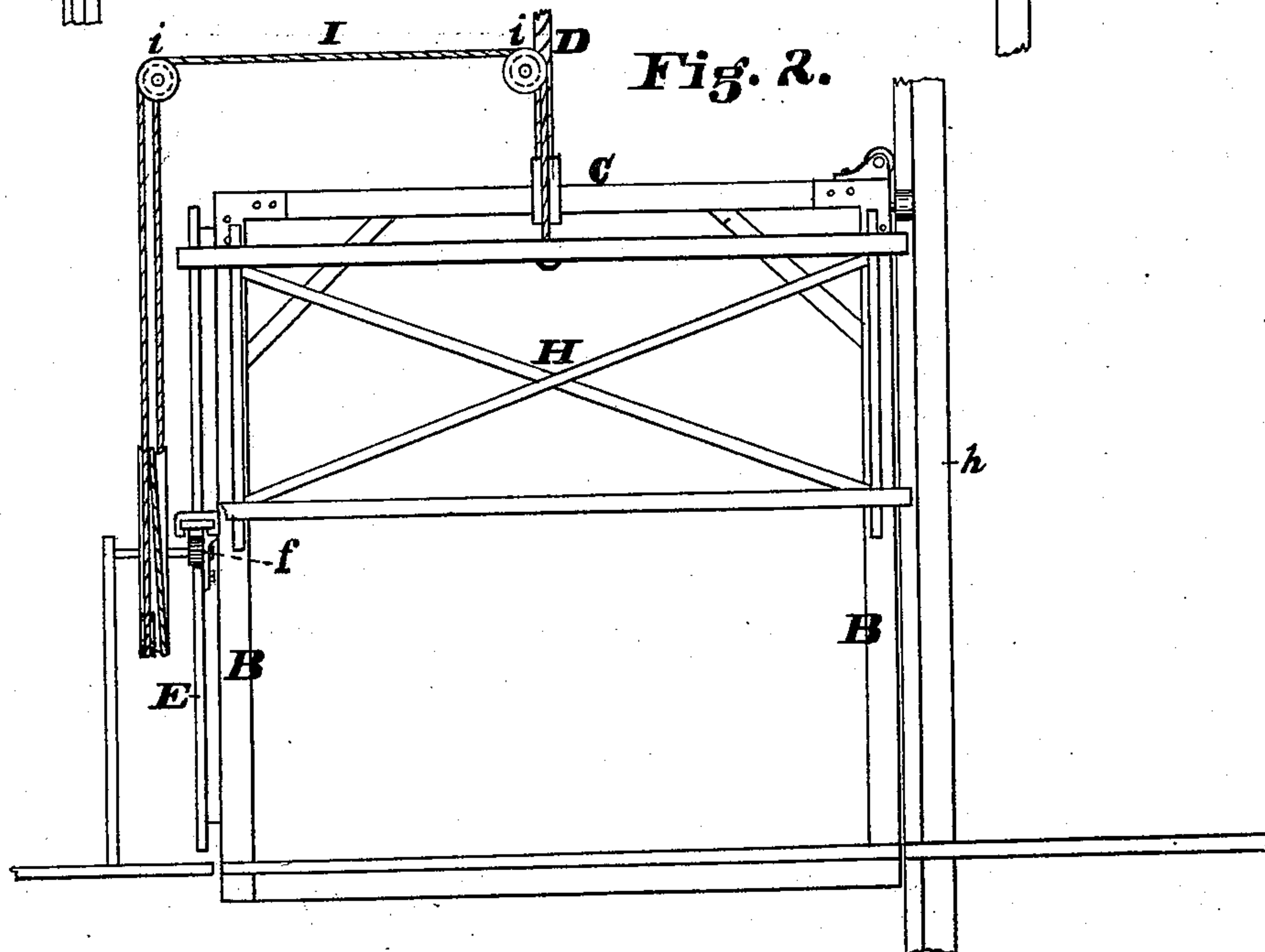
