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Clem

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[54] CARROUSEL-TYPE AMUSEMENT DEVICE

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272/40

[51] Int. Cl. A63g 1/08

[58] Field of Search 272/29, 51, 36, 37, 50

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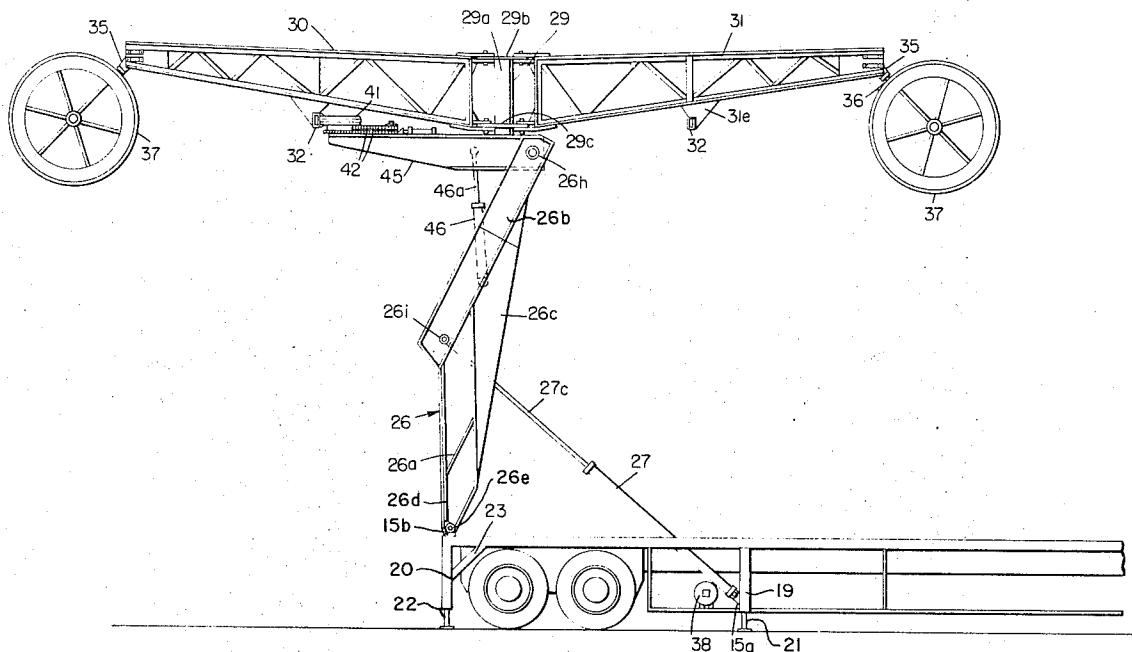
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[57] ABSTRACT

A collapsible and portable, over-the-road carrousel having when in assembly, a plurality of passenger-carrying gondolas mounted from a rotatable sweep assembly, wherein an hydraulically powered elevator, with included linkage, is so mounted from and upon a portable platform, which platform serves as a vehicle trailer in over-the-road transport and in assembly serves as a base, as to raise and lower, within wide and predetermined limits, the sweep assembly whether or not the latter be in rotation, through continuously variable relation of the sweep assembly both as to its vertical height above platform and as to its angular attitude with respect to either the vertical or horizontal and which elevator, when desired and through its included linkage, will so position the sweep assembly as to permit simultaneous loading and unloading of all of the passenger-carrying gondolas, the hydraulic powering for the elevator being such that changes in the vertical height and angular attitude of the sweep assembly as well as changes in the rotational speed of the latter, can all be accomplished independently of each other.

