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(54) **TRANSPORT APPARATUS**

TRANSPORTVORRICHTUNG

APPAREIL DE TRANSPORT

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Description

[0001] This invention relates to an transport apparatus comprising a cable or preferably a rail member along which in use a passenger is transported. The invention has been developed particularly but not exclusively as an amusement apparatus or ride, for the amusement of a passenger. However the invention may be used in other applications where it is desired to transport a passenger.

[0002] In our previous patent application published under number WO96/22821 there is shown such an amusement apparatus in which in use a passenger rides in a generally prone condition. In that application there is described a carrier in which two carrier parts are separable to allow a passenger to mount or alight the ride. However there are difficulties in ensuring the first and second parts register and lock together when brought together.

[0003] According to one aspect of the invention a transport apparatus comprising a cable or rail member from which in use, a passenger is suspended in a carrier, the carrier comprising a first part which is connected to the cable or rail member by means of at least one bogie whereby the carrier may move along the cable or rail member under gravity, and a second part characterised in that the second part is connected to the first part by means of a hinge type arrangement, the second part being thus movable relative to the first part between an open condition in which a passenger may mount the carrier and a closed condition in which the passenger is supported by the carrier in a body front down position.

[0004] It has been found that an arrangement in accordance with the present invention provides a more reliable and safe way of enabling a passenger to mount and alight from the carrier. Furthermore, the carrier may in use swing about the cable or rail member to add excitement to the ride and to enable carrier speed to be maintained around bends.

[0005] The weight of the passenger may be supported predominantly by the second part in a generally prone position. Further the carrier comprises hand support means which the passenger may grip during transport in the generally prone position.

[0006] Conveniently there is provided a locking means to retain the second part in its closed condition, the locking means engaging automatically as the second part is moved to its closed condition. There may be provided to close the second part as the carrier moves along the cable or rail member such as a cam surface along which the second carrier part rides as the carrier moves along the cable or rail member.

[0007] Also means may be provided automatically to release the locking means adjacent a passenger alighting position, the second part being constrained to move in controlled fashion to the open condition by means of a cam surface along which the second part rides.

[0008] The or each bogie may comprise means to permit the carrier to pivot about a first axis which is perpendicular to the rail and passes through the centre of the rail nominally horizontally. Conveniently, the means to permit the carrier to pivot about the first axis may comprise a cradle which is generally U-shaped and pivotally mounted for rotation about the first axis and from which the career is suspended.

[0009] The or each bogie may comprise means to permit the carrier to pivot about a second axis which is perpendicular to the rail and passes through the centre of the rail nominally vertically. Conveniently, the means to permit the carrier to pivot about the second axis comprises a shaft pivotally mounted on a base portion of the cradle and from which the carrier is suspended.

[0010] The or each bogie may further comprises means to permit the carrier to pivot about a third axis which is parallel to the rail, and below the rail. Conveniently, the means to permit the carrier to pivot about the third axis may comprise a shaft rigidly fixed perpendicular to the shaft and from which the carrier pivotally suspended by suspension members. The shaft and suspension members may bear frictional material on opposing surfaces to damp the pivotal motion of the carrier about the third axis. The or each bogie further may also comprise limiting means to limit the angle of pivotal motion the carrier can make about the third axis.

[0011] The apparatus may preferably comprise two bogies and the suspension members of the two bogies support each end of a carrier support bar from which the carrier is rigidly suspended.

[0012] According to a second aspect of the invention we provide a method of transporting a passenger utilising an apparatus according to the first aspect of the invention including the steps of moving the second part to an open condition at a passenger mounting position, permitting a passenger to mount the carrier, moving the second part to a closed condition, transporting the passenger along the cable or rail member to a passenger alighting position, moving the second part to the open condition and permitting the passenger to alight.

[0013] The invention will now be described with reference to the accompanying drawings in which :-

FIGURE 1 is a view of part of a transport apparatus in accordance with the invention showing a carrier thereof in a fully open condition:

FIGURE 2 is another view of the carrier of Figure 1 as a passenger mounts the carrier;

FIGURE 3 is another view of the carrier of Figure 1 showing the passenger in the carrier;

FIGURE 4 is a cross section through a bogie parallel to the direction of travel;

FIGURE 5 is a cross section through the bogie of Figure 4 perpendicular to the direction of travel, along A-A;

FIGURE 6 is a cross section through the bogie of Figure 4. perpendicular to the direction of travel, along B-B;

FIGURE 7 is a detail of part of the bogie of Figures 4 to 5; and

FIGURE 8 schematically shows the bogie passing through a braking station.

[0014] Referring to the drawings there is shown part of a transport apparatus comprising in this example an amusement ride 10.

[0015] The ride 10 comprises a rail member 11 along which a carrier 15, in use, moves, with a passenger 12 in the carrier 15. The rail member 11 shown may be part of a continuous length of rail along which carries the carrier 15 moves up to a higher position so that the carrier 15 may move down along the rail under gravity back to a starting position. Alternatively, carrier 15 may be movable on to the rail member 11 and then the rail member 11 may be moved upwardly with the carrier 15 stationary on the rail member 11 to a height and the carrier 15 then moves onto another rail member along which the carrier may move under gravity back to the starting position.

[0016] In accordance with the invention, the carrier 15 comprises a first part 16 which is hinged by a hinge type arrangement 17 to a second part 18. The first carrier part 16 includes a bogie 19 which enables the carrier 15 to move along and swing about the rail member 11. The bogie 19 preferably has wheels which run along the rail but in another arrangement, may permit the carrier to simply to slide along the rail member 11.

[0017] The first carrier part 16 comprises a roof-like construction 20 which in use forms a lid for the carrier 15. The second carrier part 18 comprises a well 21 into which a passenger 12 may step as the passenger 12 mounts the carrier 15 when the second part 18 is in an open position as shown in the drawings.

[0018] The lowest end 22 or the second carrier part 18 rides on a surface 25 which may restrict the extent of opening of the second part 18, and/or the carrier 15 may have some stop means which restricts the extent of opening. The second carrier part 18 also has hand supports 27 by which a passenger 12 may support himself as the passenger 12 mounts the carrier 15.

[0019] It is envisaged that the carrier 15 will be moving slowly along the rail member 11 as the passenger 12 mounts the carrier 15, in which case some means to move the carrier 15 would need to be provided, such as a drive chain with which the carrier 15 engages. However the carrier 15 may be stationary on the surface 25 if desired.

[0020] When the passenger is mounted in the carrier 15, the carrier 15 may move along the rail member 11 to a position where the surface 25 beneath provides a cam or ramp 26 up which the lowest end 22 of the second carrier part 18 rides to close the second part 18 relative to the first part 16 until a locking means automatically engages to lock the first 16 and second 18 carrier parts in a closed condition with the passenger trapped between the lid structure 20 of the first carrier part 16 and the well of the second carrier part 18. Thus during the subsequent ride, the passenger 12 is held safely in a generally prone condition.

