

(No Model.)

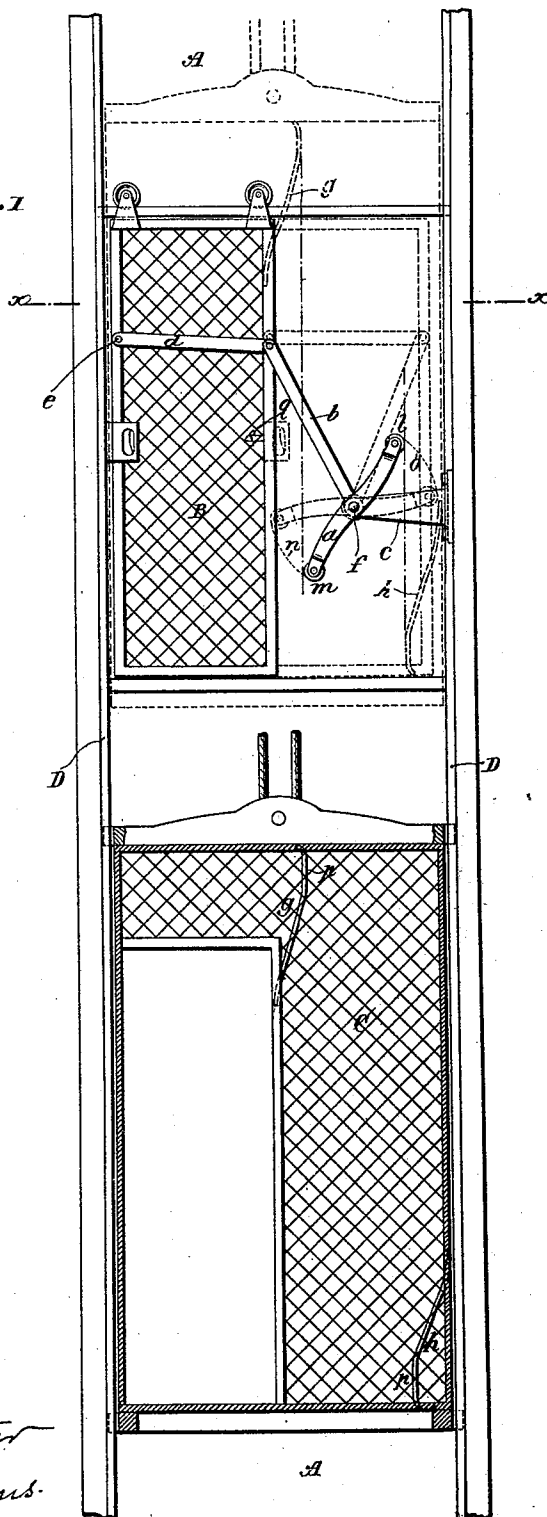
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J. B. STONER.
ELEVATOR.

No. 461,396.

Patented Oct. 13, 1891.

Fig. 1



Witnesses:

Raphael Netter
J. B. Williams.

Inventor

John B. Stoner
By H. B. Litus
Attorney.

(No Model.)

