

(No Model.)

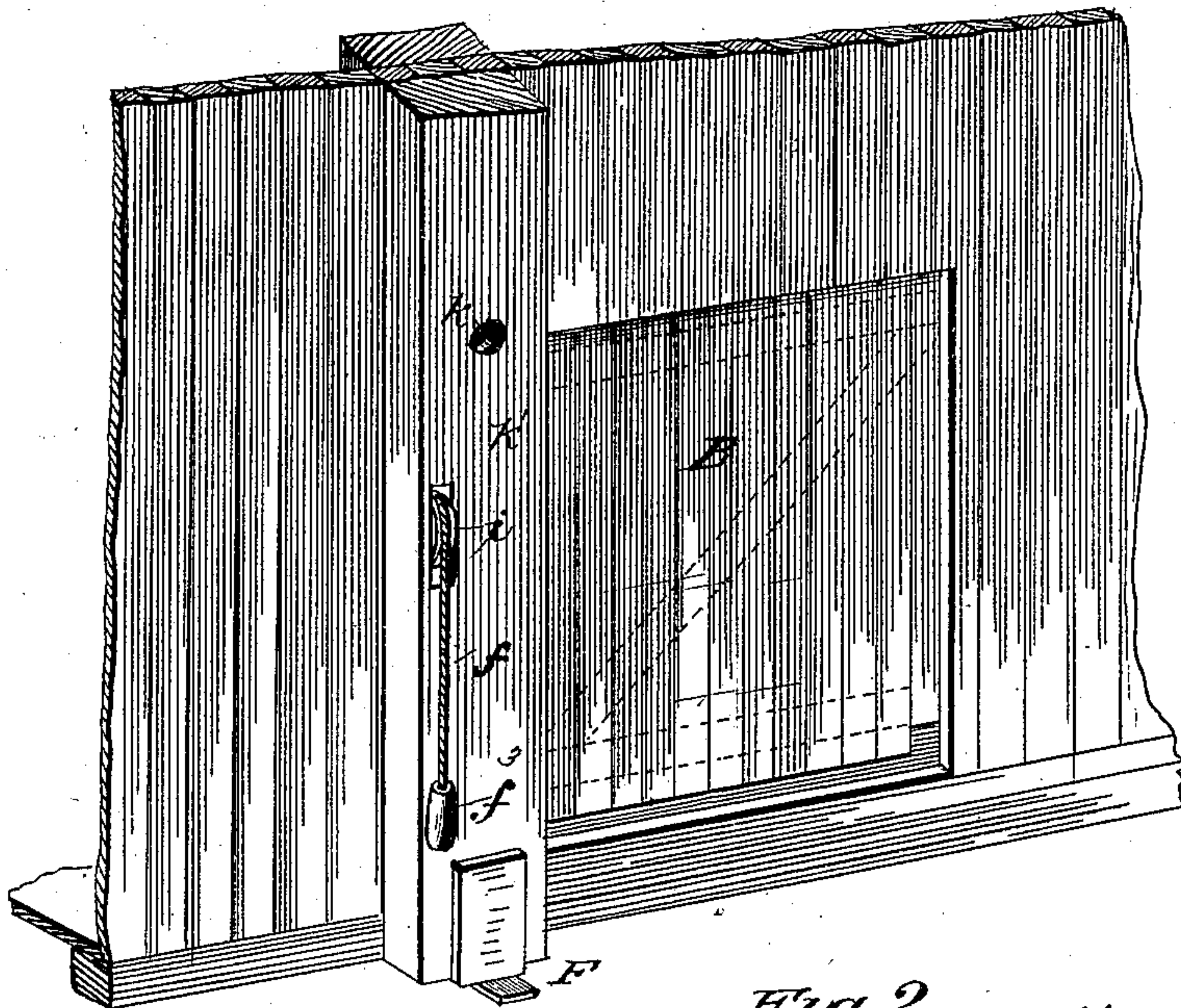
2 Sheets—Sheet 1.

