Nov. 3, 1964 L. WINTON 3,155,389

ROUNDABOUT AMUSEMENT RIDE

Filed Aug. 29, 1960 2 Sheets-Sheet 1

FIG. 1

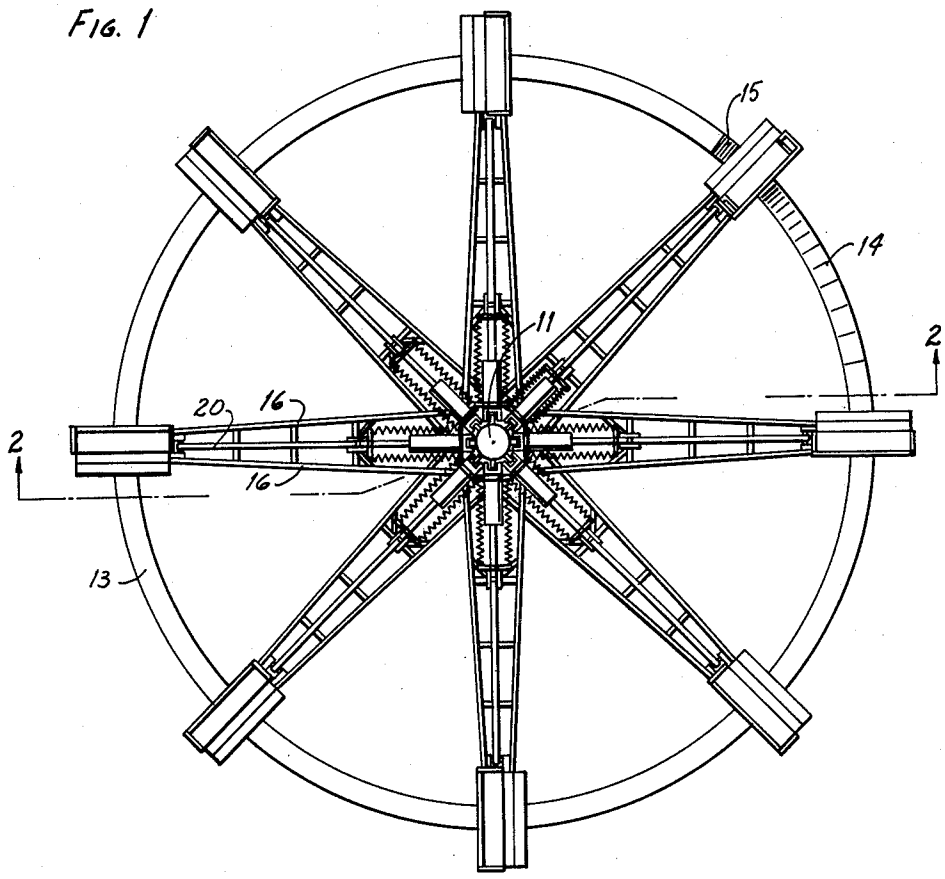
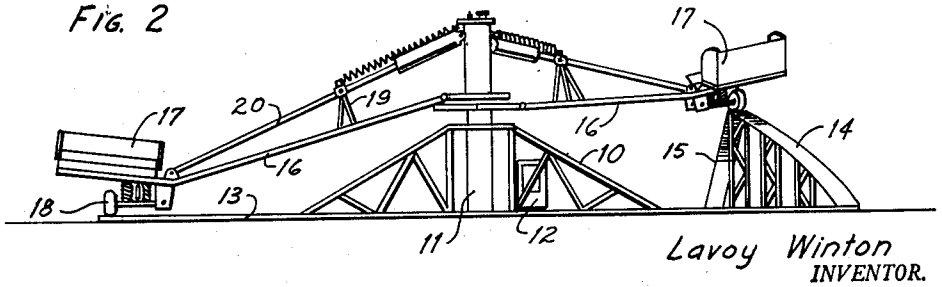


FIG. 2



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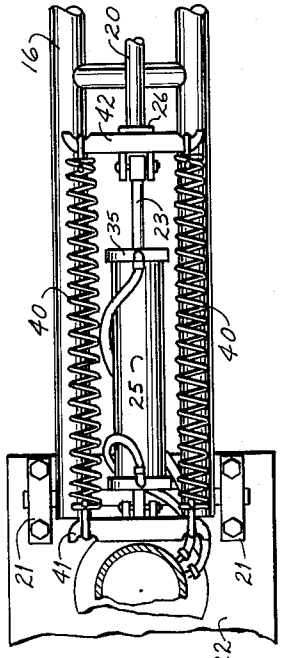

