

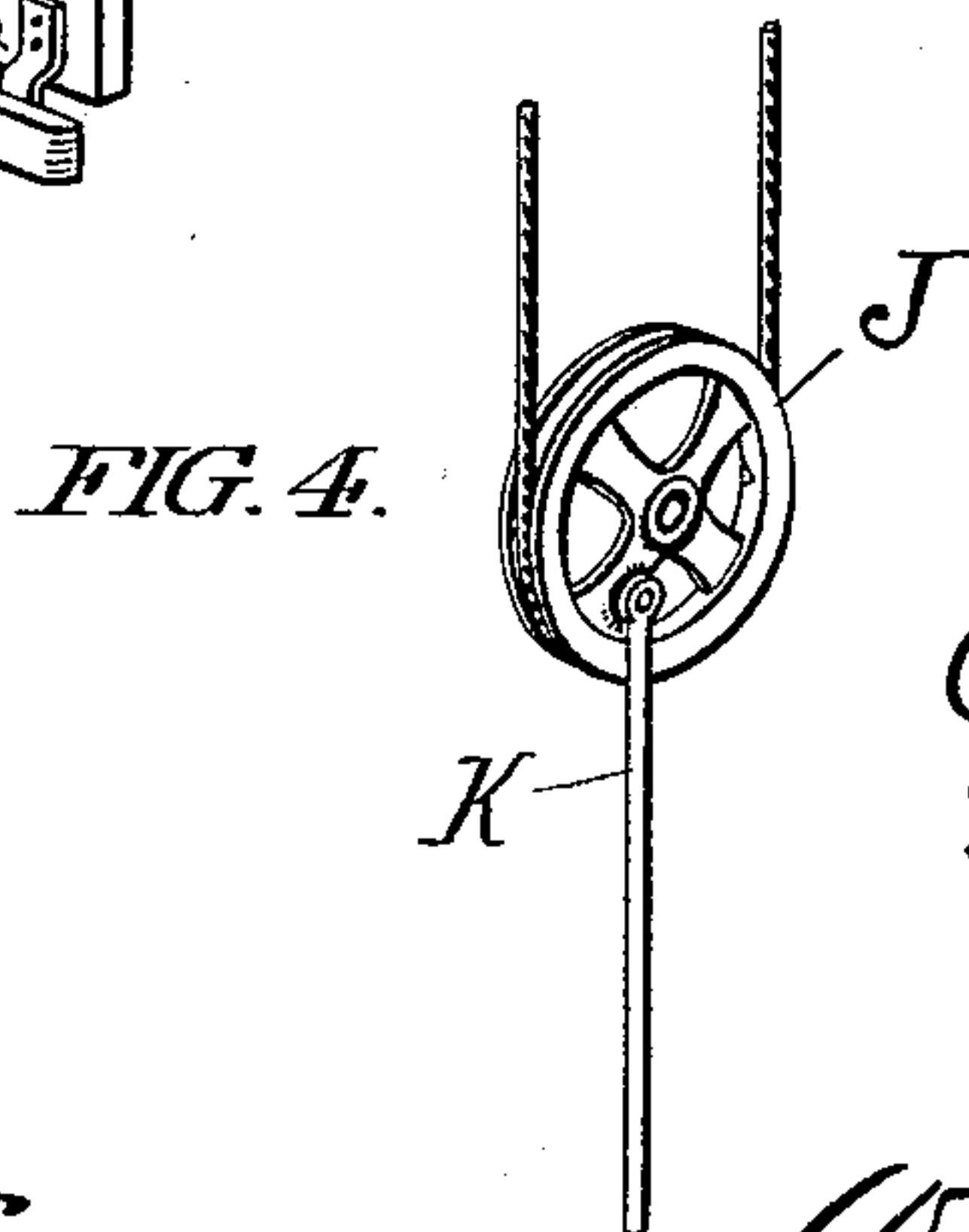
