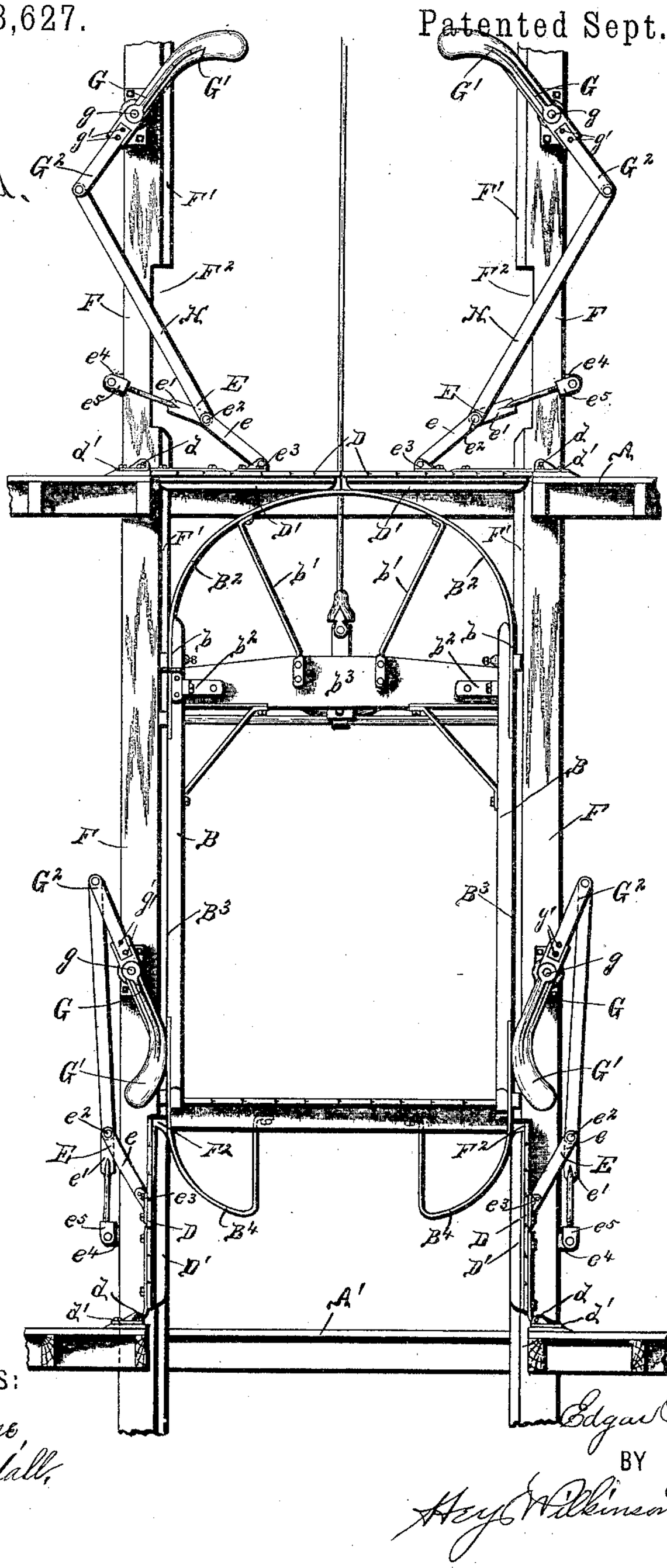
(No Model.) 3 Sheets—Sheet 1.

E. W. HOUSER.

ELEVATOR.

No. 458,627. Patented Sept. 1, 1891.

Fig. 1.



WITNESSES:

H. E. Chase,

W. H. Randall.

INVENTOR

Edgar W. Houser

BY

Hey Wilkinson & Parmele

ATTORNEYS.

