No. 898,056. PATENTED SEPT. 8, 1908.

A. MALSIN.

AMUSEMENT APPARATUS.

APPLICATION FILED SEPT. 28, 1907.

3 SHEETS—SHEET 1.

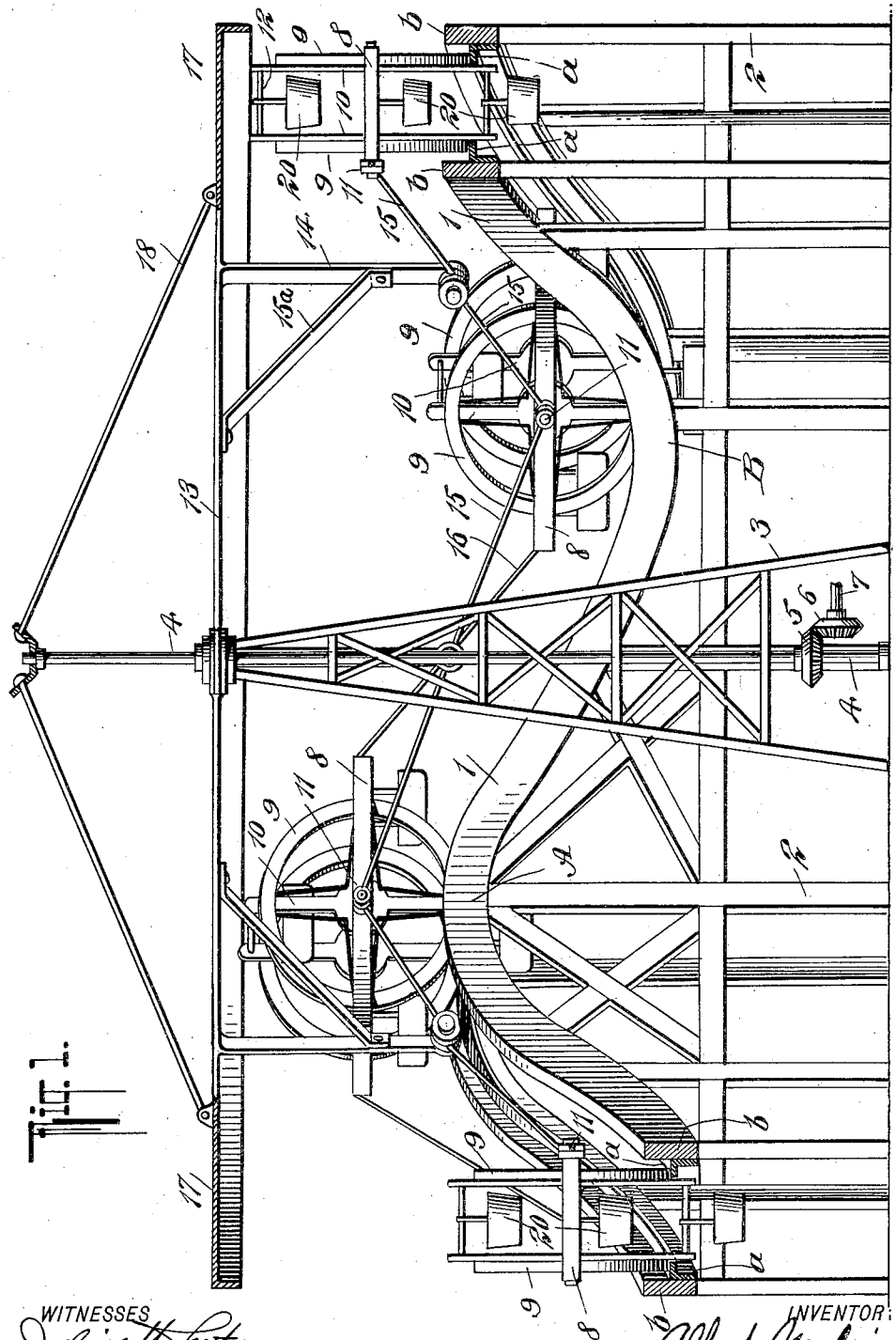

Fig. 1.

WITNESSES

Julius A. Smith

L. B. Schroeder.

INVENTOR

Albert Malsin,

Fred. P. Fischer.

ATTORNEY

THE NORRIS PETERS CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 2.

