

March 18, 1930.

I. D. PATTERSON

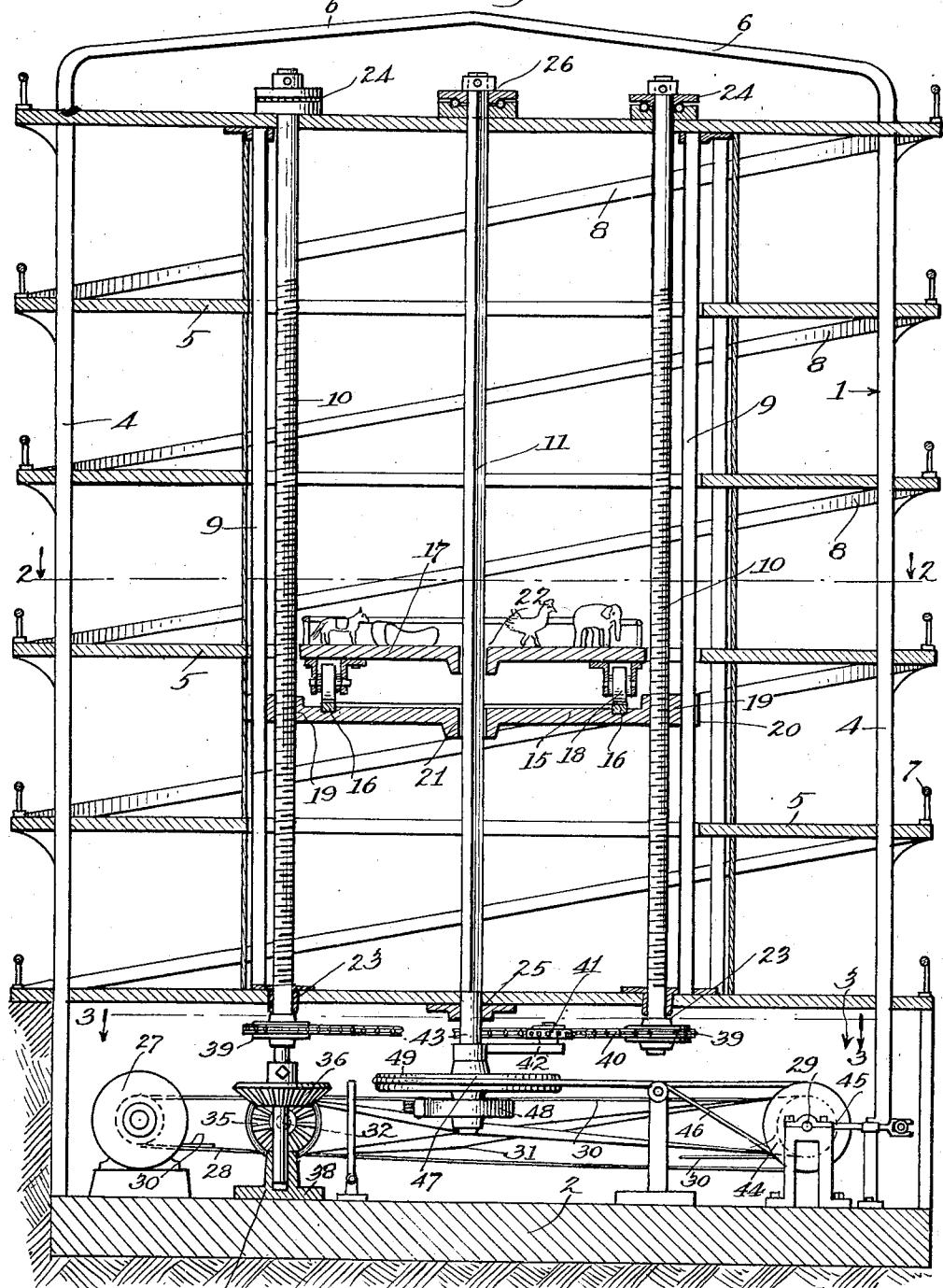
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AMUSEMENT TOWER