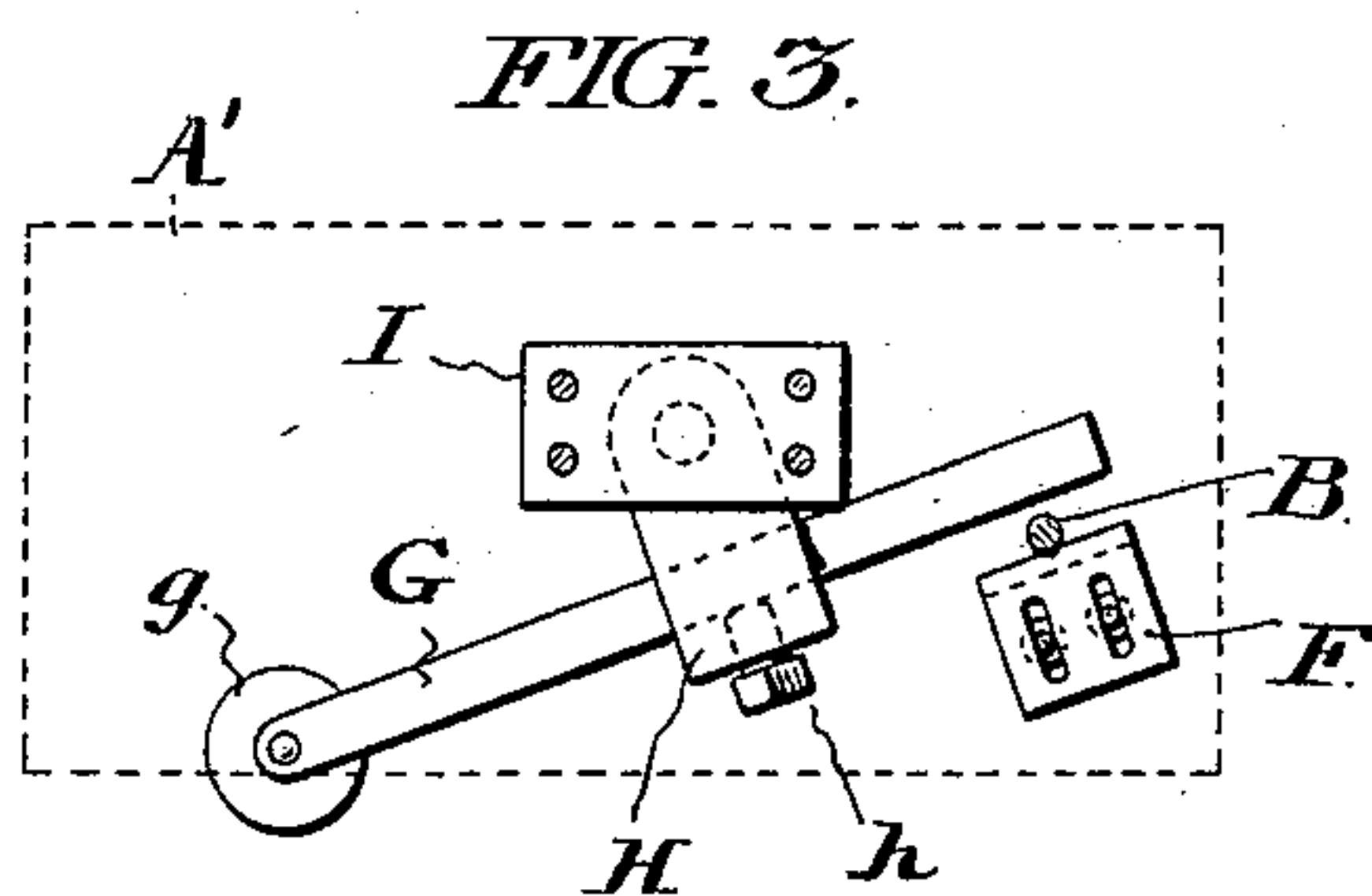
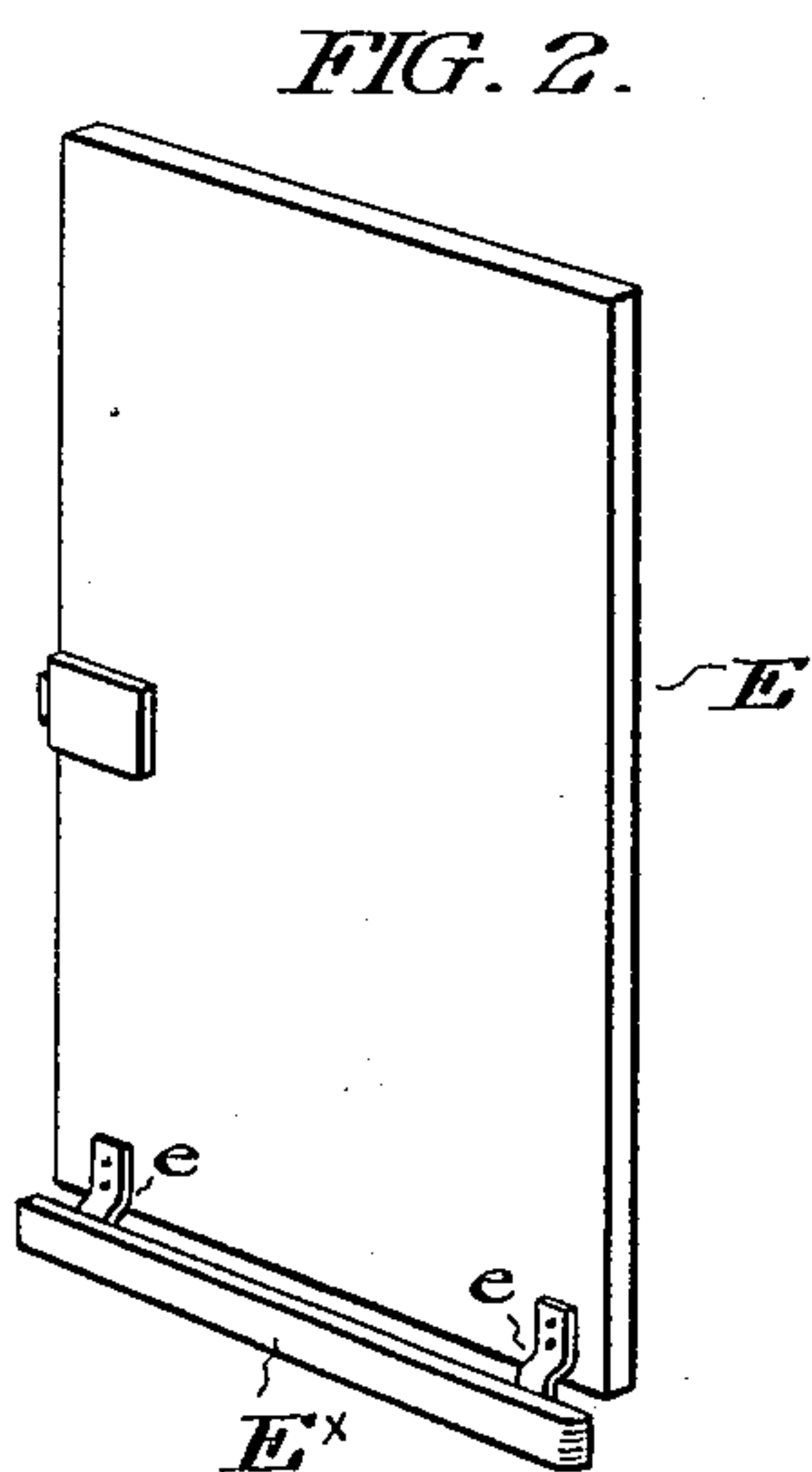
