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(54) **VEHICLE SEATING WITH PRIVACY DIVIDER**

Related U.S. Application Data

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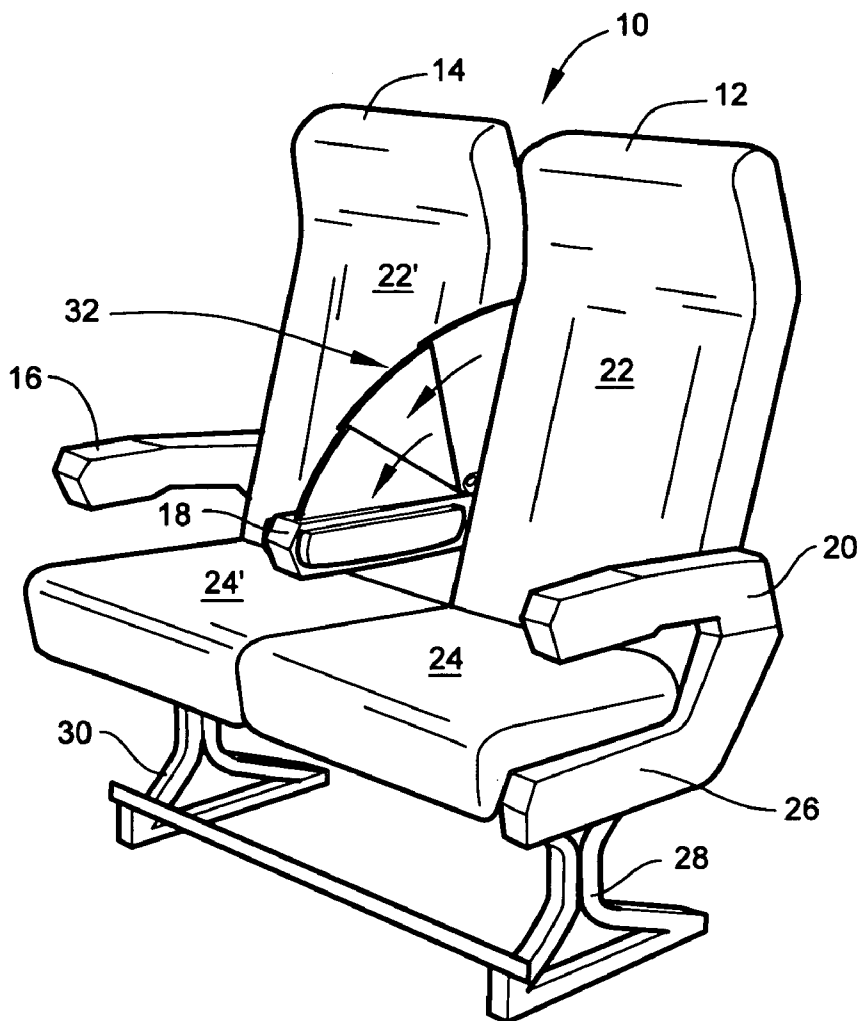
(57) **ABSTRACT**

An armrest apparatus for a passenger seat includes a longitudinally-extending center armrest adapted to be disposed between side-by-side first and second seats, and a privacy divider. The divider is moveable between a stowed position wherein an upper