FIG. 4

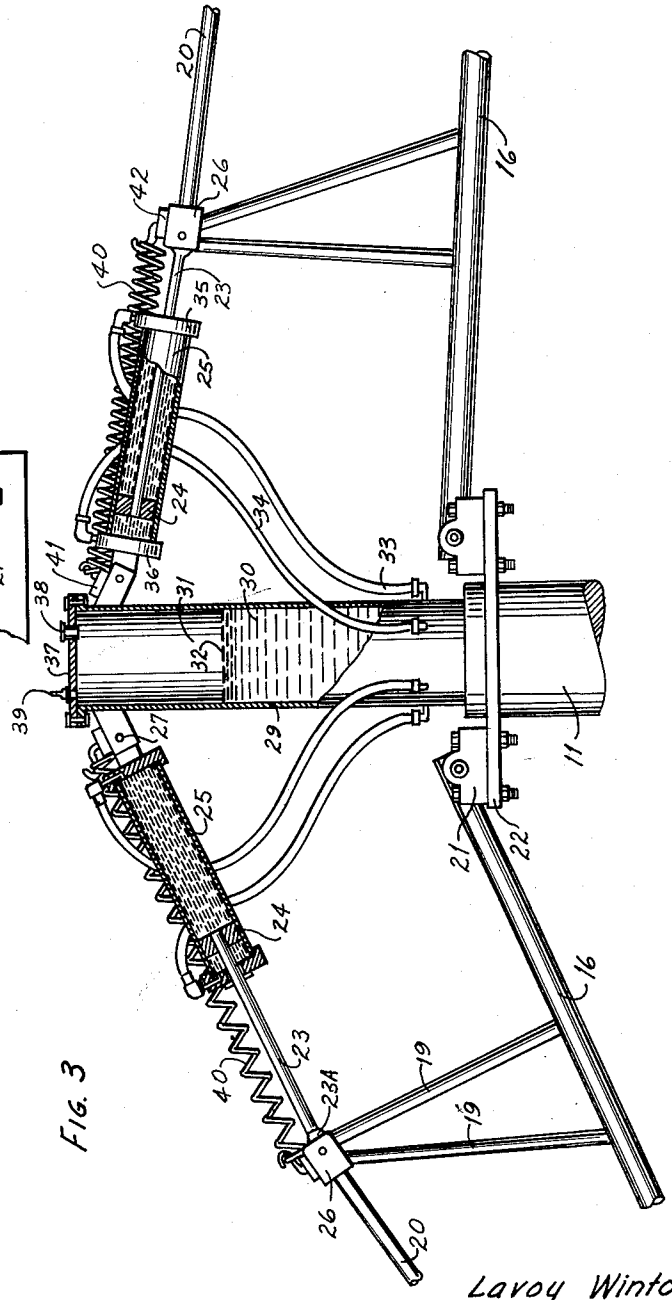

FIG. 3

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3,155,389
ROUNDABOUT AMUSEMENT RIDE

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Filed Aug. 29, 1960, Ser. No. 52,399
1 Claim. (Cl. 272—44)

This invention relates to amusement devices and is particularly concerned with a rotary vehicular device in which the occupant bearing seat ascends a circular ramp and is catapaulted therefrom in free space for descent in its circular path of travel.

Devices of this general character have heretofore been invented, among which is that disclosed in the Bartlett Patent No. 2,895,735, issued July 21, 1959. In such devices a crucial element is the effective and efficient means by which the simulated free flight is restrained to preclude any danger of violent impingement and undue shock as the seat descends to the receiving support therebelow. In the device of the aforementioned patent an uninhibited ascent with controlled descent is accomplished by the use of a single acting hydraulic cylinder providing virtually no hydraulic resistance when a car moves upwardly on the ramp, but providing gravitational resistance by restricted hydraulic flow as the car descends. Since the cars or seats carry human occupants, it is of course of vital importance that every possible safety factor may be provided to insure against any failure by which an unrestricted descend might cause disastrous impact.

Applicant's device provides a simple, effective, efficient, conventional double, or two-way acting cylinder and piston arrangement ensuring positive control independent of piston check valves or the like. In conjunction therewith, or as an alternative thereto, the present invention also provides mechanical springs to bias towards an elevation of the seat and yieldable under the forces of gravity to permit a controlled descent of the car seat from the ramp. However, neither the hydraulic arrangement, nor the mechanical spring arrangement individually or in combination, are such as to deprive the motion of the seat in its circular path of travel from the exhilarating effect of the catapulted flight in free space.

Thus it will be seen that it is among the objects of the present invention to provide a novel and improved roundabout type of amusement apparatus characterized by the provision of means simulating a catapulted free flight of an occupant carriage from the end of an ascending ramp. It is also an object of the present invention to provide novel and improved means for precluding the possibility of free gravitation movement of the carriage by which injurious shock may be experienced at the end of the descent from the ramp. A more specific object of the invention is to provide novel and improved hydraulic means for controlling the descent of the carriage from the ramp, which means is double acting, restraining either ascent or descent, and which means provides a cushioning action as the carriage ascends and descends. A further object of the invention is to provide entirely mechanical means for restraining the movement of the carriage, which means may be used alone or in conjunction with fluid means, so that should the fluid system fail injurious results will not ensue. Numerous other objects, features and advantages of the present invention will be apparent from consideration of the following specification taken in conjunction with the accompanying drawings, in which

FIG. 1 is a top plan view of the present preferred embodiment of the invention,

FIG. 2 is a central sectional view of that form of the invention shown in FIGURE 1, taken on the lines 2—2 of FIGURE 1,

FIG. 3 is a detail fragmentary central section of the device, and

FIG. 4 is a detail fragmentary top plan view illustrating the cylinder and spring arrangement.