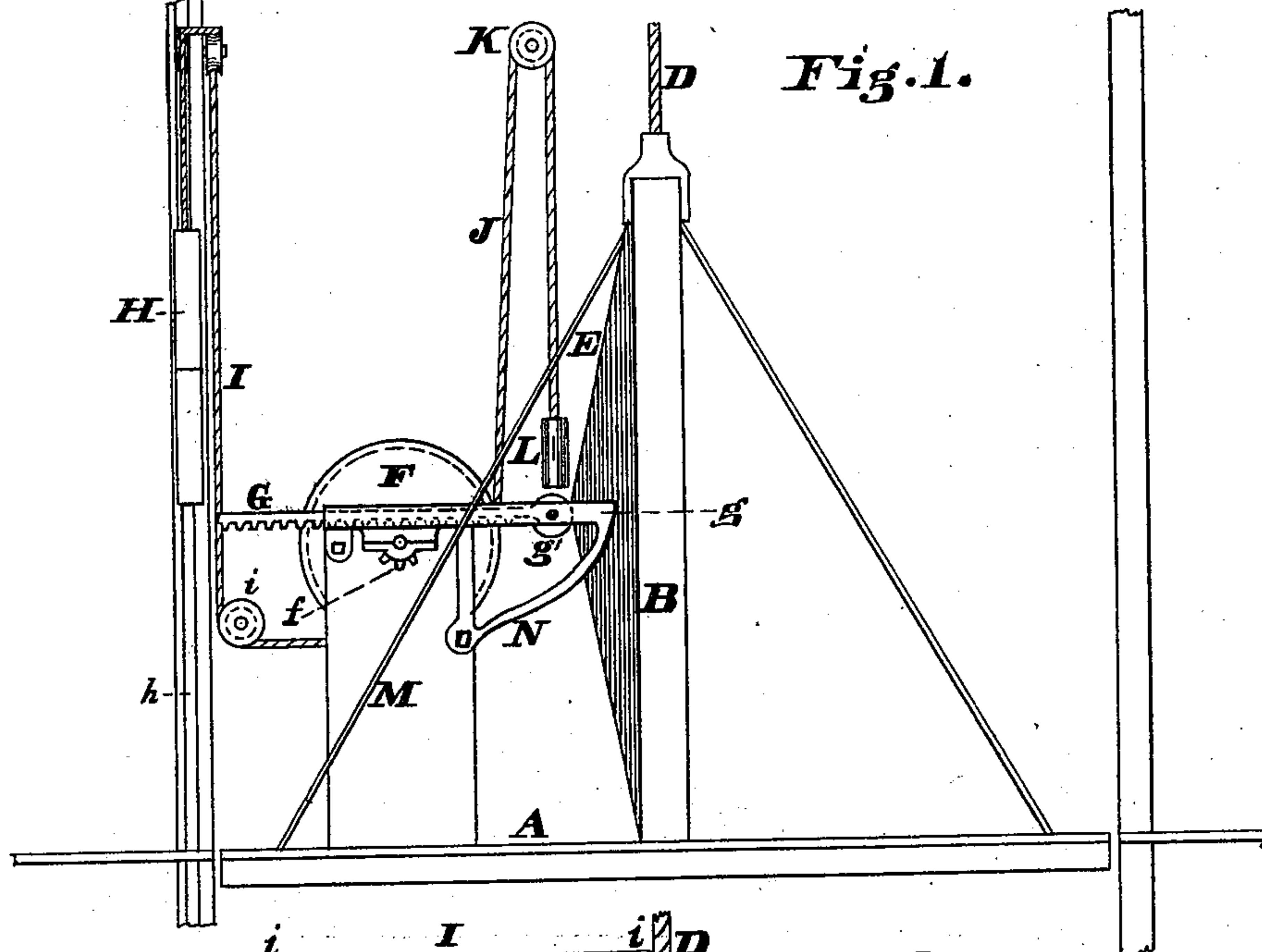


