

No. 838,594.

PATENTED DEC. 18, 1906.

A. V. TRUST.
MEANS FOR ELEVATING CARS, &c.
APPLICATION FILED MAR. 29, 1906.

4 SHEETS—SHEET 1.

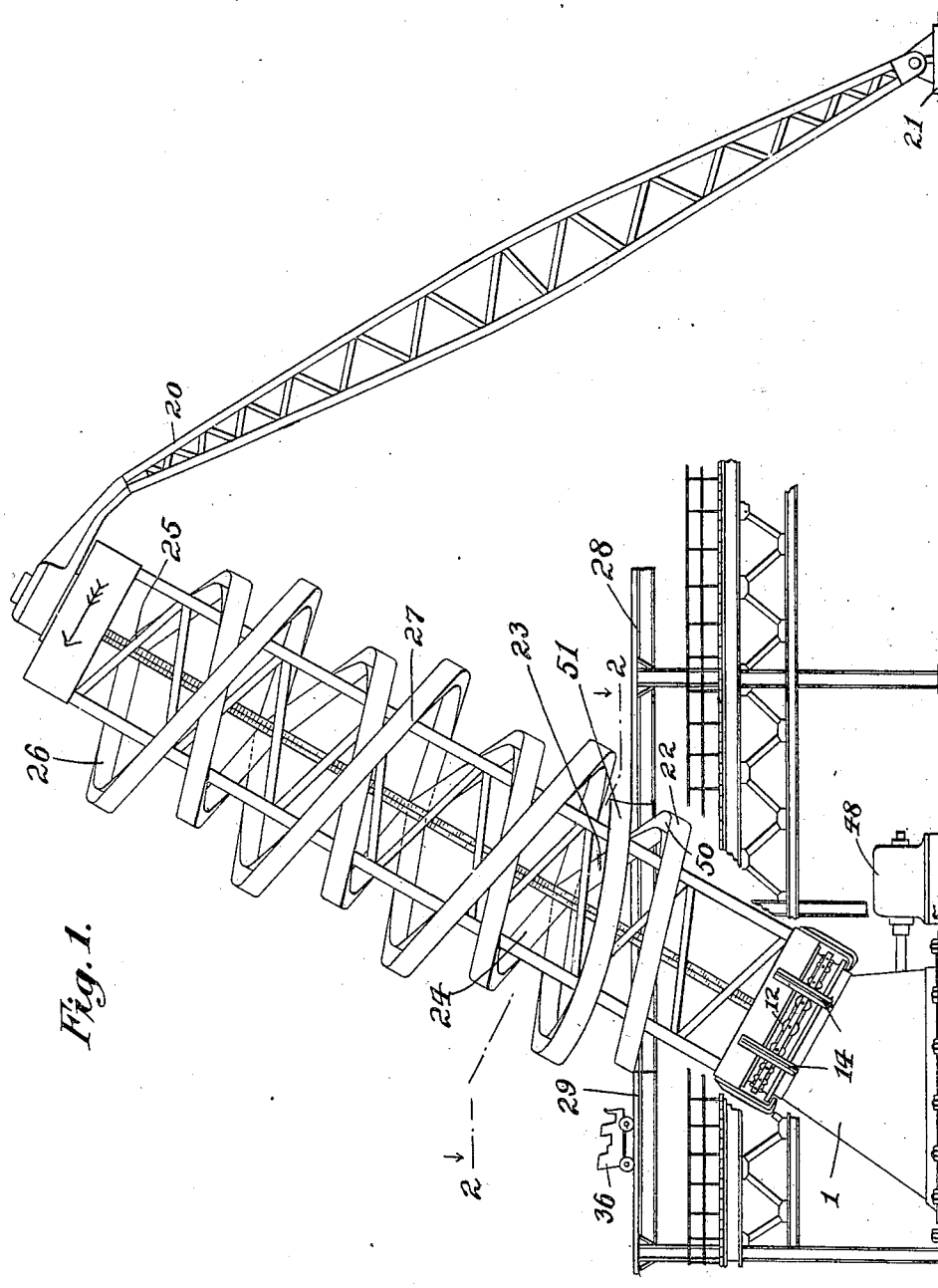


Fig. 1.

