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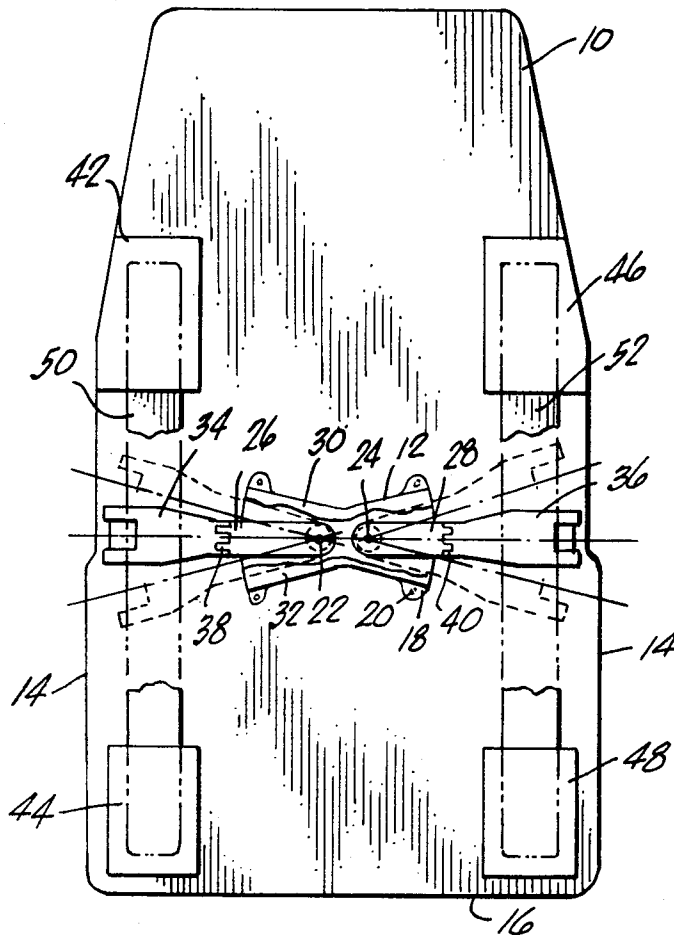
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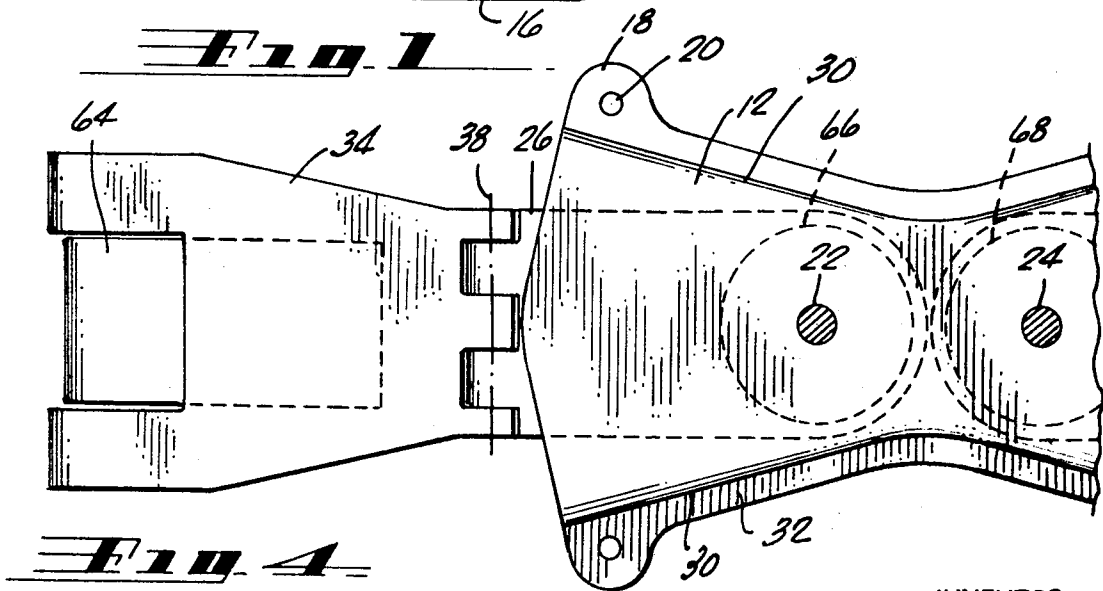
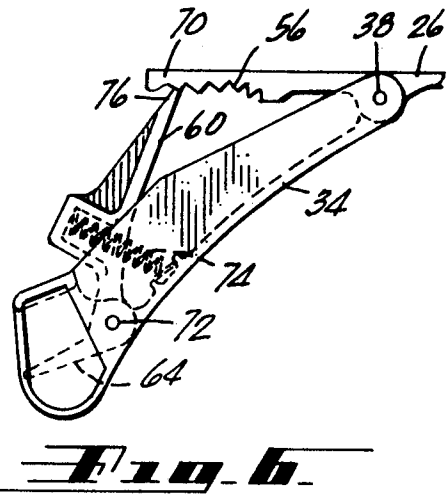
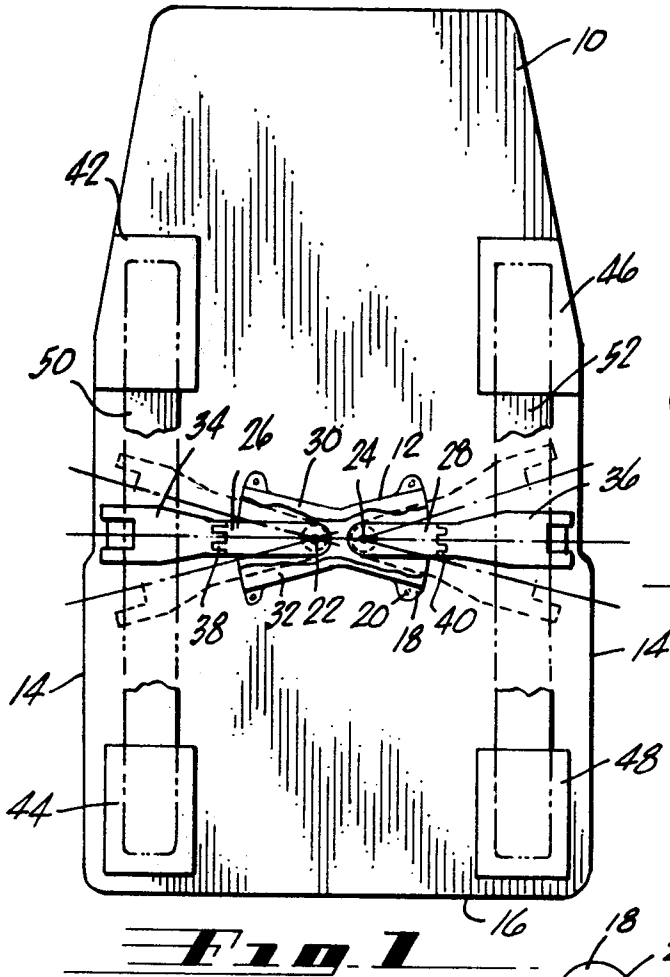
[54] **ADJUSTABLE BACK SUPPORT**
 7 Claims, 6 Drawing Figs.

