

No. 660,168.

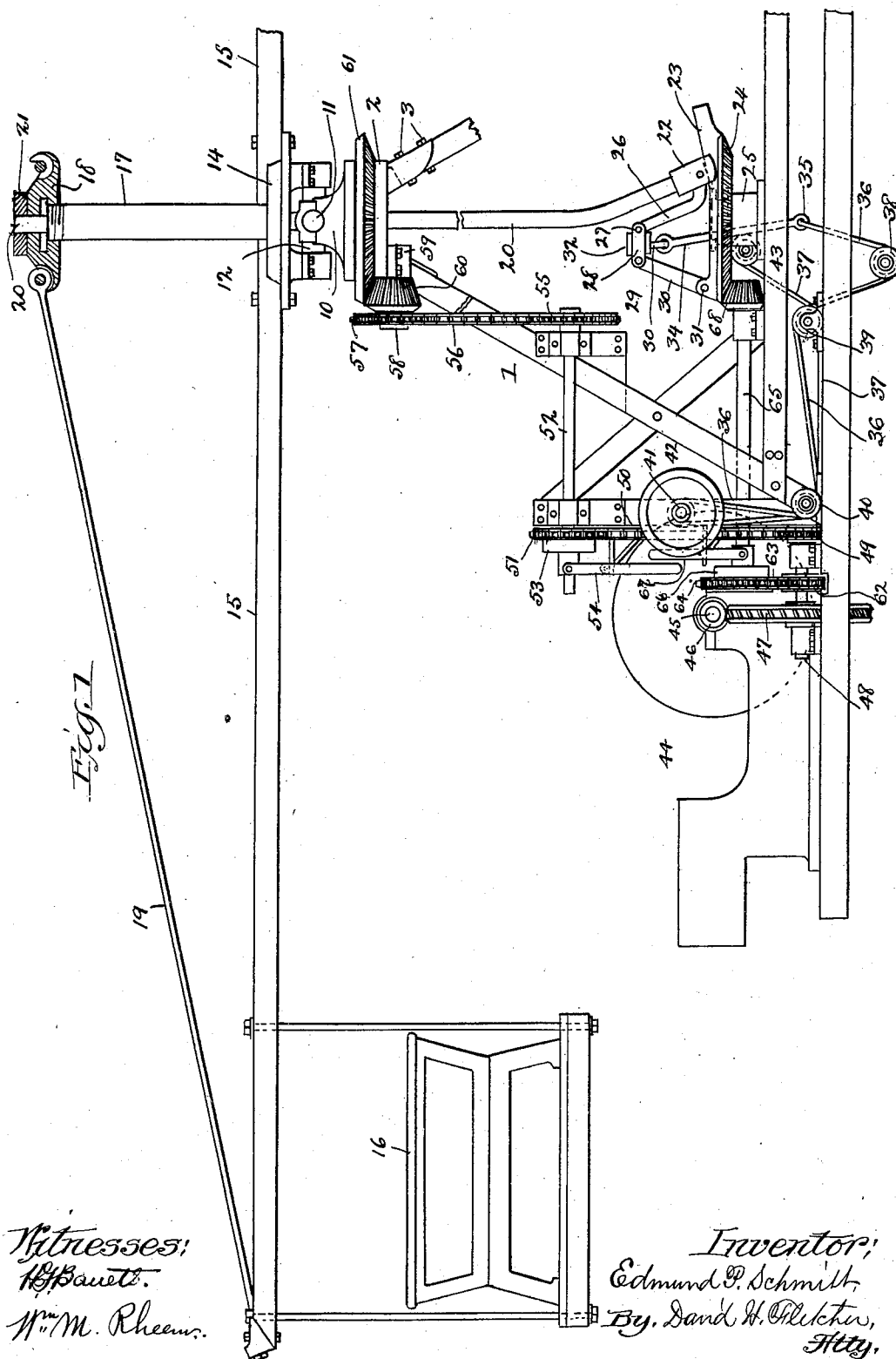
Patented Oct. 23, 1900.

E. P. SCHMITT.  
MERRY-GO-ROUND.

(Application filed Mar. 11, 1899.)

(No Model.)

