

D. CORCORAN.

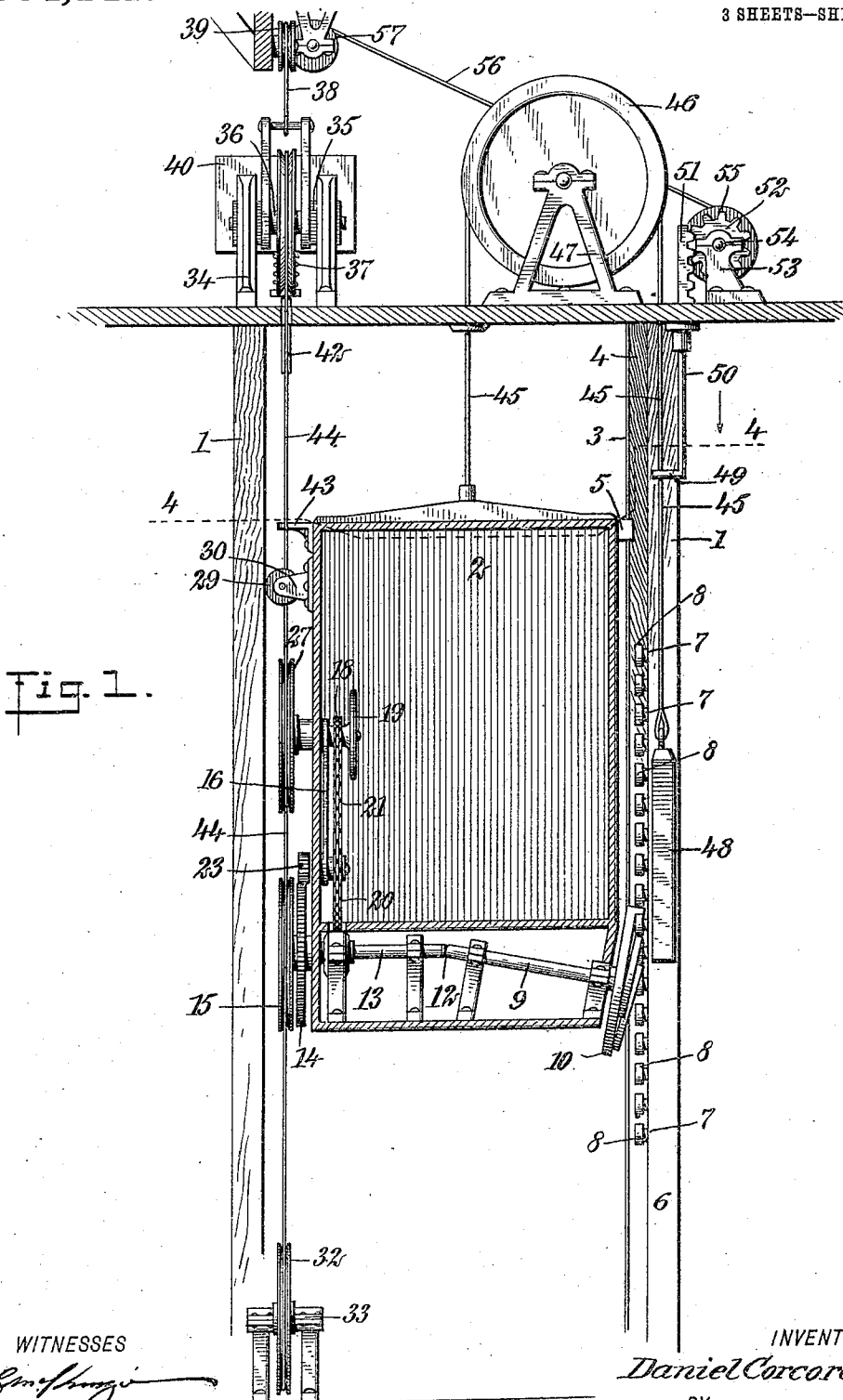
ELEVATOR.

