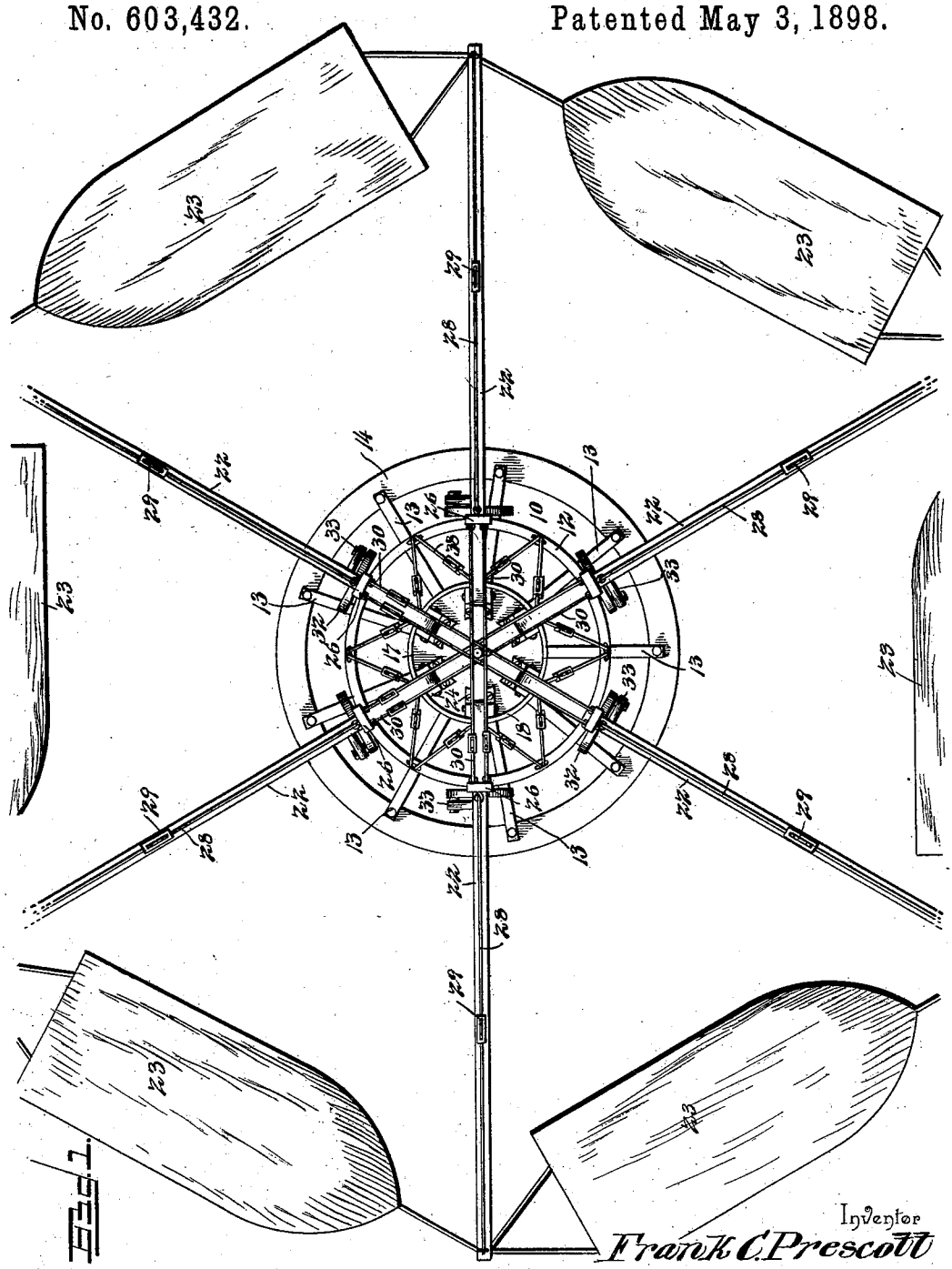
(No Model.) 3 Sheets—Sheet 1.

F. C. PRESCOTT.

CAROUSEL.

No. 603,432. Patented May 3, 1898.



