

No. 669,621.

Patented Mar. 12, 1901.

J. G. CONDERMAN.
PLEASURE WHEEL.

(Application filed Sept. 4, 1900.)

(No Model.)

4 Sheets—Sheet 1.

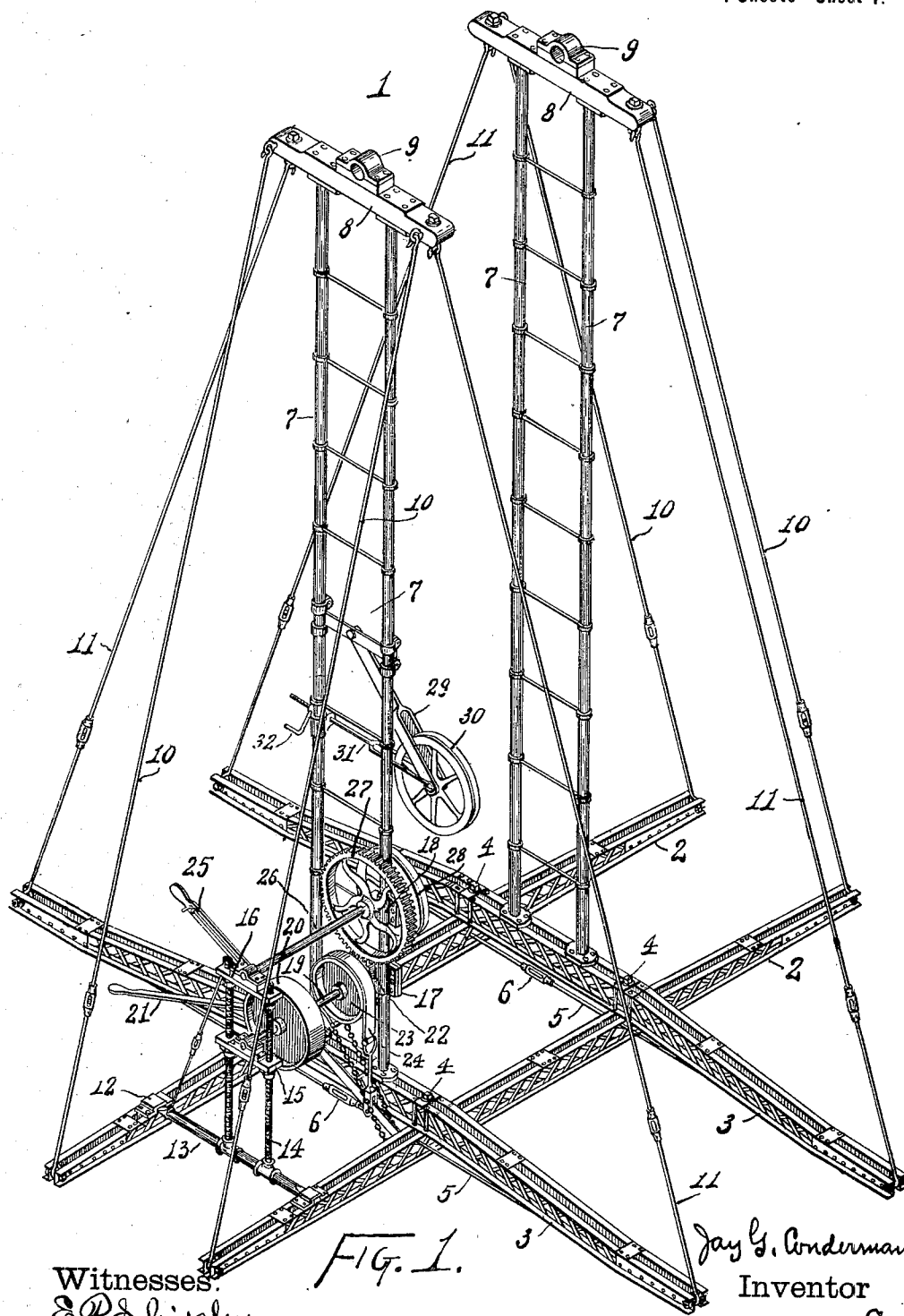


FIG. 1.