Fig. 2.

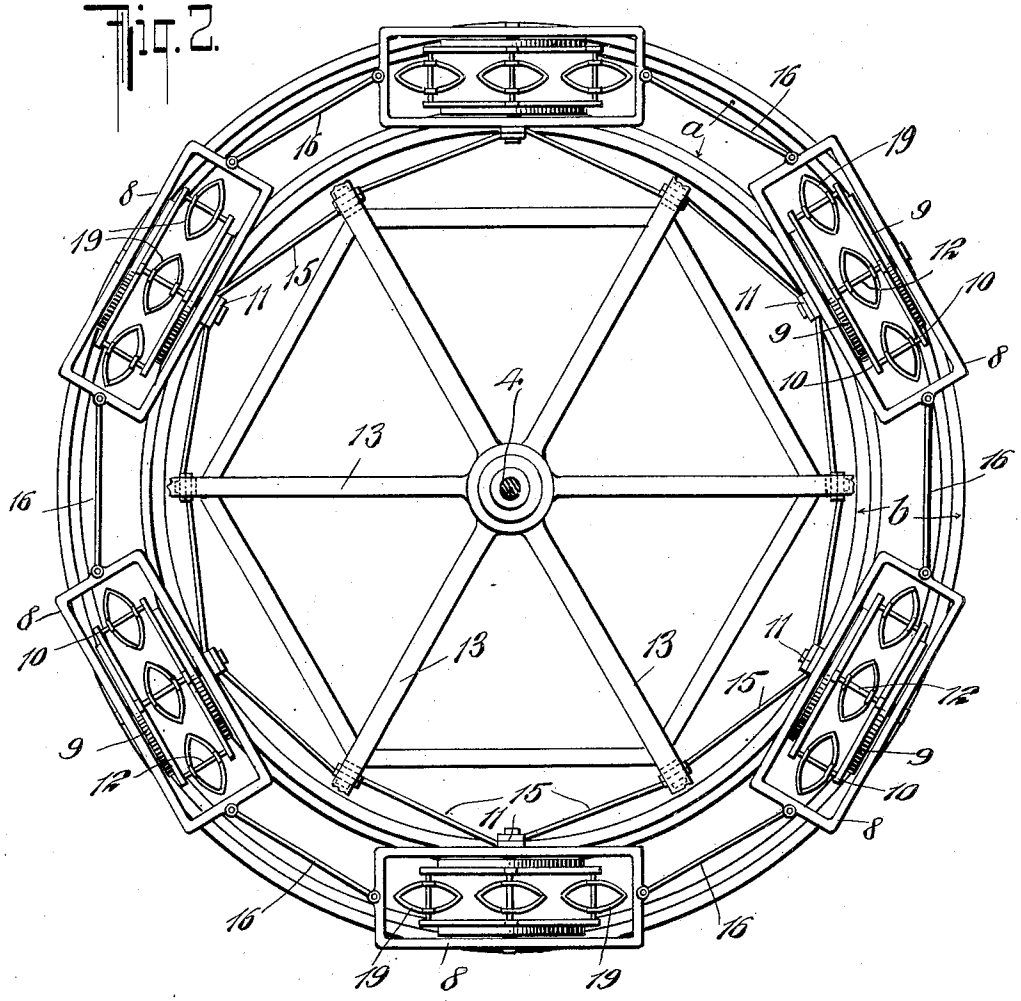
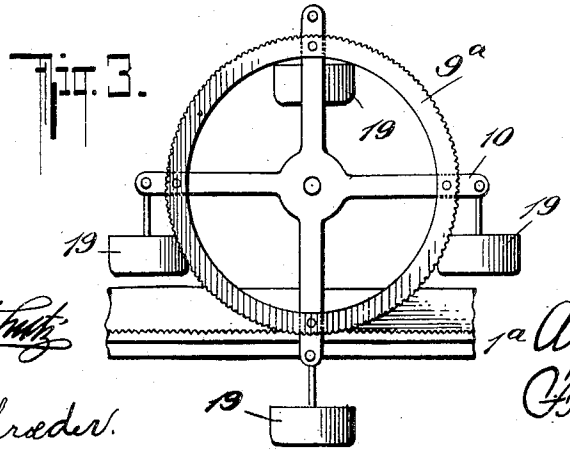


Fig. 3.