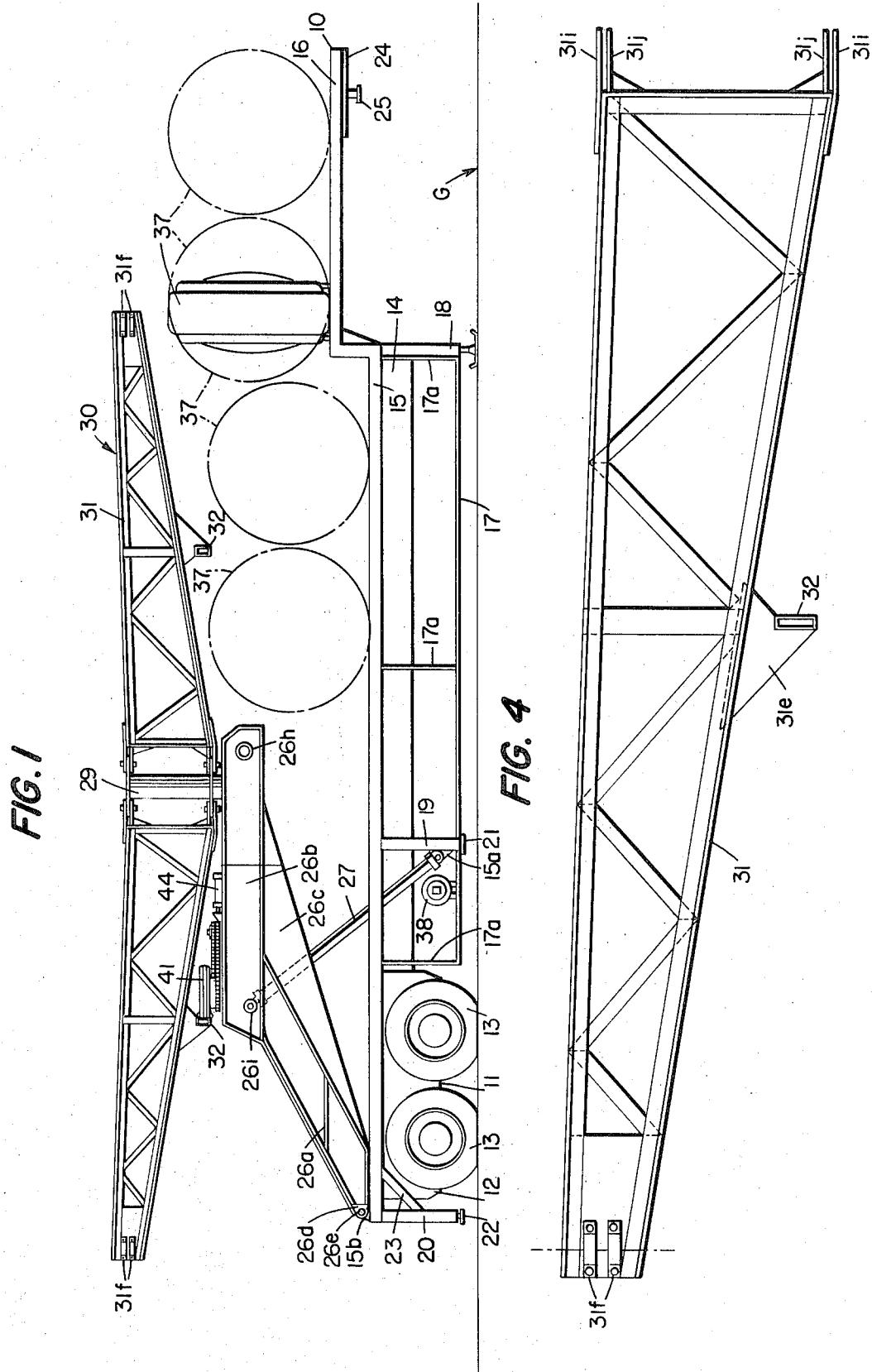
9 Claims, 11 Drawing Figures



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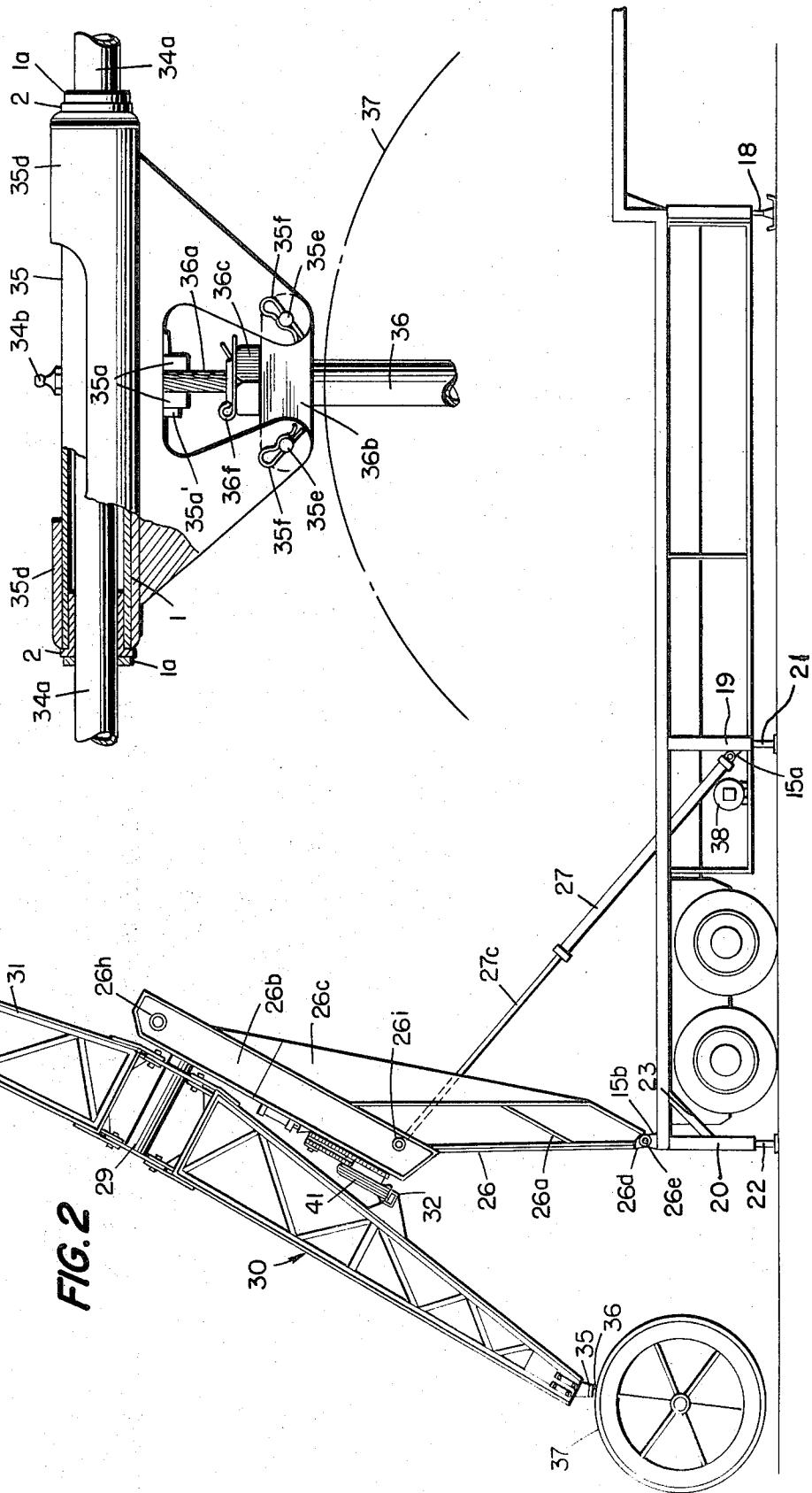
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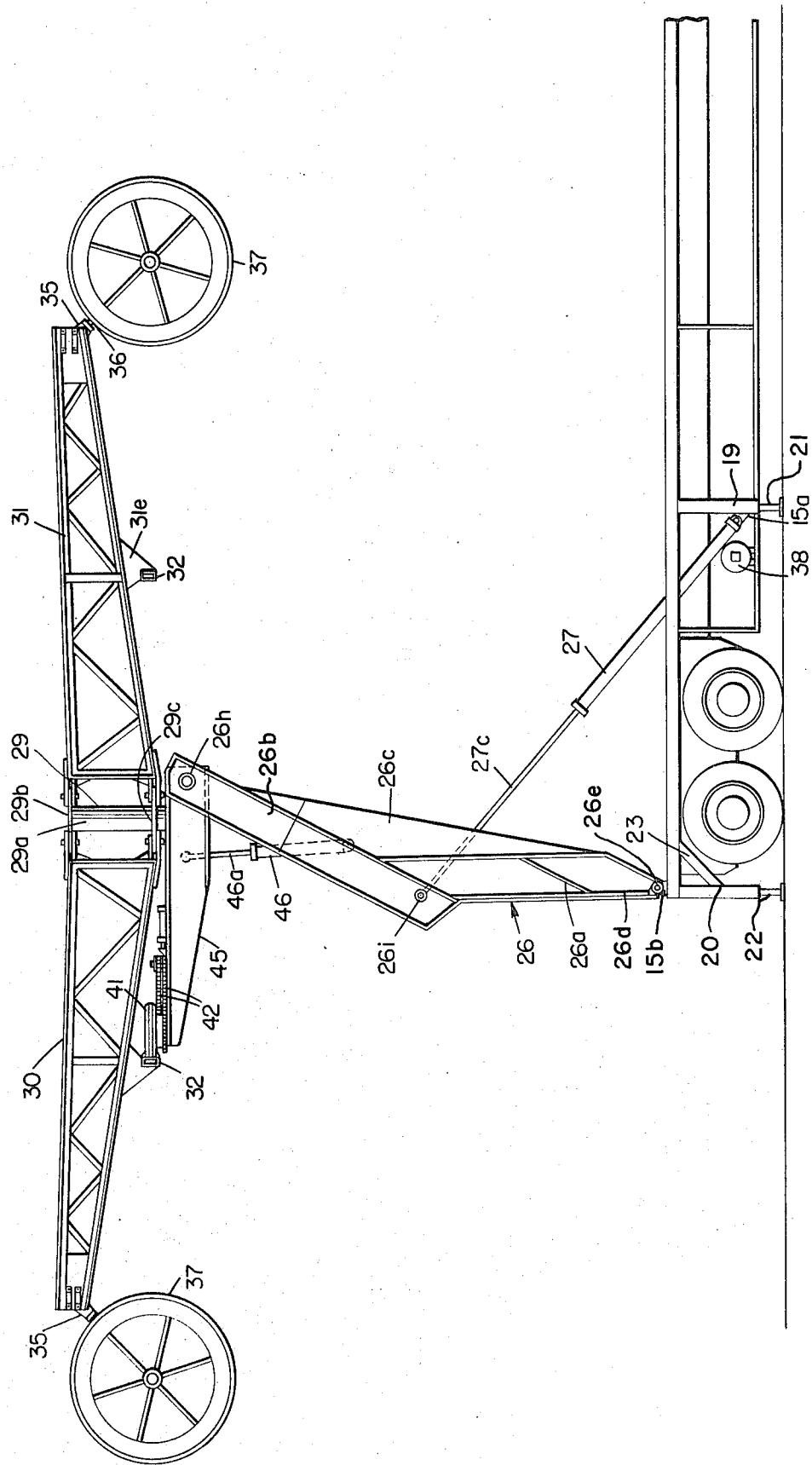


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FIG. 3



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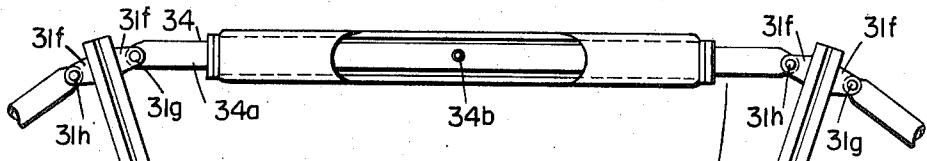
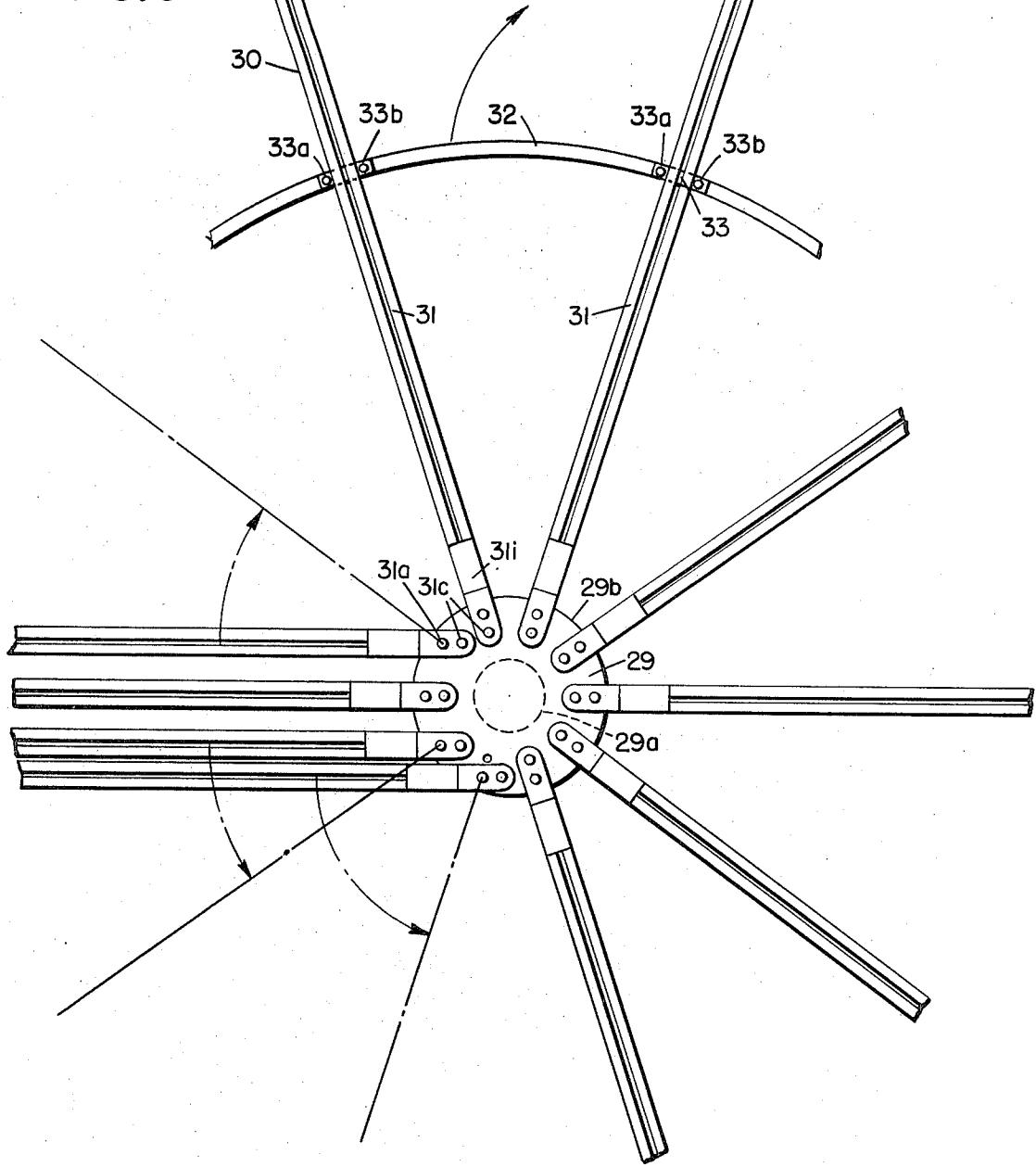