[0021] The hinge type arrangement 17 may be a simple pivot arrangement as shown in the drawings, or a more complex arrangement in which the two carrier parts 16,18 move relatively about a plurality of axes between open and closed conditions.

[0022] Instead of the lower edge 22 of the second carrier part 18 riding on the cam surface or ramp 26, the carrier may have a transversely extending cam follower which rides on a bespoke cam to move the second carrier part 18 towards its closed condition.

[0023] Any suitable locking means may be provided automatically to lock the first and second carrier parts 16, 18 in the closed condition, but preferably there is additionally provided some safety means for ensuring the carrier parts remain closed during the ride, such as a remotely operable secondary safety interlock. As the carrier 15 returns to the start position the locking means may thus only be unlocked when the safety interlock is released.

[0024] Preferably, at the start position, there is provided a ramp or the like similar to but opposite to ramp 26, to provide for the controlled movement of the second carrier part 18 from the closed to the open position.

[0025] It will be appreciated that the ride will be exciting for the passenger 12 and thus the carrier 15 is provided with handles 30 which the passenger may grip during the ride, although the passenger's safety is not contingent upon the passenger holding on.

[0026] Various modifications may be made without departing from the scope of the invention. For example although in the preferred embodiment there is provided a rail member 11 along which the carrier 15 moves, a cable may be provided instead.

[0027] The carrier parts 16,18 need not be exactly as constructed but may be otherwise designed as desired. Although in the preferred embodiment the passenger 12 rides generally prone, in another embodiment, the passenger 12 may ride in a non prone position, but preferably in a body front down position.

[0028] A particular form of bogie 19 suitable for inclusion in the ride 10 will now be described, with reference to Figures 4 to 8. Bogie 19 is for use with a rail member 11 having an upstanding fin 11a on its upper surface. Bogie 19 permits rotation of the carrier 15 about three orthogonal axes. The first is perpendicular to the rail member 11 and through the centre thereof reference X on the figures, this normally being a "horizontal" axis. The second is also perpendicular to the rail member 11 and through the centre thereof, referenced Y in the figures, and nominally a "vertical" axis. The third is parallel to the rail member 11 and below it, referenced Z in the figures, and is also nominally "horizontal".

[0029] The bogie 19 comprises a casing 40 which encloses the majority of the moving parts now to be described. Two pairs of main rollers 41 are arranged radially with respect to the rail member 11 and run on upper

quadrants thereof to symmetrically either side of the fin 11a. The main rollers 41 may be separated by an angle of 90°, but are preferably separated by an angle of less than 90°, typically 80°. Two pairs of lower rollers 42, also arranged radially of the rail member 11 run on lower quadrants of the rail member 11, and are separated by an angle of 90°, although this may be increased or decreased. The main rollers 41 support the carriage 15 during most of the ride 10. However, in portions where negative G is exerted on the carrier 15 the lower rollers 42 take the strain.

[0030] In addition, two pairs of stabilising rollers 43 are provided which run on either side of the fin 11a upstanding from the rail member 11. The stabilizing rollers 42 prevent rotation of the bogie 19 about rail member 11.

[0031] The bogie 19 further comprises a cradle 45 which is rotatably mounted on stub axles 46 located either side of the rail member 11. The stub axles 46 are mounted in bearings 47 which permit the stub axle 46 and cradle 45 to pivot about the axis X previously described.

[0032] The cradle 45 is a generally U-shaped construction having sides 45a and a base 45b. A bearing 48 is provided in the base portion 45b of the cradle 45, for rotatable mounting of a shaft 49, such that the shaft 49 is pivotable about the axis Y previously described.

[0033] The shaft 49 supports a further shaft 50 which is perpendicular to it, and keyed to it such that the shaft 50 cannot rotate with respect to the shaft 49. Two suspension members 51 are pivotally mounted on the shaft 50 to either side of the shaft 49. The suspension members 51 support a carrier support bar 52 from which the carrier 15 is suspended. Washers 53 are keyed to the shaft 50 outwardly of each suspension member 51. The washers 53 bear friction material 54 on their inward facing surfaces, and the suspension members 51 carry friction material 55 on their outwardly facing surfaces which contact the friction material 54.

[0034] The suspension members 51 pivot about the shaft 50, and thus about the axis Z previously described. As they do this the friction material 54 and 55 provide a damping effect, preventing the oscillation of the suspension members 51, and thus of the carrier 15, about the axis Z, which oscillation would result in excess dissipation of energy during use of the ride 10. The friction material 54 and 55 is arranged to ensure that the pivoting about the axis Z simply results in a gradual movement to the furthest point reached from the "vertical" and then a gradual return to the "vertical".

[0035] Also provided on the bogie 19 are stop members 56 which have generally downwardly facing surfaces 57 which are shaped to take the carrier support bar 52, and to limit the rotation about the axis Z.

[0036] The bogie 19 further comprises outwardly extending braking fins 60 to either side and in a plane which bisects the rail member 11. However it should be noted that the fins 60 may be provided such that the angle between them is less than or more than 180° if desired. The braking fins 60 bear, on their upper and lower surfaces, friction material 61. When the bogie 19 reaches a braking zone 62 of the ride 10 the fins 60 enter calipers 63 which bear on the friction material 61 and slow the bogie 19 and hence the carrier 15.

[0037] Some forms of carrier may employ a single bogie 19. However for a carrier in which the passenger 12 rides generally prone, as for the carrier 15, then it is preferable for two bogies 19 to be employed, with each supporting an end of the carrier support bar 52 from which the carrier 15 is in turn rigidly suspended.

[0038] The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

Claims

1. A transport apparatus (10) comprising a cable or rail member (11) from which in use, a passenger (12) is suspended in a carrier (15), the carrier comprising a first part (16) which is connected to the cable or rail member (11) by means of at least one bogie (19) whereby the carrier (15) may move along the cable or rail member (11) under gravity, and a second part (18) **characterised in that** the second part (18) is connected to the first part by means of a hinge type arrangement (17), the second part being thus movable relative to the first part between an open condition in which a passenger may mount the carrier (15) and a closed condition in which the passenger is supported by the carrier in a body front down position.

2. An apparatus according to claim 1 wherein the weight of the passenger is supported predominantly by the second part (18) in a generally prone position in which the passenger is transported.

3. An apparatus according to any one of the preceding claims wherein in use the passenger is transported in a generally prone position and the carrier (15) comprises hand support means (27) which the passenger may grip during transport.

4. An apparatus according to any one of the preceding claims wherein there are provided locking means to retain the second part (18) in its closed condition, the locking means engaging automatically as the second part is moved to its closed condition.

5. An apparatus according to claim 4 wherein means are provided to close the second part (18) as the

carrier (15) moves along the cable or rail member (11).

6. An apparatus according to claim 5 wherein the means which close the second part comprise a cam surface (26) along which the second carrier part (18) rides as the carrier (15) moves along the cable or rail member (11).

