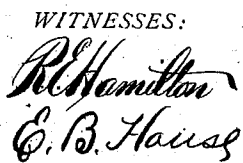




923,087.

6 SHEETS—SHEET 2.



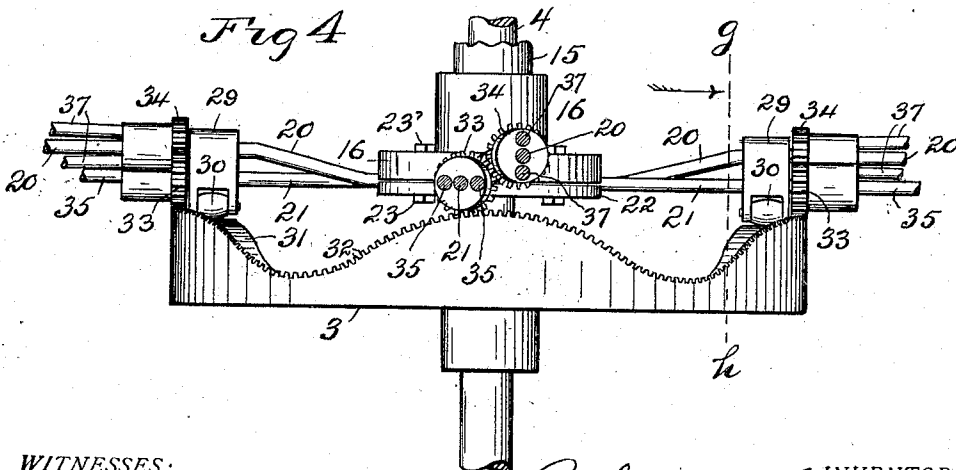
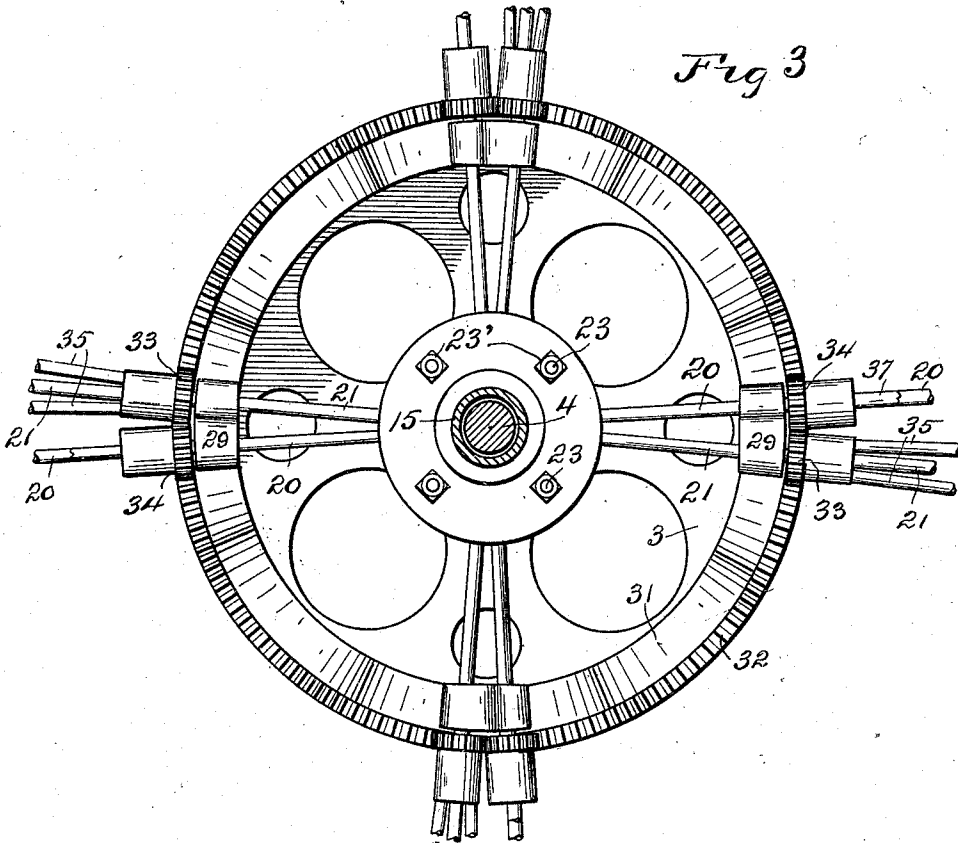
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 CAROUSEL OR MERRY-GO-ROUND.  
 APPLICATION FILED JAN. 16, 1908.