Referring to FIGURES 1 and 2 of the drawings, it will be seen that the invention is generally characterized by a central supporting structure **10**, supporting in vertical position for rotation, a central beam **11** which may be controlled and driven by any suitable means, as from a control and drive cabin illustrated at **12**. In a circular path co-axial with the beam **11** a track or runway **13** is provided, including an ascending ramp **14** terminating in a sharp decline **15**. Pivotally mounted from the beam **11** and for rotation therewith, are arms **16** on the outer extremities of which are mounted seats **17**. The seat structure **17** is preferably supported while upon the runway **13** by wheels **18**. The arms **16** are pivoted between upstanding lugs **21** of a plate **22** carried by the beam **11** and rotated therewith. In operation, as the beam **11** is rotated with its pivoted arms **16**, the seats travel upon the runway **13** except at such time as the seats are catapulted for simulated free motion from the ramp **14**.

For restraining the pivotal movement of the arms **16**, hence the flight of the seats **17** as they move from the end of the ramp **14**, a structure including a truss is provided for the arms **16**, each including a vertical truss bracket **19** formed intermediate the ends of the arms **16** and an associated truss bar **20** extending from the bracket **19** to the extremities of the arms **16** adjacent the mounting of the seats thereon. The restraining means itself is more clearly shown in FIGURES 3 and 4. One type of such means includes a piston rod **23** engaged at its outer end **23A** with a head **26** fixed thereto at the upper end of the truss upright **19** and rigid with the truss rod **20**. The piston rod **23** carries a solid piston **24** located within an hydraulic cylinder **25** which cylinder is pivotally connected as at **27** with a piston bracket mounted upon the outer face of the upper end of the beam **11** for rotation therewith in unison with the plate **22**.

The upper end of the beam **11** defines a cylindrical fluid chamber **29** in the lower end of which there is provided hydraulic fluid indicated at **30** above which there is confined a gaseous fluid such as air, indicated at **31**. The interface between the air and oil is indicated by the dotted line **32**. For each cylinder there is provided a pair of oil lines **33** and **34**, one leading from each end of the cylinder to the oil section of the chamber **29**. Oil lines **33** and **34** provide restricted oil ingress and egress from the cylinders through the outer and inner end heads **35** and **36** respectively. Since the pistons **24** are solid without provision for passage of hydraulic fluid through or about the pistons, movement of the pistons in either direction can be accomplished only through passage of the hydraulic fluid through lines **33** and **34**. The upper end of the cylindrical chamber **29** formed at the top of the beam **11**, is closed by a cap **37** provided with a removable closure **38** by which the oil **30** may be introduced into the chamber and an air valve **39** through which the air pressure over the interface **32** may be controlled.

A supplementary or alternative means for counteracting gravitational forces as the seats leave the ramp, is provided by a pair of springs **40** one on each side of each cylinder. At the piston bracket the inner ends of the springs are attached to a yoke **41** while the opposite ends of the springs are secured to an opposed parallel yoke **42** mounted on the head **26** of the truss arrangement. Thus, when the arms **16** are fully elevated as shown at the right of FIGURES 2 and 3, the coil springs are relaxed. Upon descent of the seat, the arms **16** move downwardly tensioning the springs **40**, as illustrated to the left of FIGURES 2 and 3. While the preferred present structure of the device as now in operation utilizes the hydraulic cylinder arrangement and the springs, it will be understood that the invention contemplates the possible use

of either the cylinders or the springs as alternative means for controlling the descent of the seats. However, the enhanced safety factor of the utilization of both means, is believed advisable since should either means fail, the other will ensure safety of operation.

From the foregoing, it will be seen that the present invention provides a novel, simple and improved amusement device. The invention embraces the use of hydraulic cylinders and utilizes a two-way cylinder, avoiding the necessity of valving arrangements in the piston or cylinder by which a one-way cylinder is provided. The invention further provides for the use of mechanical spring means to retard the downward movement of the arms and contemplates that the cylinder and spring arrangements may be either selectively used or preferably used jointly to enhance the safety factor. It will, of course, be understood that in the practice of the invention, numerous changes, modifications and the full use of equivalents may be resorted to without departure from the spirit or scope of the invention as outlined in the appended claim.

What I claim is:

A roundabout of the character set forth including, a central vertical rotary beam, arms pivotally mounted on said beam for rotation therewith, seats on said arms, an ascending curved ramp in the path of travel of said seats up which said seats are caused to travel as the beam and arms are rotated and whereby said arms are pivoted upwardly, an abrupt termination of said ramp providing an unsupported flight of said seats in free space whereby they tend to drop by gravity pivotally lowering the arms therewith, and double acting hydraulic means restraining the pivotal movement of said arms, said means including a chamber in said beam, hydraulic fluid in said chamber and a confined compressible fluid in said chamber, each of said hydraulic means being connected with said chamber whereby fluid expelled from the hydraulic means of each arm will pass into said chamber to be circulated and cooled therein.

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