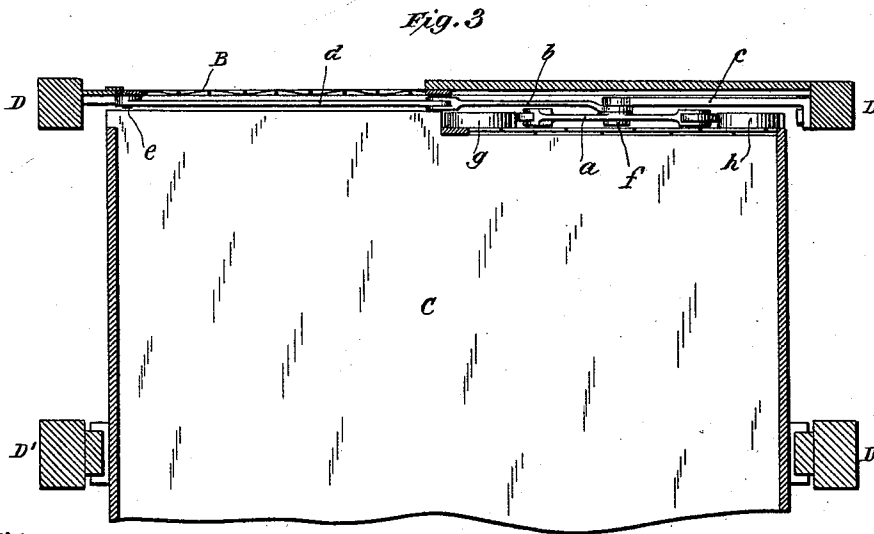
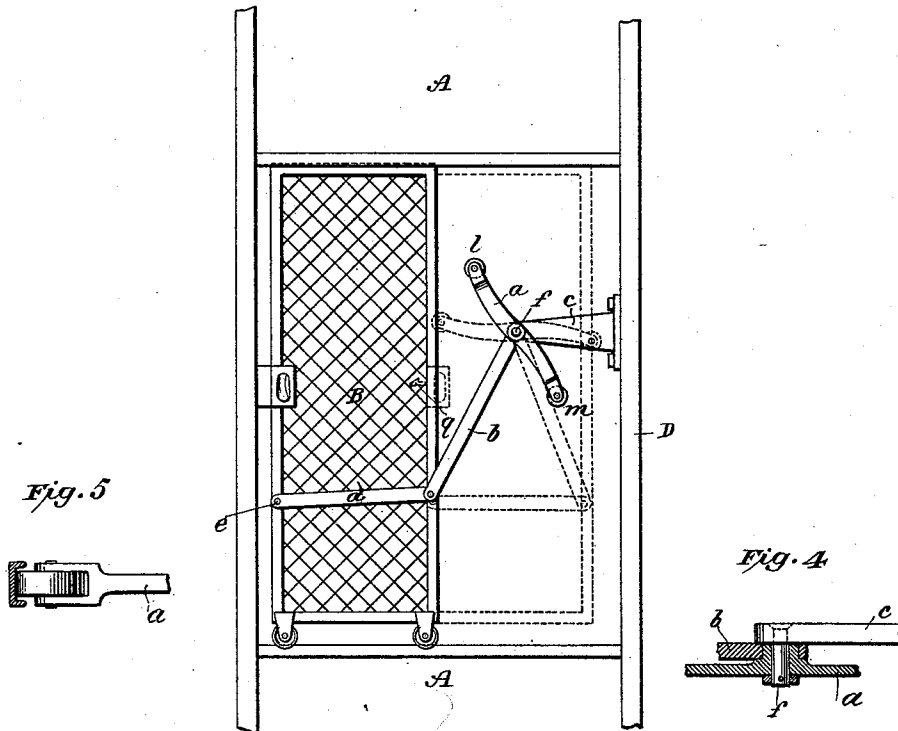
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Fig. 2



Witnesses:
Raphael Netter
J. B. Williams

Inventor
John B. Stoner
By H. B. Liles
Attorney

UNITED STATES PATENT OFFICE.

JOHN B. STONER, OF NEW YORK, N. Y., ASSIGNOR TO HERBERT B. TITUS
AND CHARLES B. HILLHOUSE, OF SAME PLACE.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 461,396, dated October 13, 1891.

Application filed November 1, 1890. Serial No. 370,054. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. STONER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Device for Automatically Closing the Doors of Elevator-Shafts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide a device for automatically closing the doors opening into elevator-shafts upon the passage of the elevator-car.

The device consists, principally, of two arms secured within the space between the elevator-car and the inclosing wall or casing forming one side of the shaft and so arranged upon a common axis that while the lever-arm, which is centrally pivoted, is operated upon by the elevator-car in passing it so operates upon the other arm that by means of a connecting-rod or equivalent device it closes the door, whether the elevator-car is passing up or down.

In the drawings, Figure 1 is a front elevation, partly in section, showing one side of the elevator-well with its door-space, the elevator-car guides, the closed door opening into the shaft, and the device by means of which it is closed. Fig. 2 is a similar view of the upper section of Fig. 1, showing the operating-lever attached to the lower half of the door. Fig. 3 is an enlarged sectional view on the line *x x*, Fig. 1. Fig. 4 is a sectional view of the arms as pivotally attached. Fig. 5 shows the roller at one end of the lever-arm in contact with a modified form of the cam or strap attached to the elevator-car.