923,087.

Patented May 25, 1909.

6 SHEETS—SHEET 3.



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6 SHEETS—SHEET 4.

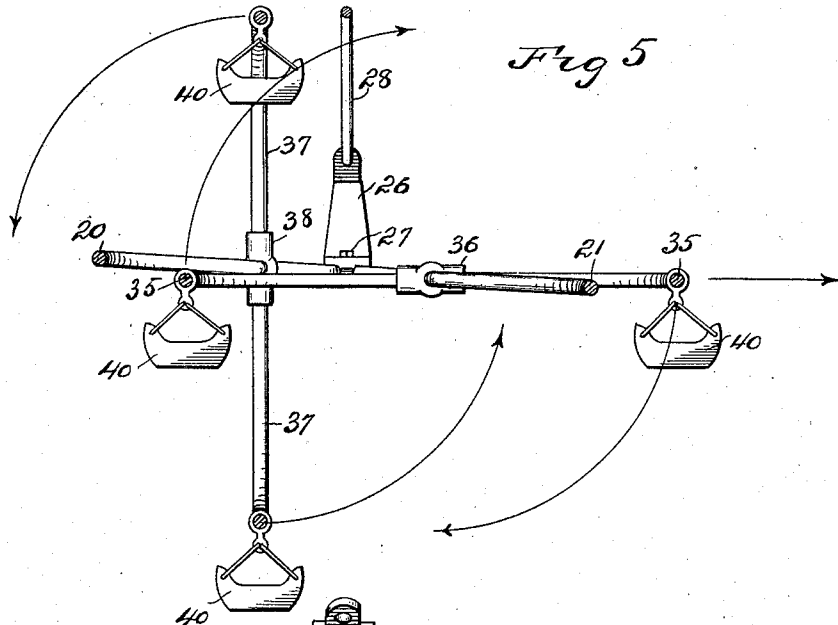


Fig 5

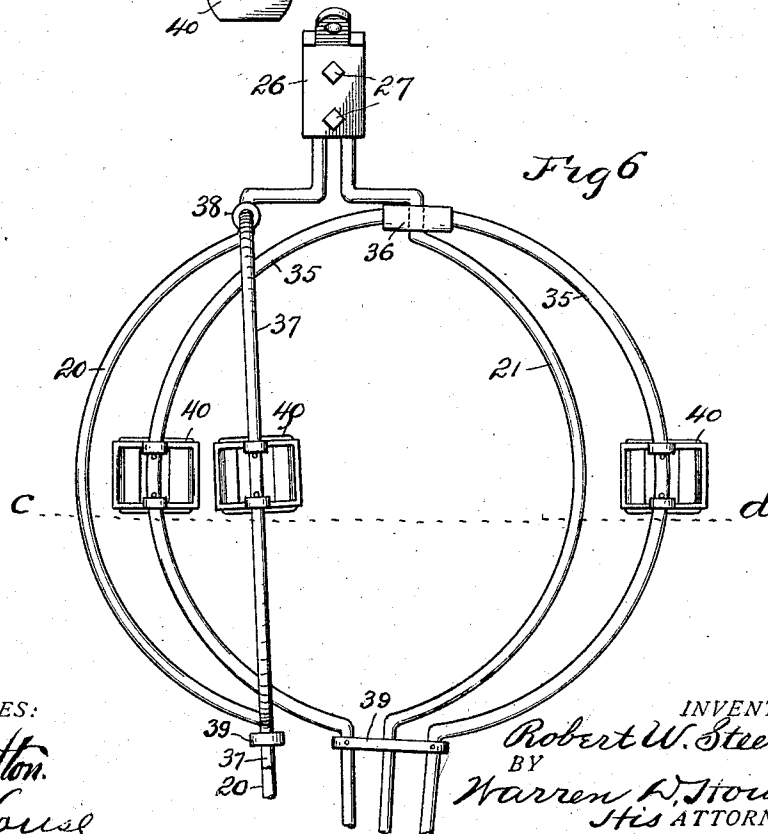


Fig 6

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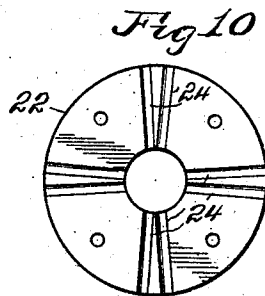
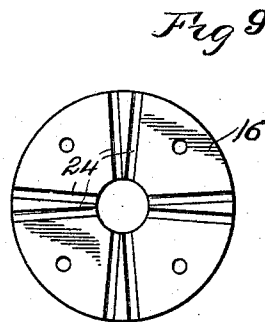
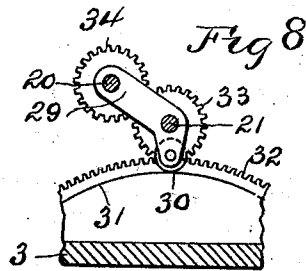
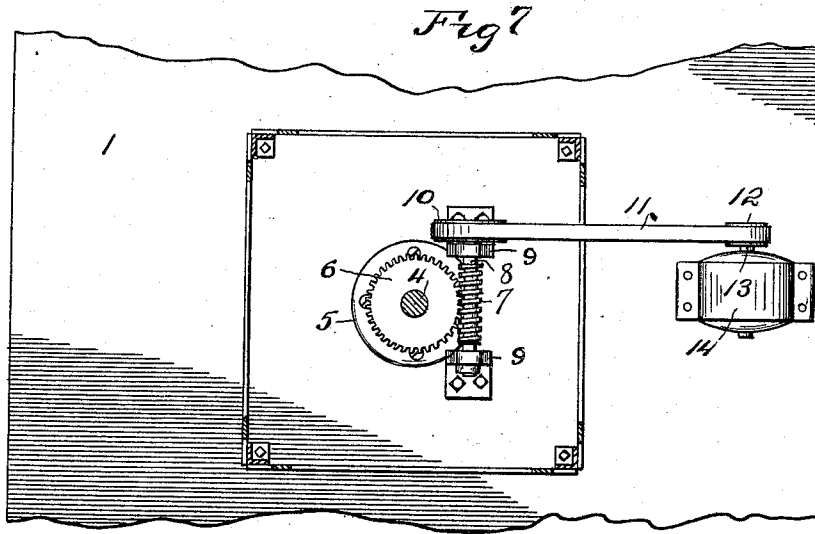
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5 SHEETS—SHEET 5.



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# UNITED STATES PATENT OFFICE.

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## CAROUSEL OR MERRY-GO-ROUND.

No. 923,087.

Specification of Letters Patent.

Patented May 25, 1909.

Application filed January 16, 1908. Serial No. 411,128.

*To all whom it may concern:*

Be it known that I, ROBERT W. STEEN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Carousels or Merry-Go-Rounds, of which the following is a specification.

My invention relates to improvements in carousels or merry-go-rounds.

The object of my invention is to provide a carousel, which is provided with one or more cars, with means by which the cars may be simultaneously moved in a number of directions, thereby bewildering and at the same time amusing the occupants of the cars.

The novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings illustrative of my invention—Figure 1 is a plan view of the carousel. Fig. 2 is a central vertical sectional view of the same. Fig. 3 is a horizontal section taken on the dotted line *a—b* of Fig. 2. Fig. 4 is a side elevation of what is shown in Fig. 3. Fig. 5 is a vertical section taken on the dotted line *c—d* of Fig. 6. Fig. 6 is a plan view of the outer ends of a pair of the supporting arms and the car carrying devices revolubly mounted thereon. Fig. 7 is a horizontal section taken on the dotted line *e—f* of Fig. 2. Fig. 8 is a vertical section taken on the dotted line *g—h* of Fig. 4. Fig. 9 is an under view of the upper clamping member. Fig. 10 is a top view of the lower clamping member.

Similar characters of reference denote similar parts.

1 denotes a horizontal base upon which is supported a vertical framework 2, upon the upper end of which is supported a horizontal stationary member 3, through which extends a vertical rotary shaft 4, the lower end of which is rotatively mounted in a bearing 5 supported on the base 1.

Secured to the shaft 4 is a worm wheel 6, which is engaged by a worm 7, rotative with a horizontal shaft 8, rotatively mounted in bearings 9 supported upon the base 1. Secured to the shaft 8 is a pulley 10, connected by a belt 11 with a pulley 12, secured on the armature shaft 13 of an electric motor 14.

Mounted on the shaft 4 is the support which carries the car carrying devices. This support preferably comprises a sleeve vertically slidable on and rotatable with the shaft 4 and provided with horizontal, radially dis-

posed arms. Said sleeve consists of a vertical tube 15, slidable upon the shaft 4 and having rigidly secured to its lower end, above the member 3, an annular, upper clamping member 16, provided with a keyway 17, in which is mounted a longitudinal key 18, located in a longitudinal groove provided in the shaft 4. Secured to the upper end of the tube 15 and encircling the shaft 4 is a ring 19. A plurality of horizontal arms, comprising preferably cylindrical bars, 20 and 21, have their inner ends clamped between the annular upper clamping member 16, and the lower clamping member 22, which encircles the shaft 4 below the clamping member 16 and is secured thereto by means of vertical bolts 23, which extend through both clamping members, and are provided at their upper ends with nuts 23', bearing upon the upper side of the member 16. Opposing sides of the members 16 and 22 are preferably provided with cooperating radial grooves 24, in which are located the inner ends of the bars or arms 20 and 21. The bars or arms 20 and 21, are arranged in pairs, the outer ends of the bars of each pair being clamped between two plates 25 and 26, secured to each other by means of vertical bolts 27. A plurality of inclined supporting rods 28 have their upper ends secured to the ring 19 and their lower ends secured respectively to the plates 26.

A plurality of blocks 29, are provided each with horizontal holes, two in number, through which extend a pair of bars 20 and 21. A plurality of carrying wheels 30 are rotatively mounted, one below and secured to each block 29, said carrying wheels being supported upon a circular, undulatory track 31, upon the upper side of the member 3, and which encircles concentrically the shaft 4. The undulatory raised portion, just referred to, is provided with a circular row of teeth 32, which are also located concentrically with the shaft 4. The undulatory raised portion 31, therefore, comprises a circular rack in which are engaged a plurality of pinions 33, which are rotatively mounted one upon each bar 21. Meshing with the pinions 33 and rotatively mounted, one upon each bar 20, are a plurality of pinions 34. The pinions 33 and 34 are provided with outwardly extending hubs, each provided with two horizontal, radial, diametrically opposite holes. In said diametrically opposite holes of each pinion 33 are secured the inner

