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(54) **HEADREST MOUNTING PLATE, SEAT
HEADREST, AND PASSENGER SEAT WITH
HEADREST**

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(76) **Inventor: Trevor B. Skelly, Winston-Salem, NC
(US)**

(57) **ABSTRACT**

Correspondence Address:
Adams, Schwartz & Evans, P.A.
2180 Two Wachovia Center
Charlotte, NC 28282 (US)

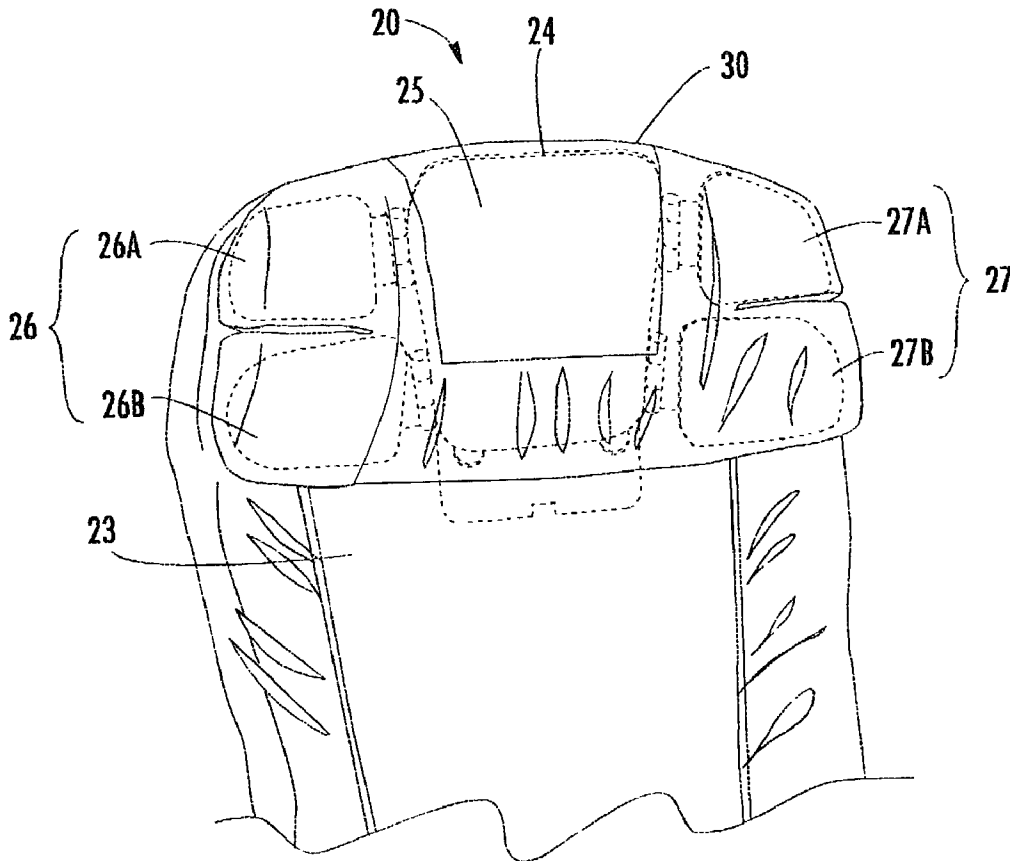
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An adjustable headrest mounting plate for a seat, including a base for being attached to a seat back of the seat, and first and second pairs of side head supports mounted on the base and extending laterally away from the base. Each of the pairs of side head supports includes an upper side head support and a lower side head support. The upper side head support and lower side head support of each of the first and second pairs of side head supports are mounted on the base for independent fore and aft movement as desired by the passenger.