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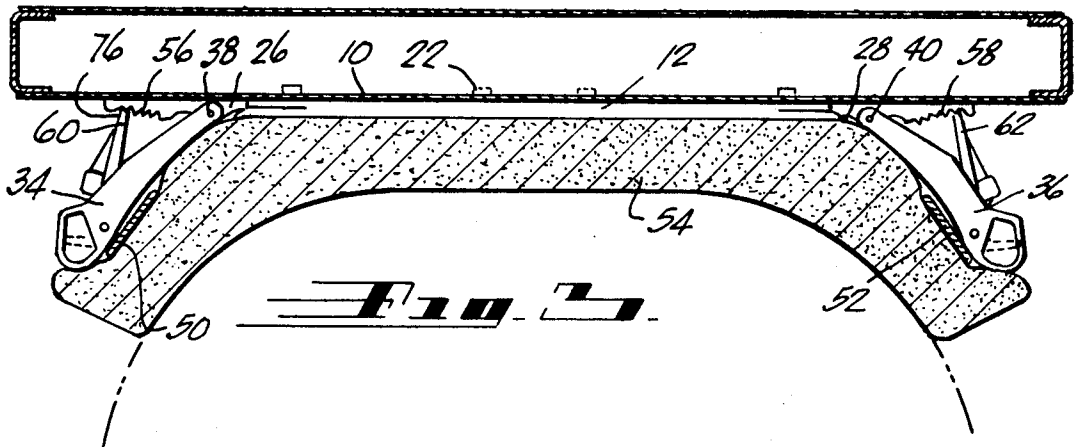
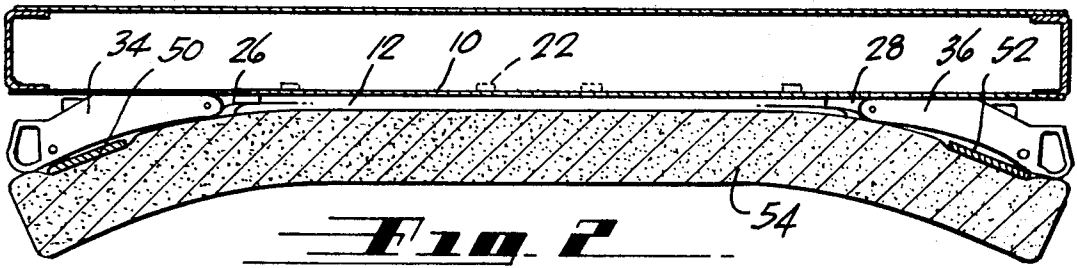
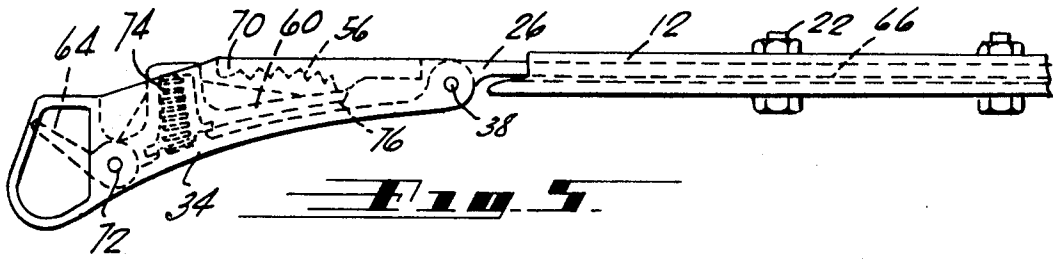
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ABSTRACT: A back support in which a change in contour is provided not only in the front to rear plane but also vertical adjustment is provided to match the contour of the back of the seat occupant. Two arms are attached to a mounting plate secured to the seat back structure behind the cushion. These arms have outer end supports which pivot in a horizontal plane from front to rear to vary the "wrap-around" curvature of the back support. The arms also are tiltable vertically to adjust the contour to fit. Vertical resilient stays are provided within the seat cushion adjacent the hinged arms to spread the cradling effect on the cushion over a satisfactory distance.