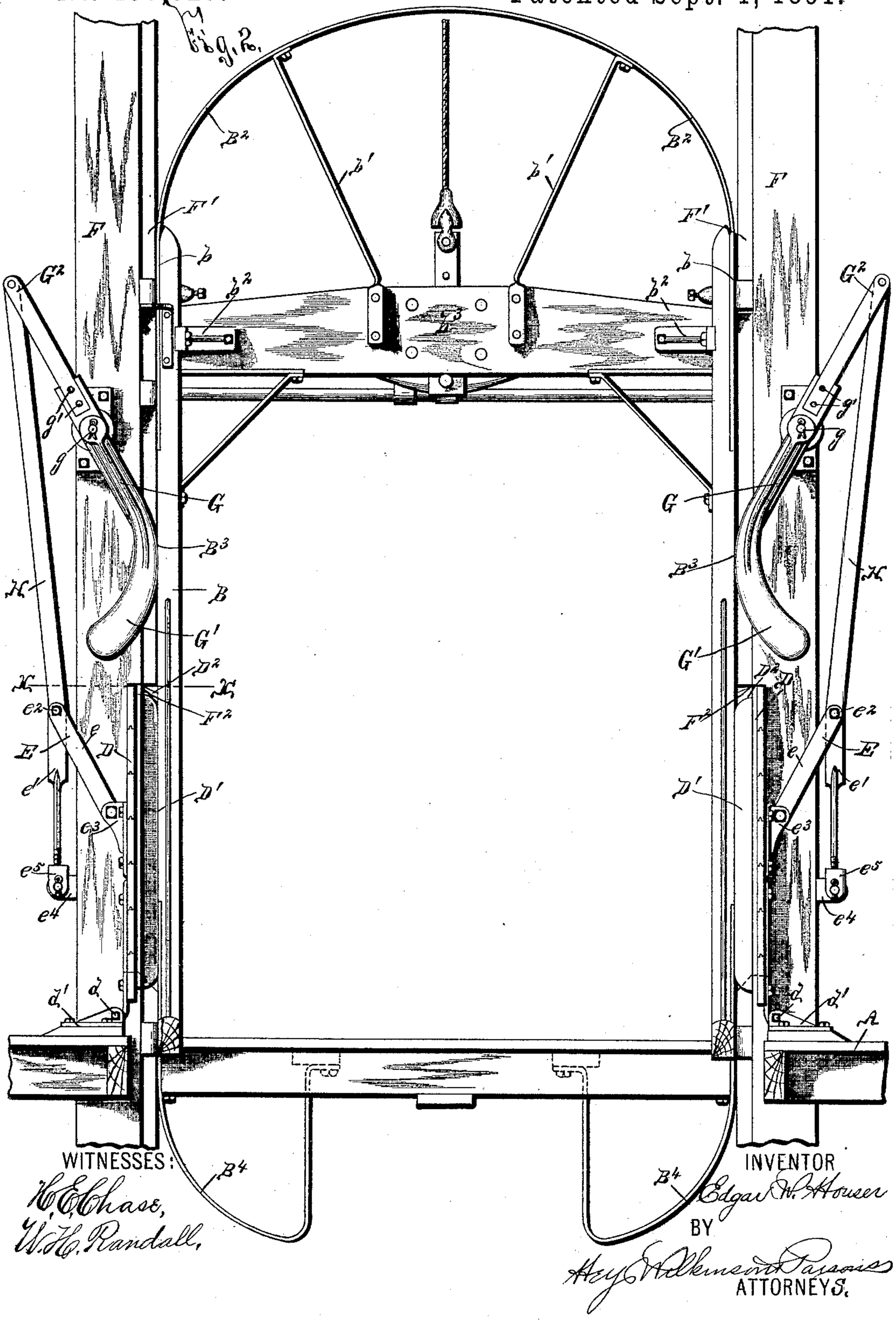
(No Model.) 3 Sheets—Sheet 2.

E. W. HOUSER.

ELEVATOR.

No. 458,627. Patented Sept. 1, 1891.

Fig. 2.



WITNESSES:
K. E. Chase,
W. H. Randall.