7. An apparatus according to claim 4 or claim 5 or claim 6 wherein means are provided automatically to release the locking means adjacent a passenger alighting position, the second part (18) being constrained to move in controlled fashion to the open condition by means of a cam surface along which the second part (18) rides.

8. An apparatus according to claim 1 wherein the or each bogie (19) comprises means to permit the carrier (15) to pivot about a first axis (X) which is perpendicular to the rail (11) and passes through the centre of the rail (11) nominally horizontally.

9. An apparatus according to claim 8 wherein the means to permit the carrier (15) to pivot about the first axis (X) comprise a cradle (45) which is generally U-shaped and pivotally mounted for rotation about the first axis (X) and from which the carrier (15) is suspended.

10. An apparatus according to anyone of claims 1, 8 or 9 wherein the or each bogie (19) comprises means to permit the carrier (15) to pivot about a second axis (Y) which is perpendicular to the rail (11) and passes through the centre of the rail (11) nominally vertically.

11. An apparatus according to claim 10 as dependant from claim 9 wherein the means to permit the carrier (15) to pivot about the second axis (Y) comprises a shaft (49) pivotally mounted on a base portion (45b) of the cradle (45) and from which the carrier (15) is suspended.

12. An apparatus according to any one of claims 1 or 8 to 11 wherein the or each bogie comprises means to permit the carrier (15) to pivot about a third axis (Z) which is parallel to the rail (11), and below the rail (11).

13. An apparatus according to claim 12 as dependent from claim 11 wherein the means to permit the carrier (15) to pivot about the third axis (Z) comprises a shaft (50) rigidly fixed perpendicular to the shaft (49) and from which the carrier (15) is pivotally suspended by suspension members (51).

14. An apparatus according to claim 13 wherein the shaft (50) and suspension members (51) bear frictional material (53,54) on opposing surfaces to damp the pivotal motion of the carrier (15) about the third axis (Z).

15. An apparatus according to claim 13 wherein the or each bogie (19) further comprises limiting means (56) to limit the angle of pivotal motion the carrier (15) can make about the third axis (Z).

16. An apparatus according to any one of claims 13 to 15 wherein it comprises two bogies (19) and the suspension members (51) of the two bogies (19) support each end of a carrier support bar (52) from which the carrier (15) is rigidly suspended.

17. An apparatus according to any one of the preceding claims which comprises an amusement ride (10).

18. A method of transporting a passenger (12) utilising an apparatus (10) according to any one of the preceding claims including the steps of moving the second part (18) to an open condition at a passenger mounting position, permitting a passenger (12) to mount the carrier (15), moving the second part (18) to a closed condition, transporting the passenger (12) along the cable or rail member (11) to a passenger alighting position, moving the second part (18) to the open condition and permitting the passenger (12) to alight.

Patentansprüche

1. Transportvorrichtung (10), mit einem Kabel oder Schienenelement (11), von dem in der Verwendung ein Fahrgast (12) in einem Träger (15) abhängt, wobei der Träger ein erstes Teil (16), das mit dem Kabel oder Schienenelement (11) mittels wenigstens einem Fahrwerk (19) verbunden ist, wodurch sich der Träger (15) entlang dem Kabel oder Schienenelement (11) unter Schwerkraft bewegen kann, und ein zweites Teil (18) aufweist, **dadurch gekennzeichnet, daß** das zweite Teil (18) an dem ersten Teil mittels einer Anordnung (17) vom Gelenktyp verbunden ist, so daß das zweite Teil relativ zu dem ersten Teil zwischen einem offenen Zustand, in dem ein Fahrgast den Träger (15) besteigen kann, und einem geschlossenen Zustand, in dem der Fahrgast von dem Träger in einer Position mit der Körpervorderseite nach unten gehalten wird, bewegbar ist.

2. Vorrichtung nach Anspruch 1, bei der das Gewicht des Fahrgastes vorwiegend durch das zweite Teil (18) in einer allgemeinen Bauchlage gehalten wird, in der der Fahrgast transportiert wird.

3. Vorrichtung nach einem der vorangehenden Ansprüche, bei der in der Verwendung der Fahrgast in einer allgemeinen Bauchlage transportiert wird und der Träger (15) Handhalteeinrichtungen (27) aufweist, die der Fahrgast während des Transportes ergreifen kann.

4. Vorrichtungen nach einem der vorangehenden Ansprüche, bei der Verriegelungseinrichtungen vorgesehen sind, um das zweite Teil (18) in seinem geschlossenen Zustand zu halten, wobei die Verriegelungseinrichtungen automatisch greifen, wenn das zweite Teil in seinen geschlossenen Zustand bewegt wird.

5. Vorrichtung nach Anspruch 4, bei der Einrichtungen vorgesehen sind, um das zweite Teil (18) zu schließen, wenn sich der Träger (15) entlang dem Kabel oder Schienenelement (11) bewegt.

6. Vorrichtung nach Anspruch 5, bei der die Einrichtung, welche das zweite Teil schließt, eine Anlauffläche (26) aufweist, entlang derer sich der zweite Trägerteil (18) bewegt, wenn sich der Träger (15) entlang dem Kabel oder Schienenelement (11) bewegt.

7. Vorrichtung nach Anspruch 4 oder Anspruch 5 oder Anspruch 6, bei der Einrichtungen vorgesehen sind, um die Verriegelungseinrichtung automatisch benachbart einer Aussteigeposition des Fahrgastes freizugeben, wobei das zweite Teil (18) so eingeschränkt ist, daß es sich in kontrollierter Weise in den offenen Zustand mittels einer Anlauffläche bewegt, entlang derer sich das zweite Teil (18) bewegt.

8. Vorrichtung nach Anspruch 1, bei der das oder jedes Fahrwerk (19) Einrichtungen aufweist, die es dem Träger (15) erlauben, um eine erste Achse (X) zu verschwenken, die senkrecht zu der Schiene (11) ist und durch das Zentrum der Schiene (11) im wesentlichen horizontal läuft.

9. Vorrichtung nach Anspruch 8, bei der die Einrichtungen, die es dem Träger (15) erlauben, um die erste Achse (X) zu verschwenken, eine Wiege (15) aufweisen, die im allgemeinen U-förmig ist und schwenkbar für die Drehung um die erste Achse (X) angebracht ist und von der der Träger (15) abhängt.

10. Vorrichtung nach einem der Ansprüche 1, 8 oder 9, bei der das oder jedes Fahrwerk (19) Einrichtungen aufweist, die es dem Träger (15) erlauben, um eine zweite Achse (Y) zu verschwenken, welche senkrecht zu der Schiene (11) ist und durch das Zentrum der Schiene (11) im wesentlichen vertikal läuft.

11. Vorrichtung nach Anspruch 10, in Abhängigkeit von Anspruch 9, bei der die Einrichtungen, die es dem Träger (15) erlauben, um die zweite Achse (Y) zu verschwenken, eine Welle (49) aufweisen, die schwenkbar auf einem Basisabschnitt (45b) der Wiege (45) angebracht ist und von der der Träger (15) abhängt.