ends of two outwardly extending bars 35, which serve as car carrying devices, the outer ends of which are rigidly secured to a block 36, rotatively mounted upon the bar or arm 21. Similar car carrying devices 37, have their inner ends rigidly secured in the diametrically opposite holes in the pinions 34, the outer ends of said bars 37 being secured, each pair, to a block 38, rotatively mounted upon the adjacent bar or arm 20. Each pair of bars 37 extends through and is rigidly secured to a block 39, rotatively mounted upon the bars or arms 20. Similar blocks 39 are similarly secured to the bars 35 and are rotatively mounted upon the bars or arms 21. Each bar 37 intermediate the blocks 38 and 39, and each bar 35 intermediate the blocks 36 and 39, is preferably in the form of a half circle, the center of which is in the axis of revolution of the car carrying devices. Each pair of bars 35 is located in a plane disposed at right angles to the plane in which is located the adjacent pair of car carrying devices 37. The orbit described by each pair of car carrying devices 35 intersects the orbit described by the adjacent pair of car carrying devices 37, but by reason of the relative disposition of the car carrying devices and by reason of the pinions 33 and 34 of each pair being of the same diameter, adjacent pairs of car carrying devices 35 and 37 never come into contact, one pair with the other.

Pivottally suspended from the center of the semi-circular portion of each car carrying device or bar 35 and 37, is a car 40, which is retained by gravity in the upright position. The cars 40 are designed to contain occupants.

In the operation of my invention the motor 14 is run, thus rotating by means of the mechanism already described, the shaft 4 and with it the support comprising the tube 15, ring 19, clamping members 16 and 22, and arms or bars 20 and 21. When the shaft 4 is rotated the carrying wheels 30 will rest upon and follow the undulatory track 31, thereby vertically reciprocating the support having the arms 20 and 21 and thereby imparting to the car carrying devices, 35 and 37, an upward and downward movement distinct from their revolving movement around their axes. At the same time the pinions 33 by reason of their engagement with the teeth 32 will be rotated in one direction, thereby imparting revolution in a like direction to the car carrying devices 35. The pinions 34, by reason of their engagement with the pinions 33, will be rotated in the opposite direction, thereby revolving the car carrying devices 37 in a direction opposite the direction of revolution of the car carrying devices 35. It will thus be seen that each car carrying device 35 and 37, will, when the shaft 4 is rotated, have three distinct movements imparted to it, namely, revolution around the axis of its driving pin-

ion, revolution around the shaft 4, and vertical movement due to vertical reciprocation of the support on the shaft 4. The cars 40 partake of these various movements which excite in the occupants of the car pleasing but bewildering sensations.

Various modifications, within the scope of the appended claims, may be made in my invention without departing from its spirit.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:—

1. In a carousel, the combination with a vertical shaft, of a rotary support vertically slidable on said shaft, a stationary member having a circular undulatory upper surface encircling said shaft and supporting said support, a car carrying device carried by said support and rotative around a horizontal axis, and means for rotating said car carrying device when the support is rotated.

2. In a carousel, the combination with a vertical shaft, of a rotary support slidable on said shaft and having one or more carrying wheels, a stationary member having a circular undulatory upper surface encircling said shaft and supporting said carrying wheels, a car carrying device carried by said support and rotative around a horizontal axis, and means for rotating said device when said support is rotated.

3. In a carousel, the combination with a vertical rotary shaft, of a support slidable thereon and rotative therewith, a stationary member having a circular row of teeth encircling said shaft and having an undulatory upper surface supporting said support, a car carrying device carried by said support and rotative around a horizontal axis, and a pinion engaging said teeth and rotative with said car carrying device.

4. In a carousel, the combination with a rotary support, of a vertical shaft on which the support is vertically slidable, a stationary member having a circular row of teeth encircling said shaft and having an undulatory upper surface supporting said support, a car carrying device carried by said support and rotative thereon around a horizontal axis, a car pivottally suspended from said carrying device, and means for rotating said carrying device when the support is rotated.