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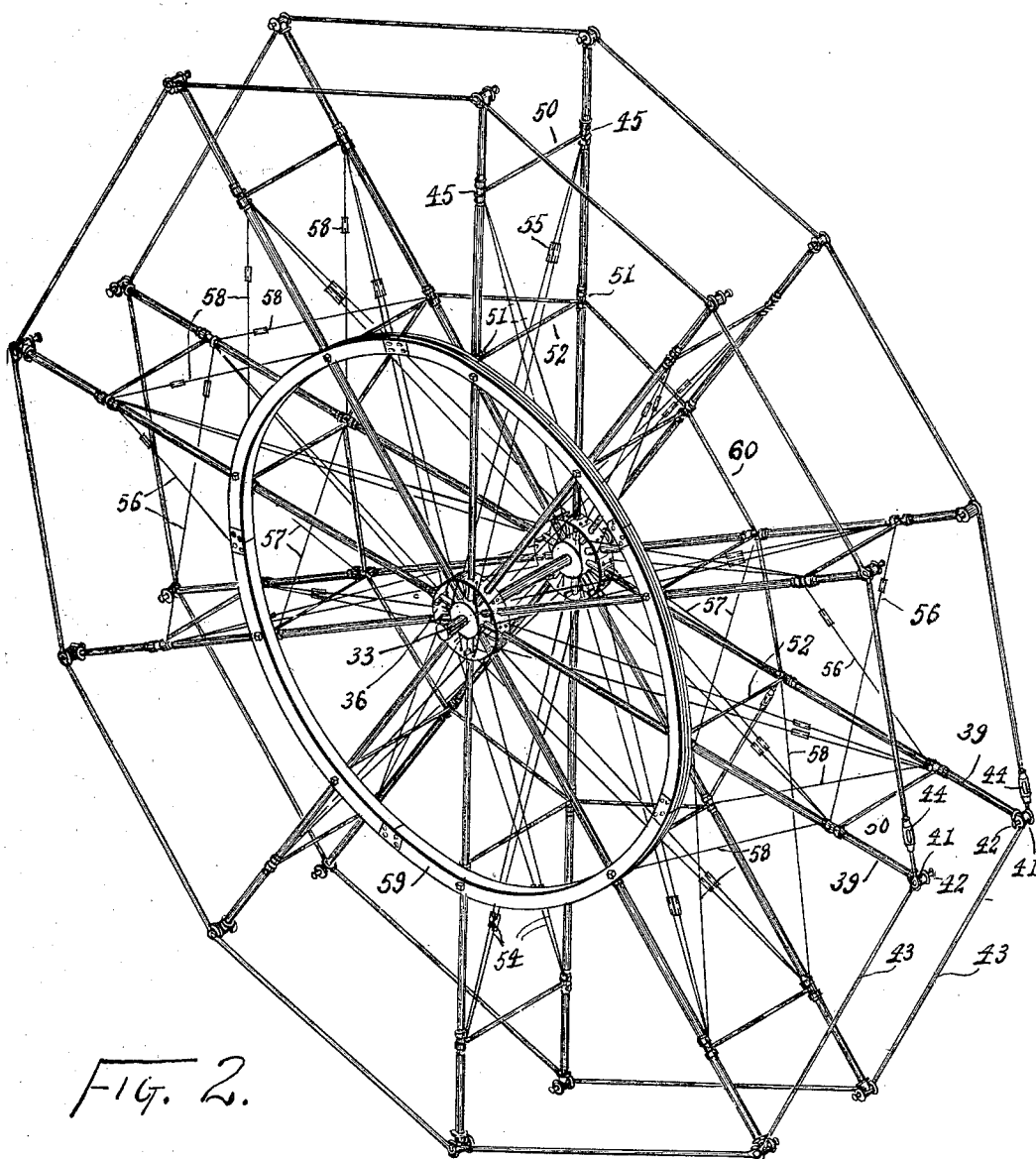


FIG. 2.

