

Feb. 5, 1957

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2,780,460

ROTARY AMUSEMENT DEVICE

Filed Jan. 28, 1953

2 Sheets-Sheet 1

Fig. 1.

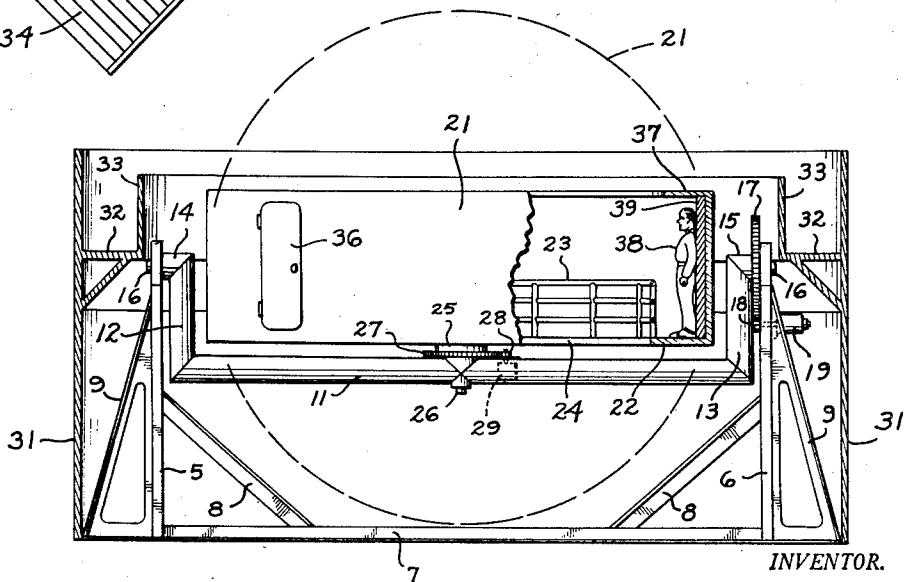
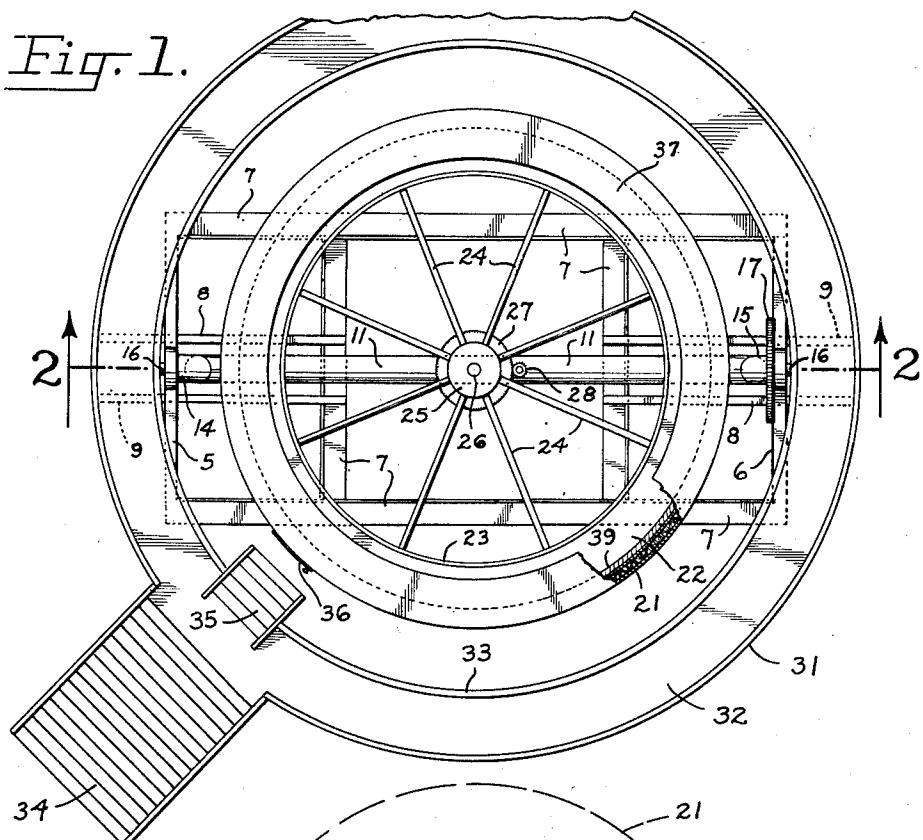


Fig. 2.