APPLICATION FILED AUG. 27, 1908.

934,141.

Patented Sept. 14, 1909.

3 SHEETS—SHEET 1.



WITNESSES

E. B. Marshall
E. B. Marshall

INVENTOR

Daniel Corcoran

BY

Munroe

ATTORNEYS

D. CORCORAN.

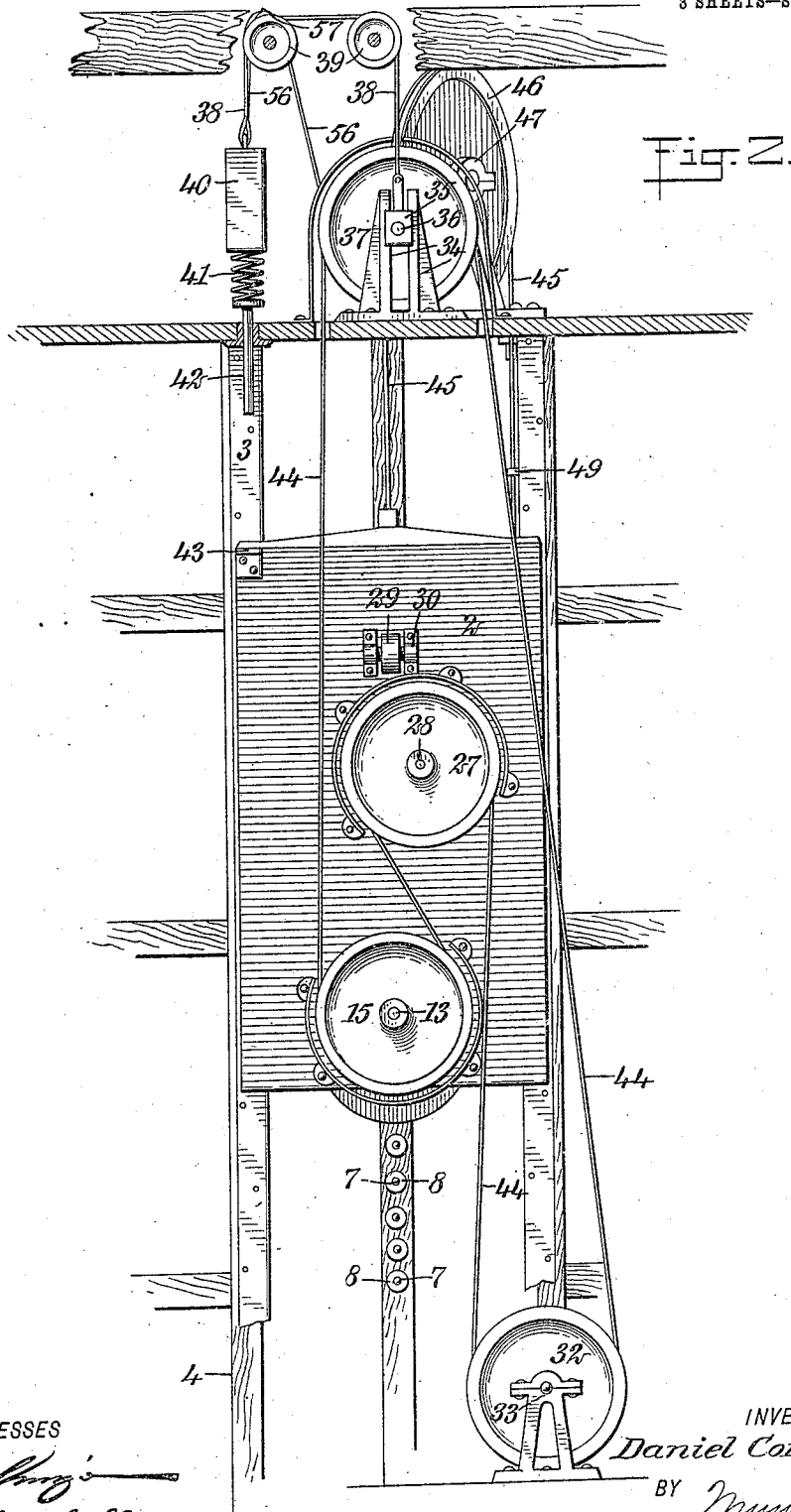
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E. B. Marshall

INVENTOR

Daniel Corcoran

BY

Munn & Co.