Witnesses
E. L. Stewart.
H. J. Berdsley

Inventor
Frank C. Prescott

By Wm S. Attorneys,
C. A. Snow & Co.

(No Model.)

3 Sheets—Sheet 2.

F. C. PRESCOTT.
CAROUSEL.

No. 603,432.

Patented May 3, 1898.

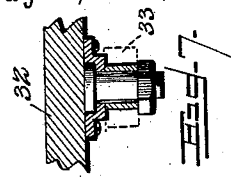


Fig. 7.

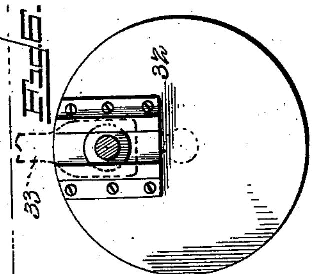


Fig. 6.

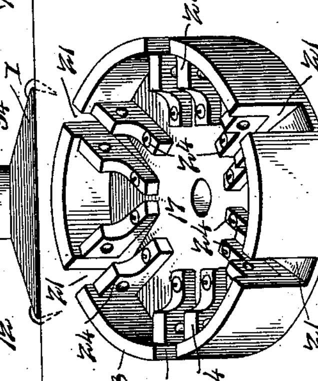


Fig. 5.

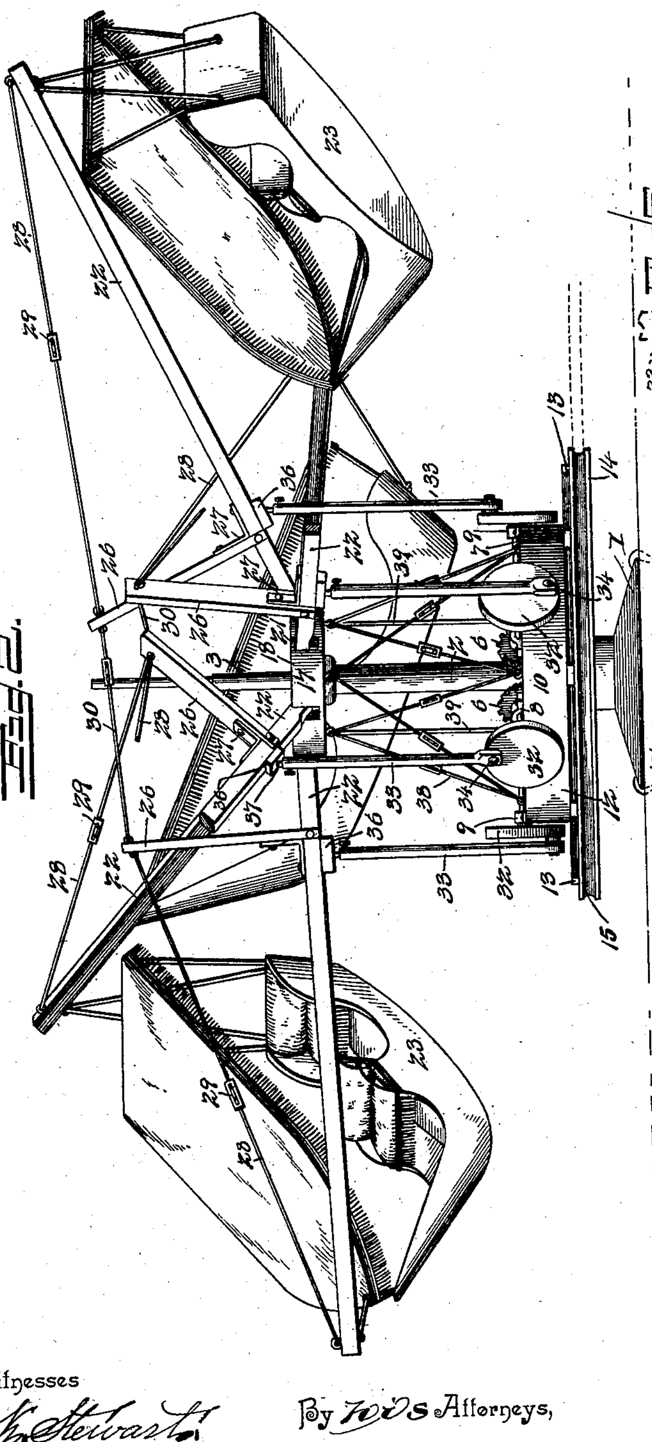


Fig. 2.

