(No Model.) 2 Sheets—Sheet 1.

J. W. BROOK.

ELEVATOR.

No. 483,894. Patented Oct. 4, 1892.

Fig. 1.

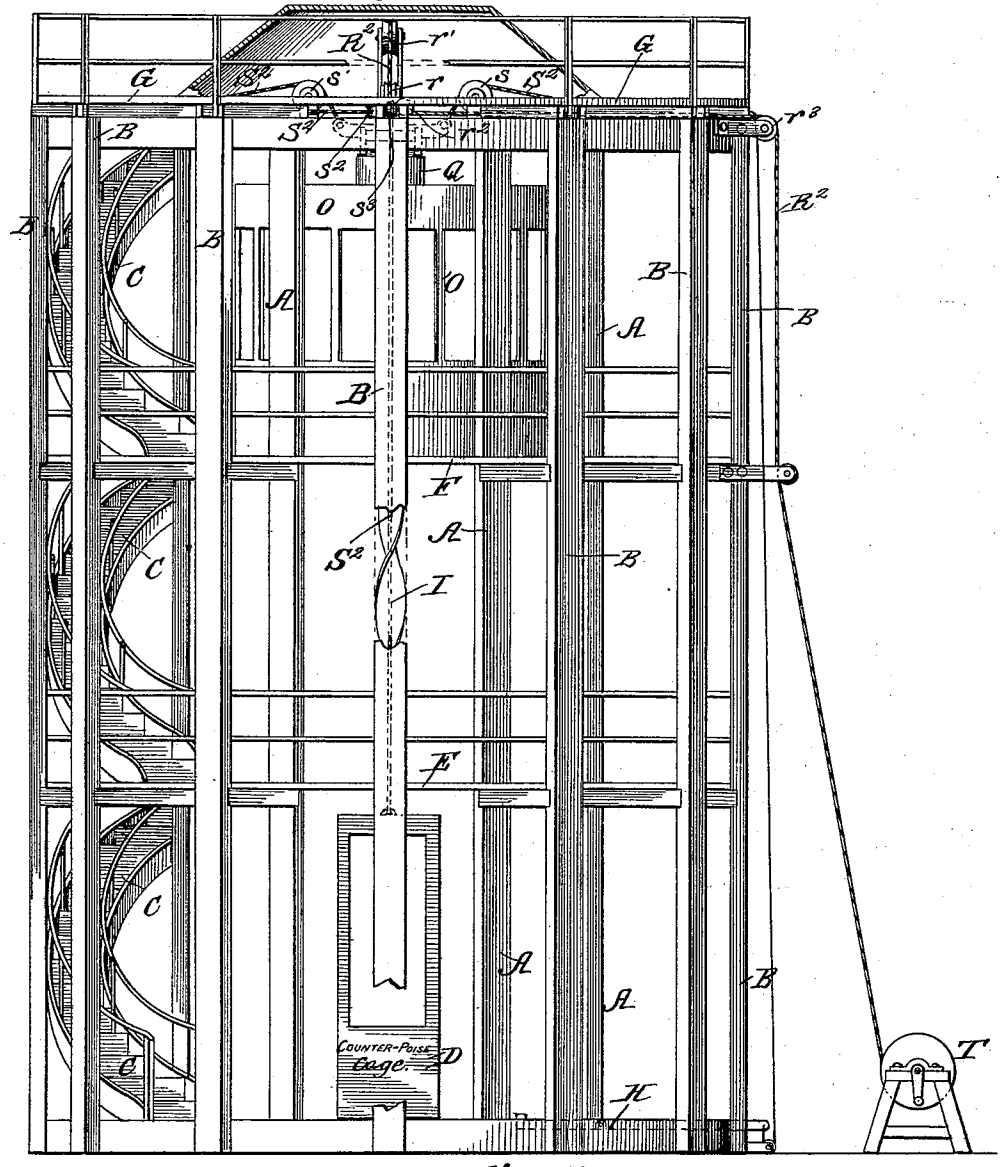
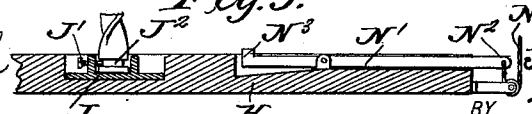


Fig. 5.



