

CLAIMS

What is claimed is:

1. An inverted motion base, comprising:

- left and right vertical supports, spaced apart from each other;
- at least one rear vertical support;
- a carriage to travel vertically along a length of the rear support and to resist lateral forces;
- a first cable connected at a first end to the carriage, the first cable having a second end wound about a first rotatable drum, wherein the first cable in combination with the first rotatable drum raises and lowers the carriage;
- a knuckle protruding from the carriage;
- a transverse support member pivotably coupled to the knuckle;
- left and right load carrying arms, each connected at a first end to a respective left and right ends of the transverse support member;
- a second cable connected at a first end to a second end of the right load carrying arm, the second cable having a second end wound about a second rotatable drum, wherein the second cable in combination with the second rotatable drum raises and lowers the second end of the right load carrying arm;
- a third cable connected at a first end to a second end of the left load carrying arm, the third cable having a second end wound about a third rotatable drum, wherein the third cable in combination with the third rotatable drum raises and lowers the second end of the left load carrying arm; and
- one or more rows of seats, each row of seats positioned between and suspended from the right and left load carrying arms, each row of seats being parallel to the other row of seats.

2. The inverted motion base of claim 1, wherein the left, right, and rear vertical supports are vertical columns.

3. The inverted motion base of claim 1, wherein the left, right, and rear vertical supports are fabricated from a load bearing material.

4. The inverted motion base of claim 1, wherein the left, right, and rear vertical supports are realized from the walls of a structure housing the inverted motion base.

5. The inverted motion base of claim 1, wherein the carriage rolls on wheels on a track fixed to the rear vertical support.
6. The inverted motion base of claim 5, wherein the carriage wheels are rotatably secured to the track to prevent lateral movement of the carriage.
7. The inverted motion base of claim 1, wherein each row of seats is suspended from the left and right load carrying arms by suspension arms of fixed length, and wherein the fixed length of each succeeding row, from the back of the load carrying arms to the front of the load carrying arms, is shorter than the preceding row.
8. The inverted motion base of claim 1, wherein, in a seat loading position, an angle of declination of the left and right load carrying arms measured relative to a horizontal plane containing the transverse member is less than or equal to an angle of inclination of the left and right load carrying arms measured relative to the horizontal plane containing the transverse member in a seat viewing position.
9. The inverted motion base of claim 1, wherein the transverse support member is pivotable with respect to the knuckle about an axis that is perpendicular to a plane formed between the left and right vertical supports.
10. The inverted motion base of claim 1, wherein the transverse support member is pivotable with respect to the knuckle about an axis that is parallel to the plane formed between the left and right vertical supports.
11. The inverted motion base of claim 1, wherein the first, second, and third rotatable drums are respectively mounted atop the rear, left, and right vertical supports.
12. The inverted motion base of claim 1, wherein the first, second, and third rotatable drums are respectively mounted approximate the base of the rear, right, and left vertical supports.

13. The inverted motion base of claim 12, further comprising:

a pulley mounted atop each of the rear, right, and left vertical supports over which the respective first, second, and third cables travel; and

a counterweight positioned along each of the first, second, and third cables between the respective first, second, and third rotatable drums and the associated pulley.

14. The inverted motion base of claim 1, further comprising:

a roof coupled to one or more of the left load carrying arm, the right load carrying arm, the traverse support member, and the carriage.

15. A method of entertainment implemented with an inverted motion base, the method comprising:

positioning at least two rows of seats facing the same direction, a first row in front of a second row, the first row at a first height measured from a predetermined fixed point and the second row at a second height measured from the predetermined fixed point, where the second height is greater than the first height; and

elevating the first and second rows to third and fourth heights, respectively, where the third height is greater than the second height and the fourth height are less than the third height.

16. The method of claim 15, wherein the first and second rows are elevated along non-linear paths.

17. The method of claim 15, further comprising:

maintaining a given horizontal separation between the first and second rows while simultaneously, at the same rate, moving the first and second rows vertically.