Inventor
Frank C. Prescott

Witnesses
E. W. Stewart
H. J. Bernhard

By his Attorneys,
C. A. Snow & Co.

(No Model.) 3 Sheets—Sheet 3.

F. C. PRESCOTT.

CAROUSEL.

No. 603,432. Patented May 3, 1898.

Fig. 3.

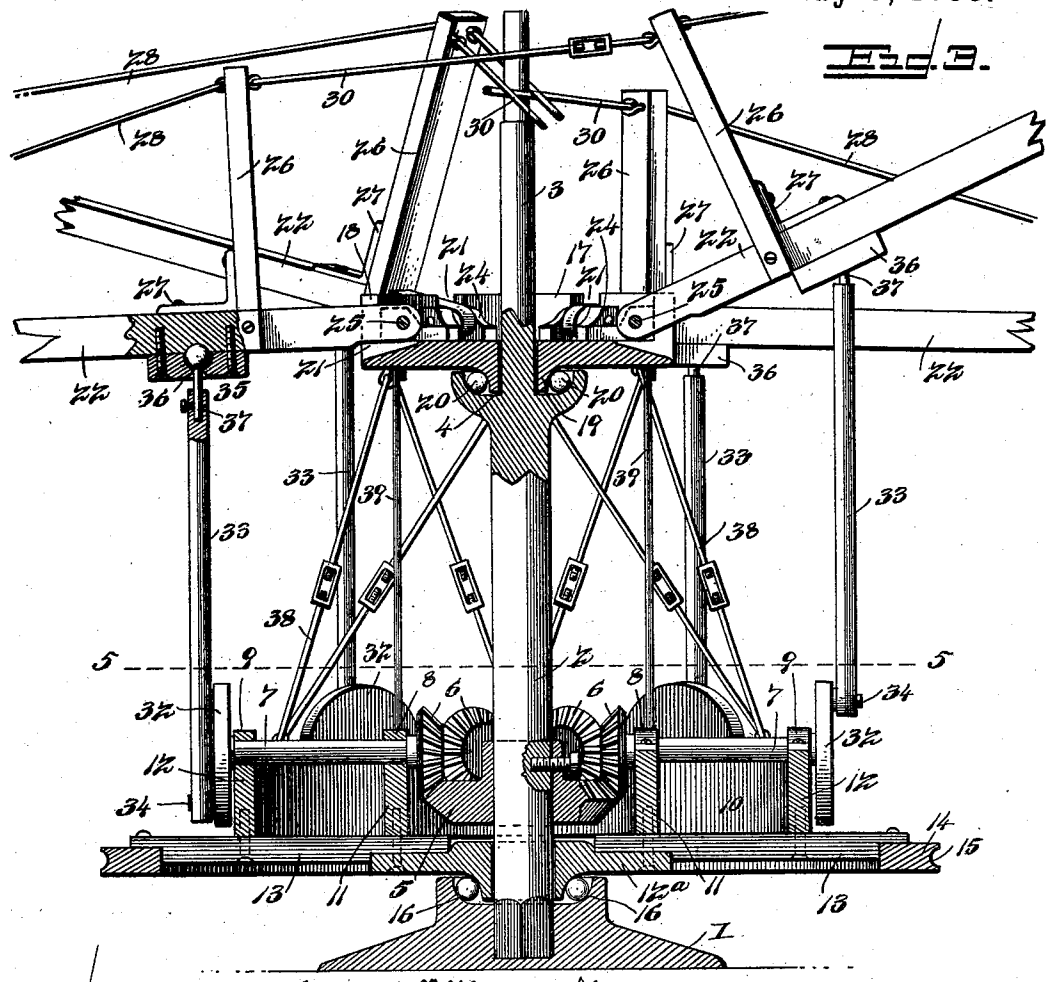
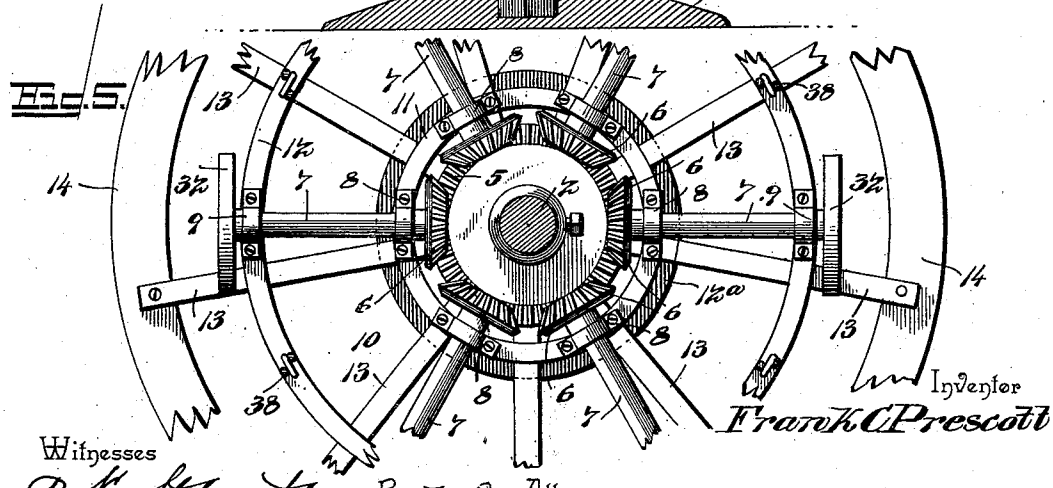


