

T. VAN KANNEL.
MULTIFORM AMUSEMENT WHEEL.
APPLICATION FILED DEC. 13, 1919.

1,371,528.

Patented Mar. 15, 1921.

3 SHEETS—SHEET 1.

Fig. 1.

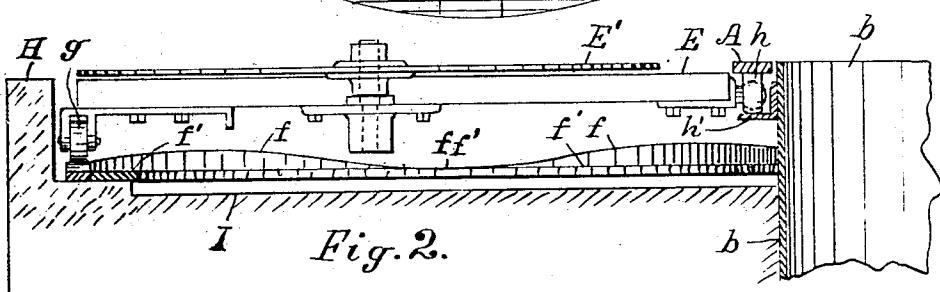
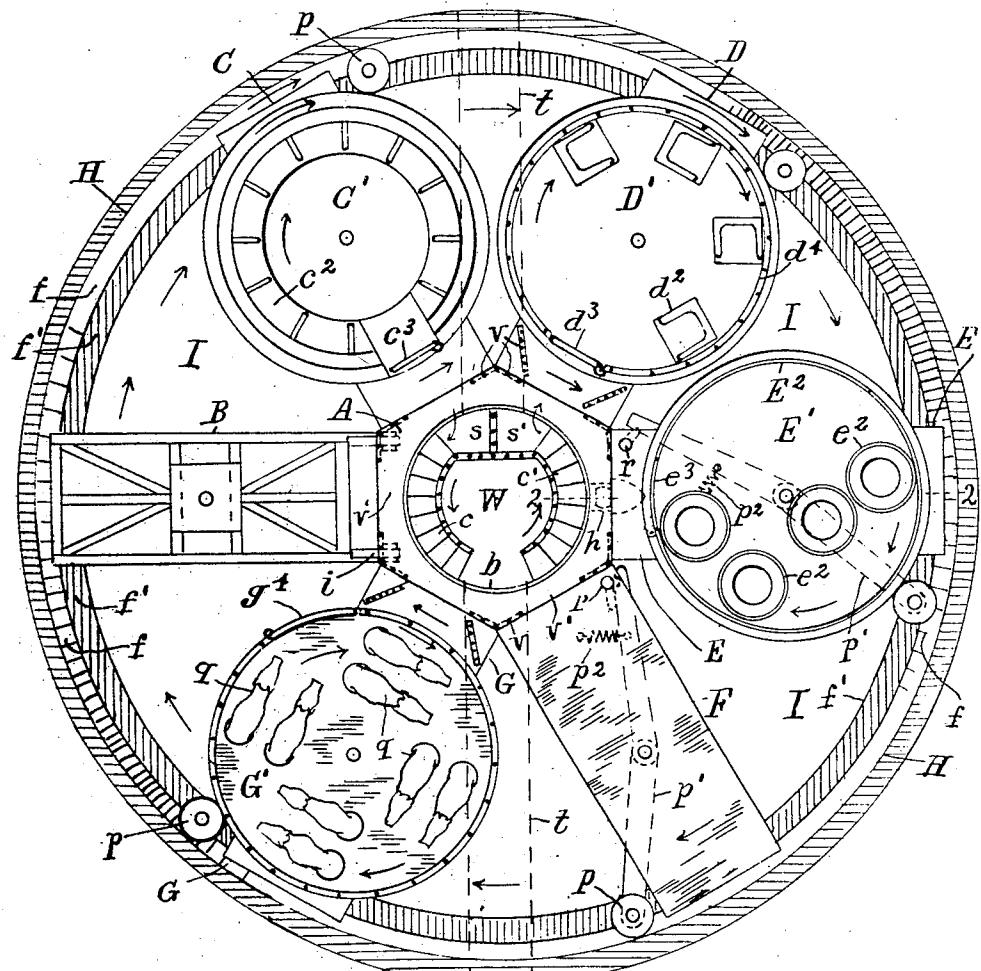


Fig. 2.
Theophilus Van Kannel,
Inventor. per Thomas S. Crane, Atty.