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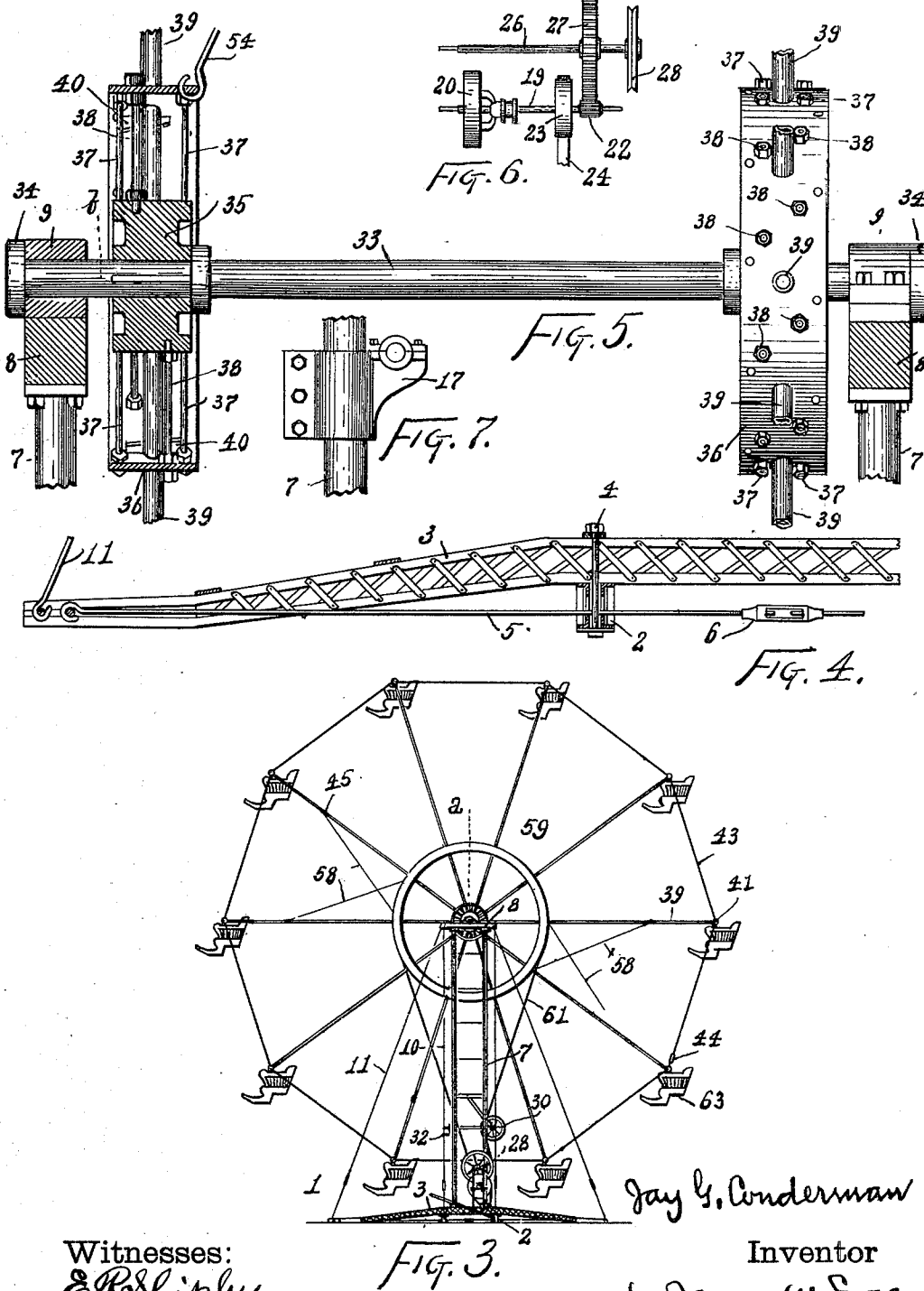
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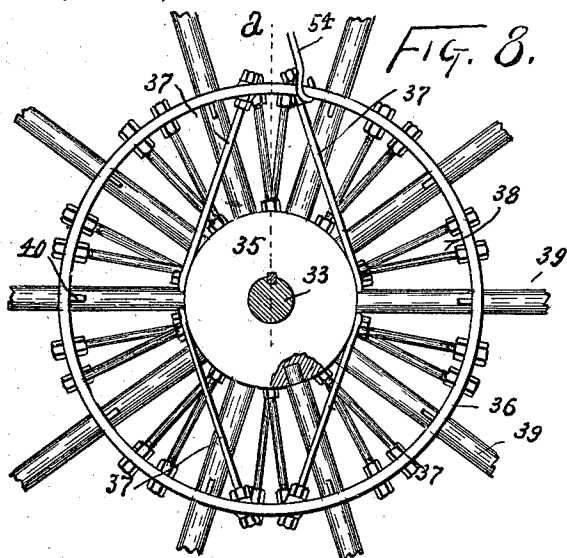


FIG. 8.

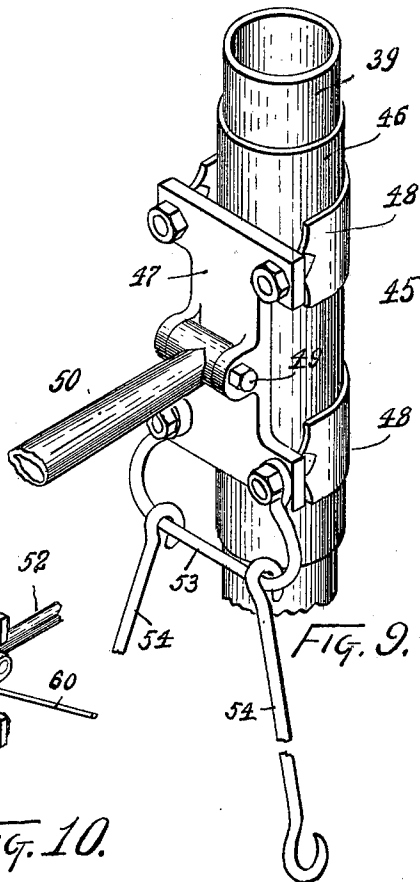


FIG. 9.

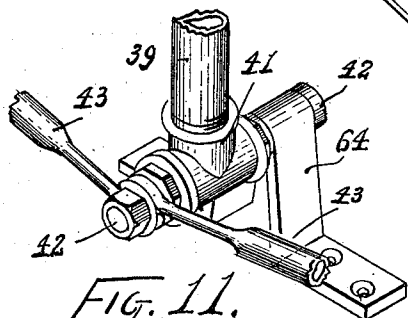


FIG. 10.

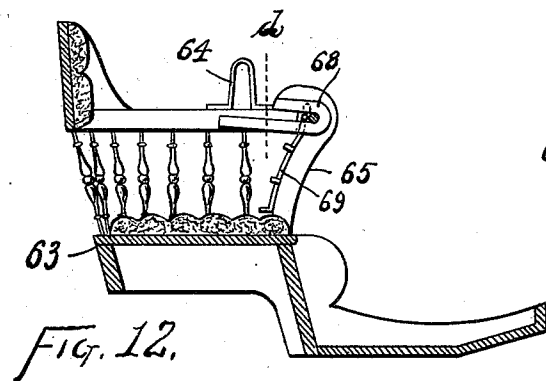


FIG. 11.

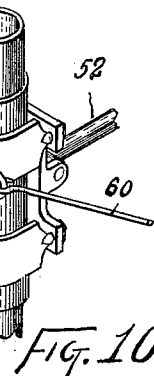


FIG. 12.