Fig. 5.



Witnesses
E. L. Stewart.
H. J. Benedict

Inventor
Frank C. Prescott
By his Attorneys,
C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

FRANK C. PRESCOTT, OF CANTON, NEW YORK.

CAROUSEL.

SPECIFICATION forming part of Letters Patent No. 603,432, dated May 3, 1898.

Application filed July 30, 1897. Serial No. 646,553. (No model.)

To all whom it may concern:

Be it known that I, FRANK C. PRESCOTT, a citizen of the United States, residing at Canton, in the county of Lawrence and State of New York, have invented a new and useful Carousel, of which the following is a specification.

My invention relates to improvements in roundabouts or carousels in which rotary motion is given to a revoluble carrier which turns on a stationary spindle; and the primary object of the invention is to provide means whereby a rocking or oscillating motion, somewhat analogous to a "wave motion," is imparted to a boat-shaped carriage as the latter is moved in a circular path around the stationary spindle.

A further object of the invention is to construct and arrange the parts in a novel way with a view to making them brace or stay each other mutually, thus contributing to the strength and stability of the structure.

A further object of the invention is to improve the machine in various ways, so as to simplify its construction, promote its efficiency, and enable ready access to be had to all the various parts for inspection and repairs.

With these ends in view my invention consists in the combination of a stationary spindle, a revoluble carrier mounted loosely on the spindle to rotate thereon, a revoluble head also fitted loosely on and bearing upon the spindle and connected rigidly with the revoluble carrier, a series of rocking mast-arms pivotally mounted on the head and extending radially therefrom and from the spindle, a boat or carriage suspended at its opposite ends from an adjacent pair of mast-arms, a series of radial shafts mounted on the revoluble carrier and each operatively connected at one end with the rocking mast-arm to impart vibratory movement thereto in a vertical plane as the carrier and head are rotated in a horizontal plane, and a fixed master-gear meshing with pinions on the other ends of the radial shafts to insure their rotation while they are carried in orbital paths with the revoluble carrier; and the invention further consists in the novel combinations of parts and in the construction and arrangement of devices, which will be hereinafter more fully described and claimed.

