

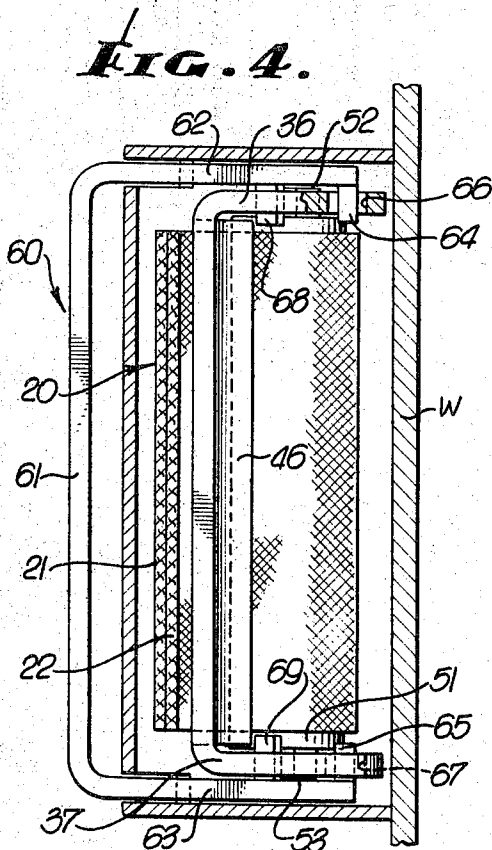
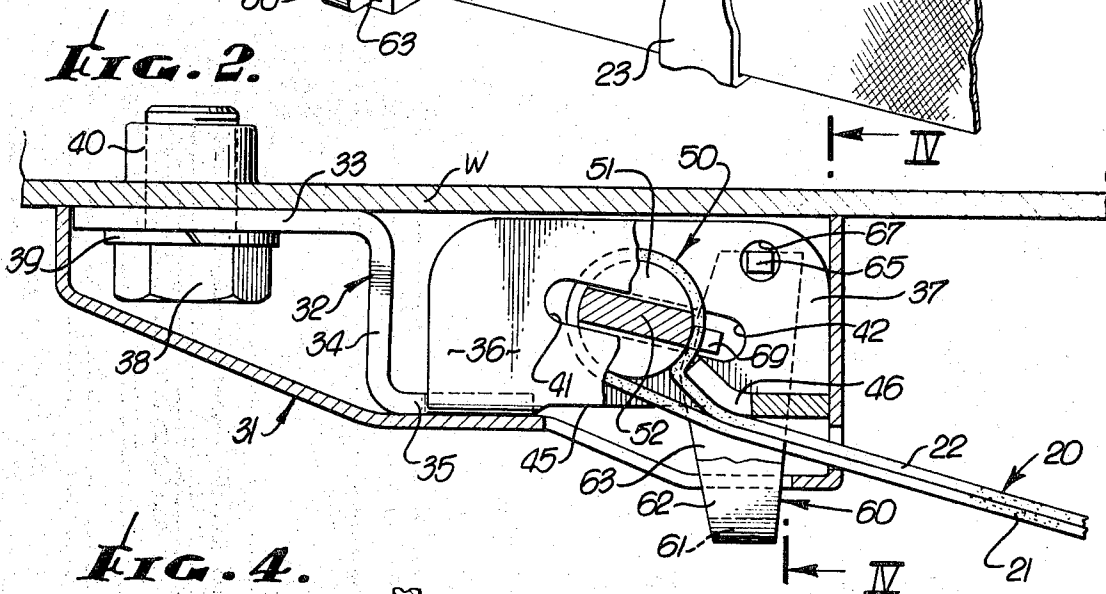
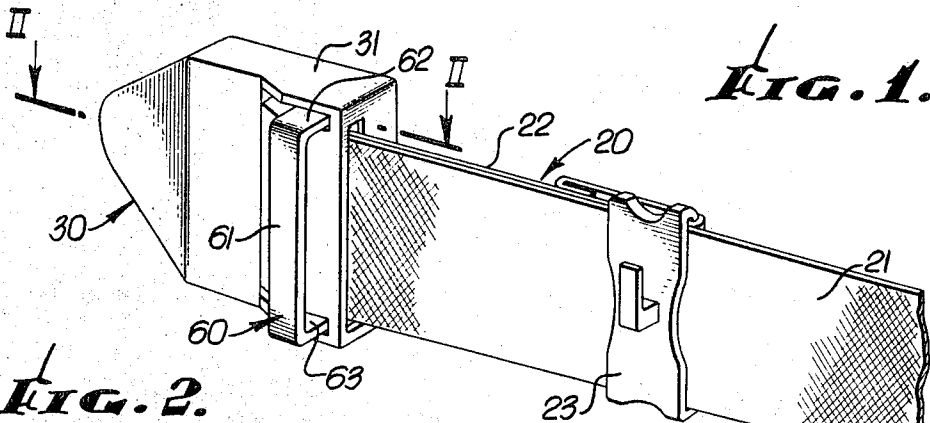
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SAFETY BELT ADJUSTABLE ANCHOR DEVICE