Filed April 28, 1926

4 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

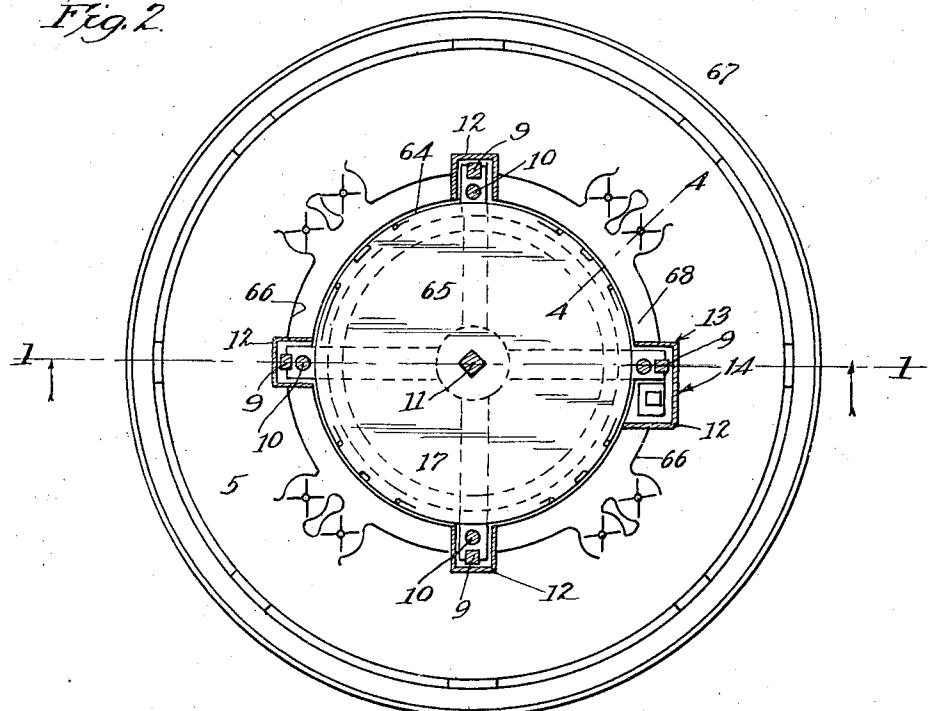
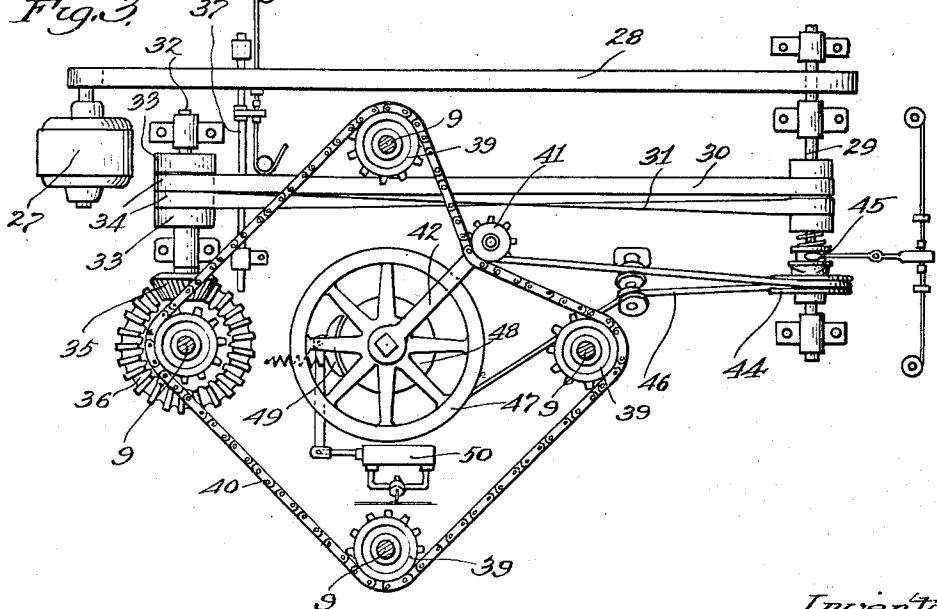


Fig. 3.



