May 7, 1929. E. O. FANKHAUSER ET AL 1,712,340

AMUSEMENT APPARATUS

Filed Feb. 24, 1927 3 Sheets-Sheet 1

Fig. 1.

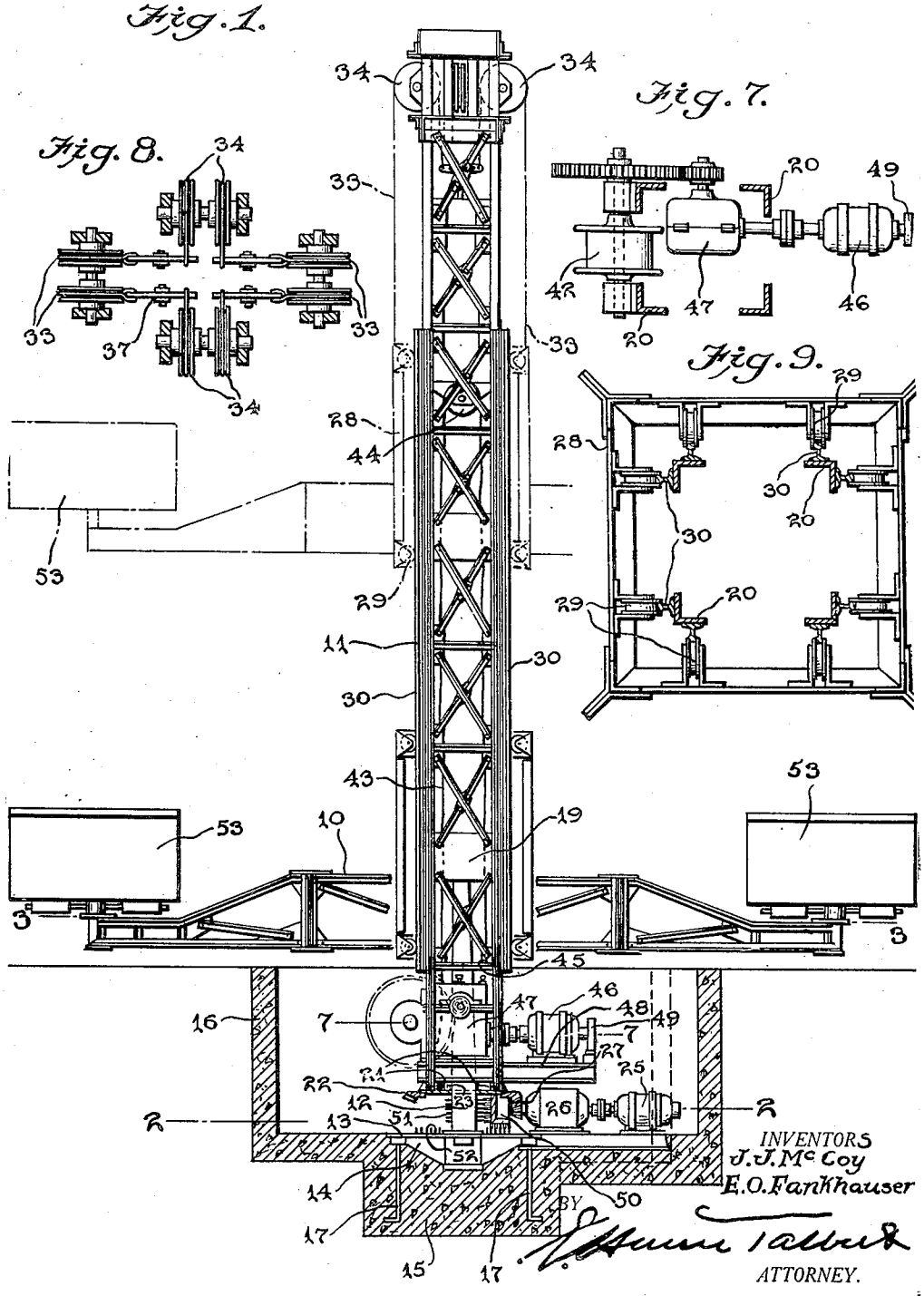


Fig. 8.