surface of the center armrest is accessible by an occupant of the first or second seat, and a deployed position wherein the divider extends to the center armrest and forms a generally vertically extending wall between occupants of the first and second seats. The privacy may include a plurality of linked panels.

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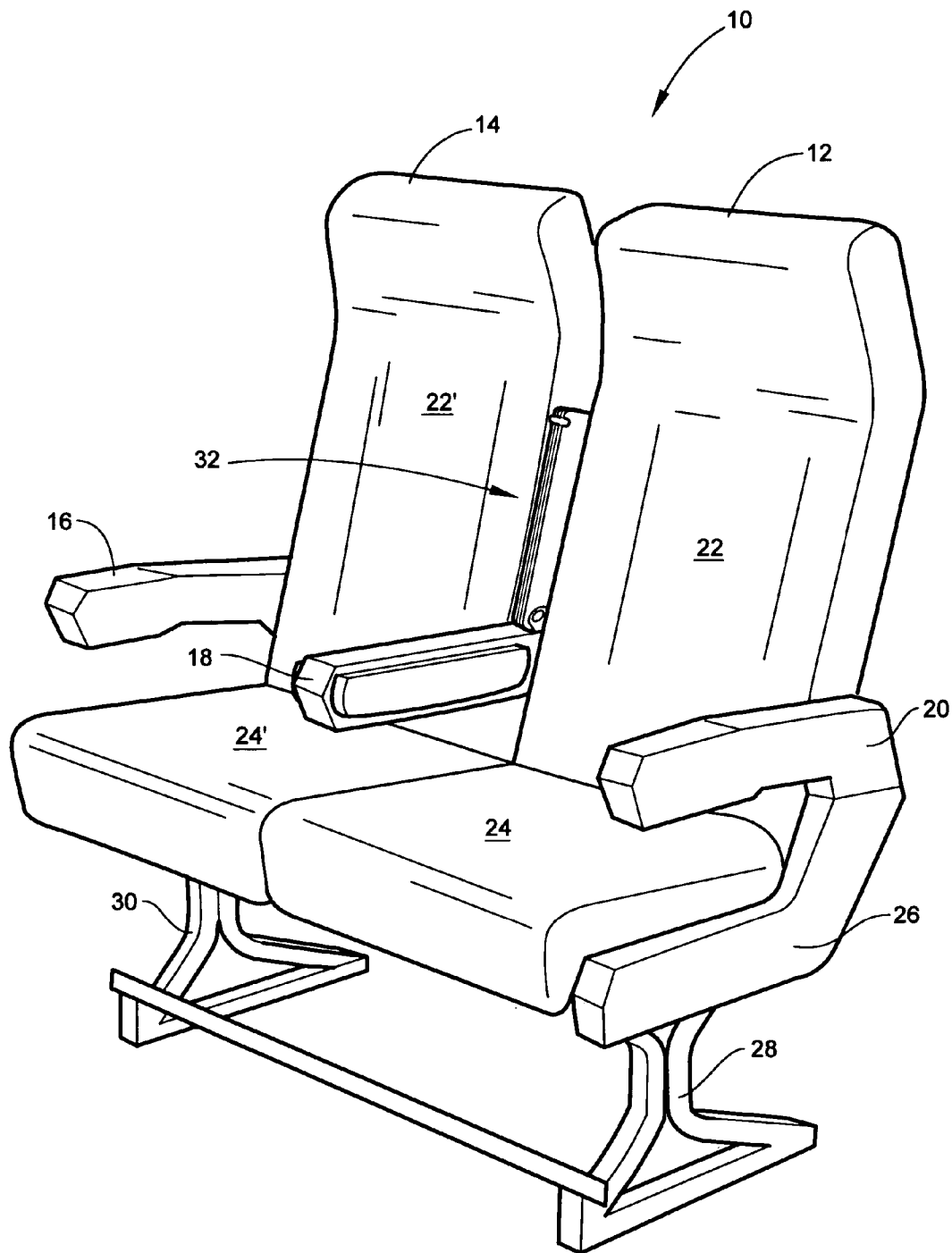
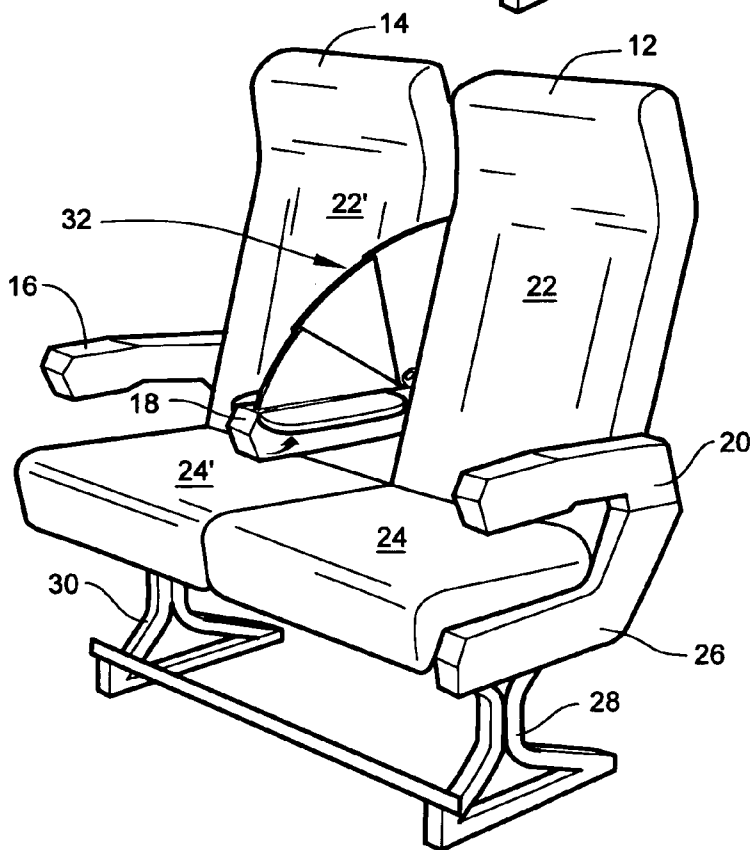
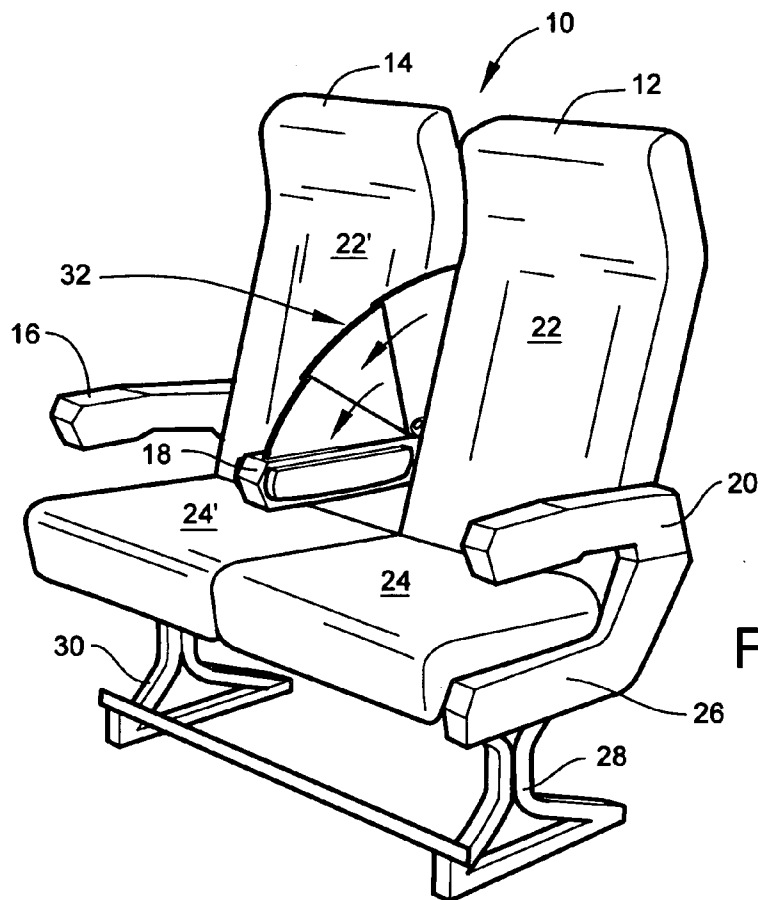