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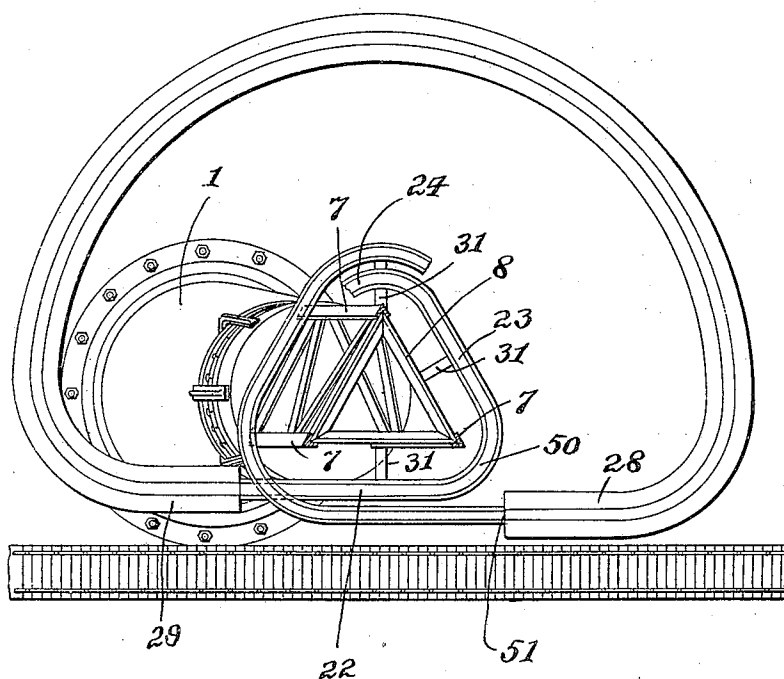
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4 SHEETS—SHEET 2.

Fig. 2.

