Nov. 18, 1941. I. S. HEINMILLER 2,262,933

TOY ELEVATOR

Filed Nov. 28, 1939 2 Sheets-Sheet 1

Fig. 1.

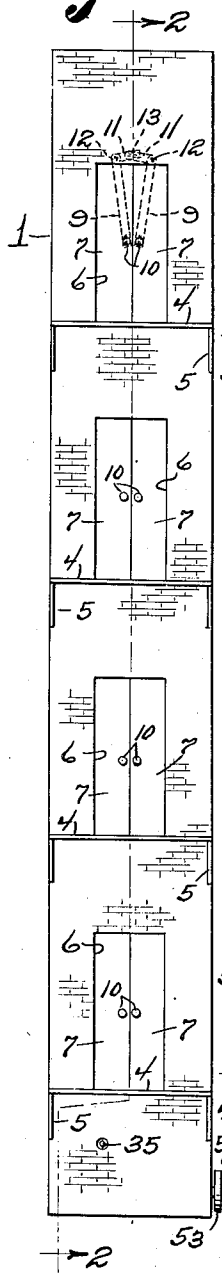


Fig. 2.

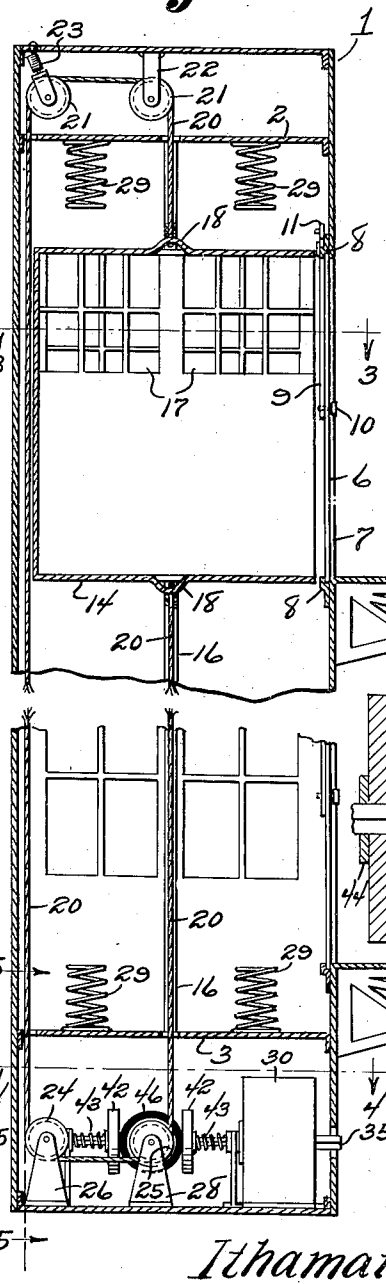


Fig. 3.

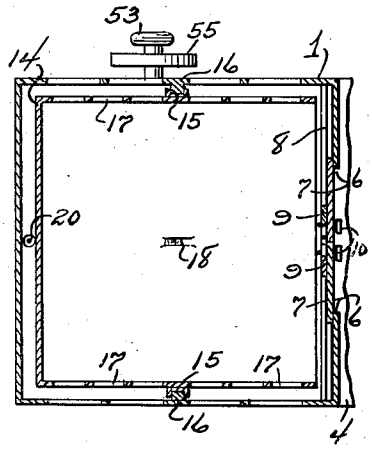


Fig. 7.

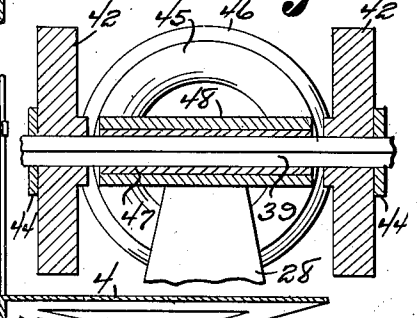
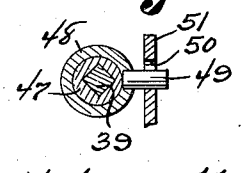


Fig. 8.



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Filed Nov. 28, 1939 2 Sheets-Sheet 2

Fig. 4.