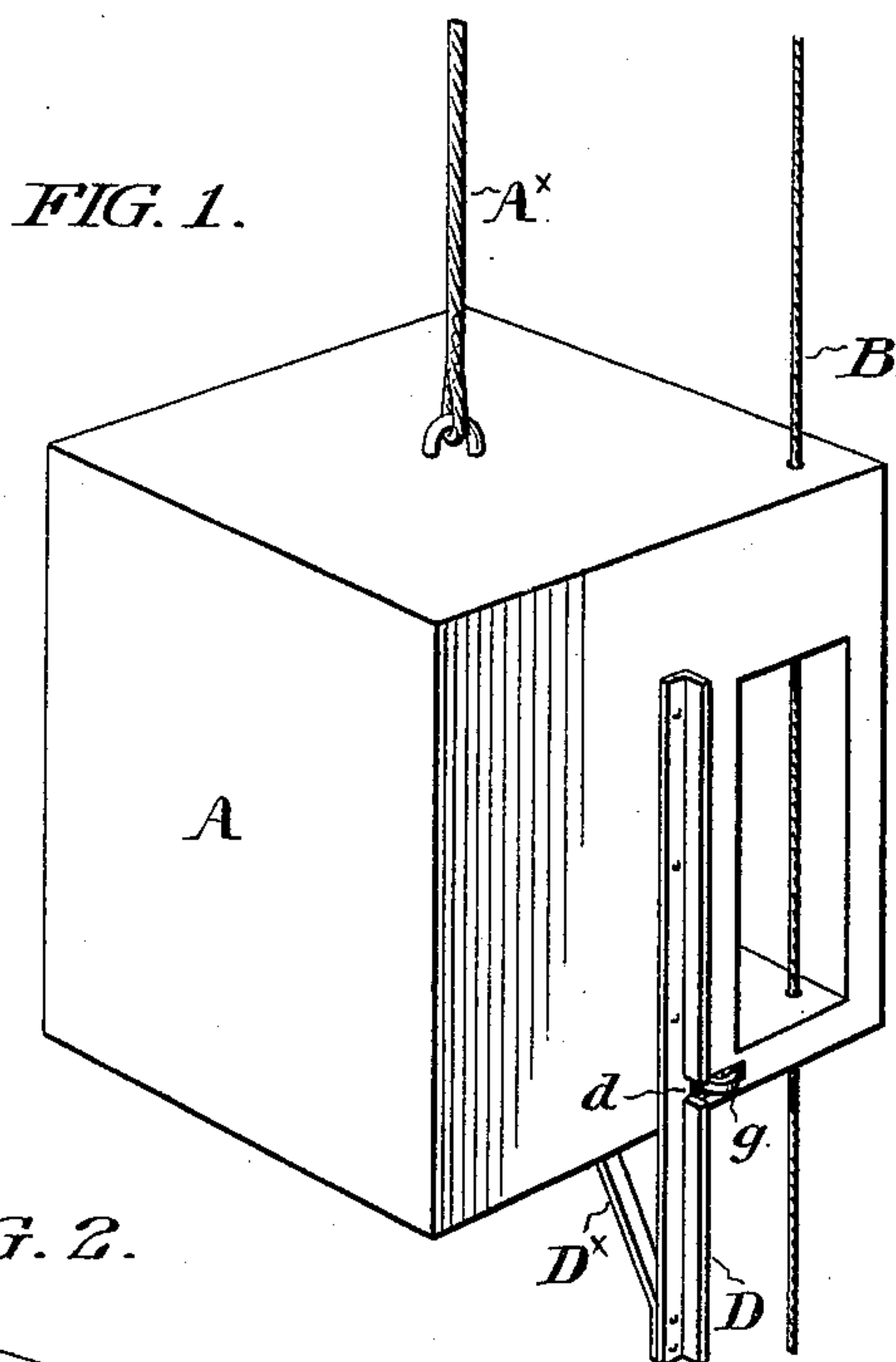
(No Model.)