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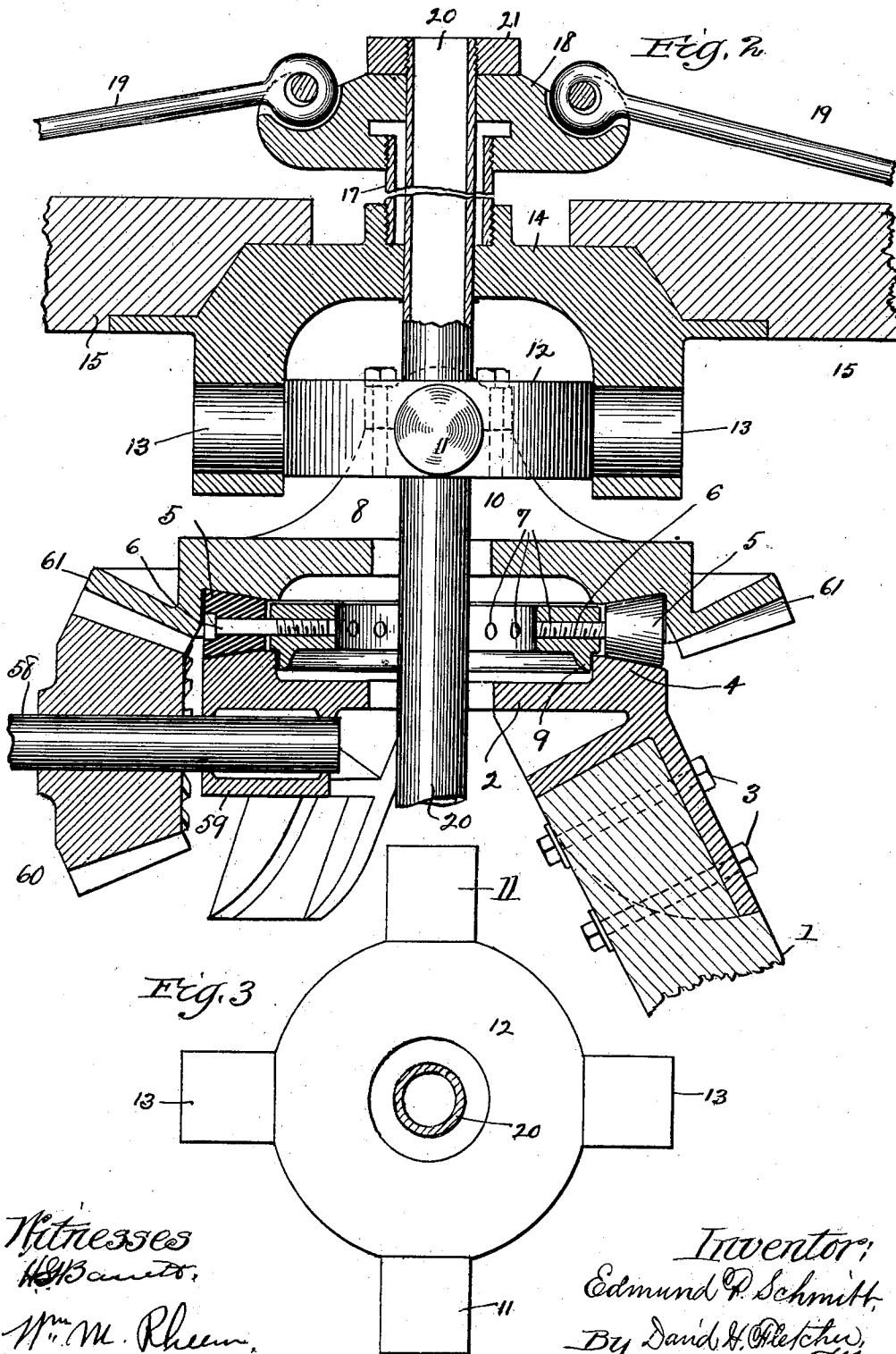


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3 Sheets—Sheet 2.