To enable others to understand my invention, I have illustrated the preferred embodiment of the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of a roundabout or carousel constructed in accordance with my invention. Fig. 2 is a side elevation thereof. Fig. 3 is an enlarged vertical sectional elevation through the revoluble carrier and head, with the rocking mast-arms broken away and showing the operative elements of the carousel. Fig. 4 is a detail perspective view of the revoluble head to show the construction thereof. Fig. 5 is a transverse sectional view through the central part of the carousel on the plane indicated by the dotted line 5 5 of Fig. 3, with the revoluble carrier broken away in part. Fig. 6 is a detail view of one of the crank-disks, showing an adjustable wrist-pin therein. Fig. 7 is a detail sectional view illustrating the manner of attaching the connecting-rods to the disks.

Like numerals of reference denote corresponding parts in all the figures of the drawings.

In the practical embodiment of my invention I employ a base 1 of suitable diameter, which is to be placed in or upon the ground and to be anchored securely in place in any suitable manner which may be supplied by a skilled mechanic. To this base 1 is secured a vertical spindle 2, which is united rigidly and solidly to the base. This spindle projects upwardly a suitable distance from the base, so as to pass entirely through the operative parts of the roundabout or carousel, and the upper part of this spindle is reduced in diameter to form a stem 3 and an annular ledge or shoulder 4 at a point between the major length of the spindle and the stem 3 thereof.

A master-gear 5 is attached solidly and rigidly to the spindle in a suitable way at a point some distance above the base 1. This master-gear may be either solid, as shown by the drawings, or it may be made in sections in any preferable manner to provide for its ready assemblage around and its attachment to the spindle 2. The peripheral edge of this fixed

master-gear has a series of bevel gear-teeth which extend continuously around the said gear 5, and with this master-gear meshes a series of beveled gear-pinions 6, attached to the inner ends of the series of radial shafts 7. These radial shafts are journaled in bearings 8 9 on the revoluble carrier 10, the said carrier being loosely fitted to the spindle and equipped with ball-bearings to ride upon the base in order to insure a free easy movement of the revoluble carrier on the spindle and the base.

In the preferred embodiment of my revoluble carrier it comprises two concentric rings 11 12, a base-plate 12^a, a series of radial spokes 13, and an annular driving rim or wheel 14, all of said parts being united solidly and rigidly together to present a substantial structure. The rings 11 12 are arranged one within the other concentric to each other, and the base-plate 12^a is arranged below the inner ring 11 in a horizontal plane parallel to that of the inner ring. The radial spokes 13 have their inner ends fitted between the inner ring 11 and the base-plate 12^a, and these spokes extend beneath or through the outer ring 12, so that the outer ends of the spokes may be attached rigidly to the driving wheel or rim 14. The spokes are attached to the base-plate, the inner and outer rings, and the driving rim or wheel by bolts, or in any suitable way, and the parts of the carrier are thus united solidly together to insure their rotation with the driving rim or wheel 14. This rim or wheel 14 may be provided with a grooved periphery 15 to receive a driving belt or cable, (not shown,) but the rim or wheel may be geared to a motor or engine in any suitable way—as, for instance, by toothed gearing—without departing from the spirit of my invention. The base-plate 12^a of the carrier is fitted loosely to the spindle 2, and said base-plate has a ball-bearing or antifriction-bearing 16 upon the base 1 to insure free motion to the carrier. The ball-bearing 16 may be of any suitable construction.

The concentric rings 11 12 of the carrier extend a suitable distance above the horizontal plane of the spokes, the base-plate, and the driving-rim, and on the upper edges of these concentric rings are provided the bearings 8 9 for the radial shafts 7. These bearings 8 9 may be of any suitable construction, and the bearings 9 are arranged in alinement with the bearings 8 radially with respect to the revoluble carrier to insure proper support to the radial shafts. The revoluble head 17 of the roundabout or carousel is placed loosely on the reduced stem 3 of the stationary spindle to ride upon the annular shoulder or ledge 4 of the spindle. This head may be cast in a single piece of metal or it may be constructed in sections to facilitate its application to the stem. When made in a single piece, as shown by the drawings, the head is provided at its peripheral edge with an annular flange 18, which rises a suitable distance above the plane of the web or disk of the head, and it is, furthermore, provided with a central hub 19, fitted loosely on the spindle and constructed to receive the ball-bearings 20, by which the head is enabled to ride upon the annular shoulder or ledge 4 of the spindle 2. The annular flange of the revoluble head is slotted or notched at suitable intervals to provide radial openings or slots 21 in the periphery of the head, and through these radial slots 21 extend the inner ends of the mast-arms 22. A series of these mast-arms 22 is provided in my roundabout or carousel to sustain a series of boats or carriages 23, and said mast-arms and the boats or carriages are arranged to be carried in a horizontal circular path by the revoluble carrier, and at the same time the mast-arms and the boats or carriages suspended therefrom are given a vibratory and rocking motion in a vertical direction, whereby the boats or carriages have imparted thereto a wave-like motion simultaneously with the rotary motion of the carrier.