WITNESSES

Juliet Stutz

L. B. Schroeder.

INVENTOR

Albert Malsin

by Fred B. Tucker.

ATTORNEY

THE NORRIS PETERS CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 3.

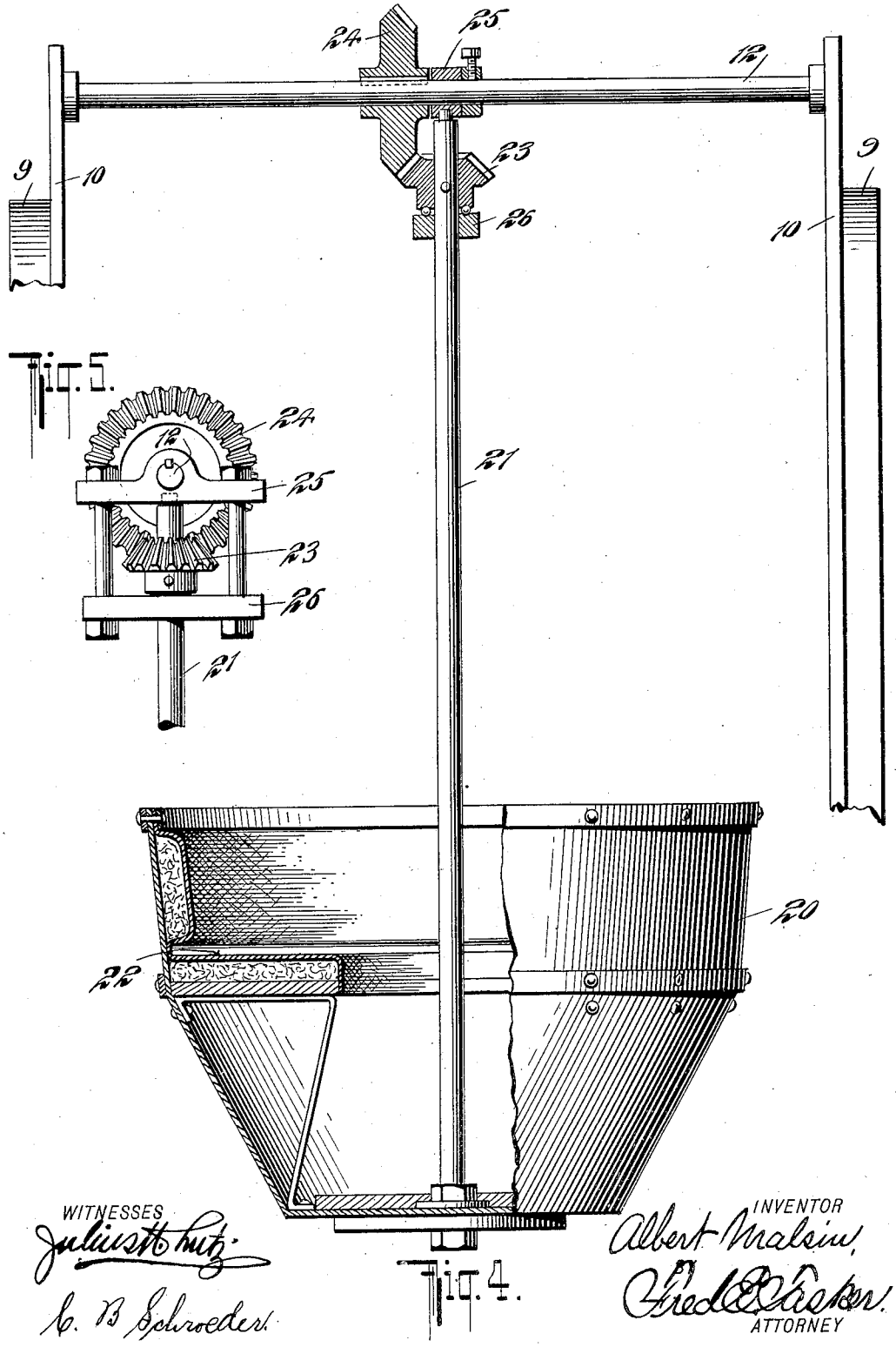

Fig. 4.

Fig. 5.

WITNESSES

Julius H. Lutz.

