

No. 676,442.

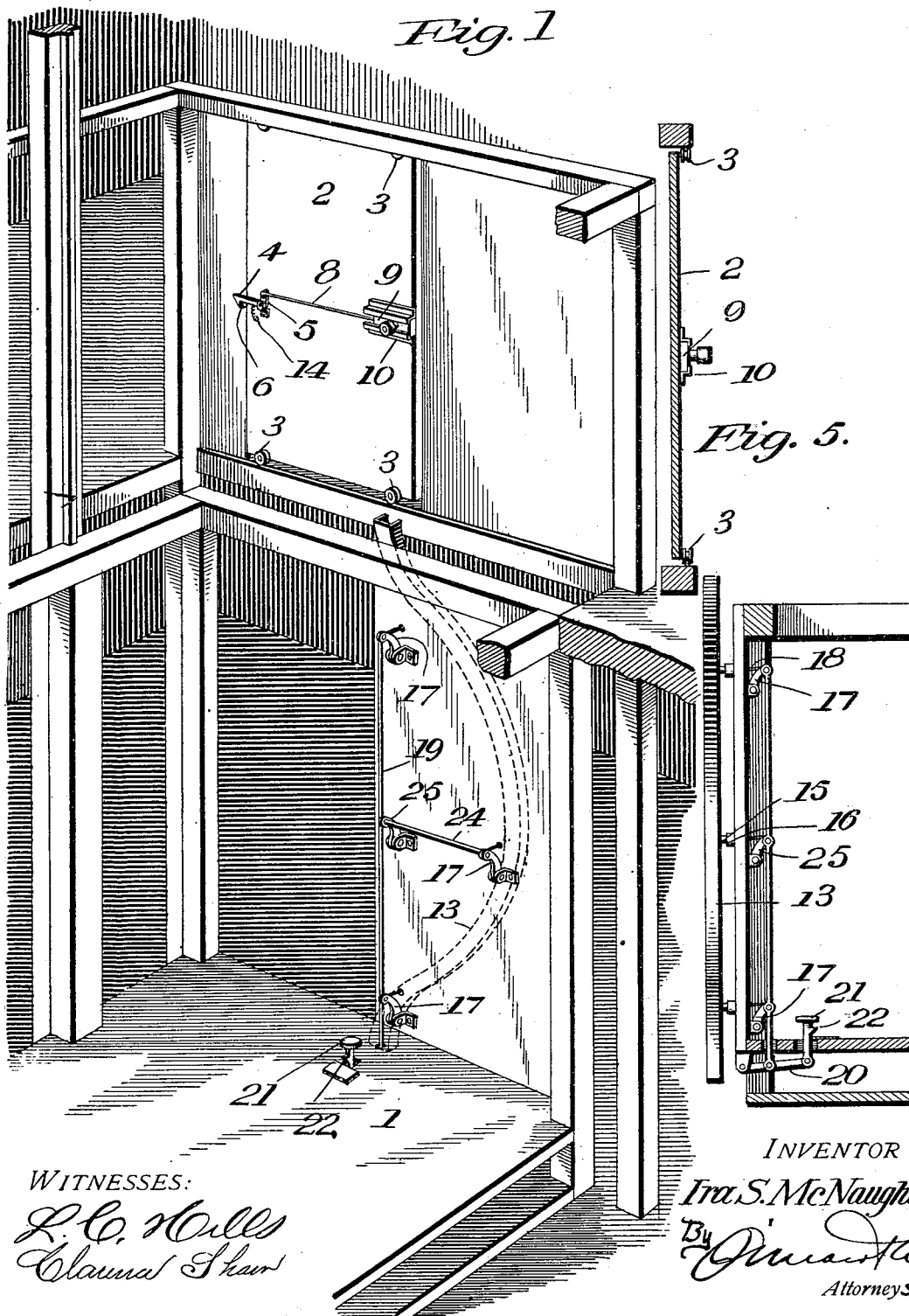
Patented June 18, 1901.