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3 SHEETS—SHEET 2.

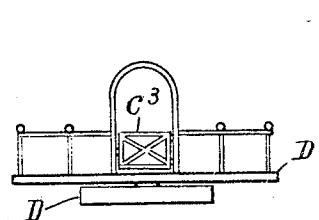


Fig. 6.

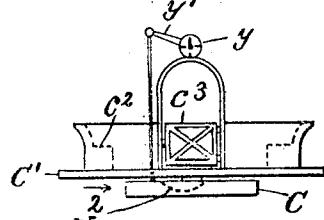


Fig. 5.

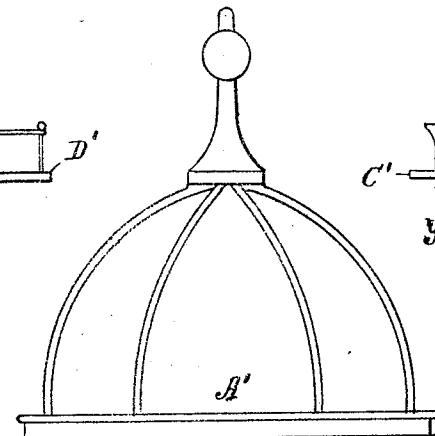


Fig. 3.

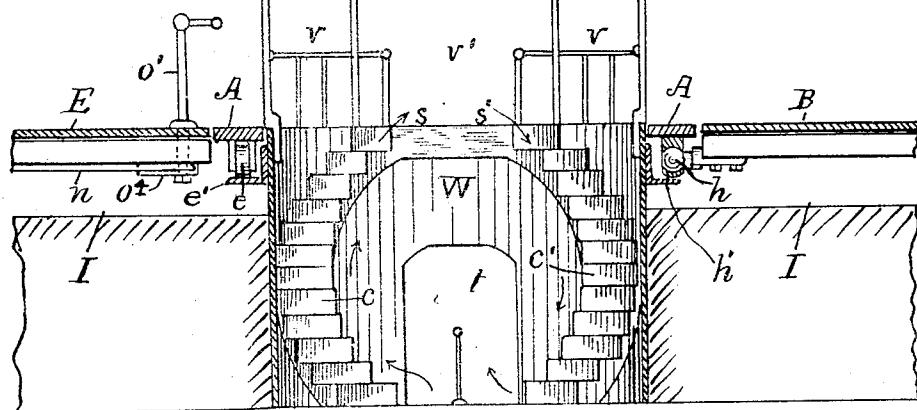
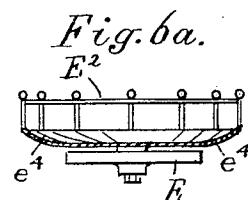
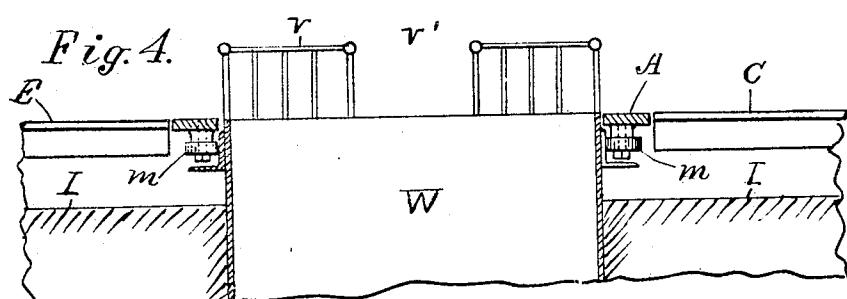


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 9.

