

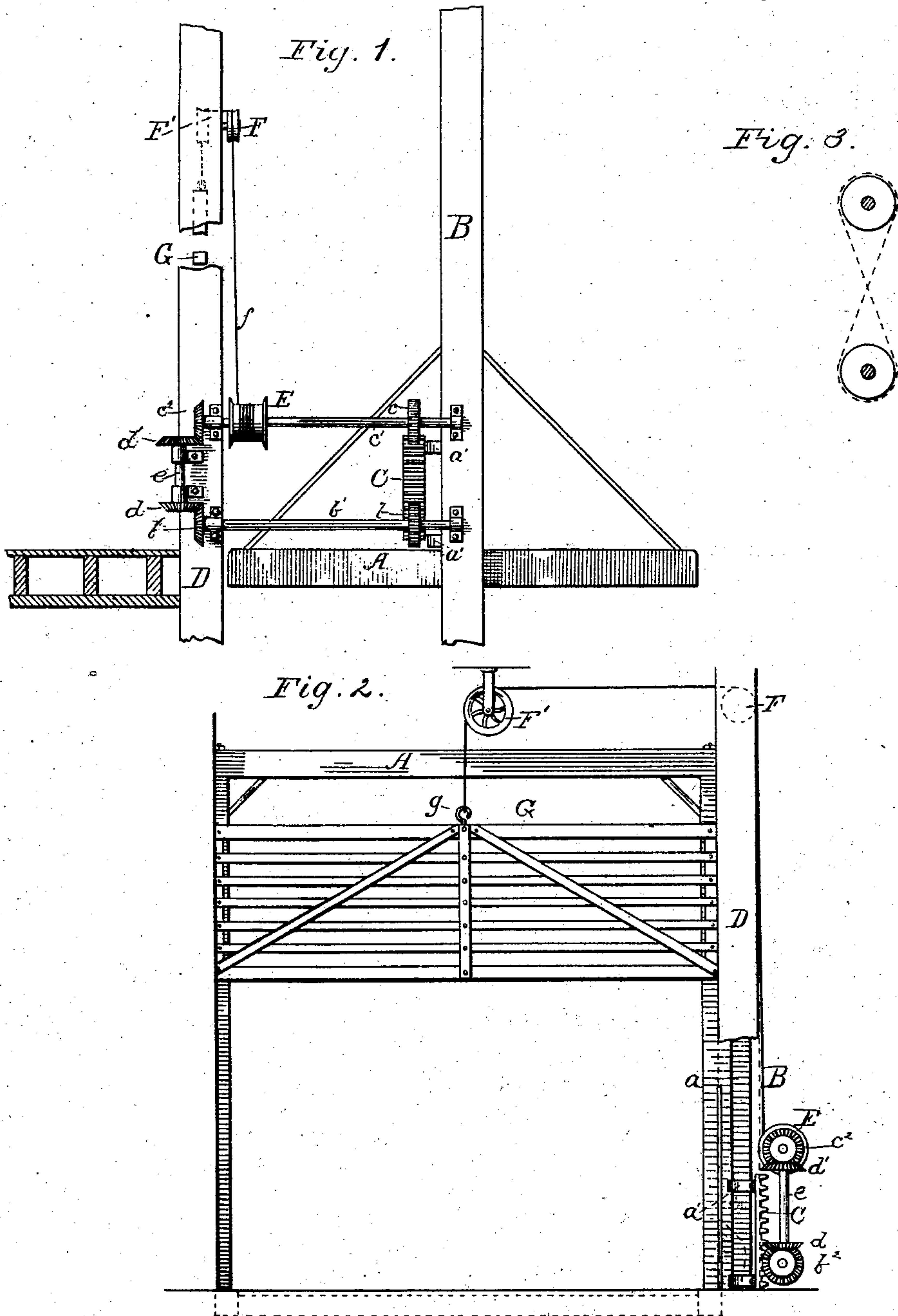
(No Model.)

J. F. S. SMITH.

AUTOMATIC GATE OPENER FOR ELEVATORS.

No. 260,794.

Patented July 11, 1882.



Witnesses:

Frank D. Thomas
James H. Coyne

Inventor:

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UNITED STATES PATENT OFFICE.

JOHN F. S. SMITH, OF CHICAGO, ILLINOIS.

AUTOMATIC GATE-OPENER FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 260,794, dated July 11, 1882.