I. S. McNAUGHT.  
ELEVATOR DOOR AND CATCH.

(Application filed Nov. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 4.

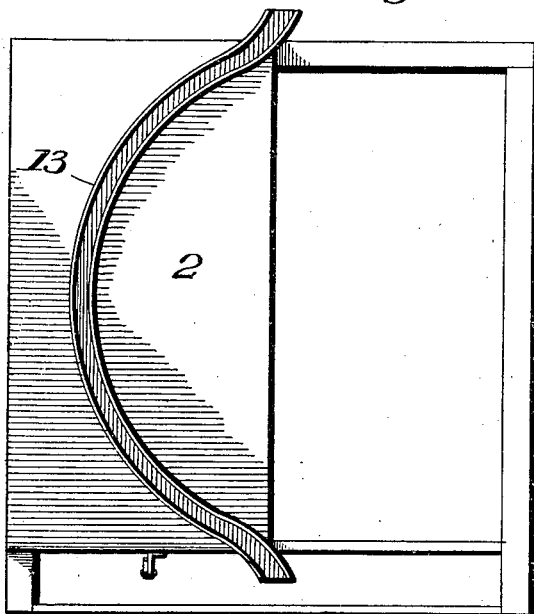


Fig. 2.

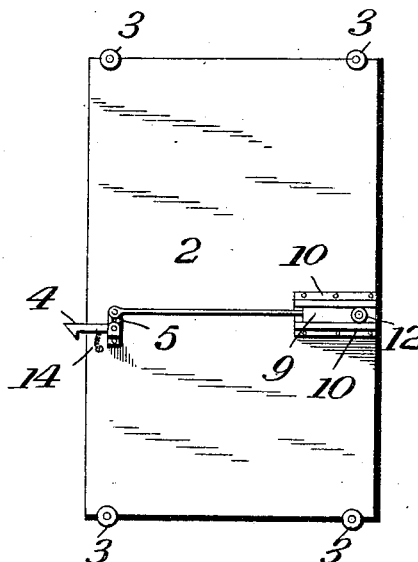


Fig. 6.

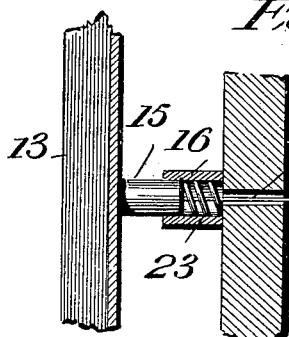


Fig. 3.

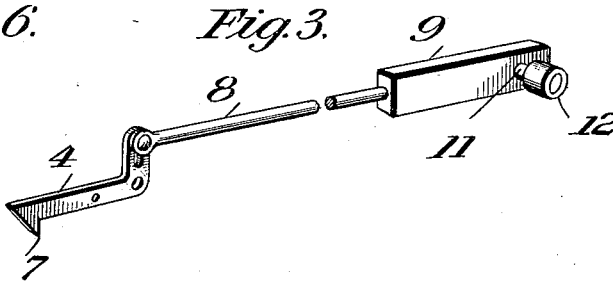
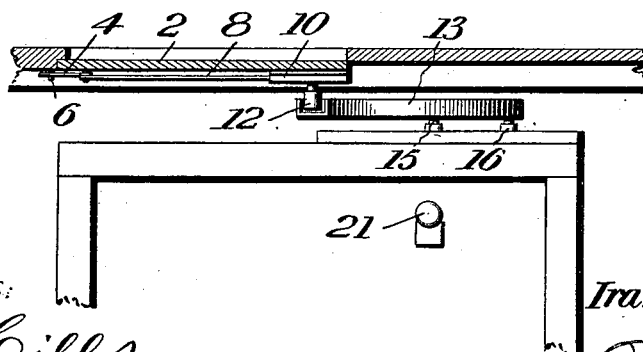


Fig. 7.