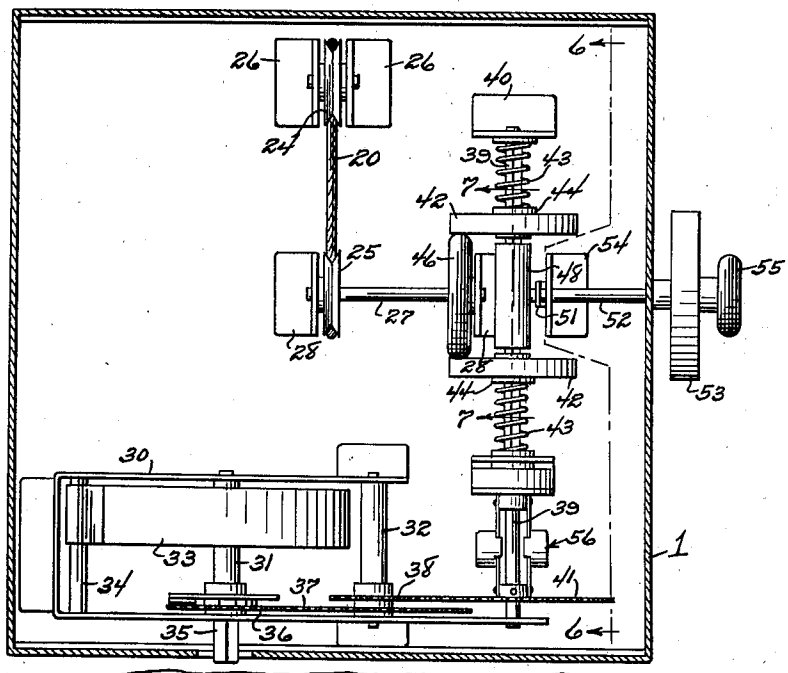


Fig. 5.

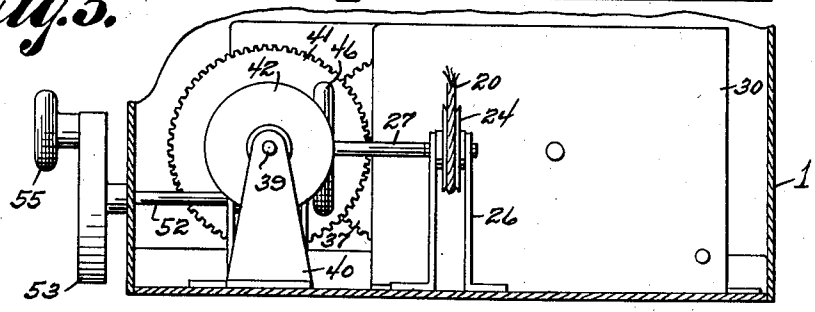
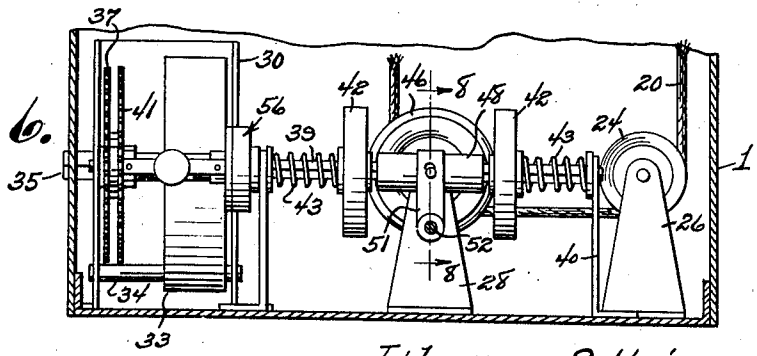


Fig. 6.



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2,262,933

TOY ELEVATOR

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Application November 28, 1939, Serial No. 306,579

2 Claims. (Cl. 74—202)

This invention relates to toy elevators, and its general object is to provide a motor operated elevator controlled by manually actuated means which when moved in one direction will cause the car to ascend and in an opposite direction, to descend, while in neutral position the control means acts as a brake for the motor, and renders the same inactive, thus power is not being consumed when the car is not running.

A further object is to provide a toy elevator including a housing for the car to travel in, and the housing has landings or platforms simulating floor levels, with doors at each landing, whereby access can be had to the car.

Another object is to provide a toy elevator with springs at the top and bottom of the housing to retard and cushion the car as it approaches the same.

A still further object is to provide a toy elevator, that is simple in construction, inexpensive to manufacture, and extremely efficient in operation, use and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a front view of the elevator which forms the subject matter of the present invention.