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SAFETY BELT ADJUSTABLE ANCHOR DEVICE
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4 Claims

ABSTRACT OF THE DISCLOSURE

An adjustable anchor device has an adjustment bar with a bight portion and two spaced legs having free ends pivoted to spaced sidewalls of a frame and having tabs engaging a slidable snubber bar extending between the sidewalls to slide the snubber bar away from an abutment extending between the sidewalls and thereby release a safety belt therebetween for adjustment.

Safety restrain systems used in vehicles, such as automobiles, generally comprise a pair of lap straps forming a seat belt or lap belt, and one or more shoulder straps which comprise an upper torso restraint system. The term "safety belt" as used herein, is intended to mean either of the two complementary lap straps or one or more shoulder straps. In the normal installation, each of the lap straps are restrained at one end to the floor of the vehicle, although such lower ends may be secured to the vehicle seat where the seat is adapted to carry the restraint loads. The shoulder strap, such as in a three-point system, is attached at its upper end to the vehicle ceiling, sidewall, or B-post in accordance with the vehicle interior configuration, position of the vehicle seat, and other well known requirements.

In the prior art, the anchor devices for restraining one end of the safety belts have generally been fixed anchor means whereby the attached safety belt end is fixed to the anchor plate, rather than adjustable with respect thereto. Examples of such prior art devices may be seen in United States Patent Nos. 3,279,019, 3,406,433, and 3,401,980. To provide the required adjustment for different sizes of occupant-users, the lap straps have been adjustably connected at the buckle through the use of a sliding snubber bar as shown in United States Patent Nos. 3,242,547, 3,246,377, and 3,274,656. Shoulder straps mounted with fixed anchor means are generally provided with an adjustment bar in the midportion thereof in a manner well known in the art.

The above-described prior art arrangements have a number of disadvantages, one of which is the requirement for separate anchor and adjustment devices. The provision of the adjustment means in the prior art lap strap buckle has also complicated the construction of such buckle and increased its size. Furthermore, in attempting to adjust the lap belt after the buckle is connected, it is often times difficult to manually orient the buckle such that the snubber bar is released permitting adjustment of the length of the lap belt. Of course, obviating the adjustment means from the buckle would allow such buckle to be lighter in weight and thus more convenient to use and inexpensive to manufacture. Similarly, with respect to the shoulder strap, elimination of the adjustment bar from the intermediate portion of the strap will facilitate out-of-the-way positioning of the strap, simplify adjustment of the length of the strap, reduce the weight of the overall strap, and satisfy other design requirements.

SUMMARY OF THE INVENTION

An adjustable anchor device for securing the restrained end of a safety belt to a vehicle comprising a frame in-

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cluding a base plate, a pair of opposed sidewalls, and means for mounting the frame to the vehicle wall, the sidewalls having elongated slots carrying a slidably mounted snubber bar, and the frame base plate having a transverse opening through which the safety belt may pass and circumscribe the snubber bar, one edge of the opening being defined by an abutment wall integrally formed with the base plate, the snubber bar being movable from a first position whereby the belt is pinched between the bar and the abutment wall and thus fixed in length to a second position whereby the belt is free to move relative to the bar and may be adjusted, and adjustment means pivotally carried by the frame for positioning the snubber bar relative to the abutment wall to permit such adjustment or restrained anchoring.

