

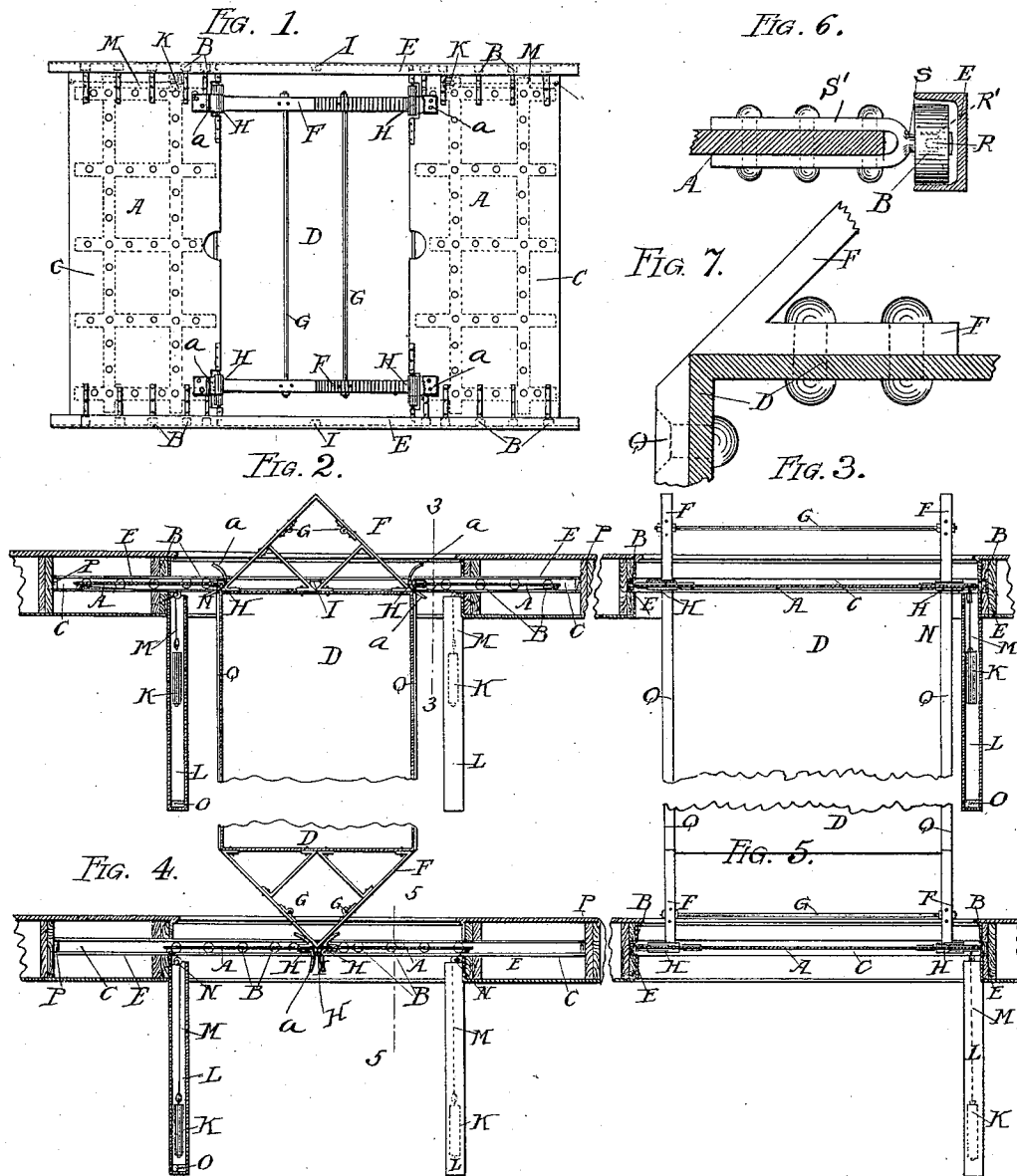
(No Model.)

2 Sheets—Sheet 1.

E. L. PARKER.
ELEVATOR.

No. 575,758.

Patented Jan. 26, 1897.