WITNESSES:

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P. B. Turpin.

INVENTOR:

James W. Brook.

BY Munn & Co

ATTORNEYS

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

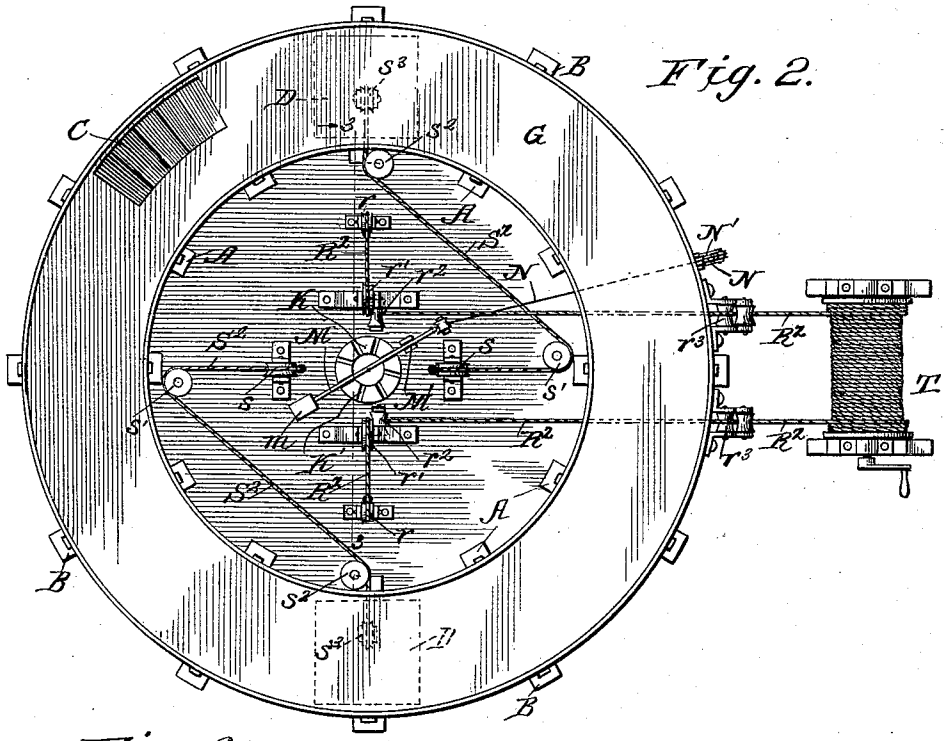


Fig. 3.

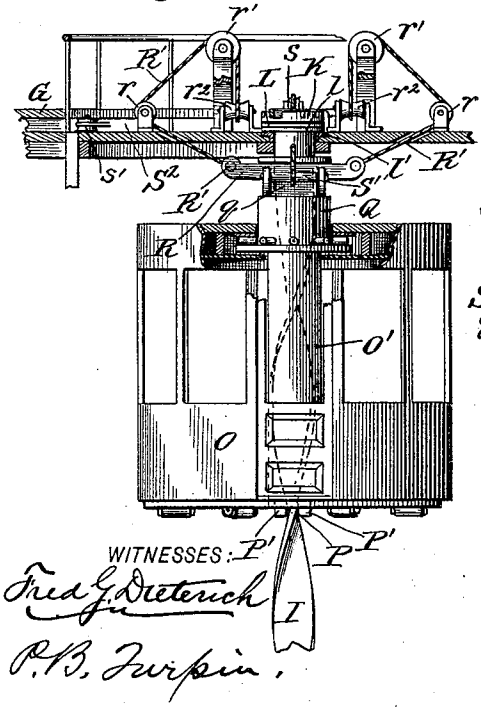


Fig. 4.