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Fig. 4.

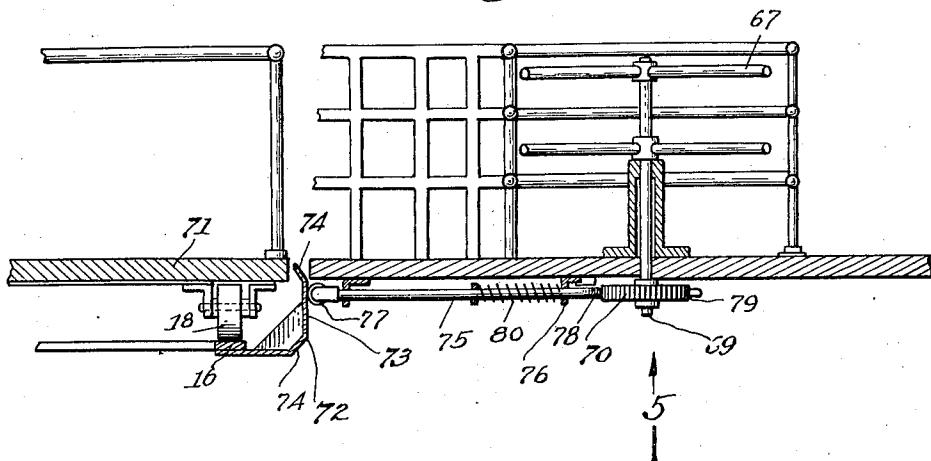
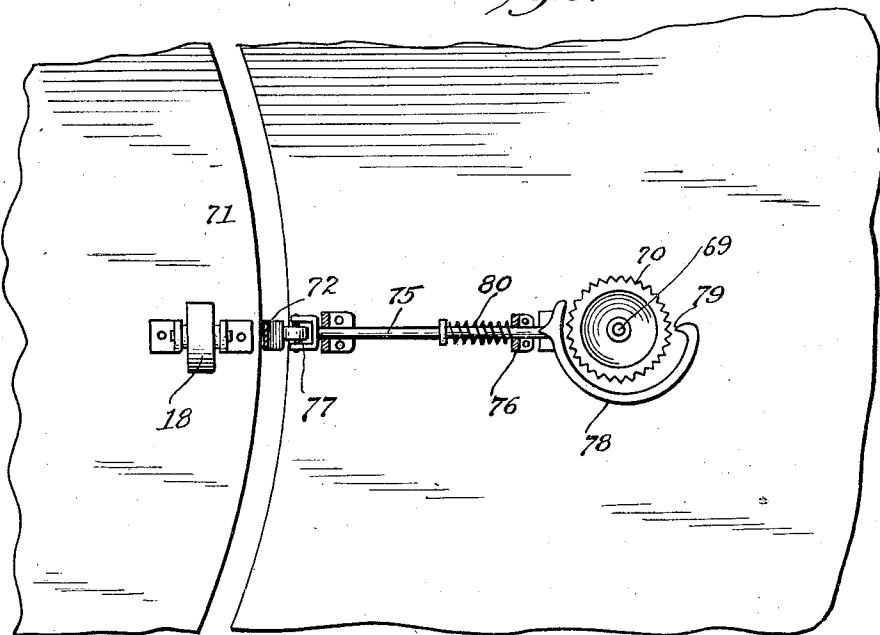


Fig. 5.