12. Vorrichtung nach einem der Ansprüche 1 oder 8 oder 11, bei der das oder jedes Fahrwerk eine Einrichtung aufweist, die es dem Träger (15) erlaubt, um eine dritte Achse (Z) zu verschwenken, die parallel zu der Schiene (11) und unterhalb der Schiene (11) ist.

13. Vorrichtung nach Anspruch 12,in Abhängigkeit von Anspruch 11, bei der die Einrichtung, die es dem Träger (15) erlaubt, um die dritte Achse (Z) zu verschwenken, eine Welle (50) aufweist, die starr senkrecht zu der Welle (49) befestigt ist und von der der Träger (15) schwenkbar über Abhängeelemente (51) abhängt.

14. Vorrichtung nach Anspruch 13, bei der die Welle (50) und Abhängeelemente (51) Reibmaterial (53, 54) auf gegenüberstehenden Flächen tragen, um die Schwenkbewegung des Trägers (15) um die dritte Achse (Z) zu dämpfen.

15. Vorrichtung nach Anspruch 13, bei der das oder jedes Fahrwerk (19) weiter Begrenzungseinrichtungen (56) aufweist, um den Winkel der Schwenkbewegung zu begrenzen, den der Träger (15) um die dritte Achse (Z) machen kann.

16. Vorrichtung nach einem der Ansprüche 13 bis 15, bei der sie zwei Fahrwerke (19) aufweist und die Abhängeelemente (51) der zwei Fahrwerke (19) jedes Ende einer Träger-Haltestange (52) hält, von der der Träger (15) starr abhängt.

17. Vorrichtung nach einem der vorangehenden Ansprüche, die ein Vergnügungsfahrzeug (10) aufweist.

18. Verfahren zum Transportieren eines Fahrgastes (12), wobei eine Vorrichtung (10) nach einem der vorangehenden Schritte benutzt wird, einschließlich der Schritte des Bewegens des zweiten Teiles (18) in einen offenen Zustand an einer Position, an der der Fahrgast einsteigt, des Erlaubens, daß ein Fahrgast (12) in den Träger (15) einsteigt, des Bewegens des zweiten Teiles (18) in einen geschlossenen Zustand, des Transportierens des Fahrgastes (12) entlang dem Kabel oder Schienenelement (11) zu einer Position, an der der Fahrgast aussteigt, des Bewegens des zweiten Teiles (18) in den offenen Zustand und des Erlaubens, daß

der Fahrgast (12) aussteigt.

Revendications

1. Appareil de transport (10) comprenant un élément formant câble ou rail (11) depuis lequel, pendant l'utilisation, un passager (12) est suspendu dans un véhicule (15), le véhicule comprenant une première partie (16) qui est reliée à l'élément formant câble ou rail (11) au moyen d'au moins un bogie (19), le véhicule (15) pouvant se déplacer le long de l'élément formant câble ou rail (11) sous l'effet de la gravité, et une deuxième partie (18), **caractérisé en ce que** la deuxième partie (18) est reliée à la première partie au moyen d'un agencement (17) du type charnière, la deuxième partie pouvant ainsi se déplacer par rapport à la première partie entre un état ouvert, dans lequel un passager peut monter sur le véhicule (15), et un état fermé, dans lequel le passager est soutenu par le véhicule dans une position du corps inclinée vers l'avant.

2. Appareil selon la revendication 1, dans lequel le poids du passager est soutenu principalement par la deuxième partie (18) dans une position généralement couchée sur le ventre, dans laquelle le passager est transporté.

3. Appareil selon l'une quelconque des revendications précédentes, dans lequel, pendant l'utilisation, le passager est transporté dans une position généralement couchée sur le ventre et le véhicule (15) comprend un moyen formant rampe (27) que le passager peut saisir pendant le transport.

4. Appareil selon l'une quelconque des revendications précédentes, dans lequel il existe un moyen de verrouillage destiné à retenir la deuxième partie (18) dans son état fermé, le moyen de verrouillage s'engageant automatiquement lorsque la deuxième partie est déplacée dans son état fermé.

5. Appareil selon la revendication 4, dans lequel un moyen est prévu pour fermer la deuxième partie (18) lorsque le véhicule (15) se déplace le long de l'élément formant câble ou rail (11).

6. Appareil selon la revendication 5, dans lequel le moyen qui ferme la deuxième partie comprend une surface à came (26) le long de laquelle la deuxième partie (18) du véhicule passe lorsque le véhicule (15) se déplace le long de l'élément formant câble ou rail (11).

7. Appareil selon la revendication 4, 5 ou 6, dans lequel un moyen est fourni pour débloquer automatiquement le moyen de verrouillage dans une position proche d'une position de descente du passager, la deuxième partie (18) étant contrainte de se déplacer de manière contrôlée vers l'état ouvert au moyen d'une surface à came le long de laquelle la deuxième partie (18) passe.

8. Appareil selon la revendication 1, dans lequel le bogie (19) ou chaque bogie (19) comprend un moyen permettant au véhicule (15) de pivoter autour d'un premier axe (X) qui est perpendiculaire au rail (11) et passe par le centre de ce dernier essentiellement horizontalement.

9. Appareil selon la revendication 8, dans lequel le moyen permettant au véhicule (15) de pivoter autour du premier axe (X) comprend un berceau (45) qui est généralement en forme de U et monté de façon pivotante afin de tourner autour du premier axe (X) et auquel le véhicule (15) est suspendu.

10. Appareil selon l'une quelconque des revendications 1, 8 ou 9, dans lequel le bogie (19) ou chaque bogie (19) comprend un moyen permettant au véhicule (15) de pivoter autour d'un deuxième axe (Y) qui est perpendiculaire au rail (11) et passe par le centre de ce dernier essentiellement verticalement.

11. Appareil selon la revendication 10 en combinaison avec la revendication 9, dans lequel le moyen permettant au véhicule (15) de pivoter autour du deuxième axe (Y) comprend un arbre (49) monté de façon pivotante sur une portion de base (45b) du berceau (45) et auquel le véhicule (15) est suspendu.

12. Appareil selon l'une quelconque des revendications 1 ou 8 à 11, dans lequel le bogie ou chaque bogie comprend un moyen permettant au véhicule (15) de pivoter autour d'un troisième axe (Z) qui est parallèle au rail (11) et placé au-dessous de ce dernier.

13. Appareil selon la revendication 12 dépendant de la revendication 11, dans lequel le moyen permettant au véhicule (15) de pivoter autour du troisième axe (Z) comprend un arbre (50) fixé perpendiculairement et de manière rigide à l'arbre (49) et auquel le véhicule (15) est suspendu de façon pivotante par des éléments de suspension (51).