Fig. 1



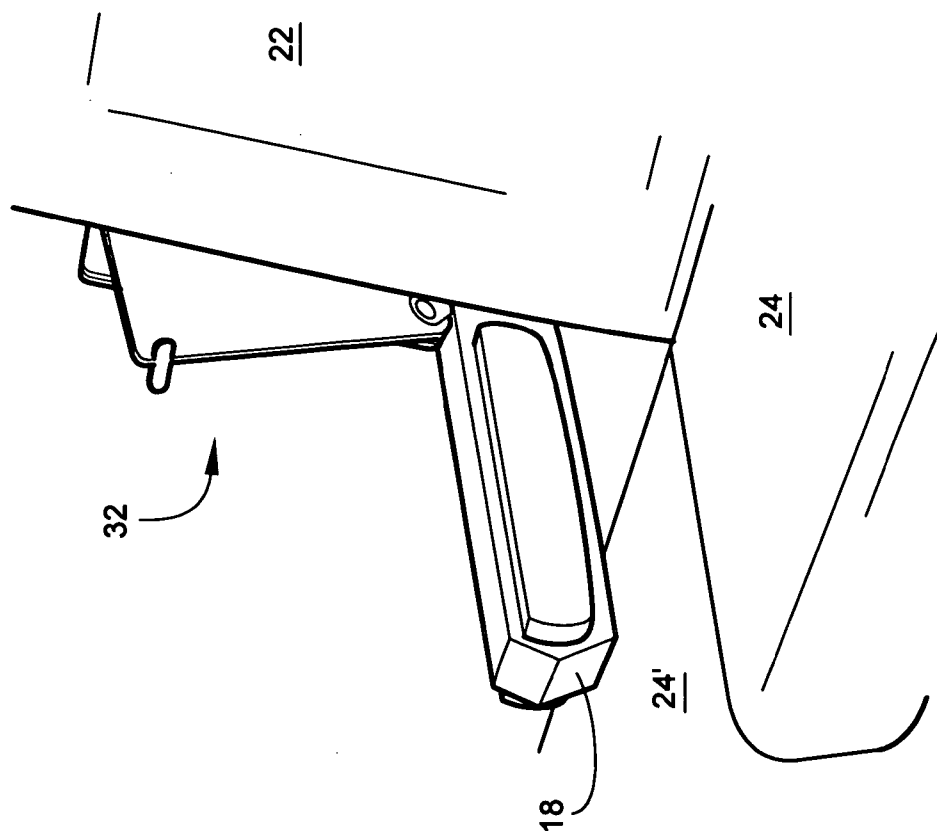


Fig. 5

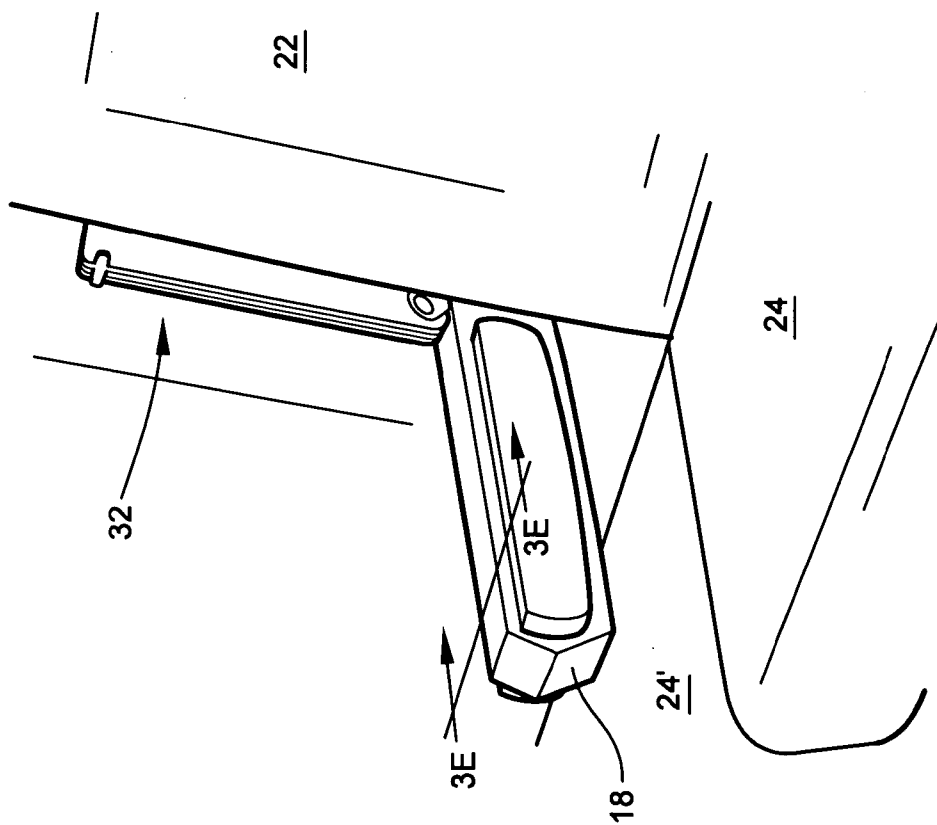


Fig. 4

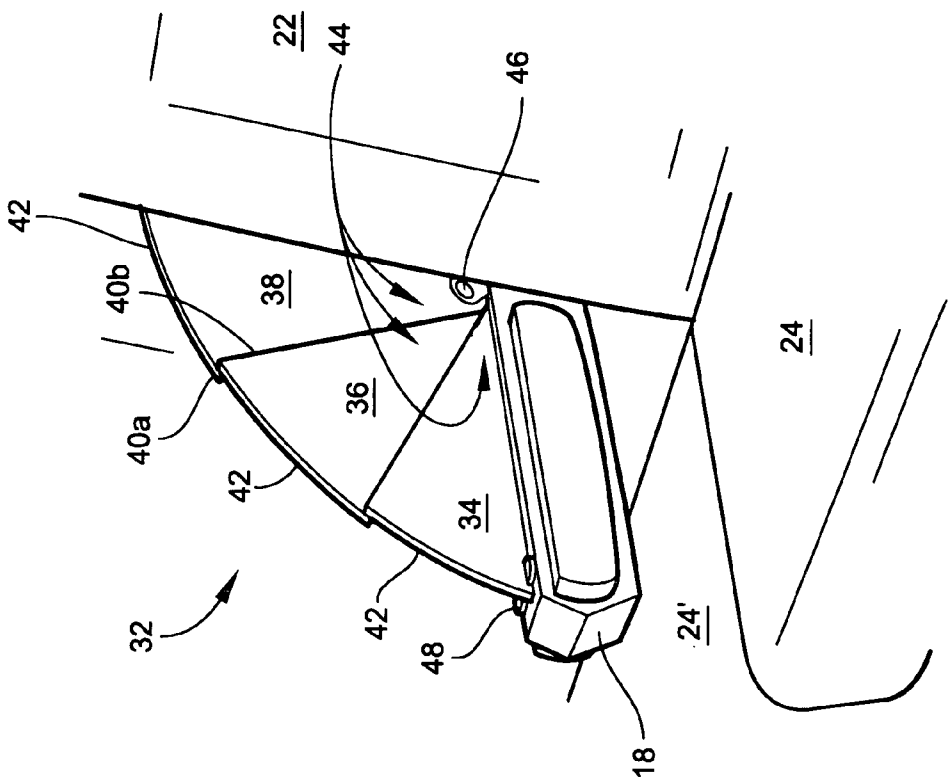


Fig. 6

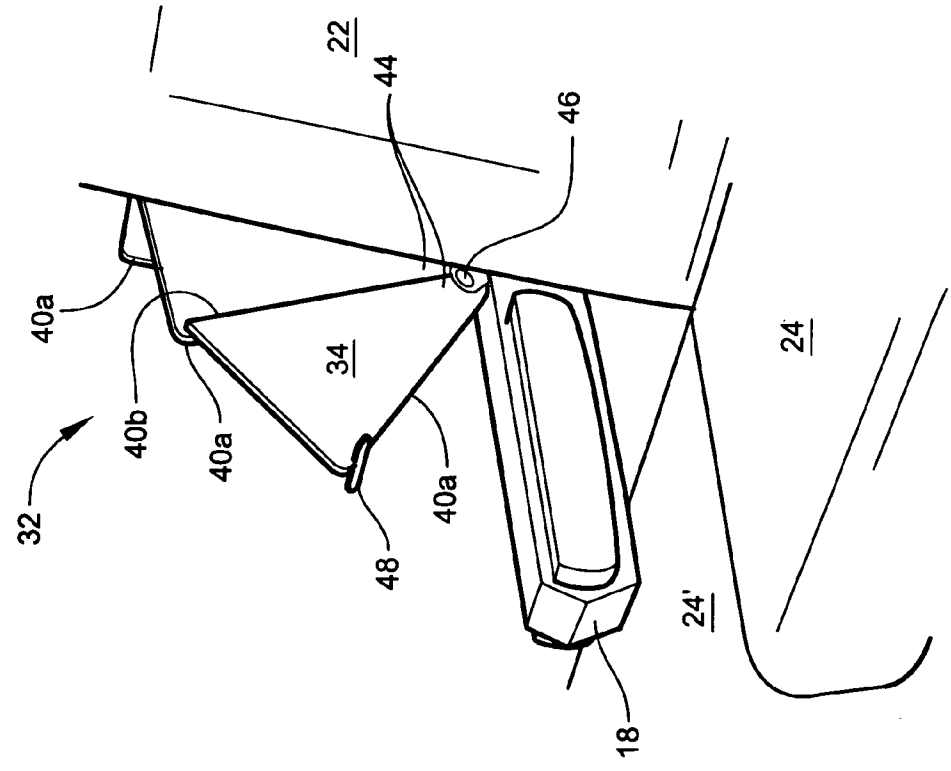


Fig. 7

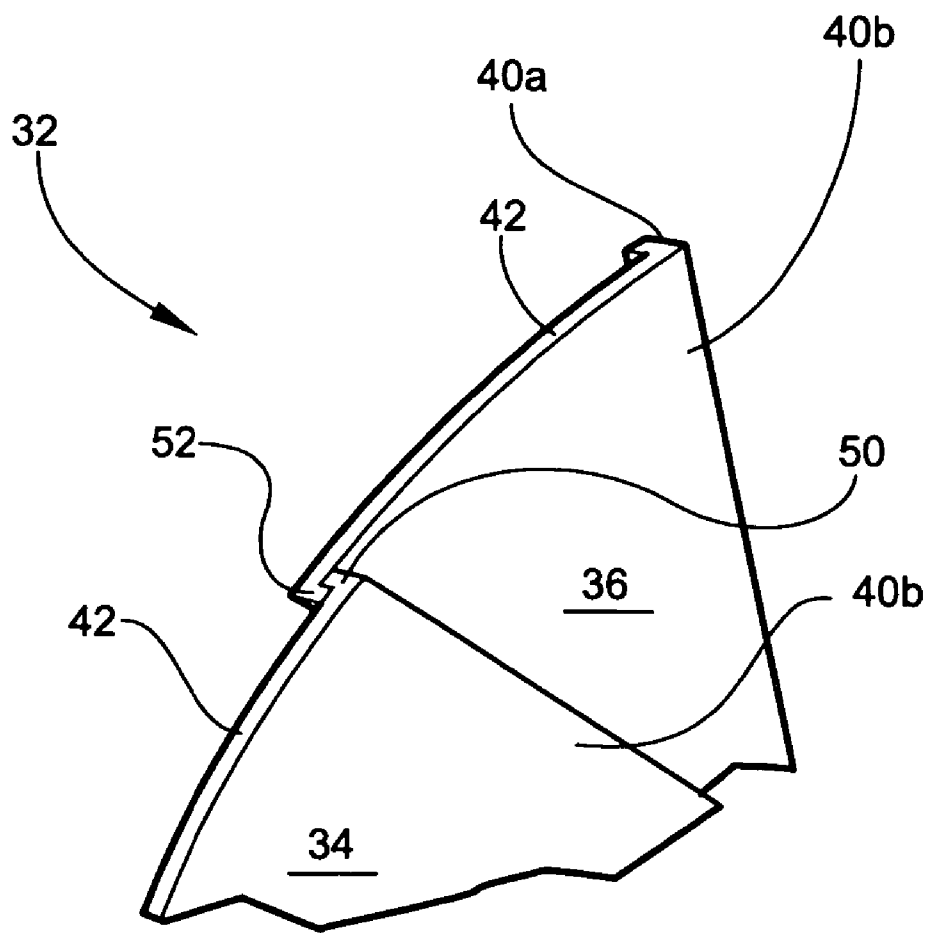