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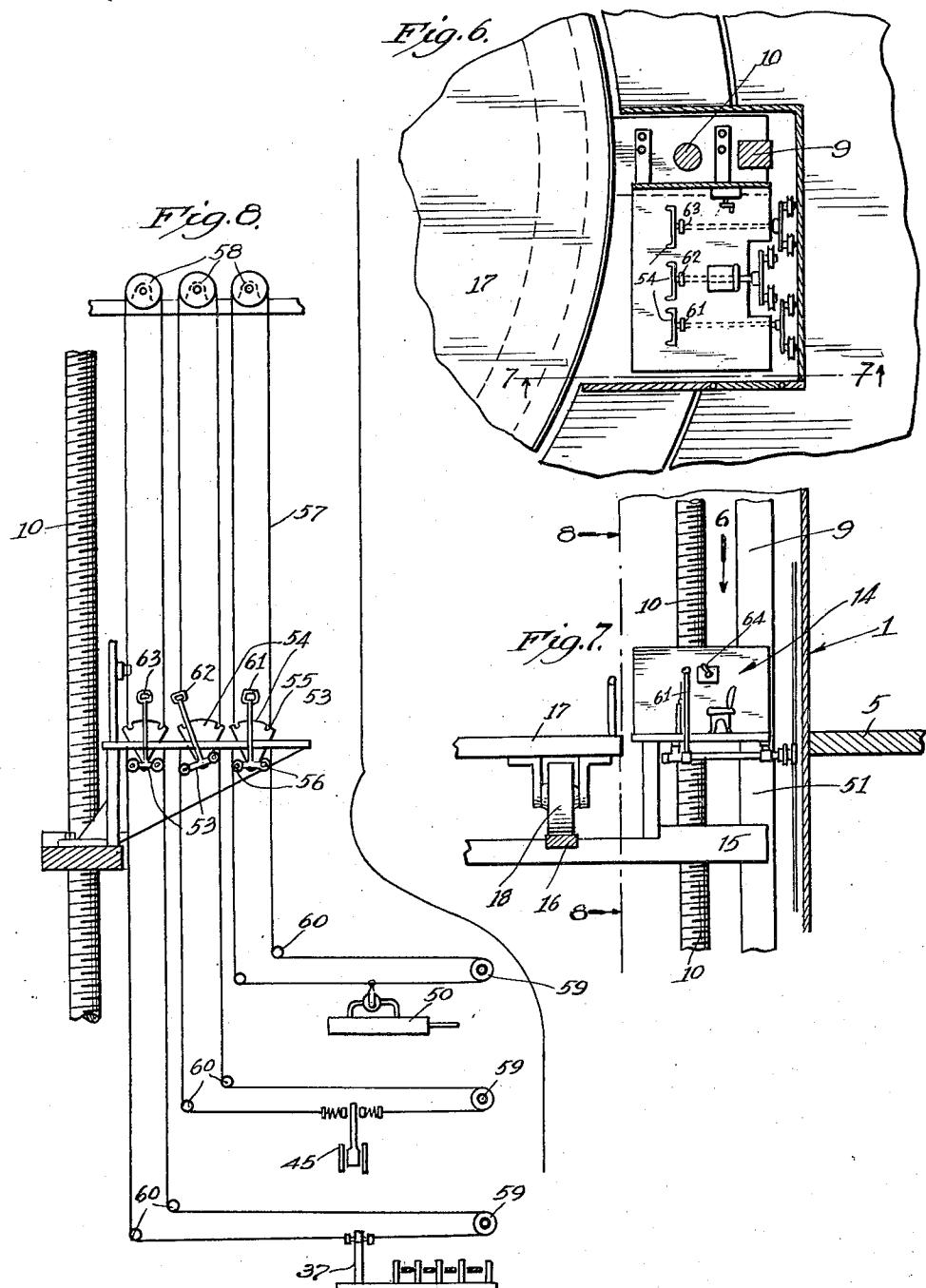
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4 Sheets-Sheet 1



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UNITED STATES PATENT OFFICE

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AMUSEMENT TOWER

Application filed April 28, 1926. Serial No. 105,123.

My invention is an amusement tower having a series of different floors at different elevations intended to house different amusement devices and the like, and having a central rotating elevator structure by which patrons may be elevated to different floors.

An object of my invention is an improved rotatable elevator, such being arranged as a carousel or merry-go-round in the center of the tower and being arranged to move up and down through such tower and operable to stop at different floor levels.