14. Appareil selon la revendication 13, dans lequel l'arbre (50) et les éléments de suspension (51) sont recouverts d'un matériau de friction (53, 54) sur des surfaces opposées afin d'amortir le mouvement de pivotement du véhicule (15) autour du troisième axe (Z).

15. Appareil selon la revendication 13, dans lequel le bogie ou chaque bogie (19) comprend en outre un

moyen de limitation (56) destiné à limiter l'angle du mouvement de pivotement que le véhicule (15) peut effectuer autour du troisième axe (Z).

16. Appareil selon l'une quelconque des revendications 13 à 15, comprenant deux bogies (19) et dans lequel les éléments de suspension (51) des deux bogies (19) supportent chaque extrémité d'une barre de support du véhicule (52) à laquelle le véhicule (15) est suspendu de manière rigide.

17. Appareil selon l'une quelconque des revendications précédentes qui comprend un parcours de divertissement (10).

18. Procédé de transport d'un passager (12) utilisant un appareil (10) selon l'une quelconque des revendications précédentes, incluant les étapes consistant à déplacer la deuxième partie (18) vers un état ouvert dans une position de montée du passager, à permettre à un passager (12) de monter dans le véhicule (15), à déplacer la deuxième partie (18) vers un état fermé, à transporter le passager (12) le long de l'élément formant câble ou rail (11) vers une position de descente du passager, à déplacer la deuxième partie (18) vers l'état ouvert et à permettre au passager (12) de descendre.

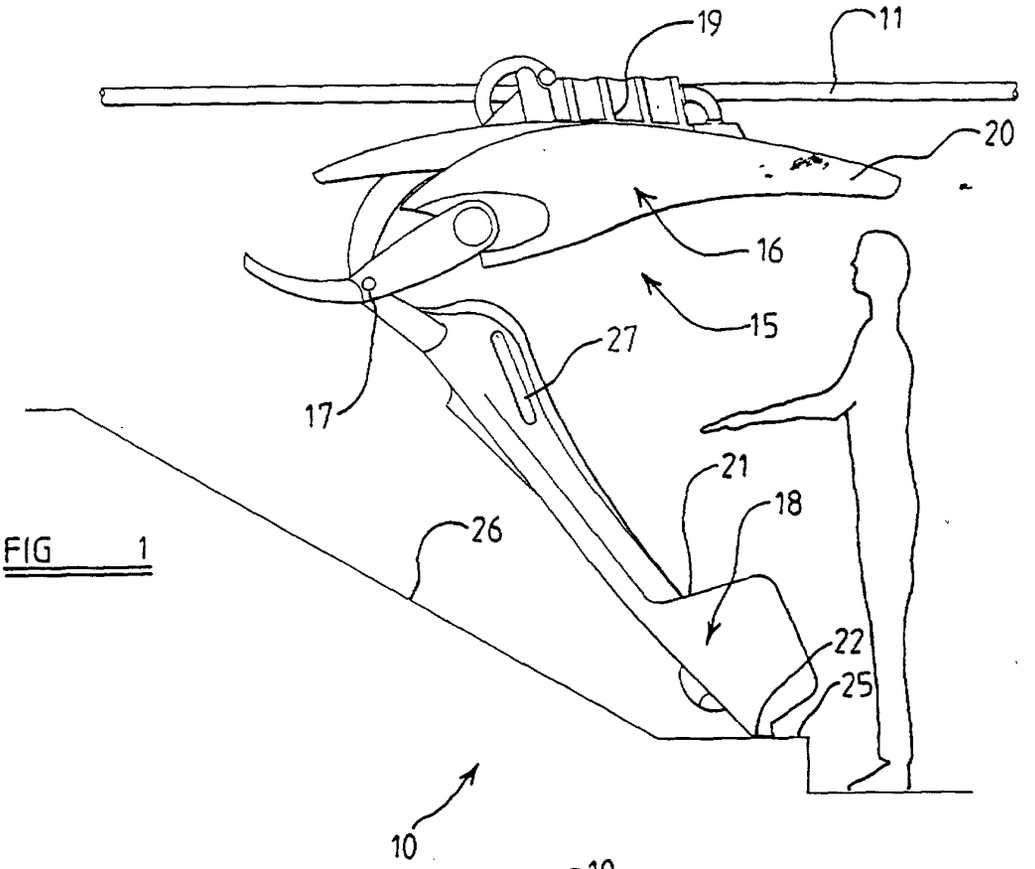
19
11
20
16
15
27
17
21
18
26
22
25
10

FIG 1

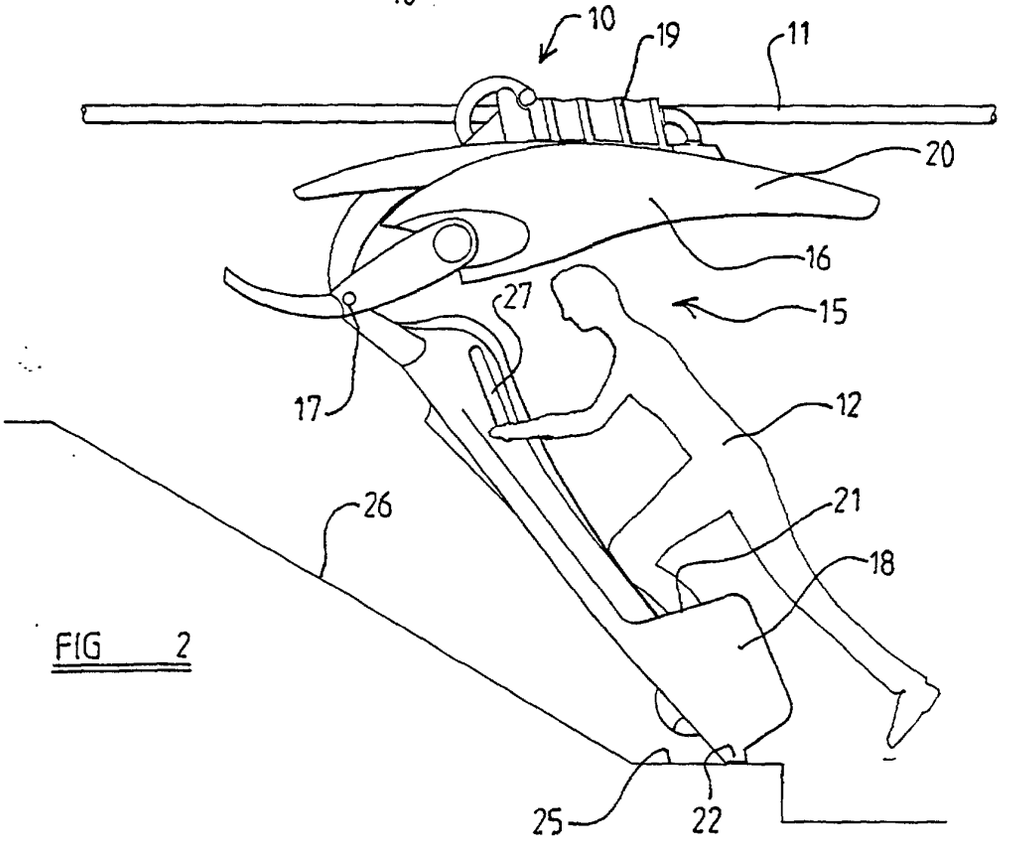
10
19
11
20
16
27
15
17
12
26
21
18
25
22