INVENTOR
Edgar W. Houser
BY
Hey Wolkmer & Parsons
ATTORNEYS.

(No Model.)

3 Sheets—Sheet 3.

E. W. HOUSER.

ELEVATOR.

No. 458,627. Patented Sept. 1, 1891.

Fig. 3.

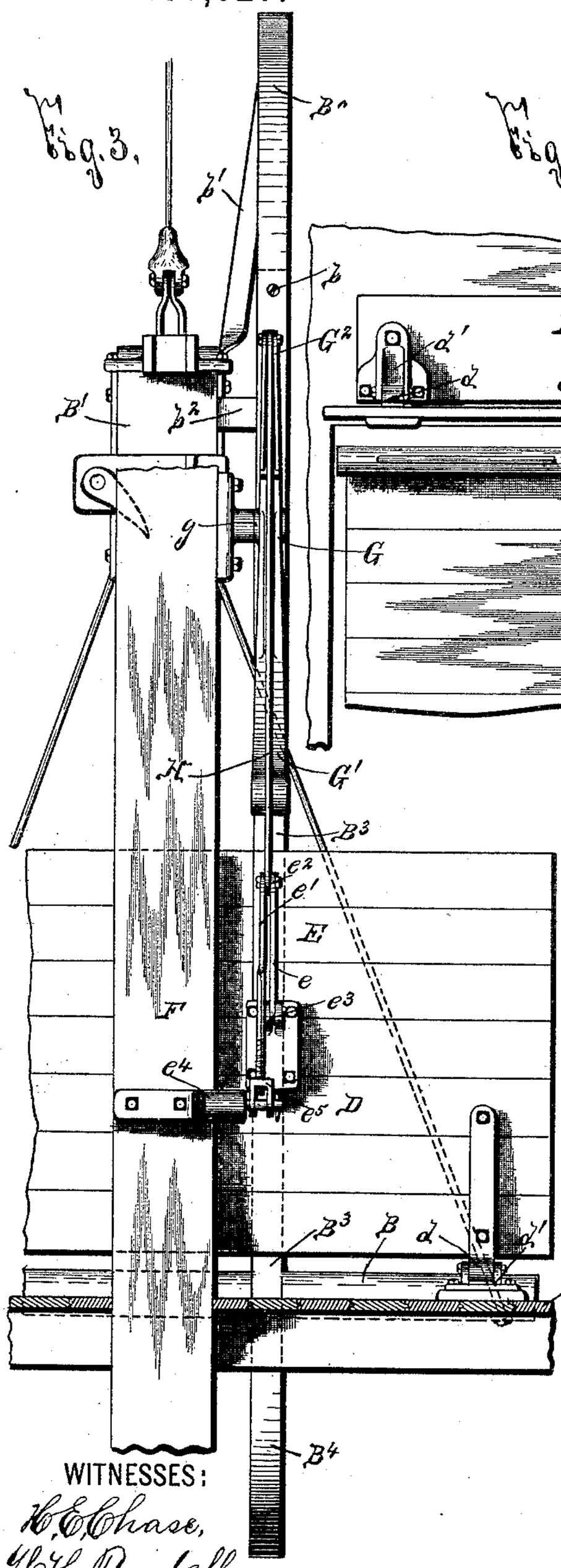


Fig. 4.