Application filed December 6, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. S. SMITH, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Automatic Gate-Openers for Elevators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to
10 make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to an automatic elevator gate-opener which lifts a gate moving in vertical grooves in the upright corner-posts of the elevator-shaft. It is simple and cheap in construction, and can be as easily applied to an old as to a new machine. It is especially
15 adapted for use in mercantile or ware houses; and its object is to provide a gate automatically lifted upon the approach of the elevator truck or cage from below or above, and lowered upon the withdrawal of the same in either
25 direction, the whole of which I accomplish by a rope passing over a series of pulleys and connected with a drum which is operated through the medium of pinions engaging with a vertical rack affixed to the side of said elevator truck or cage. As a rule, it has heretofore
30 been the custom to leave the entrance or exits of elevator-shafts in warehouses open, first, because of the inconvenience and loss of time incurred in operating gates and doors; second,
35 because said gates and doors are apt to occupy too much room in the immediate vicinity of the shaft; and, third, because it is often desirable to load or unload the truck from more than one side at the same time. My invention avoids
40 these objections by operating automatically, by raising and lowering the gate moving in vertical grooves in the corner-posts of the elevator-shaft, and by being capable of operating one or more gates at the same time, in the
45 manner hereinafter fully described, and as shown in the drawings, in which—

Figure 1 is a side elevation of my invention, and Fig. 2 is a front elevation of the same with a portion of the tower-frame broken away.
50 Fig. 3 is a detail view of an alternative device for connecting the horizontal shafts.

A represents an ordinary warehouse-truck

of a vertical rectangular frame, carrying a platform and moving vertically on the conductors or guide-posts B B.

Sunk into the sliding surface of and projecting horizontally from the side piece, *a*, obliquely to the side of the platform, are two arms, *a' a'*, holding on their outer ends the rack C. This rack engages with the pinions
55 *b* and *c*, and its length is made to correspond with the distance from its point of intersection with one pinion to its nearest point of intersection with the other, so that when traveling in a given direction as it leaves one pinion it will
60 immediately engage with the other.

The rack may be so constructed that it may be thrown in or out of gear by having the arms hinged and a strong expansion-spring pressing outward against the back of the rack, which is
65 operated by a hand or foot lever, so as to avoid operating the gate at those stations where it is desired not to stop.

The pinions *b* and *c* are secured fast on the horizontal shafts *b'* and *c'*, the ends of which
70 are journaled in suitable bearings projecting laterally from and affixed to the guide-post B and the upright corner-post D of the elevator-shaft. On the ends of these shafts, which extend slightly through and beyond the bearing
80 on the corner-post D, are bevel-gears *b²* and *c²*, meshing with similar bevel-gears, *d* and *d'*, on the vertical shaft *e*, said shaft being journaled in the brackets *e' e'*, extending from said corner-post, and serving as a medium through
85 which the motion is transmitted from one horizontal shaft to the other.

On the shaft *c'*, near the corner-post D, is a drum, E, around which is wound the rope *f*, which, passing over the concave pulleys F and
90 F', is tied or fastened to the hook *g* in the gate G, said gate moving in the vertical grooves in the corner-posts D and D' of the elevator-shaft.

It will be readily understood that as the elevator truck or cage ascends, the rack, engaging with the pinion *b*, will cause the drum to
95 so revolve as to wind up the rope and lift the gate, and that if it is then desired to ascend higher or descend the motion will be reversed, unwinding the rope and lowering the gate to
100 its original position.

I do not limit myself to the exact arrangement of the rope and pulleys or the location of the drum as described, for by a continua-

tion of the rope and additional pulleys my invention would simultaneously operate several gates, and by placing the drum on the vertical shaft it could operate sliding doors. Neither
5 do I limit myself to the exact method described of transmitting motion from one horizontal shaft to the other, for that can be accomplished by placing pulleys or sprocket-wheels in corresponding positions on the shafts and connecting them with a crossed pulley or chain,
10 as shown in Fig. 3; but

What I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic gate-opener for elevators,
15 the combination, with a vertical rack secured to the floor of an elevator-truck, of two pinions alternately engaged by said rack and operating on horizontal shafts which are connected by a vertical shaft or other mechanical
20 means to obtain a reversible motion, as and for the purpose set forth.

2. The combination, with the rack C, pinions *b* and *c*, of the drum E, rope *f*, pulleys F

and F', and gate G, substantially as described, and for the purpose set forth.

3. An automatic gate-opener for elevators, consisting of a vertical rack attached to the side of the platform of an elevator truck or cage and engaging alternately in its ascending or descending motion with two corresponding pinions placed respectively on horizontal shafts which are so connected as to obtain a reversible or contrary motion, a drum keyed to the upper horizontal shaft operated by the aforesaid means upon the approach or withdrawal of the elevator-truck, and a connecting-rope, all adapted to raise and lower a gate moving vertically in grooves, substantially as
35 hereinbefore described and set forth.

In testimony that I claim the foregoing as
40 my own I affix my signature in presence of two witnesses.

JOHN F. S. SMITH.

Witnesses:

JAMES H. COYNE,

FRANK D. THOMASON.