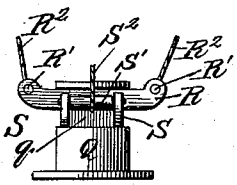
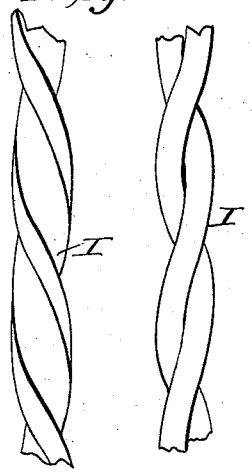


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES W. BROOK, OF LYNCHBURG, VIRGINIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 483,894, dated October 4, 1892.

Application filed October 27, 1891. Serial No. 410,019. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. BROOK, of Lynchburg, in the county of Campbell and State of Virginia, have invented a new and useful Improvement in Elevators, of which the following is a specification.

My invention is an improvement in elevators and seeks to provide a construction of elevating and lowering device in the nature of an amusement apparatus in which as a feature of amusement the cage or car will be caused to revolve as it descends; and the invention consists in the improved constructions and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a side view, partly broken away, and Fig. 2 is a top plan view, of my apparatus. Fig. 3 is a partial vertical section on about line 3 3 of Fig. 2, the car being shown partly in side view. Figs. 4 and 5 are detail views, and Fig. 6 shows different forms of shaft within the broad features of my invention.

In carrying out the invention I provide a tower consisting of suitable framing formed of inner and outer series of uprights A and B, the series of uprights B being sufficiently separated from A to permit the arrangement of stairs C and counterbalance-weights D between them. At intervals I provide landings E and F and a top landing G, the landings E and F being formed between the inner and outer series of uprights A B, as shown. These several landings are guarded by suitable hand-rails.

The space within the inner posts A is unobstructed from the floor H to the top landing, and centrally in such space I arrange the spiral or screw shaft I, which extends from the floor H, where it rests in a seat J, to the top of the tower, where it journals in a suitable bearing and has a head K, which rests on a washer L, which washer rests on a second washer *l*, which in turn rests on a bearing-plate *l'*. The shaft may be held from upward movement by means of a pin J', passed transversely through the seat J and entering a groove J^2 in the shaft, so that the latter may revolve but cannot be lifted out of its seat.

To hold the shaft from turning, I provide the latch-lever M, pivoted at M' and weighted at *m* to cause it to normally rest in one of a number of notches or seats K', formed in the head K. This latch holds the shaft from turning and may be easily released to permit the shaft to freely turn. To this end I connect a cord, wire, or chain N with the lever M and pass same over suitable guides to the ground, so that it may be quickly drawn upon to lift the latch out of the notches K' and free the shaft. In order that the said latch M may be automatically freed just before the descending car, presently described, reaches its lowest point, I provide a trip-lever N', connected at N^2 with the cord or chain N and arranged at N^3 to be engaged by the car to release the latch M. The operation of such devices permits the shaft to turn with the car when the said car reaches its lowest position, so that such turning of the car will not injure the shaft. The top or head of the shaft and the latch devices, operating in connection therewith, are suitably housed or covered, so that they will be protected from the weather and from meddlers.

The car O is preferably made circular and has centrally a protected way O' for the shaft and is provided with a suitable bearing or bearings P for engaging the said shaft, so that the car will revolve as it is moved along the shaft, the latter being held fast. In the construction shown in Fig. 3 the bearing is composed of two bars or beams P' P', bolted to the bottom of the car and fitted closely to the opposite sides of the shaft, which is shown in said figure as formed by twisting a flat strip to form a spiral shaft, and such construction may from its simplicity be preferred. It is manifest, however, that the form of screw or spiral shaft and of the bearing or nut for engaging the same may be varied without departing from some of the principles of my invention. It will also be understood that in some cases the shaft might be secured to and projected up from the top of the car and be arranged to engage a nut in the top of the tower; but I prefer the construction as shown and before described. As the car descends it will be seen that the shaft will cause it to turn.

