

No. 631,763.

Patented Aug. 22, 1899.

S. G. BURLEIGH & M. T. BIGELOW.

FIRE ESCAPE.

(Application filed Sept. 8, 1898.)

(No Model.)

Fig. 1.

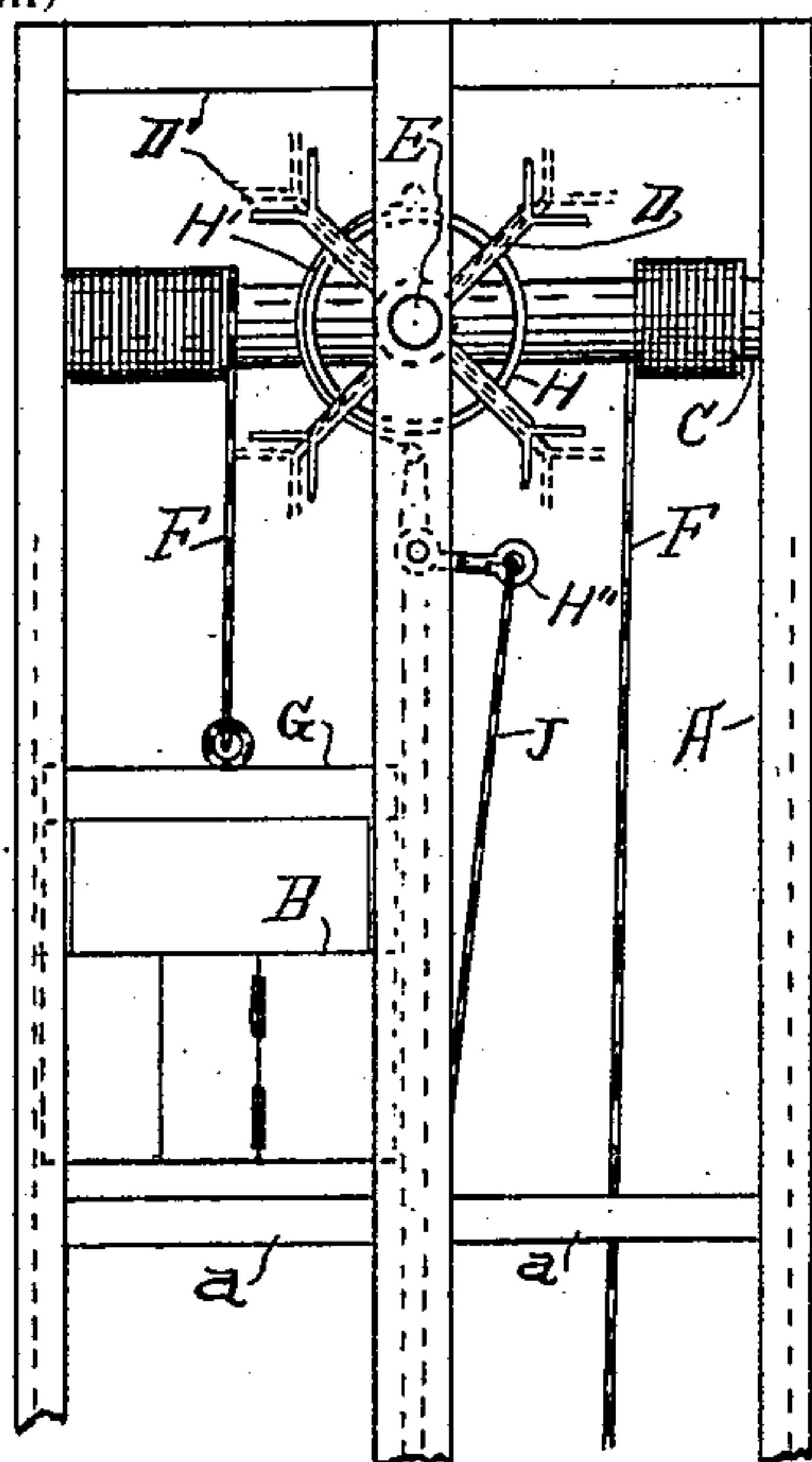


Fig. 2.