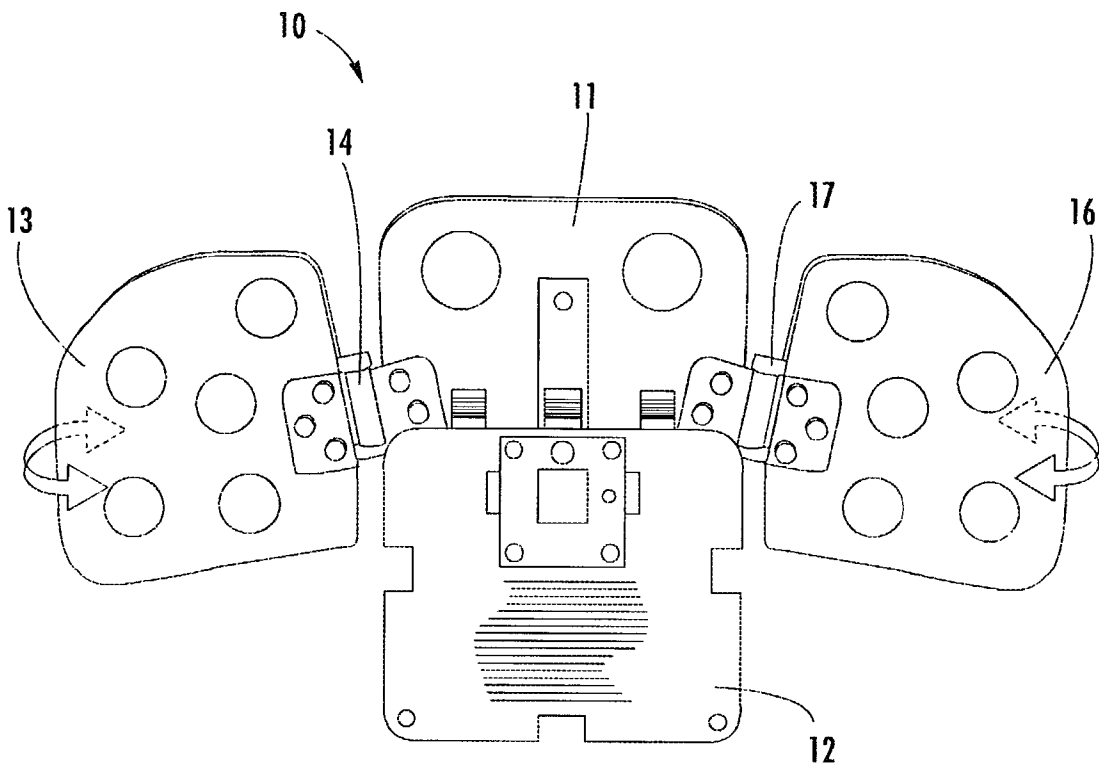


FIG. 1.
PRIOR ART

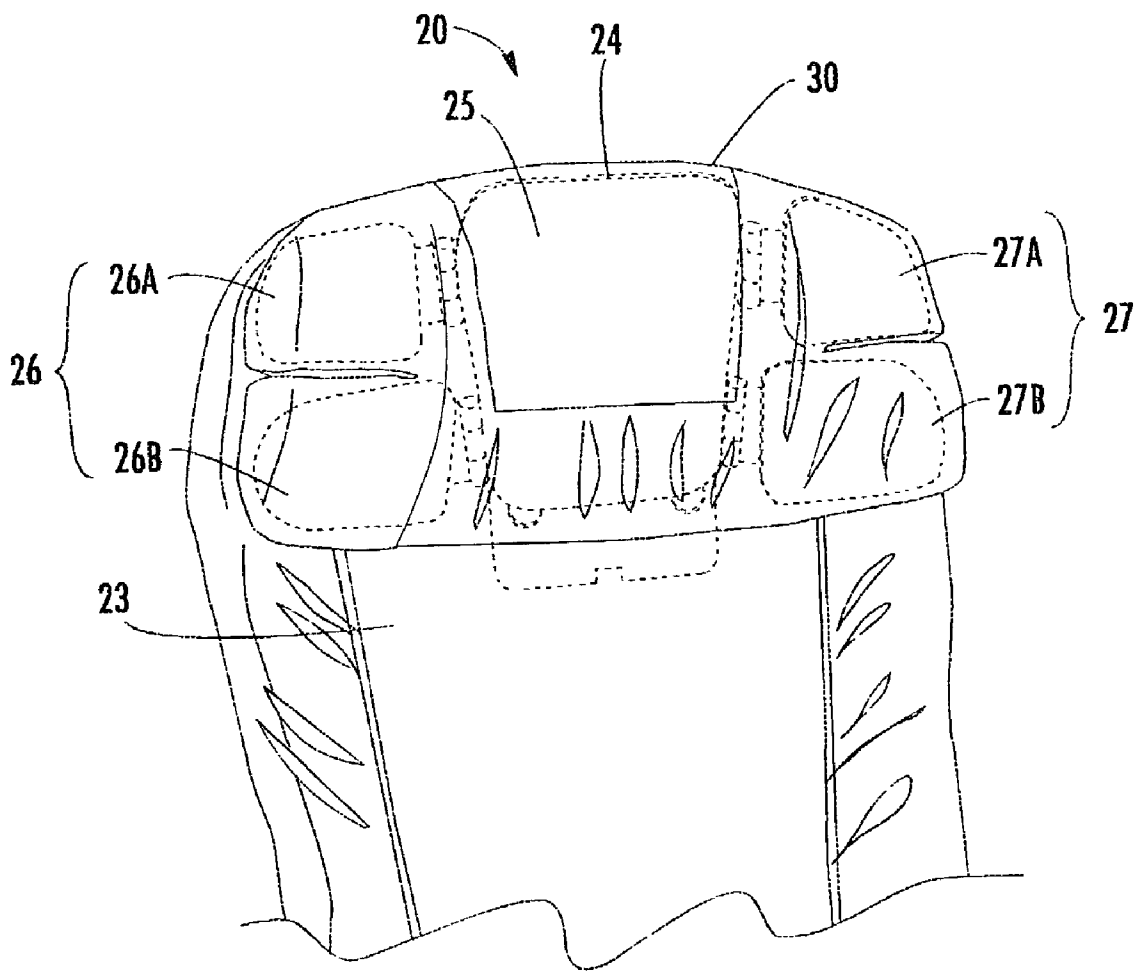


FIG. 2.