WITNESSES:

John C. Stuart
Robt. Train

INVENTOR

Ernest L. Parker
by Alexander Davis
ATTORNEYS

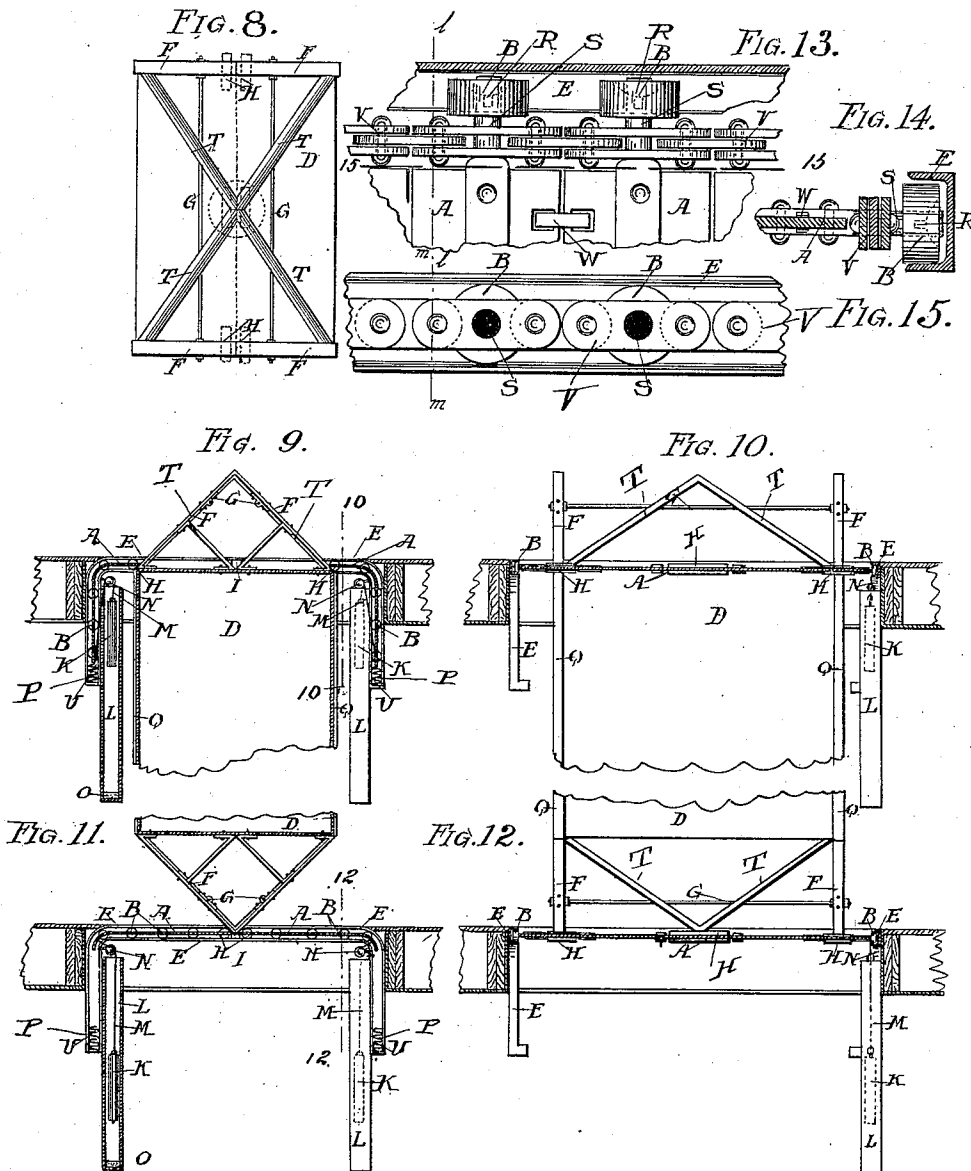
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ATTORNEYS

UNITED STATES PATENT OFFICE.

ERNEST L. PARKER, OF LOS ANGELES, CALIFORNIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 575,758, dated January 26, 1897.

Application filed March 21, 1896. Serial No. 584,301. (No model.)