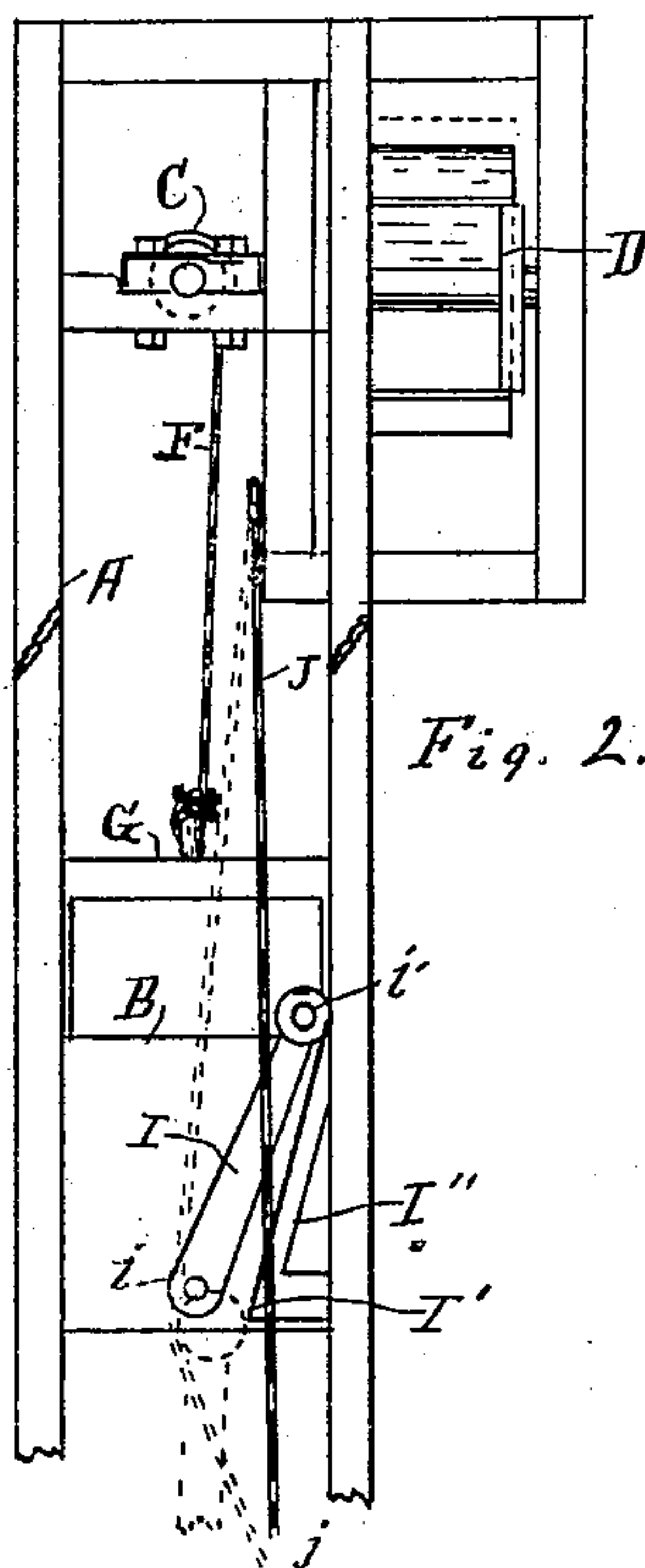


Fig. 3.

