

W. A. SULLIVAN.
VERTICAL ROUNDABOUT.
APPLICATION FILED NOV. 18, 1908.

941,209.

Patented Nov. 23, 1909.

2 SHEETS—SHEET 1.

Fig. 1

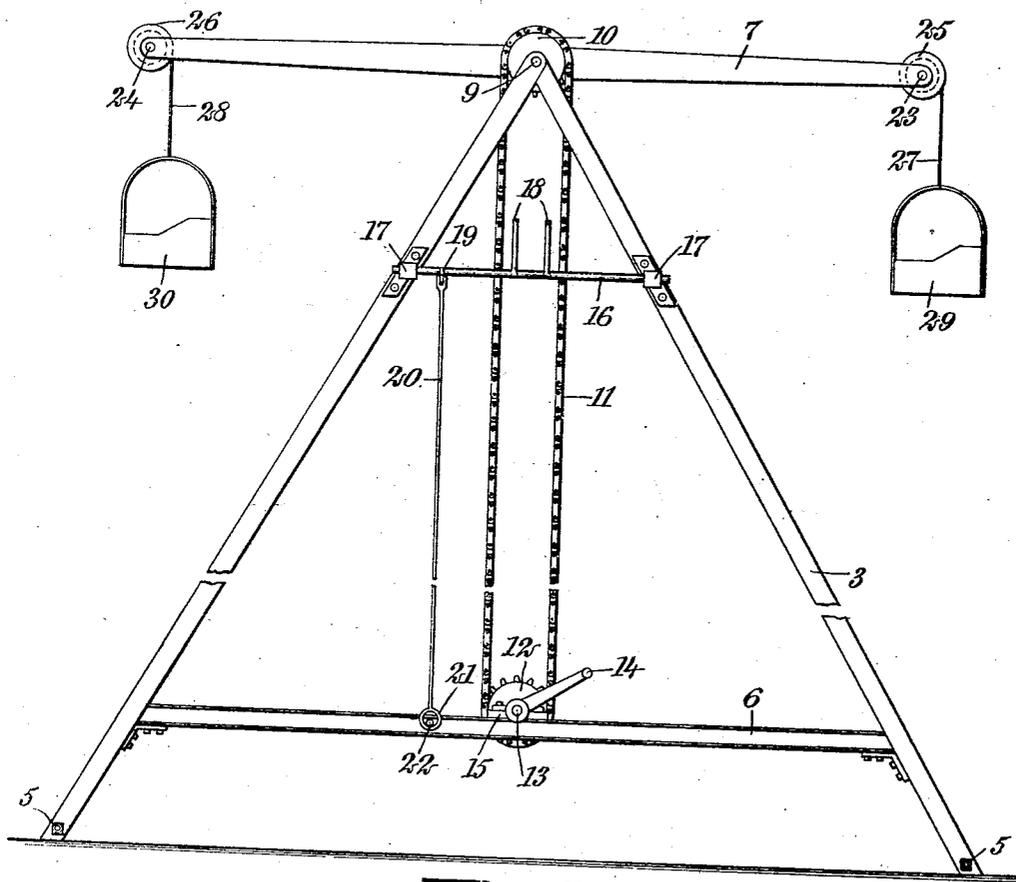
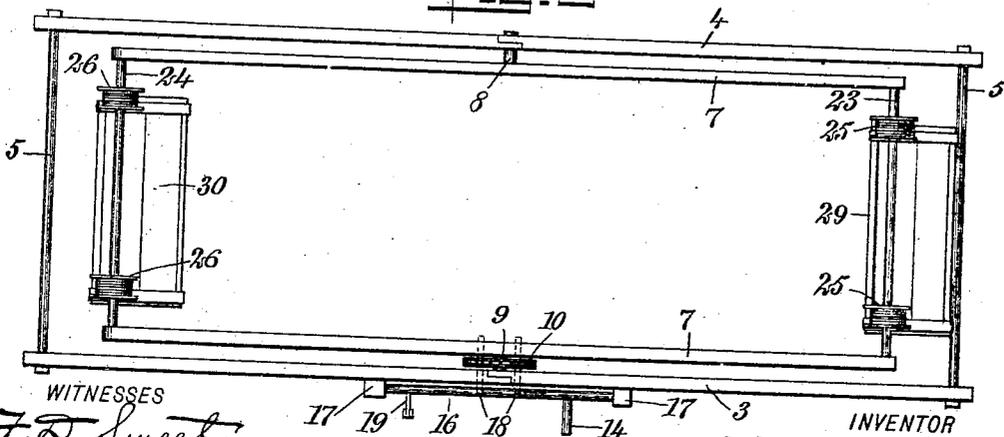


