

No. 861,248.

PATENTED JULY 30, 1907.

C. L. BARNHART.  
AMUSEMENT APPARATUS.  
APPLICATION FILED SEPT. 19, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

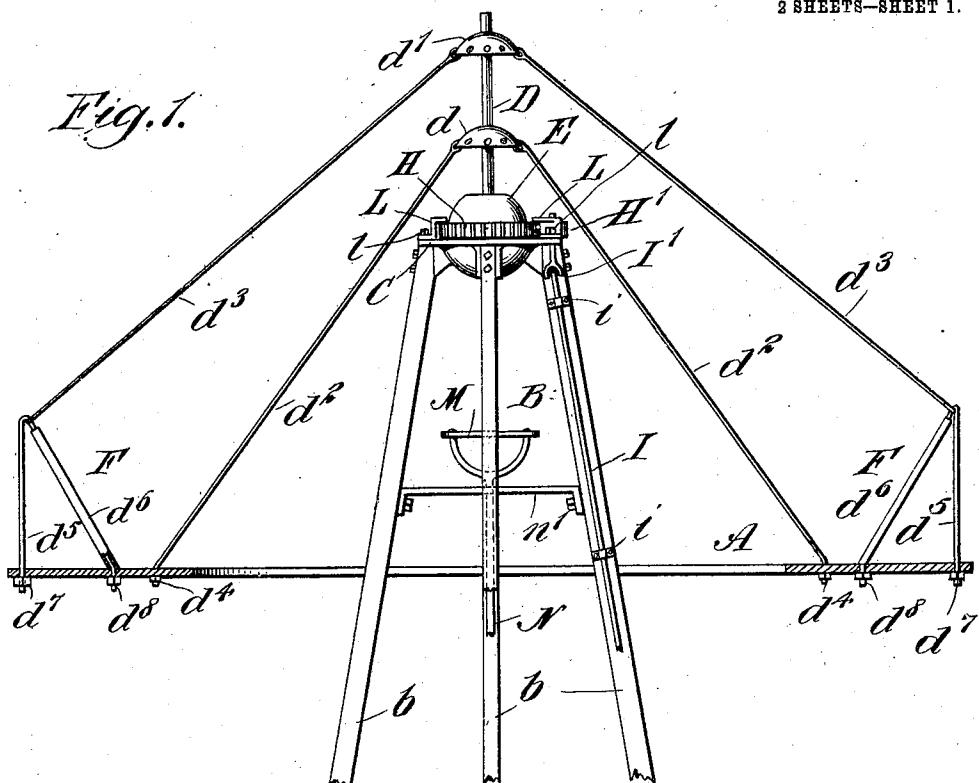


Fig. 4.

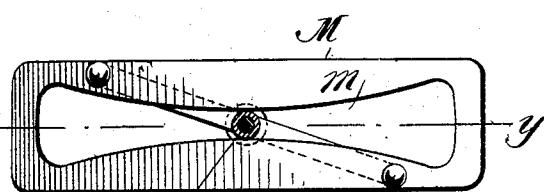
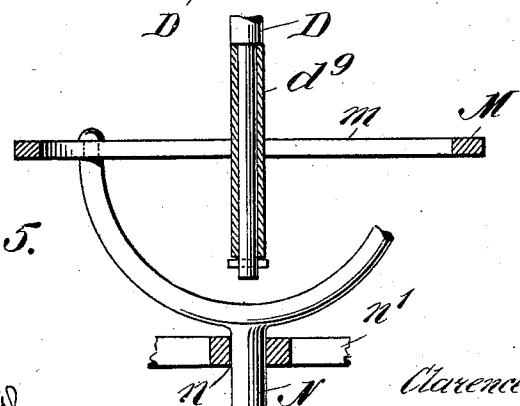