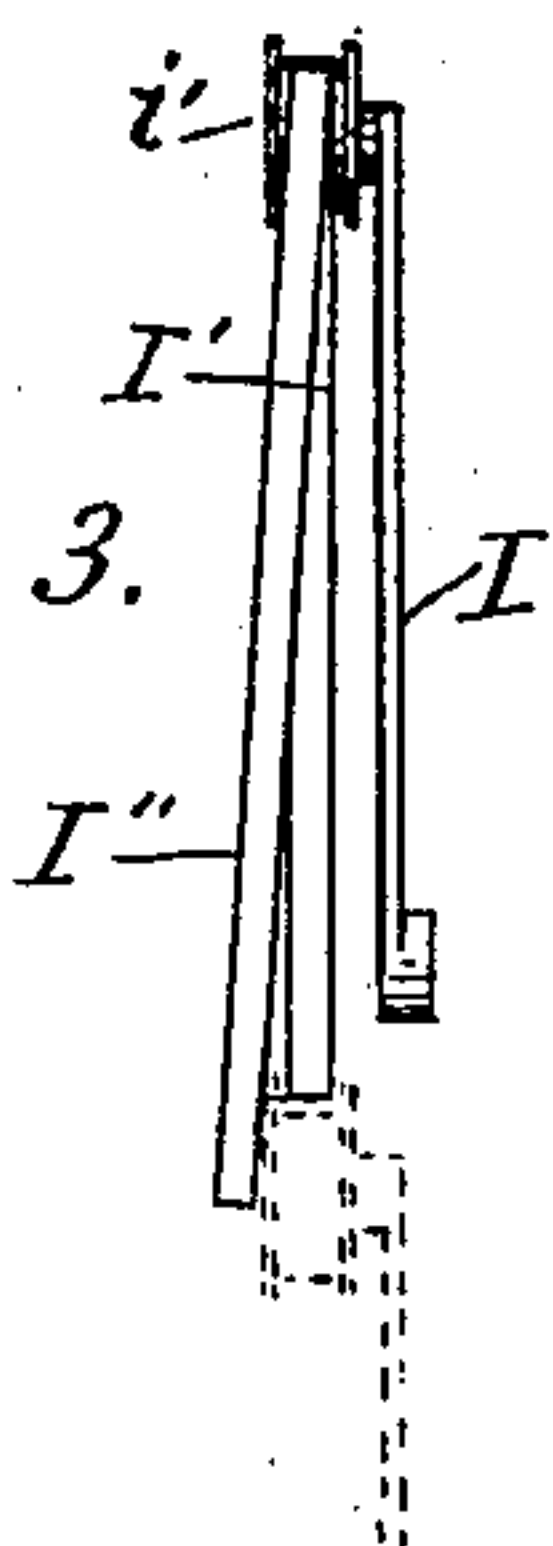
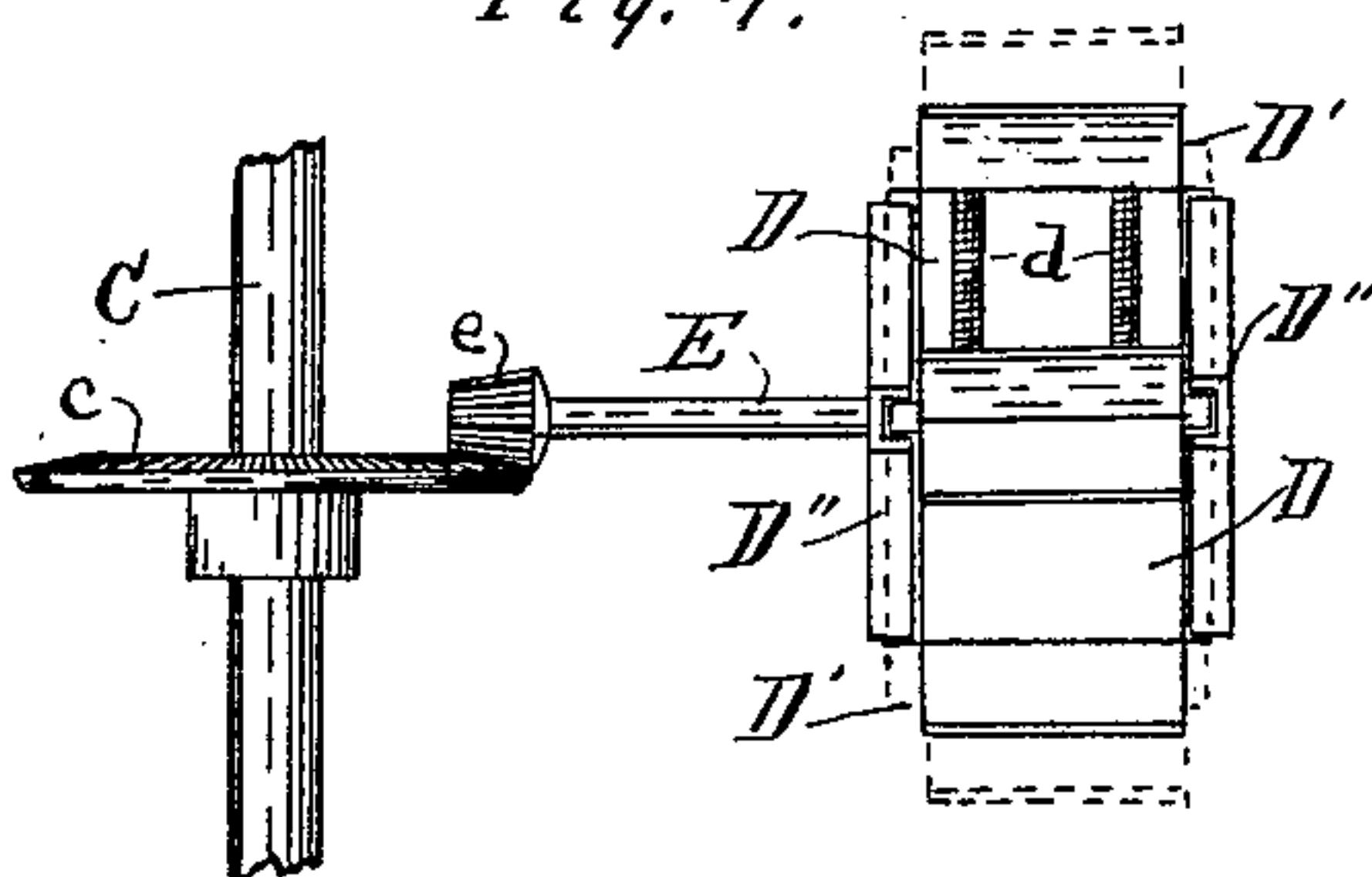