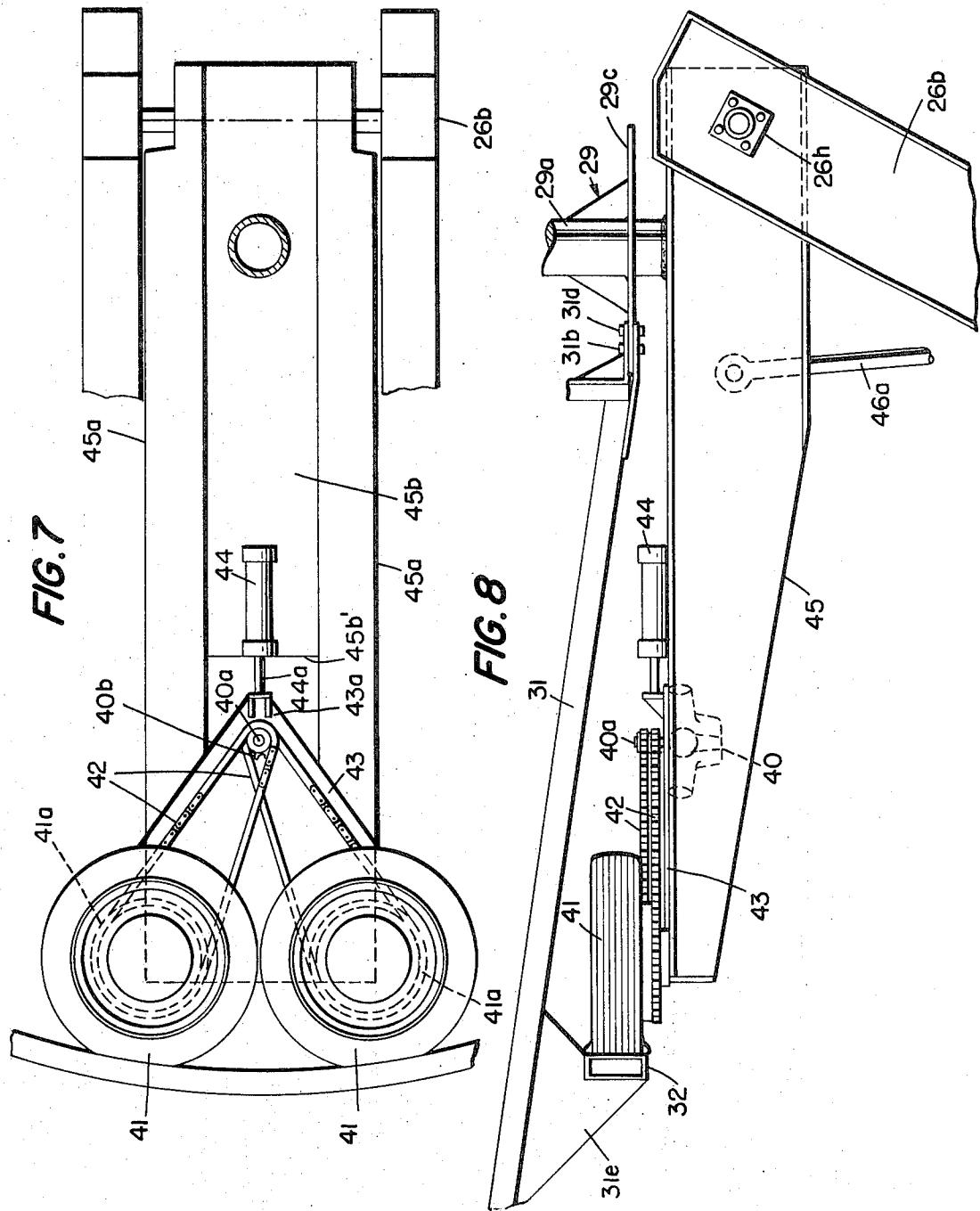
FIG. 6



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FIG. 10

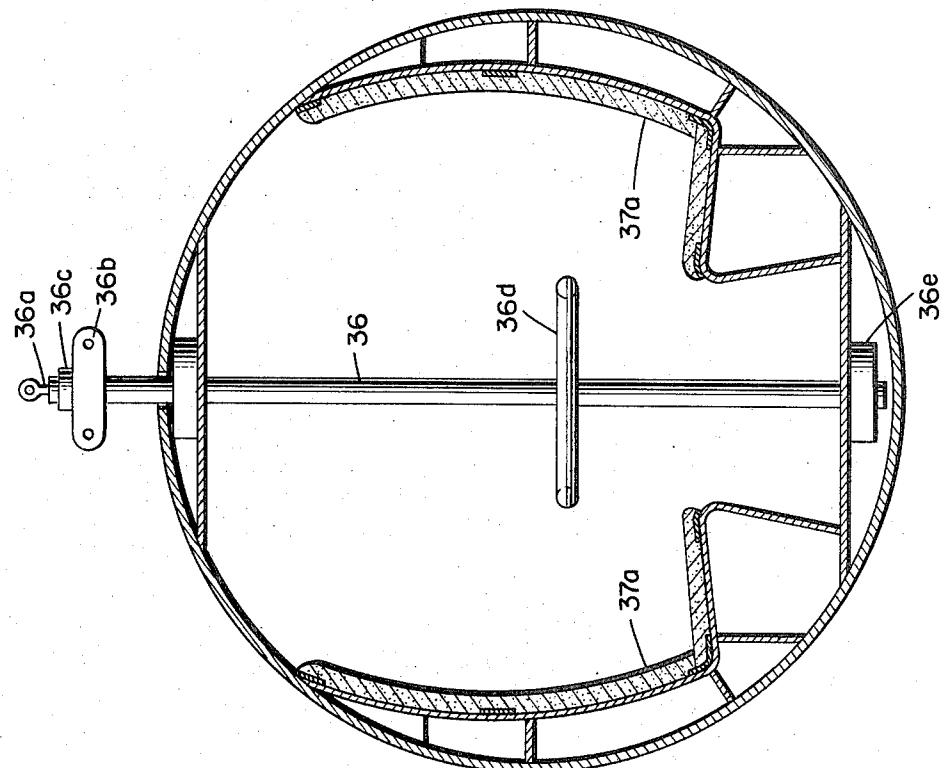
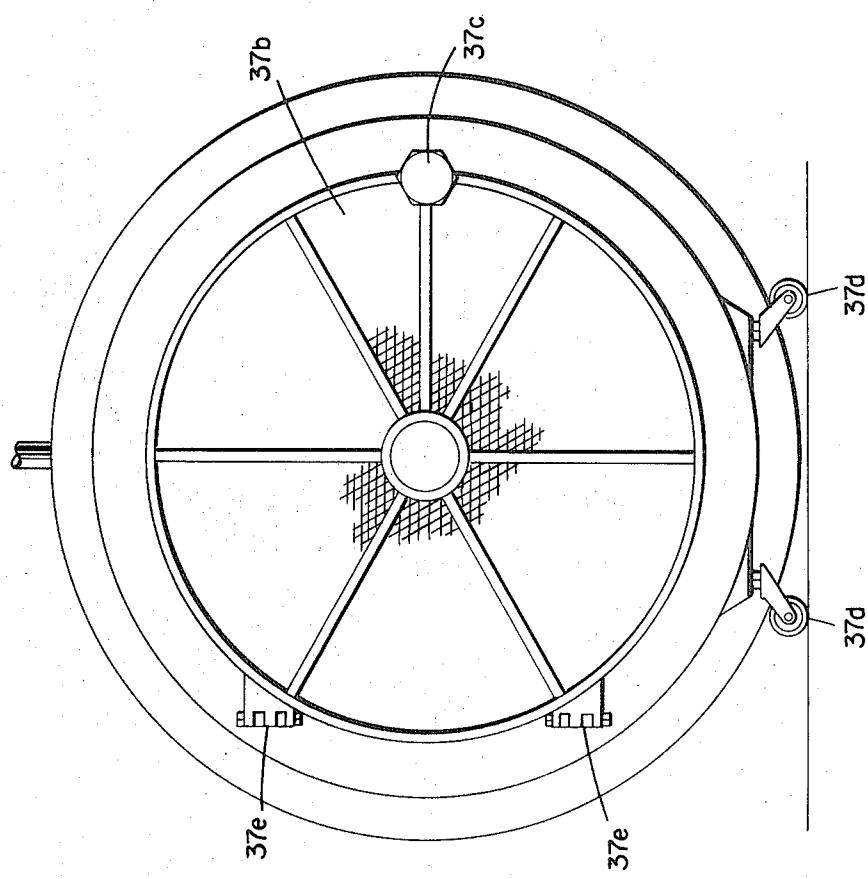