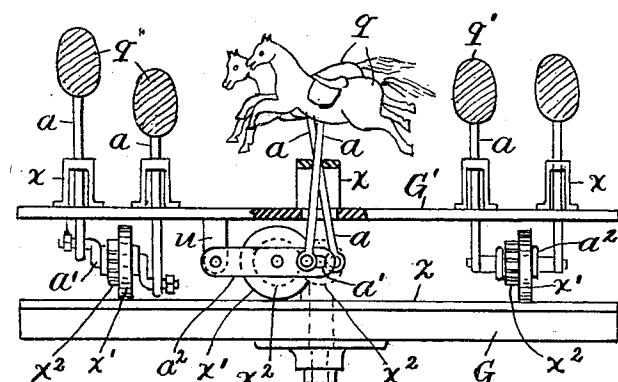
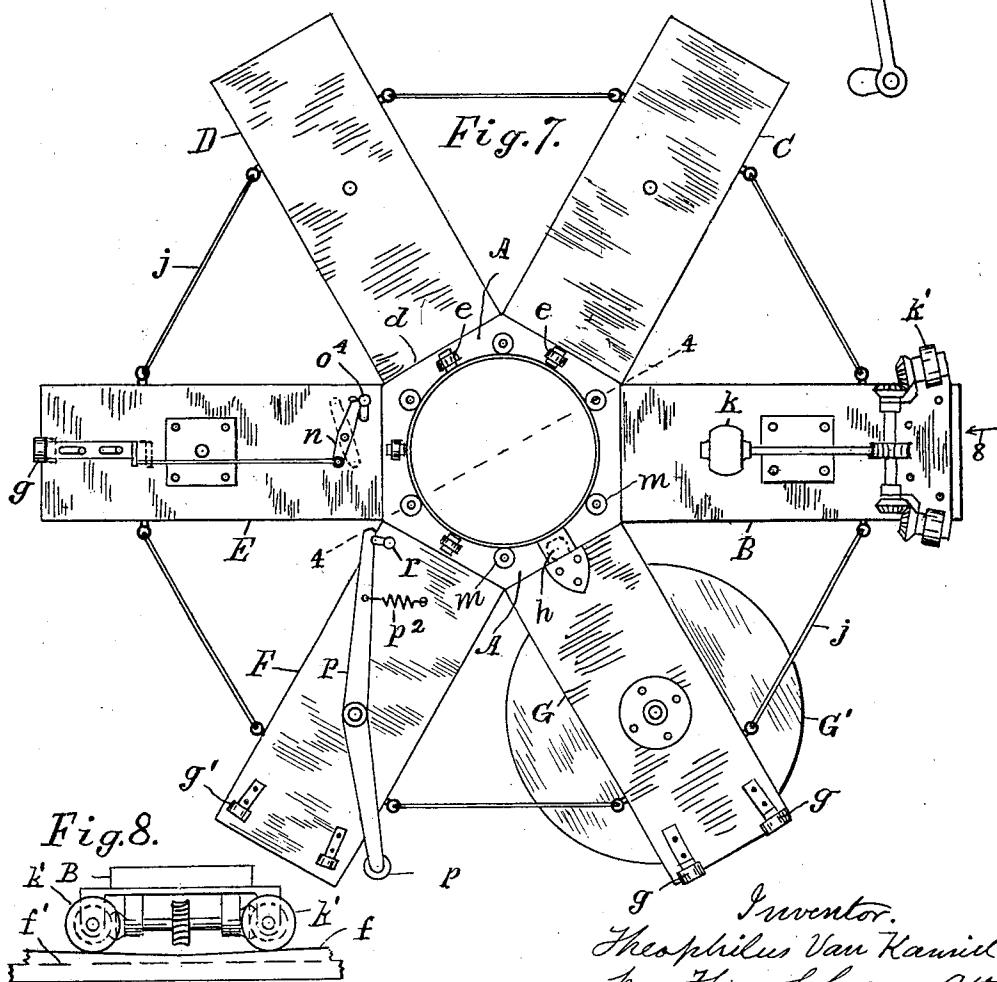
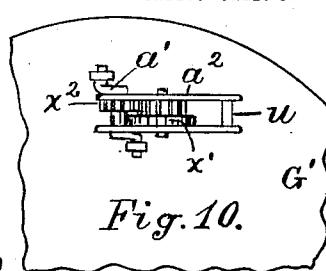


Fig. 10.