FIG 2

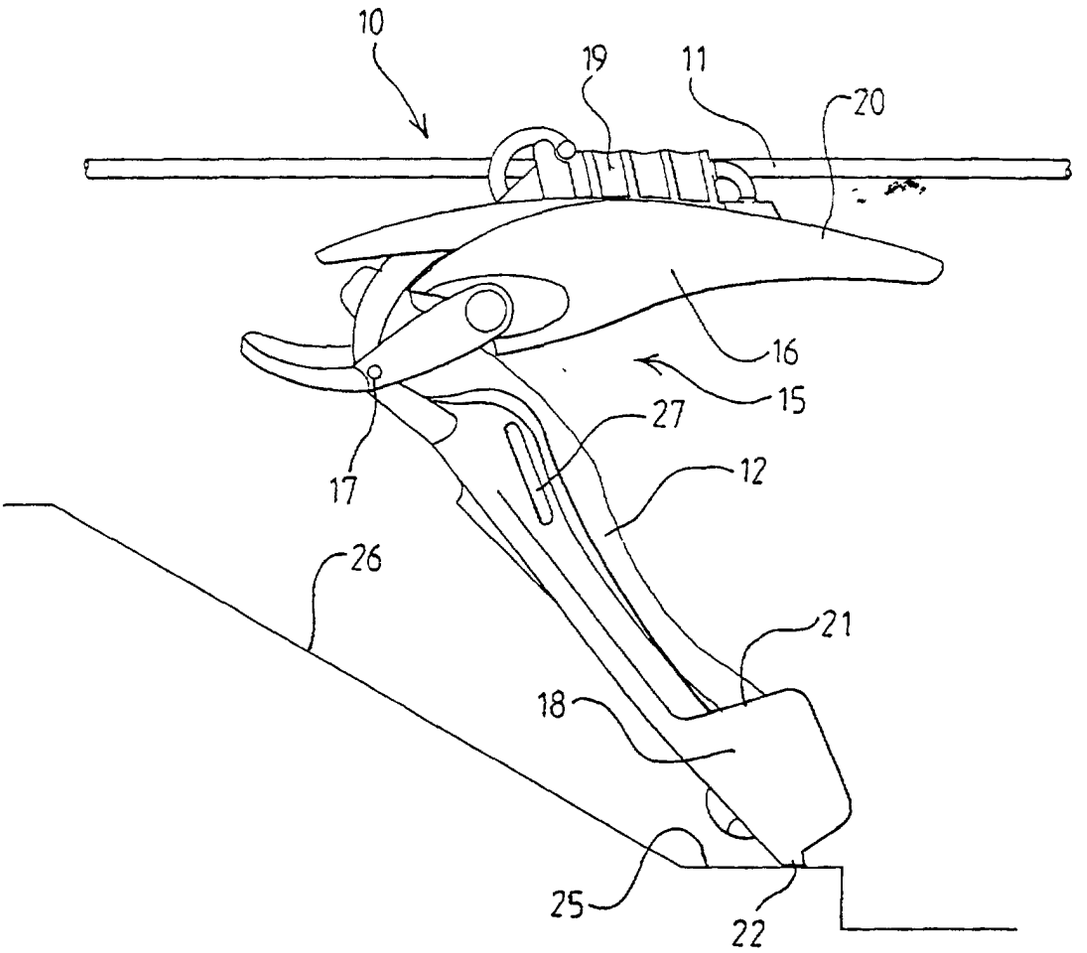

FIG 3

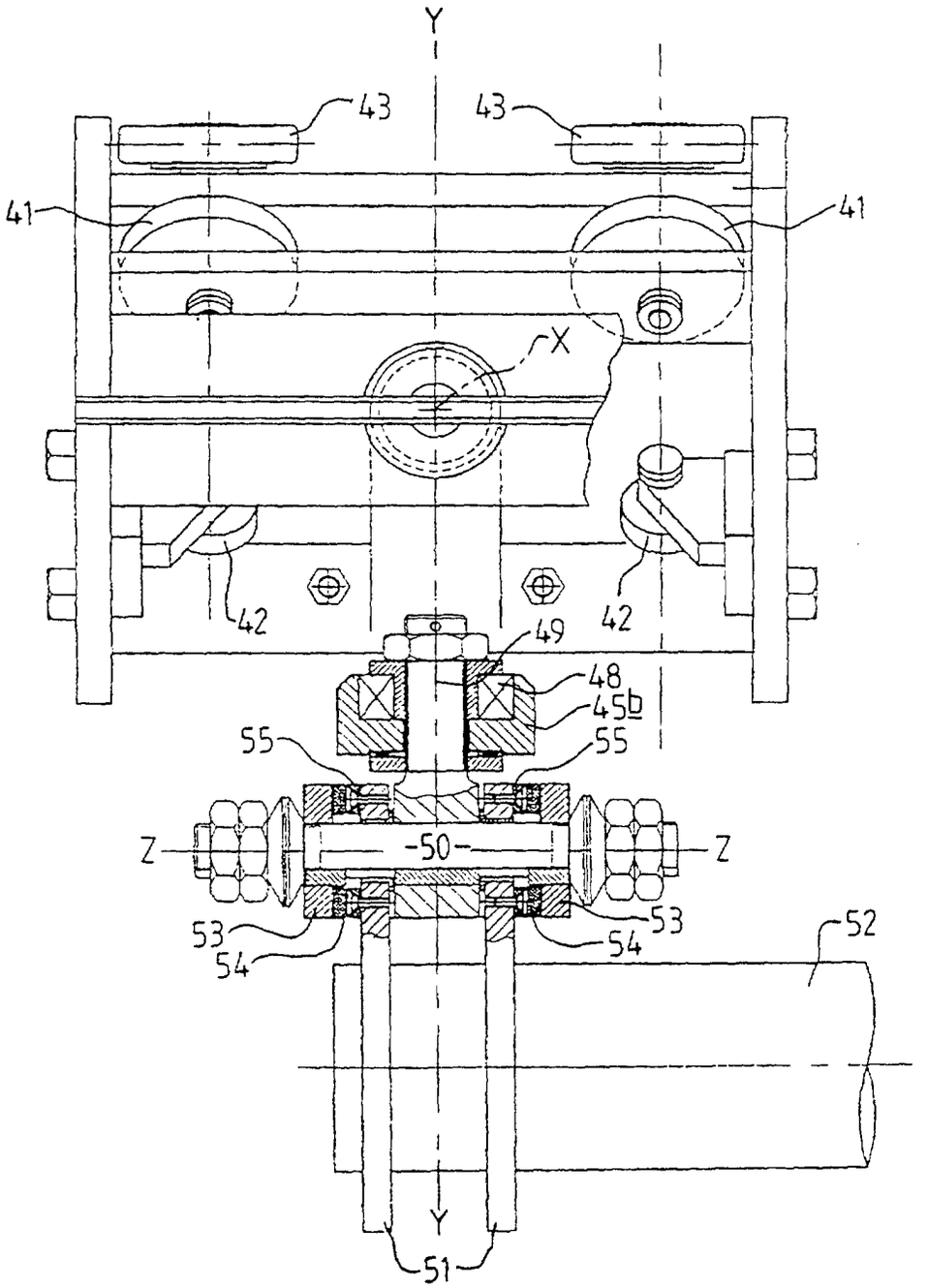

FIG 4