ATTORNEYS

D. CORCORAN.

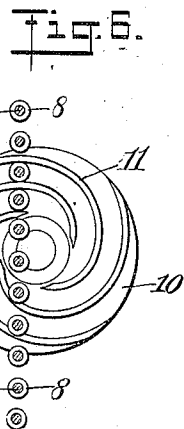
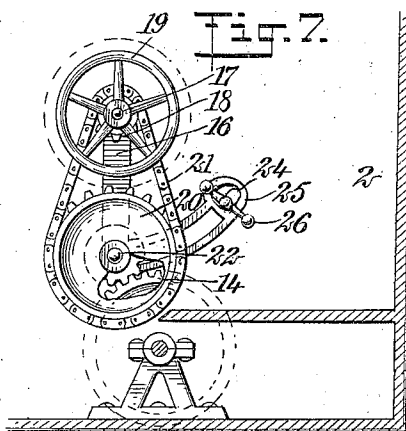
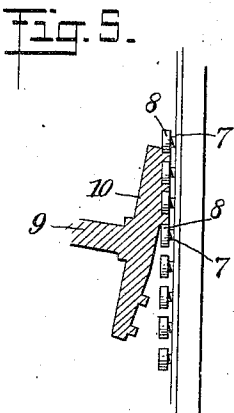
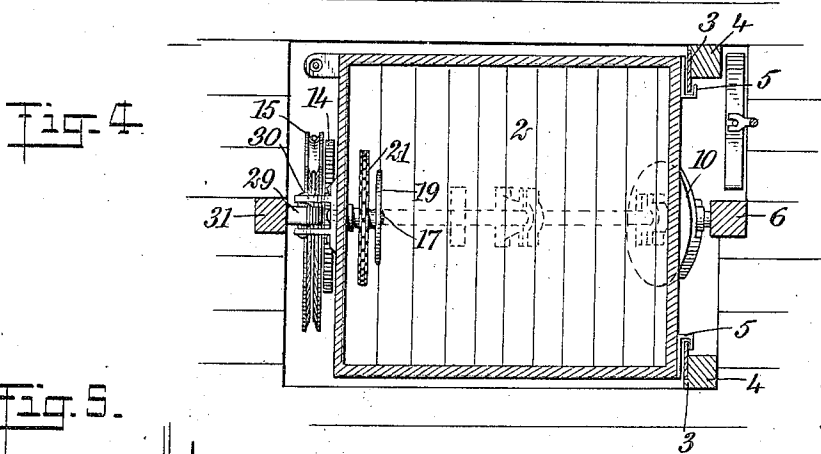
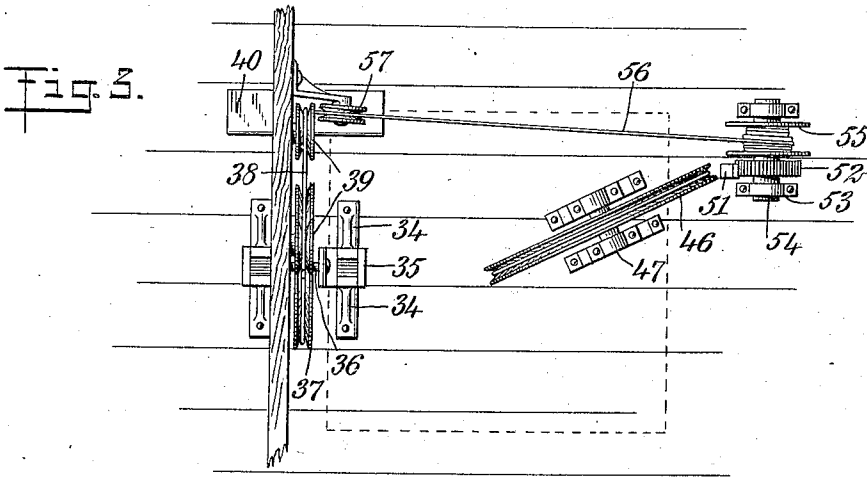
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E. B. Marshall

