No. 812,577. PATENTED FEB. 13, 1906.

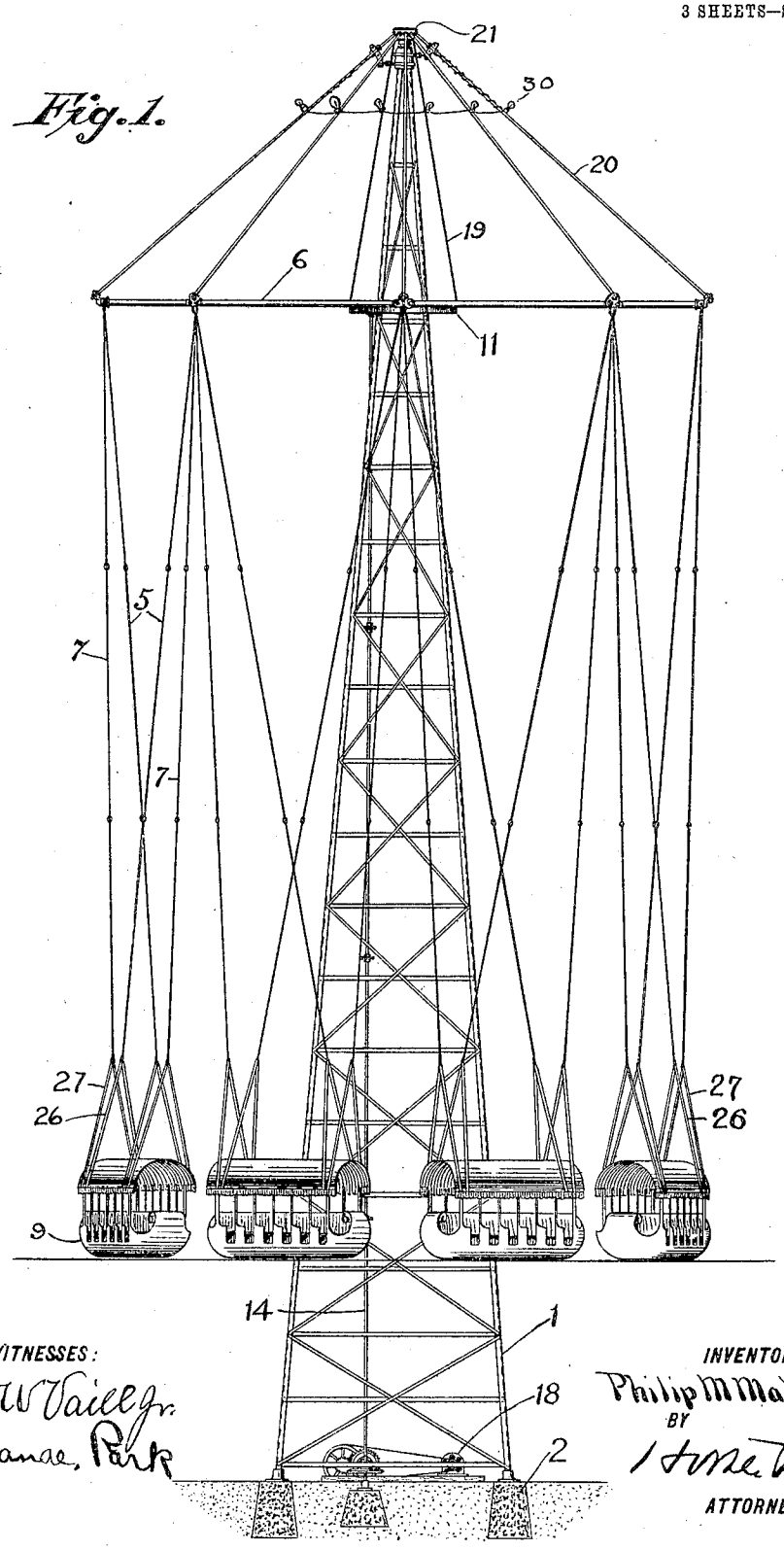
P. M. MALONEY.

AMUSEMENT DEVICE.

APPLICATION FILED SEPT. 26, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 3.

Fig. 4.

