Sept. 29, 1925. 1,555,488

I. J. SIEBERT

FERRIS WHEEL

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Fig. 1.

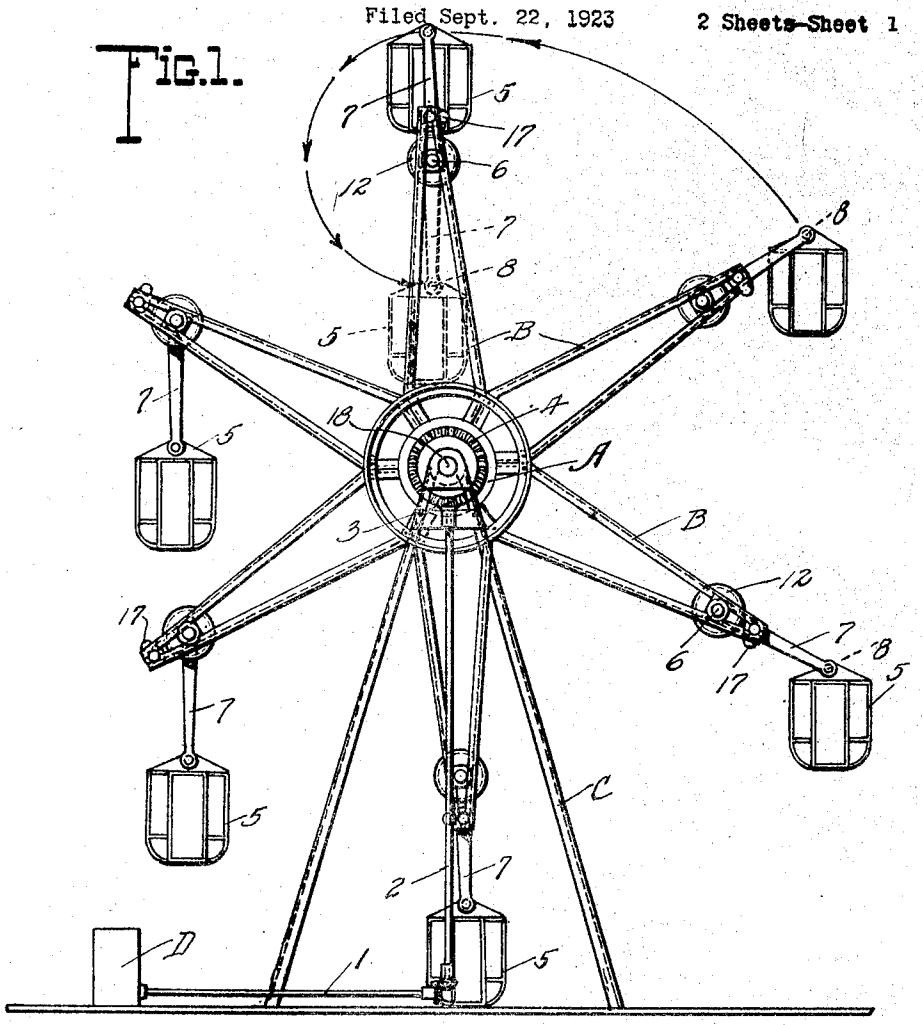
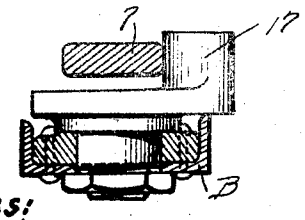


Fig. 5.



Witness:
E. E. Wagner

Fig. 6.

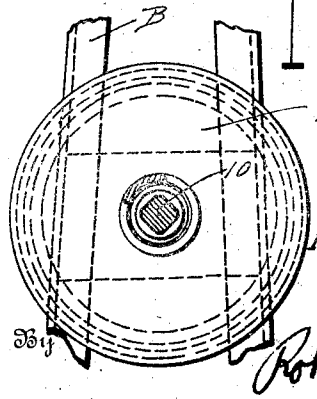


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Fig. 2.