Figure 2 is a sectional view taken approximately on line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a sectional view taken approximately on line 4—4 of Figure 2, looking in the direction of the arrows.

Figure 5 is a sectional view taken approximately on line 5—5 of Figure 2, looking in the direction of the arrows.

Figure 6 is a sectional view taken approximately on line 6—6 of Figure 4, looking in the direction of the arrows.

Figure 7 is a sectional view taken approximately on line 7—7 of Figure 4, looking in the direction of the arrows.

Figure 8 is a sectional view taken approximately on line 8—8 of Figure 6, looking in the direction of the arrows.

Referring to the drawings in detail, the reference numeral 1 indicates an elongated vertical housing which is preferably square in cross section in the form as shown, and may be of any appropriate height. The housing provides a shaft for the car to travel in and includes front, rear and side walls, and top and bottom walls, with partitions 2 and 3 within the housing adjacent to the top and bottom walls, as clearly shown in Figure 2 which likewise illustrates that the side walls have window openings therein.

The outer face of the front, rear and side walls are preferably painted to simulate bricks, as indicated in Figure 1, and the front wall has platforms 4 secured thereto and extending horizontally therefrom, at equi-distantly spaced relation with respect to each other along the height of the housing, the platforms being supported by triangular bracing members 5, and extend from the front wall at the lower end of openings 6, each of which are closed by a pair of sliding doors 7 mounted in guide strips 8 secured along the upper and lower ends of the door openings, as clearly shown in Figure 2.

The doors of each pair are movable in unison with each other, and for that purpose I provide bell crank levers that include long arms 9 extending longitudinally of the doors and having their lower ends slotted, with the shanks of knobs 10 mounted in the slots, for the arms to slide on the shanks, and at the juncture of the long arms with the short arms 11, the bell crank levers are pivoted as at 12 to the inner face of the front wall, while the short arms extend in converging relation from the long arms and have their inner portions disposed in overlapped relation and connected together by a pin and slot connection 13. By that construction, it will be obvious that when either one of the doors of a pair is opened or closed, the companion door will be moved accordingly.

Mounted for travel in the housing is a car 14 that is guided in its movement by channel members 15 fixed vertically to the side walls of the car and slidably mounted on strips 16 secured to the side walls of the housing, as best shown in Figure 3. The front of the car is open, and the side walls thereof are provided with window openings 17, while the top and bottom walls have lugs 18 struck and extending outwardly therefrom as shown in Figure 2. The rear wall of the car is preferably closed and it will be obvious that the car is arranged within the hous-

ing so that the open front will face the front wall of the housing, to allow access to the car when the doors 7 are open.

Connected to the lug of the top wall of the car is one end of a cable 20 that is trained about pulleys 21 mounted in brackets 22 and 23 secured to and depending from the top wall of the housing, the bracket 23 including a coil spring so as to hold the cable taut at all times, as will be apparent. From the resiliently mounted pulley 21, the cable extends along the rear wall of the housing and has its lower run trained about pulleys 24 and 25, and thence it is connected to the lug 18 of the bottom wall of the car, as clearly shown in Figure 2. The pulley 24 is journaled between a pair of upright bearing brackets 26 secured to and rising from the bottom wall of the housing, and the pulley 25 is fixed to one end of a shaft 27 that has its ends journaled in upright bearing brackets 28 secured to and rising from the bottom wall of the housing, as best shown in Figure 4.

The cable extends through openings in the partitions 2 and 3 and each of the partitions have coil springs 29 secured thereto in the path of the car to provide bumpers therefor, as will be apparent upon inspection of Figure 2.

The power means for the elevator in the form as shown, is a spring motor which includes an open frame casing 30 provided with parallel portions having journaled therein and bridging the same a pair of shafts 31 and 32, the shaft 31 having fixed thereto one end of a coil spring 33, while its opposite end is fixed to a cross member 34 secured to the parallel portions, as shown in Figure 4. The shaft 31 is of a length to extend through the front wall of the housing and the extending portion 35 is square cornered for receiving a key, not shown, for winding the spring, as will be apparent. The shaft 31 has a gear 36 fixed thereto that meshes with a gear 37 fixed to the shaft 32 for driving the latter shaft which likewise has fixed thereto a gear 38.

