

(No Model.)

J. J. McBRIDE.
HATCHWAY FOR ELEVATORS.

No. 447,196.

Patented Feb. 24, 1891.

Fig. III.

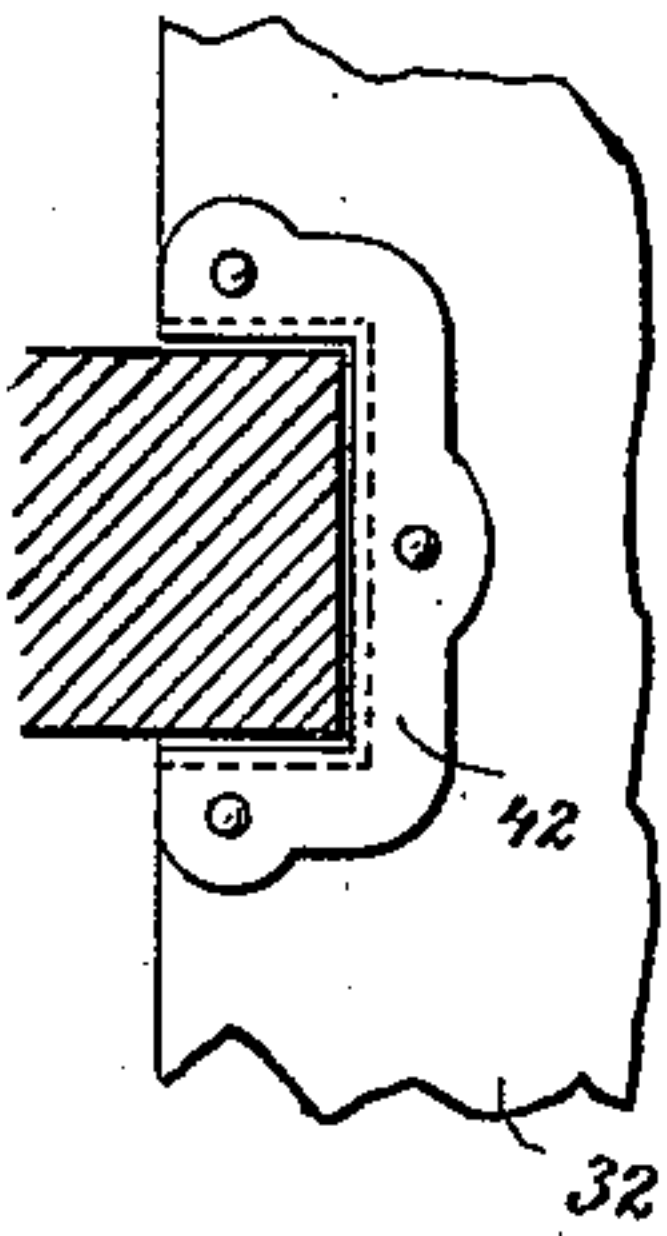


Fig. IV.