L. B. Schroeder.

INVENTOR

Albert Malsin,

Fred. E. Baker.

ATTORNEY

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALBERT MALSIN, OF NEW YORK, N. Y.

AMUSEMENT APPARATUS.

No. 898,056. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed September 28, 1907. Serial No. 395,047.

To all whom it may concern:

Be it known that I, ALBERT MALSIN, a citizen of the United States of America, and a resident of 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.

My present invention refers to an improvement in amusement devices, and has for its object the provision of an apparatus of the roundabout type, having cars which partake of various gyrating and revoluble motions, whereby a sensational effect is produced upon the passengers without there being at the same time any impairment of the device in respect of absolute safety of operation.

The invention consists essentially in the combination with a track or way which is circular and also undulating, of a series of rotating structures similar to a Ferris wheel, each carrying a plurality of suspended cars which have themselves an independent rotary movement. And the invention also consists in various details and peculiarities in the construction, arrangement and combination of the various parts, and in the means for practically applying the leading ideas of the invention in a successful and satisfactory manner, substantially as will be hereinafter more fully described and then particularly pointed out in the claims.

In the annexed drawings, illustrating my invention, Figure 1 is a side elevation in partial section of my improved amusement apparatus. Fig. 2 is a top plan view of the same with certain parts removed. Fig. 3 is a conventional side view of one of the Ferris wheels shown with certain modifications. Fig. 4 is an enlarged sectional detail view of one of the cars or passenger carriers. Fig. 5 is an enlarged detail view of the gearing at the top of the shaft of one of these cars.

Similar characters of reference designate corresponding parts throughout the different figures of the drawings.

The track, path or way along which the Ferris wheel structures roll is circular, and is also undulating, being alternately elevated and depressed with respect to an imaginary horizontal plane, passing through the same. Obviously the precise form, shape and method of support of a track of this kind may vary very widely.

In the drawings 1 denotes the track which is circular and is also undulating, rising to an elevation at A, and then sinking into a depression at B, the elevations and depressions succeeding each other alternately around the entire circular course, so that any car traveling on the track will not only be constantly making a circuit of the course, but will also be constantly running up the elevations and down into the depressions, thus giving it a variety of motions.

The track 1 may vary in its details, and in the drawings I have selected for portrayal only a rough specimen construction for explanatory purposes merely, and in this specimen the track 1 consists of rails *a a* separated from each other a short distance, on which rails the revolving structures may travel and between which rails the depending passenger carriers may hang. Alongside of the rails *a* are vertical guide rails *b* which keep the revolving structures on the track, and prevent them from falling therefrom. Said rails *a* furnish the bottom of the track, while the rails *b* serve as the sides. This track is supported at a proper distance from the ground by means of any suitable framework as, for instance, the beams, cross-braces, etc., indicated at 2 in Fig. 1. The diameter of the track may be of any length, and the ratio of the elevations A and depressions B to each other, as also to the dimensions of the track, may vary as preferred. Obviously also there may be as many elevations A and depressions B as one may wish, and they may be gradual or sharp in form.

Centrally of the track 1, I erect a tower or upright frame 3 of suitable height, in which is journaled a vertical rotating shaft 4 which is actuated by some suitable motor whose power is applied to a shaft 7 whereon is a bevel gear wheel 6 that engages another wheel 5 on the shaft 4. Shaft 4, like the ordinary roundabout or merry-go-round shaft, serves to actuate arms leading horizontally and radially therefrom at a point above the tower 3, as shown in Fig. 1, said arms being designated 13. In the course of this description, however, I shall, after describing certain other features, return to the arms 13 for the purpose of setting forth their function and relative arrangement more completely.

Rolling around the circular undulating track 1 is a series of revolving wheels built of suitable size, after the manner of what is commonly termed a Ferris wheel, each wheel carrying a series of depending cars designed to carry passengers. The structure of these wheels is capable of a very wide varia-

tion, but a convenient and simple form is that shown in the drawing where the wheel consists of a pair of circular rims 9, 9, which are strengthened by means of diametrically placed beams 10, the ends of the latter projecting beyond the rims 9 and being connected and held firmly together by means of tie-rods 12 from which the cars are supported. At the center of the revolving structure is a shaft 11 which is journaled in a rectangular or other shaped horizontal frame 8 that incloses the revolving structure. As the wheel revolves along the track 1, the rims 9 roll upon the bottom pieces *a a* of the track.