To all whom it may concern:

Be it known that I, ERNEST L. PARKER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Elevators, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a plan view of an elevator-hatchway, showing my improved doors in position. Fig. 2 is a vertical sectional view thereof, showing the car passing between the doors. Fig. 3 is a vertical sectional view on line 3 3 of Fig. 2. Fig. 4 is a view similar to Fig. 2, showing the doors and elevator-car in a different position. Fig. 5 is a sectional view on line 5 5 of Fig. 4. Fig. 6 is a detail view of a portion of the door, and Fig. 7 a detail view of a portion of the elevator-car. Fig. 8 is a plan view of the elevator-car. Fig. 9 is a modification of the sliding doors. Fig. 10 is a sectional view on line 10 10 of Fig. 9. Fig. 11 is a view similar to Fig. 9, showing the doors and elevator-car in a different position. Fig. 12 is a sectional view taken on line 12 12 of Fig. 11. Figs. 13, 14, and 15 are detail views of the flexible hatchway-door.

This invention relates to new and improved means for automatically opening the doors of elevator-hatchways for the passage of the elevator-car in either direction and for closing them after the car has passed through the hatchway, and it has for its object to provide simple means for opening and closing automatically horizontally-sliding doors and for holding them in their closed position when the car is not passing through the hatchways, and thereby effectually prevent the spread of fire through the elevator-shaft and the falling of objects through the hatchways.

Referring to the various parts by letters, A A designate two horizontal sliding doors, which in their normal position entirely close the hatchway of an elevator-shaft. As shown in Fig. 1, these doors are formed of sheet metal, suitably braced, and have mounted on their side edges a series of small rollers B, which work in ways formed by C-shaped channel-irons E E. These channel-irons are

mounted just under the floors on opposite sides of the elevator-shaft, the joists being cut away, as shown, for the passage of the irons and to permit the doors to slide in the ways. The rollers B are each secured to doors A by a bifurcated plate S', a suitable number of which embrace the side edges of each door, the rollers B being journaled on an axle S, which extends outwardly from the closed end of each plate. The outer side of the rollers are concaved, and a convex washer R fits therein and is secured in place by a bolt R', which passes through the washer into the end of the axle S. By means of these rollers the doors slide back and forth in the ways formed by irons E E with little friction.

To return the doors A A to their closed position after they have been forced open by means hereinafter described, I connect to their rear edges, by steel cables M M, weights K. These weights work vertically in casings L L, located near the hatchway-opening, the cables M M running over pulleys N N and extending rearwardly to the rear edges of the doors. The lower ends of the casings L L are provided with springs or rubber cushions O O, on which the weights K are cushioned should they touch the bottom of the casing when the doors are returned to their normal position, and against which they will strike in case they are disconnected by accident.

In the outer ends of the ways formed by the channel-irons E E are springs or rubber cushions P P. These springs cushion the doors at the extreme outer ends of their outward motion and aid in starting them inwardly to their closed position when the car has passed through the hatchway. They also prevent the doors binding in the ways E at their outermost position.

In order to force the doors A A open for the passage of the elevator-car D when it is traveling in either direction, upwardly-extending and downwardly-extending frames F F are secured to the top and bottom of the car D, respectively. As shown in the drawings, two of these frames are secured to the top and two to the bottom of the car, one near each side thereof. Each frame is constructed of flat steel bars and is in shape a right-an-

gle triangle whose apex is coincident with the longitudinal center of the car D and whose base is equal to the width of the car. Each pair of frames are connected and braced
5 by means of bars G G, and each frame F is independently braced to the car D by suitable braces.

The adjoining edges of the doors are recessed at the points where the frames F would
10 come in contact with them, and rollers H are journaled in these recesses to receive the thrust of the frames F when the car is passing through the hatchway.

Strips of metal Q are secured to the outer
15 sides of the car D and extend from the base of the frames F on the top of the car to the base of the frames on the bottom thereof and form continuous tracks on each side of the car for the rollers H H to bear against when
20 the car is passing through the hatchway. The upper and lower ends of these strips are each beveled at an angle to correspond to the angle of the side of the adjoining frame F, as clearly shown in Fig. 7.