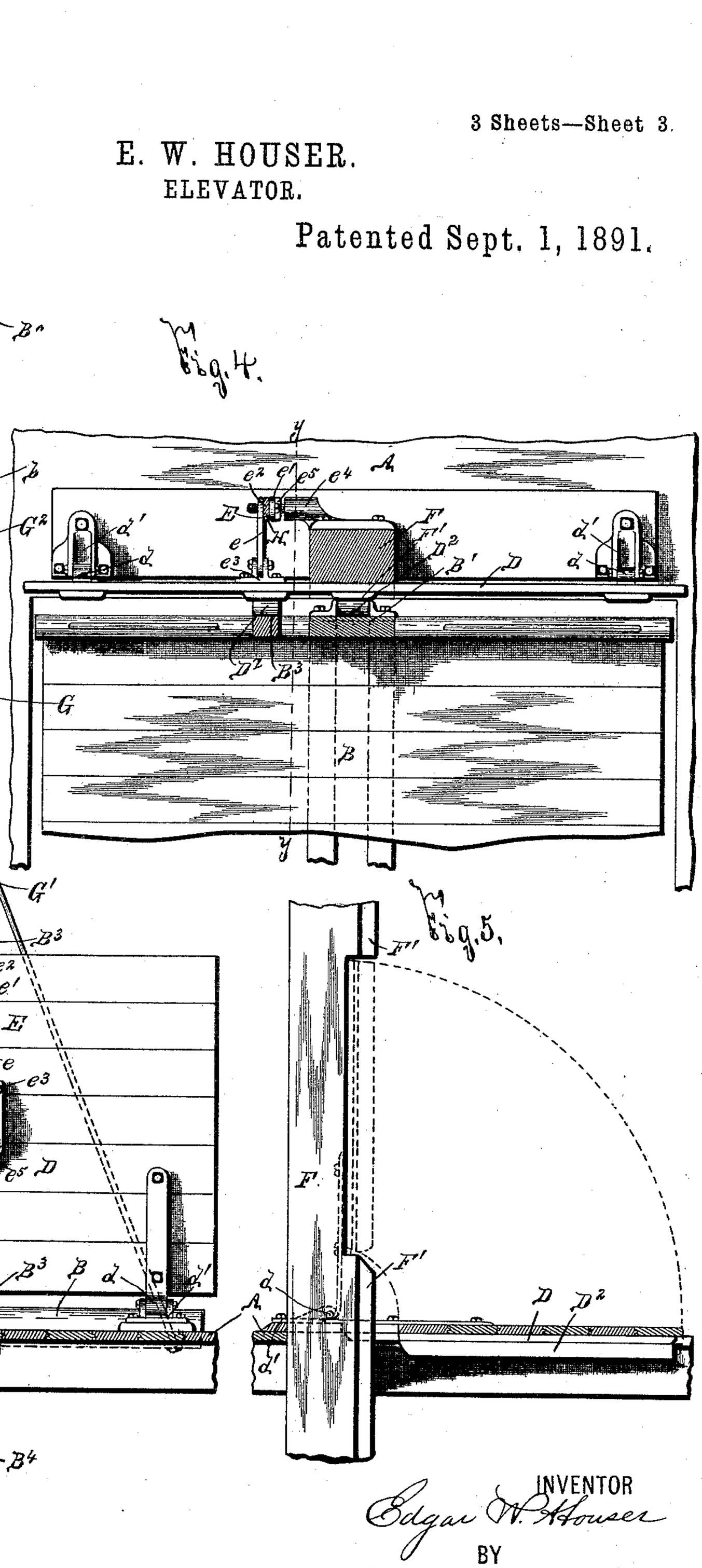


Fig. 5.

WITNESSES:
K. E. Chase,
W. H. Randall,

INVENTOR
Edgar W. Houser
BY
Hoyt Wilkinson & Parsons.
ATTORNEYS

UNITED STATES PATENT OFFICE.

EDGAR W. HOUSER, OF SYRACUSE, NEW YORK.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 458,627, dated September 1, 1891.

Application filed March 14, 1891. Serial No. 385,045. (No model.)