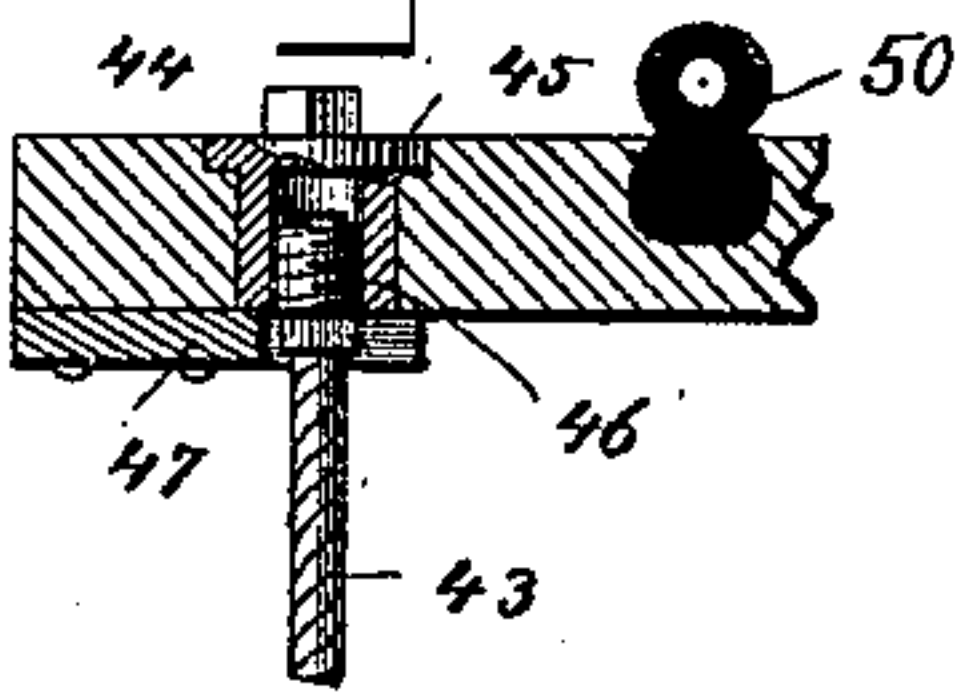


Fig. V.

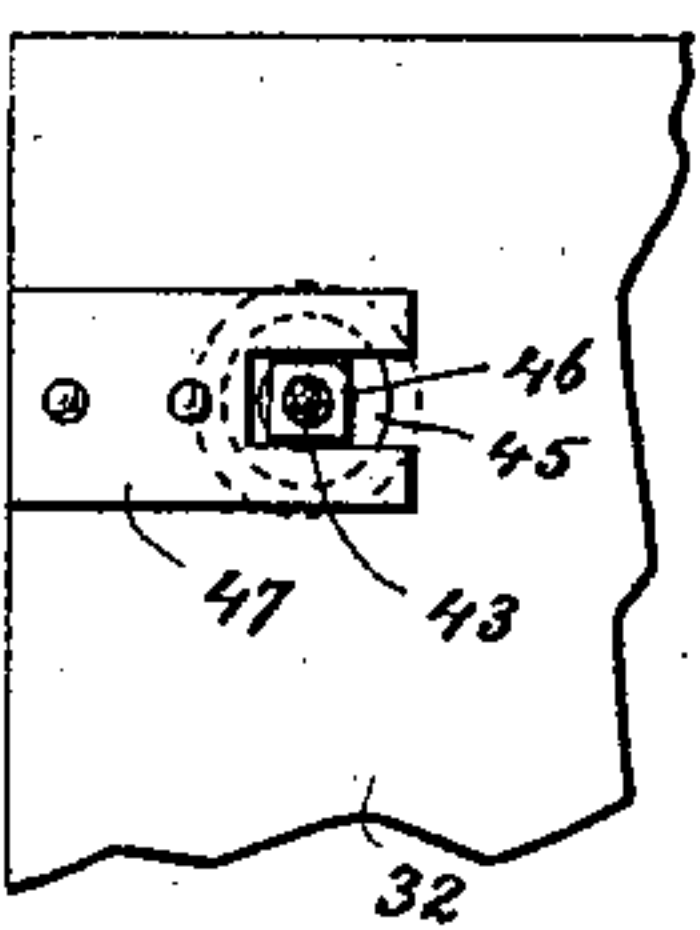


Fig. I.