A feature of my invention is the arrangement for reciprocating a central platform up and down in a building and rotating the carousel thereon.

A more specific object of my invention is a drive mechanism for operating a plurality of vertical screws simultaneously, these screws elevating the platform on which the carousel rotates.

A further object of my invention is in the drive mechanism for operating the vertical elevating screws in combination with the drive mechanism for rotating the carousel.

A still further object of my invention is the provision of a safety device including turnstiles whereby such may be locked at all times except when the carousel is on a certain floor level, when the turnstiles on such level will be unlocked.

My invention comprises a suitable building structure having floors at different elevations, the building being preferably circular. A series of vertical screws, preferably four in number, support a vertical moving platform and elevate or lower same in accordance with the direction of rotation of the screws. A central drive shaft slidably engages the carousel or merry-go-round mounted on the moving platform and rotates same either while the platform is stationary or while it is in movement up or down.

I prefer to drive the entire mechanism by belt drives having a continuously rotating drive shaft with a pair of reversible belts, one of which could be utilized for elevating the platform and the other for lowering and to have a belt drive for the center shaft operating the carousel.

I provide suitable control mechanism mounted on the platform and moving therewith to control the main belt shift, a brake mechanism for stopping the rotation of the carousel and a main clutch for shifting the carousel in and out of operation. I also provide a lock mechanism comprising a rotatable ratchet connected with turnstiles and a pawl operated by the carousel to lock and unlock the turnstiles.

My invention will be more readily understood from the following description and drawings, in which:

Figure 1 is a vertical section through the amusement tower, being taken substantially on the line 1—1 of Fig. 2, in the direction of the arrows;

Fig. 2 is a horizontal cross-section on the line 2—2 of Fig. 1, in the direction of the arrows, showing one of the floors, the turnstile arrangement, the elevating screws, vertical guides and the carousel in plan;

Fig. 3 is a horizontal section on the line 3—3 of Fig. 1, illustrating the drive mechanism;

Fig. 4 is a vertical section on the line 4—4 of Fig. 2, through the turnstile locking mechanism;

Fig. 5 is an underneath view of Fig. 4, taken in the direction of the arrow 5;

Fig. 6 is a detail plan of the control station on the moving platform taken in the direction of the arrow 6 of Fig. 7;

Fig. 7 is a vertical section taken substantially on the line 7—7 of Fig. 6, in the direction of the arrows;

Fig. 8 is an enlarged diagrammatic elevation on the line 8—8 of Fig. 7, showing the control mechanism;

Reference is first directed to the tower structure as illustrated particularly in Figs. 1, 2, 4, 6, 7 and 8:

The building structure is designated generally by the numeral 1, having a foundation 2 with a basement 3 therein. Outside walls 4 extend upwardly to a suitable elevation, there being a series of floors 5 at different heights and a roof structure 6. The outside of the tower preferably has guard rails 7

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and some kind of a tobogganing incline indicated by the numeral 8.

A series of guide columns 9 are positioned in the building, these being shown as four in number and radially inwardly of the guide columns are elevating screws 10, these being also four in number and centrally positioned is a vertical drive shaft 11 for operating the carousel as hereunder set forth. Each of the vertical columns and elevating screws are boxed in by a housing 12 and a housing 13 extends vertically through the tower and through the different floors enclosing a controller's station 14 on the vertically moving platform 15. This platform has tracks 16 on which the carousel 17 rotates, there being supporting wheels 18 for the carousel.

The operating mechanism for the carousel is substantially as follows, having reference particularly to Figs. 1, 2, and 3;

The platform 15 is provided with screw threaded extensions 19 for engaging the elevating screws 10 and the sockets 20 fitting around the guide columns 9. A central opening 21 is sufficiently large for the drive shaft 11 to extend therethrough, such shaft being preferably formed square or of other suitable shape and slidably connected to the carousel table by a sleeve or the like indicated by the numeral 22. It will be noted that the vertical screws are journaled at the base 23 and at the top 24 and that the drive shaft is also journaled at the base 25 and at the top 26.