The mast-arms are pivotally attached at their inner ends to the revoluble head 17 in a suitable way. I have shown in the preferred embodiment of my invention a pair of bearing-blocks 24, fastened rigidly to the top face of the head on opposite sides of one of the radial slots or notches therein, and between the pair of bearing-blocks is fitted one of the radial mast-arms 22. Through the bearing-blocks and the mast-arm fitted between them is passed a horizontal bolt or arbor 25, on which the mast-arm is free to rock or turn in a vertical direction, and thus the mast-arm is pivotally attached to the revoluble head in a manner to secure strength and stability at the pivotal joint, because the bearing-blocks provide firm solid supports of the extremity of the mast-arm, and the latter is adapted to rest upon the head and to be confined by the adjacent ends of the notched or cut-away flange 18 of the head. It will be understood that each mast-arm is attached to the head 17 in the manner described.

Each mast-arm is constructed in a peculiar way to constitute a truss, with a view to securing the necessary strength and stability to the parts. An upright brace-arm 26 is attached to each mast-arm at a point intermediate of its length, and the mast-arm and its brace are reinforced by the employment of angle-irons 27, which are fastened to the mast-arm and its brace at the juncture of said parts. Between the brace and the free extremity of the mast-arm is stretched a stay-rod or cable 28, which is provided with a turn-buckle or other suitable take-up device, (indicated at 29.) This construction provides a truss for the mast-arm to enable it to withstand the weight and strain of the boat or carriage and the passengers therein, and the take-up device may readily be adjusted at any time to insure the necessary rigidity and stiffness of the mast-arm.

To make the mast-arms balance each other and thus secure an equal distribution of the load on the carousel, I couple them in pairs and arrange the devices for imparting vibratory motion thereto to work in unison. In the drawings I have shown the roundabout or carousel with a series of six mast-arms and their complemental boats or carriages, and the mast-arms are arranged radially with respect to the revoluble head and the spindle. The pair of mast-arms at diametrically opposite points of the revoluble head is coupled by one or more connecting-rods 30, and thus I have three pairs, or six mast-arms, connected by the rods or stays. The rods or stays 30 are attached at their extremities to the brace-arms 26 of the mast-arms, and said connecting rods or stays 30 are arranged to pass on opposite sides of the stem of the spindle 2 in a manner to avoid interfering with each other as the mast-arms are rocked in vertical directions on the rotary motion of the carrier 10.

The vibrating or rocking motion is imparted to the mast-arms by connections with the radial shafts 7 of the roundabout. I prefer to employ the crank-disks 32 and the pitmen 33 to operatively connect the rock-shafts with the mast-arms, one of these pitmen and crank-disks being provided between each radial shaft and mast-arm. The crank-disk is attached centrally and rigidly to the outer extremity of its radial shaft, and said disk has a wrist-pin 34, to which is loosely connected the lower end of the pitman 33. The upper end of the pitman is loosely attached to its mast-arm in a manner to compensate for the orbital motion of the wrist-pin on the crank-disk without wrenching or straining the connection of the mast-arm to the revoluble head 17 and to allow the mast-arm to move or oscillate in a vertical direction. The connection between the pitman and the mast-arm is in the nature of a universal joint, (indicated at 35,) and in the embodiment of the joint shown in the drawings I have illustrated a socket-plate 36, attached to the lower side of the mast-arm, and a stem 37, fitted loosely in the socket-plate and attached to the upper extremity of the pitman.