The arms 13 are provided with downwardly projecting extensions or brackets 14 suitably braced at 15ª. Pivotally connected to the lower ends of the extensions 14 are links 15, the other ends of which are pivotally connected to the projecting end of the wheel-shaft 11 on the side adjacent to the center of the track. Links 15 from two of the arm extensions 14 extend to the shaft 11 of each wheel, as shown in Fig. 2, so that by means of the two links 15 there is a more or less rigid connection between each two projecting extensions 14, 14, while at the same time the pivotal connections allow enough looseness of action to permit the wheels to roll on the track and to rise and fall in consequence of the ascents and descents made along the undulations. The frames 8 which carry the wheels are connected together by pivoted links 16 which connect the two adjacent ends of each pair of frames 8; or in other words, each frame 8 is connected to its successor in the circular series by means of a pivoted link 16.

The arms 13 carry a projecting cover or canopy 17 designed to overhang the revolving wheels so as to protect the occupants of the cars from inclement weather and from the heat of the sun. Said overhanging canopy 17 may be made of any desired material and may be ornate if preferred so as to embellish the appearance of the apparatus. Connecting this cover with the upper end of the revolving drive shaft 4 is a series of stay-rods 18 which serve to brace and strengthen the entire structure.

The style of car or passenger carrier used with the wheels may vary widely. The ordinary form, such as is commonly employed in Ferris wheels as now operated, may be utilized, and such form is indicated at 19 in Figs. 2 and 3. Another form, however, which is preferably employed in this apparatus is illustrated in detail in Figs. 4 and 5, and is designated 20. Car 20 is supported on the lower end of a vertical shaft 21, and is of a circular form, having therein a circular seat 22 for the passengers. The shaft 21 not only supports the car 20 but imparts thereto a rotary motion. On the shaft 21, near the upper end, is a bevel pinion 23 pinned fast to the shaft. The cross rod 12 which connects the beams 10 of the wheels is provided with a bevel wheel 24 fast thereon which engages the wheel 23. A head 25, loose on the shaft 12, receives the upper end of the shaft 21 and allows the end of the shaft to rotate therein. The shaft 21 always occupies a vertical position, depending as it does from the cross-rod 12. Since cross-rod 12 does not rotate but is carried around in a circular path, due to the rotation of the wheel, the bevel wheel 24 will partake of the same movement, and this will result in imparting a rotary movement to the wheel 23, and consequently to the shaft 21, whereby it will result that the car will be gradually revolved in a horizontal direction at the same time with its being carried bodily around in a circular path by the rotation of the wheel.

In Fig. 5, I have shown a detail of the gearing at the top of the shaft 21, so as to bring out more clearly the position of parts. The bevel gear wheel 23, which is pinned to shaft 21, rests upon the cross-head 26, or rather upon a ball-bearing which is interposed between the cross-head and the bevel gear, and in this way the parts are kept effectively in place and the proper results permitted to occur in the way of a revolution of the shaft 21, while the wheel is carrying the rod 12 and the bevel gear wheel 24 around in its movement.

Referring to Fig. 3, I have delineated therein a modified form of wheel whose rims 9ª are roughened or abraded so as to have a slightly dentated or corrugated surface to increase the traction, and the track 1ª is correspondingly roughened for the same purpose, so that the two rough surfaces, that of the track and of the wheel, may serve to enable the movement of the wheel to be surer and more positive, preventing all liability of slipping, and promoting accuracy and evenness in the revolution of the wheel.

In the operation of my improved amusement apparatus herein shown and described, the rotation of the vertical drive shaft 4 will carry the radial arms 13 around in a horizontal plane, thereby causing each of the downwardly extending brackets 14 to act through the links 15 upon the wheels and push the same along the circular undulating track, said wheels not only pursuing the circular movement but also the up and down undulatory path; while at the same time the various cars 20, which are depending from points along the circumference of the different wheels, as already set forth, will not only be carried bodily around with the revolution of the wheels, but also will each have a horizontal rotation, so that in this way there is a complication of rotary movements imparted to the cars wherein are the passengers, and the latter are enabled to enjoy the sensational feeling resulting from this combination of movements.