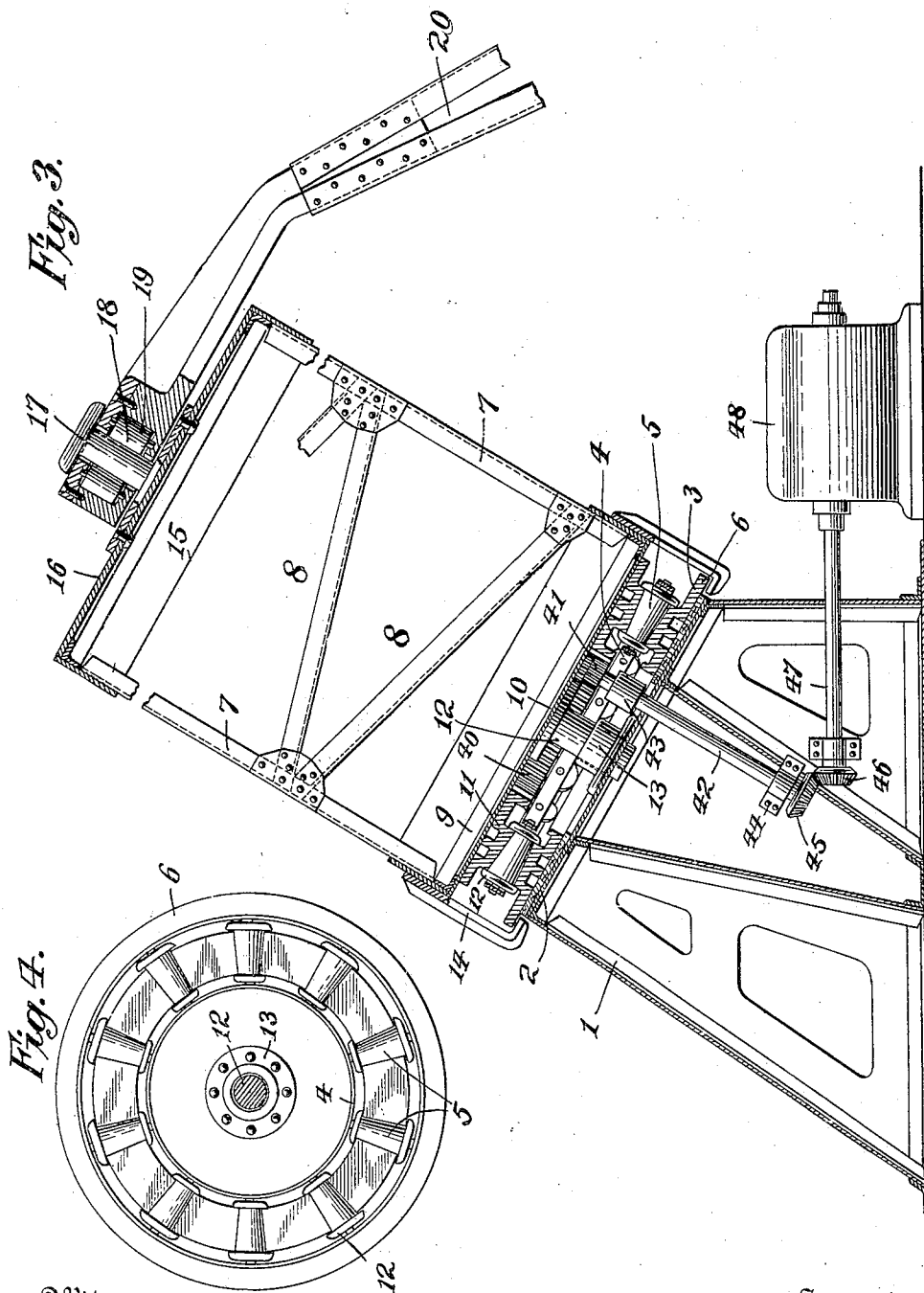


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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 5.

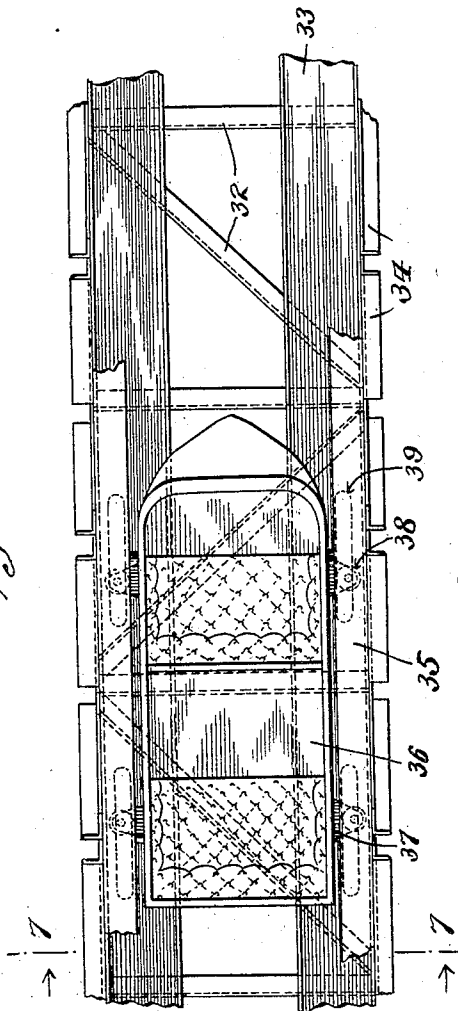


Fig. 7.