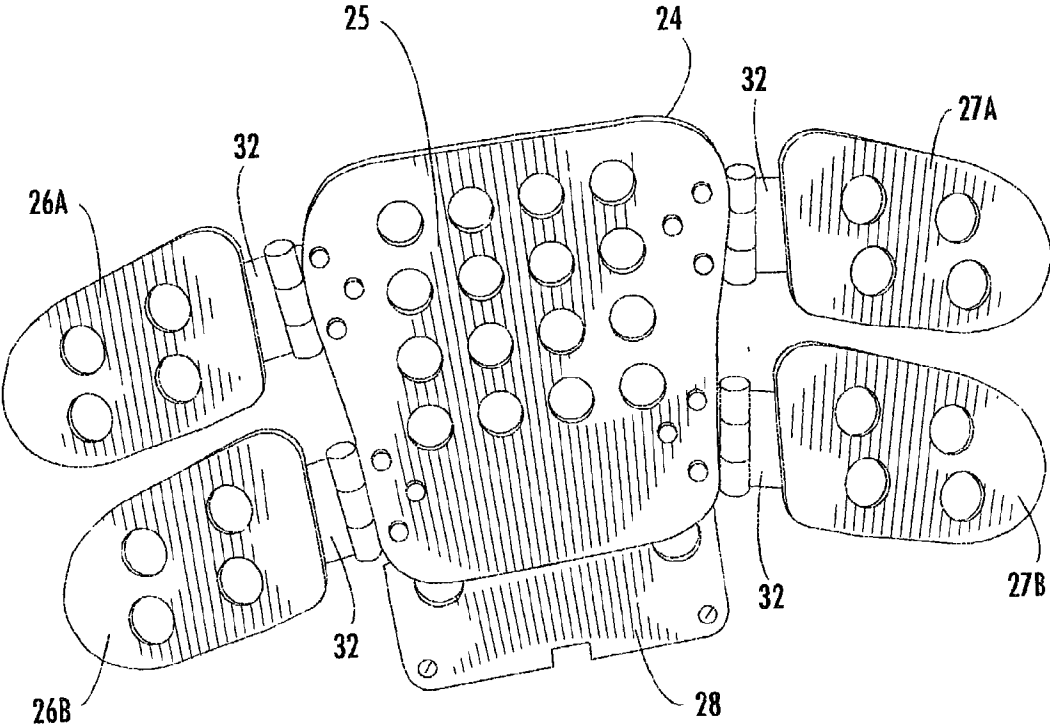


FIG. 3.

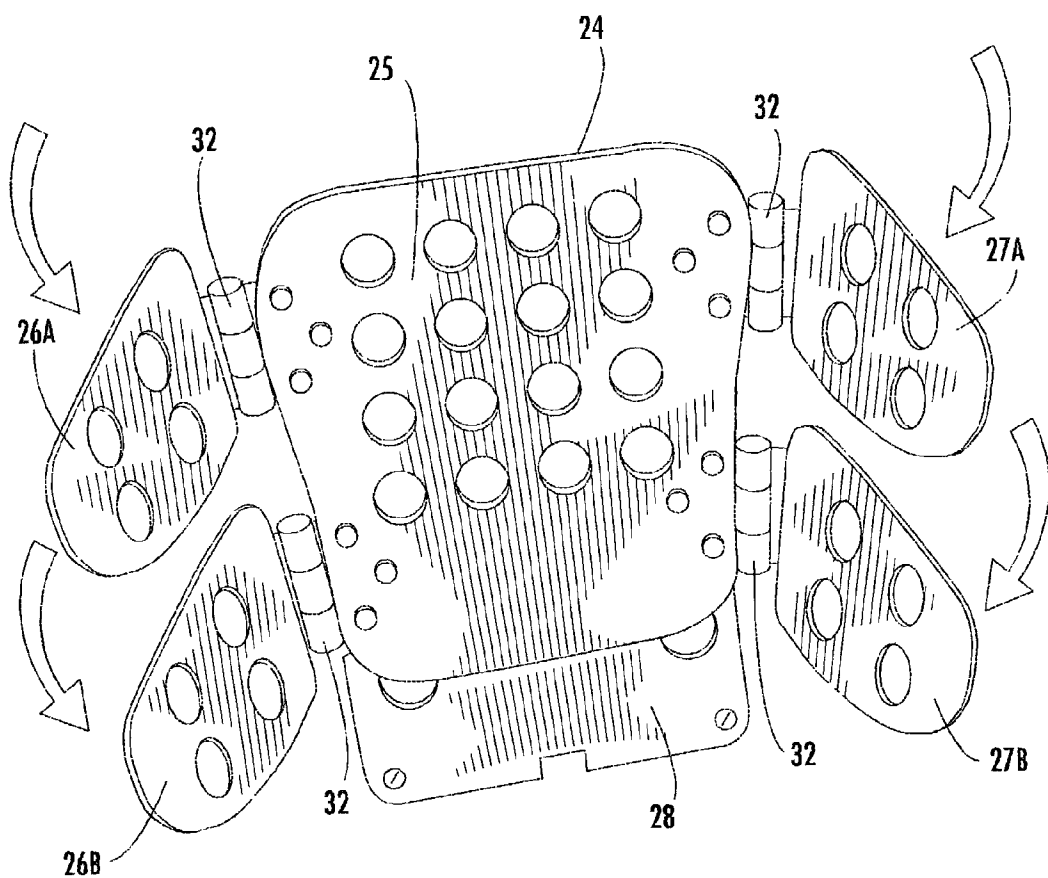


FIG. 4.