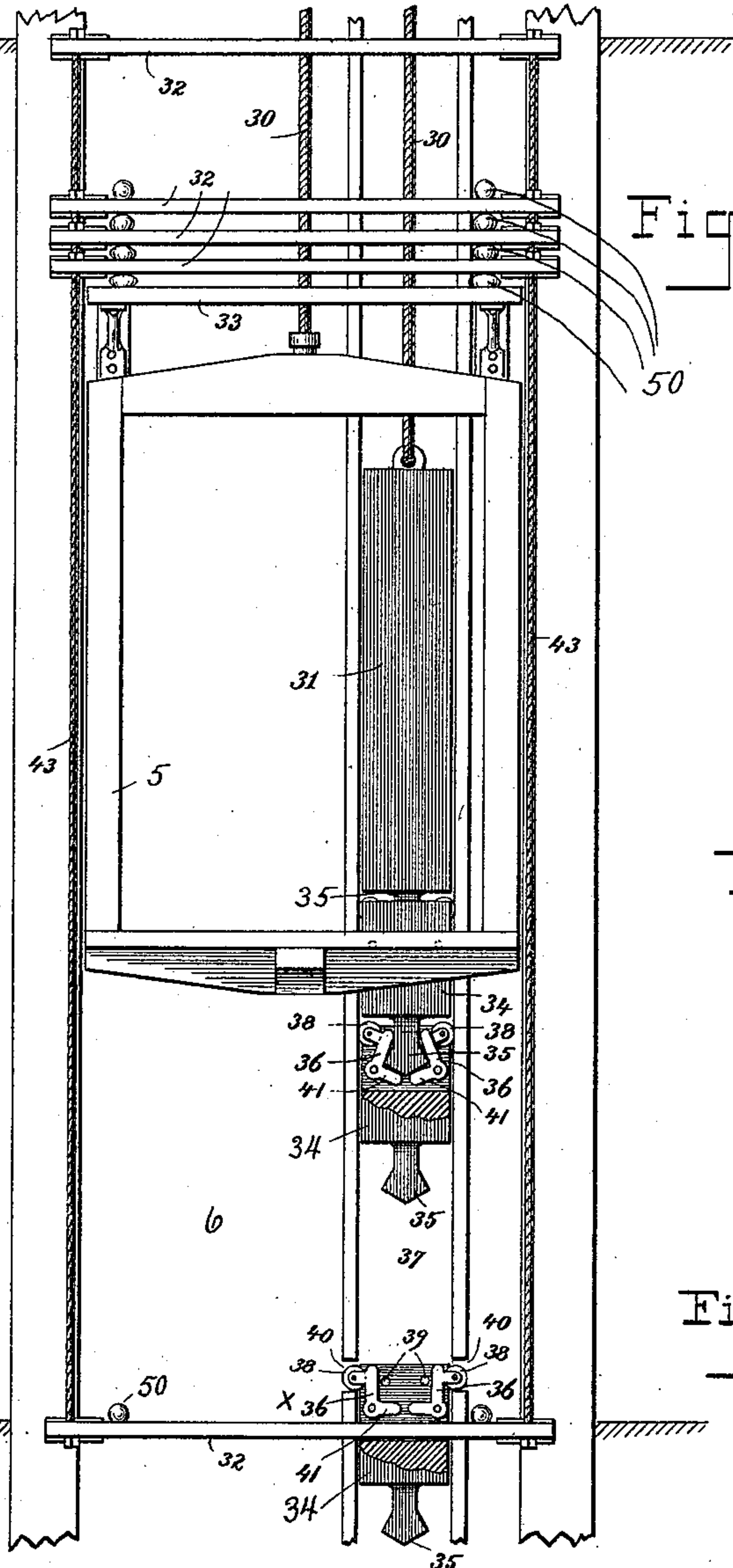


Fig. II.

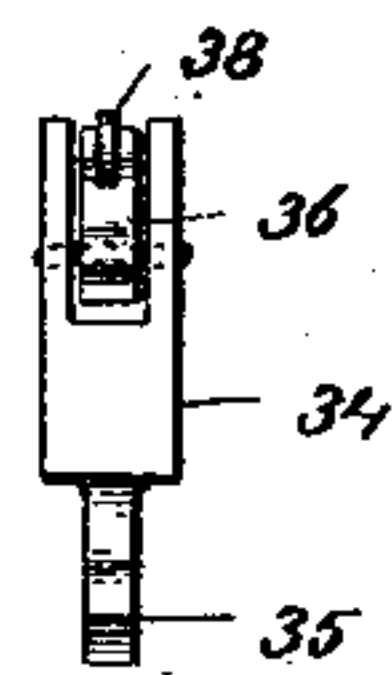


Fig. VII.