Fig. 8

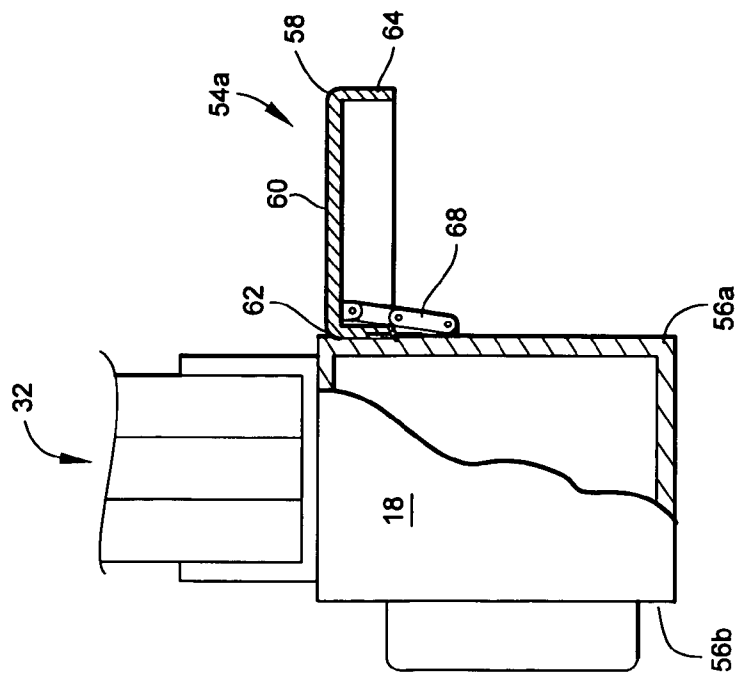


Fig. 9

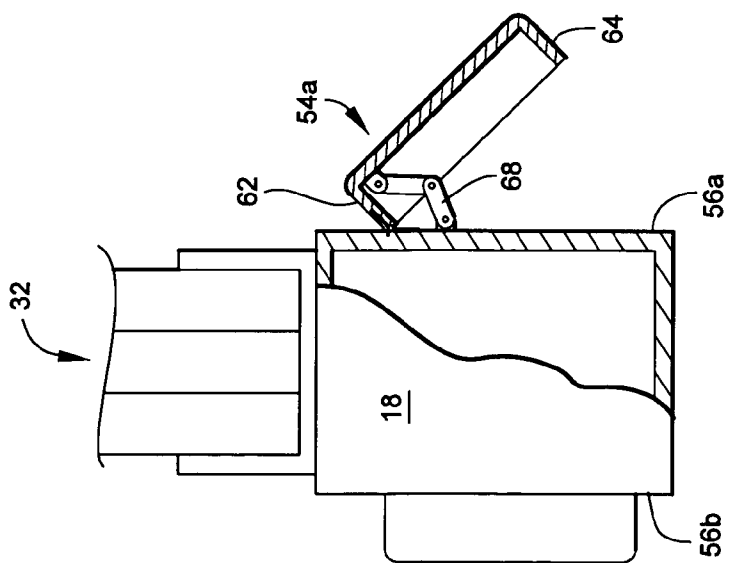


Fig. 10

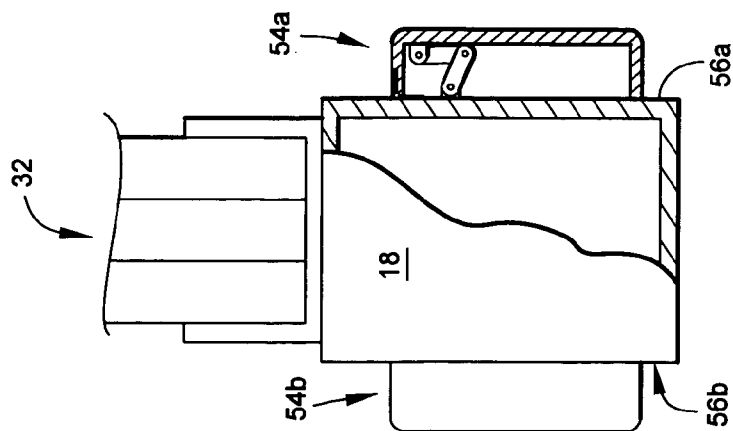


Fig. 11

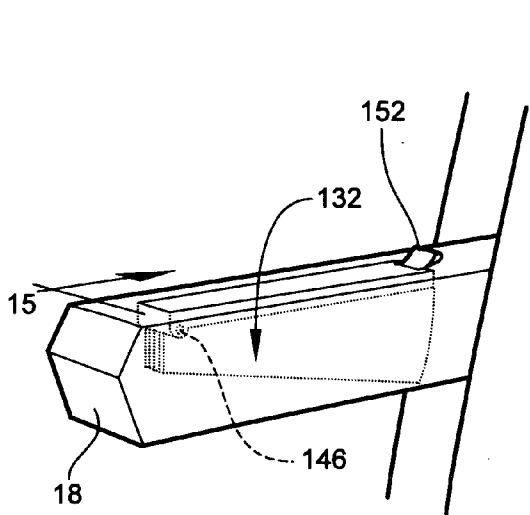


Fig. 12

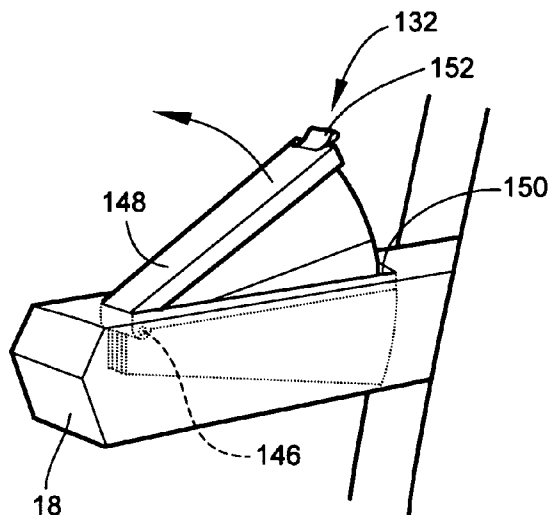


Fig. 13