18. The method of claim 15, further comprising:

producing left or right roll sensation for all seats in the first and second rows by maintaining a given horizontal separation between the first and second rows while simultaneously raising or lowering at least one side of at least one of the first and second rows.

19. An inverted motion base, comprising:

- left and right rear vertical supports, spaced apart from each other;
 - a central rear vertical support;
 - a front vertical support;
 - a horizontal support connector coupling the central rear vertical support with the front vertical support;
 - a carriage to travel vertically along a length of the central rear vertical support and to resist lateral forces;
 - a slew bearing protruding from the carriage;
 - a transverse support member pivotably coupled to the slew bearing via an articulated pivot element;
 - a roof coupled to the transverse support member;
 - one or more rows of seats, each row of seats suspended from the roof, each row of seats being parallel to the other row of seats;
 - a first cable connected at a first end to a forward edge mid-point of the roof, the first cable having a second end wound about a first rotatable drum, wherein the first cable in combination with the first rotatable drum raises and lowers the front of the roof;
 - a second cable connected at a first end to a right end of the transverse support member, the second cable having a second end wound about a second rotatable drum, wherein the second cable in combination with the second rotatable drum raises and lowers the right end of the transverse support member; and
 - a third cable connected at a first end to a left end of the transverse support member, the third cable having a second end wound about a third rotatable drum, wherein the third cable in combination with the third rotatable drum raises and lowers the left end of the transverse support member,
- wherein the combination of the second and third cable raise and lower the carriage.

20. The inverted motion base of claim 19, wherein the first, second, and third rotatable drums are respectively mounted approximate the base of the central rear, right rear, and left rear vertical supports, and wherein the inverted motion base further comprises:

- one or more pulleys mounted atop each of the horizontal connector and the right and left vertical supports over which the respective first, second, and third cables travel; and
- a counterweight positioned along each of the first, second, and third cables between the respective first, second, and third rotatable drums and the associated pulleys.

CLAIMS

1. An inverted motion base, comprising:
 - left and right vertical supports, spaced apart from each other;
 - at least one rear vertical support;
 - a carriage to travel vertically along a length of the rear support and to resist lateral forces;
 - a first cable connected at a first end to the carriage, the first cable having a second end wound about a first rotatable drum, wherein the first cable in combination with the first rotatable drum raises and lowers the carriage;
 - a knuckle protruding from the carriage;
 - a transverse support member pivotably coupled to the knuckle;
 - left and right load carrying arms, each connected at a first end to a respective left and right ends of the transverse support member;
 - a second cable connected at a first end to a second end of the right load carrying arm, the second cable having a second end wound about a second rotatable drum, wherein the second cable in combination with the second rotatable drum raises and lowers the second end of the right load carrying arm;
 - a third cable connected at a first end to a second end of the left load carrying arm, the third cable having a second end wound about a third rotatable drum, wherein the third cable in combination with the third rotatable drum raises and lowers the second end of the left load carrying arm; and
 - one or more rows of seats, each row of seats positioned between and suspended from the right and left load carrying arms, each row of seats being parallel to the other row of seats.
2. The inverted motion base of claim 1, wherein the left, right, and rear vertical supports are vertical columns.
3. The inverted motion base of claim 1, wherein the left, right, and rear vertical supports are fabricated from a load bearing material.

4. The inverted motion base of claim 1, wherein the left, right, and rear vertical supports are realized from the walls of a structure housing the inverted motion base.
5. The inverted motion base of claim 1, wherein the carriage rolls on wheels on a track fixed to the rear vertical support.
6. The inverted motion base of claim 5, wherein the carriage wheels are rotatably secured to the track to prevent lateral movement of the carriage.
7. The inverted motion base of claim 1, wherein each row of seats is suspended from the left and right load carrying arms by suspension arms of fixed length, and wherein the fixed length of each succeeding row, from the back of the load carrying arms to the front of the load carrying arms, is shorter than the preceding row.
8. The inverted motion base of claim 1, wherein, in a seat loading position, an angle of declination of the left and right load carrying arms measured relative to a horizontal plane containing the transverse member is less than or equal to an angle of inclination of the left and right load carrying arms measured relative to the horizontal plane containing the transverse member in a seat viewing position.
9. The inverted motion base of claim 1, wherein the transverse support member is pivotable with respect to the knuckle about an axis that is perpendicular to a plane formed between the left and right vertical supports.
10. The inverted motion base of claim 1, wherein the transverse support member is pivotable with respect to the knuckle about an axis that is parallel to the plane formed between the left and right vertical supports.
11. The inverted motion base of claim 1, wherein the first, second, and third rotatable drums are respectively mounted atop the rear, left, and right vertical supports.