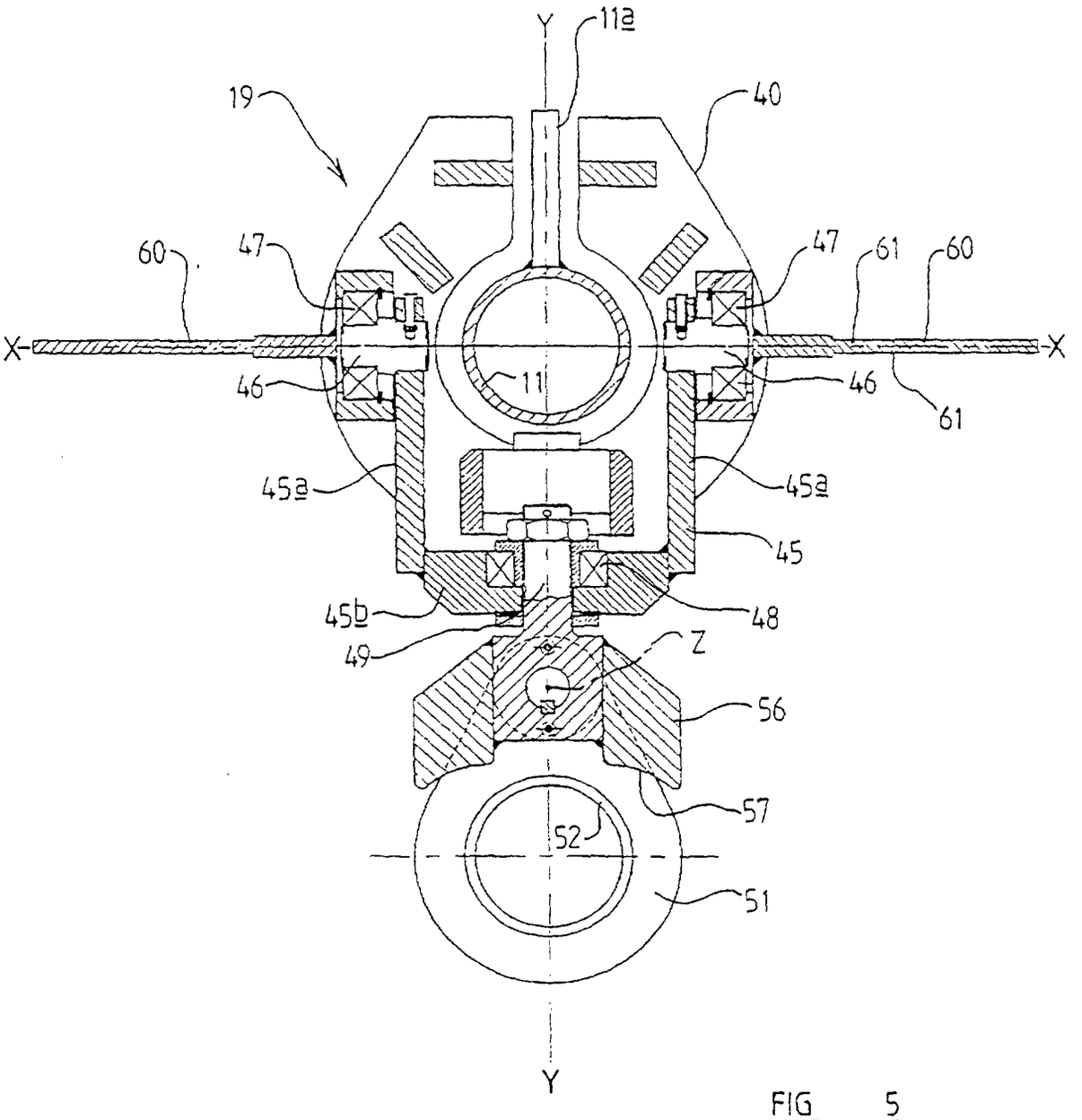
Y
11a
19
40
60
47
47
61
60
X
X
46
11
46
61
45a
45a
45
45b
48
49
Z
56
57
52
51
Y