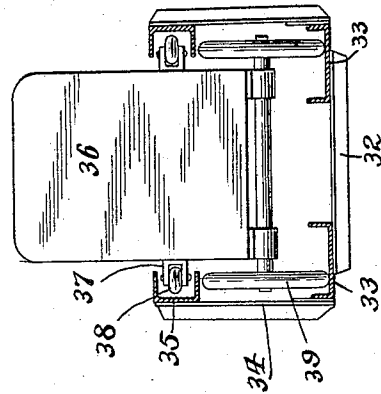
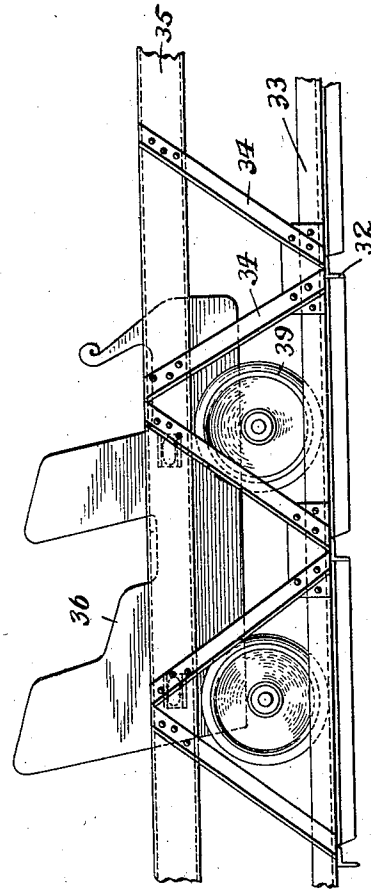


Fig. 6.



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UNITED STATES PATENT OFFICE.

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MEANS FOR ELEVATING CARS, &c.

No. 838,594.

Specification of Letters Patent.

Patented Dec. 18, 1906.

Application filed March 29, 1906. Serial No. 308,765.

To all whom it may concern:

Be it known that I, ALEXANDER V. TRUST, a citizen of the United States, residing at New York city, county and State of New York, have invented certain new and useful Improvements in Means for Elevating Cars or Similar Moving Bodies, of which the following is a clear, full, and exact description.

The object of this invention is to provide a novel means of elevating cars or similar moving bodies—such, for instance, as are used in amusement devices.

It consists, essentially, of providing an inclined tower or other revolving structure carrying certain trackways to accommodate a car or cars and to hold it or them from accidental dislodgment in the trackway. These trackways are secured to the inclined tower and encircle the same, preferably passing around it a number of times and extending from the bottom to the top of the tower, or vice versa, at such a pitch that an Archimedean-screw effect will be produced upon any movable body in the trackway. I provide a means for rotating the tower, upon the rotation of which the Archimedean effect before described will act to raise a car from the bottom of the tower to the top thereof by a succession of falls produced by gravity. I prefer to form the tower of a polygonal cross-section, preferably that of a triangle, the tracks which encircle it being of approximately the same configuration, so that there will be produced some straight sections for a continuous and rapid run of the cars and other retarding curved sections where they pass a corner of a polygonal tower. I also prefer when a car has reached the top of the tower to cause it to descend a second trackway of reverse pitch to the first; but this is not necessary, as passengers and cars may be taken off at the upper end of the tower, as practiced in all inclined elevators well known to-day.

My invention will be set forth in the claims.

In the accompanying drawings, Figure 1 illustrates my improved tower, which is shown in side elevation with the car delivering and receiving platforms in section. Fig. 2 is a plan of Fig. 1 on line 2 2. Fig. 3 is a sectional vertical view of my improved tower, showing in detail the turn-table-rotating mechanism and the pivoted central upper bearing, a portion only of the tower being shown. Fig. 4 is a plan of the turn-table base and rollers. Fig. 5 is a plan view of a

section of the straight portion of the trackway. Fig. 6 is a side elevation; and Fig. 7 is a sectional view taken on line 7 7, Fig. 5.