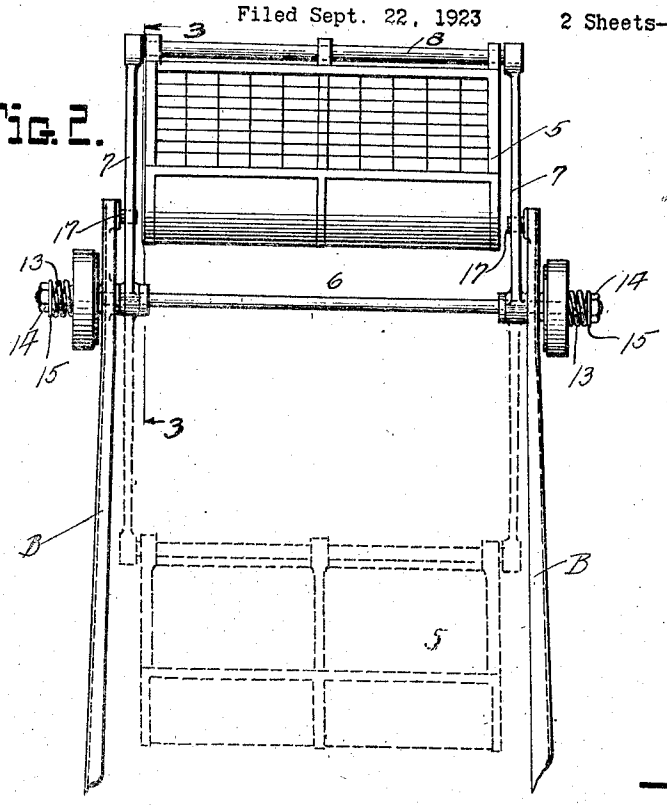


Fig. 3.

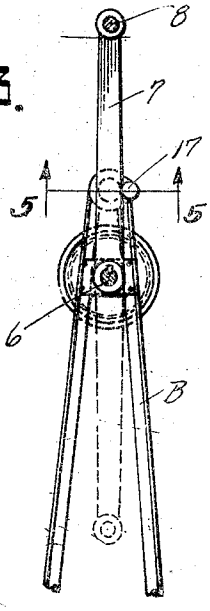
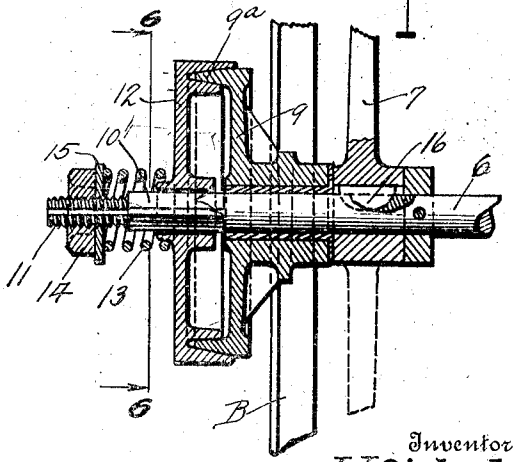


Fig. 4.



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UNITED STATES PATENT OFFICE.

IRWIN J. SIEBERT, OF CLEVELAND, OHIO.

FERRIS WHEEL.

Application filed September 22, 1923. Serial No. 664,323.

To all whom it may concern:

Be it known that I, IRWIN J. SIEBERT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Ferris Wheels, of which the following is a specification.

This invention has to do with amusement apparatus and aims primarily to provide an improved type of Ferris wheel.

In the carrying out of the invention my especial object has been to produce a Ferris wheel in which the cars are mounted peculiarly by certain novel means, whereby at predetermined periods during the rotation of the wheel with said cars, an extra and unusual movement of the cars will take place independent entirely of their regular rotation with the wheel. The said movement in practice is a gravitative dropping movement and is such that in the operation of the apparatus the occupants of the cars are given an extra "thrill" due to the rather unexpected dropping or gravitation of the car under the conditions above stated. In the circumstances, therefore, a Ferris wheel equipped with the improvements of the invention affords a novel action conducive to exhilaration and amusing excitement on the part of those who ride on the wheel, making the amusement means especially attractive from the view-point of enjoyment in use and its money earning qualities.

For a full comprehension of the invention and its advantages in operation reference is to be had to the following description in conjunction with the annexed drawings, in which:

Figure 1 is a side view showing in a general way the essential features of a Ferris wheel involving the improvements of my invention.

Figure 2 is a fragmentary end view showing essentially a pair of spokes or arms of the wheel and the car in the act of being raised to its uppermost position preparatory to dropping, the dotted lines indicating the range of the dropping movement and the readjustment of the parts incident thereto.

Figure 3 is a fragmentary sectional view on the line 3—3 of Figure 2.

Figure 4 is a sectional view of a special clutch mechanism employed to retard the dropping movement of the car in action.