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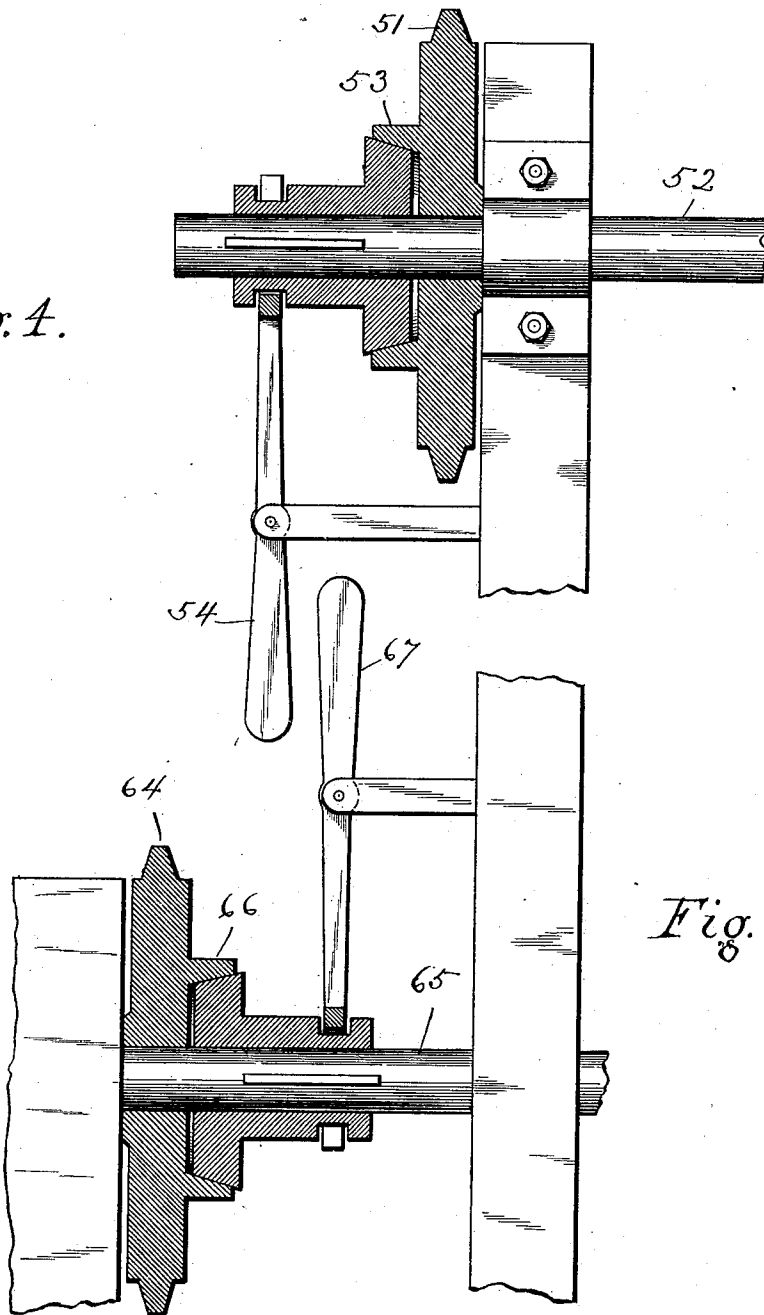
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*Fig. 4.*



*Fig. 5.*

WITNESSES

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# UNITED STATES PATENT OFFICE.

EDMUND P. SCHMITT, OF CHICAGO, ILLINOIS.

## MERRY-GO-ROUND.

SPECIFICATION forming part of Letters Patent No. 660,168, dated October 23, 1900.

Application filed March 11, 1899. Serial No. 708,702. (No model.)

*To all whom it may concern:*

Be it known that I, EDMUND P. SCHMITT, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful  
5 Improvements in Merry-Go-Rounds, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which similar numerals of reference  
10 in the different figures indicate like parts.

My invention relates to that class of amusement devices commonly known as "merry-go-rounds," in which passengers ride upon  
15 seats or supports suspended from the ends of a series of horizontal radial arms extending from a central vertical pivotal support around which the arms rotate; and the object of my invention is to so construct said  
20 device that the movement of the riders may be varied at will in relation to the plane of the horizon—that is to say, that the supporting-arms may at will be permitted to rotate  
25 in a horizontal plane or one oblique to the horizon, so that the riders may alternately rise to a maximum or descend to a minimum height at points diametrically opposite, or  
30 that the axis may be constantly changed in its relation to the vertical, so as to impart a sinuous movement to the riders in a constant or varying degree, all of which is hereinafter more particularly described and definitely  
35 claimed.