FIG. 9

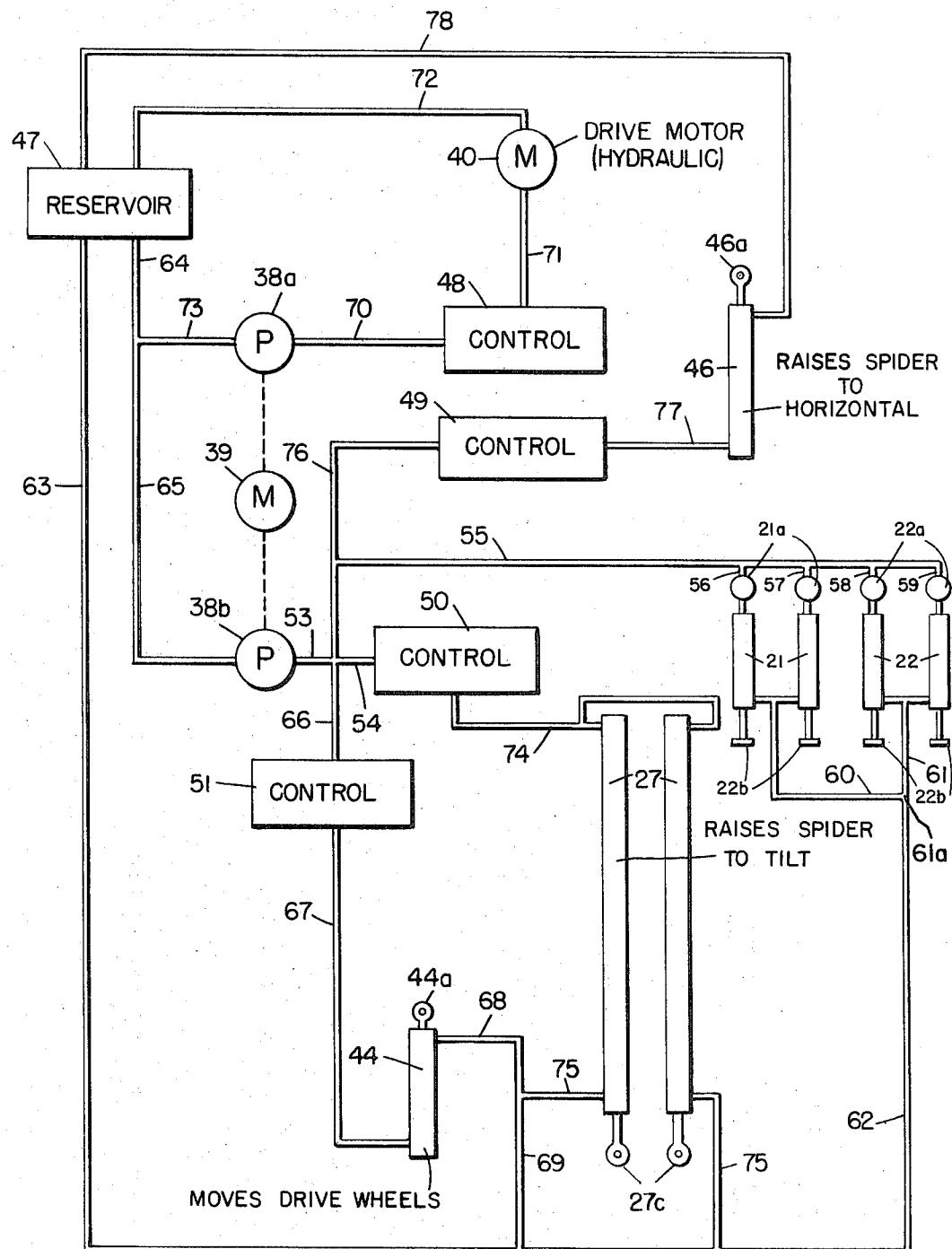


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FIG. II



CARROUSEL-TYPE AMUSEMENT DEVICE

My invention relates broadly to commercial amusement devices providing rotating rides for its patrons, herein designated by the all-encompassing term carrousel, and has particular application to a portable device of the general class described which lends itself readily to over-the-road transport from one location to another at which latter place it can be quickly re-assembled for service as a rotating ride; and concerning which carrousel I provide marked flexibility in the selection of its plane of rotation as concerns both its angular vertical attitude and its height above the ground in horizontal plane. As well, my invention provides for certain flexibility, as concerns both the vertical and the horizontal, in the positioning of the assembled carrousel with respect to the trailer on which it is mounted and which trailer provides, in assembly, the base or mounting frame of the device.

Thus it will be seen that an object of my invention is to provide a rotating-wheel or carrousel type of amusement device which, capable of ready over-the-road transport from one location to another and lending itself to ready, simple, certain and rapid procedures in both disassembly and assembly, at the same time provides a high degree of flexibility in the disposition of the assembled rotating wheel with respect both to its vertically-angular relation to the ground and its mean height thereabove.

Another object is to provide an amusement device of the general type described wherein, while the rotating device is in passenger-carrying operation, the operator thereof can quickly and rapidly accomplish multiple changes in the orientation of the rotating wheel and this, both with respect to vertically angular attitude and with relation to its instantaneous, mean height above ground.

Another object is to provide an amusement device of the general class described wherein is employed a rotating wheel the precise location of which latter, in operable assembly, readily lends itself to wide range of selective choice on the part of the operator; which device is markedly simple in construction, at the same time displaying high qualities of physical strength coupled with long useful life, and together with ready maintenance and freedom from breakdown.

Other objects and advantages will in part be obvious and are in part pointed out hereinafter during the course of the following description, all taken and considered in the light of the accompanying drawings wherein, illustratively, I disclose a presently preferred embodiment of my invention.

And now, having particular reference to the several views of the drawings;

FIG. 1 discloses in side elevation, the amusement device designated for convenience by the general term carrousel, as that name may be broadly interpreted, and shown in its entirety with included trailer, the carrousel being dismantled for over-the-road transportation;

FIG. 2 is an elevational view somewhat similar to FIG. 1, parts being broken away for simplicity and disclosing the device in assembly, with the rotating wheel in one of its myriad positions;

FIG. 3 comprises a still further side-elevational view showing the carrousel in assembly, with the assembled gondola-carrying spider positioned for rotation about a

vertical axis and a considerable height above the supporting trailer bed;

In FIG. 4 I disclose one of the sweeps in elevational detail, a number of which sweeps are assembled to form the rotating wheel or spider assembly;

The bearing assembly for carrying the related passenger gondola comprises the subject matter of FIG. 5, it being noted that there is one such bearing assembly between each related pair of sweeps it being further noted that there is one gondola associated with each such bearing assembly;

FIG. 6 is a plan view of the sweeps as related both to the sweep-carrying axle assembly and as well, to the sweep-connected drive track and gondola-carrying hanger assemblies;

FIGS. 7 and 8 are plan and side elevational views, respectively, of the drive mechanism for the rotation of the gondola-carrying spider assembly;

FIGS. 9 and 10 are respectively, a side elevational and a cut-away section, the latter through vertical plane, of one of the gondolas carried by the rotating wheel or spider assembly, clearly depicting the suspension of such gondola through the intermediary of a hanger mounted between a related pair of sweeps, and from the outer extremity of these latter; while

The hydraulic system for the carrousel is disclosed schematically in FIG. 11.