3 Sheets—Sheet 1.

A. L. PLUSH & G. H. NOBLIT.
ELEVATOR.

No. 605,910.

Patented June 21, 1898.



WITNESSES:
V. E. Paige
J. Norman Dixon

Abram L. Plush,
George H. Noblit,
INVENTORS
By their Attorneys,
Wm. E. Strawbridge
Bonsau Taylor—

(No Model.)

3 Sheets—Sheet 2.

A. L. PLUSH & G. H. NOBLIT.
ELEVATOR.

No. 605,910.

Patented June 21, 1898.

FIG. 5.

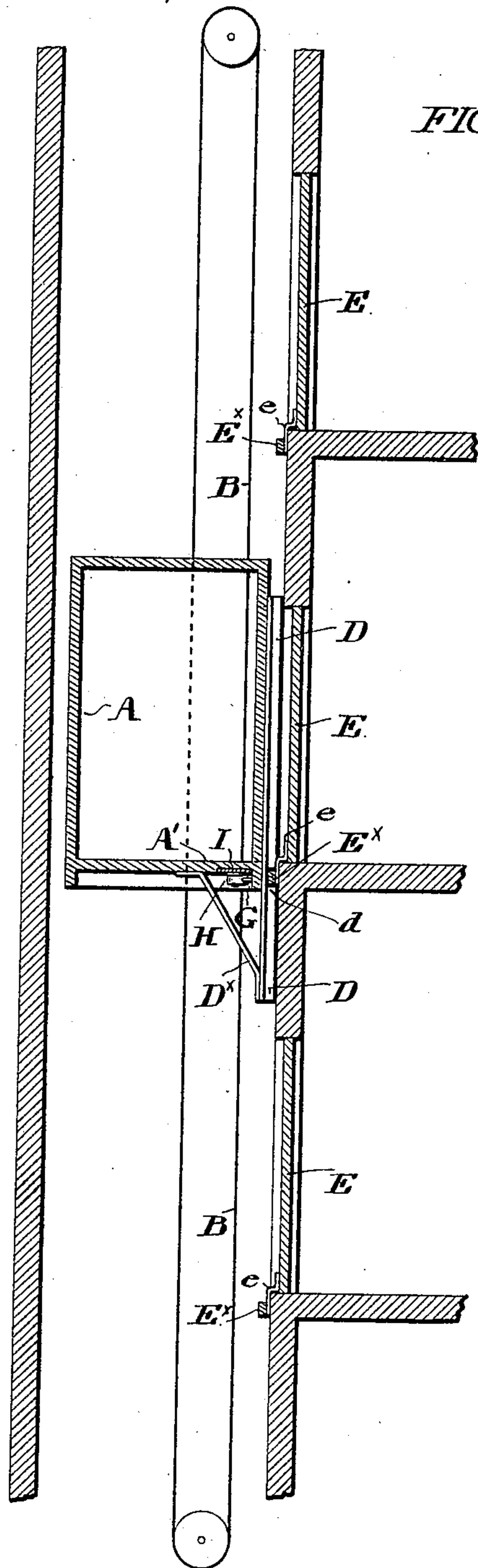
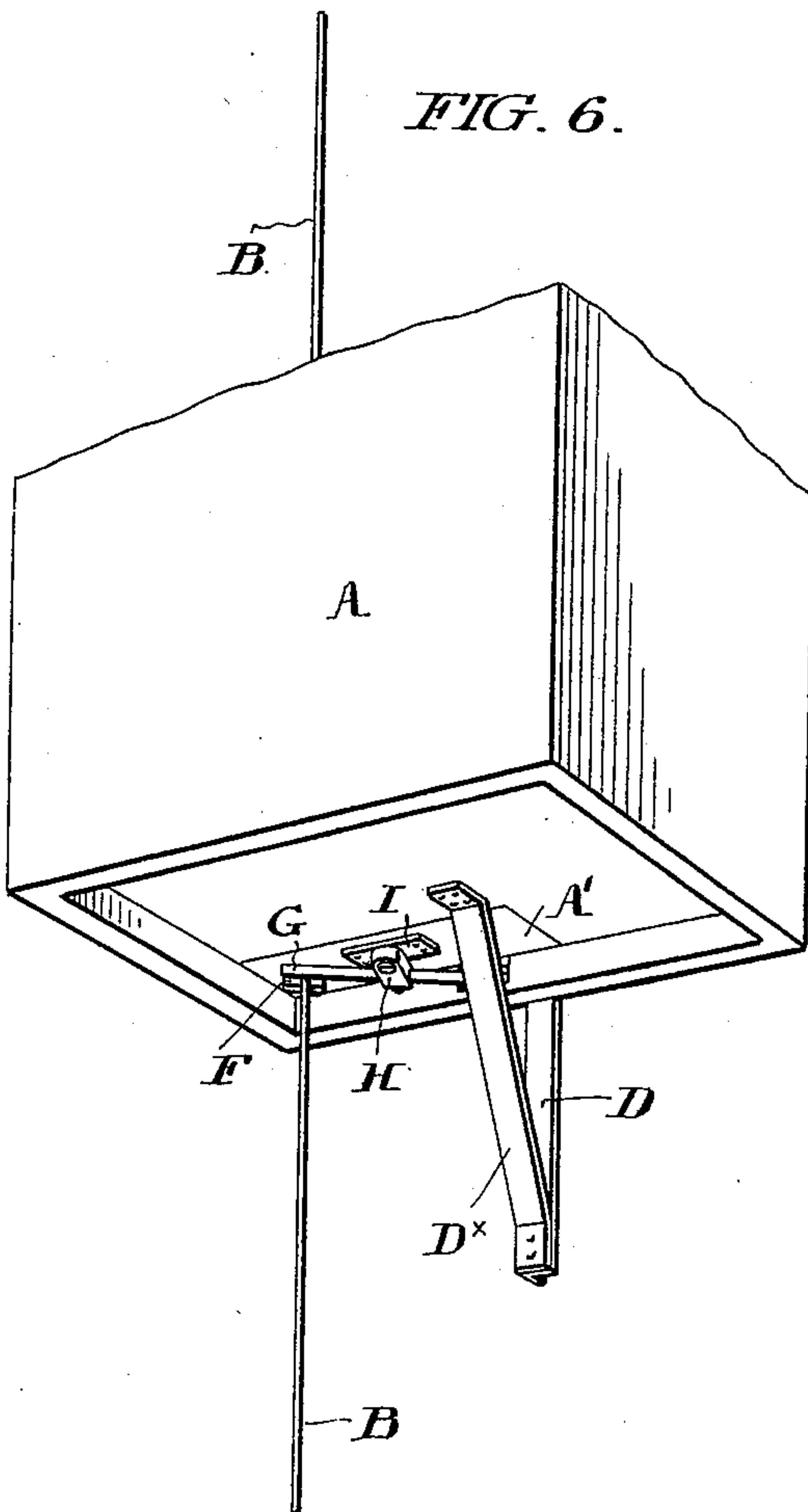


FIG. 6.