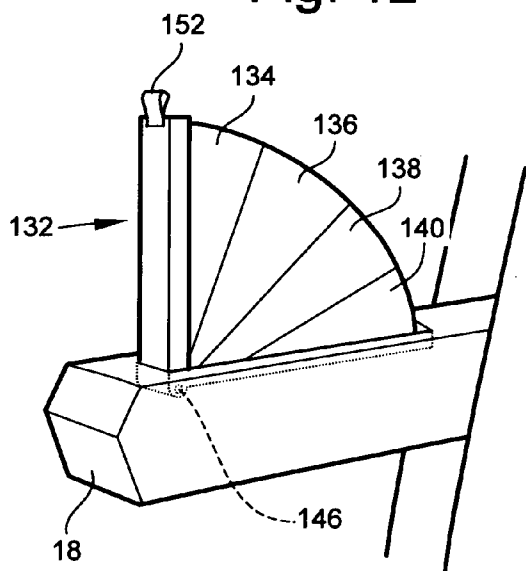


Fig. 14

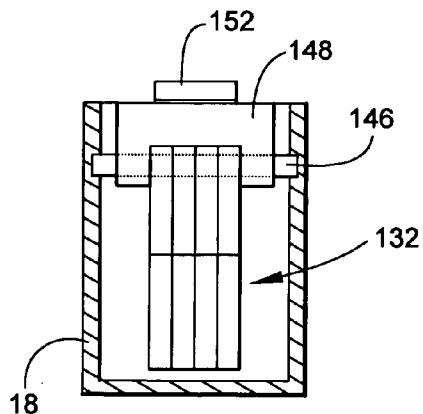
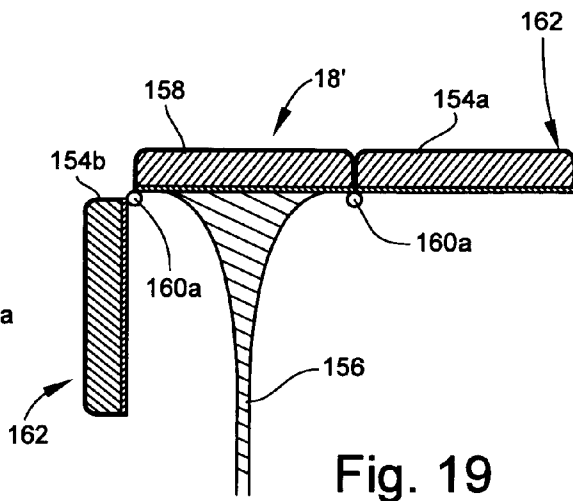
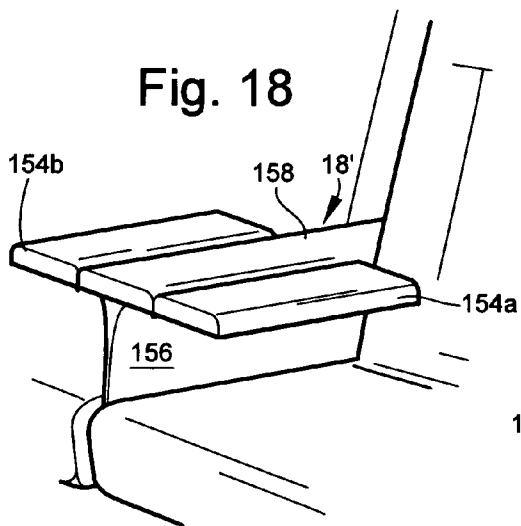
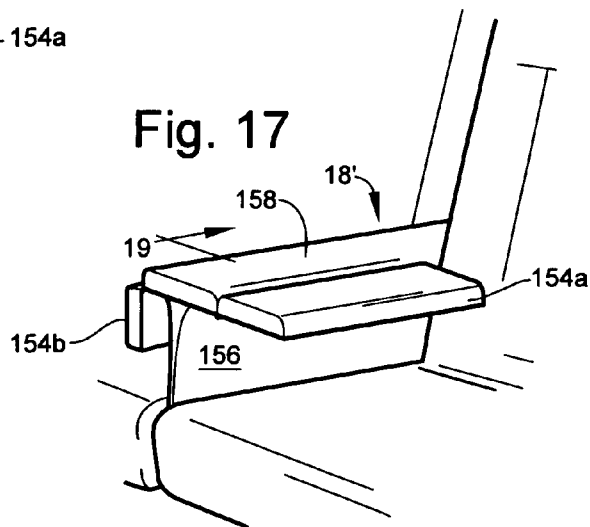
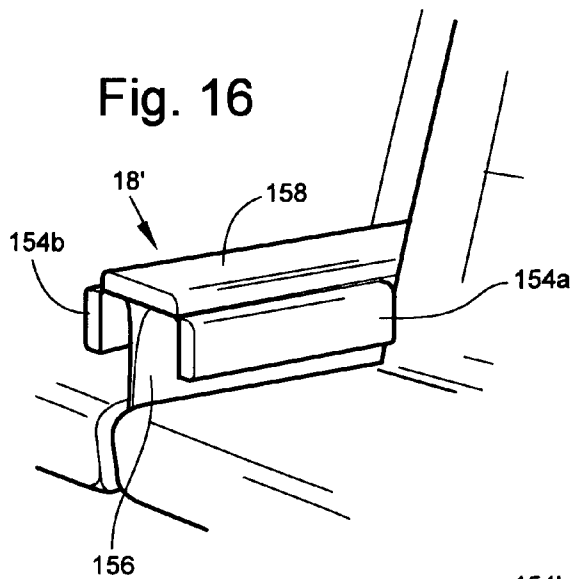