Fig. 5.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

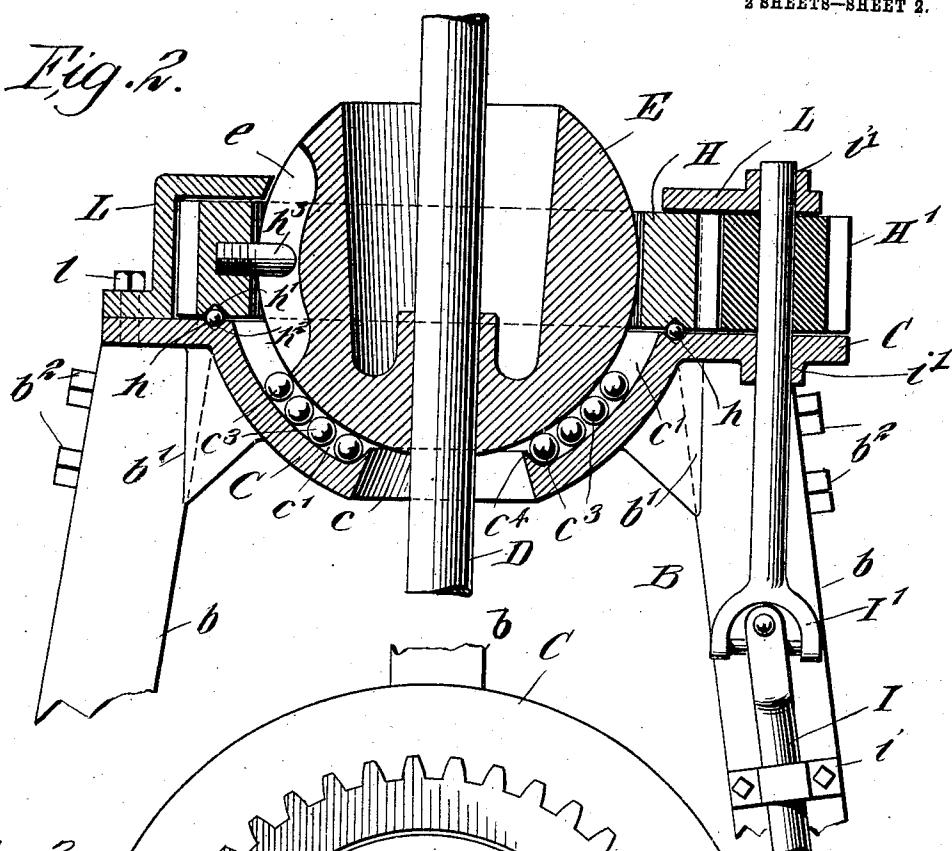
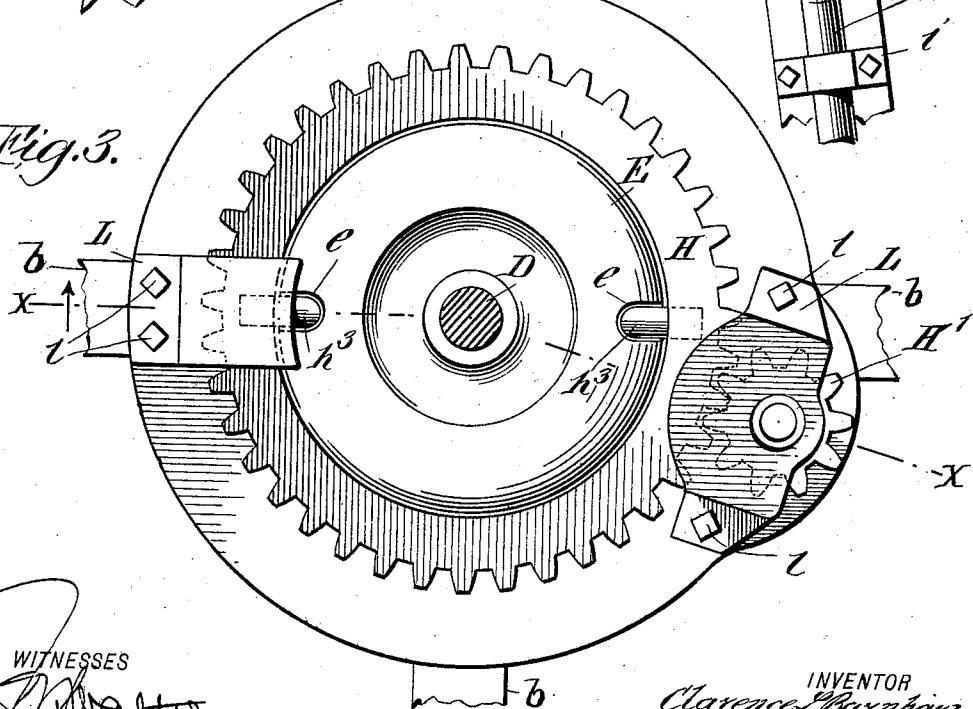


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## AMUSEMENT APPARATUS.