Fig. 7.

Fig. 9.

INVENTORS
J. J. Mc Coy
E. O. Fankhauser

BY

ATTORNEY.

May 7, 1929. E. O. FANKHAUSER ET AL 1,712,340

AMUSEMENT APPARATUS

Filed Feb. 24, 1927 3 Sheets-Sheet 2

Fig. 2.

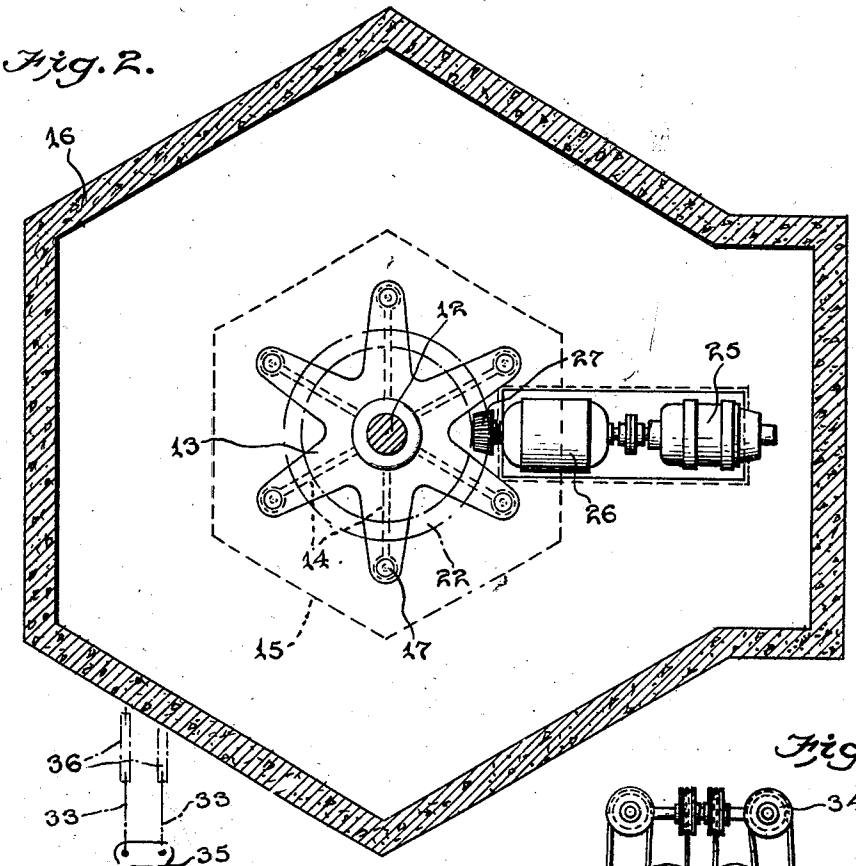


Fig. 4.