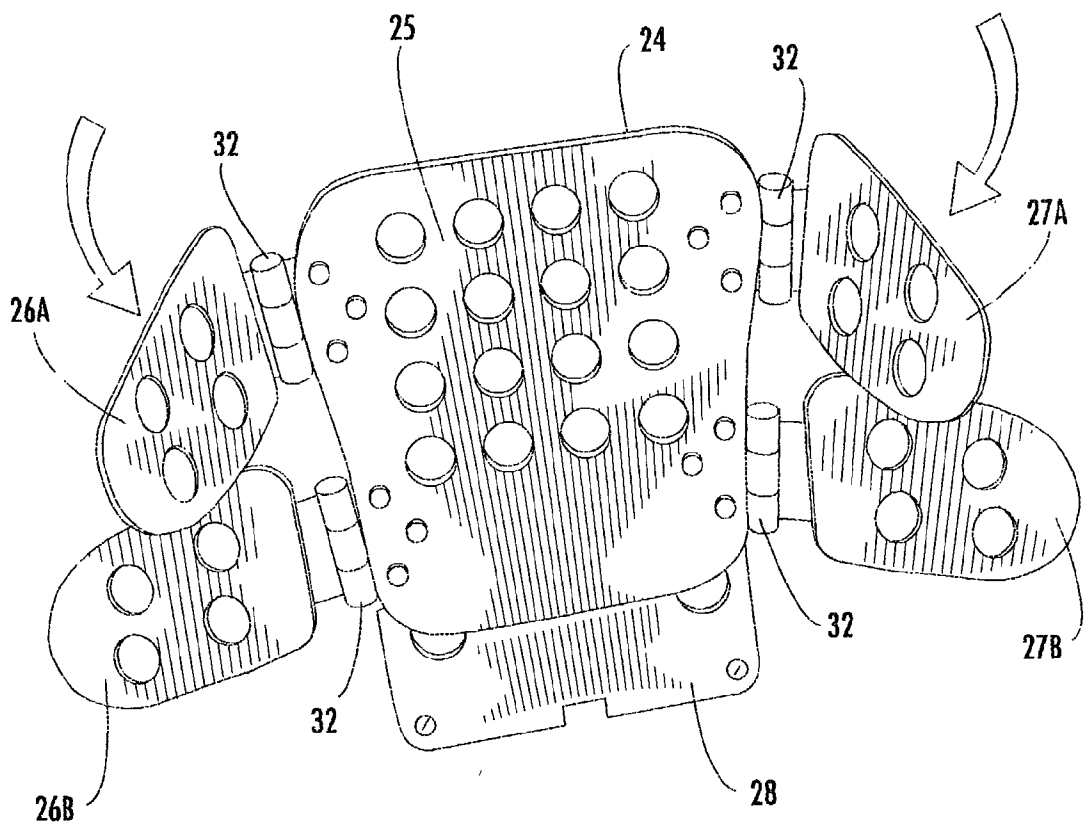


FIG. 5.