Fig. 15



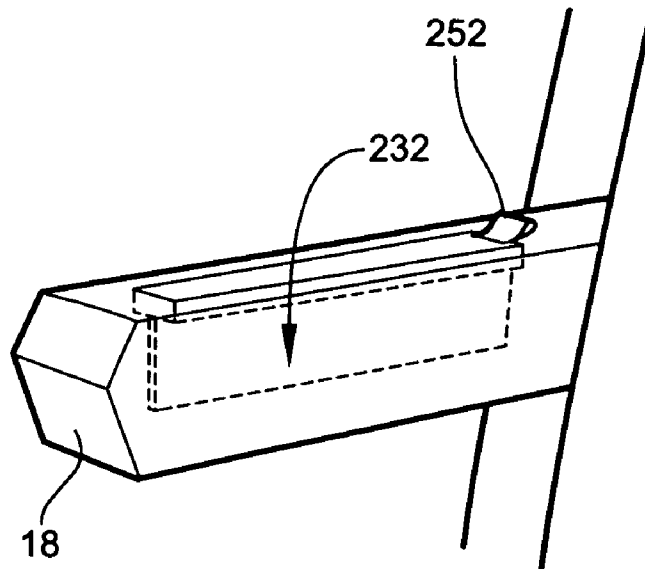


Fig. 20

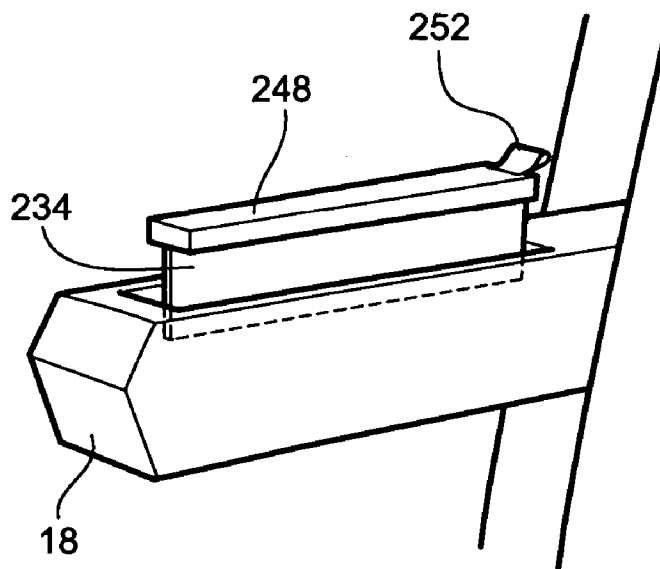


Fig. 21

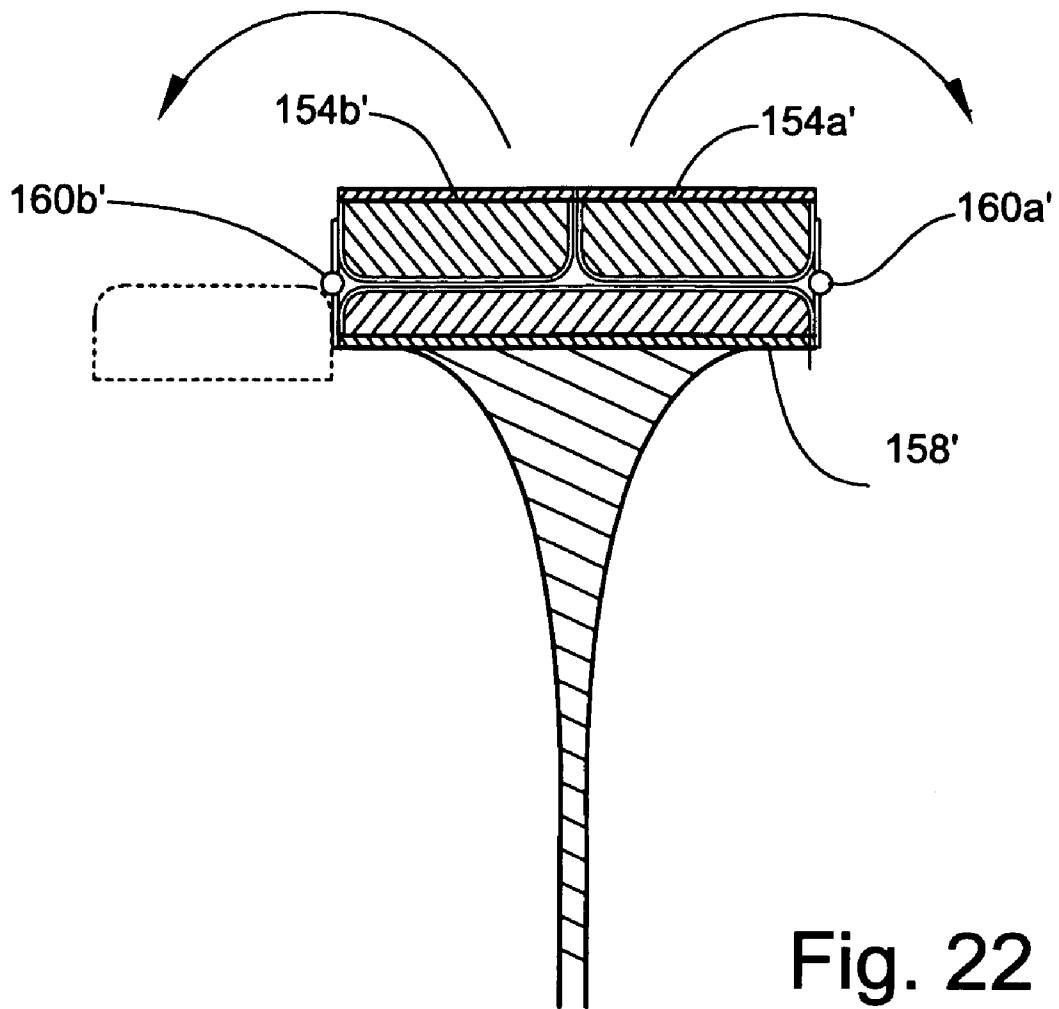


Fig. 22

VEHICLE SEATING WITH PRIVACY DIVIDER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 60/529,686 filed Dec. 15, 2003, and Provisional Application No. 60/589,297, filed Jul. 20, 2004.

BACKGROUND OF THE INVENTION

[0002] This invention relates generally to vehicle seating and more particularly to a tourist/coach class aircraft seating arrangement. Aircraft seating is typically divided into various classes, for example first class, business class, and coach or tourist class. For each class of seating, an individual passenger is allotted a preselected amount of space (both area and volume). First-class seats provide the most individual space, and also may include features to improve comfort, such as fully reclining sleeper functions. In contrast, the tourist/coach class is provided with a relatively small amount of space, in order to provide the most efficient transportation and lowest cost.

[0003] It has been found that passengers are more satisfied by a given quantity of space when that space is completely controlled, or "owned" by the passenger. Since the space for coach-class seating is limited, it is especially important that a passenger's personal space be protected from intrusion from other passengers. However, prior art coach class seats are typically arranged such that passengers seated side-by-side must share an a single armrest. In this arrangement, the armrest width allotted to each passenger, and the dividing line between adjacent seats, is not clearly delineated. This can lead to conflicts between passengers as each tries to assert control of the single armrest, as well as discomfort of the passenger that gets a smaller portion of the armrest.

BRIEF SUMMARY OF THE INVENTION

[0004] Therefore, it is an object of the invention to provide a vehicle passenger seat which is clearly separated from an adjacent seat.

[0005] It is another object of the invention to provide a privacy divider between adjacent passenger seats.

[0006] It is another object of the invention to provide a seat having a privacy divider which still provides a full-width armrest to a passenger.

[0007] These and other objects of the present invention are achieved in the preferred embodiments disclosed below by providing an armrest apparatus for a passenger seat including a longitudinally-extending center armrest adapted to be disposed between side-by-side first and second seats, and a privacy divider attached to the center armrest. The privacy divider is moveable between a stowed position wherein an upper surface of the center armrest is accessible by an occupant of the first or second seat, and a deployed position wherein the privacy divider extends to the center armrest and forms a generally vertically extending wall between of occupants of the first and second seats.

[0008] According to another embodiment of the invention, the armrest apparatus further includes at least one auxiliary armrest attached to a left or right side of the center armrest. The auxiliary armrest is moveable between a retracted

position, and an extended position in which the auxiliary armrest provides a laterally-extending support.

[0009] According to another embodiment of the invention, the auxiliary armrest is pivotally attached at an inboard edge thereof to the center armrest.

[0010] According to another embodiment of the invention, the armrest apparatus further includes means for selectively retaining the armrest in the extended position.

[0011] According to another embodiment of the invention, the center armrest includes a wall-like upright support having a top member attached thereto. Movement of the auxiliary armrest to the extended position exposes a space between the upright support and the retracted position of the auxiliary armrest. The space is adapted to accommodate a passenger's thigh.

[0012] According to another embodiment of the invention, the privacy divider includes a plurality of generally triangular panels pivotally mounted about a common axis.

[0013] According to another embodiment of the invention, the panels are linked together such that motion of a first one of the panels towards the deployed position causes motion of the remainder of the panels towards the deployed position.

[0014] According to another embodiment of the invention, the armrest apparatus further includes a second auxiliary armrest attached to the other of the left or right sides of the center armrest and moveable between a retracted position, and a extended position in which the auxiliary armrest provides a laterally-extending support

[0015] According to another embodiment of the invention, the panels are pivoted near a rear end of the center armrest and pivot downwards and forwards when deployed.

[0016] According to another embodiment of the invention, the panels are pivoted near a front end of the center armrest and pivot upwards and forwards when deployed.

[0017] According to another embodiment of the invention, one of the panels includes a cover which is disposed flush with an upper surface of the center armrest when the privacy divider is in the stowed position.

[0018] According to another embodiment of the invention, a passenger seat unit includes: a frame for being attached to a floor of a vehicle; first and second seats carried side-by-side on the frame, each of the seats including a seat bottom for supporting a passenger and an upwardly-extending seat back attached to the frame; a forwardly-extending center armrest disposed between the first and second seats; and a privacy divider. The privacy divider is moveable between a stowed position wherein the armrest is accessible by an occupant of the first or second seat, and a deployed position wherein the privacy divider extends to armrest so as to mutually block access of occupants of the first and second seats from each other.