Figure 5 is a sectional view taken about on the line 5—5 of Figure 3, and

Figure 6 is a sectional view taken on the line 6—6 of Figure 4.

Referring to the invention as to its general features of construction, it is notable that I propose to employ a Ferris wheel which may be largely of conventional form as regards its hub and car supporting arms, its mounting upon a base frame, and the method of operation to revolve the wheel when in action. Under these conditions I have illustrated my wheel in a general way as similar to many at present in use in so far as it involves the hub structure A, the car supporting arms B, the base or supporting frame C comprising largely a series of supporting legs and the power driving instrumentalities which are rather diagrammatically illustrated as including a motor D, a shaft 1 geared to a shaft 2 and the bevel gear 3 on the shaft 2 engages a bevel gear 4 on the hub structure A of the wheel. The wheel will be driven or rotated, therefore, in the well known way, being revolved in a counter clockwise direction, as illustrated in Figure 1. As shown best by Figure 2, the arms B are arranged in pairs and between the arms of each pair is mounted to operate a car 5.

The mounting of the car 5 is peculiar to this invention, and is preferably substantially as illustrated in Figures 1 to 4 of the drawings. Each pair of arms B is provided with an axle or shaft 6, carrying auxiliary car supporting arms 7 which are keyed to rotate with said axle 6, or otherwise secured thereto. The car 5 is supported to freely rotate upon a cross-bar 8 attached to the free ends of the arms 7. Any suitable means of suspension may be employed between the parts 5 and 8. The axles 6 are journaled in the main car supporting arms B, passing through said arms at points where the arms are preferably equipped with fixed clutch members 9, seen best in Figure 4. On their outer extremities the axles 6 are squared, as shown at 10, and are screw-threaded, as shown at 11. On the squared or many sided portion of said axles are mounted the moving clutch members 12. These clutch members being arranged with grooved friction surfaces that receive the flange friction surfaces 9^a of the stationary clutch members 9, which it will be remembered are rigid with the main car supporting arms B. Coiled tension springs 13 are provided intermediate the movable clutch members 12 of

the axle 6 and abutments consisting of nuts 14 and washers 15 which provide bearing means for the outer ends of said springs 13. The method of securing the auxiliary supporting arms 7 to the axles 6 is seen in Figure 4 to best advantage where the parts are illustrated as keyed together at 16.

Thus far it will be apparent that the cars are adapted to freely swing upon the auxiliary supporting arms 7 through the provision of the axles 6 and as controlled by means now to be set forth. As seen in Figures 3 and 5 in detail each of the main car supporting arms or spokes B of the wheel extends some distance beyond the axes established by the axles 6. On the projecting or extending portions of the arms B I provide abutment lugs 17 extending inwardly toward each other sufficiently to overlap and engage the arms 7 at a certain point in the rotation of the wheel, this point being, practically speaking, that in which the arms 7 are at their lower-most positions.

The foregoing indicates the construction of my invention as to its novel features, excepting that I may note that the abutment lugs 17 may be detachably connected to the arms B by means substantially as illustrated in Figure 5.

The operation of my Ferris wheel including the improvements set forth is as follows:

Assuming that the wheel is being rotated in the customary way by the driving mechanism before described, as the arms B reach their lower-most positions the cars 5 will likewise have reached their lower-most positions. It is at this time that the abutment lugs 17 engage the arms 7 and by such engagement support said arms at points intermediate their ends, and at points intermediate their connection with the arms B and the cars 5, until the cars reach their uppermost position, as illustrated in Figure 1. Under these conditions the arms 7 project outwardly from the arms B. When each car reaches its uppermost position, as seen in Figure 1, or rather passes just beyond the vertical line intersecting the axis 6 and the axis 18 of the wheel, the cooperating lugs 17 no longer support the arms 7 and they are free to swing laterally in an arc of a little more than 180° as the wheel is turning, and independently of said turning movement. Obviously the foregoing range of movement and action of the car 5 from its uppermost position swinging on its own axis 6, separately from its turning operation with the wheel gives a rather sudden drop to the car, and this peculiar movement is the one which gives an added thrill or exhilaration, and amusing excitement in the operation of my Ferris wheel. The range of movement of the cars 5 is a little greater than that shown in Figure 1, which indicates the car in dotted lines as when it has dropped suddenly. However, the car might swing a little greater distance to the right than that shown in Figure 1, depending upon the control means.