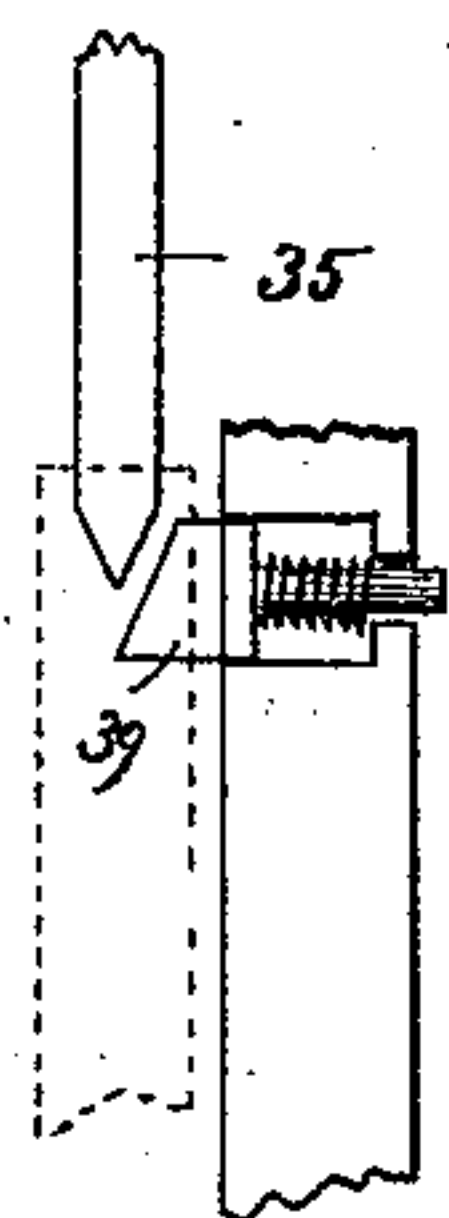
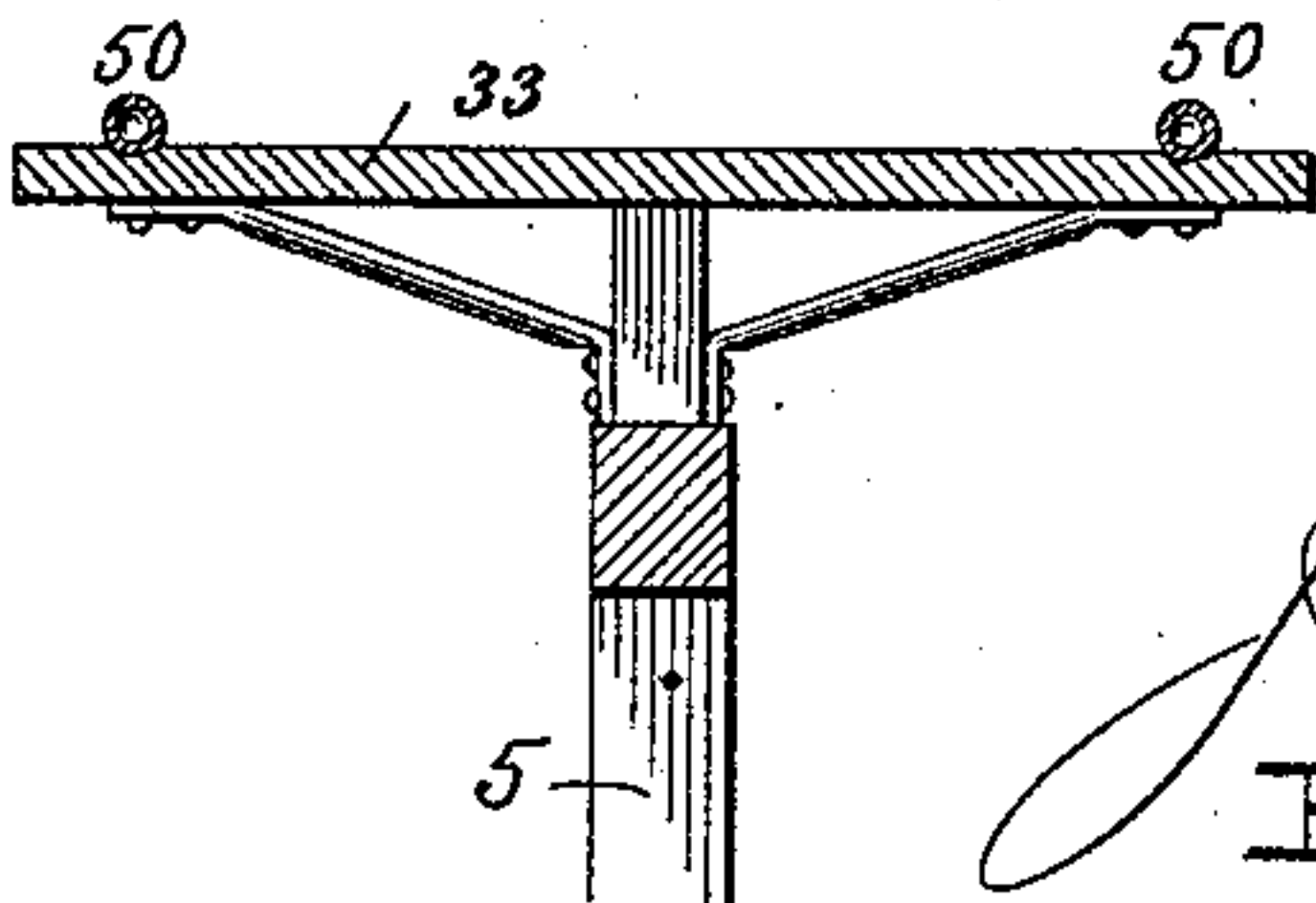