No. 861,248.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed September 19, 1906. Serial No. 335,199.

*To all whom it may concern:*

Be it known that I, CLARENCE L. BARNHART, a citizen of the United States, and a resident of the borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in Amusement Apparatus, of which the following is a specification.

Although included in the general class of amusement apparatus, my invention has reference more particularly to that form of such apparatus which is known to the art as "razzle-dazzles", in which an annular or other appropriately formed platform is suspended upon a point around and upon which it may be rotated and gyrated.

15 In a former application for Letters Patent filed by me in the United States Patent Office on or about Nov. 3rd, 1905, and serially numbered 285,669, I have shown and described an apparatus of this last mentioned character, in which the platform is supported above 20 the upper end of a rotating shaft, through the intervention of a gyratory shaft, and is gyrated around such driving shaft by mechanism arranged above and engaging with the upper end of the gyrating shaft. This 25 form of apparatus while efficient in operation and desirable under some conditions, requires in its installation a building or other structure arranged above the same for supporting the mechanism by which the gyratory motion is imparted to the platform and which in certain locations and under certain other conditions 30 are objectionable.

To obviate therefore the above mentioned objections, and to provide an apparatus in which the mechanism employed for imparting a gyratory motion to the platform may be located below the point of support of the latter, and in which greater compactness of construction and other and further advantages are attained, are among the objects of my invention.

Such being a brief outline of the principal objects sought, the invention consists, first, in the means by 40 which the platform is supported and rotated; second, in the means by which a gyratory movement is imparted thereto and the location of these means below the point of support of the platform permitted, and third, in various constructions and subordinate combinations, all as will hereinafter more fully appear.

Referring to the accompanying drawings, which form a part of this specification, and in which the embodiment of my invention preferred in practice is illustrated, Figure 1 is a side elevation of an amusement 50 apparatus constructed in accordance with my invention, the platform and a portion of one of the suspending brackets being shown in vertical axial section, and other parts broken away for convenience of illustration; Fig. 2, a vertical axial section of the upper portion 55 of the supporting frame and of the means by

which the platform is mounted and rendered capable of gyration, taken in the line  $x-x$  of Fig. 3, the gyrating and the main driving shaft with the friction balls and one of the locking studs being shown in elevation, and such shaft broken away; Fig. 3, a plan of the apparatus, with the platform and guys or rods by which it is supported omitted, and the gyratory shaft shown in horizontal section; Fig. 4, a plan of the slotted disk or plate by which the gyratory movement is imparted to the platform, with its supporting shaft, showing also 60 the lower end of the gyratory shaft and the friction sleeve thereon in horizontal section, and Fig. 5, a vertical axial section of these parts, taken in the plane  $y-y$  of Fig. 4, showing also in vertical axial section the bracket or spider in which the upper end of the shaft 70 that supports and carries the slotted plate is mounted, with certain of the parts broken away.

In all the figures, like letters of reference are employed to designate corresponding parts.

A indicates an annular or other appropriately shaped 75 platform, which is adapted to receive and sustain the persons to be carried, and is mounted upon a supporting frame B, upon and around which it may be rotated and gyrated.

The supporting frame B may be constructed in any 80 approved form, it only being essential that, whatever its construction, it be possessed of the necessary strength and stiffness to withstand the weight and strain that may be imparted to it. In the form of the invention which I have selected for purposes of illustration however, this supporting frame B is made up from a plurality of upwardly extending and inwardly inclined posts b, four being shown, which, disposed at appropriate distance apart around a vertical axis, are firmly secured at their lower ends in the ground or upon 90 suitable piers, and are firmly tied together at their upper ends by a plate C, which is or may be provided at the proper distance apart around the outer edge of its under side with seats b<sup>1</sup>, in which the upper ends of these posts are or may be fixedly secured by bolts or 95 screws b<sup>2</sup>.