9 Inventor.
Theophilus Van Kauwen
per Miss S. Crane, Atty.

UNITED STATES PATENT OFFICE.

THEOPHILUS VAN KANNEL, OF NEW YORK, N. Y.

MULTIFORM AMUSEMENT-WHEEL.

1,371,528.

Specification of Letters Patent. Patented Mar. 15, 1921.

Application filed December 13, 1919. Serial No. 344,526.

To all whom it may concern:

Be it known that I, THEOPHILUS VAN KANNEL, a citizen of the United States, residing at 400 West 160 street, New York, county of New York, and State of New York, have invented certain new and useful Improvements in Multiform Amusement-Wheels, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This amusement wheel is of that class known as circular rides for places of amusement, such as parks, fairs and carnivals. Its essential feature is the rotation of an annular central hub around the shell or casing of a central passageway, and a series of supplementary sectional platforms or carriers joined to the central hub to project radially therefrom and turn therewith about the casing.

The central passageway is provided with a staircase and tunnel to the open space outside the structure and one tunnel and staircase may be provided for use as an entrance and another as an exit for patrons of the ride.

For brevity, the supplemental platforms are called carriers herein, and these carriers are jointed to the central hub by a hinge or trunnion-connection, so as to permit a vertical or oscillating motion of the carriers at their outer ends where they rest by rollers upon circular tracks.

One of these tracks is level, and rollers moving upon such track merely support the attached carrier in a horizontal rotating position. Another track near the level track has an undulating or rising-and-falling surface, and the rollers moving upon such track move the free end of the carrier up and down, giving such carrier an agreeable undulating or tipping motion in addition to the circular motion around the central passageway.

The means by which the carrier is attached to the hub determines whether it is capable of mere tipping up and down, in which case the carrier is attached to the hub by hinges; or capable of a rocking or oscillating motion, in which case the carrier is jointed to the hub by a single trunnion, and whatever is supported upon the carrier is, of course, subjected to the same tipping or rocking motion as the carrier itself.

On a number of these carriers are placed

rotating disks, and some are provided with seats for riders, while others are provided with dummy horses or other animals which rotate within an imitation circus ring, and others have tubs, resting on casters and provided with seats for riders, and other similar devices may be used while the entire disk swings around the casing with its supporting carrier.

It will be observed that while the disk rotates upon its supporting carrier it may also have an undulating motion, as the free end of the carrier moves up and down on the undulating track. The undulating motion of the carrier may be changed to a horizontal motion, or the reverse, while the disk is rotating, by moving the supporting roller of such carrier to bear upon either the level or the undulating track, thus giving the riders a great variety of experiences in the alternate acceleration and retarding of their rotary motion, and in the alternate undulating and level or horizontal movement.

Another carrier may be provided with a disk forming a circular or other shape of platform which does not revolve, but is given two kinds of motions, one caused by a vertical vibration and another by oscillations of the carrier upon a trunnion connecting the inner end of the carrier with the central hub.

The invention will be understood by reference to the annexed drawing, in which Figure 1 is a plan of the entire apparatus with the roof over the central opening removed; Fig. 2 is an enlarged section of the revolving element and casing taken on line 2-2 in Fig. 1, the rotating disk and its support not being in section; Fig. 3 is a section of the casing and the central passageway with the adjacent parts; Fig. 4 is a section of the casing and adjacent parts on line 4-4 in Fig. 7; Fig. 5 is an end elevation of one of the carriers with disk having annular settee thereon, as shown at C in Fig. 1; Fig. 6 is a similar view of the disk shown at D' in Fig. 1; Fig. 6a is a section of the disk provided with tubs; Fig. 7 is a plan of all the carriers inverted showing the mechanism upon their under sides; Fig. 8 is an end view of the driving mechanism viewed in the direction of the arrow 8 in Fig. 7; Fig. 9 is an edge view of one of the carriers carrying the miniature circus-ring, the edge of the disk being broken away at the guide x'; Fig. 9a shows an adjustable guide-post for the connecting-rod α ; and Fig. 10 is a plan

of the mechanism for operating the circus horses.