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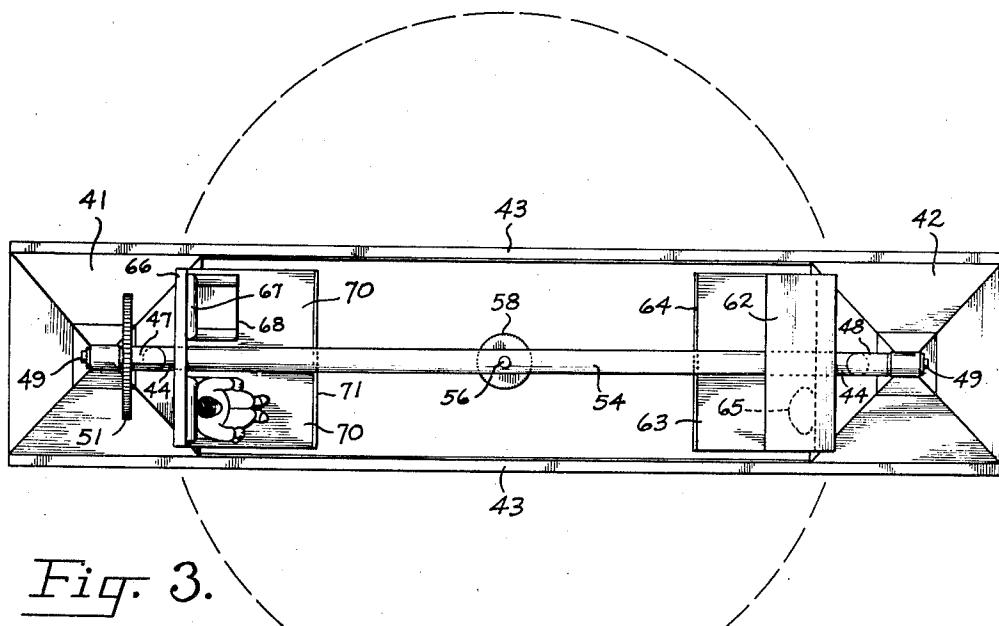


Fig. 3.