[0019] According to another embodiment of the invention, the passenger seat unit further includes at least one auxiliary armrest attached to a left or right side of the center armrest. The auxiliary armrest is moveable between a retracted position, and a extended position in which the auxiliary armrest provides support for an arm of a passenger seated in one of the first and second seats.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The subject matter that is regarded as the invention may be best understood by reference to the following description taken in conjunction with the accompanying drawing figures in which:

[0021] FIG. 1 is a perspective view of a passenger seat set including a privacy divider;

[0022] FIG. 2 is a perspective view of the passenger seat set of FIG. 1 showing the privacy divider in a partially deployed position;

[0023] FIG. 3 is a perspective view of the passenger seat set of FIG. 1 showing the privacy divider in a fully deployed position;

[0024] FIG. 4 is a partial perspective view of the passenger seat set of FIG. 1 showing details of a center armrest thereof;

[0025] FIG. 5 is another partial perspective view of the passenger seat set of FIG. 1 showing details of a center armrest thereof, with the privacy divider in a partially deployed position;

[0026] FIG. 6 is another partial perspective view of the passenger seat set of FIG. 1 showing details of a center armrest thereof, with the privacy divider in a partially deployed position;

[0027] FIG. 7 is another partial perspective view of the passenger seat set of FIG. 1 showing details of a center armrest thereof, with the privacy divider in a fully deployed position;

[0028] FIG. 8 is an enlarged perspective view of a portion of the privacy divider of FIG. 1;

[0029] FIG. 9 is a partial cross-sectional view of an armrest incorporating a folding auxiliary armrest;

[0030] FIG. 10 is another view of the armrest of FIG. 9, showing the auxiliary armrest in a partially extended position;

[0031] FIG. 11 is another view of the armrest of FIG. 9, showing the auxiliary armrest in a fully extended position;

[0032] FIG. 12 is a perspective view of an armrest incorporating an alternative embodiment of a privacy divider in a stowed position;

[0033] FIG. 13 is a perspective view of the armrest of FIG. 12 showing the privacy divider in a deployed position;

[0034] FIG. 14 is a perspective view of the armrest of FIG. 12 showing the privacy divider in an alternative deployed position;

[0035] FIG. 15 is cross-sectional view of the armrest and privacy divider of FIG. 12;

[0036] FIG. 16 is a perspective view of a passenger seat incorporating an alternative embodiment of a folding auxiliary armrest;

[0037] FIG. 17 is a perspective view of the folding auxiliary armrest of FIG. 16 in a partially extended position;

[0038] FIG. 18 is another perspective view of the folding auxiliary armrest of FIG. 16 in an extended position;

[0039] FIG. 19 is cross-sectional view of the armrest of FIG. 17;

[0040] FIG. 20 is a perspective view of a passenger seat incorporating another alternative embodiment of a privacy divider in a stowed position;

[0041] FIG. 21 is a perspective view of the privacy divider of FIG. 20 in a deployed position; and

[0042] FIG. 22 is a cross-sectional view of a variation of the auxiliary armrest shown in FIG. 16.

DETAILED DESCRIPTION OF THE INVENTION

[0043] Referring to the drawings wherein identical reference numerals denote the same elements throughout the various views, FIGS. 1-8 illustrate a passenger seat set 10 including a privacy divider. The seat set 10 includes two seats 12 and 14 which are collectively provided with three armrests 16, 18, and 20, each shown in the lowered passenger use position. The seats 12 and 14 include seat backs 22 and 22' and seat bottoms 24 and 24'. The seats 12 and 14 are supported by a frame 26. The frame 26 is mounted on legs 28 and 30 that are in turn mounted to the deck of the aircraft by track fittings of a known type.

[0044] The privacy divider, referred to generally at 32, is disposed between the seats 12 and 14 and can be stowed in an upright position as shown in FIG. 1, or deployed as shown in FIGS. 2 and 3. In the deployed position, the privacy divider 32 separates the passengers in respective seats 12 and 14, and most importantly blocks each passenger from placing his or her elbow beyond the center of the center armrest 18. Although the presence of the privacy divider 32 reduces the amount of armrest space available to each of the adjacent passengers, it will increase overall passenger satisfaction, as passengers prefer to have a smaller amount of space which is protected from intrusion from other passengers, rather than a larger amount of space which is not clearly defined.

[0045] As noted above, when the privacy divider 32 is deployed, it consumes at least some of the space normally available on top of the center armrest 18. Accordingly, the center armrest 18 is provided with a pair of auxiliary armrests 54a and 54b attached to the side walls 56a and 56b thereof. The auxiliary armrests 54a and 56b are folded down against the sidewalls 56a and 56b, out of the passenger's way, when the privacy divider 32 is not in use, as shown in FIG. 1. When the privacy divider 32 is extended, the auxiliary armrests 54a and 54b can be folded upward into a horizontal position to provide extra support for the passenger's arm, as shown in FIG. 3.

[0046] Referring to FIGS. 6 and 7, the privacy divider 32 comprises a plurality of generally triangular panels 34, 36 and 38, each including a pair of divergent side edges 40a and 40b which extend between an outer edge 42 (the shape of which may be varied as desired), and an inner apex 44. The panels 34, 36, and 38 are mounted on a common pivot 46 which passes through the inner apex 44 of each panel. One of the panels 34 includes deployment means such as the illustrated handle 48, which a seated passenger can use to pivot the panel 34 forward and downward until it contacts the center armrest 18. The privacy divider 32 may also include suitable linking means which cause the panels 36

and **38** to pivot into the deployed position when the panel **34** is moved. In the illustrated example, shown in **FIG. 8**, the panel **34** includes a flange **50** at its aft most side edge **40b** which bears against a complementary flange **52** at the forward side edge **40a** of the panel **36** as the panel **34** is pulled forward. A similar linking arrangement may be employed between the panel **36** and the panel **38**. The privacy divider **32** need not be a rigid barrier. Any configuration which will provide separation and privacy between two passengers may be used. For example, the panels **34**, **36**, and **38** could be replaced with a curtain-like structure, such as elasticized fabric (not shown).

[0047] **FIGS. 9-11** illustrate the internal structure of the auxiliary armrest **54a**, which is representative of the auxiliary armrest **54b**, in more detail. The auxiliary armrest **54a** comprises a shell **58** including a generally planar upper surface **60** connected to a pair of spaced-apart inboard and outboard flanges **62** and **64**. The inboard flange **62** is attached to the sidewall **56a** of the center armrest **18** by a linkage **68** or other suitable means to allow the shell **58** to pivot between retracted and extended positions. A suitable mechanism is provided to hold the auxiliary armrest **54a** in the extended position. In the illustrated example the linkage **68** is mounted to the shell **58** in such a manner that its elements move into an "over-center" relationship when the auxiliary armrest **54a** is raised (see **FIG. 11**). This prevents the auxiliary armrest **54a** from being lowered until the linkage **68** is manually collapsed.

[0048] **FIGS. 12-15** illustrate an alternative embodiment of the privacy divider, referred to generally at **132**, which may be substituted for the privacy divider **32** described above. The privacy divider **132** comprises a plurality of wedge-shaped panels **134**, **136**, **138**, and **140**, mounted on a common pivot **146** which passes through the inner apex of each panel. The uppermost panel **134** has a cover **148** attached thereto. The cover **148** may be padded or upholstered and is received in a slot **150** in the upper surface of the center armrest **18**. For purposes of illustrative clarity, auxiliary armrests **54a** and **54b** are not shown in **FIGS. 12-15**. The panel **134** may include deployment means such as the illustrated tab **152**, which a seated passenger can use to pivot the panel **134** upwards and forwards. The privacy divider **132** need only be raised sufficiently to prevent competition or "elbow jousting" between two passengers. Therefore, the completely raised position of the privacy divider **132** may be fully upward so that the cover **148** is nearly vertical, as shown in **FIG. 14**, or it could be at some lower position, such as is shown in **FIG. 13**. The privacy divider **132** may also include suitable linking means, such as those described above with respect to the privacy divider **32**, which cause the panels **136**, **138**, and **140** to pivot into the deployed position when the panel **34** is moved. The privacy divider **132** need not be a rigid barrier. Any configuration which will provide separation and privacy between two passengers may be used. For example, the panels **134**, **136**, and **138** could be replaced with a flexible, curtain-like structure, such as elasticized fabric (not shown).