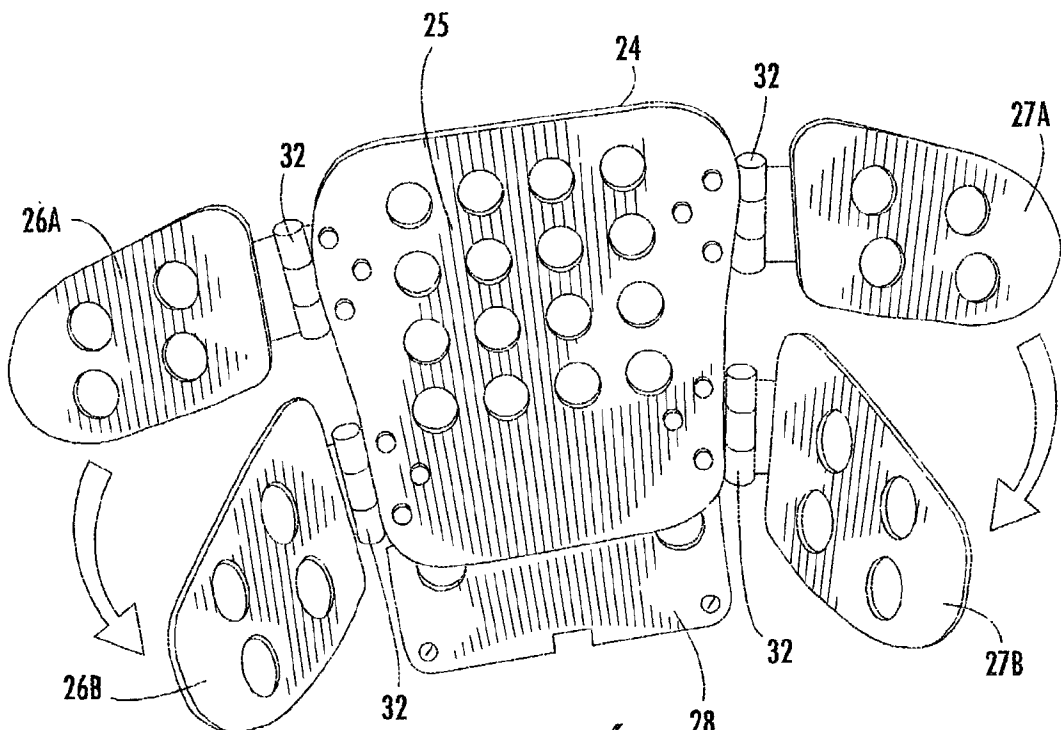
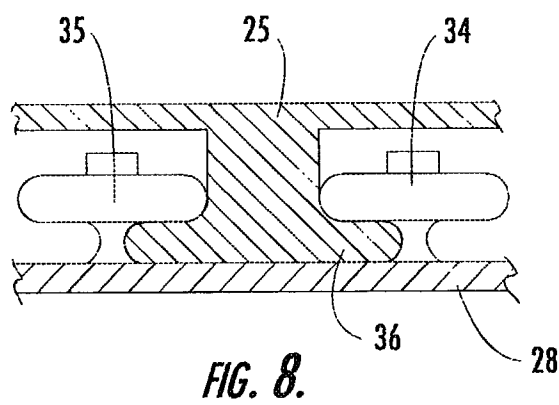
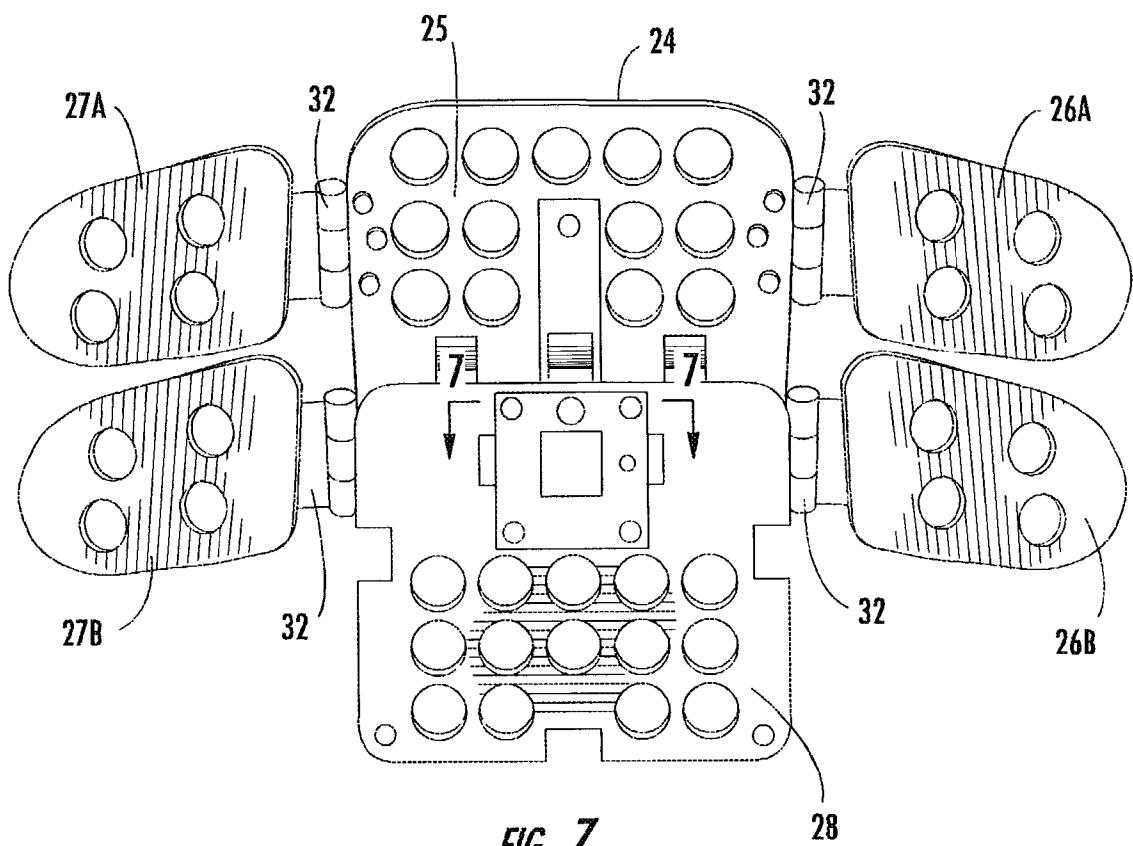


FIG. 6.



HEADREST MOUNTING PLATE, SEAT HEADREST, AND PASSENGER SEAT WITH HEADREST

TECHNICAL FIELD AND BACKGROUND OF THE INVENTION

[0001] This invention relates to a headrest mounting plate for a seat. The mounting plate is used as a frame or armature onto which are placed padding and upholstery to form a comfortable headrest which can be adjusted as needed by a seat occupant, for example, a passenger. The invention has particular application to aircraft passenger seats such as long haul first class or business class seats where a passenger may desire adjustment of the headrest for comfort during long trips.