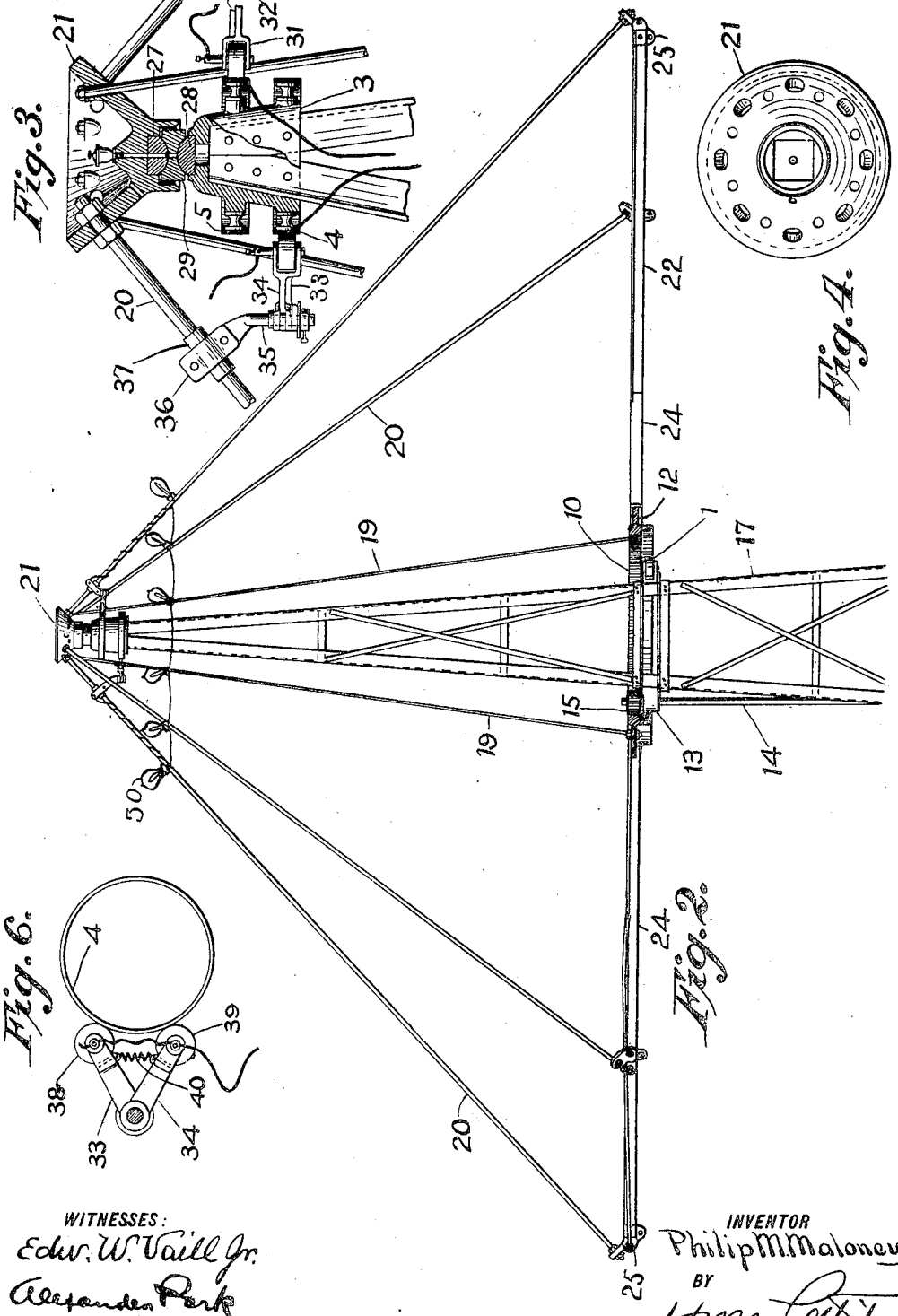

Fig. 2.

Fig. 6.