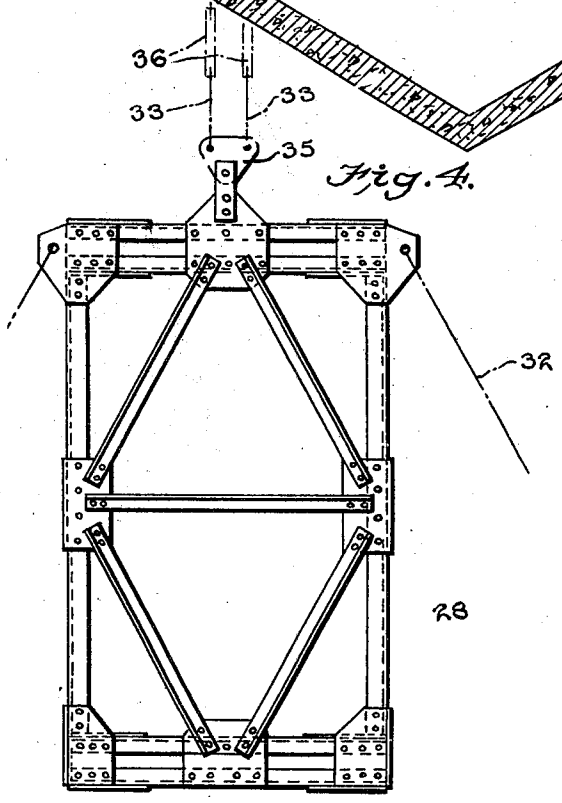
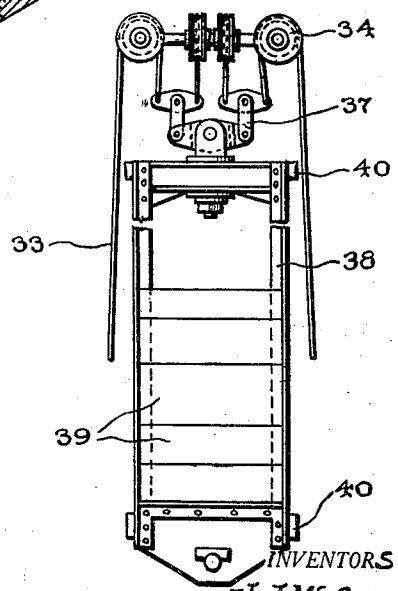


Fig. 5.



INVENTORS
U. J. Mc Coy
E. O. Fankhauser
BY
ATTORNEY.

May 7, 1929. E. O. FANKHAUSER ET AL 1,712,340

AMUSEMENT APPARATUS

Filed Feb. 24, 1927 3 Sheets-Sheet 3

Fig. 12.

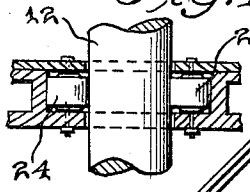


Fig. 3.