WITNESSES:

N. E. Paige
J. Norman Dixon

George H. Noblit
Abram L. Plush

INVENTORS

By Their Attorneys,
Wm E. Strawbridge
Bonnie Taylor

(No Model.)

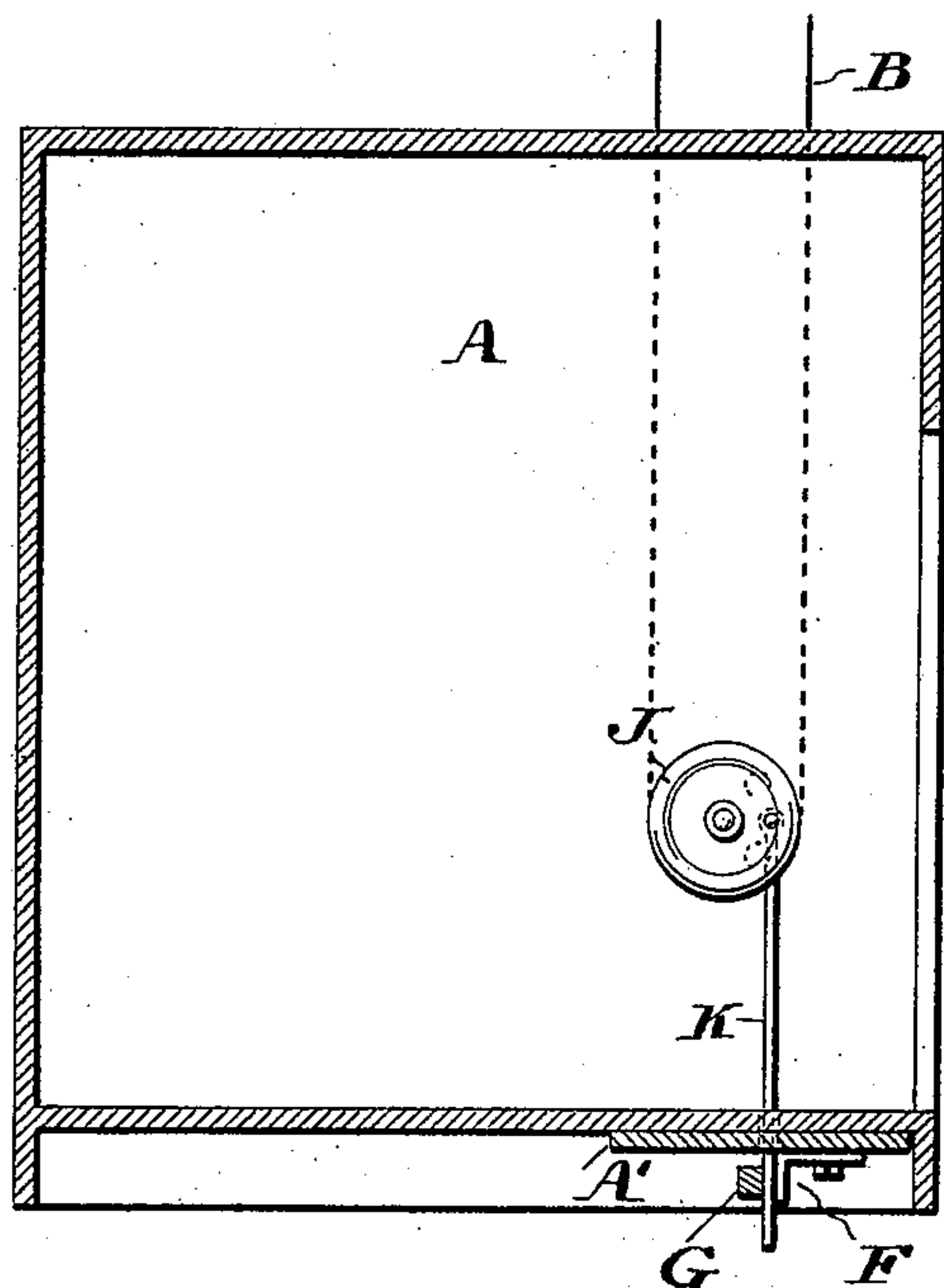
3 Sheets—Sheet 3.