5. In a carousel, the combination with a vertically movable support rotative around a vertical axis, of a stationary member having an undulatory upper surface supporting said support, the undulatory surface having a circular row of teeth encircling said axis, a pinion rotatively mounted on said support and engaging said teeth, a car carrying device carried by said support and rotative thereon around a horizontal axis with said pinion, and a car pivottally suspended from said car carrying device.

6. In a carousel, the combination with a vertical shaft, of means for rotating said shaft, a vertically movable support rotative with said shaft and having one or more carrying wheels, a stationary member having an undulatory upper surface provided with a circular row of teeth encircling said shaft, said carrying wheels being supported by said undulatory surface, a car carrying device carried by said support and revoluble around a horizontal axis, a pinion engaging said teeth and rotative upon said support for revolving said car carrying device, and a car pivotally suspended from said car carrying device.

7. In a carousel, the combination with a support rotative around a vertical axis and vertically movable, of two carrying devices carried by said support, means for moving said support vertically when the support is rotated, and means for revolving said devices in opposite directions around horizontal axes when the support is rotated.

8. In a carousel, the combination with a support rotative around a vertical axis and vertically movable, of two car carrying devices carried by said support, a stationary member having an undulatory upper surface supporting said support, and means for revolving said devices in opposite directions around horizontal axes when said support is rotated.

9. In a carousel, the combination with a vertically movable support rotative around a vertical axis, of two car carrying devices carried by said support, a stationary member having an undulatory upper surface supporting said support and provided with a circular row of teeth encircling the said axis, a pinion secured to one of said devices and rotatively mounted on said support and meshing with said teeth, and means connected with said pinion for revolving the other of said devices.

10. In a carousel, the combination with a vertically movable support rotative around a vertical axis, of two car carrying devices carried by said support and revoluble around horizontal axes, two pinions rotatively mounted on said support and meshing with each other and secured respectively to said devices for revolving the same, and a stationary member having a circular undulatory track supporting said support and provided with a circular row of teeth encircling said axis and engaged by one of said pinions.

11. In a carousel, the combination with a vertical shaft, of means for rotating said shaft, a support comprising a sleeve vertically movable upon and rotative with said shaft and provided with one or more horizontal radial arms, pinions rotatively mounted

one on each of said arms, a stationary member having upon its upper side a circular track and a circular row of teeth, said track and row of teeth having corresponding undulations, the track supporting said support and said teeth engaging said pinions, and one or more car carrying devices revolubly mounted one on each of said arms and revolved respectively by said pinions.

12. In a carousel, the combination with a vertical shaft, of means for rotating the same, a support comprising a vertically slidable sleeve rotative with said shaft and having radial arms, said support having carrying wheels, a stationary member having upon its upper side a circular track encircling said shaft and supporting said carrying wheels, said member having on its upper side a circular row of teeth encircling said shaft, said row of teeth and said track having corresponding undulations, pinions rotatively mounted one on each of said arms and engaging said row of teeth, and one or more car carrying devices revoluble one on each of said arms and revoluble respectively by said pinions.

13. In a carousel, the combination with a vertical shaft, of a support comprising a rotary sleeve vertically movable on said shaft and provided with horizontal radial arms, pinions rotatively mounted one on each of said arms and disposed in pairs which mesh with each other, car carrying devices revoluble one around each of said arms and disposed in pairs connected and revolved with said pairs of pinions respectively, and a stationary member having a circular undulatory track supporting said support and encircling said shaft and having a circular undulatory rack encircling said shaft and engaging one pinion of each of said pair of pinions.

14. In a carousel, the combination with a support rotative around a vertical axis and vertically reciprocative, of two car carrying devices carried by said support and revoluble thereon around horizontal axes in orbits which intersect, the disposition of said devices being such that they do not pass through the points of intersection at the same time, means by which when said support is rotated vertical reciprocation will be imparted thereto and means by which revolution in opposite directions will be imparted to said car carrying devices.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

ROBERT W. STEEN.

Witnesses:

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J. C. IRWIN.