[0002] FIG. 1 illustrates a prior art headrest mounting plate manufactured by Enpro Engineered Products.

[0003] The invention disclosed in this application permits a wider degree of adjustment for a wider range of passenger sizes.

SUMMARY OF THE INVENTION

[0004] Therefore, it is an object of the invention to provide an adjustable headrest mounting plate.

[0005] It is another object of the invention to provide an adjustable headrest mounting plate with a wide range of adjustment than with known headrest mounting plates.

[0006] It is another object of the invention to provide an adjustable headrest mounting plate which has upper and lower, independently adjustable head supports.

[0007] These and other objects of the present invention are achieved in the preferred embodiments disclosed below by providing an adjustable headrest mounting plate for a seat, comprising a base for being attached to a seat back of the seat, and first and second pairs of side head supports mounted on the base and extending laterally away from the base. Each of the pairs of side head supports comprises an upper side head support and a lower side head support. The upper side head support and lower side head support of each of the first and second pairs of side head supports are mounted on the base for independent fore and aft movement as desired by the passenger.

[0008] According to one preferred embodiment of the invention, the base is adapted to be mounted on the seat back for vertical adjustable movement relative to the seat back.

[0009] According to another preferred embodiment of the invention, the upper side head support and lower side head support of each of the first and second pairs of side head supports are pivotally mounted on the base by respective pivot joints for independent fore and aft movement.

[0010] According to yet another preferred embodiment of the invention, the pivot joints are friction-loaded for retaining the side head supports in a desired location and for permitting movement of one or more of the side head supports to a different desired location by application of sufficient force on the side head support to overcome the friction-loading.

[0011] According to yet another preferred embodiment of the invention, the base is mounted on the seat back for vertical adjustable movement relative to the seat back.

[0012] According to yet another preferred embodiment of the invention, the upper side head support and lower side head support of each of the first and second pairs of side head supports are pivotally mounted on the base by pivot joints for independent fore and aft movement.

[0013] According to yet another preferred embodiment of the invention, the seat is an aircraft passenger seat.

[0014] According to yet another preferred embodiment of the invention, the seat includes a seat base, a seat bottom and a seat back to which the base of the headrest is attached.

[0015] According to yet another preferred embodiment of the invention, an adjustable headrest for an aircraft passenger seat is provided, and comprises a headrest mounting plate that includes a base for being attached to a seat back of the seat and first and second pairs of side head supports mounted on the base and extending laterally away from the base. Each of the pairs of side head supports comprises an upper side head support and a lower side head support. The upper side head support and lower side head support of each of the first and second pairs of side head supports are mounted on the base for independent fore and aft movement as desired by the passenger. Padding is applied at least to passenger contact surfaces of the headrest mounting plate, and upholstery is applied over the padding.

[0016] According to yet another preferred embodiment of the invention, an aircraft passenger seat is provided, and comprises a seat base for being attached to a deck of an aircraft, a seat bottom and seat back carried by the seat base, and an adjustable headrest mounted adjacent an upper end of the seat back for supporting the head of a passenger. The headrest comprises a headrest mounting plate that includes a base for being attached to a seat back of the seat. First and second pairs of side head supports are mounted on the base and extend laterally away from the base. Each of the pairs of side head supports comprises an upper side head support and a lower side head support. The upper side head support and lower side head support of each of the first and second pairs of side head supports are mounted on the base for independent fore and aft movement as desired by the passenger. Padding is applied at least to passenger contact surfaces of the headrest mounting plate, upholstery is applied over the padding.

[0017] According to yet another preferred embodiment of the invention, an adjustable headrest mounting plate for a seat comprises a base for being attached to a seat back of the seat, and first and second pairs of side head supports. Each of the pairs of side head support comprise an upper side head support and a lower side head support. Mounting means are provided for mounting the upper and lower side head supports independently to the base for selective independent fore and aft movement of the upper and lower side head supports relative to the base as desired by the passenger.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Some of the objects of the invention have been set forth above. Other objects and advantages of the invention will appear as the description proceeds when taken in conjunction with the following drawings, in which:

[0019] FIG. 1 is a prior art headrest mounting plate;

[0020] FIG. 2 is a fragmentary view of a passenger seat with a headrest according to an embodiment of the invention;

[0021] FIG. 3 is a perspective view of a headrest mounting plate according to an embodiment of the invention;

[0022] FIG. 4 is a perspective view of the headrest mounting plate of FIG. 3 in one adjustment position;

[0023] FIG. 5 is a perspective view of the headrest mounting plate of FIG. 3 in another adjustment position;

[0024] FIG. 6 is a perspective view of the headrest mounting plate of FIG. 3 in a further adjustment position;

[0025] FIG. 7 is a perspective view of the back side of the headrest mounting plate shown in FIG. 2;

[0026] FIG. 8 is a cross-section taken along line 7-7 of FIG. 7.