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

SAMUEL G. BURLEIGH AND MYRON T. BIGELOW, OF GRAND RAPIDS,
MICHIGAN; SAID BIGELOW ASSIGNOR OF ONE-HALF HIS RIGHT TO
SAID BURLEIGH.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 631,763, dated August 22, 1899.

Application filed September 8, 1898. Serial No. 690,536. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL G. BURLEIGH and MYRON T. BIGELOW, citizens of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

Our invention relates to improvements in fire-escapes in which mechanically-actuated elevators are used for removing the occupants of "upper stories" in burning buildings; and its objects are, first, to provide a safe and reliable governor for regulating the descent of the carriages, and, second, to provide for automatically stopping the carriage before it comes in sudden contact with the ground or other solid foundation.

We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of our escape. Fig. 2 is an edge elevation of the same, showing the action of the automatic brake. Fig. 3 is an edge view of the automatic brake; and Fig. 4 is a plan of the governor, showing the connection between the governor-shaft and the main shaft.

Similar letters refer to similar parts throughout the several views.

In the construction of this fire-escape we build vertical guideways A of angle-iron or other suitable construction to form free substantial guideways for the passage of the carriage B. In the upper end of this guideway we place a main or windlass shaft C, upon which is wound the cord or cable F, that supports and carries the carriages B. In Fig. 1 it is indicated that two of these cables are used, which is designed to represent that two carriages are used. It will be noticed that the cables wind from opposite sides of the windlass, so that the descent of a loaded car will elevate the empty car to the desired position, thus making each car the motive power by which to elevate the other.