Aside from the above-mentioned objects and advantages of the present invention over the prior art devices, the invention will be further appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an exemplary embodiment of an adjustable anchor device constructed in accordance with the present invention;

FIG. 2 is a sectional view taken along the plane II—II of FIG. 1, the device being shown in the fixed belt length position;

FIG. 3 is a partial sectional view as in FIG. 2, showing the device in a position wherein the safety belt may be adjusted; and

FIG. 4 is a sectional view taken along the plane IV—IV of FIG. 2.

DETAILED DESCRIPTION OF AN EXEMPLARY EMBODIMENT OF THE INVENTION

Referring now to the drawing, there is shown an exemplary embodiment of an adjustable anchor device, constructed in accordance with the present invention, for securing the restrained end of a safety belt to a vehicle. In the embodiment illustrated, there is shown a shoulder strap indicated generally at 20 restrained by anchor device 30, attached to a vehicle ceiling wall W. In this arrangement, the shoulder strap 20 extends forwardly and downwardly from the point of its restraint so as to pass over one shoulder of the occupant or user, over the chest of such user, and is affixed at its lower end to a suitable connecting means, in a manner well known in the art.

Shoulder strap 20 comprises a first lay 21 which passes over the occupant as previously described, into the anchor device 30, and out of the device to define a second lay 22 of much shorter length. The free end of the second lay is prevented from loosely flapping about by a means of a plastic slidable guide 23 through which the end of the strap lay 22 is passed and may be doubled back.

The anchor device may be enclosed in a housing 31 of suitable plastic or other material which is aesthetically pleasing and which will enclose substantial portions of the anchor device as may be desired for appearances.

The adjustable anchor device 30 includes a frame, which in the exemplary embodiment includes a base plate indicated generally at 32 comprising a mounting wall 33, a rearward wall 34 disposed normal to base wall 33, and a top wall 35. The frame also includes opposed sidewalls 36, 37 integrally mounted on top wall 35 and defining a chamber with rearward wall 34. There is also provided means for mounting the frame 32 to the vehicle wall W which in the exemplary embodiment comprises the bolt 38, lock washer 39, and threaded opening 40 in wall W.

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Sidewalls 36, 37 of frame 32 are each provided with elongated slots 41, 42 which may be angularly disposed with respect to planar top wall 35 of base plate 32. Base plate top wall 35 is provided with a transverse opening 45 through which shoulder strap 20 may pass into the chamber defined by frame sidewalls 36, 37, rearward wall 34, and top wall 35. One edge of opening 45 in top wall 35 is defined by an abutment wall 46 which is integrally formed with top wall 35 and comprises a wall portion inwardly angularly disposed.

The adjustable anchor device also comprises a snubber bar 50 slidably mounted in the sidewall slots 41, 42. In the exemplary embodiment, the snubber bar 50 comprises a cylinder 51 which may be smooth or knurled, as required, and a pair of stub axles 52, 53. Stub axles 52, 53 have a thickness approximately equal to the width of the sidewall slots 41, 42 so as to be slidably movable in such slots but only slightly angularly rotatable with respect thereto. It will also be seen that lay 21 of shoulder strap 20 passes through a suitable opening in housing 31 through the transverse opening 45 in frame top wall 35, around the cylinder 51 of the snubber bar 50 and back out through opening 45 to form second lay 22. It will be understood that when a tension is applied to lay 21, such as when the shoulder restraint system is loaded, the snubber bar 50 is slidably moved with respect to frame 32 so that cylinder 51 pinches the lay 22 of the strap 20 against the abutment wall 46 so that the length of the belt is fixed. When the snubber bar 50 is moved to a second position, as seen in FIG. 3, wherein the second lay 22 of shoulder strap 20 is not pinched, the first lay 21 may be pulled by the occupant so as to increase the length of the operative portion of the strap, or the short lay 22 may be pulled so as to decrease the length of lay 21.