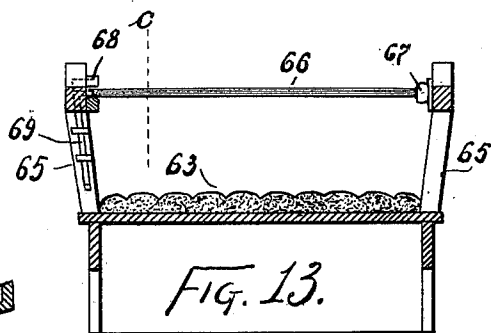


FIG. 13.

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UNITED STATES PATENT OFFICE.

JAY G. CONDERMAN, OF TROY, PENNSYLVANIA, ASSIGNOR TO ALICE M. CONDERMAN, OF HORNELLSVILLE, NEW YORK.

PLEASURE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 669,621, dated March 12, 1901

Application filed September 4, 1900. Serial No. 28,932. (No model.)

To all whom it may concern:

Be it known that I, JAY G. CONDERMAN, a citizen of the United States, residing at Troy, Bradford county, Pennsylvania, (post-office address Troy, Pennsylvania,) have invented certain new and useful Improvements in Pleasure-Wheels, of which the following is a specification.

This invention pertains to improvements in that class of pleasure-wheels in which a skeleton wheel turns on a horizontal axis and carries a circumferential series of cars or seats for the passengers, the object of the improvements being to secure safety, lightness, ease of running, perfection of control, and facility for quick and easy erection and razing.

The improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of the gallows-frame with the attached power-transmitting mechanism; Fig. 2, a perspective view of the wheel proper dissociated from the gallows-frame and without its seats; Fig. 3, a side elevation of the complete structure minus certain details; Fig. 4, a vertical longitudinal section of a part of one of the base-beams of the gallows-frame, another one of the base-beams appearing in vertical transverse section; Fig. 5, a side elevation of the main axle in conjunction with the wheel-hubs, one of the latter appearing in vertical section; Fig. 6, a side elevation of the driving-shaft and counter-shaft with the connecting-gearing; Fig. 7, a side elevation of one of the bearings of the driving-shaft; Fig. 8, a vertical transverse section of the main axle in the plane of line *b* of Fig. 5; Fig. 9, a perspective view of one of the stretcher-clips pertaining to the outer series of stretchers of the wheel; Fig. 10, a perspective view of one of the stretcher-clips pertaining to the inner series of stretchers; Fig. 11, a perspective view of one of the pintle-mountings at the ends of the wheel-spokes; Fig. 12, a vertical section of one of the seats in the plane of line *c* of Fig. 13, and Fig. 13 a vertical section of one of the seats in the plane of line *d* of Fig. 12.

In the following description the numerals of reference will be taken in consecutive or-

der, attention being first given to the gallows-frame and then to the wheel proper.

In the drawings, referring particularly to Figs. 1, 4, 6, and 7, 1 indicates the gallows-frame as a whole; 2, a pair of base-beams disposed parallel with each other and lying upon the ground parallel with the intended axial line of the wheel, these beams being preferably of compound angle and lattice construction; 3, a pair of very much similar beams disposed parallel with each other and at right angles to beams 2 and disposed on top of beams 2, the beams now under consideration having downwardly-deflected ends, so that the bases of their outer portions will be on a level with the bases of beams 2; 4, bolts at the intersections of beams 2 and 3 and serving to unite the four beams into a rigid base structure; 5, truss-rods with their ends hooking over pins near the ends of beams 3, these truss-rods extending along under the central portions of beams 3 and across and through beams 2; 6, turnbuckles in truss-rods 5, by means of which the truss-rods may be put under tensional strain; 7, four uprights having their bases flanged and separably bolted to the tops of beams 3, these uprights being arranged in two pairs, one pair standing upon each of the beams 3, the two uprights of a pair being preferably connected by cross-ties, as illustrated, serving to stiffen the structure and serve as a ladder; 8, a horizontal cap secured one at the top of each pair of uprights; 9, a journal-box secured upon each of the caps; 10, guy-rods, four in number, extending from the sides of the caps near their ends to the ends of beams 2, these guy-rods being detachably hooked at their end connections, so as to be removable, and being provided with turnbuckles, so that they can be put under tensional strain; 11, guy-rods, four in number, extending from the ends of caps 8 to the ends of beams 3, these guy-rods being also hooked and provided with turnbuckles; 12, a pair of horizontal sockets, one on each of beams 2 some distance outwardly from the uprights 7; 13, a bridge-tree separably engaging sockets 12; 14, a pair of threaded uprights projecting rigidly from the bridge-tree; 15, a journal-box engaging uprights 14 and adapted for vertical adjustment