W. J. KEYES.
CAR DOOR.

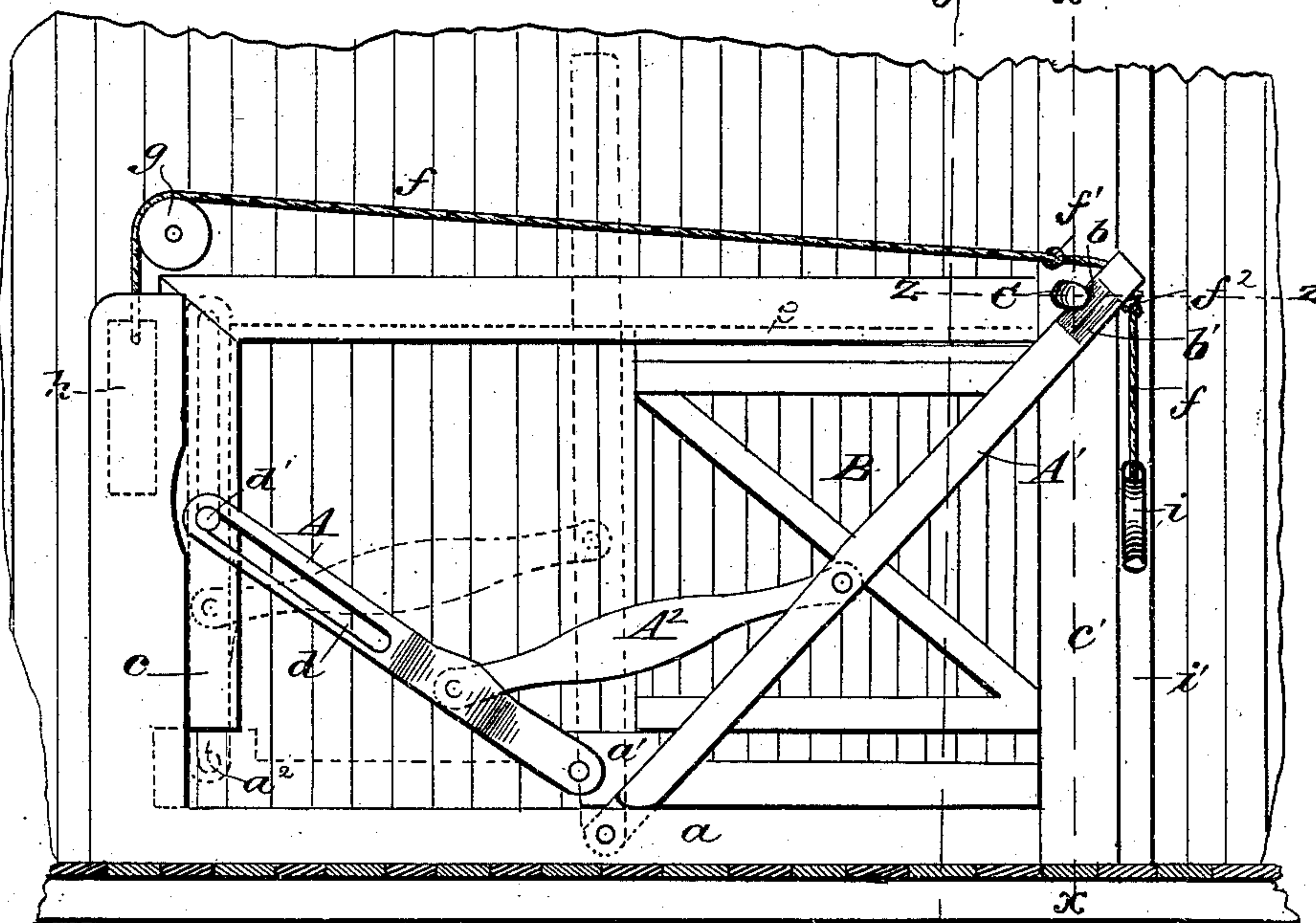
No. 389,706.

Patented Sept. 18, 1888.

Fig. 1.



Fug. 2.



WITNESSES:

WITNESSES:
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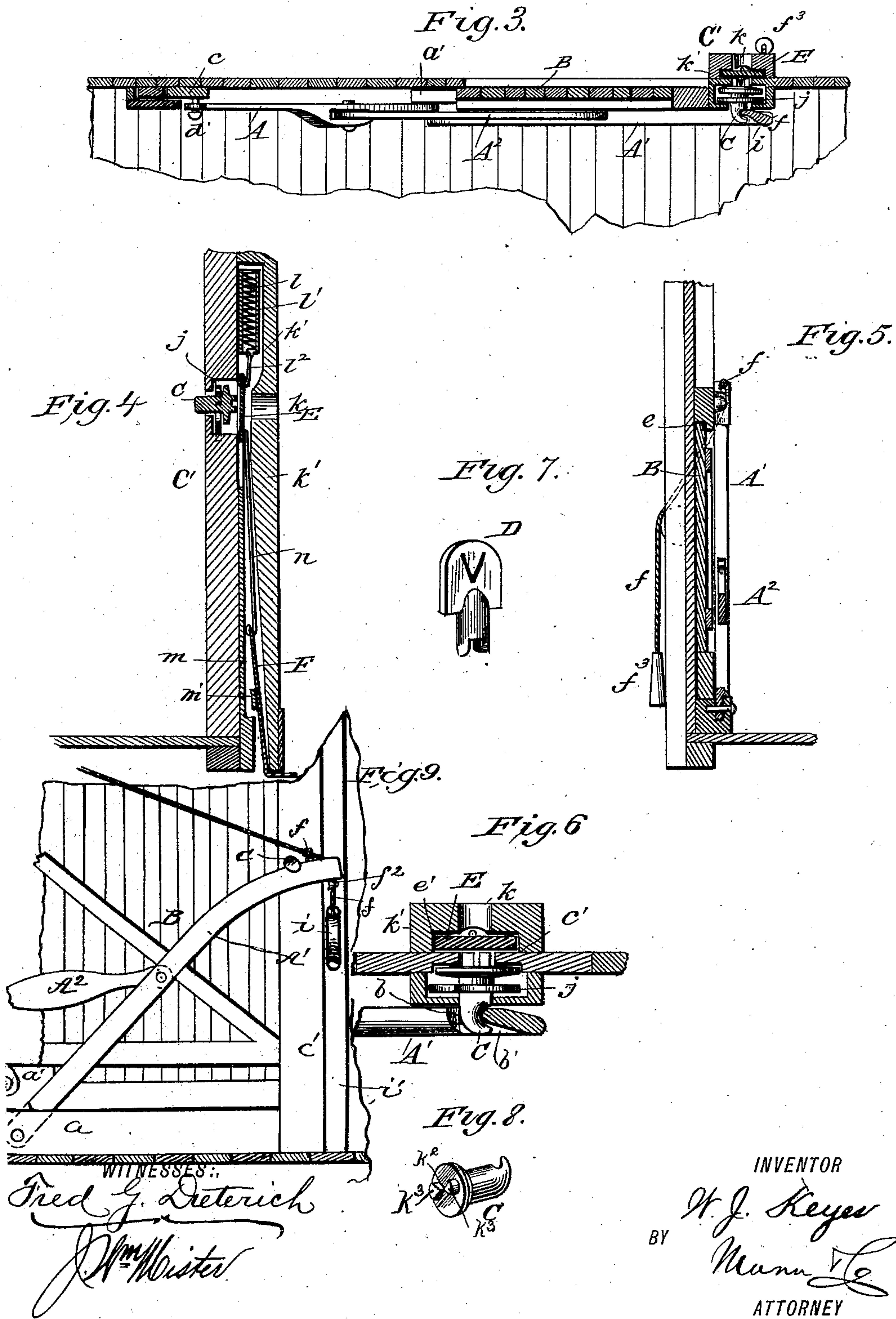
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UNITED STATES PATENT OFFICE.

WILLIAM J. KEYES, OF WHEELING, ALABAMA.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 389,706, dated September 18, 1888.

Application filed April 10, 1888. Serial No. 270,236. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. KEYES, of Wheeling, in the county of Jefferson and State of Alabama, have invented a new and useful Improvement in Car and other Doors, of which the following is a specification.

This invention has relation to certain improvements in doors especially adapted for freight-cars, while it is also applicable wherever a closure of this character is available—as, for instance, in dwellings, or in connection with blinds, gates, or barn-doors, and has for its object to effect security and readiness in opening and closing the door.

To these ends the invention consists of means for effectively securing the door, as also in readily opening and automatically closing the door, substantially as hereinafter more fully set forth, and pointed out in the claims.

In the accompanying drawing, Figure 1 is a perspective view of my improved car or other door, view from the outside. Fig. 2 is a side elevation of the same, taken from the inside. Fig. 3 is a horizontal section. Figs. 4 and 5 are sectional elevations taken on the lines *xx* and *yy* of Fig. 2, respectively. Fig. 6 is an enlarged sectional view taken on the line *zz* of Fig. 2. Fig. 7 is a perspective view of the key used in connection with the door-fastening. Fig. 8 is an enlarged detailed perspective view of the catch, and Fig. 9 is a view showing a modification of my invention.

In carrying out my invention, I employ a toggle-lever mechanism or contrivance, comprising, principally, two levers, *A A'*, and a link, *A²*, pivoted at one end to the lever *A* near its lower end, while the other end of said link is pivoted to the lever *A'* at a point a little below the middle thereof, each end of the link being let into and held in passages or openings in the levers in any suitable manner. The longer lever, *A'*, is pivoted in the sill or threshold *a*, and normally extends obliquely crosswise of the door *B*, upon its inside, and upward to a point a little above the upper forward corner edge of the door. At this end it is beveled upon each of two sides, as at *bb'*, the bevel *b* inclining or sloping rearward, while the bevel *b'* slopes in the opposite direction, or forward, the purpose of which will appear further on.