12. The inverted motion base of claim 1, wherein the first, second, and third rotatable drums are respectively mounted approximate the base of the rear, right, and left vertical supports.
13. The inverted motion base of claim 12, further comprising:
 - a pulley mounted atop each of the rear, right, and left vertical supports over which the respective first, second, and third cables travel; and
 - a counterweight positioned along each of the first, second, and third cables between the respective first, second, and third rotatable drums and the associated pulley.
14. The inverted motion base of claim 1, further comprising:
 - a roof coupled to one or more of the left load carrying arm, the right load carrying arm, the traverse support member, and the carriage.
15. A method of entertainment implemented with an inverted motion base including at least two rows of seats oriented such that each row is facing a first direction, a first row horizontally displaced in the first direction from a second row, the method comprising:
 - positioning the first row at a first height measured from a predetermined fixed point and the second row at a second height measured from the predetermined fixed point, wherein the second height is greater than the first height; and
 - elevating the first and second rows to third and fourth heights, respectively, while maintaining the orientation of each row such that each faces the first direction, wherein the third height is greater than the second height and the fourth height is less than the third height,
 - wherein the relative position of the first and second rows varies during the elevating step.
16. The method of claim 15, wherein the first and second rows are elevated along non-linear paths.

17. The method of claim 15, further comprising:
maintaining a given horizontal separation between the first and second rows
while simultaneously, at the same rate, moving the first and second rows
vertically.
18. The method of claim 15, further comprising:
producing left or right roll sensation for all seats in the first and second rows
by maintaining a given horizontal separation between the first and second
rows while simultaneously raising or lowering at least one side of at least
one of the first and second rows.
19. An inverted motion base, comprising:
left and right rear vertical supports, spaced apart from each other;
a central rear vertical support;
a front vertical support;
a horizontal support connector coupling the central rear vertical support with
the front vertical support;
a carriage to travel vertically along a length of the central rear vertical support
and to resist lateral forces;
a slew bearing protruding from the carriage;
a transverse support member pivotably coupled to the slew bearing via an
articulated pivot element;
a roof coupled to the transverse support member;
one or more rows of seats, each row of seats suspended from the roof, each
row of seats being parallel to the other row of seats;
a first cable connected at a first end to a forward edge mid-point of the roof,
the first cable having a second end wound about a first rotatable drum,
wherein the first cable in combination with the first rotatable drum raises
and lowers the front of the roof;
a second cable connected at a first end to a right end of the transverse support
member, the second cable having a second end wound about a second
rotatable drum, wherein the second cable in combination with the second

rotatable drum raises and lowers the right end of the transverse support member; and

a third cable connected at a first end to a left end of the transverse support member, the third cable having a second end wound about a third rotatable drum, wherein the third cable in combination with the third rotatable drum raises and lowers the left end of the transverse support member, wherein the combination of the second and third cable raise and lower the carriage.

20. The inverted motion base of claim 19, wherein the first, second, and third rotatable drums are respectively mounted approximate the base of the central rear, right rear, and left rear vertical supports, and wherein the inverted motion base further comprises:

one or more pulleys mounted atop each of the horizontal connector and the right and left vertical supports over which the respective first, second, and third cables travel; and

a counterweight positioned along each of the first, second, and third cables between the respective first, second, and third rotatable drums and the associated pulleys.