thereon and secured thereto by nuts upon the uprights; 16, a similar journal-box mounted upon the uprights at a higher point; 17, a journal-box clamped to one of uprights 7 and vertically adjustable thereon and having its axis in line with journal-box 15; 18, a similar journal-box disposed upon the upright above box 17 and in line with box 16; 19, a driving-shaft journaled in boxes 15 and 17; 20, a friction-clutch upon driving-shaft 19, and adapted to be rotated by belt from any suitable source of motive power; 21, a lever to serve in clutching and unclutching the friction-clutch; 22, a pinion fast on driving-shaft 19; 23, a brake-drum fast on driving-shaft 19; 24, a brake-strap engaging the brake-drum and having one end adjustably anchored by chains; 25, a brake-lever engaging the other end of the brake-strap and serving as means by which the strap may be drawn firmly to the brake-drum; 26, a counter-shaft journaled in boxes 16 and 18 over the driving-shaft; 27, a gear fast on counter-shaft 26, and engaging pinion 22; 28, a driving-sheave fast on the inner end of the counter-shaft 26 inwardly beyond the upright supporting journal-box 18; 29, a forked arm pivoted to the uprights above the counter-shaft; 30, an idle sheave loosely journaled in the fork and disposed in the plane of driving-sheave 28; 31, a drive-rod connected with fork 29, and 32 a hand-nut upon rod 31 to serve in adjusting fork 29 upon its pivot.

The wheel proper is disposed between the two pairs of uprights and with its axle resting in the journal-boxes 9, end collars on the axle coming exterior to the boxes. One side of the wheel carries a large sheave to be engaged by endless rope from driving-sheave 28, sheave 30 forming an adjustable tightener. Normally the friction-clutch 20 is disengaged from driving-shaft 19 and being turned by the motive power. The clutch is engaged by manipulating lever 21, whereupon the wheel will become rotated in an obvious manner. By disengaging the clutch and applying the brake the wheel may be slowed down and stopped. The adjustment of sheave 30 provides for taking care of a certain range of slackness in the driving-rope, and the vertical adjustment of the boxes of the driving-shaft and counter-shaft provide for taking care of additional slackness.

The guys 11 act two on each pair of uprights, (one forward of and the other to the rear of the axle,) thus serving to stay the gallows-frame in a direction transverse to the axis of the wheel. The guys 10 act two on a single outer side of a given pair of uprights, therefore staying the top of the given upright against inward motion, but not against outward motion. The tendency of the wheel to surge in a direction lengthwise of its axle pulls, by an end collar of the axle, on the pair of uprights, away from which the wheel is tending to surge, such tipping strain on the given pair of uprights being met by the guy

10 pertaining to that pair of uprights, the feet of those guys being anchored to the cross-beams 2, held down by the entire weight of the structure. The cross-form of the base structure thus furnishes staying resistance to the uprights and wheel, the staying power being increased by the weight of the wheel and its load. The gallows-frame structure is easily taken apart and packed for shipment. Bridge-tree 13 and uprights 14 unship from sockets 12, thus permitting the two shafts and their accessories to be removed. Slacking and unhooking the guys 10 and 11 and unbolting the feet of the uprights permits the guys and uprights to be taken down and shipped in compact form. The removal of bolts 4 and truss-rods 5 permits the base-beams to be dissociated, the entire main structure thus becoming a number of long and comparatively small pieces, each packed and transported.

Anticipating the description of the wheel proper it may be here stated that a forty-foot wheel, capable of carrying twenty passengers and having a high factor of safety, may be taken down and packed for shipment in about two hours by the work of three men and re-erected in a time very little in excess of that.

Taking up for consideration the wheel proper and referring to Figs. 2, 3, 5, 8, 9, 10, and 11, 33 indicates the main axle, the same resting in journal-boxes 9 of the gallows-frame; 34, collars at each end of the axle, adapted for contact with the exterior of those journal-boxes; 35, a pair of hubs fast on the axle, one near each of the axle-journals, the wheel being formed, as heretofore explained, of two skeleton webs so practically identical in character as to permit the general hub construction to be generally described in the singular; 36, a strong band concentrically encircling hub 35 and having considerably greater diameter than the hub; 37, four pairs of tangent spokes with their ends bolted tangentially to hub 35, their converging but separated outer ends passing through band 36 and being firmly fastened thereto, preferably by nuts upon the spokes inside and outside the band, two pairs of these tangent spokes being arranged near one end of the hub and two pairs near the other end of the hub, as seen in Figs. 5 and 8, these tangent spokes serving to transmit rotary strain from hub 35 circumferentially to band 36; 38, several pairs of nearly radial spokes with their inner ends stepped into sockets in the hub, their outer ends being rigidly secured to the band 36, preferably by nuts upon the spokes inside and outside the bases, there being as many pairs of these spokes as there are main spokes in the wheel, or, rather, in that side or face of the wheel to which the given hub structure pertains, one spoke of a pair being disposed to one side of the center of the length of the hub, while the other spoke of the pair is disposed at the other side of the center of the length of the hub, the two spokes