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ADJUSTABLE BACK SUPPORT

BACKGROUND OF THE INVENTION

The contour of seat back supports are comfortable for some occupants while uncomfortable to others, due to anatomical differences. The area of concern is that referred to as the "small of the back." Since it is impossible to provide fixed padding to match all anatomies, various means to provide cushion contour adjustment have been attempted. Some are elaborate, complex and inconvenient to adjust while others simply are not suitable to provide for the desired comfort.

SUMMARY OF THE PRESENT INVENTION

The adjustable back support comprising the present invention provides for a readily adjustable cushion contour front to rear and the change in contour may also be easily adjusted vertically as required to match the contour of the seat occupant.

A mounting plate is rigidly attached to the seat back structure behind the cushion. A pair of arms are pivotally attached to the mounting plate for limited vertical movement. Each arm has a hinged outer end support movable in a horizontal plane, front to rear. A spring loaded ratchet is provided in each hinged outer arm end, to hold the outer end in the desired cradling position. A seat back cushion is installed over this support. When the outer end supports of the arms are moved forward, the cushion ends are moved forward, cradling the occupant's torso. Raising or lowering the arms about their pivot points will determine where the cradling is produced vertically, as desired by the occupant.

Since the width of the outer end supports is not great, an undesirable localized contour in the cushion would result when the support is moved forward to wrap the cushion around the occupant. To eliminate this condition, a vertical resilient stay is retained in pockets incorporated in the back of the cushion upholstery cover — one at each edge in line with the outer arms of the supports of the contour changer. When the outer end arms are moved forward, the stays bow and spread the cradling effect on the cushion over a satisfactory vertical distance.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of the seat back without the cushion;

FIG. 2 is a plan view of the seat back with the support in retracted position;

FIG. 3 is a plan view of the seat back with the support in extended position;

FIG. 4 is a front elevational view of a portion of the mounting plate with one arm and outer end affixed thereto;

FIG. 5 is a plan view of an outer endpiece in retracted position connected to an arm; and

FIG. 6 is a plan view of an outer endpiece in extended position.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENT

Reference is now made to FIG. 1 wherein there is shown a seat back structure 10 having a mounting plate 12 fastened to the front surface thereof midway between the side edges 14 and above the bottom edge 16 to a position of proximity to the small of the back of the seat occupant. The seat portion upon which an occupant is to sit is not shown. Mounting plate 12 has mounting ears 18 with apertures 20 therein to receive screws, bolts or other fastening means.