DESCRIPTION OF THE PREFERRED EMBODIMENT AND BEST MODE

[0027] Referring now specifically to the drawings, a headrest mounting plate according to the prior art is illustrated in FIG. 1 and shown generally at reference numeral 10. The mounting plate 10 includes a base 11 attached for vertical sliding movement on a mounting bracket 12 that is affixed to the seat back of a seat. A single side head support 13 is mounted by means of a friction joint 14 to base 11, and a single side head support 16 is mounted by means of a friction joint 17 to the opposite side of base 11. The mounting plate 10 is shown from the rear, so that adjustment by increasing the angle between the base 11 and either of the head supports 13 or 16 would take place by pivoting the head supports 13 or 16 away from the mounting bracket 12.

[0028] The prior art headrest mounting plate 10 permits the passenger to increase or decrease the amount of support offered to the side of the head, however, the range of adjustment is limited to the relatively small amount of vertical movement of the base 11 relative to the mounting bracket 12. Furthermore, the support offered is of necessity to the side of the head, rather than the upper or lower part of the head.

[0029] Referring now to FIG. 2, the relevant portion of a passenger seat 20 is shown, and includes a seat back 23 within which is positioned a headrest mounting plate 24, shown in phantom lines. A headrest base 25 supports the head of the passenger when the passenger is reclined against the seat back with the head facing generally forward. In accordance with the invention, the headrest mounting plate 25 includes first and second pairs of side head supports 26 and 27. Each of the pairs of side head supports 26, 27 include an upper side head support 26A, 27A and a lower side head support 26B, 27B, and are covered by appropriate padding and upholstery, as shown to define a headrest 30. As explained in further detail below, each of the head supports 26A, 26B, 27A, 27B are independently mounted for pivot movement by the passenger to achieve a comfortable head position. For example, a tall passenger may choose to utilize the upper side supports 26A, 27A by moving them forwardly to support the head, while leaving the lower side supports 26B, 27B aligned with the seat back 23 in order to avoid impinging on the shoulders. Conversely, a shorter passenger may choose to use only the lower head supports 26B, 27B, while leaving the upper side supports 26A, 27A aligned with the seat back 23 in order to avoid mussing his or her hair, or

to be cooler by leaving the upper portion of the head out of contact with the headrest 30 while the lower portion is fully and comfortably supported.

[0030] Referring now to FIG. 3, the headrest mounting plate 24 is shown in further detail without the covering of padding and upholstery. The base 24 is formed of aircraft aluminum with cut-outs to reduce weight. Base 24 is mounted for vertical sliding movement, see FIG. 8, on a mounting bracket 28 which, in turn, is mounted to the forward side of the seat back 23 beneath the padding and upholstery. The upper side head supports 26A, 27A and the lower side head supports 26B, 27B also includes weight-reducing cut-outs, and are pivotally mounted to the base 25 by means of hinges in the form of friction pivot joints 32. The pivot joints 32 are friction-loaded and retain the side head supports 26A, 26B, 27A, 27B in a desired location, but permit movement to a different desired location by application of sufficient force to overcome the friction-loading.

[0031] As is shown in FIG. 4, all of the side head supports 26A, 26B, 27A, 27B may be moved forward in alignment with other to collectively define a relatively narrow space within which the head is positioned.

[0032] Alternatively, as is shown in FIG. 5, the upper side head supports 26A, 27A, may be moved forward, while the lower side head supports 26B, 27B may be left rearwardly in alignment with the seat back 23. As mentioned above, this permits a tall person to have full head support without impinging on the shoulders.

[0033] A further alternative is shown in FIG. 6k where the upper side head supports 26A, 27A, may be moved rearwardly, while the lower side head supports 26B, 27B may be moved forward. As mentioned above, this permits a short person to support the side of the head without the top of the head being covered.

[0034] FIG. 7 shows the rear side of the headrest mounting plate 24, and FIG. 8 provides one means by which the base 25 may be mounted for vertical movement on the mounting bracket 28. Friction rollers 34, 35 rotate against a vertically-extending guide 36. The frictional resistance of the rollers is 34, 35 is sufficient to retain the base 25 in the desired vertical location, but will allow movement of the base 25 upon application of sufficient force.

[0035] Other means may be used to mount the upper and lower side head supports 26A, 27A, 26B, 27B to the base 25. These include the use of a universal joint, such as a ball and socket, or cylinder and socket, thus allowing the upper and lower side head supports to move up and down within a range of motion, and to rotate about a generally horizontal axis. The base 25 can be provided with means to tilt fore and aft in a vertical plane to provide further a further range of motion, or can be divided into multiple plates, each moveable about one or more axes as necessary to provide the required range of motion. In such an arrangement, the upper and lower side head supports may be themselves still mounted for adjusting movement, or the adjusting movement can be provided by the multiple plates.

[0036] A headrest mounting plate, passenger seat headrest and passenger seat are described above. Various details of the invention may be changed without departing from its scope. Furthermore, the foregoing description of the preferred embodiment of the invention and the best mode for

practicing the invention are provided for the purpose of illustration only and not for the purpose of limitation—the invention being defined by the claims.