INVENTOR

Daniel Corcoran

BY

Mumford

ATTORNEYS

UNITED STATES PATENT OFFICE.

DANIEL CORCORAN, OF YONKERS, NEW YORK.

ELEVATOR.

934,141.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed August 27, 1908. Serial No. 450,411.

To all whom it may concern:

Be it known that I, DANIEL CORCORAN, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented a new and Improved Elevator, of which the following is a full, clear, and exact description.

My invention relates to elevators and it has for its object to provide a cage having a conical disk with a plurality of spiral threads on its face, there being a series of studs in the elevator shaft on which are disposed rollers respectively, the spiral threads being adapted to mesh with the said rollers. The conical disk is secured to an obliquely disposed shaft on the cage, this shaft being connected by a universal joint to a horizontal shaft, the horizontal shaft having a driving pulley secured thereto, there being an idler pulley disposed thereover. There is a pulley at the top of the shaft and another pulley at the bottom, a motor being coupled with the latter and the former being journaled in a box which is adjustable vertically. Means are provided for lowering the box when the cage reaches predetermined elevations in the shaft, and means are also provided which will permit the operator in the cage to raise or lower the cage, independently of outside power, should occasion arise making such action advisable.

Still other objects of the invention will appear in the following complete description.

In this specification I will describe the preferred form of my invention, but it will be understood that I do not limit myself thereto, as I consider myself entitled to all forms and embodiments of the invention which may be held to fall within the scope of the appended claims.

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, in which—

Figure 1 is a front elevation of my invention, showing the cage in section; Fig. 2 is a side elevation, one side of the elevator shaft being removed; Fig. 3 is a plan view; Fig. 4 is a sectional view on the line 4—4 of Fig. 1; Fig. 5 is an enlarged view showing the conical disk in section and the manner of its engagement with the rollers; Fig. 6 is a face view of the conical disk with the rollers

engaging the conical threads; and Fig. 7 is an enlarged view showing the mechanism in the cage by which it may be operated independently of outside power.

By referring to the drawings, it will be seen that a cage 2 is disposed in a shaft 1, there being guides 3 secured to corner posts 4 of the shaft. Shoes 5 on the cage 2 engage the guides 3 to hold the cage in proper position during its operation. A post 6 is disposed in the shaft between the corner posts 4, and to this post 6 are secured a vertical series of studs 7, rollers 8 being disposed on the said studs. In the bottom of the cage 2 is journaled an obliquely disposed shaft 9, and a conical disk 10 is secured at right-angles to the said shaft. In the face of the said disk 10, there are a plurality of spiral threads 11, the said spiral threads being of the same dimension and being at equal distances apart. The spiral threads 11 mesh with the rollers 8. When the cage 2 is disposed in the shaft 1, as has been stated, with the shoes 5 against the guides 3, the center of the disk 10 is disposed laterally of the plane of the studs 7. The obliquely disposed shaft 9 is connected by a universal joint 12, to a horizontal shaft 13, and this shaft 13 extends through the side of the cage and to it are secured a gear wheel 14 and a pulley 15. On the inside of the cage 2 an arm 16 is pivoted; at the upper terminal of this arm there being a shaft 17 on which are mounted a sprocket wheel 18 and a hand wheel 19. Secured to a shaft 22 on the other end of the arm 16 there is a sprocket wheel 20 and the sprocket wheels 18 and 20 are connected by a sprocket chain 21. The shaft 22 is disposed through a curved slot in the side of the cage and at the outer terminal of the said shaft 22, there is secured a gear wheel 23, this gear wheel being adapted to mesh with the gear wheel 14. It will, therefore, be seen that when desired, the arm 16 may be moved so that the gear wheel 23 will mesh with the gear wheel 14, so that when the hand wheel 19 is operated, by means of the sprocket chain 21, the rotary motion will be communicated to the sprocket wheel 20, to the shaft 22 to which it is secured, to the gear wheel 23 and to the gear wheel 14, which will operate the horizontal shaft 13, the obliquely disposed shaft 9 and the conical disk 10. By this means the cage 2 may be operated in the shaft independently of out-

