

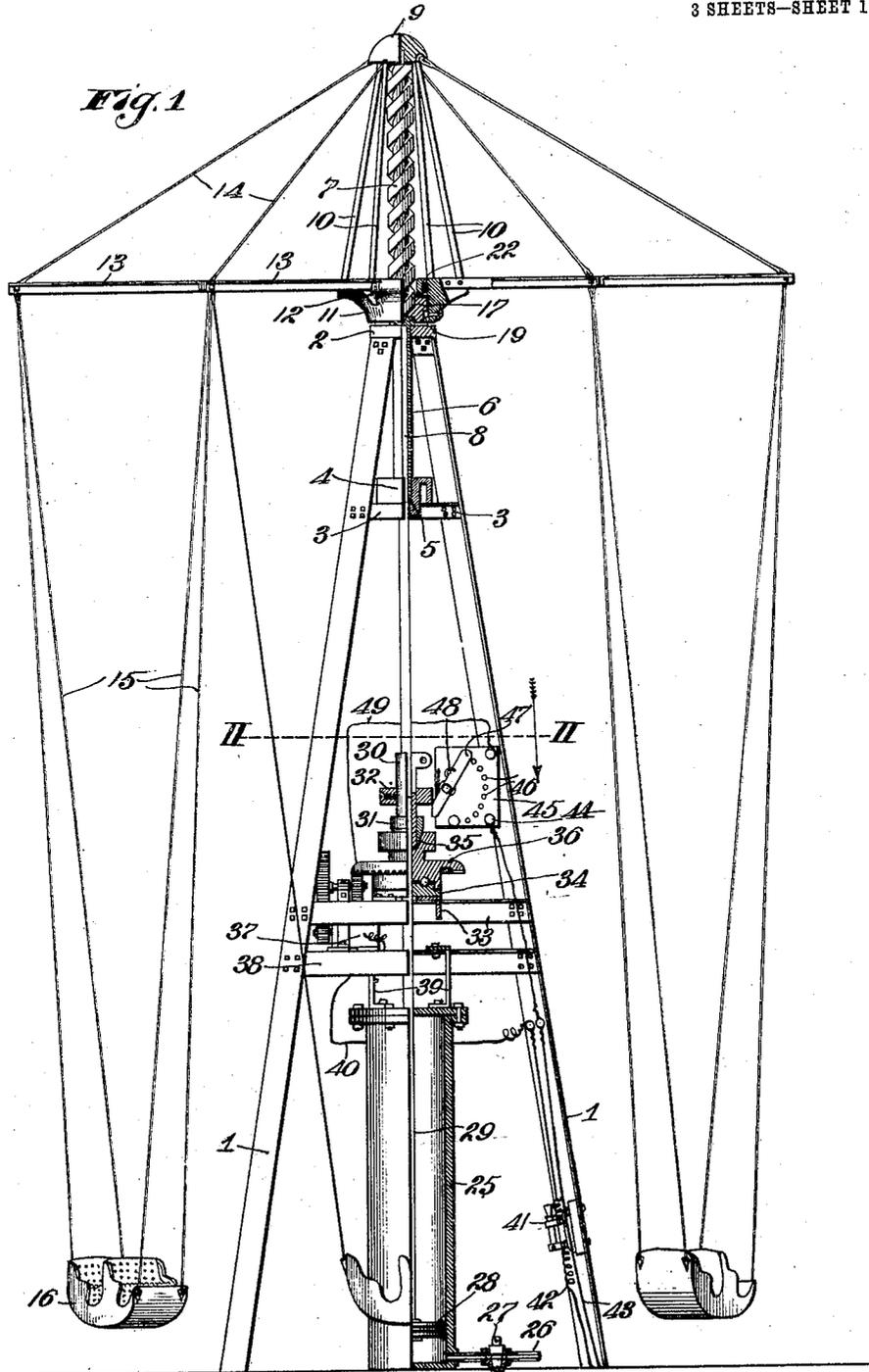
No. 794,148.

PATENTED JULY 4, 1905.

R. GARVEY.  
CIRCLE SWING.

APPLICATION FILED AUG. 2, 1904.

3 SHEETS—SHEET 1.



Witnesses  
F. R. Snow.  
A. W. Straight.