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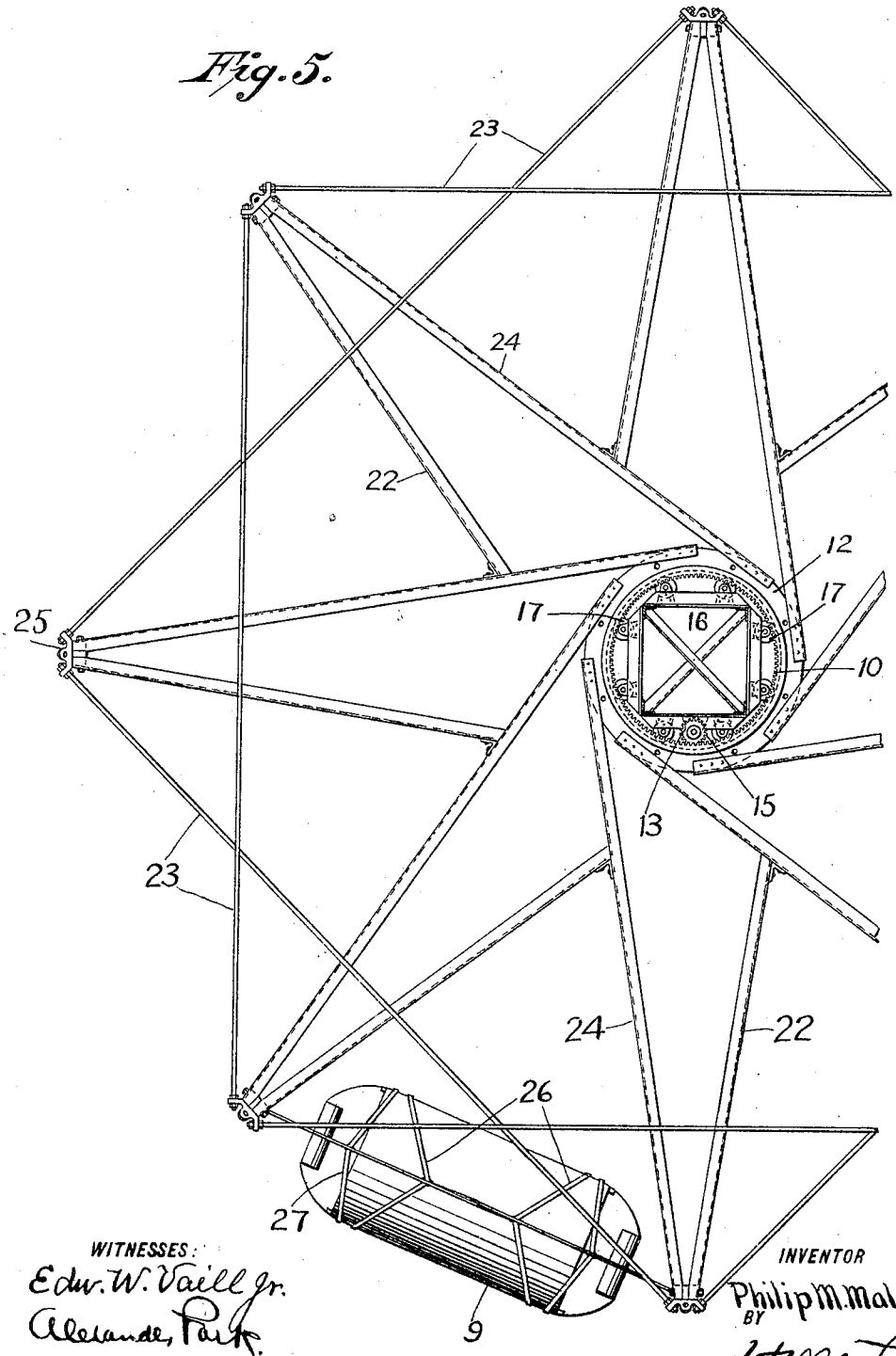
3 SHEETS—SHEET 3.

Fig. 5.



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AMUSEMENT DEVICE.

No. 812,577. Specification of Letters Patent. Patented Feb. 13, 1906.

Application filed September 26, 1904. Serial No. 225,881.

To all whom it may concern:

Be it known that I, PHILIP MERCER MALONEY, a citizen of the United States, and a resident of the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Amusement Devices, of which the following is a full, clear, and complete disclosure.

Briefly, my invention comprises certain improvements in construction and arrangement of parts in amusement devices, particularly those devices which are adapted to carry cars or passenger-vehicles, so that the same may revolve about a vertical axis and under the influence of centrifugal force swing outwardly on a radius and at the same time are held in an inclined or tipped position by the centrifugal force.

My invention more particularly relates to certain improvements in the manner of suspending the cars from the radial supporting-arms, also to the manner of holding the radial arms in position about a vertical axis.

One object of my invention is to provide such a suspension for the cars or vehicles that the cars will be constrained to move radially only and will not in stopping or starting or at other times collide or interfere with each other.