As shown in the drawings, I provide a pedestal 1, having an oblique face 2, upon which is firmly secured the circular stationary ring 3, which forms the base of a turn-table. Above the base 3 a connecting-ring 4 carries a number of roller-bearings 5 of conical shape, with their larger diameter outermost. The base 3 of the turn-table overlaps the main pedestal or base 1, forming a protruding ring or flange 6, for a purpose to be hereinafter described. The tower proper is formed in this instance of three oblique members 7, arranged as the apices of an equilateral triangle and connected by suitable strengthening truss members 8.

The lower ends of the member 7 are secured to a circular ring 9, having a closed bottom plate 10, which rests against a circular ring 11, similar to the base of the turn-table before described. This circular ring 11 rests upon the roller-bearings 5, before described.

The bearings may be formed with enlarged end portions 12 to act as retaining means to hold the two circular rings 11 and 3 in concentric position. I prefer, however, to provide additional means to aid in this purpose. I have shown in Fig. 3 a central stud 12, secured to the plate 10, turning in a bearing 13, secured to the top of the pedestal 1. I have also shown safety grab-hooks secured to the outer periphery of the ring 9 and extending below, almost engaging the projection 6 of the base-plate 3. The upper ends of the member 7 are secured to a ring 15, carrying a cover-plate 16, to which there is centrally secured a stud 17, passing through a bearing 18, provided with roller-bearings 19. The bearing 18 is supported upon the end of a supporting-girder 20, which is secured at its lower end to a foundation-plate 21 upon the ground.

The trackways, which are the essential features of this invention, are best shown in Figs. 1, 2 and in detail in Figs. 5 to 7. The track-section 22 is shown in Fig. 1 as being the lowermost section of the ascending trackway. In the position shown in Figs. 1 and 2 the open end of this section 22 is adjacent to a stationary platform 29. A car entering track 22 will descend to the right-hand end of the section 22, as shown in this figure, and be carried by its impetus slightly around the corner 50. Upon the rotation of the tower

in the direction of the arrow this corner 50 will become raised until the section 23 occupies a position at the same pitch and angle as that before occupied by the section 22. With
 5 the corner 50 the car has also been raised so that it will now slide down section 23 and slightly around the corner between sections 23 and 24, to be in this manner successively advanced until the car reaches the top of the
 10 tower, where the trackway merges at 25 with the descending loop 26 of the reverse spiral 27. The lowermost section of this reverse spiral is shown as having its open end 51 adjacent to a platform 28 when the first section
 15 22 of the ascending spiral is adjacent to its platform 29. Thus a car may be shot out of the last loop or section of the descending spiral onto the stationary platform 28 at the same time that a car is being admitted to the
 20 section 22. I prefer that the ascending and descending spiral trackways be secured to the framework by suitable brackets 31; but I prefer to have the inner spiral the ascending one, while the outer spiral is of greater diameter though parallel with the first.

The track of each spiral is preferably formed as a trough having cross-braces 32 to form a supporting-floor for channel-iron tracks 33 for the main wheels 39 of the car.
 30 The upright sides of the trough are formed of cross-beams 34, having at their upper ends longitudinal channel-irons 35, serving as guides for auxiliary safety-rollers 38, idly mounted in bearings 37, carried by the sides
 35 of the car-body 36. In order to rotate the tower, I secure or form upon the circular ring 11, carried on its base, an internally-toothed gear-wheel 40, with which a pinion 41 meshes, carried upon a shaft 42, mounted in bearings
 40 43 44. One end of the shaft 42 is provided with a bevel-wheel 45, with which gears a second bevel-wheel 46, upon a shaft 47, driven by a motor 48.