In addition to the frames F F for forcing
25 back the doors bars T, which are triangular in cross-section, may be secured to the top and bottom of the car, said bars extending from the outer lower ends of the frames E upwardly to a point directly over the center
30 of the car and in the same horizontal plane with the apexes of the frames E, as shown in Figs. 8 and 9. Additional rollers H H are inserted in recesses formed in the middle of
35 the adjoining edges of doors A A to receive the thrust of the bars T, as shown in dotted lines in Fig. 8. These bars T will bear on the rollers H for only a short distance from the apex of the frame formed by
40 them and are for the purpose of starting the doors rearwardly. The rollers H, upon which these bars bear, may be of any suitable length, in order that said bars will operate on them for the desired distance from the apex of the
45 frame.

Instead of employing rigid doors, as shown in Fig. 1, flexible doors, as shown in Fig. 13, may be used. These doors consist of a series of parallel slats connected by staples W,
50 each slat being provided with a supporting-roller B at each of its ends, said rollers working in the ways formed by the channel-irons E E. The series of slats which make up each door is connected together by a strong chain
55 V, through the links of which at suitable intervals the axles of the rollers extend. The whole strain of holding the slats together is brought on the chain through the axles of the rollers, the links W serving merely to
60 hold the adjoining edges of the slats together.

If desired, the irons E E may be turned down, as shown in Figs. 9 and 11, when the flexible doors are used, in order to prevent the doors sliding under the floors and to ob-
65 viate the necessity of cutting away the joist

supporting the floors. In the ways E E at the longitudinal center of the hatchway are secured stops I, against which the inner edges of the doors A A abut when in their closed position. The bottom of the ways E E are
70 bent at right angles, and the springs P are secured at said lower ends to cushion the doors and give them a slight impetus to aid in returning them to their closed position.

The hoisting-rope may be secured to the
75 apex of the frame formed by the bars T, or it may be secured to any suitable part of the car, and the doors A A are cut away at their adjoining edges to permit of the passage of the hoisting-rope.
80

In operation the doors are forced open by the points of the frames F striking between the rollers H H and forcing the door back in the ways E, the rollers H working on the frames F. When the doors are back and the
85 car is passing through the hatchway, the weights K hold the rollers H against strips Q on the sides of the elevator-car. When the car has passed through the hatchway, the weights K, through the cables M, force the
90 doors to their closed position.

To relieve the hatchway-doors of the sudden shock caused by being struck by the irons F when the car passes through them in either way, spring-plates a are secured to
95 doors A on their upper and lower sides and extend out over the rollers H, carried by said doors. These plates, when the door is in its normal position, come together or nearly together over the rollers H H and curve out-
100 wardly. When the car passes through the hatchway in either direction, the irons F first strike the springs a and force the doors A A slightly apart before said irons come in contact with the doors, thus relieving the
105 doors of all shock and jar.

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

1. The combination of an elevator-car, a
110 pair of sliding hatchway-doors, ways E for said doors, rollers carried by said doors and working in ways E, rollers H mounted in the adjoining edges of the doors, curved springs a carried by each door, each spring being
115 mounted adjacent a roller H and extending over said roller as described, weights K connected to the doors by cables M, and frames F carried by the car and adapted to engage springs a and rollers H, substantially as described and for the purpose set forth.

2. The combination of an elevator-car, frames F secured thereto, a pair of hatch-
125 way-doors, each of said doors consisting of a series of parallel slats, means for loosely connecting the adjacent edges of the slats, a roller mounted on each end of each slat, chains extending along the edges of the doors between the rollers and the ends of the slats, the axles of the rollers extending through the links of
130

the chain, whereby the chains are not rigidly
connected to the slats and the slats may have
a pivotal or vibrating motion independent of
the pivotal movement of the links of the
5 chain, ways E in which the rollers on the door
work and weights K connected to said doors,
substantially as and for the purpose set forth.

In testimony whereof I affix my signature
in presence of two witnesses.

ERNEST L. PARKER.

Witnesses:

J. C. STUART,
E. R. KELLAM.