The shorter lever, *A*, has one end pivoted to

a projection, *a'*, at the rear bottom edge of the door, or directly to said edge of the door, while the upper end of said lever has a sliding connection with the rear door-jamb, *c*, by means of an elongated slot, *d*, in the lever, and a pivot-bolt or headed pin, *d'*, passing through said slot and entering or projecting from the jamb. The projection *a'* is snugly received as the door is moved rearward into a recess or socket, *a²*, provided therefor by a notch in the lower end of the door-jamb *c*. The door *B*, while shown in the present instance as being reduced and bodily extended at its upper end or edge into a groove, *e*, at the top edge of the door-opening and sliding or resting at its bottom edge immediately in contact with the sill or threshold *a*, yet it may be mounted or hung upon rollers, as is usual in sliding doors.

Through a passage or aperture in the extreme upper end of the lever *A'* is passed a rope, *f*, or similar medium, which is knotted as at *f' f²*, one knot resting against the lever when the latter has reached the maximum limit of its forward movement, while the other knot limits the forward pull upon the rope. This rope is carried over a pulley, *g*, directly above the rear jamb, *c*, that end thereof having attached to it a weight, *h*, depending or sliding in a suitable inclosure or boxing formed, it may be, by the rear edge of the jamb *c*, and additional pieces secured to the inner side of the car-body. The rope *f* is also carried over a second pulley, *i*, hung in a strip or studding. It may be secured upon the one side of the forward jamb, *c'*, and extending edgewise through the car-body. It is thence extended down, outside of the car, and provided with a knob, *f³*, for its convenient manipulation.

C is a catch, which is provided at one end with a notch, into which is snapped or sprung and held the upper beveled end of the lever *A'* when the door is locked or secured. The catch *C* consists of a short plug-like cylinder disposed in an aperture or socket extending transversely through the forward jamb, *c'*, and the car-body, a little forward of and above the upper front corner edge of the door-opening, enabling the catch to stand in the path of the movement of the lever *A*. This catch has coiled around it a spring, *j*, which has its ends connected to the catch and the wall of its aperture or socket, respectively, and which is

adapted as the catch is turned so as to release its notched end from the lever A when the door is opened to coil or contract, and thus permit a recoil movement of the catch, whereby its notched end will again be brought into position to receive the beveled end of the lever A when the door is closed. The opposite end of the catch C is disposed in alignment with and at the inner edge of the key-hole k , made in a cleat, k' , fastened to the outside of the car-body, thus removing this end of the catch or bolt inwardly from a plane touching the outside of the car. The said end of the catch or bolt C is formed with depressions k^2 and intermediate projections or studs, k^3 , with which is adapted to engage the bits and intervening depressions of the key D, to effect the turning of the catch and consequently the unlocking of the door.

E is a "blind" or slide fitted to have movement in a chamber, c' , upon the inner side of the cleat k' and to conceal from view the catch C, standing normally in alignment with the latter. This blind or slide is connected at its upper end to a spring, l , inclosed within a casing or cylinder, l' , disposed in a chamber, which is formed by jointly recessing opposite surfaces of the outside of the car-body and the cleat k' . This casing or cylinder l' is connected or fastened in any suitable manner to the cleat k' . The connection between the slide or blind E and the spring l is effected, preferably, by means of a bail, l^2 , with its ends connected to opposite corners of the upper end of the slide or blind, while its middle is connected to the lower end of a wire connected to the upper end of the spring and extending down within and below the lower end of the spring.

F is a bent or angular metal plate disposed within a recess or channel, m , in the cleat k' , within which it is suitably guided by a cross-plate, m' , secured in the cleat crosswise of said recess or channel, as shown. The upper end of the plate F is connected by a wire or rod, n , to the slide or blind E, connecting with the lower end of said slide or blind, while the lower end of the plate projects laterally outward from and below the lower edge of the cleat k' , to permit of its actuation by the thumb or otherwise.