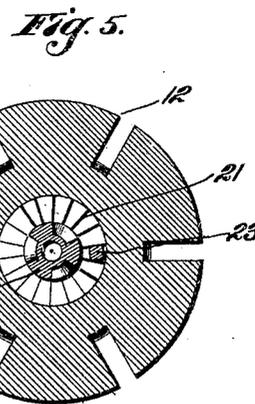
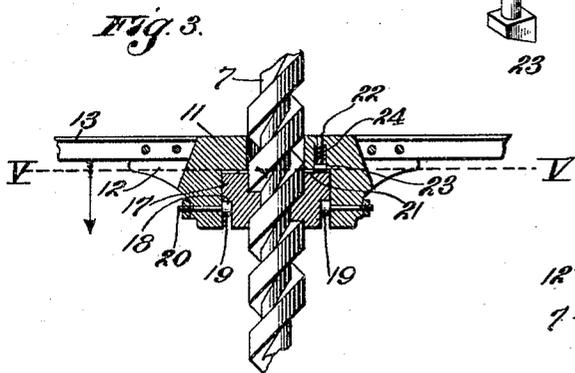
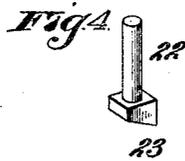
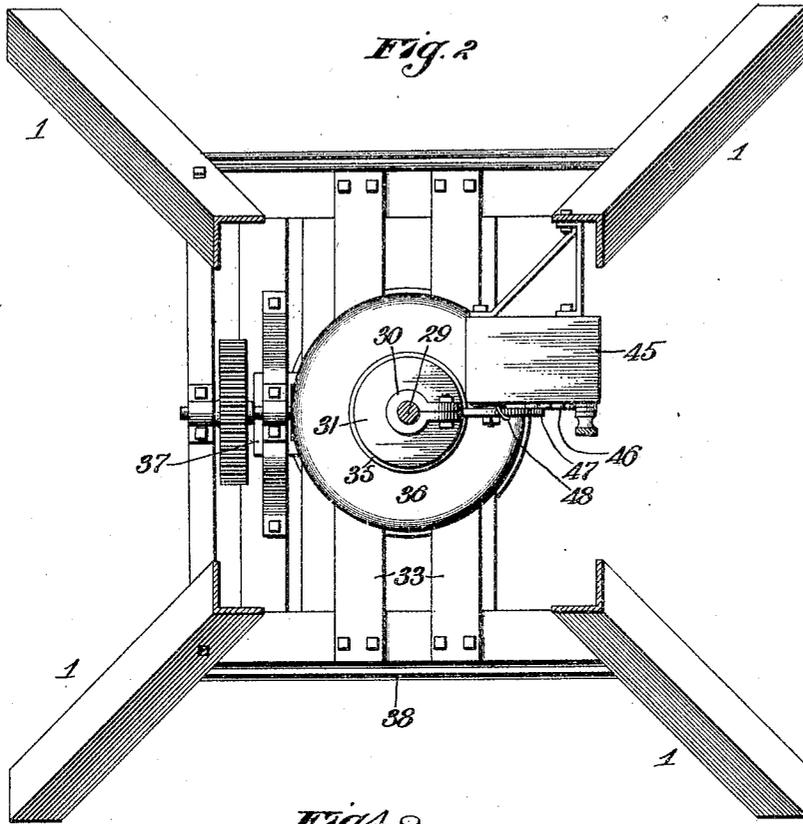
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APPLICATION FILED AUG. 2, 1904.

3 SHEETS—SHEET 2.



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APPLICATION FILED AUG. 2, 1904.

3 SHEETS—SHEET 3.

Fig. 6.

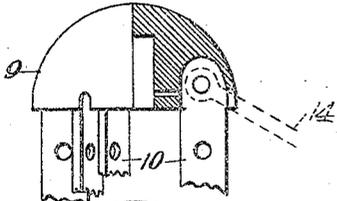


Fig. 8.

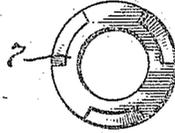


Fig. 7.

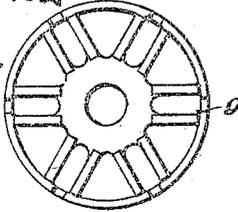


Fig. 9.

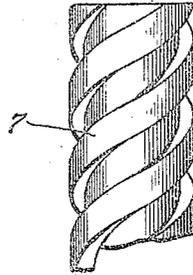


Fig. 10.

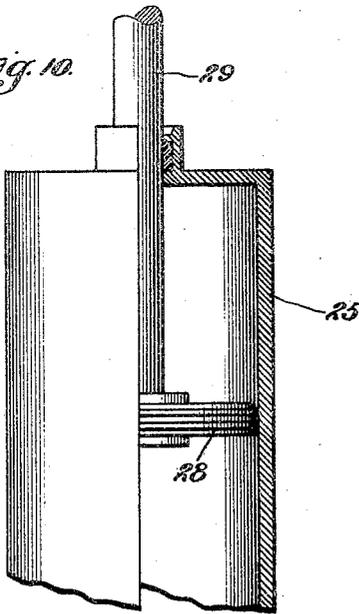


Fig. 11.