W designates the central well or passageway surrounded by a casing b and surmounted by a canopy or pagoda A' which is stationary in the center of the apparatus.

The casing contains the staircases c and c' communicating with the platforms s and s' on a level with the ring A which forms the central hub. One or more tunnels t extend from the well W outside of the wall H which surrounds the carriers.

Fig. 3 shows the hub A in section with rollers or wheels e supporting its weight upon a track e' projected from the casing b, and six such wheels are shown on the under side of the hub in Fig. 7; and intermediate to such wheels are shown rollers m bearing upon the outer side of the casing to center the hub, as shown in Fig. 4.

The edge d of the central hub is shown of hexagonal form, and six carriers B, C, D, E, F and G are jointed to the six straight edges of the hub by means which permit the carriers to be tipped or oscillated while in motion.

A circular wall H incloses the rotating elements forming a pit in the center of which the casing b is located, and the carriers project from the annular hub nearly to the inner side of such wall.

Contiguous tracks are located in the pit I shown within the wall W, the track f having an undulating surface and the track f' a flat horizontal surface.

Fig. 7 shows wheels g upon the carriers E and G arranged upon the outer ends of the carriers to bear upon the undulating track f, and wheels g' are shown upon the carrier F arranged a little nearer the hub to bear upon the flat track f'. Fig. 7 is diagrammatic showing the application of various features to different carriers, but omitting many constructive parts.

In Fig. 1 the carrier B is shown hinged to the edge of the hub by joint-bars i which permit the outer end of the carrier to be tipped up and down by the undulations of the track f operating upon the wheel g shown on the carrier E in Fig. 7.

The carrier G is shown in Fig. 7 furnished at the inner end with a ball-joint trunnion h which, as shown at the right-hand side of Fig. 2, is mounted in a bearing h' upon the hub A so that it may be oscillated and also tipped.

A carrier connected to the hub by such a trunnion must be provided with two wheels at its outer end, as shown at g on the carrier G in Fig. 7, acting as a tripod to hold it in a working position.

The several carriers are coupled together by links j having a loosely fitting joint to the carriers, thus permitting them to tip

or oscillate while holding them in radial relation to the hub A.

All the carriers and connected parts may be propelled by gearing or chain and sprocket-wheels operating upon the hub or upon one of the carriers which moves the others by connection thereto.

In Fig. 7 an electric motor k is shown upon the under side of the carrier B connected by gearing to supporting wheels k' arranged to rest upon the level or upon the undulating track. The electric gearing drives these wheels and thus turns all the carriers and their hub around the central casing.

It will be observed that any carriers having a hinge-joint i, as shown on the carrier B in Fig. 1, may be tipped up and down by a single wheel under its outer end, but cannot be oscillated like those furnished with the trunnion h shown in the inner ends of the carriers E in Fig. 1 and G in Fig. 7.

The motion of any carrier may be changed from a tipping to a level motion by causing its supporting wheels to rest upon the undulating or level track.

Means to shift the wheel g is shown upon the carrier E in Fig. 7 having connections to an operating lever n actuated by a cam upon the lower end of a hand-operated shaft o' shown in Figs. 3 and 7.

The wheel g shiftable by the lever n is shown in Fig. 7 moved outwardly to bear upon the undulating track, but when the cam o' is turned to move the lever n into the position shown in dotted lines, it draws the wheel g inward over the level track and thus arrests the tipping movement of the carrier.

To facilitate such shifting of the wheel from one track to the other, the lowest point on the undulating track is made level with the flat track f', as shown in the middle of Fig. 2.