In operation it will be seen that by pressing downward upon plate F to the required extent the slide or blind E is withdrawn or moved so as to expose the outer end of the catch or bolt C. The key D is now introduced so as to have engagement with the catch or bolt, and by turning it in the required direction—*i. e.*, so as to bring the side thereof designated by a character representing, for instance, an approximation of the letter V—the catch or bolt C will be disengaged from the lever A, effecting the release of the latter. The weighted rope f will now pull upon the lever A', which in turn will act through the link A² upon and cause the lever A to pull or move the door rearward, thus effecting the automatic opening of the door. In order to effect a reverse movement of the aforesaid parts, as is required

to close the door, it is only necessary to pull upon the rope f by grasping and exerting downward pressure upon the knot f' of said rope until the door is closed. In the meantime, or just as the door closes, the upper beveled end of the lever A will ride over the notched end of the bolt or catch C and drop in front of and be caught by the said end of the catch or bolt, effectually securing the lever and thus locking the door. After the required turning of the catch or bolt C and the removal of the key D from its hole, and the thumb or other pressure from the plate F, the slide or blind E will automatically return to its former position, concealing from view the catch or bolt.

This invention has special advantages in its application to freight-car doors, in that by the principal lever extending across or crosswise of the door great power or resistance is secured thereby and it cannot readily be "picked," while on the other hand, with a key in the hands of each depot-agent, the door can be readily opened; also, in its application to car-doors, the principal lever may be curved or made in the arc of a circle, which would permit of the securing or locking of the door lower down, enabling it to more readily clear the top of the car in its movement.

This invention is also applicable for use upon doors in dwellings, as also in connection with blinds, gates, and barn-doors, having, among other advantages in its first-named use, to be out of the way, taking up no unnecessary room nor striking the furniture.

In the application of the invention to doors, single or double, for stores or dwellings or to gates the plate F is actuated by the foot. It can be used either with or without a weight, and cannot be opened either from the inside or outside, adapting it equally as well for prisons as for any of the aforesaid purposes.

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

1. The combination, with a door or closure, of the lever mechanism having one lever, one end thereof being connected to the door or closure and the other end having a sliding connection with the rear door-jamb, while its other lever is linked to the aforesaid lever and pivoted at its lower end to a sill or threshold, and a catch constructed and arranged to be actuated by a key and to engage with said latter lever, and means for moving said latter lever into position for engagement with the catch, substantially as set forth.

2. The combination, with a door or closure, of the lever mechanism comprising a lever having one end pivoted to the door and provided near its other end with an elongated slot receiving a projection or bolt from a fixture, and a second lever connected or linked to the aforesaid lever and provided with an upper beveled end, its lower end being pivoted to a sill or threshold, a weighted rope passed through a fixture and through and acting upon

one of said levers, and the catch having a notched end to engage with the upper end of the lever acted upon by said rope, substantially as set forth.

5 3. The combination, with a door or closure, of the lever mechanism comprising a slotted lever connected to the door or closure and receiving a pin or bolt from a fixture, and a second lever connected or linked to the aforesaid
10 lever and provided with an upper beveled end, its lower end being pivoted to a sill or threshold, the weighted rope passed through the said second lever, and the catch having a spring-recoil movement, substantially as specified.

15 4. The combination, with a door or closure, of the lever mechanism having one lever pivoted to the door or closure and its second lever pivoted to a sill or threshold and linked or connected to the aforesaid lever and engaging with a catch, said second lever, as it is released from said catch, having automatic movement, thus opening the door or closure, substantially as specified.

23 5. The combination of a door or closure, the lever mechanism having one lever, one end of which is connected to the door or closure and the other end having a sliding connection with the rear door-jamb, while its other lever is linked to the aforesaid lever and pivoted at
30 its lower end to a sill or threshold, a catch constructed and arranged to be actuated by a key and to engage with said latter lever, means for moving said latter lever into position for engagement with the catch, and the slide or blind concealing the outer end of the catch
35 and actuated by a thumb or other pressure plate, substantially as set forth.

6. The combination of a door or closure, the lever mechanism having one lever, one end of which is connected to the door or closure and the other end having a sliding connection with the rear door-jamb, while its other lever is linked to the aforesaid lever and pivoted at its lower end to a sill or threshold, a catch constructed and arranged to be actuated by a key and to engage with said latter lever, means for moving said latter lever into position for engagement with the catch, and the slide or blind concealing the outer end of the catch and actuated by a thumb or other pressure plate, said plate, as it is released, being automatically returned to its original position, substantially as specified.

7. The combination of a door or closure, the lever mechanism having one lever, one end of which is connected to the door or closure and the other end having a sliding connection with the rear door-jamb, while its other lever is linked to the aforesaid lever and pivoted at its lower end to a sill or threshold, a catch constructed and arranged to be actuated by a key and to engage with said latter lever, means for moving said latter lever into position for engagement with the catch, the slide or blind concealing the outer end of the catch, the plate projecting laterally from the car and connected to said slide or blind, and the inclosed spring acting to return the slide or blind after its release to its original position, substantially as set forth.

WILLIAM J. KEYES.

Witnesses:

W. S. McCONNELL,
E. A. NORRIS.