Fig. 2



WITNESSES

F. D. Sweet

Walton Harrison

INVENTOR

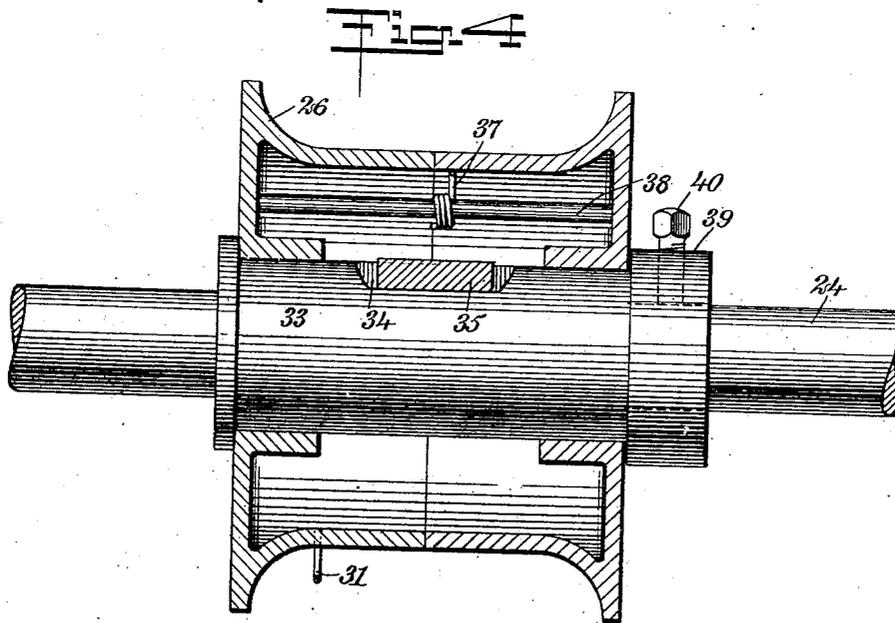
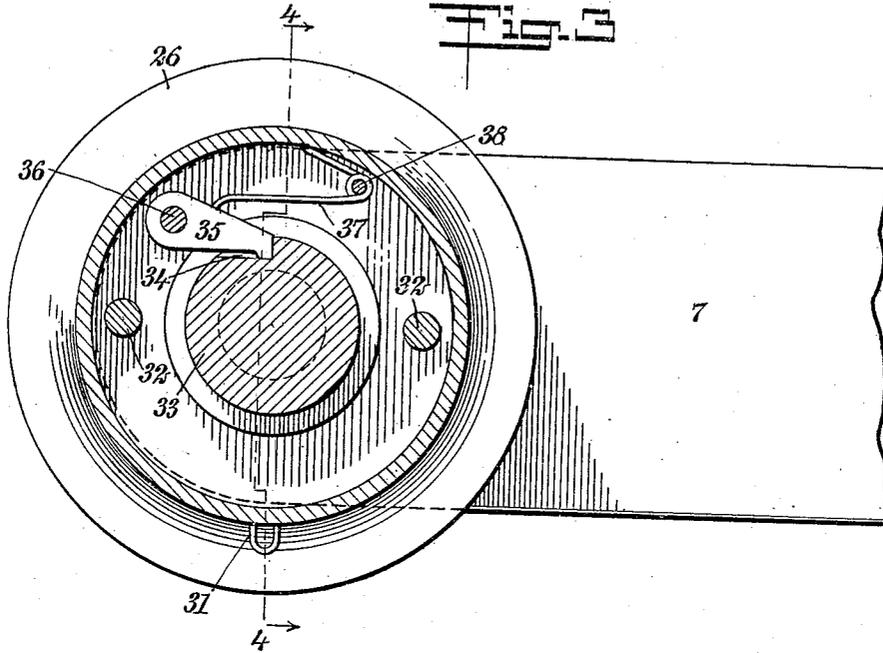
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BY *M. M. Co.*

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WITNESSES
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UNITED STATES PATENT OFFICE.

WILLIAM A. SULLIVAN, OF NEW YORK, N. Y.

VERTICAL ROUNDABOUT.

941,209.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed November 18, 1908. Serial No. 463,203.

To all whom it may concern:

Be it known that I, WILLIAM A. SULLIVAN, a citizen of the United States, and a resident of the city of New York, (Richmond Hill, borough of Queens,) in the county of Queens and State of New York, have invented a new and Improved Vertical Roundabout, of which the following is a full, clear, and exact description.

My invention relates to roundabouts, my more particular purpose being to provide a vertical roundabout including large beams journaled upon a frame and adapted to turn bodily end over end, its motive power being wholly or partially controlled by the slow descent of passengers or of heavy passenger carriages.