Such shifting mechanism may be applied to shift the two wheels g shown upon the carrier G in Fig. 7, which when resting upon the undulating track causes the carrier to tip up and down, but when moved inwardly over the level track produces a smooth horizontal motion of the carrier.

Such undulating track is indicated by the line f in Fig. 8, the wall H being omitted from this figure to expose this mechanism, and the level track f' is indicated behind the undulating track in dotted lines.

A great diversity of amusement devices may be mounted upon the carriers and operated as desired, rotatable disks being shown upon three of the carriers in Fig. 1, which disks necessarily share any tipping movement to which such carrier is subjected.

The periphery of the disks is shown proximate to the inner side of the wall H, and the disk is conveniently rotated by a friction

roller p mounted upon a lever p' to be crowded in between the periphery of the disk and the inner side of the wall H , as shown upon disks E' and F' in Fig. 1.

5 A spring p^2 is attached to the lever p' to press the roller p normally against the inner side of the wall H , as shown on the carrier F in Fig. 1, but a cam-spindle r is shown on the carrier F in Fig. 1 extended through 10 the carrier to its upper side, by turning which the cam may move the lever and draw the roller out of contact with the wall, as shown on the carrier E .

The direction of rotation is indicated by 15 arrows in Fig. 1 and tends to crowd the roller p against the wall and thus rotate the disk. By such means any disk may be stopped and started independently of the others.

20 The disk C' on the carrier C is shown provided with a circular settee or circle of seats c^2 , and a gate c^3 at the periphery for access to the seats.

The disk D' on the carrier D is shown provided merely with a series of settees or 25 chairs d^2 and is surrounded by a railing d^4 with a gate d^3 for access to the same.

The disk E' upon the carrier E is shown provided with tubs e^2 in which riders may 30 be seated, and which are provided with casters to move freely in any direction, as the carrier is tipped and oscillated.

A guard-rail E^2 is provided to restrain the tubs and is formed with a gate e^3 to prevent the tubs from escaping and for access 35 to its interior. By giving the disk E' both a tipping and oscillating motion it causes the tubs to move in every direction.

The disk supporting the tubs is shown 40 provided in Fig. 1, like the other disks, with the roll p and lever p' to produce the rotation of the disk if desired; but the centrifugal force generated by such a rotation would hold the tubs against the guard-rail E^2 ; and to prevent this the floor e^4 of the disk is sloped downward adjacent to the guard-rail so that the tubs would at times be drawn from the guard-rail by gravity and moved toward the center. (See Fig. 6a).

45 At the time that the tub is carried by the rotation of the disk to the point nearest to the hub the centrifugal force generated by the rotation of the carrier is greatly reduced, and only the centrifugal force of the disk itself is effective. Thus, the two centrifugal forces vary in relation to one another, permitting free movement of the tub in all parts of the disk.

The disk G' upon the carrier G is fitted up 50 as a miniature circus, by mounting horses g thereon for riding, and means is shown by which each horse is moved in a natural running manner. This is done by extending a connecting-rod a from a crank a' through a

guide z to support the horse's body, as shown in Fig. 9.

The horses are preferably mounted in pairs so that the horses in each pair may be connected to mechanism which gives them opposite movements, one rising when the other falls, and one leaping forward when the other moves backward, thus balancing each other as to weight and inertia.

Four of the horses' bodies are shown in section at q' in Fig. 9, such bodies being in their extreme opposite positions at the left side of the figure, and on the same level at the right-hand side of the figure; and Fig. 10 which shows a part of the disk inverted, exhibits the gearing for one pair of the horses.

The crank-shaft, as shown in Figs. 9 and 10, is mounted in roller-frames a^2 in which a rolling-wheel x' is journaled and connected to the crank-shaft by gears x^2 . The gearing is employed to reverse the motion imparted to the crank-shaft by the wheel x' , which in its forward rotation would impart a backward leaping motion to the horses instead of a forward leaping motion. The galloping speed may be varied by changing the proportions of the gears. In Fig. 9a I have shown means for raising and lowering the guide z against which the connecting-rod a bears as the horse's body is moved forward and backward by the crank. Such vertical adjustment alters the proportions of the connecting-rod which extend above and below the guide, and thus alter the degree to which the horses are moved and the angle to which they are tipped. The means for such adjustment is shown upon a large scale in Fig. 9a, the column z^3 which supports the guide being made tubular and extended to the disk G' , and the guide having a hollow post z^2 which is threaded inside of the column so that it can be raised or lowered by turning therein.