For mounting the platform A upon the supporting frame B and permitting of its rotating and gyration thereon, a shaft D is employed, which extends downward through a suitable orifice c formed in the plate C 100 and is provided with a ball E that is fixedly secured thereto and fitted to rotate and gyrate in a correspondingly shaped seat or socket c<sup>1</sup> formed in the upper surface of such plate to receive it. As thus arranged, this shaft D is provided above the ball E with two circular flanges or disks d and d<sup>1</sup>, located the one above the other, and connected with the platform A through the intermediaries of the rods or guys d<sup>2</sup> and d<sup>3</sup>. Of these, the rods or guys d<sup>2</sup> are connected at their upper ends with the flange d and at their lower ends they ex- 105 110

tend downward through the platform, at some distance from the outer edge thereof, and are provided on their lower ends beneath it with nuts  $d^4$ ; while the rods or guys  $d^3$  are connected at their upper ends with the flange  $d^4$  and at their lower ends they are connected with the platform A near its outer edge. Instead of the rods or guys  $d^3$  being connected at their lower ends directly with the platform A, however, they are connected therewith through the intervention of suspending brackets F, which are constructed with respective tension and compression members  $d^5$  and  $d^6$ , of which the tension members extend downward through the platform and receive appropriate nuts  $d^7$  on their lower end beneath it, while the compression members  $d^6$  receive in their lower ends studs  $d^8$ , which extend upward through the platform and enter them.

With the platform A mounted upon the supporting frame B as thus explained, the rods or guys  $d^3$  are so disposed as to permit of a free passage-way beneath them while the rotation and gyration of the platform upon the supporting frame is allowed; and in order to minimize the friction between the coöperating surfaces of the ball E and the socket  $c^1$  when the apparatus is in operation, the socket  $c^1$  is preferably made somewhat larger in diameter than the ball E and receives a series of friction balls  $c^2$ , which are interposed between it and such ball, and are prevented from rolling out from between them and falling downward through the orifice  $c$ , by an upwardly extending flange or lip  $c^4$  formed around the upper edge of the orifice, as shown. As thus arranged and equipped a rotary motion may be imparted to the platform A by any appropriate means. I prefer however to impart it thereto through the intervention of an annular gear H, which surrounds and positively engages with the ball E, and is itself rotated from any convenient prime mover (not shown) through a shaft I and other suitable appliances. When thus imparted, this gear H may be arranged in various ways. In the drawings however, I have shown it as located above the tie-plate C, in a horizontal plane passing through the center of the ball, in which position it rests upon a series of friction balls  $h$ , interposed between coöperating V shaped circular grooves  $h^1$  and  $h^2$  formed respectively in its under side and in the upper side of the tie-plate C opposite each other and in concentric relationship to the axis of the gear, with the gear itself positively engaged with the ball E, through the medium of inwardly extending studs  $h^3$ , which enter suitably shaped grooves  $e$  formed in the surface of the latter longitudinally of and in the plane of the axis of the gyroscopic shaft D. As thus mounted and connected with the ball E, not only is the gear H accurately guided in its rotation around its axis and a positive rotation imparted to the ball and through it to the platform when the gear is rotated, but the ball is left free to oscillate and gyrate within it in all directions, as the requirements of the platform may demand; and in order to hold the gear H down upon the friction balls  $h$  and prevent it from rising from them when the apparatus is in operation or otherwise, a plurality of keepers L are employed, which, secured to the upper surface of the tie-plate at proper distances apart by bolts or screws  $l$ , extend upward therefrom over the upper surface of the gear in close relationship thereto, as shown. While the rotation of the gear H, is thus communicated to

the ball E, and through it to the platform A, the rotation of the gear itself from the shaft I may be effected by any of the usual and well known forms of devices ordinarily employed for transmitting motion. In the drawings however, I have shown this result accomplished by a gear  $H^1$ , and, when this is employed for the purpose, I preferably mount the shaft I in suitable bearings  $i$  and  $i^1$ , respectively secured to one of the posts of the supporting frame B, and formed upwardly through the tie-plate C and through one of the keepers L, and secure the gear  $H^1$  thereon in proper position to engage with the gear H, interposing a universal joint  $I^1$  at the proper point in the shaft I, when the parts of the latter are required to lie in different planes.