(No Model.)

G. ACKERMANN.
Automatic Elevator Gate.

No. 230,387.

Patented July 27, 1880.



Attest

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UNITED STATES PATENT OFFICE.

GEORGE ACKERMANN, OF CINCINNATI, OHIO.

AUTOMATIC ELEVATOR-GATE.

SPECIFICATION forming part of Letters Patent No. 230,387, dated July 27, 1880.

Application filed May 13, 1880. (No model.)

To all whom it may concern :

Be it known that I, GEORGE ACKERMANN, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Automatic Elevator-Gates, of which the following is a specification.

My invention has for its object the construction and arrangement of an automatically opening and closing gate for elevators moving up and down in vertical grooves in front of the hatchway, in such a manner that with a short travel of the platform of the elevator either above or below the floor where the gate is placed the gate will be closed, and will remain closed until the platform has approached within, say, two feet of the floor where the gate is placed; and it consists in placing in front of the hatchway, upon each floor through which the elevator passes, a gate sliding up and down in vertical grooves and connected, by means of a rope or chain and guide-pulleys, with a sheave-pulley of comparatively large diameter, the sheave-pulley being connected to a reciprocating rack by means of a shaft and pinion. The end of the rack nearest to the upright of the elevator-platform is provided with a friction-roller which engages with a double-inclined plane secured to and traveling with the platform of the elevator. The weight of the gate is sufficient to maintain the friction-roller in contact with the inclined planes, and the pressure of the inclined plane forces the rack inward and lifts the gate, as the platform approaches the gate from above or below. The gate closes by gravity directly the platform travels above or below the floor.

In the accompanying drawings, Figure 1 is an elevation, showing the devices employed to connect the gate with the platform of the elevator, and Fig. 2 is a front elevation of the gate and the platform.

Similar letters of reference indicate corresponding parts.

A is the platform of an ordinary elevator, having posts or uprights B B and cross-beam C, to which the lifting-rope D is attached.

E is a double-inclined plane attached to one of the posts B.

F is a grooved sheave-pulley mounted in

suitable bearings upon a frame, M, and provided with a toothed pinion, *f*.

G is a straight toothed rack traveling in horizontal ways *g*, and provided with a friction-roller, *g'*.

H is a gate, of wood or iron, fitted to travel freely up and down in ways *h h*.

I is a rope firmly secured at one end to the gate H, and passed over the guide-pulleys *iii*, and wound around the grooved sheave F, to which it is attached.

J is a rope wound around the sheave F and passed over the guide-pulley K, to support the counter-weight L.

The operation of the mechanism is as follows: The approach of the platform of the elevator from either above or below the floor where the gate is located causes either the lower or upper portion of the double-inclined plane to operate the toothed rack G through the friction-roller *g'* and force the rack from its normal position. The travel of the rack G is accompanied by a corresponding rotation of the pinion *f* and grooved sheave F.

The rope I being coiled around and secured to the sheave, it follows that a revolution of the sheave in one direction causes the gate H to rise, and that a revolution of the sheave in an opposite direction is accompanied by the descent of the gate.

When the friction-roller *g'* bears against the inclined plane D at either end thereof, the grooved sheave is rotated in the direction necessary to lift the gate and give free access to the platform A, and when the platform ascends above or descends below the level of the floor the gate H descends and closes the opening to the hatchway. At the same time the gate is descending by reason of its weight the grooved sheave is being rotated back to its original position, to be acted upon by the inclined plane D when next it approaches the gate.

The weight L simply balances a portion of the weight of the gate H, in order that less power may be required to lift the gate in its grooves.

In practice one of these gates will be placed upon each floor, connecting with the hatchway.

The mechanism employed in this device is extremely simple and less liable to derangement than the machinery of the elevator itself. At the same time it furnishes perfect
5 security against the many frightful accidents due to open hatchways.

Although many devices for barring the entrance to open hatchways have been invented, to be operated by the rise and fall of the platform, experience has shown that none of these
10 devices have heretofore been sufficiently practical and inexpensive to justify their general introduction.

Although I have shown what I think is the best form of construction of my invention, still I do not wish to be confined to the precise arrangement shown, as certain variations may be made in the construction of the device without departing from the principle of
20 the invention, the essential requisites of which are a gate sliding in vertical grooves and a double-inclined plane attached to the platform or cage of an elevator, the motion of a rack held in contact with the inclined plane by the
25 unbalanced weight of the gate being transmitted to the gate to cause it to rise and fall as the inclined plane travels upward and downward.

The friction-roller g' may be mounted in a standard or bracket on the upright of the cage
30 or platform, and the inclined planes may be attached to the rack G , to produce the rise and fall of the gate H ; but this form of construction is neither so cheap nor so simple as that shown, and is more liable to derangement in
35 use.

Having described my invention, what I claim is—

1. The combination of the gate H , rope I , sheave F , pinion f , rack G , and double-inclined plane E with the platform of an elevator, for the purpose, and as described
40

2. The combination of the sheave F , pinion f , rack G , friction-roller g' , and inclined planes E with the platform of an elevator, for the
45 purpose and as described.

In testimony whereof I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

GEORGE ACKERMANN.

Witnesses:

CHAS. F. LOUDON,
C. W. WITHEBURY.