A further object of my invention is to provide such a support for the frame and radial arms that there will be no liability of straining the driving-shaft or other supporting parts due to unequal loading of the cars, while at the same time the former are held accurately and firmly in position, so that the power may be applied thereto evenly and without undue strain on the driving mechanism.

For a full, clear, and exact description of my invention reference may be had to the following specification and to the accompanying drawings, forming a part thereof, in which—

Figure 1 is a side elevation of my improved amusement device. Fig. 2 is an elevation of the upper portion of the supporting-tower, showing the revolving portion of the frame partly in section; Fig. 3, a sectional view of the pivot for supporting the radial arms and braces at the top of the tower, so that the same may be pivoted to swing about a vertical axis and at the same time have a slight oscillating motion, if necessary. Fig. 4 is a bottom plan view of the upper portion of the pivot or part which rests on the top or apex of the supporting-tower. Fig. 5 is a plan view of the radial arms and driving mechanism, showing the arrangement of braces and the manner of suspending the cars from the radial arms. Fig. 6 is a detail view showing the arrangement of the contacting arms for conducting the current from the stationary to the rotatable part of the frame.

Referring to the drawings, the numeral 1 indicates a tower made of structural steel or otherwise in any well-known manner, which rests on suitable foundations 2 and preferably converges toward its top to receive a cap or casting 3, upon which the rotary part of the frame is pivoted, and which also is adapted to carry the collecting-rings 4 and 5.

The radial arms 6, to which are attached the suspension devices 7 and 8 which support the cars 9, are held in position in the following manner: A ring or circular rack 10 surrounds the tower 1 and carries on its lower side a flange 11. The radial arms may be composed of pipe or structural iron and are firmly attached to the ring 10 by means of bolts or rivets or other suitable devices. Upon the tower 1 is carried suitable bearing or bearings 13, which support a vertical shaft 14, the upper end of which carries a small gear or pinion 15. This gear or pinion 15 is adapted to mesh interiorly with the rack or ring 10, above mentioned. The tower or central frame 1 also carries transverse bars or supports 16, which fix in position antifrictional rollers 17, which are adapted to contact with and form guides for the ring 10 by engaging the flange 11. The shaft 14 is connected by suitable gearing to a motor 18, which obviously may be either electric or a steam-engine or any other well-known source of power. It will be noticed that as the shaft 14 is not necessarily located in the center of the tower 1 greater space is thereby allowed for the arrangement of the gearing, motor, and other parts. In similar amusement devices where the shaft is located centrally the space between the shaft and the outer supports of the tower which is made available is much less than in the present construction.

The radial arms which support the cars 9 are preferably composed of angle-bars or structural steel in the form of two diverging side strips 22 and 24, one of which is riveted or otherwise attached to the flange 12 of the ring 10, while the other strip or angle-iron 22 is connected with the adjacent strip 24. The

ends of the bars 22 and 24 are provided with suitable connecting pieces or castings 25, which are provided with holes for retaining in position the tie-rods 23, which preferably connect alternate arms. The radial arms are supported or held in position horizontally by means of supporting or tie rods 19 and 20, the outer of which extends from the castings 25 on the ends of the arms to the central pivot-casting 21 at the top of the tower. The inner supporting-rods 19 also engage said casting 21 at the top of the tower, and their lower ends are attached to the flange 12 of the ring 10.

The cars 9 are supported from the ends of the arms 6 by means of two pairs of suspension cables or rods, two of one pair, as indicated by 7, extending from the ends of the radial arms 6 to the adjacent ends of the corresponding car, while two of the other pair extend to the opposite ends of the car, thereby crossing intermediate their length, and in connection with the cables or rods of the first pair not only support the cars, but preventing a longitudinal movement thereof in relation to the radial arms. This feature is especially important, as the cars are thereby prevented from moving forward or backward and from colliding or interfering with each other. The cables or rods 7 and 8 are preferably connected to V-shaped straps or loops 26 and 27, which are attached to each side of the frame of the cars 9. The casting 3 at the top of the tower 1 and the casting 21, to which the supporting-rods 19 and 20 are attached, are provided at their adjacent ends with rectangular recesses which are adapted to contain pivot-blocks 27 and 28, which enter recesses contained in an intermediate pivot-block 29. These blocks 27, 28, and 29 may be made of any suitable hard metal of good wearing qualities, such as steel or phosphor-bronze.