FIG 5

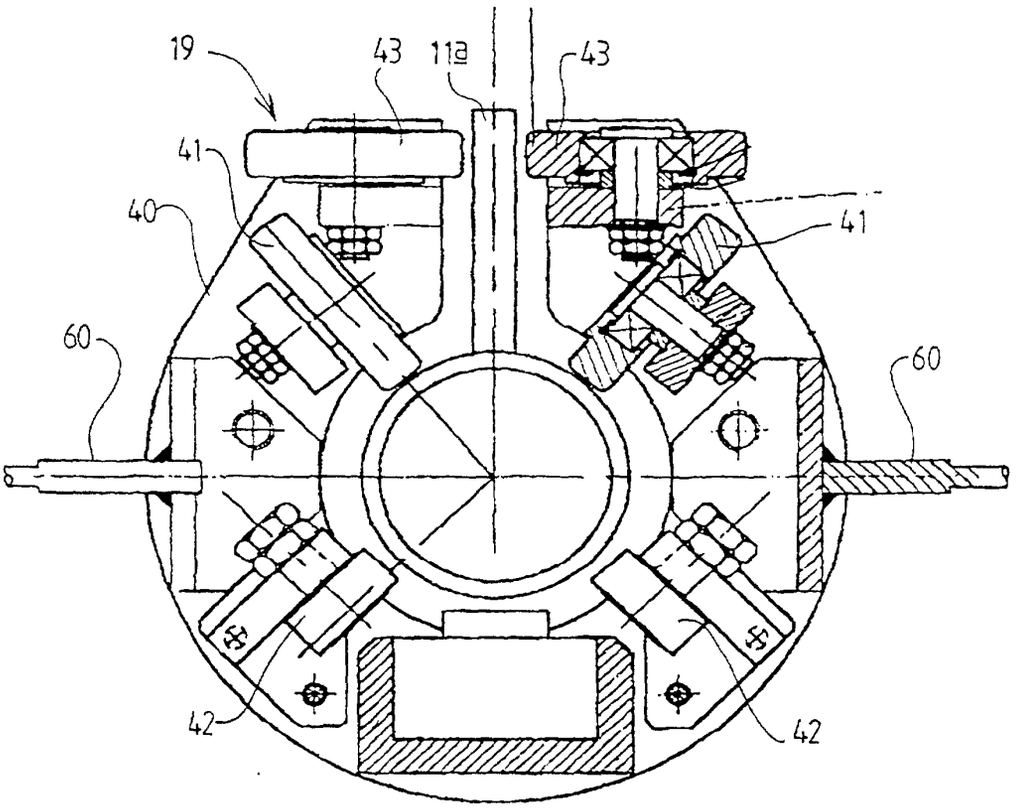

FIG 6

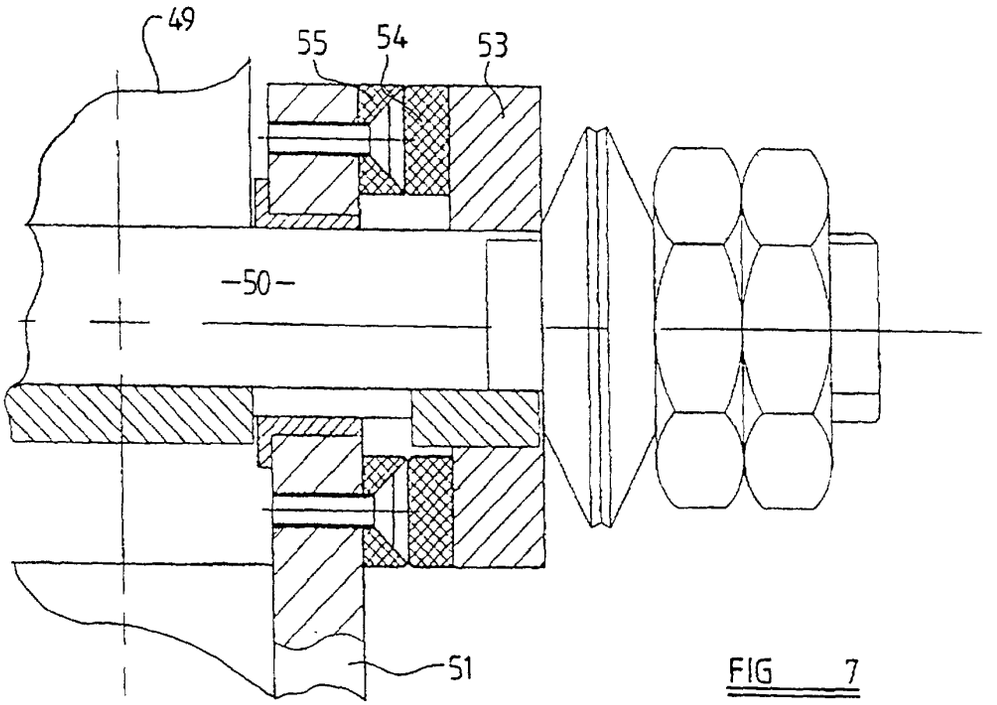

FIG 7

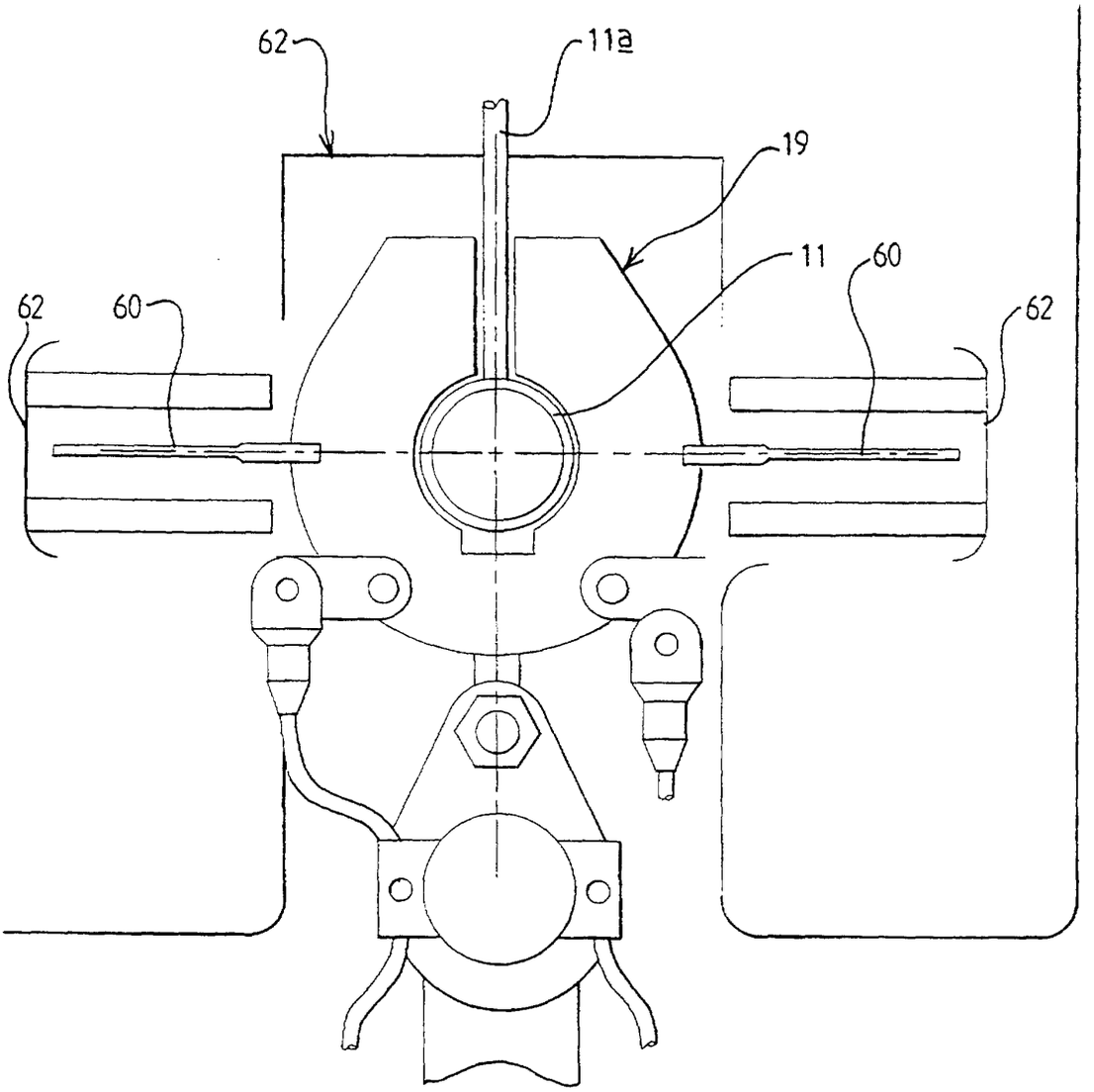

FIG 8