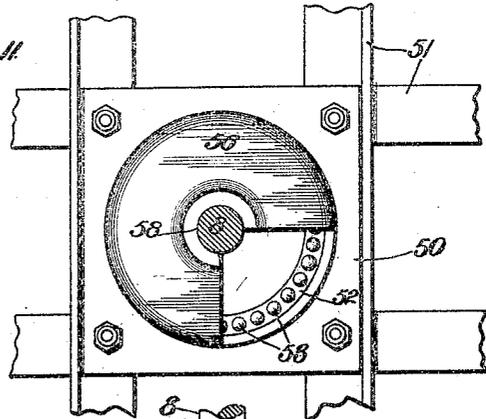
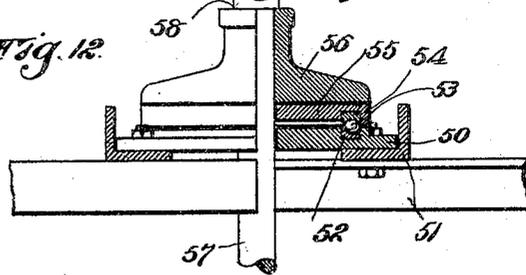


Fig. 12.



Witnesses  
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# UNITED STATES PATENT OFFICE.

RICHARD GARVEY, OF KANSAS CITY, MISSOURI.

## CIRCLE-SWING.

SPECIFICATION forming part of Letters Patent No. 794,148, dated July 4, 1905.

Application filed August 2, 1904. Serial No. 219,229.

*To all whom it may concern:*

Be it known that I, RICHARD GARVEY, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Circle-Swings, of which the following is a specification.

This invention relates to circle-swings of that class embodying a tower, a revoluble frame mounted thereon, and cars flexibly suspended from said frame and adapted as the latter operates to swing outwardly and upwardly by centrifugal force; and my object is to produce a swing of this character having an initial gravitative movement to overcome inertia.

A further object is to produce a swing having a ball-bearing to sustain the weight of the cars, the occupants thereof, and the frame when the gravitative movement of the latter has ceased.

A still further object is to produce means for automatically throwing the revolving mechanism in gear with a suitably-driven motor as the weight of the revolving machinery is imposed upon said bearing.

A still further object is to produce means for raising the frame and cars preliminary to starting the swing in action.

A still further object is to produce means for automatically disposing resistance in the path of the current as the frame and cars are elevated to prevent the operation of the motor at such time.

With these objects in view the invention consists in certain novel and peculiar features of construction and organization, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 represents a view, partly in side elevation and partly in central vertical section, of a circle-swing embodying my invention. Fig. 2 is an enlarged section taken on the line II II of Fig. 1. Fig. 3 is an enlarged central vertical section of the revoluble car-carrying frame and also shows in elevation the tubular screw engaged thereby. Fig. 4 is an enlarged detail perspective view of the spring-actuated pawl forming a part of the machine. Fig. 5

is a horizontal section on the line V V of Fig. 3. Fig. 6 is an enlarged view, partly in side elevation and partly in vertical section, of the cap connected to the revoluble frame and also shows certain braces between said cap and frame. Fig. 7 is a bottom plan view of said cap. Fig. 8 is an enlarged top plan view of the screw. Fig. 9 is a side view of a portion of the screw. Fig. 10 is an enlarged view, partly in side elevation and partly in section, of the cylinder and the piston thereof. Fig. 11 is a horizontal section of a modified construction. Fig. 12 is a view of the same, partly in elevation and partly in vertical section.

In the said drawings, where like reference characters identify corresponding parts, a tower of suitable height is formed of upwardly-converging bars or angle-irons 1 and a head-plate 2, secured to and surmounting said bars, it being understood, of course, that the tower will also be braced and stiffened in any suitable manner. Near its upper end by preference the tower is equipped with a skeleton platform composed of bars 3 and forming a support for a sleeve or coupling 4, the bore of said sleeve or coupling being of reduced diameter at its lower end in order to provide the upwardly-disposed shoulder 5 as a support for the lower end of the non-threaded portion 6 of a stationary screw 7. 8 designates a rod journaled in said screw, and 9 a cap rigidly secured upon the upper end of said rod above the screw.