of a given pair being given one an angular advance and the other an angular retreat at their outer ends, so as to bring their outer ends closer to the engaging of the main spokes of the wheel; 39, the main spokes of the wheel, there being a pair of these spokes, one spoke at each face of the wheel for each seat or car to be carried by the wheel, and, continuing the description in the singular, the spokes passing disengageably and radially through apertures in band 36 and being stepped in radial sockets in the hub; 40, a key engaging a mortise in each of main spokes 39 just within band 36 and serving, when driven, to draw the main spokes firmly home in their sockets in the hub, the term "spokes" when hereinafter used without qualification referring to the main spokes 39 of the wheel; 41, a socket-piece formed upon or secured to the outer end of each spoke 39, the axis of the socket being at right angles to the axis of the spoke, as seen in Fig. 11; 42, a pintle, firmly but removably secured in each socket-piece 41 and projecting endwise from each end of the socket, the inner projection of the pintle forming a journal for the support of the seat or car and the outer projection being adapted to receive eyes on the ends of chord members; 43, the main chord members, the same consisting of a series of ties stretching from pintle to pintle and forming a continuous chain of chords at the periphery of the wheel, these chord members being formed with eyes at their ends for detachable engagement with the outer projecting ends of pintles 42, on which they are held by nuts screwed upon the pintles; 44, a turnbuckle in one of the chord members 43 at each side of the compound wheel, whereby after the spokes have been assembled in the hubs and the chord members 43 applied to the spokes the chord systems may be put under circumferential strain, accurately spacing the extremities of the spokes and straining the spokes radially inwardly, keys 40 being preferably driven before the wheel has been put under preliminary strain by the action of these turnbuckles; 45, clips considered as a whole firmly attached to the spokes at some distance inwardly from their extremities, one of these clips being illustrated in Fig. 9; 46, a reinforcing-tube upon the spoke at the point where clip 45 is attached, the spokes being preferably formed of comparatively light tubing; 47, a plate disposed against the inner face of the reinforcement; 48, clips partially encircling the reinforcement and having their end shanks bolted to plate 47; 49, a pivot-bolt separably engaging ears projecting inwardly from plate 47, the axis of this pivot-bolt being at right angles to the axis of the spoke; 50, primary stretchers extending across the wheel and reaching from a given spoke to the radially-corresponding spoke at the other face of the wheel, the ends of these stretchers being pivoted to bolts 49, these stretchers being parallel with the axis of the wheel; 51, clips substantially like clips

45, but attached to the spokes at points near the axis of the wheel; 52, secondary stretchers like stretchers 50, parallel with the axis of the wheel and connecting the secondary clips 51; 53, loops upon clips 45, as seen in Fig. 9; 54, a pair of ties having their outer ends hooked to loop 53, these ties diverging and extending diagonally inwardly across the wheel, their separated inner ends hooking into apertures in the band 36, pertaining to the opposite faces of the wheel, these ties, therefore, having their outer ends at one side of the wheel and their inner ends at the other side of the wheel, there being a corresponding pair of ties for each of the main spokes of the wheel; 55, a turnbuckle in each of ties 55, whereby after those ties have been hooked into place they may be put under tensional strain; 56, a pair of intersecting but disconnected diagonal ties, one end of one tie engaging a primary clip 45, being hooked to the loop 53 thereof and extending diagonally across the wheel and engaging the primary clip at the next spoke in advance at the opposite side of the wheel, the other tie of the pair being correspondingly but oppositely arranged, this pair of ties pertaining only to two pairs of spokes of the wheel and there being at the diametrically-opposite side of the wheel a corresponding pair of intersecting ties, the wheel thus being provided with two pairs of these intersecting ties; 57, similar pairs of intersecting diagonal ties engaging the secondary clips in the same sector-space of the wheel as contain ties 56, the ties 56 and 57 being provided with turnbuckles by means of which they can be put under proper strain after being hooked into place; 58, a tie engaging a primary clip at one end of one intersecting ties 56 and extending thence diagonally inwardly to the secondary tie on the same face of the wheel and on the spoke in advance of the sector-space containing intersecting ties 56, there being a similar tie at the other face of the wheel and each face of the wheel having a similar tie at the opposite sector-space of the wheel, a given tie 56 thus starting from a primary clip of a spoke at one face of the wheel and extending diagonally across the wheel to the next spoke in advance, and then being prolonged by tie 58 to a secondary on the same side of the wheel on the spoke next again in advance; 59, a ring-sheave firmly but removably bolted against the spokes at that face of the wheel corresponding with the location of the driving mechanism heretofore described and in line with driving-sheave 28 and stretcher-sheave 30; 60, an endless chain of chord members with their ends engaging the secondary clips 51 at that face of the wheel opposite the ring-sheave, the ring-sheave, the circle of secondary stretchers 52, and the circle of chord members 60 representing about equal diameters, this series of chord members being provided in one of its members with a turnbuckle for straining purposes; 61, the driving-rope engaging driving-

sheave 28 and the ring-sheave of the wheel and engaged defectively by stretcher-sheave 30; 62, Fig. 10, the juncture between contiguous chord members 60, the members being hooked together and one end of each chord member having an eye having bolted engagement with the appropriate secondary clip; 63, the seat or car, of which there is to be one for each pair of main spokes of the wheel; 64, a suspender secured firmly at each end of the seat and adapted for engagement with the inner projecting journals of the pintles 42, these hangers being vertically slotted and the slots enlarging downwardly, so that if a seat be lifted relative to its supporting-pintles those pintles, having been freed in their sockets in the spokes, may be inwardly withdrawn, thus completely detaching the seats from the wheel; 65, the front portions of the side arms of the seat; 66, a rod extending across the seat in position to come forward of the body of the passenger in the seat; 67, a ball-joint or universal hinge coupling one end of rod 66 to one of the arms of the seat; 68, a rearwardly-open notch receiving the end of the rod at the opposite arm of the seat, and 69 a latch normally standing to the rear of the free end of the rod and preventing the displacement of the rod, but capable of movement to release the end of the rod and permit it to be disengaged from the retaining-notch, so as to permit the passengers to enter and leave the seats.