FORENOTE

By way of forenote it may be recalled that more and more, the industry has been directing attention to the production of a wide variety of amusement rides which, to a certain degree, are adaptable for over-the-road transportation for short-time stays from say, one carnival to another. Many of these amusement devices are centered around a rotatable wheel from which passenger-carrying units are suspended, while similarly, much attention has heretofore been directed to imparting flexibility in the positioning of this rotatable wheel in assembly and relative to the ground, both as to (a) the particular angle or attitude with respect to the vertical in which the wheel or ride is located, and (b) the precise positioning both horizontally and vertically, with relation to rectangular coordinates, of its related mobile platform. And while some effort has been made towards permitting operator-chosen compounding of the wheel-location controls during rotation these efforts, for a number of reasons, some one or more of which such efforts relate to the presently available devices, have uniformly fallen short of complete satisfaction. In sum, neither desired flexibility of positioning nor compounding of motion during operation has been fully achieved. Moreover, these known devices involve detrimental complexity of both design and construction. In many instances they display insufficient sturdiness along with other insufficient performance characteristics so that, all in all, difficulties have demonstrated themselves both in frequent break-down and in complexity of the requisite repairs. Finally, consumer-acceptance has been notably disappointing.

A further object of my invention, accordingly, is in large measure to avoid the aforementioned deficiencies and difficulties, at the same time producing an amusement device which, while having requisite desirable universality of positioning and momentary plane of rotation, i.e., attitude, at the same time (a) can be readily disassembled and compactly positioned and stowed for

over-the-road transportation, (b) can be readily unstowed and re-assembled on new location, and (c) can thereupon be operated by relatively unskilled labor; which device, basically simple both in design and construction, nevertheless displays all requisite sturdiness and safety in operation, meeting all Code requirements of the various controlling bodies, all coupled with long useful life.

And now, having reference to the disclosure of the several views of the drawings, I note that in this presently preferred form as herein illustrated, and perhaps having initial attention more particularly to the disclosure of FIG. 1,

TRAILER ASSEMBLY

An over-the-road trailer which comprises part of my construction is broadly indicated at 10. I provide this trailer 10 with a load-distributing, tandem-mounted rear axle assembly 11. And I provide a conventional suspension system 12 which carries this axle assembly 11, thereby supporting the trailer from the under side thereof. It is to be noted that this trailer 10 typically and conventionally is made up of longitudinal trailer beams 14 disposed one on each side of the trailer's longitudinal centerline, together with longitudinally extending side rails 15 carrying the trailer bed, which bed is not itself depicted in the drawings. Wheels 13, conventional in nature, are mounted to and serve to carry suspension system 12. For purposes to be discussed hereinafter, I provide lugs 15a, 15a, (see FIG. 1) while I provide generally similar and upstanding lugs 15b, 15b, one on each side rail 15, 15 near the end thereof.

Conventionally, the frame of trailer 10 is provided with an upstanding and forwardly projecting, somewhat goose-neck extension 16. The undercarriage 17 of trailer 10 may be compartmentized for storage of equipment during transport. A series of reinforcing struts 17a depend from the side rails 15 along the lengths of these latter, being secured at various points to the undercarriage 17, preferably at the bottom thereof. Forward jack assembly 18, which in a typical embodiment and for economy, preferably is hand-operated, serves when the amusement ride is in assembly and when these jacks are lowered to the ground, as part of an effective, ultimate load-carrying and stabilizing system.

Forward bulkhead assembly 19 (FIG. 1) is disclosed as formed on, fast to and depending from the underside of trailer side rails 15, 15. These elements 19 are fabricated from tubular or generally similar materials. They serve to reinforce and strengthen the assembled ride. A similar bulkhead assembly 20, designated as a rear bulkhead assembly, is suspended from the rear ends of the side rails 15, 15.

These bulkhead assemblies, 19, 20 respectively carry jack assemblies 21, 21 and 22, 22, one such jack assembly of each of the related pairs of assemblies being bolted or otherwise made fast to the corresponding bulkhead on each side of the centerline of the trailer. In FIG. 1 these jack assemblies will be seen to be telescopic in nature. They are disclosed as raised from the ground G. On the contrary, in FIGS. 2 and 3 they are disclosed as lowered to, resting upon and reacting against the ground, substantially participating and assisting, along with jack assemblies 18, 18, in stabilizing the carrousel while in assembly and in passenger-

carrying service. Importance attaching to a high degree of stabilization, I provide these jack assemblies 21, 22 as far outboard of the longitudinal centerline of the trailer 10 as is possible. And this is also true as concerns 5 the jack assemblies 18, 18.

It is to be noted that the diagonal element 23 (perhaps best disclosed in FIGS. 1 and 3) which extend between the bed of the trailer 10 and the rear jack assemblies 22, 22, is itself comprised of reinforcing braces.

Plate 24 of trailer 10 is made fast to and depends from the underside of goose-neck extension 16. This plate 24 carries pin 25 depending downwardly from the center thereof.

The better to understand the operation of these several jack assemblies, it may be noted at this point that, 15 in preparation of the trailer for over-the-road transport a suitable tractor, not shown, is connected by means of a king pin 25 to the trailer 10, thereby imparting a limited degree of lift thereto and about the tandem wheels 13, 13 of the trailer as a fulcrum. The operator then jacks up the several jack assemblies 18, 21 and 22 (it being noted that in my preferred embodiment, here shown, the assemblies 21, 22 are actuated hydraulically).

With the ride dismantled and compacted upon said trailer for over-the-road transport, the device is ready for carriage to its next location.

ANGULAR AND HEIGHT POSITIONING COMPONENTS

As to the components mounted on trailer 10, and having attention to the disclosure of FIGS. 1 through 3, it will be seen that pedestal assembly 26 with its related and fabricated leg 26a, serves as the ultimate support 35 and carriage for the passenger-carrying spider of my device, and which latter is itself made up of fabricated elements later to be described. To this end and at its upper, outer and otherwise free end, this leg 26a pivotally carries a spider-carrying boom assembly 26b. This boom assembly 26b itself is comprised of hollow, 40 fabricated or built-up construction more particularly disclosed in FIG. 8, and concerning which it is here noted that, internally thereof and pivotally supported thereby, it carries a mounting frame 45 (See FIG. 3), later to be described.

In FIGS. 1 through 3 I disclose paired, load-distributing gussets 26c, 26c extending between and each made fast, at one end thereof to leg 26a and at the other end to boom assembly 26b, thereby providing a 50 rigid and somewhat monolithic pedestal 26, possessing all requisite sturdiness and displaying completely adequate factor of safety. Leg 26a terminates at its lowermost and rearmost extremity in a toe 26d. This toe 26d serves as part of a hinge element, for swinging pedestal 26 through a vertical plane and about a horizontally-disposed hinge pin 26e. This hinge pin 26e extends through lugs 15b, 15b, these latter being upstanding 55 from the rear ends of side rails 15, 15.

Giving attention now to the boom assembly 26, it may be noted that at the rearward end of this latter, and about its centerline, I provide paired hinge elements and pins 26f (FIGS. 1 through 3). These serve for the pivotal reception of piston rod 27c, the latter being a part of a telescopic hydraulic cylinder 27. I make clear in the disclosure of FIGS. 1 through 3, the manner in which these hydraulic cylinders 27, of which I provide a pair, are each pivotally connected between related

and paired lugs 15a, 15a upstanding from the forward bulkhead 19, of the trailer 10, at their one ends, and the related hinge elements 26i, 26i of boom assembly 26b, at their other ends. For more complete understanding of the function of these hydraulic cylinders 27 it may be noted, giving particular attention to the disclosure of FIG. 1, that with piston rods 27c of related hydraulic cylinders 27 in retraction, the sweeps 31 (of which more will be said at a later point in this disclosure) are disclosed as pulled into their lowermost and horizontal position. Because of this and with passenger-carrying gondolas 37 carried near the ends of these sweeps (FIG. 3) all passengers may simultaneously and readily either mount upon or dismount from the gondolas, from or to an extended deck on the trailer 10, as the case may be. In this regard it is to be noted that I provide a multi-hinged deck, conventional to the art, which is carried in collapsed form on trailer 10 during transport, and which is assembled on location into a horizontally-extending, somewhat annular, passenger-carrying deck which fits symmetrically about the assembled carousel.