To all whom it may concern:

Be it known that I, EDGAR W. HOUSER, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Elevators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in elevators, and has for its object the production of a simple and effective device for automatically opening and closing the elevator-doors as the car moves up and down; and to this end the invention consists, essentially, in hinged elevator-doors, a toggle for supporting the doors having one lever pivoted to a door and the other to a stationary support, as the car-guide beam, a pivoted lever secured to the elevator-car-guide beam and provided with a weighted extremity projecting into the path of the elevator-car, a link between said toggle and the opposite extremity of the pivoted lever, a car having curved bearing-faces adapted to engage the projecting extremity of the pivoted lever, a cut-out in the car-guide beam above the elevator-door for receiving the same, a guide-rib on the normal lower face of the elevator-door, and in the detail construction and arrangement of the parts, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 represents an elevation of two floors, two separate pairs of elevator-doors and their actuating-levers, and an elevator-car midway between the two pairs of gates, the upper one being shown as closed and the lower one as just on the point of closing. Fig. 2 is a similar enlarged view illustrating the elevator-car as in its position assumed when the gates are entirely opened and the floor of the car is in alignment with the floor of the building. Fig. 3 is a rear view of a portion of the car-guide beam, the elevator-door, and the levers for actuating the door. Fig. 4 is a horizontal sectional view taken on line $x\,x$, Fig. 2; and Fig. 5 is a transverse sectional view taken on line $y\,y$, Fig. 4.

A and A′ represent the upper and lower floors of a building having an elevator-well C, in which is movable an elevator-car B of any desirable form and construction.

D represents the elevator-doors, which are preferably hinged at d to a bearing d' upon the floor of the building. As preferably constructed, the doors are arranged in pairs, each one of the doors being of substantially the same area and having its free extremity in close proximity to the adjacent edge of the other for entirely closing the openings between the floors. The doors are also of somewhat greater width than the elevator-well in order that their opposite edges may rest upon the floor A A′ and be thereby firmly supported and adapted to safely hold superimposed weights.

E represents a toggle formed by a pair of levers e and e', having their adjacent extremities pivoted together at e^2 with the opposite extremity of the lever e, pivoted to a lug e^3 upon the elevator-gate D, and the opposite extremity of the lever e' pivoted to a support e^4, preferably mounted upon the elevator-guide beam F, although it may be otherwise mounted, if desired. The outer extremity of the lever e' is screw-threaded and provided with an adjustable connection e^5, whereby the length of the toggle may be somewhat adjusted to conform to the exact requirements.

G represents a lever pivoted at g to the beam F and formed with one extremity G′ curved, weighted, and projecting into the elevator-car path. The opposite extremity G^2 is connected to the common pivotal point of the toggle-levers e and e' by a link H.

For the purpose of simplicity of manufacture the opposite extremities of the lever G are formed separable one from the other and secured together by rivets or bolts g', the weighted end being preferably composed of cast metal and the other of bar or band iron.

The elevator-car B is provided with a guide-way B′, adapted to engage a rib F′ upon the beam F and guide the car in its upward and downward movements.

Provided upon the upper extremity of the elevator-car at one side of the way B′ is a bearing-face B^2, preferably composed of a semicircular or curved bar secured at its opposite extremities at b and braced at its cen-

tral portion by bars b'. As the car moves upward this bearing-face encounters the lower face of a bearing rib or face D′ on the doors D and forces them upwardly into a recess or cut-out F^2, formed in the guide-beam for their reception. On the under face of these doors is a rib or face D^2 at one side of the rib D′, which latter rib D^2, when the gate is in its upward position, forms a continuation of the rib F′ and serves to guide the elevator in its onward movement. As the elevator-doors are moved upward the normal lower extremity of the lever G is elevated above the weighted end, which is correspondingly depressed and retained in said position by contact with a bearing-face B^3, formed on the outer wall of the elevator-car in alignment with the face B^2. At the lower extremity of the car B is a curved bearing-face B^4, which forms a continuation of the vertical face B^3, and as the elevator-car continues its upward movement the weighted end G′ of the lever G bears against the curved bearing-face B^3 and permits the door to gradually close as the elevator-car ascends. On the contrary, when the elevator descends the bearing-face B^4 depresses the weighted end G′ and elevates the elevator-doors into their opened position.

As preferably constructed the bearing-face B^3 is composed of a hard-wood bar having its lower face secured to the elevator-car floor and its upper face supported by a brace b^2, projecting from the top cross-bar b^3. Formed at the opposite extremities of this face B^3 are cut-outs for receiving the ends of the faces B^2 and B^4, which are preferably composed of iron or steel bars.