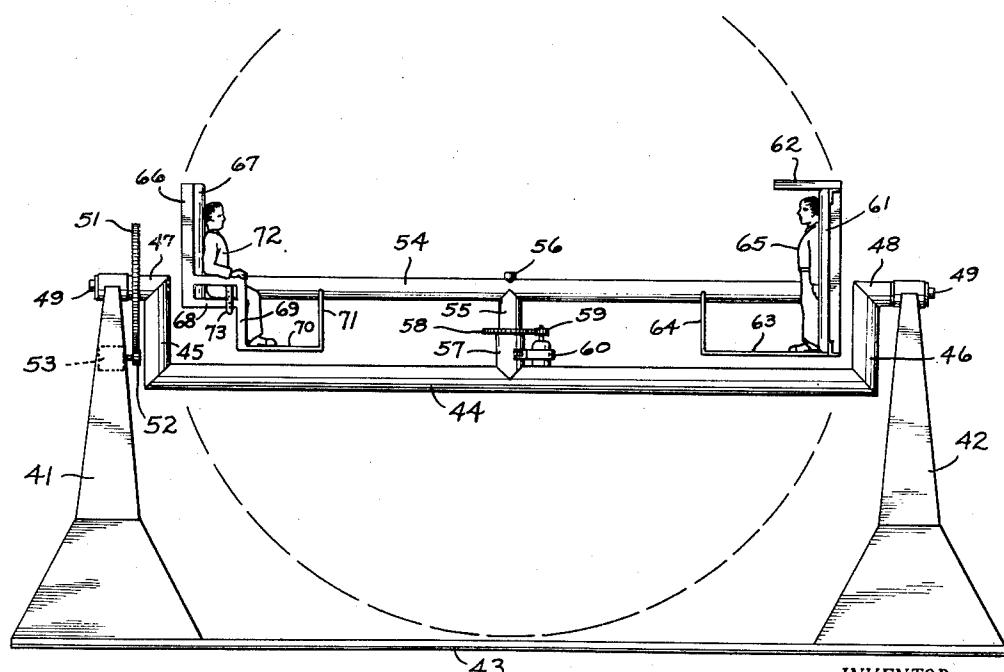


Fig. 4.

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ROTARY AMUSEMENT DEVICE

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Application January 28, 1953, Serial No. 333,782

1 Claim. (Cl. 272—36)

This invention pertains to amusement devices of the 15 class employed in amusement parks, and relates particularly to a rotary amusement device wherein the patrons are caused to be propelled through circular paths which vary from horizontal to vertical.

The principal object of the present invention is to provide a rotary amusement device which functions by propelling the patrons through various circular paths to create thrills and exhilarations heretofore not experienced.

Another important object of this invention is the provision of a rotary amusement device which affords to the patrons the alternative of participating in the ride through the circular paths or of being a spectator so positioned as to have full view of the participants as the latter are propelled.

A further important object of this invention is to provide a rotary amusement device which affords a maximum of thrills and excitement with a maximum of safety to the participants.

A still further object of the present invention is the provision of a rotary amusement device which is of simplified and sturdy construction for long and safe operation, and which is capable of assembly and disassembly for convenient portability.

The foregoing and other objects and advantages of this invention will appear from the following detailed description, taken in connection with the accompanying drawing, in which:

Figure 1 is a top plan view of a rotary amusement device embodying the features of the present invention, a portion thereof being broken away to disclose details of construction and other portions thereof being shown in dotted outline;

Figure 2 is a vertical sectional view taken along the line 2—2 of Figure 1, a portion thereof being broken away to disclose details of construction, the vertical position of rotation of the rotary element being shown by the dot-and-dash line;

Figure 3 is a top plan view of a modified form of rotary amusement device embodying the features of this invention, the path of horizontal rotation being indicated by the dotted line; and

Figure 4 is a view on side elevation of the device shown in Figure 3, the path of vertical rotation being indicated by the dotted line.

Stated broadly, the amusement device of the present invention comprises a housing mounted for rotation upon a frame which, in turn, is mounted for rotation about an axis normal to the axis of rotation of the housing.

Referring to Figures 1 and 2 of the drawing, there is shown a pair of spaced vertical standards 5, 6. These standards are substantially triangular in shape, each having a wide bottom end which is secured to the rectangular horizontal base frame 7. Reinforcing structural braces 8 and 9 insure the rigidity and strength of the integral standards and base frame.

A substantially U-shaped structural frame is also provided, including central section 11, spaced arms 12, 13

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extending normal to the central section in a common plane, and the extensions 14, 15 projecting outwardly from the respective arms 12, 13 parallel to the axis of the central section 11. This frame is supported between the spaced standards 5, 6 by the terminal stub shafts 16 of extensions 14, 15, which stubs are journaled in bearings provided in the upper ends of the said standards.

A gear 17 is secured to the stub shaft of extension 15 of the U-shaped frame and it meshes with a second gear 18 mounted on the drive shaft of the electric motor 19. The motor is mounted upon the standard 6. Thus, upon energization of the motor the U-shaped frame is caused to be rotated about the axis of the extensions 14, 15.

Supported centrally upon the U-shaped frame is a cylindrical housing 21. This housing is provided with a floor 22 which, as illustrated in the drawing, is formed as a circular ring which extends radially inward from the periphery of the housing sufficiently to provide a circular walkway. An upstanding guard and hand rail 23 is preferably provided around the inner edge of the ring.