Conversely, and having consideration of the disclosure of FIGS. 2 and 3, and with piston rod 27 in extension, the sweeps are elevated at selected substantial heights above the ground. The angular relation or attitude of these elevated sweeps 31 with respect to the ground is controlled by additional mechanism later to be described. Mounting frame 45, shown both in FIG. 8 and the top center of FIG. 3, is pivotally and internally carried at the outer free end of boom assembly 26b. It is from this frame 45 that axle assembly 29 is rotatably carried. And it is this axle assembly 29 which serves directly to carry the sweeps 31, and on which the sweeps are foldably mounted. The details of construction of frame 45 and related components will be deferred to a later point in this disclosure. It is here noted, however, that frame 45 cannot be seen in FIGS. 1 and 2, since it is collapsed within the related boom assembly 26b. Having attention to the disclosure of FIGS. 1 through 3, it will be seen that this axle assembly 29 comprises an axle 29a which in turn, is provided with top and bottom axle rings or circular caps 29b, 29c. These latter are welded fast to the axle 29a, and they extend concentrically and outwardly therefrom, as perhaps will best be seen from a consideration of the disclosure of FIG. 6.

THE SPIDER ASSEMBLY

It being noted that the plurality of sweeps 31 comprise, in assembly, a spider 30, it is further to be noted that it is this spider which is directly carried by the sweep-carrying axle assembly 29. Each sweep 31 may be likened in general configuration, to an elongated arm. And each such sweep 31 is fabricated or built-up of constructional components, to provide a completely acceptable combination of light weight coupled with requisite qualities of physical strength, displaying a high degree of resistance to failure in tension, compression, shear or any combination of two or more thereof. It may here be noted that each two adjacent sweeps 31, 31 (FIG. 6) serve as a pair to pivotally carry a related gondola-supporting means each of which latter, and in turn, suspend the related gondola therefrom, for pivotal movement with relation thereto and this, both in oscillating revolution and in axial rotation with respect thereto.

For each sweep 31 (FIG. 6) I provide a hinge pin 31a. This hinge pin rotatably extends through the upper axle ring 29b near the outer extremity thereof. Similarly, and having reference to FIG. 8, I provide a hinge pin 31b which serves to make its related sweeps 31 rotatably fast to the lower axle ring 29c.

It being essential to make the sweeps fast to axle 29 when the device is in assembly, I provide for each sweep 31 and radially inwardly of the related hinge pin 31a, a suitable lock pin 31c. This lock pin 31c passes through the related sweep 31 and makes the same removably fast to the top axle ring 29b. In like manner (FIG. 8) I provide a series of removable lock pins 31d, serving to make the sweeps removably fast to the lower axle ring 29c.

On location and in assembly, the sweeps 31 are rotated about the hinge pins 31a, 31b in umbrella-like or spider-like symmetrical arrangement; whereupon the removable lock pins 31c, 31d are inserted to secure the sweeps in their spread, spider-like assembly. Conversely, and upon dismantling the apparatus preparatory to stowage and transport, the lock pins 31c, 31d are first removed. The sweeps 31 may then be folded or nested in generally parallel configuration, nested longitudinally of the centerline of trailer 10 (see the leftmost portion of FIG. 6).

For proper mounting of sweeps 31, I provide (FIG. 4) paired mounting lugs 31i, 31j. These mounting lugs project inwardly from the inner end of each sweep 31 and this, both at the top and bottom of these latter. These paired lugs 31i, 31j respectively engage about the top and bottom axle rings 29b, 29c of axle assembly 29. For convenience in construction, it is to be noted that I bend the bottom mounting lug 31i into a widely obtuse-angular configuration. In the assembly of the sweeps 31 into spider-like configuration, hanger rods 34a, 34a (FIGS. 5 and 6) are provided, one between each related and adjacent pair of lugs 31i, 31j, these latter being carried on the adjacent sweeps 31, 31. More specifically, each rod 34a is hinged at one end to related lug 31j, as by hinge pin 31g, while at its other end this hanger rod 34a is made removably fast to its related lugs 31i, as by removable bolt 31h.

45 BEARING ASSEMBLY, FOR SWINGING SUPPORT OF PASSENGER-CARRYING GONDOLAS

Anti-friction bearings, 2,2 preferably comprising combined journal and thrust bearings, are provided. One of these is disposed at each end of bearing assembly 35 (FIG. 5). These bearings 2,2 are indicated merely schematically in the drawings. To minimize the weight of this bearing assembly 35, at the same time decreasing total quantity of material required, a portion 35d thereof may be cut away in the region of the related hanger rod 34a.

Having reference more particularly to the constructional details of FIG. 5, I provide an elongated tubular member 1 extending throughout bearing assembly 35 and made fast thereto as by welding or the like. The bearings 2,2 are press-fitted, one at each end of this tubular member 1. They serve nicely to receive the related hanger rod 34a, in anti-friction manner. As will be seen, each bearing 2 terminates at its outer end in an outwardly projecting annular flange, which serves to receive and react against the thrust shoulder 1a of the related hanger rod 34a. Each bearing assembly 35 carries a gondola-carrying axle 36, made removably fast

thereto as by pins 35e, 35e. And each gondola-carrying axle 36 has suspended therefrom a related gondola 37 (FIGS. 9 and 10). For reasons hereinafter stated, this axle 36 is hollow. More precisely, hollow axle 36 is tapered near but short of its upper end for snug, friction-fit with and into a complementally-tapered block 36b. This block 36b is pierced near each end thereof for alignment with corresponding openings in bearing assembly 35 for the reception of removable pins 35e, 35e. Hair-pin cotters 35f, 35f serve to removably lock the block 36b in assembly. The extreme upper end of axle 36 is threaded for the reception of a lock-down nut 36c. In its threaded-down position this lock-down nut 36c is made fast by hair-pin cotter 36f.

And now having particular attention to the construction illustrated in FIGS. 5 and 10, it will be seen that a flexible safety cable 36a extends through hollow axle 36 and is made removably fast at its upper end (FIG. 5) to bearing assembly 35 through suitable and conventional securing means 35a, with included pin and cotter elements, indicated at 35a¹. As will best be seen from FIG. 10, both axle 36 and its included cable 36a extend through the interior of the related gondola 37 to lowermost thrust bearing 36e.

DETAILS OF PASSENGER-CARRYING GONDOLA

It may be noted at this point in the disclosure that, in operation, passengers seated at 37a, 37a in the respective gondolas may provide rotational spin to any particular gondola in which they may be riding, simply by grasping the control wheel 36d and reacting thereagainst, thereby initiating gondola rotation about axle 36, in direction and at rotational speed selected by the passengers. This rotation is of course, independent as relates to each gondola 37, and may vary widely from gondola to gondola. Thus both rotational speed and direction of rotation may vary not only from one gondola to another but as well, from moment to moment with the particular gondola.

The side door 37b, vertically hinged at 37e, 37e to gondola proper 37, serves to permit ready entrance and exit to the gondola. This door is provided with conventional and spring-loaded latch 37c. Each gondola 37 (FIG. 9) carries anti-friction rollers 37d, 37d to facilitate movement about the platform or bed of trailer 10, or its included gooseneck extension thereof.

CERTAIN MECHANICAL ELEMENTS OF DRIVE MECHANISM

At this point in the description, it is in order to disclose the manner in which the gondola-carrying sweep assembly is driven in rotation. To this end, each sweep 31 hingedly carries (FIG. 6) a related arcuate track section 32. In assembly, these track sections 32 combine to form a circular ring or track. Each section 32 is hinged at 33 by means of permanently fast hinge-pin 33a so that when dismantled, the related track section 32 will fold forwardly along the length of the sweep, along one side thereof (it is to be noted that for convenience, the hanger rods 34a are swung rearwardly of the sweeps 31 and this, along the side of the sweeps opposite that along which the track sections 32 fold). The other, free end of each track section 32 is made removably fast to the hinge 33 of the next adjacent sweep 31 (in clockwise direction as seen in plan in FIG. 6) by removable lock pin 33b. This track 32 is disclosed in sec-

tion in FIG. 4, intermediate the length of the sweeps 31.

The circular track 32 comprises part of the drive mechanism, certain details of which are perhaps best disclosed in FIGS. 7 and 8. From a consideration of these views, it will be seen that frame 45 is pivotally carried on and by boom assembly 26b, through bearing assembly 26h.