In connection with the car I provide a non-rotating hanger Q, which is in the form of a cylinder encircling the shaft and journaled

at its lower end to the car, so that the latter may revolve freely independently of the hanger. Near its upper end the hanger is squared at q. A pair of bars R is bolted to two opposite sides of such portion q and a pair of bars S is bolted to the other two sides of such squared part q of the bars R and S, being thus at right angles to each other and being extended beyond the hanger and connected at their outer ends by cross-pins or bolts R′ and S′.

To the bolts R′ of the upper bars R, I connect the ropes or cables R^2, which extend upward and thence over guide-rollers r r' r^2 r^3 and connect with a windlass T or other similar hoisting power, so that the car may be hoisted when desired.

To the bolts S′ of the lower bars S, I connect the ropes or cables S^2, which extend upward and thence over pulleys s s' s^2 s^3 and connect with the counterbalance-weight D. These counterbalance-weights are constructed in the form of elevator-cages, which may be used to lift the passengers who go up to the top of the tower to descend in the revolving car, said counterbalance elevator-cages and their passengers being designed to in practice weigh less than the car, so that the latter will as it descends lift the elevators.

The bars R and S extend sufficiently far beyond the hanger-sleeve to operate to prevent the said hanger from turning, as the leverage action will be sufficient to resist the tendency of the hanger to be revolved by the turning of the shaft or the car.

Having thus described my invention, what I claim as new is—

1. An improved apparatus, substantially as described, comprising the tower or frame, the car, and the spiral or screw shaft arranged concentric with the car, the car being adapted to contain passengers and to be revolved as it descends by the action of the said shaft, all substantially as and for the purposes set forth.

2. The combination, in an apparatus substantially as described, of the car, the tower or frame, and the shaft supported therein and arranged concentric with the car and having practically throughout its length a spiral or thread, the car being movable vertically upon such shaft and provided with a bearing engaging the same, whereby the car will be revolved as it descends, substantially as set forth.

3. In an apparatus substantially as described, the combination of the tower or frame, the spiral or screw shaft supported therein, devices whereby said shaft may be held from turning or may be released to turn, and the car provided with a bearing engaging such shaft, such bearing being fixed with relation to the car, all substantially as set forth.

4. The combination of the tower or frame, the spiral or screw shaft journaled in bearings therein, the latch arranged to hold the said shaft from turning, and the cord or the like connected with such latch and extended downward, whereby the latch may be released from engagement with the shaft, substantially as and for the purposes set forth.

5. In an apparatus substantially as described, the combination of the tower or frame, the spiral or screw shaft, and the car adapted to contain passengers and to be revolved by the action of the spiral or screw shaft, the hanger encircling the shaft and journaled to the car, and the hoisting-cable connected with the said hanger, substantially as set forth.

6. The combination of the tower or frame, the spiral or screw shaft, the car having a bearing engaging such shaft, the hanger journaled to said car, whereby the latter may turn independently of the hanger, the bars secured to the hanger and extended therefrom, and the cables connected with the extended ends of the said bars, all substantially as set forth.

7. The combination of the tower or frame, the spiral or screw shaft, the car having a bearing engaging said shaft, the hanger encircling the said shaft and journaled to the car and provided with a squared portion, the bars secured to the said squared portion and extended beyond the same, the hoisting-cables connected with one pair of said bars, the counterbalance-cables connected with the other pair of such bars, and the counterbalance-weights, substantially as set forth.

8. The combination of the tower or frame, the spiral or screw shaft journaled in suitable bearings therein, the latch for holding said shaft from turning, and the trip connected with said latch and arranged for operation by the car, whereby the car may automatically release the latch to permit the shaft to turn, substantially as and for the purposes set forth.

The specification of my invention signed by me in the presence of two subscribing witnesses.

JAMES W. BROOK.

Witnesses:
H. J. ROBINSON,
P. B. TURPIN.