From the foregoing description it would be
 45 obvious that a car once entering section 22 will be carried to the top in true Archimedean fashion upon the rotation of the tower to a sufficient extent and that a car will have a free motion of considerable speed when traveling parallel to any one of the sides of the
 50 tower and checking slightly at the corners. The same two speeds will be produced upon the descent which is secured by reversely arranging the sections or pitch of the descending
 55 trackway.

What I claim as my invention is—

1. A revoluble inclined tower, a continuous trackway having an open end carried thereby, and passing a number of times
 60 around the tower and extending from below to above the same, means for rotating the tower and trackway, a pair of parallel supporting-rails for the trackway and a car adapted to traverse the trackway and adapted
 65 ed to traverse a plane surface as well, and a

platform above the lowest position reached by the open end of the trackway in its revolution.

2. A revoluble inclined tower, a continuous trackway carried thereby and passing a
 70 number of times around the tower and extending from below to above the same, means for rotating the tower and trackway and a car adapted to traverse the trackway, and a platform for the car adjacent to the
 75 end of the spiral, said platform being so located that the open end of the spiral will be level with the platform when the lower member of the spiral is inclined downwardly from
 80 said platform.

3. A revoluble inclined tower, a continuous trackway carried thereby and passing a number of times around the tower and extending from below to above the same, means for
 85 rotating the tower and trackway and a car adapted to traverse the trackway, said tower being of a polygonal cross-section and the trackways in their location approximately corresponding thereto.

4. A revoluble inclined tower, a continuous trackway carried thereby and passing a number of times around the tower and extending from below to above the same, means for rotating the tower and trackway
 95 and a car adapted to traverse the trackway, in combination with a second similar trackway of reverse pitch.

5. A revoluble inclined tower, a continuous trackway carried thereby and passing a number of times around the tower and extending from below to above the same,
 100 means for rotating the tower and trackway and a car adapted to traverse the trackway, in combination with a second similar trackway of reverse pitch, said two trackways being
 105 joined at their upper ends.

6. A revoluble inclined tower, a continuous trackway carried thereby and passing a number of times around the tower and extending from below to above the same,
 110 means for rotating the tower and trackway and a car adapted to traverse the trackway, and a platform for the car adjacent to the end of the spiral, in combination with a second similar trackway of reverse pitch and a
 115 second platform adjacent to the end of said second trackway.

7. A revoluble inclined tower, a continuous trackway carried thereby and passing a number of times around the tower and extending from below to above the same,
 120 means for rotating the tower and trackway and a car adapted to traverse the trackway, and a platform for the car adjacent to the end of the spiral, in combination with a second similar trackway of reverse pitch and a second platform adjacent to the end of said
 125 second trackway, said two trackways being joined at their upper ends.

8. An inclined tower, a base therefor, a 130

turn-table between the base and lower end
of the tower, a central bearing at the top
thereof, a bearing therefor, a support for the
bearing, a driving-shaft and mechanism be-
5 tween the same and the tower to permit its
rotation thereby, a trackway encircling the
tower and carried thereby, a car for the track-
way said trackway extending in a general
spiral direction from the base to the top of
10 the tower and of such pitch that a car lo-
cated therein will be projected along the
spiral by gravity and thereby raised to the
top of the tower.

9. An inclined tower, a base therefor, a
15 turn-table between the base and lower end
of the tower, a central bearing at the top
thereof, a bearing therefor, a support for the
bearing, a driving-shaft and mechanism be-

tween the same and the tower to permit its
rotation thereby, a trackway encircling the 20
tower and carried thereby, a car for the track-
way said trackway extending in a general
spiral direction from the base to the top of
the tower and of such pitch that a car lo-
cated therein will be projected along the spi- 25
ral by gravity and thereby raised to the top
of the tower, and a second trackway of re-
verse pitch its upper end connected with the
upper end of said first trackway.

Signed at New York city this 27th day of 30
March, 1906.

ALEXANDER V. TRUST.

Witnesses:

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EMERSON R. NEWELL.