The column is shown made in halves with flanges connected by bolts z^4 which would be tightened to hold the post rigidly when properly adjusted, and loosened when it is desired to turn the post for effecting a different adjustment.

The disk G' is mounted by a suitable bearing to rotate above a circular floor shown at z upon the carrier G in Fig. 9.

The roller-frame is hinged at u to the disk G' , and the weight of the horses upon the rods a presses the wheel x' upon the floor z as the disk rotates, thus rotating the crank and moving the horses backward and forward and up and down simultaneously, so as to impart a genuine galloping motion, the path of the center of motion describing an ellipse. The guard-rail on disk G' has a gate g^4 for access to the disk.

The motion of all the rotating disks is preferably arranged, as indicated by the arrows in carrier C in Fig. 1, so that its outer periphery moves in the same direction as the periphery or outer end of the carrier.

The rider, at the coincidence of these two motions thus moves very swiftly, but when the same rider is carried along the inner periphery of the disk (the motion being reverse to the movement of the carrier at this point), the rider will be approximately motionless in respect to a fixed point. This alternation of a swift and slow motion adds much to the amusing experience, while the speed change from one extreme to the other is so gradual that it does not cause an unpleasant or dangerous shock.

One or more of the carriers may be operated without any revolving disk, but provided with a large platform covered by an artistic roof or awning, so that those who wish a quiet ride may enter on this carrier and sit in ordinary chairs and swing around the central passageway while watching the others ride.

In some cases this carrier may be arranged so that it can, at pleasure, receive the tipping motion produced by the undulating track.

To keep an account of the duration of the ride which is allotted to the patrons, a counting mechanism is placed over each carrier, one being shown at y in Fig. 5 having a lever y' operated by a cam surface y'' upon the carrier at each revolution of the disk, so that when a certain number of revolutions is indicated on the counter, and the full number of rounds has been ridden, a bell would be rung automatically which advises the attendant to collect a second fare, or cause the occupants to withdraw in quiet. Railings w are shown next each flat side of the hub to protect the patrons from accident in entering or leaving the various disks.

The apparatus is built upon such a scale that patrons who reach the level of the hub can move all around the casing and enter upon any of the carriers that they may choose, and in thus moving about the patrons are protected by the railings w upon the hub, with an opening at v for the passage of the patrons to each disk. The openings v are protected by suitable gates which are closed as soon as the disk is put in motion. It is immaterial how access is afforded to the hub or casing in the center of the apparatus. Instead of a tunnel and staircase for access to a central well, a stationary platform in the center of the hub may be provided and access furnished thereto by a bridge extending over the moving carriers at a suitable height to clear the passageway

and passengers, and furnished with stairs at its opposite ends, as required.

Economy in the power required to operate this amusement apparatus may be effected by locating the elevations upon the undulating track so that one of the carriers is raised at the same time that another one is lowered; this balances the force required to elevate one carrier by the force exerted in the descent or falling of another carrier.

As the carriers are all moved jointly they may be said to form a horizontal rotatable platform, which expression I have used in the claims for convenience.

I have entitled this apparatus a multi-form amusement wheel, as the various independently movable carriers rotate like the radial parts of a wheel and are provided with diversified means for carrying the passengers.

Having thus set forth the nature of the invention what is claimed herein is:

1. In an amusement wheel, the combination, with a rotatable central hub, of a plurality of carriers extended therefrom, one or more of said carriers having a pivot thereon, a disk mounted to turn upon the said pivot, with means for carrying passengers, means for rotating the disk upon its pivot, and means for rotating the carriers conjointly.