[0049] **FIGS. 20 and 21** illustrate another alternative privacy divider **232** disposed inside an armrest **18**. It is similar in construction to the privacy divider **132** in that it includes a cover **248** and at least one panel **234** (or a curtain-like structure as described above). In contrast to the pivoting motion of the privacy divider **132**, the privacy

divider **232** is deployed or stowed by raising or lowering it in a vertical direction. The panel **234** may be mounted in the armrest **18** by suitable rails or other known structures for this purpose. The cover **248** may also include a tab **252** that a seated passenger can use to manipulate the privacy divider.

[0050] **FIGS. 16-19** illustrate an alternative center armrest **18'** which incorporates a pair of auxiliary armrests **154a** and **154b**. The center armrest **18'** comprises a wall-like upright support **156** and a longitudinally-extending top member **158**, which may be padded and/or upholstered. As illustrated in **FIG. 19**, the upright support **156** is relatively thin to minimize passenger space intrusion, and may be flared outwards at the top to provide a mounting surface for the top member **158**. First and second auxiliary armrests **154a** and **154b** are pivotally attached to opposed edges of the top member **158**, for example with hinges **160a** and **160b**, to allow the auxiliary armrests **154a** and **154b** to pivot between retracted and extended positions. Each of the auxiliary armrests **154a** and **154b** includes a top surface **162** which may be which may be padded and/or upholstered as shown. As shown in **FIGS. 16-18**, the auxiliary armrests **154a** and **154b** may be individually raised or lowered. Suitable means, for example a friction mechanism, may be provided to prevent the auxiliary armrests **154a** and **154b** from being lowered unintentionally.

[0051] **FIG. 19** illustrates the auxiliary armrest **154a** in the extended position and the other auxiliary armrest **154b** in the retracted position. In the retracted position, the auxiliary armrest **154b** provides padding for the thigh of a seated passenger. In the extended position, the auxiliary armrest **154a** provides an arm support as described above. Because of the design of the upright support **156**, which lacks the spaced-apart sidewalls of the center armrest **18** described above, and the auxiliary armrests **154a** and **154b**, there is also a substantial amount of extra width or "thigh room" provided in the extended position.

[0052] **FIG. 22** illustrates a variation of the auxiliary armrests **154a** and **154b**, labeled **154a'** and **154b'**. In this variation, the first and second auxiliary armrests **154a'** and **154b'** are pivotally attached to opposed edges of a top member **158'**, for example with hinges **160a'** and **160b'** such that they lie on top of the top member **158'** in the retracted position. The auxiliary armrests **154a'** and **154b'** may be individually retracted or extended by pivoting them through 180°. Suitable means, for example a friction mechanism, may be provided to prevent the auxiliary armrests **154a'** and **154b'** from being moved unintentionally.

[0053] The foregoing has described a seating arrangement including a privacy panel. While specific embodiments of the present invention have been described, it will be apparent to those skilled in the art that various modifications thereto can be made without departing from the spirit and scope of the invention. Accordingly, 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.

What is claimed is:

1. An armrest apparatus for a passenger seat comprising:
 - a longitudinally-extending center armrest adapted to be disposed between side-by-side first and second seats;

a privacy divider attached to said center armrest, said privacy divider being moveable between:

a stowed position wherein an upper surface of said center armrest is accessible by an occupant of said first or second seat; and

a deployed position wherein said privacy divider extends to said center armrest and forms a generally vertically extending wall between of occupants of said first and second seats.

2. The armrest apparatus of claim 1 further comprising:

at least one auxiliary armrest attached to a left or right side of said center armrest and moveable between:

a retracted position; and

an extended position in which said auxiliary armrest provides a laterally-extending support.

3. The armrest apparatus of claim 2 wherein said auxiliary armrest is pivotally attached at an inboard edge thereof to said center armrest.

4. The armrest apparatus of claim 3 further comprising means for selectively retaining said armrest in said extended position.

5. The armrest apparatus of claim 2 wherein said center armrest comprises a wall-like upright support having a top member attached thereto, and wherein movement of said auxiliary armrest to said extended position exposes a space between said upright support and the retracted position of said auxiliary armrest, said space adapted to accommodate a passenger's thigh.

6. The armrest apparatus of claim 1 wherein said privacy divider comprises a plurality of generally triangular panels pivotally mounted about a common axis.

7. The armrest apparatus of claim 6 wherein said panels are linked together such that motion of a first one of said panels towards said deployed position causes motion of the remainder of said panels towards said deployed position.

8. The armrest apparatus of claim 2 further comprising a second auxiliary armrest attached to the other of said left or right sides of said center armrest and moveable between:

a retracted position; and

an extended position in which said auxiliary armrest provides a laterally-extending support.

9. The armrest apparatus of claim 1 wherein said panels are pivoted near a rear end of said center armrest and pivot downwards and forwards when deployed.

10. The armrest apparatus of claim 1 wherein said panels are pivoted near a front end of said center armrest and pivot upwards and forwards when deployed.

11. The armrest apparatus of claim 10 wherein said one of said panels includes a cover which is disposed flush with an upper surface of said center armrest when said privacy divider is in said stowed position.

12. A passenger seat unit comprising:

a frame for being attached to a floor of a vehicle;

first and second seats carried side-by-side on said frame, each of said seats comprising a seat bottom for supporting a passenger and an upwardly-extending seat back attached to said frame;

a forwardly-extending center armrest disposed between said first and second seats; and

a privacy divider moveable between:

a stowed position wherein said is armrest accessible by an occupant of said first or second seat; and

a deployed position wherein said privacy divider extends to said armrest to mutually block access of occupants of said first and second seats from each other.

13. The passenger seat unit of claim 12 further comprising:

at least one auxiliary armrest attached to a left or right side of said center armrest and moveable between:

a retracted position against said left or right side of said center armrest; and

an extended position in which said auxiliary armrest provides support for an arm of a passenger seated in one of said first and second seats.

14. The passenger seat unit of claim 13 wherein said auxiliary armrest is pivotally attached at an inboard edge thereof to said center armrest.

15. The passenger seat unit of claim 14 further comprising means for selectively retaining said auxiliary armrest in said extended position.

16. The passenger seat unit of claim 13 wherein said center armrest comprises a wall-like upright support having a top member attached thereto, and wherein movement of said auxiliary armrest to said extended position exposes a space between said upright support and the retracted position of said auxiliary armrest, said space adapted to accommodate a passenger's thigh.

17. The passenger seat unit of claim 12 wherein said privacy divider comprises a plurality of generally triangular panels pivotally mounted about a common axis.

18. The passenger seat unit of claim 17 wherein said panels are linked together such that motion of a first one of said panels towards said deployed position causes motion of the remainder of said panels towards said deployed position.

19. The passenger seat unit of claim 13 further comprising a second auxiliary armrest attached to the other of said left or right sides of said center armrest and moveable between:

a retracted position; and

an extended position in which said auxiliary armrest provides support for an arm of a passenger seated in the other of said first and second seats.

20. The passenger seat unit of claim 19 further comprising means for selectively retaining said second auxiliary armrest in said extended position.

21. The passenger seat unit of claim 8 wherein said panels are pivoted near a rear end of said center armrest and pivot downwards and forwards when deployed.

22. The passenger seat unit of claim 8 wherein said panels are pivoted near a front end of said center armrest and pivot upwards and forwards when deployed.

23. The passenger seat unit of claim 22 wherein said one of said panels includes a cover which is disposed flush with an upper surface of said center armrest when said privacy divider is in said stowed position.