The rotating part of the device may be provided with suitable means for illuminating or decorating the same, such as by the lamps 30. These lamps 30 are supplied with suitable electric current through the rings 4 and 5, before mentioned, and the contacts or brushes 31, 32, 33, and 34. Each of these pairs of contacts—as, for instance, 33 and 34—are carried by a vertical pin or stud 35, which is attached to one of the supporting-rods in any suitable manner, as indicated at 36, but is insulated from said rod 20 by means of a bushing of fiber or other insulating material 37. The contacts 33 and 34 are preferably pivoted on the stud 35 and carry at their outer ends antifrictional rollers 38 and 39. The contact-arms 33 and 34 are also connected by a coil-spring 40, which serves to draw the same together and into contact with the collecting-ring 4. By this construction it will be seen that I have provided contacts which may readily yield to any irregularities of the ring or with any motion of the rotating part of the supporting-frame, while at the same time a constant and even contact is maintained without any liability of arcing should one of the antifrictional wheels jump or become separated from its corresponding ring. It is obvious that the collecting-rings 4 and 5 are in electrical connection with any suitable source of electric current.

The operation of my improved amusement device will be obvious from an inspection of the drawings, it being sufficient to say only that as the motor 18 drives the central shaft 14 the radial arms 6 will be rotated and carry with them the cars suspended therefrom. The action of centrifugal force will throw the cars outwardly, so that the same will revolve in greater and greater circles as the speed is increased, while at the same time the cars become inclined laterally, owing to the fixed points of suspension at the ends of radial supporting-arms. Any uneven loading of the cars will not have a tendency to bend any of the parts of the device, and said parts will be held rigidly in position without undue friction by means of the guide-wheels and other parts connected with the radial arms.

Having thus described my invention, what I claim, and desire to protect by Letters Patent of the United States, is—

1. In an amusement apparatus, cars or vehicles adapted to carry passengers, a rotatable frame, divergent suspension means for said cars comprising connections which extend from points above the ends of said cars slantwise to points adjacent the opposite ends of said cars, thereby crossing above said cars, connections extending directly from said points above said cars to points adjacent the ends of said cars directly below, and loops for said suspensions, a pair of loops being located at each end of the car and having their lower ends attached to the opposite sides and on the outside of said cars and having their upper ends attached to a pair of diverging suspensions.

2. In an amusement apparatus, a supporting-tower provided with a convex bearing-block at its apex, a rotatable frame having a convex bearing-block at its upper end, a double concave pivot-block interposed between the bearing-blocks of the tower and frame, and vehicles adapted to carry passengers suspended from said frame.

3. In an amusement apparatus, a supporting-tower, a rotatable frame suspended from the top of said tower, said rotatable frame comprising an upper member pivotally mounted on the upper end of said tower, radial arms attached to means adapted to engage the body of said tower to hold the frame in position laterally, supporting members extending from said upper member to the outer ends of said arms, and to said means for holding the frame against lateral movement, and

vehicles adapted to carry passengers suspended from said arm.

4. In an amusement apparatus, a supporting-tower, a rotatable frame suspended from the top of said tower, comprising an upper member pivotally mounted on the upper end of said tower, supports depending from said upper member, a guide-ring surrounding said tower, provided with arms, said supports being connected with said ring and said arms, vehicles adapted to carry passengers suspended from said arms, and a motor and a gearing between said motor and said ring for rotating said frame.

5. In an amusement apparatus, a supporting-tower, a rotatable frame suspended from the top of said tower, and comprising an upper member from which depend supporting-rods, a guide-ring having an interior rack surrounding said tower, antifriction devices upon said tower engaging a smooth portion of said ring, an outwardly-extending flange upon said ring, arms attached to said flange, said supporting-rods being attached to said arms and said flange, vehicles adapted to carry passengers suspended from said arm, and means for rotating said frame.

6. In an amusement apparatus, a supporting-tower, a rotatable frame suspended from the top of said tower, and comprising an upper member from which depend supports, a guide-ring having a rack surrounding said tower, a smooth track between said ring and said tower, antifriction devices also between said ring and said tower engaging said track, arms attached to said guide-ring, said supports being attached to said arms and said ring, vehicles adapted to carry passengers suspended from said arms, and means for rotating said frame.

In witness whereof I have hereunto set my hand this 24th day of September, A. D. 1904.

PHILIP MERCER MALONEY.

Witnesses:

JOHN F. GRADY,

EDW. W. VAILL, Jr.