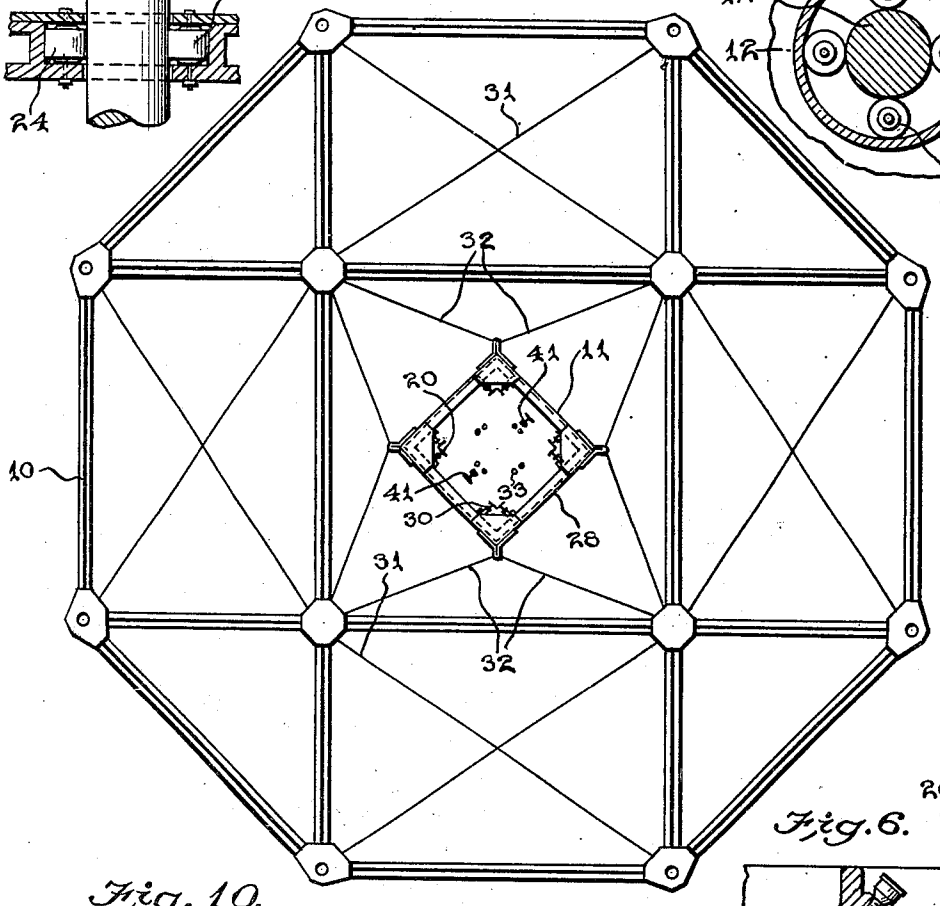


Fig. 11.

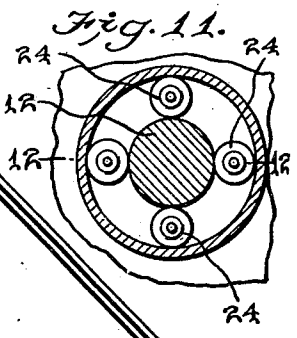


Fig. 10.

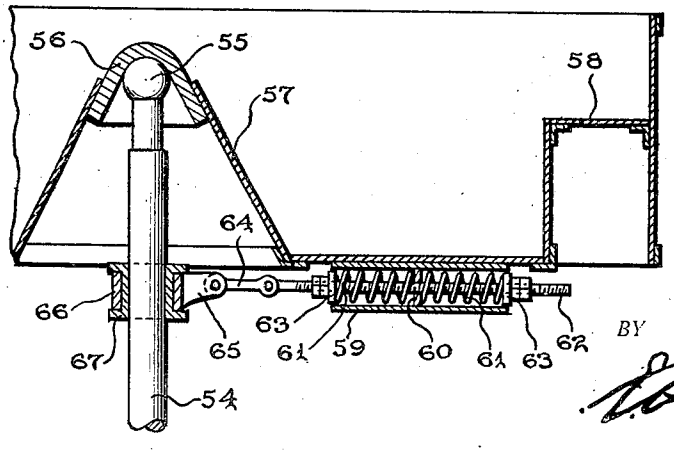
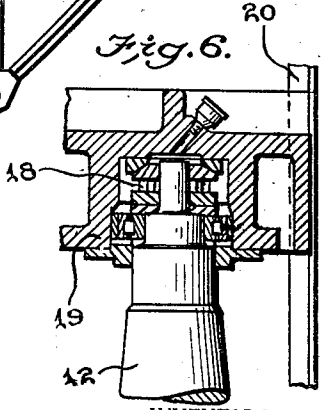


Fig. 6.



INVENTORS
J. J. Mc Coy
E. O. Fankhauser

BY

ATTORNEY.

Patented May 7, 1929. 1,712,340

UNITED STATES PATENT OFFICE.

ELMER O. FANKHAUSER AND JOHN J. McCOY, OF NEW CASTLE, PENNSYLVANIA.

AMUSEMENT APPARATUS.

Application filed February 24, 1927. Serial No. 170,646.

The object of the invention is to provide an amusement apparatus particularly suitable for amusement parks and comprising generally a circular series of cars movable in a circle with the whole series automatically raised and lowered during the circular movement; to provide a construction wherein the cars are capable of promiscuous movement around their own axes; and to provide a construction wherein intermittent or jerking movement of the car supporting means is prevented as the latter is raised and lowered.

With this object in view, the invention consists in a construction and combination of parts of which a preferred embodiment is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevational view of the invention, partly broken away and partly in section.

Figures 2 and 3 are respectively horizontal sectional views on the planes indicated by the lines 2—2 and 3—3 of Figure 1.

Figure 4 is a side elevational view of the roller cage.

Figure 5 is an elevational view of the counterweight frame.

Figure 6 is a detail sectional view of the thrust bearing whereby the rotating mast is supported on the stationary post.

Figure 7 is a sectional view on the plane indicated by the line 7—7 of Figure 1.

Figure 8 is a horizontal sectional view taken on the plane of the axes of the sheaves 34.