The drive mechanism is substantially as follows, having reference particularly to Figs. 1 and 2:

A source of power preferably an electric motor 27 operates a primary drive belt 28, this operating a primary drive shaft 29 which is designed to be always in rotation while the motor is being operated. A single and a reversed belt 30 and 31 transmit power from the primary shaft to the counter-shaft 32 which has fixed drive pulleys 33 on the ends with loose pulleys 34 in the center. A bevel pinion 35 transmits motion to a main bevel gear 36 and the belts are shifted by a belt shifter 37 of the usual construction.

The main bevel gear 36 is mounted on the lower end of one of the screws 10, such screw having a thrust bearing 38. Sprocket gears 39 are mounted on each of the vertical screws and a sprocket chain 40 takes over said sprocket gears and is maintained at proper tension by a tightener pinion 41 mounted on an arm 42 pivotally connected to the lower rounded end 43 of the central drive shaft 11.

From the mechanism above described it will be seen that by operation of the belt shifter 37, by means of the reverse belts, the vertical screws 10 may be operated in either direction and therefore may be utilized to raise and lower the platform 15 relatively slowly and on account of the inter-gearing of

the vertical screws they will all operate at the same speed.

The drive mechanism for the central drive shaft 11 comprises a drive pulley 44 loosely mounted on the drive shaft 29 and connectible therewith by a clutch 45 which is preferably of a slip clutch type. A belt or rope drive 46 conveys motion from the pulley 44 to a large drum wheel 47 rigidly secured to the lower end of the drive shaft 11. A brake drum 48 is mounted on the lower end of this drive shaft 11 and a brake 49 operated by a compressed air brake cylinder 50 is utilized to apply the brakes when desired and thus control the rotation of the carousel.

The control mechanism for the belt shifter 37, the clutch 45 and the brake is substantially as follows, having reference particularly to Figs. 6, 7, and 8:

As will be noted in Fig. 7, the control station 14 is mounted on a staging 51 which is built up from one side 52 of the platform 15 so that the control station is substantially on a level with the carousel table. Three rock levers 53 are mounted in the control station and have a segment 54 with stop notches 55 to hold said levers in adjusted position. Idler pulleys 56 are secured to the levers and ropes 57 are wound thereon extending over upper pulleys 58 and lower pulleys 59 around guides 60 or the like if desired, this being a common feature in elevator construction.

In Fig. 7, the brake cylinder 50 is indicated as being operatively connected to the brake lever 61, the clutch 45 to the clutch lever 62, and the belt shifter 37 to the belt shifter lever 63. It will be noted that the clutch lever is provided with only two notches in the segment as the clutch will either be thrown in or out, whereas with the brake and the belt fasteners, these may be required to be neutral. An electric switch 64 is mounted in the control station and electrically connected with the electric motor so that the operator may control the operation of the motor as well as the other parts of the mechanism.

The actuation of the platform and carousel is believed obvious, the operator by means of the levers 61, 62 and 63 being able to control the movement of the platform either up or down, the rotation of the carousel and the braking thereof brings same to a stop. It will be apparent that the carousel is intended to rotate at a comparatively high velocity.

The turnstile mechanism and the safety appliance therefor is substantially as follows, having reference particularly to Figs. 2, 4 and 5:

It will be noted that each of the floors has a central opening 64 and the outer periphery of the carousel 65 will form a relatively close fit therewith. A railing 66 extends around the opening, being spaced therefrom sufficiently to accommodate people getting on and off the carousel. Turnstiles 67 allow

admission and exit of passengers to and from the space 68 between the rail and the opening 64.