A plurality of spaced structural spokes 24 are secured to the ring 22 and extend radially inward to a central hub 25. Secured to this hub is a shaft 26 which is journaled in a bearing mounted at the center of the central section 11 of the U-shaped frame. The axis of the shaft extends along the axis of the cylindrical housing 21, and this shaft forms the pivot support for the housing. The shaft is secured in the bearing against axial displacement by any conventional means, such as locking collars, to prevent axial displacement of the housing 21 with respect to the U-shaped frame.

Secured to the shaft 26 is a gear 27. This gear meshes with a second gear 28 secured to the drive shaft of the electric motor 29 which is mounted on the central section 35 11 of the U-shaped frame. Thus, upon energization of the motor 29 the housing 21 is caused to be rotated about its axis, this axis being substantially normal to the axis of rotation of the U-shaped frame.

Surrounding the housing 21 and supporting structure is 40 a circular wall 31 which extends from the base of the device upwardly to a plane slightly above the upper edge of the housing when the latter is in horizontal position. This wall supports a circular walkway 32 disposed in a plane slightly below the upper edge of the housing, for 45 example about three feet below the upper edge of the outer wall 31. A guard wall 33 extends upwardly from the inner edge of the walkway 32. Access to the walkway 32 is afforded by the stairway 34.

The walkway 32 is provided for those persons who wish 50 to watch the action taking place within the housing, rather than participate therein. Participants enter upon the floor 22 within the housing by means of a stairway 35 leading downwardly from the walkway 32 to a door 36 provided in the wall of the housing.

If desired, a protective canopy 37 may be provided 55 above the participants 38. In the drawing this canopy is shown in the form of a ring extending inwardly from the upper edge of the housing 21.

The operation of the amusement device described here- 60 before is as follows: Patrons are admitted to the stairway 34, the spectators taking positions around the gallery walkway 32 and the participants 38 entering the housing through the door 36 and taking positions around the circular floor 22. The attendant then closes the door and 65 closes a switch to energize motor 29. The housing 21 thereupon begins to rotate in a horizontal plane and ultimately reaches a speed at which centrifugal reaction forces the participants radially outward against the inner surface of the housing. This inner surface may be lined with a 70 thickness of resilient material 39, such as sponge rubber or other suitable padding, if desired.

When the maximum rotational speed of the housing 21

has been attained, the attendant then closes another switch to energize motor 19. Thereupon the U-shaped frame supporting the rotating housing 21 is caused to rotate about the axis of the stub shafts 16 of the extensions 14, 15. Thus, as the housing is rotated about its longitudinal axis it is also rotated about its diametric axis.

Although the speed of rotation of the U-shaped frame may be varied within considerable limits, it is preferred that this frame make one complete revolution in a time of about one minute and that this cycle terminate the action for the group of participants.

The required speed of rotation of the housing 21 will vary in accordance with its diameter. In any event the speed required must be of such magnitude that the participants 38 will be held firmly against the housing wall at all times. It will be apparent that the greatest centrifugal force is required to hold the participant against the housing wall when the housing is in the vertical position shown by the dot-and-dash line in Figure 2 and the participant is at the topmost position of rotation. Accordingly, it is this condition which dictates the required maximum speed of rotation of the housing.

During the axial and diametric rotation of the housing the participants are displayed within full view of the spectators stationed on the walkway 32. As the housing rotates about its diametric axis the participants may be observed through the space between the spokes 24. Additionally, the participants may view the surroundings through either the open top or bottom of the housing and thereby become fully cognizant of their changing position.

