Oct. 9, 1951 J. PSAILA 2,570,981

VERTICAL AXIS CIRCULAR SWING

Filed Jan. 10, 1949 2 Sheets-Sheet 1

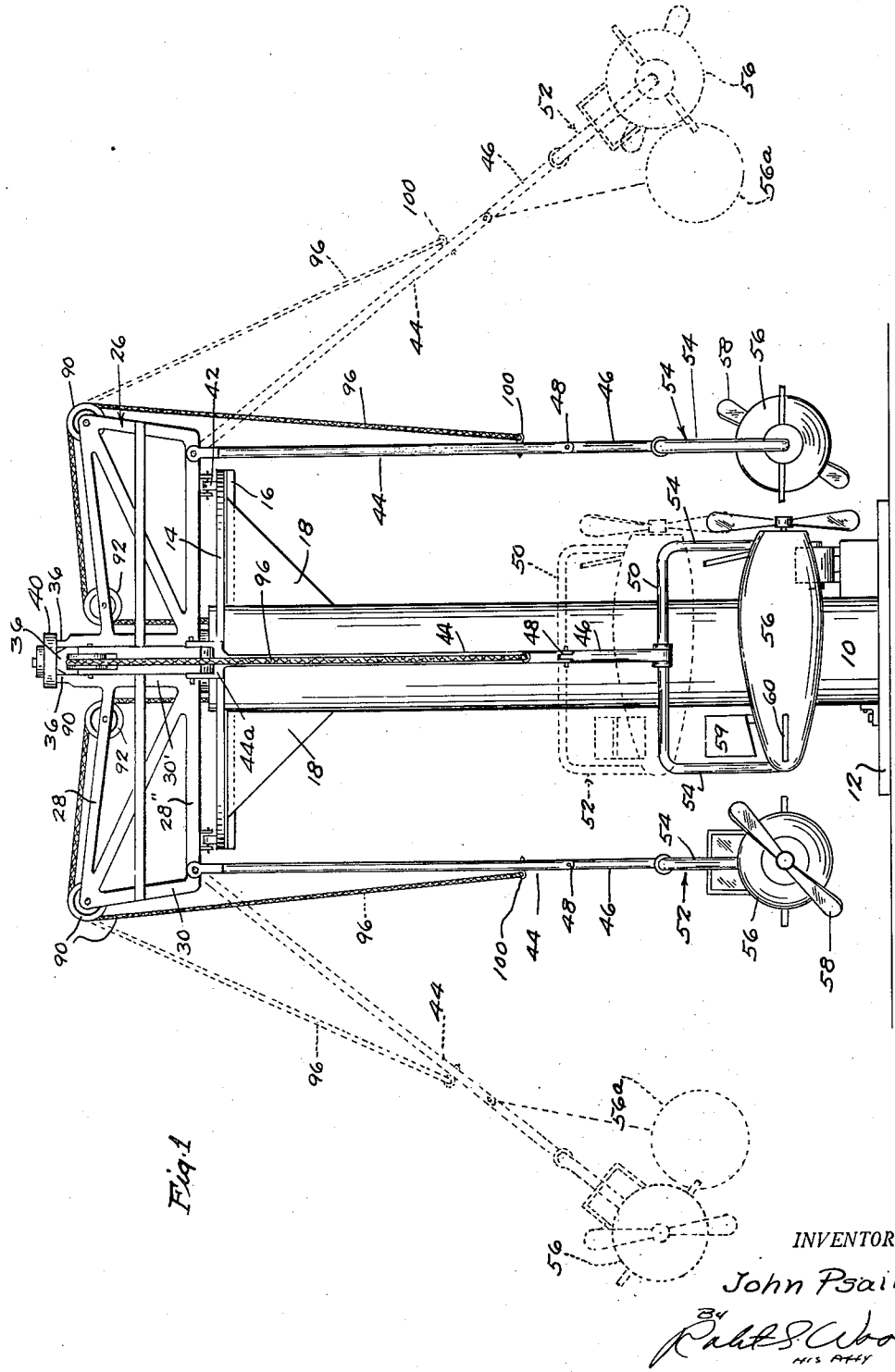

Fig. 1

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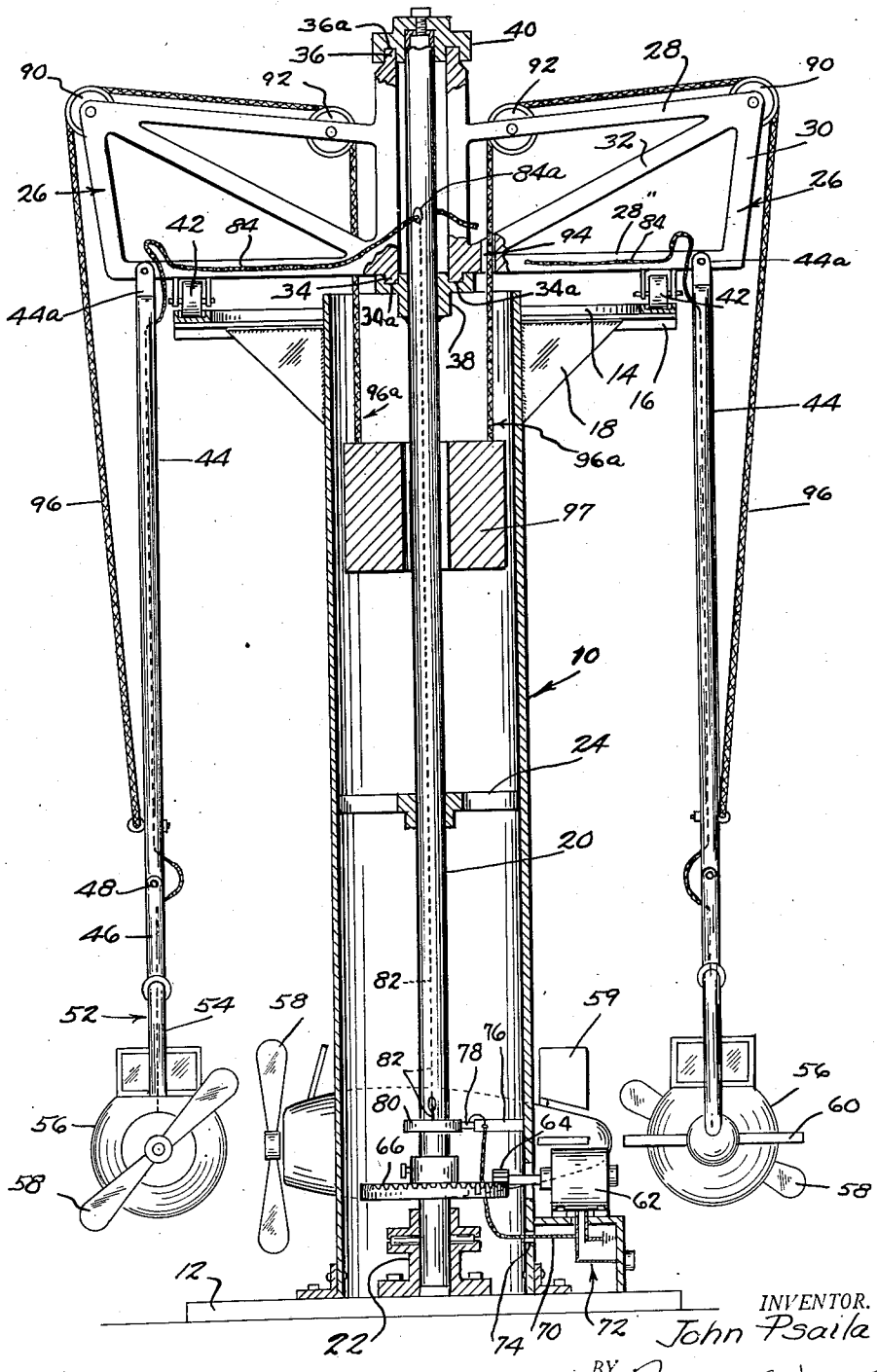

Fig. 2

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VERTICAL AXIS CIRCULAR SWING

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1 Claim. (Cl. 272—41)

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The present invention relates to amusement apparatus of the type generally known as an aerial merry-go-round, usually found in public amusement places, such as parks, fairs and carnivals, and it is to be noted that points of novelty present in the invention, are also applicable in the construction of children's toys, made in substantial simulation thereof.

