position occupied thereby, with the balls installed.

Due to the central position of the studs 12 to which the seat is attached, any loading of the seat which exerts an upward force, such as occurs under the shocks and vibrations encountered in service, tends to cause the flange portions 16 to draw together, due to the lift upon the central part of the carriage channel. This tightens flanges 16 against the balls 30, and drives the latter inwardly against the sides of the track channel. The action is analogous to that of a pair of ice tongs, the section 17 acting as a pivot about which portions 16 swing when the pivot section is lifted. Since most shock loads encountered in service by such devices create an upward component in one part or another of the structure, this clamping action, which constantly maintains the parts in tight engagement with the balls, takes place during most severe seat loading, and effectively eliminates lost motion and rattling of the parts.

Escape of the balls 30 is prevented by bending upwardly the front corners of the race flanges 16, as indicated at 18, and by deforming in a downward direction the ends of the race portions 22, as indicated at 23. This is done before the parts are assembled, and the balls are inserted by sliding the carriage to the extreme ends of its travel and then springing the parts sufficiently to force them in.

While it will be apparent that the illustrated embodiment of my invention herein disclosed are well calculated to adequately fulfill the objects and advantages primarily stated, it is to be understood that the invention is susceptible to variation, modification and change within the spirit and scope of the subjoined claims.

We claim:

1. An adjustable supporting structure for seats and the like, comprising a channeled track having transverse and side webs, antifriction elements rollable therein and projecting thereabove, said track having flanges projecting laterally from the tops of its side webs, a channeled carriage rollably carried by said antifriction elements and having transverse and side webs, the side webs extending downwardly beside and thence projecting inwardly to underhang said flanges of the track, said carriage being formed of resilient sheet material and its transverse web being wider than the diameter of said antifriction elements, said flanges and the underhanging portions of said side webs being complementarily channeled to form outer raceways located upon opposite sides of said track, additional anti-friction balls located in said outer raceways and bearing against the outer surfaces of the side webs of the channeled track, and against the inner surfaces of the side webs of the channeled carriage, the diameter of said balls slightly exceeding the distance between said side webs and flanges, whereby they impose predetermined strain upon said side webs, and whereby said additional balls prevent unwanted lateral movement of the carriage with respect to the track, and securing means for attaching a load to said transverse web of said carriage along a central line substantially aligned with the first mentioned anti-friction elements, the remainder of said transverse web and said side webs of the carriage being free to flex inwardly except as restrained by said balls, whereby upward forces exerted upon said transverse web of the carriage through said attaching means tend to cause the side webs of the carriage to move inwardly against said balls, and cramp the latter more tightly against the track.

2. In a sliding support for a seat or the like, a channeled track having bottom and side webs, race-forming flanges projecting laterally from the tops of said side webs, a carriage rollable over the track and having sides extending downwardly outside of and spaced from said race-forming flanges and underhanging the same; anti-friction elements arranged in the channeled track and substantially filling the space between the side webs thereof and projecting thereabove to engage and support the carriage, and additional anti-friction elements disposed between said carriage and said race-forming flanges and filling the space between said sides of the carriage and the side webs of the track, whereby said last mentioned anti-friction elements prevent unwanted lateral movement of the track and carriage.

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