The modification illustrated in Figures 3 and 4 of the drawing operates upon substantially the same principle as the structure described hereinbefore and illustrated in Figures 1 and 2, but the structural details thereof differs in various respects. Spaced vertical standards 41, 42 are secured at their bottom ends to the rectangular base frame 43. A substantially U-shaped structural frame, including the central section 44, the spaced arms 45, 46 and the lateral extensions 47, 48 projecting outwardly from the respective arms 45, 46 is supported for rotation between the standards by the terminal stub shafts 49 which are journaled in bearings provided in the upper ends of the standards. A gear 51, secured to the lateral extension 47, meshes with a second gear 52 mounted on the drive shaft of electric motor 53, whereby energization of the motor causes rotation of the U-shaped frame about the axis of the stub shafts 49. The foregoing construction is similar to the structural arrangement of the modification first described herein.

An elongated structural support arm 54 is provided at its center with a hub 55 through which a shaft 56 extends, terminating in the hub 57 formed at the center of the center section 44 of the U-shaped frame. The shaft 56 is secured to the hubs 55, 57 in any conventional manner to provide for rotation of the hub 55 but to prevent axial displacement of the same with respect to hub 57. A gear 58 is secured to hub 55 and meshes with a second gear 59 which is secured to the drive shaft of a second electric motor 60 mounted on the central section 44 of the U-shaped frame.

A car or cab is supported at each end of the arm 54. For purposes of illustration the cars are shown to be slightly different in form, it being understood that structural design is a matter of choice. The car shown on the right side in Figure 4 comprises a wall 61 secured to arm 54, the canopy 62 which is optional, and a floor 63 which is secured at its outer end to the bottom edge of the wall 61 and is supported at its inward end by the guard wall 64 secured to the arm 54. Side walls may be provided if desired. In this arrangement the participant 65 takes a standing position against the wall 61.

The car illustrated accommodates two participants, one on each side of the support arm 54. Participants enter and leave the cars by means of a portable stairway (not shown).

5 The car shown on the left side in Figure 4 is constructed in the form of a pair of chairs. A wall 66 secured to the arm 54 provides a support for the backs 67 of the chairs. The seat 68 of each chair is secured at its rearward edge to the bottom edge of wall 66, while the front edge of each chair is connected by legs 69 to a floor 70. The front end of the floor is supported by guard wall 71 secured to arm 54. The participant 72 sits upon the chair and, if desired, may be secured therein by safety belt 73. Side walls may be provided, if so desired.

10 15 It will be apparent that the modified construction shown in Figures 3 and 4 operates in substantially the same manner as the device shown in Figures 1 and 2. Rotation of the cars supported by arms 54 will cause the participants to be thrust radially outward, while rotation of the U-shaped frame will cause the participants to be rotated about the horizontal axis of the stub shafts 49.

20 25 In the event it is desired to rotate the housing 21 or the cars supported by arm 54 at speeds less than that required to provide the centrifugal force described hereinbefore, safety straps may be provided to secure the participants either to the housing wall or to seats secured within the housing.

30 35 It will be apparent to those skilled in the art that various changes in size, design and details of construction of the modifications described hereinbefore may be made without departing from the scope and spirit of the present invention. Accordingly, it is to be understood that the detailed description herein is merely illustrative and is not to be construed in a limiting sense.

35 40 Having now described my invention and the manner in which the same may be used, what I claim as new and desire to secure by Letters Patent is:

40 45 A rotary amusement device comprising a pair of spaced standards, a substantially U-shaped frame extending between the standards and supported at its spaced ends on the standards for rotation about a horizontal axis, a motor drive interconnecting the frame and one of the standards for rotating the frame on said horizontal axis, a single bearing mounted on the frame centrally of the ends of the latter with the axis of the bearing extending substantially normal to the said horizontal axis of the frame, a high speed occupant support frame mounted on the bearing and extending radially thereof for rotation about the bearing axis, a second motor drive interconnecting the occupant support frame and the U-shaped frame for rotating the occupant support frame about said bearing axis, and an occupant back support mounted on the occupant support frame at the radial extremity of the latter, the back support extending substantially parallel with the bearing axis and being of sufficient height to support the entire back of an occupant stationed thereagainst, the high speed occupant support frame being adapted to be driven at a rotational speed sufficient to hold an occupant against the back support by centrifugal force during rotation of the U-shaped frame on its horizontal axis.

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