A. L. PLUSH & G. H. NOBLIT.
ELEVATOR.

No. 605,910.

Patented June 21, 1898.

FIG. 7.



WITNESSES:

A. E. Paige
J. Norman Dixon

Abram L. Plush
George H. Noblit

INVENTOR:

By Their Attorneys,
Wm E. Strawbridge
Bonsall Taylor

UNITED STATES PATENT OFFICE.

ABRAM L. PLUSH AND GEORGE H. NOBLIT, OF BRYN MAWR, PENNSYLVANIA,
ASSIGNORS OF ONE-THIRD TO WALTER BEVAN, OF ROSEMONT, PENNSYLVANIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 605,910, dated June 21, 1898.

Application filed February 25, 1897. Serial No. 624,958. (No model.)

To all whom it may concern:

Be it known that we, ABRAM L. PLUSH and GEORGE H. NOBLIT, citizens of the United States, and residents of Bryn Mawr, in the county of Montgomery and State of Pennsylvania, have invented and produced certain new and useful Improvements in Elevators, of which the following is a specification.

It is the object of our invention to provide a safety device for elevators, which, by preventing the shaft door from being opened except when the car is at rest and level with a landing, and by preventing the car from being started while said door is open, will diminish the number of accidents liable to happen in connection with the operation of elevators.

In the accompanying drawings we show and herein we describe good forms of convenient embodiments of our invention, the particular subject-matter claimed as novel being hereinafter definitely specified.

In the accompanying drawings, Figure 1 is a view in perspective of an elevator car of an ordinary type shown as equipped with our improvements.

Figure 2 is a view in perspective of the shaft door removed from its frame, sight being taken toward its inner face.

Figure 3 is a top plan view of the block F and of the lever G and its attached parts, removed from the elevator car, the plate A' upon which said parts are mounted being indicated in dotted lines.

Figure 4 is a view in perspective of a hand-wheel of the kind sometimes employed on elevators, as part of the controlling devices.

Figure 5 is a vertical sectional elevation of a part of the elevator shaft, and of an elevator car mounted therein, the shaft doors and the elevator car being illustrated as provided with a good form of our invention.

Figure 6 is a fragmentary view in perspective of the lower portion of the elevator car removed from the shaft, and illustrating as in place thereon parts of the apparatus embodying our invention.

Figure 7 is a vertical sectional elevation of an elevator car, equipped with a modified form of that portion of our invention which

relates to the mechanism for gripping the controlling devices, section being supposed taken in a plane parallel with and in close proximity to that elevator car wall, on which the wheel J is mounted,—the elevator door and its connected parts, the upright D and its connected parts, and the supporting rope A^x, do not therefore appear.

Similar letters of reference indicate corresponding parts.

In the accompanying drawings, the elevator car A is supported by the cable A^x supposed in engagement with any ordinary hoisting engine or apparatus of any conventional or preferred type.

The car is provided on its exterior, in the vicinity of the door opening, with an outwardly projecting vertically extending flange or rib D, preferably extending for some distance below the bottom of the car, and provided, conveniently, in the region of the bottom of the car, with a recess or notch d.

This flange or rib may be conveniently provided by employing an ordinary L-shaped angle iron, one flange of which may be very easily secured to the body of the car, leaving the other flange to project in the manner described.

If desired, the depending lower end of the angle iron or rib may be braced by any suitable stay, such as that designated D^x and shown in the drawings.

The doors E of the elevator shaft are each provided with a horizontally-disposed bar E^x, coextensive with the breadth of said doors, and secured to their lower portions by keepers e of such form as to support said bars somewhat out from the inner faces of said doors.

The bars E^x are of such dimensions as to adapt them to take into the notch or recess of the rib D,—and the parts are so disposed that when the car is in such position that its floor is flush with a landing, the notch in the flange or rib D will be in line with the bar of the door at the landing, with the result that when said door is thrown open, said bar will pass through said notch.

If, however, the operator attempts to throw open the door when the floor of the car is not on a level with the landing, the end of the bar

will encounter said flange or rib and the door will refuse to open.

F, Figure 3, is a block or jaw, so to speak, secured to the under face of the car, in the vicinity of the opening therein through which the controlling device extends, said block or jaw being secured by screws which pass through screw openings in it, and, said screw openings being elongated, slight adjustment of said block toward and from said controlling device may be effected.