side power, but when the cage 2 is operated in the usual manner the arm 16 is moved laterally so that the gear wheel 23 will be disconnected from the gear wheel 14. This I propose to do by means of a cam 24, which is disposed in an opening in a quadrant 25, the cam 24 being controlled by a handle 26. When the cam is operated by its handle 26, the quadrant 25 will be moved and inasmuch as the arm 16 is secured to the said quadrant, the arm will be moved far enough to disconnect the gear wheel 23 from the gear wheel 14. Above the pulley 15, secured to the shaft 13, on the outside of the cage 2, there is an idler pulley 27, which is mounted on a stud 28, secured to the side of the cage. Above the pulley 27 there is a bearing wheel 29 which is journaled in bearings 30 secured to the side of the cage. This bearing wheel 29 is adapted to ride against a post 31 at the side of the elevator shaft, see Fig. 4. At the bottom of the elevator shaft a pulley 32 is journaled in bearings 33, and the shaft to which the said pulley 32 is secured is coupled with a motor, not shown. At the top of the elevator shaft there are guides 34, see Figs. 2 and 3, in which is adapted to slide a box 35, in which is journaled a shaft 36 to which a pulley 37 is secured. A cable 38 is secured to the box 35, the cable 38 passing over the pulleys 39 and its other terminal is secured to a weight 40, beneath which there is a spring 41, and to the bottom of this spring is secured a stud 42, projecting through an opening in the top of the shaft, but the opening is not large enough to permit the spring 41 to pass therethrough. At the top of the cage is a plate 43, which is adapted to engage the stud 42. A cable 44 is disposed over the pulley 37 and then down and around the pulley 15, then obliquely upward to the pulley 27, over which it is disposed, then down and under the pulley 32, after which the cable extends up and is united over the pulley 37. It will, therefore, be seen that when the cable 44 is operated, it will rotate the pulley 15, secured to the horizontal shaft 13, and inasmuch as this horizontal shaft 13 is connected with the obliquely disposed shaft 9 by the universal joint 12, the conical disk 10 will be rotated to operate the cage. To the top of the cage 2 is secured a cable 45, this cable passing over a pulley 46 journaled in bearings 47 at the top of the elevator shaft, the cable 45 then passing downwardly and having secured to its other terminal a counter weight 48. This cable 45 passes through an opening in a bent terminal 49 of a rod 50, the rod passing up through the framing at the top of the shaft and having secured thereto a rack 51, the rack engaging with a gear wheel 52 journaled in bearings 53, a shaft 54 to which the gear wheel 52 is secured, having also secured to it a pulley 55. Wound on

this pulley 55, there is a cable 56, which passes over a pulley 57, and is then secured to the weight 40.