In view of the detailed description which has been given little need be said as to the mode of operation of the wheel or as to the manner of erecting it or taking it down. Rod 66 serves in retaining the passengers in the seats, and it is desirable that latch 69 be so obscure or unobtrusive as not to invite tampering at the hands of the passengers. In taking the wheel down the ties and chord members are readily removed after being relieved of their strain, a pivot-bolt at one end of each stretcher 50 and 52 permitting the stretcher to be folded down against the spokes, to which they remain attached. The spoke-key having been removed, the spokes may be taken out, the entire skeleton structure of the wheel thus resolving itself into a lot of light long pieces quickly and easily packed and transported.

I claim as my invention—

1. In a pleasure-wheel, the combination, substantially as set forth, a separable parallel pair of base-beams, a separable parallel pair of base-beams disposed over the first pair of base-beams and secured at right angles thereto, two separable uprights supported by the base-beams, providing a clear space between said uprights, separable guys extending from the top of the uprights to the extremities of the intersecting base-beams, and a separable wheel journaled in boxes carried at the upper ends of the uprights.

2. In a pleasure-wheel, the combination substantially as set forth, of a separable par-

allel pair of base-beams, a separable parallel pair of base-beams disposed over and secured at right angles to the first-mentioned base-beams and having their outer ends deflected to the level of the first-mentioned beams, two separable uprights supported by said base-beams, providing a clear space between said uprights, separable guys connecting the upper ends of the uprights with the outer extremities of the intersecting base-beams, and a separable wheel journaled in boxes carried at the upper ends of said uprights.

3. In a pleasure-wheel, the combination, substantially as set forth, of a separable parallel pair of base-beams, a separable parallel pair of base-beams disposed over the first-mentioned base-beams and secured at right angles thereto and having their outer ends deflected to the level of the first-mentioned beams, separable truss-rods below the deflected beams and engaging the ends thereof and passing transversely through the first-mentioned base-beams, two separable uprights supported by said base-beams, providing a clear space between said uprights, separable guys connecting the upper ends of said uprights with the extremities of said base-beams, and a separable wheel journaled in boxes carried by the upper ends of said uprights.

4. In a pleasure-wheel, the combination, substantially as set forth, of a separable parallel pair of base-beams, a separable parallel pair of base-beams secured at right angles to the first-mentioned pair of beams, the two separable uprights supported by said base-beams, providing a clear space between said uprights, separable guys detachably engaging eyes at the top of said uprights and pins at the outer extremities of said intersecting beams, and a separable wheel journaled in boxes carried at the upper ends of said uprights.

5. In a pleasure-wheel, the combination, substantially as set forth, of a separable base structure, a separable pair of uprights supported thereby, a separable wheel journaled in boxes carried by the upper ends of said uprights, a separable sheave secured to one face of said wheel, a counter-shaft mounted in boxes to one side of the space between said uprights, a sheave fast on said counter-shaft in the plane of the first-mentioned sheave, a driving-shaft parallel with said counter-shaft, gearing connecting the driving-shaft and counter-shaft, a friction-clutch upon the driving-shaft, and brake mechanism connected with the driving-shaft.

6. In a pleasure-wheel, the combination, substantially as set forth, of a separable parallel pair of base-beams disposed at right angles to the axis of the wheel, a separable pair of uprights supported by said beams, journal-boxes at the top of said uprights, separable guys extending from the tops of said uprights diagonally outwardly to the extremities of said base-beams, an axle journaled in said

journal-boxes and having end collars exterior thereto, and a separable wheel fast to said axle.

7. In a pleasure-wheel, the combination, substantially as set forth, of a separable pair of parallel base-beams, separable uprights supported thereby, journal-boxes at the tops of the uprights, a separable wheel axled in said journal-boxes, separable uprights supported by said base-beams parallel with and near the first-mentioned uprights, journal-boxes mounted for vertical adjustment on the first and last mentioned uprights, and driving mechanism mounted in said last-mentioned journal-boxes.

8. In a pleasure-wheel, the combination, substantially as set forth, of a separable pair of parallel base-beams, separable uprights supported thereby, a separable wheel mounted in journal-boxes carried at the tops of said uprights, journal-boxes on the base of one of said uprights, sockets carried by said base-beams, a bridge-tree detachably engaging said sockets, uprights supported by said bridge-tree, journal-boxes supported by said last-mentioned uprights, and driving mechanism journaled in boxes supported by said bridge-tree and at the base of said upright.

9. In a pleasure-wheel, the combination, substantially as set forth, of a separable gallows-frame, a separable wheel mounted therein, pintles carried thereby, seats suspended on said pintles, a guard-bar extending across the front of each seat, a universal hinge uniting one end of the guard-bar to one end of the seat structure, and a latchment detachably connecting the opposite end of the guard-bar to the opposite end of the seat structure.

10. In a pleasure-wheel, the combination, substantially as set forth, of a separable gallows-frame, an axle journaled therein, a pair of hubs fast on the axle, a band disposed concentrically around each hub, spokes extending from the hubs to the bands and maintaining the bands in concentric relationship to the hubs, separable main spokes engaging apertures in said bands and step-sockets in said hubs, pintles carried at the outer extremities of said main spokes, and seats or cars suspended from said pintles.