In the drawings, Figure 1 is an elevation  
35 showing the main actuating mechanism and one arm of my improved device. Fig. 2 is an enlarged vertical sectional view in detail of the supporting-frame and bearings of my improved device. Fig. 3 is a plan view in detail  
40 of the trunnioned ring upon which is mounted the spider to which the frame is attached and by which it is suspended. Fig. 4 is an enlarged vertical sectional view in detail of the clutch mounted upon the main driving-shaft for actuating the rotating frame,  
45 and Fig. 5 is a like view of a similar clutch upon the shaft intended to impart special motion thereto.

Referring to the drawings, 1 represents the  
50 main supporting-frame of my improved machine, which consists, preferably, of four rigid timbers arranged to form a wide supporting-

base and converging at the top, so as to connect with sockets forming a part of a cast-metal bearing-plate 2, to which they are rigidly attached by means of bolts 3, as shown. Projecting above the main surface of the plate 2 is an annular raised portion 4, Fig. 2, which is slanted downwardly and outwardly in all directions from the center, as shown, thus forming a tread or circular track upon which is mounted a series of conical rollers 5, the axes of which respectively consist of bolts 6, which are tapped into bores 7, formed in a ring 8, having a depending flange 9  
55 adapted to fit within the circle formed by the raised portion 4 of the supporting-plate. Mounted upon the roller-bearings 5, of which ordinarily there would be about sixteen in number, is a heavy circular pillow-block 10,  
60 having a tread adapted to rest upon and fit said conical roller-bearings, as clearly shown in Fig. 2. Upon opposite sides of the pillow-block 10, diametrically placed, are bearings adapted to receive trunnions 11 11, (see also  
65 Fig. 3,) formed upon opposite sides of a ring 12, which is also provided with like trunnions 13 13, which serve as a support for a circular spider 14, formed from cast metal, to which is rigidly bolted a series of radial arms  
70 15, to which may be suspended or secured, as shown or in any well-known way, the usual chairs 16 for the accommodation of passengers.

Extending upwardly from the spider 14,  
75 into which it is centrally tapped, is a cylindrical steel or iron pipe forming a central mast or support 17, upon the top of which is rigidly attached a cast-metal head 18, to which is secured by means of suitable bolts, as  
80 shown, a series of supporting-rods 19, which are connected, respectively, in an approved manner with the outer ends of the radial arms 15. In the head 18 is formed a central bore through which is loosely passed a secondary pipe 20, upon the upper end of which  
85 is tapped a nut 21, which is in contact with the head 18 and serves to hold the pipe 20 in place. The pipe 20 is inclosed within the pipe 17 and extends downwardly through the rings 12 and 8 and through central openings in the pillow-block 10 and plate 2, said openings being sufficiently large to permit of a considerable oscillatory movement of the  
90  
95  
100