I claim:

1. An adjustable headrest mounting plate for a seat, comprising:

- (a) a base for being attached to a seat back of the seat;
- (b) first and second pairs of side head supports mounted on the base and extending laterally away from the base, each of said pairs of side head supports comprising an upper side head support and a lower side head support;
- (c) the upper side head support and lower side head support of each of the first and second pairs of side head supports being mounted on the base for independent fore and aft movement as desired by the passenger.

2. An adjustable headrest mounting plate according to claim 1, wherein said base is adapted to be mounted on the seat back for vertical adjustable movement relative to the seat back.

3. An adjustable headrest mounting plate according to claim 1, wherein the upper side head support and lower side head support of each of the first and second pairs of side head supports are pivotally mounted on the base by respective pivot joints for independent fore and aft movement.

4. An adjustable headrest mounting plate according to claim 3, wherein said pivot joints are friction-loaded for retaining the side head supports in a desired location and for permitting movement of one or more of the side head supports to a different desired location by application of sufficient force on the side head support to overcome the friction-loading.

5. An adjustable headrest mounting plate according to claim 1, wherein said base is mounted on the seat back for vertical adjustable movement relative to the seat back, and wherein the upper side head support and lower side head support of each of the first and second pairs of side head supports are pivotally mounted on the base by pivot joints for independent fore and aft movement.

6. An adjustable headrest mounting plate according to claim 1, 2, 3, 4 or 5, wherein said seat is an aircraft passenger seat.

7. An adjustable headrest mounting plate according to claim 6, wherein said seat includes a seat base, a seat bottom and a seat back to which the base of the headrest is attached.

8. An adjustable headrest for an aircraft passenger seat, comprising:

- (a) a headrest mounting plate, comprising:
 - (i) a base for being attached to a seat back of the seat;
 - (ii) first and second pairs of side head supports mounted on the base and extending laterally away from the base, each of said pairs of side head supports comprising an upper side head support and a lower side head support;
 - (iii) the upper side head support and lower side head support of each of the first and second pairs of side head supports being mounted on the base for independent fore and aft movement as desired by the passenger;
- (b) padding applied at least to passenger contact surfaces of the headrest mounting plate; and
- (c) upholstery applied over the padding.

9. An adjustable headrest according to claim 8, wherein said base is adapted to be mounted on the seat back for vertical adjustable movement relative to the seat back.

10. An adjustable headrest according to claim 8, wherein the upper side head support and lower side head support of each of the first and second pairs of side head supports are pivotally mounted on the base by respective pivot joints for independent fore and aft movement.

11. An adjustable headrest according to claim 10, wherein said pivot joints are friction-loading for retaining the side head supports in a desired location and for permitting movement of one or more of the side head supports to a different desired location by application of sufficient force on the side head support to overcome the friction-loading.

12. An adjustable headrest according to claim 8, wherein said base is mounted on the seat back for vertical adjustable movement relative to the seat back, and wherein the upper side head support and lower side head support of each of the first and second pairs of side head supports are pivotally mounted on the base by pivot joints for independent fore and aft movement.

13. A aircraft passenger seat, comprising:

- (a) a seat base for being attached to a deck of an aircraft;
- (b) a seat bottom and seat back carried by the seat base;
- (c) an adjustable headrest mounted adjacent an upper end of the seat back for supporting the head of a passenger, and comprising:
 - (i) a headrest mounting plate, comprising:
 - (a) a base for being attached to a seat back of the seat;
 - (b) first and second pairs of side head supports mounted on the base and extending laterally away from the base, each of said pairs of side head supports comprising an upper side head support and a lower side head support;
 - (c) the upper side head support and lower side head support of each of the first and second pairs of side head supports being mounted on the base for independent fore and aft movement as desired by the passenger;
 - (ii) padding applied at least to passenger contact surfaces of the headrest mounting plate;
 - (iii) upholstery applied over the padding.

14. An aircraft passenger seat according to claim 13, wherein said base is adapted to be mounted on the seat back for vertical adjustable movement relative to the seat back.

15. An aircraft passenger seat according to claim 13, wherein the upper side head support and lower side head support of each of the first and second pairs of side head supports are pivotally mounted on the base by respective pivot joints for independent fore and aft movement.

16. An aircraft passenger seat according to claim 15, wherein said pivot joints are friction-loaded for retaining the side head supports in a desired location and for permitting movement of one or more of the side head supports to a different desired location by application of sufficient force on the side head support to overcome the friction-loading.

17. An aircraft passenger seat according to claim 13, wherein said base is mounted on the seat back for vertical adjustable movement relative to the seat back, and wherein the upper side head support and lower side head support of each of the first and second pairs of side head supports are pivotally mounted on the base by pivot joints for independent fore and aft movement.

18. An adjustable headrest mounting plate for a seat, comprising:

- (a) a base for being attached to a seat back of the seat; and
- (b) first and second pairs of side head supports, each of said pairs of side head support comprising an upper side head support and a lower side head support;
- (c) mounting means for mounting the upper and lower side head supports independently to the base for selective independent fore and aft movement of the upper and lower side head supports relative to the base as desired by the passenger.

* * * * *