In using my invention, the pulley 32 is rotated, thereby drawing on the cable 44 and turning the pulley 15, thereby operating the shafts 13 and 9 and the conical disk 10, and as the conical disk 10 rotates, the spiral threads 11 will engage the rollers 8 on the studs 7, and inasmuch as one of the terminals of each of the threads 11 is very much nearer the center of the disk than its other terminal, which passes to the periphery, when the disk 10 is rotated, the rollers 8 will pass along the threads 11, which will cause the cage 2 to ascend when the conical disk is rotated in one direction and will cause the cage to descend when the disk is rotated in the opposite direction. When the cage reaches the top of the shaft, the plate 43 will contact with the stud 42 and will push it upwardly, thereby lifting the weight 40 which frees the cable 38 and permits the box 35 to descend, and as the pulley 37 is secured to the shaft 36 journaled in the said box, when the box 35 descends, the cable 44 which passes over the pulley 37 becomes free and no longer draws on the pulley 15 to operate the shaft 13. In a similar manner, when the cage 2 descends to the bottom of the shaft, the counter weight 48 will lift the rod 50, thereby, by means of the rack 51 and the gear wheel 52, rotating the pulley 55 which draws on the cable 56 and thereby lifts the weight 40, which also, as has been stated, will permit the box 35 with the pulley 37 to descend and thereby free the cable 44, preventing further rotation of the pulley 15 secured to the shaft 13. Should the outside power fail at any time when the cable 44 is loose, any person in the cage 2 may move the handle 26, which will rotate the cam 24, thereby throwing the arm 16 so that the gear wheel 23 will engage the gear wheel 14, and when this is done, the hand wheel 19 may be rotated, thereby rotating the sprocket wheel 18, which is connected by the sprocket chain 21 with the sprocket wheel 20, and as the shaft 22 is secured to the said sprocket wheel 20 and as the gear wheel 23 is secured to the shaft 22, when the hand wheel 19 is rotated, it will, by means of the connections set forth, rotate the gear wheel 14, thereby rotating the shafts 13 and 9 and the conical disk 10. In this way the cage may be operated from within.

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

1. In an elevator, an elevator shaft, a cage disposed therein, a box, a pulley journaled in the box, means which are adapted for operating the cage in the elevator shaft, a cable adapted for driving the said means, the cable being disposed on the pulley,

guides for the box, means for keeping the box in a predetermined position relatively to the elevator shaft, means for freeing the last named means, and means on the cage which is adapted for actuating the means for freeing the said means.

2. In an elevator, a cage, an elevator shaft, means for moving the cage in the elevator shaft, means in the elevator shaft with which the first named means are adapted to coact, a shaft to which the said first named means are secured, a pulley secured to the shaft, a pulley at the top of the elevator shaft, a pulley at the bottom of the elevator shaft, a cable mounted on the said pulleys, a block in which one of the pulleys in the elevator shaft is journaled, and means adapted to be actuated by the elevator for moving the block when the cage is at the top or bottom of the elevator shaft.

3. In an elevator, a cage, an elevator shaft, members in the elevator shaft, a disk having a spiral thread in its face, a shaft, the disk being secured to the said shaft and the thread being adapted for meshing with the members in the elevator shaft, a pulley secured to the said shaft, a pulley at the top of the elevator shaft, a pulley at the bottom of the elevator shaft, a cable disposed on the said pulleys, a block in which one of the pulleys in the elevator shaft is journaled, and means for automatically operating the block when the cage is at a predetermined position in the elevator shaft.

4. In an elevator, an elevator shaft, a cage, a series of members in the elevator shaft, a plate having a spiral thread in its face, the thread being adapted to mesh with the members, a shaft journaled in the cage, the plate being secured to the shaft, a hand-wheel in the cage, means connecting the hand-wheel with the shaft by which the cage may be operated, and means for throwing the last named means so that they disconnect the hand-wheel from the shaft.

5. In an elevator, an elevator shaft, a cage, means for operating the cage in the elevator shaft, a cable adapted for operating the said means, a box, a pulley journaled in the box, the said cable being disposed on the pulley, and means adapted to be operated by the cage for moving the box when the cage reaches a predetermined position in the elevator shaft.