The adjustable anchor device of the present invention is also provided with adjustment means, indicated generally at 60, pivotally carried by frame 32 for positioning the snubber bar 50 relative to the abutment wall 46. In the exemplary embodiment, adjustment means 60 comprises a substantially U-shaped bar including a bight portion 61 and legs 62, 63. Each of the free ends of the legs 62, 63 are provided with axles 64, 65, respectively, received in openings 66, 67, respectively, of sidewalls 36, 37 of frame 32. Each of the legs 62, 63 carry tabs 68, 69 for engaging the cylinder 51 of snubber bar 50.

The adjustment bar is shown in its normal position, in FIG. 2, wherein the snubber bar 50 is positioned so as to pinch lay 22 of shoulder strap 20 to fix the length of the strap. In this position of the snubber bar, the adjustment bar is pivoted to its furthest counter-clockwise position by engagement of tabs 68, 69 with snubber bar 50. When it is desired to adjust the length of the shoulder strap, the bight portion 61 of the adjustment bar is manually pushed so as to rotate legs 62, 63 whereupon tabs 68, 69 will move snubber bar 50 away from abutment wall 46 so as to unpinch lay 22 of shoulder strap 20 permitting the strap to be adjusted.

From the preceding description, it will be seen that the above-stated objects of the present invention are accomplished by the exemplary embodiment described. The advantages of ease of adjustability, inexpensive manufacture, appearance, convenience, as well as other desirable features can now be appreciated. It should be understood, however, by those skilled in the art, that the foregoing detailed explanation is exemplary only and various modifications, adaptations and variations of the exemplary safety belt adjustable anchor device may be made within the scope of the present invention which is defined by the following claims.

I claim:

1. In an anchor device for adjustably securing the restrained end of a safety belt to a vehicle including a frame with a top wall and a pair of spaced sidewalls,

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said top wall having an opening through which a safety belt may pass, one edge of which defines an abutment, and said sidewalls having aligned slots one end of which is adjacent the abutment, means mounting the frame to the vehicle, and a snubber bar extending between sidewalls and slidably mounted in said slots for movement therealong between a position away from said abutment and a normal position adjacent said abutment, said belt passing through said opening, around said snubber bar, and back through said opening, tension on said belt pulling the snubber bar to its normal position to hold the belt against further movement, the improvement comprising the provision of:

an adjustment bar having a bight portion from which two legs extend along the sidewalls of the frame to terminate at free ends, said sidewalls being provided with aligned holes therethrough at the free ends, axles extending from the free ends of the legs into the holes in the sidewalls of the frame so as to pivotally mount said bar and to space the bight portion of said bar from the top wall of the frame, and

tabs extending from the legs of the adjustment bar for engagement with the snubber bar, said tabs engaging the snubber bar in the normal position when the legs are generally perpendicular to the top wall, whereby manual movement of the bight portion pivots the adjustment bar, so that the tabs thereof move the snubber bar away from the normal position and free the belt for adjustment, and whereby tension on the belt moves the snubber bar to the normal position and the engagement of the snubber bar with the tabs moves the adjustment bar to the perpendicular position.

2. The improvement as in claim 1 wherein the sidewall slots are angularly disposed to the top wall generally following the arc about the pivot of the legs and wherein

the tabs extend from said legs of the adjustment bar into the slot to engage the snubber bar, the angular disposition of the slots permitting the tabs to move therein when the adjustment bar is pivoted without jamming against the sides of the slots.

3. The improvement as in claim 1 additionally comprising

a housing enclosing said frame and frame mounting means, said housing having openings through which the safety belt and adjustment bar pass, the edge of said adjustment bar opening being engaged by the adjustment bar in the perpendicular position to stop the adjustment bar from pivoting past said perpendicular position.

4. The improvement as in claim 1 wherein the top wall is spaced from the vehicle wall with the sidewalls extending therefrom to the vehicle wall to form a chamber with the vehicle wall and the mounting means includes a base wall adjacent the vehicle wall, a rearward wall, extending between the base wall and a top wall, and securing means securing the base wall to the vehicle wall to mount the frame thereto.

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