As a means to regulate the car against too sudden dropping when it reaches its uppermost position the clutch mechanism comprising the members 9 and 12, previously set forth, is utilized. This mechanism comprises the friction clutch members in constant engagement with one another, the friction of the engagement adapted to be increased or decreased as required by the adjusting means 14, so that greater or less speed may be achieved in the dropping action of the car during the rotation of the wheel.

I do not confine myself to the special clutch means illustrated, as several types of such means could well be employed, so long as the desired result is attained.

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

1. An amusement device comprising an upright wheel mounted to turn about a horizontal axis, auxiliary car supporting arms pivoted to the wheel so as to have a swinging movement relative thereto, cars pivotally suspended from the supporting arms, and means for holding the arms in one position during a portion of the movement of the wheel and permitting them to assume different positions during other portions of the movement of the wheel.

2. An amusement device comprising an upright wheel mounted to turn about a horizontal axis, auxiliary car supporting arms pivoted to the wheel so as to have a swinging movement relative thereto, cars pivotally suspended from the auxiliary supporting arms, and trip means for causing the auxiliary supporting arms to project outwardly and away from the axis of the wheel during the upward movement of the cars and to hang freely from their pivotal connections with the wheel during the downward movement of the cars.

3. An amusement device comprising an upright wheel mounted to turn about a horizontal axis, auxiliary car supporting arms pivoted to the wheel so as to have a swinging movement relative thereto, cars pivotally suspended from the auxiliary supporting arms, and trip means for causing the auxiliary supporting arms to project outwardly away from the axis of the wheel during the upward movement of the cars and releasing the arms when the cars reach their uppermost positions, whereupon the cars take a sudden drop and the auxiliary arms hang freely from their pivotal connections with the wheel during the lowering of the cars.

4. An amusement device comprising an

upright wheel mounted to turn about a horizontal axis, auxiliary car supporting arms pivotally connected to the wheel and adapted to project radially therefrom, cars pivotally suspended from the supporting arms, trip means cooperating with the arms for causing them to project radially from the wheel during the raising of the cars, said auxiliary supporting arms being released when the respective cars reach their uppermost positions, whereupon the cars take a sudden drop and the supporting arms hang freely from their pivotal connections with the wheel during the lowering of the cars, and retarding means for preventing too rapid movement of the cars during the said sudden drop when the supporting arms are released.

5. An amusement device comprising an upright wheel mounted to turn about a horizontal axis, auxiliary car supporting arms pivoted to the wheel and adapted to project radially therefrom, cars pivotally suspended from the supporting arms, and abutments on the wheel arranged for engagement with the respective auxiliary supporting arms whereby the said arms are caused to project radially from the wheel while the cars are being raised and are suddenly released when the cars reach their uppermost positions, whereupon the cars and auxiliary supporting arms have a sudden downward swinging movement independent of the movement of the wheel and the auxiliary supporting arms hang freely from their pivotal connections with the wheel during the downward movement of the cars by the wheel.

6. An amusement device comprising an upright wheel mounted to turn about a horizontal axis, auxiliary car supporting arms pivoted to the wheel and adapted to project radially therefrom, cars pivotally suspended from the supporting arms, abutments on the wheel arranged for engagement with the respective auxiliary supporting arms, whereby the latter are caused to project radially from the wheel while the cars are being raised and are released when the respective cars reach their uppermost positions, whereupon the cars have a sudden downward movement independent of the movement of the wheel and the auxiliary supporting arms hang freely from their pivotal connections with the wheel during the downward movement of the cars, and clutch means at the connection between the wheel and auxiliary supporting arms for retarding the cars on their sudden downward movement when the auxiliary arms are released at their uppermost positions.

7. An amusement device comprising an upright wheel mounted to turn about a horizontal axis, horizontal shafts arranged about the periphery of the wheel, friction means applied to the shafts to prevent rapid rotation thereof, auxiliary car supporting arms rigid with the shafts, cars pivotally suspended from the auxiliary supporting arms, and abutments on the wheel arranged for engagement with the respective auxiliary car supporting arms, whereby the arms project radially from the wheel while the cars are being raised, the cars being suddenly released when they reach their uppermost positions, whereupon they have a downward swinging movement independent of the movement of the wheel, and the auxiliary supporting arms hang freely from the shafts during the downward movement of the cars.

In testimony whereof I affix my signature.

IRWIN J. SIEBERT.