With the mechanism for communicating a rotary motion to the platform A, there are employed means by which a gyroscopic motion may be imparted thereto. These means, which may be modified in various ways, in the specific embodiment of the invention here shown are located below the point of support of the platform A, and are constructed in the form of a rotating plate M, which is provided with an elongated slot  $m$ , extending outwardly in opposite directions from its center point, for engagement with the lower end of the gyroscopic shaft D. As thus constructed this rotating plate is fixedly secured to the upper end of a rotating shaft N, which, in turn, is adapted to be operatively connected with any suitable prime mover, and is mounted in suitable bearings  $n$  formed in the tie-brackets or spiders  $n^1$ , with its axis in prolongation of that of the gyroscopic shaft D, when this latter shaft is occupying a vertical position. With the parts thus arranged, whenever the lower end of the gyroscopic shaft D is carried outward to one side of the axis of rotation of the plate M, in one direction or the other along the slot  $m$ , and such plate is rotated through its carrying shaft N, a gyroscopic motion will be imparted to the shaft D and a corresponding wobbling or gyroscopic movement communicated to the platform A, which movement will be increased or decreased in amplitude as the lower end of the gyroscopic shaft is carried outward from or inward toward the axis of rotation of the plate M; and in order to lessen the friction of the lower end of the shaft D on the walls of the slot  $m$ , as it travels outward and inward along them, the lower end of the shaft is preferably provided with a friction roller or sleeve  $d^9$  rotatively mounted thereon. Thus, as will be seen, I produce a razzle-dazzle in which, not only is the platform which receives and sustains the persons to be carried given both a rotary and gyroscopic movement by mechanical agency, but the parts thereof are greatly simplified and rendered more compact, by locating the mechanism by which the proper motions are imparted to it below the point of support of the platform, not to mention other and further advantages which flow from the improved construction.

While in the foregoing I have described the best means contemplated by me for carrying my invention into practice, many changes may be made in the structural details thereof without departing from the spirit of the same, and I do not therefore wish to be limited thereto, except as hereinafter made the subject of specific claims.

Having now described my invention and specified one of the various ways in which it may be carried into

effect, I claim and desire to secure by Letters Patent of the United States:—

1. The combination, with a supporting frame provided with a socket at its upper end, a ball resting in such socket, and a shaft secured to such ball, of a platform supported from said shaft, a gear surrounding said ball and connected therewith, and means for imparting a rotary motion to such gear, whereby a rotation of the ball and through it of the platform may be effected, substantially as described. 10

2. The combination, with a supporting frame provided with a socket at its upper end, a ball resting in such socket, and a shaft secured in such ball and extending downward through the socket, of a platform supported from the shaft, a gear surrounding and engaging the ball, and mechanism for rotating said gear and for engaging with the lower end of the shaft, whereby both a rotary and a gyroscopic motion may be imparted to the ball and through it to the platform, substantially as described. 15

3. The combination, with a supporting frame, a tie-plate at its upper end provided with a socket in its upper side, a ball arranged in such socket, and a platform supported therefrom, of an annular gear mounted upon the tie-plate and surrounding and engaging the ball through stud and groove connections, and mechanism for imparting a rotary motion to the gear, substantially as described. 20

4. The combination, with a supporting frame provided with a tie-plate at its upper end, which is constructed in its upper side with a socket and with a circular V shaped

groove  $h^2$ , a ball E arranged in such socket, and friction balls interposed between such ball E and the socket, of an annular gear arranged upon the tie-plate and provided in its under side with a circular groove  $h^1$  corresponding with the groove  $h^2$ , friction balls interposed in such grooves upon which the annular gear is supported, keepers by 30 which the gear is prevented from rising from the friction balls, stud and groove connections between the gear and the ball E, and means by which rotation may be imparted to the gear, substantially as described. 35

5. The combination, with a supporting frame provided with a socket at its upper end, a ball arranged in such socket, a shaft extending downward through the socket and having the ball fixedly secured thereto, of a platform supported from such shaft, an annular gear surrounding the ball and engaging therewith, a slotted plate for engaging with the lower end of the shaft, a second shaft mounted in suitable bearings and carrying at its upper end the slotted plate, and means for imparting a rotary motion to said gear and to the shaft carrying the slotted plate, substantially as described. 40

In witness whereof I have hereunto set my hand in the presence of two witnesses, this 15th day of September, 1906. 45

CLARENCE L. BARNHART.

Witnesses:

FRED J. MATTIE,  
J. E. GREER.