Figure 9 is a horizontal sectional view of the guide roller cage.

Figure 10 is a central vertical sectional view of one of the cars.

Figure 11 is a detailed horizontal sectional view illustrating the roller bearings interposed between the stationary post and the mast.

Figure 12 is a vertical sectional view of the structure shown in Figure 11.

The car supporting frame 10, which is constructed of structural steel sections, is an open framework rotatable with and about the axis of the mast 11 which is similarly formed of standard steel sections united by appropriate latticework. The mast is supported on a stationary post 12, the latter being carried in the central socket of a base plate 13 braced on the under face by webs 14. The base plate is carried on a concrete foundation 15 formed in the bottom of a concrete lined pit 16, being anchored in the foundation by anchor bolts 17.

The weight of the mast is carried on a thrust bearing 18 positioned at the upper end of the stationary post 12 and carried in a metal housing 19 secured to the corner bars 20 of the mast, these corner bars being the conventional steel angles. The corner bars of the mast extend into the pit 16 and are secured by riveting or otherwise to webs 21 formed on the upper face of a bevel gear 22, the webs being integral parts of an annular flange 23 with which the gear is formed. This annular flange 23 is disposed in surrounding relation to a plurality of rollers 24 carried by the post 12 and the rollers engaging the flange meet any side thrust of the mast and keep the latter disposed vertically.

The mast is mounted for rotation around the post 12 as an axis, the motor 25 driving the gear 22 through a speed reducer 26 with which is connected the bevel pinion 27 which meshes with the gear 22. The speed reducer is of a conventional form, being commercially known as the Palmer bee mill type.

The car supporting frame 10 being carried by the mast, rotates when the latter is rotated, but it is designed for movement simultaneously up and down the mast and to this end there is provided a guide roller cage 28 which is also constructed of standard steel sections. The guide roller cage is disposed in surrounding relation to the mast and at each corner is provided with a pair of guide rollers 29 of which one is disposed on one side of the frame and one on the adjacent side, these rollers bearing upon guide rails 30 mounted on the corner bars 20 and being peripherally grooved to straddle the guide rails.

The frame 10, which in the illustrated embodiment of the invention is of octagonal form with the center section square, is braced on the four sides of the square center section with appropriate brace rods 31 and is swung from the guide roller frame 28 by means of hanger rods 32, the latter extending in opposite directions from the four corners of the guide roller frame and connecting with the main frame at the four corners of the square center section thereof.

The guide roller frame is in turn supported on the mast by means of cables 33, there being eight of these in the illustrated embodiment, two on each side of the mast and each trained over a sheave 34 rotatably mounted at the upper end of the mast, the sheaves being arranged in pairs of which the units of each pair are arranged in close proximity and the pair disposed centrally of the mast on the side on which it is mounted. The cables 33 connect with the guide roller carriage 28 on each of the four sides of the latter, being connected to equalizers 35 through adjustable elements 36 in the form of turn-buckles interposed between the equalizers and the cables.

The opposite ends of the cables are connected with an equalizer 37 carried at the upper end of a counterweight frame 38, the latter being provided with the counterweights 39 and having guide clips 40 at its upper and lower end and on opposite sides which straddle the guide rails 41 mounted interiorly to and on opposite sides of the mast 11. The combined weight of the counterweights and frame is slightly less than the frame 10 and the cars carried thereby, so that with the cars empty, the frame 10 will move down the mast.

Means for elevating the frame 10 on the mast is provided, this means consisting of a drum 42 around which are trained the cables 43, the latter extending upwardly through the mast and being trained over sheaves 44 mounted at the lower end of the counterweight frame and terminally anchored, as at 45, at the lower end of the mast and on the opposite side of the latter from the drum 42, the drum being positioned at one side of the mast. Rotation of the drum is effected by means of a motor 46, the power of which is transmitted to the drum through a speed reducing mechanism 47 of the type commercially known as the Cleveland worm reduction. The motor 46, the speed reducer 47 and the drum 42 rotate bodily with the mast, being supported on a platform 48 carried by the mast and disposed just above the gear 22. The motor is provided with a conventional form of magnetic brake 49.