The overhanging canopy or roof 17 may be constructed in a great variety of ways, and it will assist materially in the pleasure of the ride as it will ward off the heat of the sun, as well as inclement influences of the weather; and I reserve the liberty of varying and modifying the form of the canopy within wide limits. I also reserve the liberty of reconstructing and rearranging and modifying in a great variety of ways the various details and peculiar features of my invention, in order to bring about the best results.

The elevated portions A and the depressed portions B of the circular track may vary widely in their precise curvature. The elevations are preferably convex in form, and the depressions are concave, and the concavities correspond in size with the convexities; or, in other words, one preferable way of constructing the circular track is to make the convex elevations A with a curvature or arc which will be exactly the same as the curvature or arc of the concave depressions B; but while this is a preferable way of arranging it, I am not confined thereto, and wish it distinctly understood that I can change this if desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In an amusement apparatus, the combination with means for supporting it, of a circular track having alternate curved elevations and depressions to form an undulating surface, said track having lateral guides and an open bottom, a series of revolving wheels rolling on said track, and pendent cars carried by the wheels, together with means for imparting an independent rotary motion to said cars in addition to the bodily revolution of the cars with the wheels.

2. In an amusement apparatus, the combination with a curved track, of a revolving Ferris wheel movable thereon and provided with a series of depending cars, together with means for rolling the wheel on the track, together with means for imparting an independent rotary motion to said cars in addition to the bodily revolution of the cars with the wheel.

3. In an amusement apparatus, the combination with a circular undulating track, having an open bottom and lateral guides of a series of revolving wheels rolling on said track and carrying pendent cars, and means for causing the wheels to roll on the track, and means for independently rotating the pendent cars.

4. In an amusement apparatus, the combination with a circular undulating track, of a series of wheels rolling on said track, each wheel carrying a series of pendent cars and means for imparting an independent rotary motion to said cars.

5. In an amusement apparatus, the combination with a circular undulating track, of an upright drive-shaft having radially projecting arms, wheels rolling on the track, connections between the said radial arms and the axes of the wheels for actuating said wheels, together with pendent cars carried by the wheels and means for imparting an independent rotary motion to said cars in addition to the bodily revolution of the cars with the wheels.

6. The combination with a circular undulating track and an upright drive-shaft having radially projecting arms, of a series of wheels rolling on the track, a frame inclosing each wheel, means whereby the motion of the arms is imparted to the wheels, and connections between the frames, together with pendent cars carried by the wheels and means for imparting an independent rotary motion to said cars in addition to the bodily revolution of the cars with the wheels.

7. The combination with a circular undulating track, of a vertical drive-shaft having radially extending arms, a series of wheels rolling on the track, a frame for each wheel in which it is journaled, links connecting the arms with the wheels and their frames, links connecting each frame with the adjacent frame, and passenger-carrying cars arranged in the wheels.

8. The combination with a circular track or way, having an open bottom, of a series of revolving wheels rolling along the track, means for imparting the rolling movement to said wheels, means for connecting the wheels and causing them to remain the proper distance apart, and a series of individually rotative passenger carriers suspended from points on each wheel.

9. The combination with a circular track having lateral guides and an open bottom, of a wheel rolling on said track, and a series of passenger carriers supported from points on said wheel, each carrier having an individually rotative motion in addition to its bodily revolution with the wheel.

10. The combination with a circular undulating track, a series of wheels rolling thereon, each wheel comprising parallel rims having diametrical beams and cross pieces connecting said beams, and a series of individually rotative passenger carriers suspended from said cross-pieces and having a gearing connection between the carrier shaft and the cross-piece.

11. The combination of a circular undulating track, a series of wheels rolling thereon, a vertical drive-shaft having radial arms, means connecting said arms with the wheels for the purpose of actuating the latter, series of passenger cars pendent on each wheel, and an overhanging canopy for the cars.

12. The combination of a circular undulating track, a supporting structure therefor, a series of revolving wheels rolling along said

track, a frame for each wheel, a vertical shaft having radially projecting arms provided with depending brackets, links connecting said brackets with the wheel journals, links connecting the frames, and a series of individually rotative passenger carriers pendent on each wheel.

Signed at New York city, this 27th day of Sept. 1907.

ALBERT MALSIN.

Witnesses:
RICHARD CONDON,
C. B. SCHROEDER.