My invention further relates to means for turning the revoluble member backward in order to give the vertical roundabout sufficient power to operate as indicated.

In addition, my invention relates to mechanism for enabling the revoluble member, when once given a proper degree of momentum, to turn idly upon its bearings, so as to prolong the journey made by the passengers.

My invention relates still further to mechanism controllable at will for locking the beams in a predetermined position of idleness, in order to facilitate the entrance of passengers to the carriages and the landing of such passengers from the carriages.

While my invention may assume a number of distinct types of device, I do not deem it necessary to describe all of them, and merely show a single representative form, realizing that proper variations may be made therein without departing from the spirit of my invention.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation showing the roundabout complete; Fig. 2 is a plan view of the same; Fig. 3 is an enlarged vertical section through one of the drums, showing the ratchet mechanism for enabling the drum to stop rotating upon its own axis after the cords are fully unwound, thereby preventing the cords, after being fully unwound, from immediately winding up in the wrong direction; and Fig. 4 is a substantially vertical section taken upon the line

4—4 of Fig. 3, looking in the direction of the arrows.

A pair of A-frames 3, 4 are connected together by spacing rods 5. These A-frames include longitudinal beams 6 secured firmly to them, for the purpose of rendering them strong and rigid. A pair of beams 7 are journaled upon the framework, and for this purpose a pin 8 extends through the frame 4 and projects inwardly, and a stub shaft 9 is journaled in the frame 3 from which it extends inwardly. A sprocket wheel 10 is secured rigidly upon the stub shaft 9, and an endless sprocket chain 11 engages the sprocket wheel 10 and also engages another sprocket wheel 12, the latter being mounted rigidly upon a stub shaft 13 which is journaled in bearings 15 resting upon one of the beams 6. A hand crank 14 is secured rigidly upon the stub shaft 13 for the purpose of turning the latter. A rocking shaft 16 is journaled in bearings 17 carried by the A-frame 3, this rocking shaft being provided with arms 18 rigid with it and parallel with each other. An additional arm 19 is rigidly mounted upon the rocking shaft 16.

A rod 20 is pivotally connected with the outer or free end of the arm 19, and depends therefrom, terminating in a ring 21. This ring is adapted to engage a pin 22 disposed at a little distance from the stub shaft 13. The beams 7 are substantially alike and are connected together at one end by a shaft 23 secured rigidly to them. At their opposite ends these beams are connected by another shaft 24 also rigid with them. For convenience I designate the beams 7 and shafts 23, 24 and their immediate connections as "a revoluble frame".

The shafts 23 and 24 are provided with drums 25, 26, and partially wound upon these drums are cords 27, 28 supporting carriages 29, 30. These carriages simply hang upon the cords, the winding of the cords being in the same direction upon the drums 25, 26, as will be understood from Fig. 1.

Each drum 25, 26 is provided with a staple 31 and is strengthened by aid of pins 32. The drums 25, 26 are journaled upon necks 33 (see Fig. 4), these necks being practically enlargements of the shafts 23, 24, and each neck is provided with a notch 34. Each drum carries a pawl 35 which is mounted upon a rod 36 and is adapted to enter the notch 34. A spring 37 engages the

pawl 35 and also engages the inner surface of the drum, as will be understood from Fig. 3, said spring being mounted on a rod 38. Each neck 33 carries a collar 39, through which extends a set bolt 40 engaging the shaft of the drum.

The arrangement of the parts is such that when the beams 7 are turned in a clockwise direction, according to Fig. 1, so as to incline the cords 27, 28, the drums will turn with the shafts 23, 24, until the cords are fully unwound, and consequently until the carriages are in their respective lowermost positions for a given position of the beams 7; that is, until the cords 27, 28 are completely unwound and simply hang from the staples 31. Since, however, the beams 7 have by this time acquired considerable momentum, they continue to revolve for some little time, and as the shafts 23, 24, being rigid with the beams, continue to turn the pawls 35 (see Fig. 3) simply allow the necks 33 to turn idly under them, so that the cords 27, 28 are not wound up in the wrong direction. The result is that the beams 7 with the drums 25, 26 now idle, revolve from momentum alone, until the moving parts are finally brought to a stop by friction and the resistance of the air. If the hand crank 14 be next turned in a contraclockwise direction according to Fig. 1, the cords 27, 28 are again wound up.

For the purpose of locking the beams 7 in definite positions, I use the arms 18, 19, shaft 16 and rod 20. By disengaging the ring 21 from the pin 22 and pushing the rod 20 upward by aid of the ring 21 considered as a handle, the rocking shaft 16 may be turned approximately a quarter of a revolution, so that the arms 18 now intersect the path of one of the beams 7. If, therefore, the roundabout happens to be in such condition that the beams 7 are vertical and the shaft 16 be rocked as stated, the two arms 18 thus project upon opposite sides of the adjacent beams 7 and thus prevent the beams 7 from turning.