11. In a pleasure-wheel, the combination, substantially as set forth, of a separable gallows-frame, an axle journaled therein, a pair of hubs fast on said axle, a band concentrically surrounding each hub, substantially radial spokes engaging the hubs and bands and maintaining the bands in concentric relationship to the hubs, spokes extending tangentially from the hubs to the bands and secured to the hubs and the bands, separable main spokes engaging apertures in the bands and step-sockets in the hubs, pintles carried by said main spokes, and seats or cars suspended from said pintles.

12. In a pleasure-wheel, the combination, substantially as set forth, of a separable gallows-frame, an axle journaled therein, hubs

fast on said axle, bands concentrically surrounding the hubs, spokes engaging the bands and hubs and holding the bands in concentric relationship to the hub, separable main spokes engaging apertures in the bands and step-sockets in the hubs, separable keys engaging mortises in the main spokes within the bands, pintles carried by the extremities of the main spokes, and seats suspended from said pintles.

13. In a pleasure-wheel, the combination, substantially as set forth, of a separable gallows-frame, an axle journaled therein, hub structures mounted on said axle, main spokes separably socketed into said hub structures, pintles carried by the extremities of said main spokes, a separable endless series of chord members connecting the outer extremities of said main spokes, and seats suspended from said pintles.

14. In a pleasure-wheel, the combination, substantially as set forth, of a gallows-frame, an axle journaled therein, hub structures fast on said axle, main spokes separably socketed into said hub structures and arranged in radial pairs with one spoke of a pair at each face of the wheel, pintles carried by the outer extremities of the spokes, seats suspended from said pintles, chord members provided with end eyes engaging said pintles and forming an endless series of chords at each face of the wheel, clips upon the spokes between the axle and said pintles, stretchers extending across the wheel and detachably engaging an outer clip of a given spoke at one side of the wheel and extending diagonally inward to detachable engagement with the hub structure at the opposite side of the wheel.

15. In a pleasure-wheel, the combination, substantially as set forth, of a gallows-frame, an axle journaled therein, hub structures on said axle, main spokes detachably socketed into said hub structures and arranged in radial pairs with one spoke of a pair at each face of the wheel, pintles carried by said spokes, seats suspended from said pintles, a separable pair of continuous series of chord members connecting the pintles on the appropriate sides of the wheel, and separably-intersecting diagonal cross-ties disposed in diametrically opposite panels of the wheel and tensionally uniting the four spokes of each of said panels.

16. In a pleasure-wheel, the combination, substantially as set forth, of a gallows-frame, an axle journaled therein, hub structures on said axle, spokes detachably socketed into said hub structures and arranged in pairs with one spoke of a pair at each side of the wheel, pintles carried by the spokes, seats suspended from the pintles, stretchers connecting the opposite spokes of each pair of spokes, a continuous series of chord members detachably connected with all the spokes at one side of the wheel at points intermediate the length of the spokes, a ring-sheave secured to the spokes on the side of the wheel

opposite said series of chord members, and a tie at each side of the wheel with its inner end attached to a spoke substantially tangential to said sheave and series of chord members and having its outer end attached to the spoke in advance and at a point farther toward the extremities of the spokes.

17. In a pleasure-wheel a knockdown gallows-frame consisting of the combination of separable multiple horizontal base-beams disposed both in separable and angular relation to one another, separable vertical parallel multiple standards having journal-bearings at their upper ends, and separable multiple guys uniting the base-beams and standards, whereby the parts may be readily assembled for installation and disassembled for transportation.

18. In a knockdown pleasure-wheel, the combination of a double-hubbed separable axle, separable spokes carried by the hubs, separable seats carried by the wheel, locking means uniting the spokes to the hubs, separable ties or stretchers securing the spokes together, and separable means for bringing the ties or stretchers under tension to force the spokes toward the hubs whereby the parts may be readily assembled for installation, and disassembled for transportation.

19. In a pleasure-wheel, the combination of a separable gallows-frame provided with axle-bearings, an axle journaled therein provided with double hubs, detachable spokes carried by the hubs, separable seats carried

by the wheel, locking means uniting the spokes to the hubs, separable ties or stretchers securing the spokes together, and separable means for bringing the ties or stretchers under tension whereby the spokes are forced inwardly into engagement with the hubs.

20. In a knockdown pleasure-wheel, the combination of separable multiple horizontal base-beams disposed both in parallel and angular relations to one another, separable vertical parallel multiple standards having journal-bearings at their upper ends, separable multiple guys uniting the base-beams and standards, a knockdown separable wheel mounted in said journal-bearings, and separable seats carried by the wheel, whereby the parts may be readily assembled for installation, and disassembled for transportation.

21. In a knockdown pleasure-wheel, separable horizontal base-beams, separable standards, separable guys uniting said beams and standards, a knockdown wheel mounted in the upper ends of said standards, separable spokes for the wheel, separable tie-rods for maintaining the spokes in their relative positions, means for forcing the spokes inwardly, and seats carried at the ends of the spokes, whereby the parts may be readily assembled for installation and disassembled for transportation.

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