An object of the invention is to provide means in the construction, adding to flexibility of presently accepted standard supports for a car or passenger vehicle, to the end that a patron's ride may be made to have a degree of thrill, greater than that of merely riding through a circular course of ascending and descending value, and which flexibility in the supporting means may be utilized by a patron upon manipulation of certain standard controls present in the vehicle.

Another object of the invention is to provide means whereby greater response to developed centrifugal force is obtained to the end that the vehicles or cars of the apparatus, including the occupants thereof, will climb more rapidly to a circular plane of maximum elevation upon the application of rotative effort thereto, and conversely thereof, to return to the loading point more rapidly upon cutting off rotative effort, to the end that a total speed up of operation is obtained, which fact operates to the edification of the patrons and to the financial advantage of the operator of the apparatus.

A further object of the invention is to provide means comprising the provision of counter-balancing weights so connected to the apparatus as to develop an increased mechanical advantage or leverage action upon outward movement of passenger cars or airplanes, which tends to offset the combined weight of the airplanes with appurtenances thereof and the weight of riders to the end that a definite saving of propelling power is effected in the operation of the apparatus.

A still further object of the invention is to provide an amusement apparatus which is mechanically simple, which is reliable in operation, sturdy in construction, and which is of relative low cost.

Other objects, features and advantages of the invention may be noted from a study of the accompanying drawing, the detailed description and the subjoined claim.

In the drawing:

Figure 1 is a utility view showing an amusement apparatus of the aerial merry-go-round

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type, in which the features of novelty of the invention are incorporated; and

Figure 2 is a view partially in section showing otherwise hidden detail of construction.

The amusement apparatus in which the features of novelty of this invention are incorporated, comprises a hollow central tower 10 which is bolted or otherwise secured to a foundation 12. Adjacent the upper end of the tower 10 I place an annular track 14 which is preferably made of channel iron and which is supported upon radial arms 16 which are secured to the tower at their inner end and which are supported upon angular braces 18 which may be welded to the tower substantially as shown in the drawing.

Within the tower 10 I place a revolvable shaft 20 which is centered within and supported by a suitable bearing 22, while upwardly therefrom I place another bearing 24 which is also adapted to center and steady the shaft 20. Adjacent the upper end of the shaft 20 and exteriorly of the tower 10 I place a plural number of radially disposed arms 26 which are formed with substantially horizontally disposed rails 28 and vertically disposed stiles 30 and with a compression member 32 to impart strength thereto.

The upper and lower ends of the stiles 30' extend outwardly from the rails 28 to form trunnions 34 and 36, and of these trunnions, trunnion 34 rests within a companion recess 34a formed in a flange 38 welded or otherwise secured to the shaft 20, while the trunnion 36 lies nested within a companion recess 36a formed in a capping 40 upon the extreme upper end of the shaft 20.

The lower rails 28'' have wheels 42 journalled thereon, and which are adapted to roll within an annular track 14 in their partial support of the radial arms 26. Each of the lower rails 28 is provided with a pendent tubular arm 44 in hinged relationship thereto by means of a yoke 44a, and each of the tubular arms 44 is provided with a fore-shortened extension 46 which is hinged at 48 thereto. The otherwise free end of the extension 46 is attached to the horizontal mid-portion 50 of an inverted U-shaped member 52, the legs 54 of which are adapted to be connected to an airplane-like car 56 which is adapted in conventional manner to provide seats for patrons.

With respect to the airplane cars 56, it is proposed that each of these be provided with an electric motor driven propeller 58, and with movable rudders 59 and elevators 60, manipulation of which will provide a degree of personal

control of the airplane concerned. Also, the motor driven propellers are intended to provide an alternative source of motive power for the apparatus as a whole, the prime source of power being a motor 62, stationed adjacent the base of the tower 10, which is provided with a gear 64 in mesh with a ring gear 66 secured upon the shaft 20, so that upon rotation of the gear 64, the gear 66 and the shaft 20 including the whole of the apparatus is rotated therewith.