6. In an elevator, an elevator shaft, a cage disposed therein, a box, a pulley journaled in the box, means on the cage which are adapted for operating the cage in the elevator shaft, means in the elevator shaft which are adapted to be engaged by the means on the cage, a cable which is adapted to drive the first named means, the cable being disposed on the pulley, guides for the box, means for keeping the box in a predetermined position relatively to the elevator

shaft, a second pulley at the top of the elevator shaft, a cable secured to the cage, the last named cable passing over the last named pulley, a counterweight which is secured to the other terminal of the last named cable, and means for releasing the said means for keeping the box in a predetermined position, which are operable by the counter-weight.

7. In an elevator, an elevator shaft, a cage disposed therein, a box, a pulley journaled in the box, means which are adapted to operate the cage in the elevator shaft, a cable which is adapted to drive the said means, the cable being disposed on the pulley, guides for the box, means to keep the box in a predetermined position relatively to the elevator shaft, and means to release the said means which are operable by a surface on the cage.

8. In an elevator, an elevator shaft, a cable, a series of members in the elevator shaft, a plate having a spiral thread which is adapted to mesh with the members, the plate being mounted to rotate on the cage, a shaft to which the plate is secured, a gear wheel secured to the shaft, an arm pivoted to the cage, a sprocket wheel and a hand wheel at one end of the arm and a sprocket wheel and gear wheel at the other end, the last named gear wheel being adapted to mesh with the gear wheel on the shaft, and a sprocket chain connecting the two sprocket wheels.

9. In an elevator, an elevator shaft, a cage, a series of members in the elevator shaft, a conical plate having a plurality of spiral threads in its face, the threads being adapted to mesh with the members, a shaft, the plate being secured to the shaft, a gear wheel which is also secured to the shaft, an arm pivoted to the cage, a sprocket wheel and a hand wheel at one end of the arm and a sprocket wheel and a gear wheel at the other end, the last named gear wheel being adapted to mesh with the gear wheel on the shaft, and a sprocket chain connecting the two sprocket wheels.

10. In an elevator, an elevator shaft, a cage, means on the cage which are adapted to engage means in the elevator shaft to operate the cage, means in the elevator shaft which are adapted to be engaged by the means on the cage, a shaft which is adapted to drive the means on the cage, a gear wheel which is secured to the shaft, an arm pivoted on the cage, a sprocket wheel and a hand wheel mounted at one end of the arm and a sprocket wheel and a gear wheel at the other end, the last named gear wheel being adapted to mesh with the gear wheel on the shaft, and a sprocket chain connecting the two sprocket wheels.

11. In an elevator, an elevator shaft, a cage, means on the cage which are adapted to engage means in the elevator shaft to op-

erate the cage, means in the elevator shaft which are adapted to be engaged by the means on the cage, a shaft which is adapted to drive the means on the cage, a gear wheel
5 which is secured to the shaft, an arm pivoted on the cage, a sprocket wheel and a hand wheel mounted at one end of the arm and a sprocket wheel and a gear wheel at the other end, the last named gear wheel being adapted
10 to mesh with the gear wheel on the shaft, a sprocket chain connecting the two sprocket wheels, and means to hold the arm in a predetermined position relatively to the cage.

12. In an elevator, an elevator shaft, a
15 cage, means on the cage adapted for engaging means in the elevator shaft, means in the elevator shaft adapted to be engaged by the

means on the cage, a shaft adapted for driving the means on the cage, means on that shaft adapted for engaging means for driving it, an arm pivoted in the cage, means on the arm adapted for engaging the means on the shaft, means for rotating the last named means, and means for moving the arm so that the means thereon will be thrown out
20 of engagement with the means on the shaft.
25

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

DANIEL CORCORAN.

Witnesses:

H. S. TARBELL,
MARY L. SHORT.