Pivotally mounted at spaced points 22, 24 are a pair of arms 26, 28 adapted for limited rotation in a vertical plane between limit stops 30 and 32. Hingedly connected to the outer ends of arms 26, 28 are outer end supports 34, 36 which extend outwardly almost to the side edges 14 of the seat back structure. These supports 34, 36 may pivot vertically about pivot points 22, 24 and may pivot horizontally through hingelines 38, 40.

Lines 42, 44 46 and 48 illustrate pockets to which fit the ends of resilient stays 50, 52. These pockets are on the back surface of the seat back cushion not shown in this view. The lines indicate their position when assembled. These stays 50, 52 provide a more gradual contour change when the outer end supports 34, 36 are moved to their extended position.

The function and operation of the adjustable back support can be seen when reference is made to FIG. 2 and FIG. 3. Here can be seen mounting plate 12 fastened to seat back structure 10. End supports 34, 36 hingedly connected to arms 26, 28 extend forward somewhat, in FIG. 2, to impart a gentle curve to back cushion 54. Stays 50 and 52 are attached to the back side of cushion 54.

In FIG. 3 the end supports 34, 36 are extended forwardly to adjust the cushion contour to that of the seat occupant. These supports are held in this position by a spring-biased ratchet structure including teeth 56, 58 on arms 26, 28 outwardly of hinge pivots 38, 40 and cooperating tangs 60, 62 pivotally connected to supports 34, 36.

An enlarged view of the mounting plate 12, arm 26 and outer end support 34 is shown in FIG. 4. This structure has previously been described except for release handle 64 which is used to retract support 34 and thus release the ratchet mechanism, and the use of friction pads 66, 68 between the arms and mounting plate to maintain the arms in the desired vertical position.

The ratchet mechanism is shown in greater detail in FIGS. 5 and 6. Outer end support 34 is pivotally connected to arm 26 at point 38 inwardly from end 70 of arm 26. Ratchet teeth 56 extend inwardly from end 70. Tang 60 is pivotally mounted at 72 on support 34 and has a biasing spring 74 continuously urging end 76, counterclockwise in these views. Thus, as outer end support 34 is manually pulled forward by the seat occupant, end 76 of tang 60 engages teeth 56 to maintain the outer end support in extended position, such as is shown in FIGS. 3 and 6.

The outer end support 34 may be returned to its retracted position by rearward depression of handle 64, in the form shown. Alternately, a clockwise rotation of tang 60 by the occupant will free its end 76 from teeth 56 and permit rearward movement of the support to its retracted position.

Having described an illustrative embodiment of the present invention, it is to be understood that other embodiments will occur to those skilled in the art and that these modifications are to be construed as part of the present invention.

I claim:

1. An adjustable back support comprising a mounting plate for attachment to a seat back structure, a pair of arms pivotally mounted on said plate for limited movement in a substantially vertical plane, each of said arms having outer end supports pivotally mounted thereon for movement in a substantially horizontal plane, biased ratchet means for adjustably positioning said outer end supports in multiple extending positions forwardly of said back structure, and a back support cushion positioned over said plate, arms and outer end supports, whereby the contour of said cushion can be changed and the position of contour change may be adjusted vertically.
2. An adjustable back support as in claim 1 wherein said cushion has vertically positioned resilient stays affixed to the rear surface thereof in line with said outer end supports whereby, upon extending said outer end supports forwardly, said stays will bow and spread the cradling effect on said cushion to produce gradual contour change.
3. An adjustable back support as in claim 2 wherein said cushion has vertically spaced pockets on the rear surface thereof to receive the ends of said stays.
4. An adjustable back support as in claim 1 wherein said plate has limit stops to limit vertical movement of said arms.
5. An adjustable back support as in claim 1 wherein said cushion is attached to said seat back structure intermediate the ends of said cushion.

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6. An adjustable back support as in claim 1 wherein said outer end supports are connected to said arms at points intermediate the outer ends of said arms, and wherein said ratchet means includes teeth on said arms and tangs pivotally mounted on said outer end supports engageable with said teeth to adjustably maintain said end supports in extended

positions forwardly of said arms.

7. An adjustable back support as in claim 6 wherein said tangs have outer ends pivotally connected to said outer end supports and inner ends engageable with said teeth, and spring means urging said inner ends into contact with said teeth.

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