pipe 20 therein in the manner and for the purpose hereinafter specified. The pipe 20 is bent near its lower end, as shown in Fig. 1, and upon said end is rigidly secured a guide-  
 5 block 22, which is notched, so as to engage loosely with a guide-flange 23, extending diametrically across and formed upon the upper side of a beveled gear-wheel 24, which is jour-  
 10 naled upon a vertical support 25, rigidly attached to the frame. The guide-block 22 is connected by means of a link 26 to a lug 27 upon a block 28, arranged above the gear-wheel 24. A link 30, attached loosely to a lug 29 upon a block 28, is connected in like manner at its  
 15 opposite end to a lug 31, extending upwardly from one end of the flange 23. A secondary block 32 is swiveled in a bore formed in the block 28. Upon the lower side of the swiveled block 32 is an eye 33, to which is loosely  
 20 connected a depending link 34, having an eye 35 at its lower end, to which is attached cords 36 37, the former being trained beneath a pulley 38, over a pulley 39, and beneath a pulley 40 and having its opposite end attached  
 25 to a windlass 41, which is adapted to be actuated by means of a hand-wheel 42, mounted upon the frame, while the cord 37 is trained over a pulley 43 and beneath pulleys 39 and 40 and has its end attached to the opposite side  
 30 of the windlass 41 from that to which the cord 36 is secured. As the function of the cord 36 is to pull down upon the link 34, so that of the cord 37, which, as stated, is also attached to the eye 35 of said link, is to pull  
 35 upwardly thereon when the tension is released upon the cord 36 and applied to cord 37. A double ratchet-and-pawl mechanism (not shown) of any well-known form may be used to hold the windlass temporarily in a given  
 40 position; but the machine is preferably used without it. As a result of this construction when the hand-wheel 42 is rotated in a given direction one cord is wound upon and the other unwound from the windlass, thus caus-  
 45 ing said cords to move in opposite directions, thereby forcing the link 34 up or down, as desired, and thus tilting the lower end of the shaft 20 to any degree desired or holding it vertically at the will of the operator. For exam-  
 50 ple, as the cords are shown to be adjusted when the hand-wheel is rotated to the left the cord 36 is caused to pull down upon the link 34, which results, through the combined action of the inclined links 26 30, in pushing the  
 55 block 22 farther away from the center of the gear 24, which throws the shaft or pipe 20 out of plumb. This action is permitted as a result of the double trunnion movement of the spider 14 and ring 12, and as a result of  
 60 said movement the entire seat-supporting framework is tilted so that the normally-horiz-ontal arms 15 are more or less inclined to the plane of the horizon. By a reversal of the hand-wheel the link 34 is forced upwardly,  
 65 thus drawing the lower end of the shaft 20 nearer to the center of the gear 24, which causes the shaft 20 to coincide with the ver-

tical axis of the machine, which is the fixed axis of the revoluble pillow-block. This fea-  
 70 ture will be again referred to after describing the remaining mechanism of the machine.

I will first describe the means for actuating the rotating frame, after which I will describe the additional means for imparting special motions thereto.

75 While it is obvious that any form of motor may be employed for actuating the machine, I have shown in the drawings a gas-engine 44 for that purpose. Upon the engine-shaft 45 is mounted a worm 46, which engages a  
 80 worm-gear 47 upon a horizontal driving-shaft 48, having a sprocket-wheel 49 keyed thereto. Said sprocket-wheel is connected by means of a sprocket-chain 50 to a sprocket-wheel 51, loosely mounted upon a shaft 52. A clutch  
 85 53, keyed to the shaft 52, is adapted to be thrown into and out of gear by means of the usual hand-lever 54. A sprocket-wheel 55 is connected by means of a sprocket-chain 56 to a sprocket-wheel 57 upon a short shaft 58,  
 90 journaled in a bearing 59 upon the under side of the plate 2. A beveled pinion 60 (see also Fig. 2) is mounted upon the shaft 58 and is adapted to engage with a beveled gear formed upon the outer rim of the circular pillow-  
 95 block 10. The rotation of the pinion 60 through the train of mechanism described causes the pillow-block to rotate upon the roller-bearings, thereby rotating the entire movable framework of the machine around the cen-  
 100 tral axis.

I will now describe the means for imparting a special movement to the carrying-frame-work in addition to that already specified.

105 Keyed to the shaft 48 is a secondary sprocket-wheel 62, which is connected by means of a sprocket-chain 63 to a sprocket-wheel 64, loosely mounted upon a shaft 65. A clutch 66 is keyed to said shaft, which is adapted to be thrown into and out of engagement with  
 110 the sprocket-wheel 64 by means of a clutch-lever 67, which enables the shaft 65 to be started or stopped at will, whether the shaft 52 be in operation or not. A pinion upon the end of the shaft 65 is adapted to engage  
 115 with the gear 24, the rotation of which causes the shaft 20 to be rotated in turn. This rotation is independent of that of the pipe or mast 17, and when the hand-wheel 42 is in position to permit the shaft 20 to coincide  
 120 with the theoretical axis of the machine when the arms 15 are horizontal no modification of the movement of the former results; but when the shaft 20 is thrown by the movement of the hand-wheel 42 into a  
 125 position oblique to said axis an undulatory or wave-like movement is imparted to the arms 15 the degree of which is dependent upon the extent of movement of the hand-wheel, while its periodicity, upon which de-  
 130 pends the number of wave movements in a given cycle, is controlled by the relative speed of the gear-wheel 24 and that of the gear upon the outer rim of the circular pillow-block 10,

assuming the two to rotate in the same direction—that is to say, if the shaft 20 is caused to make four revolutions in the same direction to one revolution of the main frame then  
 5 four wave movements will be imparted to the frame during each revolution thereof and more or less in proportion as the relative speed of the two is varied; but it is obvious that the same result may be accomplished by reversing the movement of the gear 24 and that  
 10 when so reversed the same number of wave movements of the frame may be produced with a proportionate decrease in speed of said gear.