10 designates outwardly-diverging braces connecting the cap 9 with a revoluble frame, said frame comprising the hub 11, provided with radial notches 12, and radial angle-iron arms 13, secured rigidly within said notches, and said arms are braced and strengthened by upwardly-converging rods 14, secured at their lower ends to the outer ends of said arms and at their upper ends to said cap.

15 designates cables for suspending from the outer ends of arms 13 cars 16 for passengers.

17 designates a nut fitting rotatably within hub 11 and mounted upon the screw 7, and said nut is reduced diametrically to provide a downwardly-disposed shoulder 18 to rest upon the rollers 19, journaled on the inner ends of bolts 20, secured to the revoluble frame. The

upper end of the nut is provided with a ratchet-toothed face 21, and engaging the same is the beveled head 23 of a pawl 22, extending vertically through the hub 11 and held downward with a yielding pressure by the spring 24, bearing at its upper end against the hub and at its lower end upon the head of the pawl, the relation between the nut and the pawl being such that downward movement of the nut causes the abrupt or vertical face of one of its teeth to bind against a corresponding face of the pawl, and thereby compel the latter and the frame to revolve with the nut. When the screw is raised, the nut is revolved by the screw in the opposite direction, but does not rotate the frame because the beveled surfaces of teeth 21 successively engage the corresponding face of the pawl, the spring of the latter yielding sufficiently to permit of the successive passage of said teeth past the pawl, as will be readily understood.

Vertically below the shaft 8 and resting upon the foundation of the tower is a cylinder 25, and communicating with the lower end of the same is a pipe 26, controlled by a valve 27, said pipe being adapted to lead from a pump (not shown) or any means of causing water, steam, or air, or an equivalent to enter the lower end of the cylinder against the piston 28 thereof, so as to force the latter and its stem 29 upward, the upper end of said stem being journaled in a clamp 30, secured rigidly to the lower end of rod 8 and provided with a conical friction disk 31 and collar 32.

33 is a skeleton frame composed of suitable cross-bars supported from the tower, and designates a ball-bearing mounted on said frame, the upper or rotatable portion of the bearing being formed with a gear-wheel 36, meshing with the gearing of a suitable electric motor 37, mounted upon a suitable frame 38, carried by the tower, which frame is also connected by suitable braces 39 with the cylinder to resist any tendency of the latter to rise under the power applied in raising the piston.

40 is a conductor leading from the motor to one side of an ordinary hand-switch 41, carried by and insulated from the tower in any suitable manner, and 42 is a wire leading from said switch to a suitable source of electric-current supply. 43 is a wire which also leads from the source of electric-current supply, and is connected at its opposite end to the binding-post 44 of the rheostat 45, suitably supported from the tower. The rheostat is provided with the usual contact-points 46 and with a lever 47 for successively engaging said contacts, said lever being held normally by the pressure of a spring 48 in engagement with the lowest contact-point, so as to impose sufficient resistance to the passage of the current to prevent the operation of the motor should switch 41 be closed. The rheostat is connected by conductor 49 with the motor.

When the swing is to be operated, the per-

son in control opens valve 27 to permit the water or other pressure agent to enter the cylinder and force its piston upwardly, which action may occur after the cars have received their passengers. The upward movement of the piston by the pressure of its stem on rod 8 raises said rod, and through the instrumentality of the cap 9 and connections 10 and 14 the revoluble frame and cars are also raised, said frame moving upwardly without rotative action because nut 17, carried thereby and rotating backward by engagement with the screw, slips inoperatively past the yieldingly-depressed pawl, as hereinbefore explained. When the cars are raised the required distance, the passengers may enter them, if not already therein, and the machine is ready for operation, it being understood, of course, that the rheostat-lever 47 at this time is in engagement with the lowest contact-point, so as to prevent operation of the motor in case the circuit is closed by switch 41. The operator now opens valve 27, which action is instantly followed by gravitative action of the elevated parts, this action being obviously attended by rotative action on the part of the revoluble frame, the cars carried thereby, and the supporting-rod 8, the rotative action taking place because of the engagement of the abrupt faces of a tooth of nut 14 and pawl 22. As this gravitative action takes place the collar 32 on the revolving rod-clamp 30 engages the proximate end of lever 47 and operates the same, so as to gradually cut out the resistance to the operation of the motor, which therefore begins to operate, and consequently operates the ball-bearing gear-wheel 36. As the revoluble frame reaches its lowest point of descent friction-cone 31 imposes the weight of said frame and its connections on the said ball-bearing, so that the rotative action of the frame is continued through the power of the rapidly-operating motor, and as the result of such operation the circle traversed by the cars gradually increases in diameter, the cars also increasing their distance from the ground. After the proper length of time has elapsed the person in control opens switch 41 and as a result the speed of rotation gradually diminishes and the circle traversed by the cars also gradually diminishes, the latter of course gradually returning to their original position. If desired, the swing may be equipped with a suitable brake (not shown) for diminishing its speed more rapidly than would naturally occur, which brake is omitted because it may be of any common and well-known construction. All future operations are repetitions of those described.