Fig. VI.



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UNITED STATES PATENT OFFICE.

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HATCHWAY FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 447,196, dated February 24, 1891.

Application filed January 21, 1890. Serial No. 337,621. (No model.)

To all whom it may concern:

Be it known that I, JOHN JAMES McBRIDE, a citizen of the United States, residing at Ridgefield Park, in the county of Bergen, State of New Jersey, have invented certain new and useful Improvements in Elevators, of which the following is a specification.

My invention relates to improvements in those hoists or elevators in which each hatchway is normally closed by a loose door known in this specification as a "traveling door," which is picked up or lifted bodily, still maintaining its horizontal position by the ascending and returned to its place by the descending ing cab. A consequence of this arrangement is that the cab in ascending has its weight increased by the addition of one traveling door after another and again correspondingly diminished on its return journey as it leaves door after door behind it. This discrepancy of weight is in the customary arrangement of such doors aggravated by the fact that each door above the cab is connected to a like door below the cab, which lower door is lifted along with the upper one, in order that the opening of a hatchway above the cab shall be accompanied by the closure of one below it.

The object of my invention is to devise a means whereby the changing weight of the cab incident to these causes becomes automatically compensated by the attachment to and detachment from the counterpoise of supplementary weights.

The means employed by me for effecting the above purpose and the improvements ancillary thereto are represented in the accompanying drawings, in which—

Figure I is a partly-sectioned elevation of an elevator and hatch-doors embodying my improvements. Fig. II is a side view of a clip-jaw of one of my supplementary weights. Fig. III is a detailed top view of the metal guide and wear-shoe. Fig. IV is a sectional view of the means for adjusting and fastening to an upper traveling door one of the four cables by which the corresponding lower door is suspended from it. Fig. V is a top view of the same. Fig. VI is a sectional elevation of the door-carrying cradle. Fig. VII is an elevation of the clip-locking device.

5 represents an elevator cab or cage, and 6 the guide frame or well in which it operates.

30 may be considered the ordinary cable for a counterpoise or weight 31.

32 represents a number of upper hatch-doors of the loose or traveling type and one of the series of lower hatch-doors, of which each of the latter is suspended from one of the former by means of cables 43.

When the cab has passed through the uppermost hatchway, all the doors rest on a cradle 32, attached to the top of the cab, and these doors are deposited one by one on their seats at the successive hatchways as the cab descends. At the instant that any of said upper doors comes to rest in its hatchway its suspended mate or lower door finds a resting place at the bottom of the well. Conversely as the cab ascends and lifts successively the doors at the several floors it raises at the same time the corresponding doors of the lower series to close the hatchways below it. Thus as it ascends it picks up the doors in pairs, and in buildings having many stories this materially increases the total weight on the cab and its lifting-cable and puts an undue tax on the motive power employed. To remedy this defect I have devised a system of supplemental weights, which as the counterpoise ascends become automatically engaged with the lower end of the latter, so as to add their mass successively to the counterpoise at each successive ascent of the cab through the respective hatchways, and which as the counterpoise ascends are in like but reverse order automatically, one by one, released and held in place in their guideways in readiness for like service on redescent of the counterpoise. To this end the counterpoise 31 has projecting downwardly from it a spear or arrow shaped foot 35, and each supplementary weight 34, except the lowest, is in like manner provided with similar spear or arrow shaped foot 35.