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# UNITED STATES PATENT OFFICE.

IRA S. McNAUGHT, OF FORT WORTH, TEXAS, ASSIGNOR OF ONE-HALF TO J. BURNETT COLLINS, OF SAME PLACE.

## ELEVATOR DOOR AND CATCH.

SPECIFICATION forming part of Letters Patent No. 676,442, dated June 18, 1901.

Application filed November 10, 1900. Serial No. 36,062. (No model.)

*To all whom it may concern:*

Be it known that I, IRA S. McNAUGHT, a citizen of the United States, residing at Fort Worth, in the county of Tarrant and State of Texas, have invented a new and useful Elevator Door and Catch, of which the following is a specification.

My invention relates to elevator doors and catches, and has for its objects to produce a device of this kind by means of which the door can be automatically closed and opened by the action of the cage as it passes the different landings and also to provide the same with mechanism whereby the cage may pass the landing without operating the door.

With these objects in view my invention consists in the improved elevator door and catch, as will be hereinafter more fully set forth.

In the accompanying drawings, in which the same reference-numerals indicate corresponding parts in each of the views in which they occur, Figure 1 is an inside perspective of an elevator-cage provided with mechanism for opening the door. Fig. 2 is an elevation of a door provided with my improved catch. Fig. 3 is an enlarged detail view of the catch and means for operating the same. Fig. 4 is an inside view of the front of an elevator-cage, taken from the inside. Fig. 5 is a vertical sectional view through the side of the cage. Fig. 6 is an enlarged detail view of a portion of the same, and Fig. 7 is a horizontal section through the front portion of an elevator-cage and the elevator-shaft.

Referring more particularly to the drawings, 1 indicates an elevator-cage, which may be of any desired form and construction.

2 is a door arranged to slide laterally to and from the opening in the elevator-shaft at the floor or landing in the usual manner, the top and bottom of the door being preferably provided with antifriction-rollers 3, arranged to travel in grooves in the door-frame. The door is provided upon the inside with a catch 4, which is pivotally secured in a support 5, and adapted to engage with a pin 6 in the door-frame when the door is closed. The catch is preferably made L-shaped, with a hook 7 upon its free end, and is loosely connected with a rod 8, as by means of a slot at its op-

posite end. A sliding bolt 9 is mounted in ways 10 at the opposite edge of the door. A pin 11 projects from the bolt between the ways, and is preferably provided with an antifriction-roller 12.

The front side of the elevator-cage is provided with a vertically-arranged grooved guide 13, which extends the full length of the cage and projects a suitable distance above and below the same. The ends of the guide are arranged to engage with the pin on the door when the door is closed and the intermediate portion is curved laterally to such an extent as to move the door away from the opening at the landing by the time the bottom of the cage reaches the floor of the building. The side walls of the ends of the guide preferably diverge slightly from each other to cause the pin to enter the groove as the cage is moved vertically in the shaft, and the portions of the walls immediately adjacent thereto are gradually curved, which will move the door very slowly when the pin first enters the groove, thereby avoiding any shock or jar to the parts in opening or closing the door. By forming the central or intermediate portion of the guide upon a curve the engagement therewith of the pin on the door when the door is to be closed will be smooth and even and the liability of breaking any of the parts will be avoided.

A spring 14 is arranged to normally hold the free end of the catch down so as to engage with the pin when the door is closed, the ends of the catch being inclined so as to cause the hook 7 to slip over the pin and hold the door closed. By forming the catch L-shaped and securing the rod 8 to the rear end when the guide engages with the pin 11 the longitudinal movement of the rod will swing the catch upon its pivot against the tension of the spring and disengage the hook from the pin, and thereby permit of the door being opened as soon as the catch is released.