The operation of my device is as follows: The parts being arranged as indicated in Fig. 1, the operator grasps the handle 14 and turns it in a clockwise direction so as to cause the revoluble frame to turn end over end in the same direction. In doing this the carriages 29, 30 are lowered relatively to the ground and also to the general axis of rotation coinciding with the stub shaft 9. The cords 27, 28 are of such length only as will prevent either carriage from striking the drums 25, 26, associated with the opposite carriage. That is to say, the cords 27, 28 are too short to permit of either carriage striking an obstruction. The carriages having been lowered sufficiently, the passengers enter them. This may be done by locking the revoluble frame as above indicated,

allowing one or more passengers to enter the lower carriage, then turning the crank 14 by hand to a sufficient distance to lower the other carriage so as to permit it to be filled or partially filled with passengers. Again, a weight may be placed in one of the carriages and used to counterbalance the revoluble frame until the passengers enter the carriages and are seated. Another plan would be to enable the passengers to enter the carriages from any sort of an elevation disposed immediately adjacent to their common path of travel. If, for any reason, it be desired to lock the revoluble frame, this is done by rocking the shaft 16 as above described. While the only means I show for turning the sprocket wheel 12 is the hand crank 14, it will be understood that I do not limit myself to this particular means for propulsion as any other mechanism may be employed for winding up the roundabout—that is, raising the carriages to a relatively higher level. In order to withdraw the arms 18 from the path of travel of the revoluble frame, the rod 20 is drawn downwardly and the ring 21 slipped over the pin 22 as indicated in Fig. 1. This leaves the arms 18 extending upward, or in their normal position, while the roundabout is in active use. The device being wound up by aid of the hand crank 14, and the passengers having entered the carriages and the moving parts being released, as above stated, the beams 7 revolve with the shaft 9 as a center, the carriages moving one over the other, describing paths which are nearly, but not quite, circular, the carriages meanwhile getting lower and lower with each revolution of the beams 7. This action may be understood by comparing Fig. 3 with the left-hand portion of Fig. 1. The weight of the carriage 30 and passengers contained therein being suspended by the cord 28, is necessarily nearer the general center of rotation, than is the weight of the carriage 29 and its contents. This is because the cord 28 is closer than the cord 27 to the stub shaft 9. Hence, if one of these carriages and its contents be equal in weight to the other carriage and its contents, the carriage 29, acting virtually upon a longer lever than does the carriage 30, tends to descend and the carriage 30 tends to ascend. After these carriages pass each other, however, the carriage 30 now becomes virtually located at the long end of the lever and the carriage 29 at the shorter end of the same. The principle may be grasped quite readily by imagining that the drums 25, 26 are of much greater diameter so that one of the carriages is quite close to the stub shaft 9, while the other carriage is removed some distance from the same. Finally the carriages reach the limits allowed them by their respective cords 27, 28, after which the beams 7 and

their accompanying parts turn idly for some little time until the momentum of the moving parts is exhausted, the carriages gradually coming to rest. The passengers
 5 are then allowed to land. In winding up the device by aid of the hand crank 14, the revoluble frame at the top is turned in a contraclockwise direction. This causes the pawl 35 (see Fig. 3) to become rigid rela-
 10 tively to the shaft 24 so that the drum 26 is practically locked in relation to the revolving frame and as this frame turns, the cord 28 is wound up, raising the carriage 30. The same thing takes place with reference
 15 to the carriage 29.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination of a fixed frame, a
 20 revoluble frame mounted thereupon and adapted to support the weight of passengers, a rocking shaft provided with arms for obstructing movements of said revoluble frame, and means controllable at will for
 25 turning said rocking shaft into a predetermined position for the purpose of bringing said arms into the path of travel of said revoluble frame.

2. The combination of a fixed frame, a

revoluble frame journaled thereupon, car- 30
 riages connected with said revoluble frame and adapted to carry passengers, means controllable by the weight of said passengers for turning said revoluble frame, and mech-
 35 anism for disconnecting said means so as to allow said revoluble frame and the moving parts associated therewith to run because of their momentum.

3. The combination of a fixed frame, a
 40 revoluble frame journaled thereupon, carriages connected with said revoluble frame and adapted to turn said frame by their own weight and the weight of the passengers car-
 45 ried, and ratchet mechanism controllable automatically by the weight of said carriages and said passengers for stopping the appli-
 50 cation of power to said revoluble frame, thereby allowing said revoluble frame and movable parts associated therewith to continue running from their own momentum.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM A. SULLIVAN.

Witnesses:

FRANK SY SORLEY,
 GEO. W. FIELDER.