2. In an amusement wheel, the combination, with a rotatable central hub, of carriers extended therefrom, at least one carrier having a rotatable disk thereon, a circular wall around the carriers, means for rotating the carriers conjointly within the wall, and a friction wheel arranged to crowd between the said wall and the margin of the rotatable disk to cause the rotation of the same. 3. In an amusement wheel, the combination, with a rotatable central hub, of a plurality of carriers having a movable connection therewith, as by a hinge or trunnion, circular undulating and level tracks adjoining one another beneath the outer ends of the carriers, and a roller upon at least one of the carriers shiftable to rest at pleasure upon either of the said tracks.

4. In an amusement wheel, the combination, with a central entrance well having a cylindrical shell around the same, of a central annular hub movable about such shell with separate carriers projected therefrom, a rotatable disk upon any of the said carriers, a tunnel and staircase for access to the carriers, a guard-railing around the well with openings leading upon the carriers, a guard-railing around the disk with openings for access thereto, and means for rotating the disk and stopping it without opening adjoining the central hub.

5. An amusement wheel provided with an

annular central hub, a plurality of carriers having movable connections therewith as set forth, a disk rotatable upon one of the carriers, a circular undulating track beneath 5 the outer end of said carrier, rollers upon the said carrier bearing upon the said track and operating to oscillate and tip the said disk during its movement around the casting, by the tipping and oscillation of its 10 supporting carrier.

6. An amusement wheel provided with an annular central hub, a plurality of carriers having movable connections therewith as set forth, disks rotatable upon a plurality 15 of the carriers and provided with various amusement devices, a circular undulating track beneath the outer end of the carriers, and rollers upon any of the said carriers bearing upon the said track and operating 20 to oscillate or tip the said carriers.

7. An amusement wheel provided with an annular central hub, a plurality of carriers having movable connections therewith as set forth, a circular undulating track beneath 25 the outer ends of the carriers, rollers upon any of the said carriers bearing upon said track and operating to oscillate or tip the said carrier or carriers, and connections between the said carriers to maintain the floor 30 spacing and radial relations of the said carriers.

8. An amusement wheel having a rotatable central hub with independent carriers extended therefrom, a circular floor upon one 35 of the carriers, a disk rotatable upon the carrier above the said floor, a friction-wheel carried by the disk and bearing upon the said floor, opposed cranks driven by the friction-wheel, crank-rods extended upward 40 through the disk with horses affixed to the upper ends of the rods, and guides upon the disk for directing the rods to produce a galloping motion of the horses.

9. An amusement wheel having a rotatable central hub with independent carriers 45

extended therefrom, a circular floor upon one of the carriers, a disk rotatable upon the said floor, a friction-wheel carried by the said disk and bearing upon the said floor, opposed cranks driven by the friction-wheel, 50 vertical rods extended upward through the disk with horses affixed to the upper ends of the rod, guides upon the disk for directing the rod to produce the galloping motion of the horses, and means for vertically adjusting the guides of the vertical rod in relation to the crank-shaft. 55

10. An amusement wheel having a rotatable central hub with independent carriers extended therefrom, a rotatable disk upon 60 at least one of the said carriers, means for rotating and tipping the disk, a guard-wheel upon the periphery of the disk with a gate for access to the disk, one or more tubs containing seats and having casters to move 65 freely within the said guard-rail whereby the tubs when thrown toward the guard-rail by centrifugal force are returned to the middle of the disk by the force of gravity.

11. An amusement wheel having a rotatable central hub with independent carriers extended therefrom certain of said carriers having rotatable disks thereon, means for rotating the disks upon the carriers, guard-rails around the peripheries of the disk with 70 75 openings in each, and gates fitted to such openings to permit passage to and from the disks and the central hub.

12. An amusement wheel having a rotatable central hub with independent carriers 80 extended therefrom, certain of said carriers having rotatable disks thereon, means for rotating the disks upon the carriers, and at least one of the said disks having a counter mounted thereon and actuated by a cam 85 upon the carrier at each rotation of the disk, to indicate the completion of the ride.

In testimony whereof I have hereunto set my hand.

THEOPHILUS VAN KANNEL.