FURTHER DETAILS OF DRIVE MECHANISM

A drive mechanism, perhaps best shown in FIGS. 7 and 8, serves to impart rotational motion to the spider assembly 30. It will be recalled that this spider assembly 30 includes the circular drive track 32 against which paired drive wheels 41, 41 frictionally react, thereby imparting spin or motion to spider assembly 30 in either clockwise or counterclockwise direction, and in widely ranging and variable speeds, all under the control of the operator. It is worthy of special note that these factors may be varied while the ride is in motion, thus facilitating production of pleasing and rapidly and continuously variable motion sensation to the riders. The relation of these drive wheels 41, 41 to the track 32 is such that, upon discontinuance of positive drive to these drive wheels, hydrodynamic braking of the carousel sets in, contributing to bringing the spider assembly to rest in smooth and rapid manner.

To this immediately foregoing end, a five-sided truncated motor-mounted plate 43 engages side rails 45a, 45a of drive-system-mounting frame 45 in such manner as to be capable of limited longitudinal movement at the outer or free end of this latter. This limited movement is occasioned by linear travel of piston 44a of hydraulic cylinder 44, this piston being made fast to the adjacent and truncated top 43a of five-sided plate 43. The drive-system-mounting frame 45 is pivotally carried from boom 26b through a suitable hinge 26h. As a constructional detail, it may be noted that plate 43 is limited to longitudinal reciprocal movement by and between the side rails 45a, 45a of frame 45. Plate 45b may be made fast as by welding to the side rails 45a, extending from the boom-related end thereof to a point 45b¹ (FIG. 7) intermediate the length of these side rails. It is this plate 45b which carries hydraulic cylinder 44. And upon energization of this cylinder 44 through the hydraulic system of FIG. 11, which system is later to be described, the wheel-carrying plate 43 can be linearly moved together with its drive wheels 41, 41, into and out of engagement with track 32 of spider assembly 30.

Noting that pump 38a of this hydraulic system (FIG. 11) energizes this hydraulic motor 40 (FIG. 8) it is to be further noted that the shaft 40a of this motor 40 carries a double sprocket 40b. And drive chains 42 extend between this double sprocket 40b and related drive sprockets 41a of drive wheel 41, there being two such drive chains, one for each of these paired wheels.

In operation the hydraulic cylinder 44, through its related wheel-mounting plate 43, serves to move the drive wheels 41, 41 into and out of engagement with track 32, while at desired times and durations hydraulic motor 40 imparts rotation to these drive wheels 41, 41 in rotational direction and at speed, both at the selection of the operator.

The operator having energized cylinder 44 in manner such as to bring the drive wheels 41 into drive relation with track 32 (although motor 40 may not yet have

been brought into rotation), means conventional to the art and included in and as part of cylinder 44, thereupon serves to lock the piston 44a in its extended position.

CERTAIN DETAILS OF ASSEMBLY, ON LOCATION, OF STOWED CARROUSEL, PREPARATORY TO OPERATION THEREOF

It is now in order to describe the operation of the mechanical components of the carrousel, as relates to the assembly thereof, on location, into condition ready for operation. Let us assume that the carrousel, disassembled and compacted for over-the-road transport, arrives on the trailer, at the location for reassembly, preparatory to operation.

The operator first plugs in the electrical system to available service so as to energize the hydraulic system. He cranks down the jacks 18,18 (FIG. 1) into load-bearing relation to the ground and the front part of the trailer, together with its related load, is jacked up thereon. The tractor, not shown, is thereupon freed from pin 25 of plate 24. The hydraulically powered jacks 21,21 and 22,22 are lowered to the ground and the carrousel is jacked up thereon, taking load of the trailer wheels 13,13. Suitable adjustment is made to the several jacks, so that the trailer bed is leveled into a fully horizontal plane. The passenger deck, hinged to the trailer, is then unfolded and assembled to level, passenger-loading position. This deck extends completely around the circular extent of the assembled carrousel, facilitating in loading and unloading, as the case may be, all the passengers at one stop of the spider assembly.

At this point, all sweeps 31 are unstowed and rotated into approximately their radially extending, spider-like operating position (FIG. 6), somewhat in the manner of an umbrella. Gondola-bearing assemblies 35 (FIG. 5) are next unstowed; and are rotated outwardly into their FIG. 6 position. They are then pinned by removable bolts 31h in their operable position.

As a next step, the track assemblies 32 (FIG. 6) are unstowed, unfolded inwardly, and pinned in place by lock pins 33b. Sweeps 31 are then locked in assembled position by inserting lock pins 31c. This is followed (FIGS. 7 and 8) by energizing hydraulic cylinder 44, operating the same to bring drive wheels 41 to bear upon track 32.

Following this, and as the next step, is the energization of cylinders 27 (FIG. 1) and 46 (FIG. 3) to slight extent. This combined action will lower the outer ends of selected and paired sweeps 31, together with their related and intermediately-positioned gondola bearing assembly 35, onto axle block 36b of a related one of the stowed gondolas 37. It is to be noted that to this end, it is cylinders 27 and their related piston rods 27c which are first energized, rotating pedestal assembly 26 about hinge 26e, followed by energization of cylinder 46 and extension of its piston rod 46a, causing frame 45 to swing about hinge 26h. Following this, pins 35e (FIG. 5), 35a¹, and cotters 35f,35f are secured in place, thereby making the particular gondola 37 fast to the rotatable spider assembly.

The sweep sequence is repeated sequentially until all ten gondolas are mounted in suspension from the spider. The assembly is now complete.

Repeating to some extent what has hereinbefore been said, it is to be noted that, under control of the op-

erator, motor 40 (FIG. 8) is then energized, causing rotation of drive wheels 41 through drive chains 42. This rotates spider 31 in its plane of rotation. The operator then energizes cylinders 27 to selected position in vertical angular sweep to a fixed limit, in the selected neighborhood of 62° to the horizontal, this having been computer-selected as the angle which is optimum for loads and reactions to be maintained at a safe magnitude.

Next, the operator, at his option and either combined with operation of cylinders 27 or separately therefrom, will operate cylinder 46 (FIG. 3) to selected angle through a vertical plane which is in the third quadrant as relates to rectilinear coordinates, up to nearly horizontal plane.

Angular and linear peripheral speeds of sweeps 31 can be varied throughout the operation of this latter, creating pleasing ride variation, and can be used (upon lowering speed) for hydrodynamic braking. It is to be noted that the gondolas are centrifugally flung while in rotation; and the occupants of each gondola can determine direction — either clockwise or counterclockwise — of spin of each gondola 37 about its axle, together with its rotational speed.

HYDRAULIC POWER SYSTEM

Having heretofore discussed the details of the mechanical system which operates the carrousel, it is now in order to give consideration to the hydraulic system which powers these mechanical components. My resort to an hydraulic system for powering these several parts of my new carrousel permits great flexibility in the control for the several parts thereof, as will be seen from a consideration of the details of that hydraulic system. As disclosed in FIG. 11 this hydraulic system is energized from electric motor 39, which latter is jacked into available electrical service at each location at which the carrousel is set up in operable assembly. The opposed drive shafts of this electric motor 39 drive hydraulic pumps 38a and 38b. These pumps serve to force hydraulic fluids through their related, closed hydraulic systems.

Having attention to hydraulic pump 38b it will be seen that illustratively, fluid supplied from reservoir 47 can be forced from right-hand end of pump 38b through conduits 53 and 55, and thence to hydraulically paralleled, paired jacks 21,21 and 22,22 with related hydraulic controls 21a,21a and 22a,22a. Each jack 21 and 22 has included therein, piston rod assemblies 21b and 22b respectively. More precisely, the hydraulic fluid courses conduit 55 to paralleled conduits 56, 57, 58, 59 one for each of these four hydraulic jacks just alluded to. Return conduits 60 and 61 are provided, one such conduit for each pair of jacks 21,21 and 22,22. These conduits 60,61 merge at their junction 61a into single conduit 62, passing thence through conduit 63 to reservoir 47. Fluid from reservoir 47 is led by conduits 64, 65 to the left side of pump 38b, completing the hydraulic energizing circuit for the hydraulic jacking system.

Thus energized, the jacks 21,21 and 22,22 will function to jack up the loaded trailer. The weight of the loaded trailer can be effectively relied upon to lower the trailer upon release of the pressure release valves of these jacks.

Following assembly of the spider and its included track, accomplished mechanically, the carrousel is ready for operation of the drive wheels 41, 41 in FIGS.

7 and 8. This is accomplished by passage of pressure-driven hydraulic fluid from pump 38b, through conduits 53 and 66 to control 51 for hydraulic cylinder 44 (FIGS. 7 and 8) and its related piston rod 44a, and thence through hydraulic conduit 67 extending between control 51 and cylinder 44. Conduits 68, 69 and 63 serve to complete the return system to reservoir 47, with hydraulic fluid coursing thence through conduits 64 and 65 to pump 38b.

It is now in order to rotate drive wheels 41,41 (FIGS. 7 and 8) so as to drive the spider assembly 30. To this end, drive motor 40 (FIG. 11) is energized from pump 38a through conduit 70 to motor control 48 for the hydraulic motor 40, fluid coursing from control 48 through conduit 71 to motor 40, thence returning to reservoir 47 through conduit 72. The reservoir 47 supplies pump 38a through conduits 64 and 73.