The revoluble head 17 and the revoluble carrier 10 are coupled together to insure their simultaneous rotation, and as one means for thus coupling the head and carrier together I employ a series of stays or rods 38, which are arranged to cross each other and which have their ends fastened, respectively, to the revoluble head and to the outer ring 12 of the carrier. The attachment of the braces or stays 38 to the carrier and head may be effected in any suitable way—as, for instance, by eyebolts—and each stay or rod 38 is provided with a turnbuckle or other take-up device for straining the rod or stay to secure the necessary parallel relation of the head and carrier and enable the parts to rotate freely on the spindle 2. To prevent the head from sagging under the weight or load of the passengers in the boats or carriages suspended from the mast-arms attached to the revoluble head, I provide the upright braces 39 between the head 17 and the inner ring 11 of the carrier. These upright braces are arranged at suitable intervals from each other, and any desired number of such braces may be used.

The boat or carriage 23 is attached to the proper mast-arm in any suitable way; but I prefer to loosely connect the boat or carriage to a pair of the mast-arms, so it will have a swaying motion as the carrier and head rotate about the spindle. I prefer to construct the part 23 in the form of a boat to be suspended at its bow and stern from two adjacent mast-arms; but it will be understood that I do not strictly limit myself to the particular form of boat shown, because the carriage for the passengers may be of any suitable style or form which may be preferred. The boat or carriage has one or more seats for the passengers, and it may be equipped with an awning and upholstered or finished in any suitable manner.

This being the construction of my improved roundabout or carousel, the operation may be described as follows: Motion is imparted to the driving wheel or rim 14 of the carrier, and as the head 17 is rigidly coupled to the carrier the head and carrier rotate simultaneously to move the mast-arms, the boats or carriages suspended therefrom, and the radial shafts in a circular path around the stationary spindle. As the shafts are carried with the carrier the bevel-gears on the inner ends thereof mesh with the master-gear, and the radial shafts are thus rotated on their axes to impart rotary motion to the crank disks or wheels. These crank disks or wheels operate to reciprocate the pitmen, which in turn oscillate or rock the mast-arms and the boats or carriages suspended therefrom, and thus the boats or carriages are given a twofold motion in a positive manner—*i. e.*, a horizontal rotary motion with the carrier and head and a vertical oscillating motion by the connections between the mast-arms and the radial shafts. The mast-arms being connected in pairs, the wrist-pins on opposite crank-disks are set on opposite centers, so as to impart to one mast-arm of the pair an upward motion, while the other mast-arm of the same pair is given a downward motion, and thus the mast-arms move in unison to enable them to be coupled in pairs without breaking the connecting rods or stays, so that the load in the pairs of boats or carriages is equally distributed.

Various changes in the form and proportion of parts and details of construction may be made without departing from the spirit or sacrificing the advantages of my invention.

In Fig. 6 of the drawings I have shown in detail one of the crank-disks 32, and this disk is constructed to carry the crank or wrist pin 34 in a manner to provide for the radial ad-

justment of said pin toward or from the center of the disk. This object may be attained by any suitable construction of the parts, and the purpose of the adjustable crank or wrist pin is to vary the throw or movement of the pitman attached thereto. This adjustable wrist-pin is to be moved in unison with the adjustment of the turnbuckles of the rods 30, which couple the pairs of trussed mast-arms.

I prefer to build up or make in sections the belt-wheel and the rings of the carrier in the practical construction of my carousel; but I may make each part in a continuous piece, as shown by the drawings.

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

1. The combination with a carrier, a spindle and a head, of a series of mast-arms pivoted to the head, a series of carriages or boats each suspended at opposite ends from an adjacent pair of mast-arms, and mechanism substantially as described for reciprocating adjacent mast-arms in opposite directions to impart pitching motion to the boats or carriages, substantially as described.

2. The combination with a carrier, a spindle and a head, of a series of mast-arms fulcrumed in said head to rotate therewith in a horizontal direction, a series of carriages or boats arranged end to end in relation to each other outside of the carrier and each suspended at opposite ends from two adjacent arms of the series of mast-arms, and means substantially as described for giving reciprocating motion in a vertical direction to the mast-arms, said mast-arms being so arranged and combined with each other and the driving mechanism that adjacent arms reciprocate vertically in opposite directions, for the purposes described, substantially as set forth.