Each supplementary weight is at its upper end equipped with a clip, which consists of two L-shaped levers or jaws 36, between which the foot of the member next above it is on the descending stroke of the counterpoise thrust and by which it becomes gripped.

When the counter-weights are at rest at their proper respective places in the guideway 37, these jaws 36 or rollers 38 thereon are held apart by spring pins or bolts 39, so as to occupy rests, recesses, or notches 40 in the walls of said guideway, as shown at *x* in Fig. 1, and to thereby support the respective counter-weights. Suppose now that the cab begins to ascend from its lowest position, and the counterpoise 31 consequently begins to descend in its guideway, the arrangement of the parts is such that just as the cab picks up the first pair of traveling doors the counterpoise-foot 15 enters between the spring-jaws 36, throws back stop pins or bolts 39, (see Fig. VII,) and, engaging with the horizontal extensions 41 of said jaws, withdraws the rollers 38 from the recesses 40, thus releasing the counter-weight and permitting it to descend with the engaged counterpoise. The same action causes the jaws to close upon and grip the said foot 35, so as to increase the weight of the counterpoise by the mass of said counter-weight. On the next counter-weight below being reached the spear 35 of the already-engaged weight in like manner becomes engaged with the jaws of said lower weight, and so on, the number of weights engaged being more or less and depending on the greater or less upward flight of the cab.

At the reverse or ascending movement of the counterpoise which accompanies descent of the cab each counter-weight becomes automatically detached and retained at its proper position. (See *x*, Fig. I.) By this means the changes of load upon the platform are merely those of the persons or merchandise for which it is used.

In order to avoid concussion incident to the impact of the cradle 33 with the door next above it and of the several consecutive doors with one another, I provide buffers, such as rubber balls 50, corks, leather pads, cushions, coiled or other springs.

42, Fig. III, represents a metal guide and wear shoe for the edges of the "carrying-doors."

The cables 43, by which each several door of the lower series is suspended at proper distance from its mate of the upper series, have a polygonal collar 46', which, occupying a yoke 47, secured to the under side of the door, holds the cable against twisting. Above collar 46' is a screw-head 46, which is engaged in a nut 45, having a polygonal head 44. By turning said head to right or left the cable 43 is drawn upward or downward until the proper relative separation of the upper and lower doors is secured.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination, with the series of traveling doors of an elevator and with a counter-

poise, of one or more supplementary weights constructed, substantially as described, with jaws on one member and foot on the other member, so as to become automatically attached to said counterpoise on each descending and detached on each ascending journey of the latter, for the purpose set forth.

2. The combination, with the elevator-cab and a series of traveling doors and with a notched or recessed guideway, of a counterpoise armed at bottom with spear 35, and one or more supplementary counter-weights 34, which are adapted to be automatically engaged with and disengaged from said counterpoise, substantially as and for the purpose set forth.

3. The combination, with the main counterpoise of an elevator-car, of supplementary counter-weights, coupling devices on all of said supplementary weights, and armed jaws connecting with said coupling devices and engaging with rests or notches in the guide-frame.

4. The pick-up supplementary counter-weight 24, having spear-shaped foot 35 and L-shaped levers or jaws 36.

5. The combination, with the suspenders 43 of a series of traveling doors 32, of the adjusting and coupling device consisting of nut 44 45, screw-head 46, polygonal collar 46', and yoke 47.

6. In combination with the series of traveling doors, the counterpoise 31, and the series of automatically engaging and disengaging supplementary weights 34, said counterpoise and each supplementary weight, except the bottom one, having an arrow-shaped foot 35, and each supplementary weight having jaws 36, adapted to grasp such foot of the member immediately above it on descent of said member and to be released therefrom and engage in recesses of the guide-frame on ascent of said member, substantially as set forth.

7. In an elevator having a cradle on top of the elevator-cab and a series of traveling hatchway-doors in the guide-shaft, the combination, with a counterpoise 31, having an arrow-shaped foot 35, and with recesses 40 in the guide-frame, of a series of supplementary weights, one for each pair of said doors, each weight, except the bottom one, having a like arrow shaped foot, and each weight having a pair of jaws 36, adapted to grasp such foot of the member immediately above it at each descent and to become released from said foot and engage in said recesses at each ascent of the counterpoise, said weight having spring-catches 39, and the whole being arranged and adapted to operate as set forth.

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