Each of the turnstiles is provided with a turnstile post 69 having a ratchet gear 70 on the lower end. The platform 15 is provided with a cam 72 having an outwardly extending part 73 and inclines 74. An operating rod 75 is slidably mounted in brackets 76, having a roller 77 at one end to engage the cam and having a pawl 78 connected to the other end. This pawl has a tooth 79 adapted to engage the teeth of the ratchet gear 70. A spring 80 normally presses the rod 75 towards the carousel and the dog into engagement with the ratchet gear, hence normally locking the turnstiles. On the upward or downward movement of the carousel the cam 72 operates the above described devices to unlock the turnstiles, these becoming unlocked when the table is on a level with the various floors. It will thus be seen that people cannot enter or exit through the turnstiles until the carousel table is on the level of such floors and at such level the operator will be required to bring the carousel to a stop.

Many changes in general construction and in specific details may be made in my amusement tower and in the construction of the elevating platform and carousel and in the driving mechanism therefor. Such changes however, will be within the spirit of my invention as set forth in the description, drawings and claims.

Having described my invention, what I claim is:

1. In an amusement tower, a plurality of rotatable vertical screws, a platform operatively connected thereto to be raised and lowered, a driving mechanism at the base of the screws for operating same, a carousel mounted on the platform, a control station movable with the platform, and a remote control device in the control station to control the driving mechanism for the screws.

2. In an amusement tower as claimed in claim 1, having in addition means operative through the platform for rotating the carousel, and a remote control device in the control station to govern the rotation of the carousel.

3. In an amusement tower, a plurality of vertical screws, a platform mounted thereon for vertical movement, a central drive shaft extending upwardly through the platform, a carousel rotatable on the platform and operatively connected to the drive shaft, a system of gearing connected to the screws at the base thereof, a drive mechanism connected to the drive shaft at the base thereof, and means to control the drive mechanism for the screws and for the drive shaft independently one of the other.

4. In an amusement tower as claimed in claim 3, in which the means to control the

drive mechanism comprises a control station movable with the platform, having remote control devices in said station, and an operative connection from the remote control device to the said driving mechanism.

5. In an amusement tower having a plurality of floors with openings therethrough, a rotatable carousel having a vertical movement through said openings, turnstiles forming entrances and exits from the floors to the said carousel when at said floor levels, a rotatable turnstile post connected to each turnstile having a ratchet gear wheel, means to lock said gear when the carousel is positioned between floors to prevent movement of the turnstile, and means to unlock said gear when the carousel is positioned at floors.

6. In an amusement tower having a vertically movable and rotatable carousel, power mechanism to raise and lower the carousel, separate power mechanism to rotate said carousel, a clutch to control the rotation of the carousel, a brake to stop said rotation, and a remote control device moving vertically with the carousel to operate the clutch and the brake.

7. In an amusement tower as claimed in claim 6, having in addition a belt drive having a drive shifter for the elevating mechanism for the carousel, and a remote control movable vertically with the carousel to operate the belt shifter.

8. In an amusement tower having a plurality of vertical screws and a central drive shaft, a platform operatively connected to said screws for vertical motion, a carousel mounted on the platform having an operative driving connection with the central drive shaft, a series of sprockets on the lower ends of the screws, a sprocket chain taking over said sprockets, a belt drive for the central drive shaft, a reversing belt drive having gearing for the screws, a clutch to control the belt drive to the central shaft, and remote control means to shift the belts for driving the screws and to operate the clutch for the central shaft.

9. In an amusement tower as claimed in claim 8, having in addition a brake mechanism for the central shaft and a remote control means for operating the said brake.

10. An amusement tower having in combination a carousel, means to raise and lower same in a vertical direction, means to rotate the carousel, a control station interconnected with the carousel to move in a vertical direction, said station being connected to a structure preventing rotation of the station with the carousel, and control means in a control station to control the vertical movement and the rotational movement of the carousel.

11. An amusement tower comprising in combination a vertically movable platform having a control station thereon, a carousel mounted on said platform, means to elevate

the platform, means operating centrally of
the platform to rotate the carousel and means
in said station to control the vertical move-
ment of the platform and the rotational
movement of the carousel.

5 In testimony whereof I have signed my
name to this specification.

ISAIAH D. PATTERSON.

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