15 The operation of my improved machine is as follows: Assuming the hand-wheel 42 to be turned to its normal position, so that the shaft 20 is vertical, the clutch 67 to be disengaged, and the clutch 53 engaged, the starting of the  
 20 motor causes the arms 15 to revolve around a vertical axis; but upon moving the hand-wheel 42 this movement may be varied to represent what is known as a "roller-coaster" movement—that is, alternately up and down  
 25 an incline with each revolution, the pitch of the incline being varied at will by the extent to which the hand-wheel is turned. By causing the clutch 66 to be brought into engagement the movement may be still further varied, as stated, to represent a series of undulations with each revolution, like the movement of a boat upon the waves.

It is obvious that if the mechanism directly controlling the action of the shaft 20 were  
 35 rigid in its character the machine would be broken; but the toggle-joint principle involved in the links 26 and 30 and their connections permits the same to yield sufficiently under strain to avoid any injury to the mechanism.

Having thus described my invention, I claim—

1. In a machine of the class described, the combination of a revoluble passenger-carrying frame, a central universal-jointed support,  
 45 a revoluble pillow-block maintained upon a rigid frame, means for rotating said pillow-block, a central vertical mast extending above said central jointed support, said mast having  
 50 inclined rods extending radially therefrom to support the radiating arms of the carrying-frame, a central vertical shaft journaled within said mast and extending downwardly through and below the pillow-block and  
 55 means for moving the lower end of said shaft laterally, substantially as described.

2. In a machine of the class described, the combination of a revoluble passenger-carrying frame, a central universal-jointed support,

a revoluble pillow-block maintained upon a  
 rigid frame, means for rotating said pillow-  
 block, a central vertical mast extending above  
 said central jointed support, said mast having  
 inclined rods extending radially therefrom to  
 support the radiating arms of the carrying-  
 65 frame, a central vertical shaft journaled within said mast and extending downwardly through and below the pillow-block, means  
 for moving the lower end of said shaft laterally while the machine or main frame is in  
 70 motion, and means for rotating the lower end of said depending shaft around a common center at a different rate of speed than that imparted to the main frame, whereby an undulatory movement may be imparted to the arms  
 75 of the latter during each revolution thereof, substantially as described.

3. The combination of a revoluble frame having radial arms from which seats are suspended, said frame being supported upon a  
 80 central revoluble pillow-block, a double-trunnioned connection, interposed between the frame and pillow-block whereby the axis of said frame may be tilted obliquely to that of said block, means for rotating said pillow-  
 85 block upon roller-bearings, a central shaft swiveled within said frame and arranged to extend below said pillow-block, a gear-wheel at the lower end of said shaft, the axis of which coincides with that of the pillow-block, a toggle-joint connecting the lower end of said  
 90 shaft with a lug upon the periphery of said gear-wheel, means for actuating said toggle-joint to tilt said shaft, and means for simultaneously rotating said gear-wheel, substantially  
 95 as described.

4. The combination of a revoluble seat-carrying frame pivotally mounted upon a central  
 revoluble pillow-block having a vertical axis  
 of a motor in operative connection with said  
 100 revoluble pillow-block, shaft 20, gear 24 having its axis coincident with that of the pillow-block, guide-flange 23 in sliding engagement with the lower end of said shaft, a toggle-joint  
 connecting the lower end of said shaft with  
 105 said gear, link 34, cords 36 37, in operative connection with a windlass and pulleys whereby they may be simultaneously moved in opposite directions, and means for actuating the  
 gear-wheel 24 independently of said revoluble  
 110 pillow-block, substantially as described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 4th day of March, 1899.

EDMUND P. SCHMITT.

Witnesses:

D. H. FLETCHER,

DWIGHT B. CHEEVER.