This construction of automatic elevator-gate may be readily attached to any desired form of elevator-car without extra fitting or excessive expense, since the only thing necessary is to secure to the ordinary guide-beam the pivotal pin g and the support e^4, provide said guide-beam with a cut-out F^2, secure to the door the lug e^3, pivot between the lug e^3 and the support e^4 the toggle E, connect the toggle E to the pivoted lever G by the link H, and provide upon the elevator-car the bearing-faces B^2, B^3, and B^4. By practical use I have ascertained that this construction of elevator-gate is also very quickly and noiselessly operated without the slightest liability of any failure in its operation.

The operation of my invention will be readily perceived from the foregoing description and upon reference to the drawings, and it is evident that considerable change may be made in its detail construction and arrangement without departing from the spirit thereof.

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 of an elevator-car, a movable door, a pivoted lever G, having one extremity weighted for causing said lever to assume its normal position, a toggle E, consisting of levers e and e', hinged together at their adjacent extremities, with the opposite end of one of the levers e hinged to said door, a support e^4 for the opposite end of the other lever e', and a link H between said toggle and one extremity of said weighted lever, substantially as and for the purpose set forth.

2. In an elevator, the combination of a car B and a door D, an upright F at the side of the elevator-well, a lever G, pivoted at its central portion to said upright, with one extremity weighted for causing said lever to assume its normal position, a stationary support e^4 on said upright, a toggle E, consisting of levers e and e', pivoted together at their adjacent extremities, with one lever pivoted at its opposite end to the support e^4 and the other pivoted to the elevator-door, and a link H between the toggle E and the unweighted extremity of the lever G, substantially as set forth.

3. In an elevator, the combination, with a car B and a movable door D, of an upright F, projecting along the elevator-well, a lever G, pivoted to said upright, with one extremity extending into the path of the car B, a support e^4 on said upright, a toggle E, consisting of levers e and e', one lever e being pivoted to the door D and the other lever e' being pivoted to the support e^4, and a link H between said toggle and the lever G, substantially as described.

4. In an elevator, the combination, with a car B, curved bearing-faces B^2 and B^4 at the opposite extremities of said car, the vertical bearing-face B^3 at the sides of the car, and a movable door D, of an upright F, projecting along the elevator-well, a lever G, pivoted to said upright, with one extremity extending into the path of the car B, a support e^4 on said upright, a toggle E, consisting of levers e and e', one lever e being pivoted to the door D and the other lever e' being pivoted to the support e^4, and a link H between said toggle and the lever G, substantially as specified.

5. In an elevator, the combination of a car B, having a vertical bearing-face B^3 at its opposite sides, a bearing-face B^2, having its opposite extremities secured to the face B^3 for forming a continuation thereof, bearing-faces B^4, uprights at the opposite sides of the elevator-well, levers G, hinged to said uprights, supports e^4, toggles E between said supports and the adjacent elevator-door, and consisting of levers e e', hinged together at their adjacent extremities, with one lever e hinged to an elevator-door and the other to the movable support e^4, and links H between the toggles E and levers G, substantially as described.

6. In an elevator, the combination, with a car B, having bearing-faces B^2, B^3, and B^4, of a door D, having bearing-face D′ and rib D^2 on its under face, a beam F, having rib F′ and formed with a cut-out F^2 for receiving the

door D, a lever G, a toggle E, and a link H between the lever G and the toggle E, substantially as and for the purpose set forth.

7. In an elevator, the combination of a car B, an upright F, a lever G, pivoted to said upright, a door D, a support e^4, a lever e', an adjustable end e^5 on said lever e', a lever e, hinged at one extremity to the lever e' and at the other to the door D, and a link H between the levers G and e e', substantially as and for the purpose described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 10th day of March, 1891.

EDGAR W. HOUSER.

Witnesses:
E. A. WEISBURG,
CLARK H. NORTON.