In order that the control of the motor 45 and magnetic brake 49 may be effected from a remote point, the gear 22 is provided on its under face with a brush carrier 50, the latter having brushes bearing upon the collector rings 51 mounted upon the post and upon collector rings 52 mounted upon the base plate 13, the plurality of collector rings providing for the proper control of the brake and the forward and reverse movements of the motor 45. The wiring, of course, follows out the conventional plan and is unnecessary of detail illustration here.

At each corner of the frame 10 a car 53 is carried, a post 54 being mounted at each corner and vertically disposed, each post having a ball 55 at its upper end seated in an inverted cup 56 carried by an upstanding conical extension 57 on the bottom of the car at the center of the latter. The car interiorly is provided with a seat 58 on the interior and on the under face of the bottom on opposite sides carries cylinders 59 in which are disposed the plungers 60, the latter being normally at the longitudinal centers of the cylinders and being engaged on opposite faces with compression springs 61 which are disposed in surrounding relation to the rods 62, the latter being provided with followers 63 abutting the springs at the opposite ends and adjustable on the rods because of threaded engagement with the latter. The rods 62 are connected by means of links 64 with ears 65 extending radially from a collar 66, the latter being disposed in loose surrounding relation to a sleeve 67 secured to the post 64, the sleeve being flanged at the upper and lower ends to preclude axial movement of the car on the sleeve.

It is obvious that the car may rotate around the post as an axis due to the spherical bearing at the upper end of the post provided by the ball 55 and cup 56, the collar 66 turning on the sleeve 67. The springs 61 tend to keep the car normally horizontal but yieldingly permit depression of the same on one side or the other due to any excess weight.

The invention having been described, what is claimed as new and useful is:

1. An amusement apparatus comprising a bodily movable framework and a car carried at the periphery thereof for promiscuous movement on its own axis during the movement of the frame, the latter having a vertically disposed post at its periphery terminating in a ball and the car being formed with an inverted frusto-conical extension at its center, an inverted cup carried by said extension and engaging said ball, and radial springs tensioned between the car and said post.

2. An amusement apparatus comprising a bodily movable framework and a car carried at the periphery thereof for promiscuous movement on its own axis during the movement of the frame, the latter having a vertically disposed post at its periphery terminating in a ball and the car being formed with an inverted frusto-conical extension at its center, an inverted cup carried by said extension and engaging said ball, and radial springs tensioned between the car and said post, the post being provided with a flanged sleeve in the plane of the bottom of said car, and a collar loosely surrounding said sleeve and having operative connections with the inner ends of the springs, the latter

being of combination form and adjustable.

3. An amusement apparatus comprising a rotatable vertically disposed mast, a car supporting framework mounted on the mast for rotary movement therewith but having an axial movement therealong, a driving member operatively connected with the mast for rotating the same, a second driving member carried by the mast, the latter at its upper end being provided with sheaves, a counterweight slidably mounted within the mast, cables connecting the counterweight with the framework and trained over said sheaves, a drum driven by the second driving member, cables trained around the drum and anchored at the lower end of the mast, and sheaves carried by the lower end of the counterweight, said last named cables being trained over said last named sheaves.

4. An amusement apparatus comprising a vertically disposed rotatable mast and means for rotating the same, a guide roller frame disposed in surrounding relation to the mast and having rollers engaging guide rolls mounted upon the mast, a car supporting frame having hanger rods by which it is suspended from the guide roller frame, a counterweight disposed within the mast and mounted on vertical guides in the latter, the mast at its upper end being provided with sheaves, cables trained over said sheaves and operatively connecting the counterweight with the guide roller frame, the counterweight being provided at its lower end with sheaves, a motor-driven drum carried by the mast, and cables trained over the sheaves on the counterweight and over said drums, the remote ends of said cables being anchored at the lower end of the mast.

In testimony whereof they affix their signatures.

JOHN J. McCOY.
ELMER O. FANKHAUSER.