Assuming that the operator may desire to raise the spider assembly 30 to an attitude of tilt with respect to the horizontal (although it is not required that he do so), control 50 is energized from pump 38b, thereby energizing paired hydraulic cylinders 27,27 (FIGS. 2 and 3) and related piston rods 27c,27c (as to these piston rods 27c,27c see also, FIG. 8). The hydraulic systems of the cylinder 27, and following the conventions previously adopted herein as concerns the description of these hydraulic systems, is such that fluid courses from the right-hand side of pump 38b, through conduits 53 and 54 to control 50; thence through conduit 74 to cylinders 27,27; and thence through conduits 75, 69 and 63 back to reservoir 47, fluid being thence supplied through conduits 64 and 65 to the left-hand side of pump 38b.

Finally, it being desired to raise spider assembly 30 from some initial position of this latter, the lowermost limit of which is disclosed in FIG. 1, to some point up to and including the upper and limiting, horizontal position, as illustrated in FIG. 3, I energize hydraulic cylinder 46 (FIG. 3) and its related piston rod 46a through control 49 which is hydraulically powered off pump 38b. The hydraulic system for the operation of this spider-raising cylinder 46 may be traced as follows, still having reference to the disclosure of FIG. 11: From the right-hand side of pump 38b through conduits 53 and 76, control 49, conduit 77, cylinder 46, and conduit 78 to reservoir 47, and thence through conduits 64, 65 back to the left-hand side of pump 38b.

SUMMATION OF ADVANTAGES

Upon consideration of all the foregoing, it can be readily ascertained that my new construction is attended by rugged simplicity coupled with long useful life, and is further attended by a highly practical combination of certainty of operation, marked freedom from repairs, ease of such repairs as and when required, and the involvement of component parts which themselves are simple and readily available on the open market, at comparatively low cost. As well, labor and operators of but moderate skill are required, with attendant low cost of operation.

My new ride lends itself to ready and rapid assembly, once the carrousel arrives on location and is unstowed from its compacted and dismantled position on the carrying trailer which latter, on location, becomes an integral part of the assembled device, serving as the base thereof. The ride can be passenger-loaded on all of the ten gondolas at one time, and during a single stop, and

this without necessity of sequentially spotting each gondola at a common loading dock; it being noted that, within my knowledge, no device either heretofore known or presently marketed permits loading at a single stop with subsequent elevation to selected height and attitude of operation.

The carrousel can be raised to any one of a wide range of selected heights, and may be tilted to a range of something more than 60° of vertical angle to an upper, elevated and limiting horizontal position. The spider assembly 30 may be rotated at varying speeds in either direction of rotation. Oscillation of the passenger gondolas may be achieved through effective combination of gravity action and centrifugal force as speeds and heights of the spider are varied. Finally, the passengers in each gondola can contribute to the variety of obtainable motions through rotation of the hand wheel 36d on shaft 36 (FIG. 10).

All the foregoing, as well as many other practical objects and advantages, attend the practice of my invention as hereinbefore described and illustrated. And it will be apparent from the foregoing that many different embodiments of the basic concepts as hereinbefore described and illustrated, as well as many modifications of the disclosed embodiments, will readily suggest themselves to those skilled in the art. Accordingly, I intend the foregoing disclosure to be considered as simply illustrative, and not by way of limitation.

I claim:

1. A carrousel-type amusement device possessing over-the-road portability and capable, on location and in assembly, of the positioning of its series of passenger-carrying gondolas at selected wide angular attitudes to the horizontal and at selected wide range of heights above ground level, such selections being independent of each other, which said device comprises a portable base; a first, rigid support means having an outermost free end, which said first means is hingedly mounted on said base for swinging through a vertical angle to selected angular attitude, with its outermost free end at corresponding and derivatively selected height above the ground; a second and independently controlled means mounted from said base and pivotally connected to said first means for swinging said first means through the aforesaid vertical angle to a selected attitude and for thereupon holding it in the attitude thus selected; a third means hingedly connected to the outermost free end of said first means; rotatable, umbrella-like spider means, with included circular track, rotatably mounted on said third means; a fourth means with included controls therefor, operable separately and independently from the controls for said second means, which said fourth means is hingedly mounted at one end to, and is carried by, said first means at a point intermediate the length of the latter, and which said fourth means is pivotally fast as its other end to said third means at a point intermediate the length of the latter, for swinging said third means, along with the spider means mounted thereon, through a vertical angle and into a selected angular attitude of the spider means relative to the attitude of said first means; drive means carried on said device, for driving said spider; and means also carried on said device, for energizing said drive means independently of both said second means and said fourth means.
2. An amusement device according to claim 1 which said track co-acts with said drive means for driving said

spider means; in which device said drive means is also mounted on said third means; for movement into and out of rotational engagement with said circular track; said energizing means including a first control means for moving said drive means into and out of rotatable cooperation with the circular track of said spider means for controlled rotation of the latter, and said energizing means also including a second control means for controlling the rotation of said drive means; said controls together with the consequent energization of said drive means, being accomplished independently of bodily motion of both said first means and said third means.

3. An amusement device according to claim 1 in which the spider means is in part comprised of a central axle assembly, together with a plurality of elongated arms which are hingedly secured to said central axle assembly in such manner that, when the amusement device is dismantled for over-the-road transportation, said arms can be quickly folded upon, and approaching the parallel to, each other, and which arms in assembly, rotate outwardly from said central axle assembly; which said axle assembly is itself mounted upon and made rotatably fast to said third means; and in which device a respective passenger-carrying gondola is, in assembly, pivotally suspended between each sequential pair of the arms of said spider.

4. An amusement device according to claim 3 in which said central axle assembly includes applied top and bottom, outwardly projecting cap rings, one such ring being provided at each end of said axle assembly; each said cap ring having paired and radially aligned holes centering from and upon the longitudinal center of said axle assembly, there being two holes for each arm of the spider means, and the spacing between the holes of each pair of radially aligned holes being equal; the holes in the top cap ring being in alignment, both radially and angularly, with the corresponding holes in the bottom cap ring, each arm being hingedly connected at both the top and bottom of its inner end to said cap rings through the outer ones of the related radially aligned pair of holes; and releasable lock means engaging with the related inner holes of each pair of radially aligned holes of the cap rings whereby, upon manipulation of said releasable lock means, the arms can be quickly folded upon, and approaching the parallel to, each other for transport, and can be quickly unstowed and assembled on new location.

5. An amusement device according to claim 1 in which said drive means is mounted on said third means for movement into and out of contact with the circular track of said spider means, for imparting motion thereto; and means for imparting requisite movement of said drive means into and out of contact with said track.

6. An amusement device according to claim 5 in which said drive means includes means for rotating the same, and in which the means for moving the drive means into and out of engagement with the circular track, on the one hand, and that part of the drive means which provides rotary motion, on the other hand, are separate from each other.

7. An amusement device according to claim 5 in which the second and fourth means, as well as the 10 means for moving the drive means into and out of engagement with the circular track, comprise separate hydraulic cylinders of an hydraulic system, which system itself is part of said amusement device; and separate and independently operable controls for each said hydraulic cylinder.

8. A carrousel-type amusement device possessing over-the-road portability and capable, on location and in assembly, of the positioning of its passenger-carrying components at selected wide angular attitudes to the 20 horizontal and at selected wide range of heights above ground level, comprising an over-the-road trailer serving as a base; a pillar-like pedestal assembly having an upper and outermost free end and which pedestal assembly is hingedly mounted at its lower and inboard end on said trailer, for swinging through vertical angle to selected vertical attitude so that its said upper and outermost free end will be positioned at selected heights above the ground; a telescopic hydraulic cylinder pivotally connected to said pedestal assembly and said trailer for swinging said pedestal assembly through the aforesaid vertical angle; a swingable mounting frame hingedly connected to said outermost free end of said pedestal assembly; an umbrella-like spider means 30 with included circular track, rotatably mounted on said mounting frame; hydraulic means pivotally fast to said mounting frame and pedestal assembly for swinging the mounting frame, along with the spider means mounted thereon, through a vertical angle and into selected angular attitude of the spider means as related to the horizontal; rotatable drive means also mounted on said mounting frame, cooperating with the circular track of said spider means for rotating the latter; hydraulically-actuated means for rotating said drive means; a series 40 of passenger-carrying gondolas hingedly carried from said spider means; and an hydraulic system in common with the several hydraulic means, for energizing the same.

9. A carrousel-type amusement device according to 50 claim 8, including hydraulic means operably connected to said rotatable drive means carried on said mounting frame for moving said drive means into and out of driving engagement with the circular track on the said spider means.

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