In Figs. 11 and 12 I show a modified construction, the same comprising a plate 50, bolted to a skeleton frame 51, adapted to be supported by the tower, and said plate is provided with a ball-bearing ring 52. The balls 53 of said ring are engaged by a similar ring

54 of a rotatable plate 55, rigidly secured to a collar 56, journaled on the diametrically-diminished lower end 57 of rod 8, shoulder 58, formed by reducing the lower end of said rod, being adapted as the rotatable frame descends in the initial part of its operation to impose the weight of said frame and its supported parts upon collar 56, so that the swing may continue to rotate on the ball-bearing under the momentum gained by the descent of the frame instead of having such rotation continued by the action of an electric or other motor, as described.

From the above description it will be apparent that I have produced a circle-swing embodying the features of advantage enumerated as desirable in the statement of the object of the invention, and while I have illustrated and described the preferred embodiment of the same it is to be understood that I reserve the right to make such changes in its form, proportion, detail construction, and organization as shall fall within the scope of the appended claims.

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

1. A circle-swing comprising a tower, a rigid screw carried thereby, a revoluble frame fitting loosely around the screw, cars suspended from said frame, means to raise and lower said frame with relation to the screw, a nut carried by the frame and engaging the screw, a bearing to sustain the weight at times, of the revoluble frame and the parts carried thereby, a motor, and means actuated by descending movement of the frame, for causing the motor to rotate the frame.

2. A circle-swing, comprising a tower, a vertically-movable frame carried thereby, a bearing to sustain the frame when occupying its lowest point of descent, a motor, and means actuated by the descending frame for causing the motor to rotate said frame on said bearing.

3. A circle-swing, comprising a tower, a stationary screw carried thereby, a revoluble frame fitting loosely around the screw, cars suspended from said frame, a nut carried by said frame and engaging the screw, an electric motor, a bearing geared thereto, a friction-disk to impose the weight of the frame on said bearing, a rheostat in circuit with the motor, and means movable with the revoluble frame for automatically operating the rheostat to gradually cut resistance out of the path of the current.

4. A circle-swing, comprising a tower, a

stationary screw carried thereby, a revoluble frame fitting loosely around the screw, cars suspended from said frame, a nut carried by said frame and engaging the screw, an electric motor, a bearing geared thereto, a friction-disk to impose the weight of the frame on said bearing, a rheostat in circuit with the motor, means movable with the revoluble frame for automatically operating the rheostat to gradually cut resistance out of the path of the current, means to raise the revoluble frame with relation to the screw, and means to restore the rheostat to its original condition as said frame is raised.

5. A circle-swing, comprising a tower, a vertical screw rigidly mounted thereon, a revoluble frame fitting loosely around the screw, cars suspended therefrom, a spring-actuated pawl carried by the frame, a nut journaled in and carried by said frame and engaging said screw, and provided with ratchet-teeth engaging said pawl, and means for raising said frame.

6. A circle-swing, comprising a tower, a vertical hollow screw mounted thereon, a rod journaled in and extending through said screw, a revoluble frame fitting loosely around the screw, cars carried thereby, a cap rigidly connected to said frame and secured to the upper end of said rod above the screw, a nut engaging the screw and journaled in and carried by said frame and provided with ratchet-teeth, a yieldingly-pressed pawl engaging the ratchet-toothed surface of the nut, means to apply upward pressure on the rod to raise the frame and cars, and means for relieving the rod of such pressure to permit the frame and cars to descend.

7. A circle-swing, comprising a tower, a vertical screw rigidly mounted thereon, a revoluble frame fitting loosely around the screw and provided with horizontal series of rollers having their axes extending radially of the screw, a nut fitting in the revoluble frame and resting upon the rollers thereof and provided with an annular ratchet-tooth face, means for raising the frame, and a spring-actuated pawl carried by the revoluble frame and engaging the ratchet-tooth face of the nut to cause said frame to turn with the nut, when moving downward.

In testimony whereof I affix my signature in the presence of two witnesses.

RICHARD GARVEY.

Witnesses:

F. R. GLORE,  
GEO. Y. THORPE.