3. The combination with a spindle, a carrier and a revoluble head, of a series of mast-arms fulcrumed on the head to reciprocate in vertical planes, a series of carriages or boats arranged in endwise relation to each other outside of the carrier and each loosely suspended at its respective ends from adjacent pairs of mast-arms to sway transversely thereon and to move in vertical directions therewith, and a driving mechanism independent of the spindle and operatively connected with the mast-arms to reciprocate adjacent arms in opposite directions, whereby the carriages or boats are given a pitching motion by the arms and are free to sway horizontally thereon, substantially as described.

4. The combination with a non-rotatable spindle, of a revoluble carrier, a head fitted idly on the spindle, a series of shafts arranged radially on the carrier, a single master-gear common to all the radial shafts and fixed to the spindle to mesh with gears on all of said radial shafts, a series of mast-arms fulcrumed on the head, crank-disks fixed to the outer ends of said radial shafts, vertically-disposed pitmen attached to the crank-disks and to the mast-arms at points beyond their fulcra to sustain the weight of said arms and to impart vertical reciprocating movement thereto, and a series of carriages or boats suspended from the mast-arms, substantially as described.

5. The combination with a non-rotatable spindle, of a revoluble head fitted idly on the spindle, a series of mast-arms fulcrumed on the head and provided with upwardly-extending braces, the brace-rods attached to the mast-arms and their braces, the series of coupling-rods attached to the braces of the mast-arms and connecting the latter in pairs, a revoluble carrier, means connecting said head and carrier to insure simultaneous movement of the head with said carrier, a driving mechanism for imparting reciprocating motion to the mast-arms, and carriages or boats suspended from said mast-arms, substantially as described.

6. In a roundabout or carousel, a non-rotatable spindle, a revoluble carrier independent of said spindle, a revoluble head mounted idly on said spindle, and stays or rods attached to the head and the carrier to couple the parts together and insure simultaneous movement of the head with the carrier, combined with mast-arms pivoted to the head, radial shafts journaled on the carrier and operatively connected to the mast-arms, and means for driving said radial shafts, as and for the purposes described.

7. In a roundabout or carousel, a revoluble carrier comprising a driving rim or wheel, a base-plate, the inner and outer rings, and radial spokes united rigidly to all of said parts, combined with a non-rotatable spindle, a foot-base in which the spindle is fixed and supporting said carrier, a revoluble head coupled to the carrier to turn therewith and mounted idly on the spindle, mast-arms pivoted in the head, radial shafts operatively connected to the mast-arms, and means for driving said radial shafts, as and for the purposes described.

8. The combination with a non-rotatable spindle, of a revoluble carrier, a revoluble head mounted on said spindle to rotate idly thereon, a series of mast-arms fulcrumed on the head, a series of upright posts 39, stepped on the carrier and attached to the head outside of the fulcra connection between the latter and the mast-arms to sustain said head against the weight or load thereon, a series of stays joined to the head and carrier, the carriages or boats suspended from the mast-arms, and means for reciprocating said mast-arms, substantially as described.

9. In a roundabout or carousel, the revoluble head flanged and slotted to receive the mast-arms, and bearing-blocks united to said head, within the slotted flange thereof combined with mast-arms fitted in the slotted flange of the head and pivoted to the bearing-blocks thereof within the slotted flange to rest thereon when lowered, a revoluble car-

rier, and means mounted on said carrier for imparting reciprocating motion in a vertical direction to the mast-arms, substantially as described.

10. In a roundabout or carousel, the combination of a fixed spindle, a revoluble carrier having a ball-bearing on the spindle, a revoluble head also having a ball-bearing on a shouldered part of the spindle to rotate idly thereon, means for uniting the head and carrier together to insure simultaneous rotation to said parts, a series of mast-arms pivoted to the head, boats or carriages suspended from the mast-arms, a master-gear fixed to the spindle, a series of radial shafts journaled on the carrier and geared directly to the master-gear, and pitmen connecting the radial shafts and the mast-arms, for the purposes described, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK C. PRESCOTT.

Witnesses:

W. J. DONALDSON,

CHAS. H. COLLY.