G is a lever, pivotally supported upon the under face of the car in such position that one of its ends extends past the controlling device on the side opposite that occupied by the block or jaw F, and the other extends through the front wall or beyond the front edge of the car and occupies a position in line with the notch or recess *d*, such protruding end being preferably equipped with a small roller *g* or other anti-friction device.

Conveniently, the lever G is arranged in the manner shown in Figure 3, in which it is shown as mounted in an opening in an oscillating block H and secured in said block by a set screw *h*, said block H being itself pivotally secured to a pivot plate I attached to the plate A'. It will of course be understood that the pivot plate I and the plate A' may be omitted if desired and the parts which they carry be attached directly to the bottom of the elevator car.

The oscillating block H and the lever G become in effect one structure when the screw *h* is tightened up, and swing together on a center which is coincident, of course, with the point of pivotal attachment of the block H.

The arrangement described not only enables adjustment of the lever G but also exaggerates the effect of any movement imparted to the outer end of the lever, and thus renders it more effective.

As the controlling device passes down between the jaw F and the lever G, it will be obvious that upon the swinging of the inner end of the lever toward said block said controlling device will be caught between said jaw and lever and that, therefore, movement of said controlling device, to start the car, will be impossible until it is released.

As stated, we cause the end of the lever G to project from the front of the car in line with the notch in the rib or flange, and consequently in line with the bar E^x, with the result that when the elevator comes to rest in a position in which its floor is level with the landing and said bar in registry with the notch of the rib, said bar will, in the opening of the door, encounter the protruding end of the lever G and, deflecting said lever, cause its inner end to bind the controlling device against the jaw F, so that said controlling device cannot be moved or the car started until it is released by the lever upon the closing of the door.

It will thus be seen that our devices constitute an absolute check upon the operator

in charge of the car and a final preventive of the ordinary class of elevator accidents.

The controlling device, to which *per se*, we lay no claim, is in certain figures of the drawings shown as a rope B extending vertically through the elevator shaft and passing through the floor of the car.

Inasmuch as in some types of elevators the rope in engagement with the hoisting devices depends from the top of the elevator shaft in a loop which passes around an operating wheel mounted on the car, such as the wheel J shown in Figures 4 and 7, and does not pass below the car, we prefer to provide in connection with such elevators, as a part of the controlling devices, a pitman K, the upper end of which is, as shown in Figure 4, secured to said wheel J, and the lower portion of which passes down between the lever G and the jaw F, and said pitman or connection will when engaged by these devices be effective to prevent rotation of the operating wheel while the door is open.

We prefer to mount the jaw F and the block H and its associated parts, upon a plate of metal A', indicated in dotted lines in Figure 3, upon which said parts are assembled in the shop in which they are manufactured, so that said plate, carrying said parts, may be easily applied directly to the car.

Having thus described our invention, we claim—

1. In combination, an elevator car located in an elevator shaft and provided with a rib or flange extending down its side and for some distance below its floor, a notch or recess being formed in said flange, a door to the elevator shaft, and a horizontally-disposed bar carried by said door and adapted in the movement of said door to pass through said notch, substantially as set forth.

2. In combination, an elevator car, a shaft door, a controlling device, a block or jaw mounted on said car in the vicinity of said controlling device, a lever mounted on said car and adapted to be operated by the movement of the shaft door to engage the controlling device between itself and said block, and a bar mounted upon said shaft door, the car being provided with a notch or recess which registers with said bar when the car is in a predetermined position—substantially as set forth.

3. In combination, an elevator car, a controlling device, a block fixedly secured to said car in the vicinity of said controlling device, an oscillating block pivotally secured to said car, a lever adjustably mounted on said oscillating block, and means for occasioning the throw of said lever, to grip the controlling device between itself and said block, substantially as set forth.

4. In combination, the elevator shaft provided with doors each carrying a horizontally extending bar, an elevator car provided with a vertically extending rib embodying a notch adapted to be engaged by said bars, a control-

ling device, a fixed jaw or block, a lever oper-
ating in connection with said block to bind
upon the controlling device, said lever having
a protruding end adapted to be encountered
5 by said bars in the movement of the elevator
shaft doors, substantially as set forth.

In testimony that we claim the foregoing as

our invention we have hereunto signed our
names this 23d day of February, A. D. 1897.

A. L. PLUSH.

GEO. H. NOBLIT.

In presence of—

GEO. W. REED,

F. NORMAN DIXON.