The circuit involved to carry energy to each of the motors used to drive a propeller 58, is quite simple, and could comprise a single lead 70 extending from the motor circuit 72, through a suitable opening 74 in the side of the tower to a base 76, a brush 78, a slip ring 80 and an upwardly extending lead 82, which can be formed with branch leads 84 extending through suitable openings 84 in the upper end of the hollow shaft, and thence outwardly along each of the radial arms 26 and then downwardly along the side of, or through the pendant tubular arms 44, and 46 to the member 52, and thence to a motor (not shown) in each of the airplanes 56. The other lead to and from the motor can be grounded to the frame of the apparatus.

Each of the radial arms 26 are provided with suitable openings therein to receive grooved wheels 90 and 92 and with a passageway 94 for a cable 96, the outer end of which is securely attached to an arm 44 and which extends upwardly and over the pulley wheels 90 and 92 and thence downwardly through the passageway 94 to the interior of the tower where they are each attached to a common weight 97 which serves as a partial counter-balance for the weight of the tubular arms 44 and 46, and the airplane with its accessories, as well as the weight of the occupants of each of the airplanes 56.

Having thus described the structural detail of my invention, I will now describe the operation thereof as applied to an aerial merry-go-round.

Upon energizing the motor 62, the gear 64 will rotate gear 66 and the shaft 20 within the tower, and will carry the radial arms 26 and the airplanes 56, including intermediate structural elements therewith in a circular course around the tower. As the speed of the afore-mentioned parts accelerates, the pendent arms 44 and the airplanes will swing outwardly under centrifugal force in an ascending arc which fore-shortens the distance between the eye 100 and the axial center of the grooved wheel 90, so that the inner end 96a of the cable is drawn downwardly within the tower by means of the weight 97 attached thereto. This inward movement of the cable is not just a mere retraction to take-up slackness created by the fore-shortening of the length of cable when in the dotted line position shown in Figure 1 as compared with the full line position thereof, but is also expressive of the gravitational pull of the mass of the weight 97 which operates at all time to lift the airplane and associated parts by swinging the pendant arm 44 around its hinged connection 44a upon the rail 28'', and the further the arms 44 move from full pendency, the more effective the counterbalancing effect of the weight 97, and this fact

is of great importance, for it occurs at a time or during an interval when more and more power is required to outwardly swing the airplanes to increasingly greater heights, thereby operating to save the input power required to lift an amount of weight represented by the mass 97 and the mechanical advantage thereof as represented by the change in position of the arm 44 in moving from full pendency to the horizontal, clearly a matter of the greatest importance to operators of this type of equipment.

During an intermediate period less than when in full horizontal position, the airplane 56 and the extension 46 are not apt to assume an outward position in line with the arm 44, but may assume a more pendent position with respect to the arm 44 in some such degree as represented by the dotted lines 56a in Figure 1, and this last mentioned position may be approached or attained in part by reason of working the control surfaces 59 and 60 afore-mentioned, thereby imparting enhanced pleasure to the patron of the apparatus.

Having thus described my invention as applied to an amusement apparatus of the character described, that which I believe to be novel and for which Letters Patent are sought, is:

In an amusement apparatus, a vertical, tubular column fixedly secured to a base, a driven shaft centered in said column, a recessed flange on said driven shaft and a like recessed capping upon the free end of the shaft, and radial arms, said radial arms having trunnions on their inner ends for detachable socketing in the recesses in said flange and capping, a circular track located upon and exteriorly of said column in partial support of said radial arms, a plural number of passenger vehicles, a plural number of pendent tubular arms, said pendent arms being hingedly connected to said vehicles and said radial arms for direct support of said vehicles, sheaves on each of said arms, a cable running over the sheaves on each radial arm and having its one end so attached to a pendent tubular arm as to lie in an acute angle to the longitudinal axis thereof during full pendency of the related arm, and to a weight centered around said shaft and within said column and held aloft by the inner ends of all of the cables running over said sheaves, and power means to rotate the driven shaft within said column.

JOHN PSAILA.

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