The means for transmitting the power from the spring motor to the shaft 27 for raising and lowering the car, as well as for controlling the latter includes a shaft 39 having one end journaled in a portion of the casing 30 and its opposite end in an upright bearing bracket 40 secured to the bottom wall of the housing. A gear 41 is secured to the shaft 39 and meshes with the gear 38 so that the shaft 39 is rotated by the spring motor and the shaft 39 is square cornered for the major portion of its length, as clearly shown in Figures 4 and 7.

Mounted on the square cornered portion of the shaft 39 to be carried thereby, but for slidable movement thereon is a pair of disk wheels 42 normally urged toward each other by coil springs 43 sleeved on the shaft 39 and having their inner end convolutions engaging washers 44 bearing against the wheels, as best shown in Figure 7. Mounted on the shaft 27 for disposal between the wheels 42 is a wheel 45 having a rubber tire 46 secured thereon, and it will be obvious that the springs 43 tend to hold the wheels 42 in constant engagement with the tire 46 to set up a frictional contact therewith.

Fixed to the square cornered portion of the shaft 39 for rotation therewith, is an inner sleeve 47 that has slidably mounted thereon an outer sleeve 48 which has secured thereto and extending therefrom a pin 49 mounted within a slot 50 extending longitudinally in the upper end of the crank member 51, the latter having its lower end fixed to the shank 52 of a hand wheel 53, the shank being mounted for rotation in a bearing bracket 54 and in the side wall of the housing for disposal of the hand wheel exteriorly of the housing, as shown in Figure 4.

The hand wheel has rotatably mounted thereon adjacent to its periphery a gripping knob 55, and it will be obvious that upon rotation of the hand wheel in one direction, that is to the right in Figure 4, the sleeve 48 will engage the hub of the right hand disk wheel 42 and move the same out of contact with the tire 46 of the wheel 45, but as the left hand wheel 42 remains in contact with the tire 46, the wheel 45 will rotate in a direction to cause the car to ascend. When the hand wheel is moved in an opposite direction, the left hand wheel 42 will be disposed out of contact with the tire 46, but the right hand wheel 42 will remain in engagement therewith for rotating the wheel 45 in a direction to cause the car to descend. However, when both wheels 43 are engaged with the tire 46, the car remains stationary and the springs 43 apply sufficient pressure against the wheels 42, for the tire 46 to act as a brake, to render the motor inactive, thus power is not being consumed when the car is not running.

I preferably provide a governor 56 mounted on the shaft 39, so that the latter will be rotated at the same speed at all times.

From the foregoing and the disclosure in the drawings, it will be obvious that the car is under constant control of the operator at all times, to be stopped and started as desired, merely by movement of the hand wheel 53 through the medium of the knob 55, in either direction, it depending of course upon whether the operator desires the car to ascend or descend, with the result it will be seen that my toy elevator will provide much amusement and fun and is manually controlled substantially in the same manner as a real elevator.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:

1. Mechanism of the character described, comprising a driven shaft, a friction wheel having a rubber tire thereon and fixed to said shaft, a spring motor, a drive shaft geared to the motor, spring pressed wheels normally engaged with the periphery of the tire upon diametrically opposite sides thereof to hold the motor inactive, said spring pressed wheels mounted on the drive shaft to be rotated thereby and for slidable movement into and out of engagement with the tire, a sleeve mounted on the drive shaft to be rotated thereby, a sleeve mounted for slidable movement on the first sleeve, and manual means for moving the latter sleeve against either of the spring pressed wheels for disposing either of the latter wheels out of engagement with the tire for rotating said driven shaft in either direction.

2. Mechanism of the character described, comprising a driven shaft, a friction wheel fixed to said shaft, a drive shaft, spring pressed wheels normally engaged with the periphery of the friction wheel upon diametrically opposite sides thereof, said spring pressed wheels mounted on the drive shaft to be rotated thereby and for

slidable movement into and out of engagement with the friction wheel, a sleeve mounted on the drive shaft to be rotated thereby, a sleeve mounted for slidable movement on the first sleeve and engaged with the spring pressed wheels for moving either of the latter wheels out of engagement with the friction wheel for rotating said driven shaft in either direction, a pin secured to the slidably mounted sleeve, a hand wheel including a shank mounted for rotation, a gripping knob secured to the hand wheel, and a crank member secured to the shank and having a slot with the pin extending therein for moving the slidably mounted sleeve upon rotation of the shank.

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