As it is not necessary to open the door of each landing as the elevator passes, I provide means whereby the guide may be drawn back so as to pass the landing without engaging with the pin on the door. One means of accomplishing this is by providing the guideway with projections 15, one at each end and one

at the central portion, and providing the side of the cage with cup-shaped members 16 in position to receive the projections. An arm 17 is mounted upon the side of the cage adjacent to each member and projection, and a cord 18 is secured thereto and to the projection on the rear face of the guide. A vertically-movable rod 19 is secured to the free ends of said arms, so as to operate them in unison. A lever 20 is pivotally secured below the bottom of the cage in engagement with the lower end of the rod and provided with a foot-piece 21 at its free end. The foot-piece is preferably provided with a shoulder 22, which is adapted to engage with a suitable catch on the bottom of the cage and hold the footpiece and the rod depressed when it is desired to hold the guide out of engagement with the pin. A spring 23 is preferably seated in each of the members, so as to engage with the projection and normally force the guide out in position to engage with the pin on the door as the cage is moved up and down the shaft. As the central projection and cupped member are located at one side of the vertical line between the end projections to correspond with the curvature of the guide, it is desirable to provide means for drawing back that projection simultaneously with the end projection. I accomplish this by journaling a rock-shaft 24 across one side of the door and connecting one end with the rod 19 by means of an arm 25, which is of the same length as the arm 17 upon its opposite end, the arm 17 being connected with the projection 15 by the cord 18.

In using my improved elevator door and catch the parts are so arranged that as the elevator passes the different landings the pin on the door will enter either end of the slot as the door is moving up or down and the catch released from engagement with the pin or other means of securement and the door gradually drawn back, so as to stand wide open by the time the bottom of the elevator reaches the landing. As the cage moves upon its journey in either direction the door will be closed and automatically latched by being forced over laterally by the curved guide. However, if it be desired to pass one or more landings without opening the door the attendant places his foot upon the footpiece at the bottom of the cage and presses it down, which will cause the guide to be withdrawn, so that it will not engage with the pin on the door. If the operator should desire to open the door after the end of the guide has passed the pin, it can be done in the usual manner and the door moved back until the pin will register with the central curved portion of the guide. By releasing the guide the springs in the cup-shaped members will force it forward, so as to cause its walls to engage with the pin and close the door in the same man-

ner as though the door had been opened by the guide instead of by the attendant. If for any reason the pin should fail to enter the groove, the groove may be drawn back at any point and the door moved so as to cause the pin to enter, and thus cause the parts to operate the same as originally intended.

The catch is located substantially midway of the door, and by providing the door with antifriction-rollers at top and bottom the pull of the guide upon the pin is substantially in the same plane with the door and the parts are not liable to stick or bind, and thus injure the parts and jar the elevator-cage. The footpiece for controlling the guide is preferably connected with the rod by means of a rock-shaft, so that it may be located at any convenient point in the bottom of the elevator to permit of its being conveniently moved by the operator.

By constructing the parts as above described the door of each landing may be operated by use of but a single guide, which is located upon the cage and under complete control of the operator.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an elevator, the combination, with the cage, of a curved guide movably secured to one side thereof, the outer face of said guide being provided with a longitudinally-grooved channel, projections upon the rear face of the ends and central portion of said guide, hollow members for the reception of said projections, arms mounted upon the side of the cage, one for each projection, a cord from each arm to its respective projection, means for operating said arms in unison, and a door provided with a pin in position for entering the channel in said guide, substantially as described.

2. In an elevator, the combination, with a cage, of a curved guide movably mounted upon the side of the cage, arms pivotally secured to the cage one at each end of the guide and one at the center thereof, cords for connecting said arms with the guide, a rock-shaft journaled upon the door and connected with the arm at the center of the guide at one end and provided with an arm at the other end in alinement with the arms at the ends of the guide, a rod connected with said arm and the arms at the ends of the guide, a lever secured to the lower end of the rod, the free end of which is provided with a shouldered footpiece that projects through the bottom of the cage, and a door provided with a pin in position to enter the groove of said guideway, substantially as described.

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