A A represent the elevator-shaft; B, a sliding door opening into the shaft; C, the elevator cage or car; D D', two of the elevator-guides. To the guide D is firmly attached a bracket *c*, in the end of which on the side toward the cage or car C is journaled a stud *f*.

a designates a lever-arm, which is provided with a central integral hub, through which passes the stud *f*, so that the lever *a* is thereby pivotally mounted. (See Fig. 4.) The lever *a* is preferably provided with terminal

rollers *l m*. An arm or link *b* is mounted rigidly on the hub of the lever-arm *a*, as shown in Fig. 4. Thus the arm *b* has a fixed position relatively to the arm *a*, with which it is thus connected, and both together oscillate upon the stud *f*. The free end of the arm *b* is pivoted to the free end of the connecting arm, rod, or link *d*, which is attached to the door B by means of the fixed pivot *e*. (See Fig. 2.)

To the outside of the elevator-car C are firmly attached two curved straps or strips *g h*, preferably of iron or other metal and substantially of the form shown, in such manner that in passing they engage, respectively, the rolls *l m* at the ends of the lever-arm *a*—that is, the lever-arm *a* being in a horizontal position when the door B is open, as indicated by the dotted lines, if the elevator-car is going upward the strap *h* engages with the roller *l*, carrying the lever-arm *a*, and the arm *b*, which revolves with it, and also the connecting-rod *d* to their final positions, as shown by the full lines, thus closing the door B, while if the elevator-car is passing downward the strap *g* engages in the same way with the roller *m* at the opposite end of the lever-arm *a*, producing the same result. The straps *g h* are so shaped and so placed relatively to the lever-arm *a* as to engage the rollers *l m*, respectively, at any point upon the dotted lines *n o*, which mark the periphery of the space through which they pass, as shown in Fig. 1, thus closing and latching the door B with certainty if left open to the slightest extent, and, furthermore, these straps being in shape and position vertical for a little space at *p p*, their extreme points of contact with the rollers *l m*, the door is thereby held closed and latched for an instant, thus preventing any rebound from a sudden closing, while if the door remains closed the rollers *l m* are without the path of the straps *g h*, and the elevator-car passes in either direction without contact therewith.

If the space between the elevator-car and the casing of the elevator-shaft within which the device is to be placed is contracted so that the straps *g h* are necessarily very narrow, they may be made of U-iron, as shown in Fig. 5, to prevent the rollers *l m* from slipping off.

The lever-arm *a* may be so hinged as to yield by contact with the straps *g h* passing in the opposite direction from that above described; but this appears unnecessary, as the latch *q* is invariably so arranged that it can be unlatched only from the inside of the elevator-car when its door-space is opposite the door B.

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

1. The combination of the cage or car having suitable oppositely-arranged projections or straps at proper points thereon, an oscillating lever-arm pivotally mounted on some fixed part of the elevator-shaft, so as to be in the path of the projections on the moving car when the sliding door of the shaft is open, but out of the path of said projections when the said door is closed, an arm fixed on this lever and immovable relatively thereto, but movable with the lever, a pivoted link connecting the end of this arm pivotally with the door, and the horizontal sliding door, all arranged so that as the car moves up or down one or the other end of the aforesaid oscillating lever-arm will be struck by the projections whenever the door is open, so that the parts may operate to close the door, substantially as described.

2. The combination of a cage or car C, having oppositely-arranged projections or straps *g h* thereon, a lever-arm *a*, pivoted to the ele-

vator-shaft, an arm *b*, rigidly mounted on the arm *a*, so as to vibrate therewith, terminal rollers at each end of the arm *a*, a sliding door B, and a connecting-rod *d*, pivoted to the door and to the end of the arm *b*, substantially as described.

3. The combination of the elevator C, the oppositely-arranged straps *g h*, fixed thereto, the lever-arm *a*, centrally pivoted to the casing of the elevator-shaft, the arm *b*, the connecting-rod *d*, and the sliding door B, the lever-arm *a* being so placed that its ends are in the path of said straps when the door B is open, and the whole so arranged as to close said door by the passage of the elevator-car, substantially as shown and described.

4. The combination of a cage C, the oppositely-arranged straps *g h*, secured thereon, said straps being partially vertical at *p p*, the lever-arm *a*, pivoted on the projecting bracket *c* and provided with terminal rollers *l m*, an arm *b*, connected rigidly to the hub of the lever *a*, the sliding door B, and the connecting-rod *d*, pivoted to said door and to the arm *b*, substantially as described.

Signed at New York, in the county of New York and State of New York, this 17th day of October, A. D. 1890.

JOHN B. STONER.

Witnesses:

H. B. TITUS,
LEVI S. TENNEY.