For the purpose of averting the danger of the descending car passing downward too rapidly we construct and apply a governor, as follows: We place a counter-shaft E in position to be driven by the main or windlass

shaft C and cause it to revolve rapidly by the use of a multiplying-gear, as c and e. Near the opposite end of the shaft E we secure arms D", in which are supported sliding wings D, calculated to govern the descent of the carriage by the resistance of the atmosphere against the rapidly-revolving wings. To increase the efficiency of this governor, we place deflecting-wings D' at the outer edges of the wings D at a proper angle to the main wings, so that the rapid motion of the governor will cause the glancing motion of the air upon these deflecting-wings to draw the main wings out radially from the center of the shaft, and thus increase the distance of the main wings from the center of the shaft, and as a consequence the leverage and consequent resistance of the governor, and thus insure a safe steady descent of the carriages regardless of the amount of weight it may be called upon to transfer from the higher to a lower elevation or plane. The main wings of this governor are flexibly held to normal position by springs, as d, properly applied, as indicated in Fig. 4.

As the sudden jar of striking the ground with the full momentum of the car as it descends loaded would be likely to cause great discomfort, if not actual injury, to its occupants, we have arranged an automatic brake, as follows: We secure a brake-wheel, as H, upon the governor-shaft and place any desirable form of brake-shoe, as H', so arranged that it may be readily thrown to and from contact with the wheel. In Fig. 1 of the drawings we have shown an angle-lever H", having one arm connected with the shoe and the other arm engaged by a cord or cable J, the opposite end of which is secured near the bottom of the tower or guideway A, as at j in Fig. 2, so that to draw it to one side, as indicated by the dotted lines in Fig. 1, will cause it to draw heavily upon the arm of the angle-lever, and consequently force the shoe firmly against the surface of the brake-wheel. To actuate this brake automatically, we pivot an arm, as I, to the carriage B in any convenient position and place at its upper end a free-running sheave, as i', in position so that when the carriage is descending it will pass between the cord and the incline I', so that its

passage along the edge of the incline will carry the cord to the position indicated by its dotted lines in Fig. 2 a little time before the carriage reaches bottom, thus shortening the cord so
 5 that it will pull heavily upon the angle-lever and force the brake-shoe against the wheel and greatly retard, if not wholly stop, the car before it strikes a solid foundation. The incline guide I' is provided with a guideway I''
 10 so arranged that the roller or sheave z' will drop behind the incline and pass up through the space formed by the offset with the upward passage of the carriage, so that it may again be in position to engage the incline and
 15 actuate the brake-cord upon its next downward passage. We find it desirable to make the back wall of the offset upon an incline laterally, so that the sheave will swing over and spring back, so as to insure contact with
 20 and traveling over the incline upon its next downward passage.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

25 1. In combination with the carriages, guide-ways, elevating-shaft and cables of an elevator fire-escape; a rotary fan connected with the main shaft by multiple-gear, sliding wings in said fan arranged to slide radially by cen-
 30 trifugal force, and springs to return said wings

to normal position, substantially as and for the purpose set forth.

2. In combination with the carriages, guide-ways, cable and elevator-shaft; a rotary fan having radially-expanding wings, springs to
 35 return said wings to normal position, and diverging wings at the outer edge of said radially-diverging wings to force said wings to diverge by their incline action upon the air as they pass through in their revolutions, sub-
 40 stantially as shown and described.

3. In combination with the carriages, guide-ways, elevator-shaft and cables of an elevator fire-escape; a revoluble fan-governor, and a
 45 brake shoe and wheel connected with said governor, a cord connected with said shoe to actuate it to brake or release the brake-wheel, the lower end of said cord secured at the bot-
 50 tom of the carriage-ways, and an adjustable roller and an incline for actuating said cord to actuate the brake-shoe, substantially as set

Signed at Grand Rapids, Michigan, September 2, 1898.
 forth.

SAMUEL G. BURLEIGH.
 MYRON T. BIGELOW.

In presence of—

ITHIEL J. CILLEY,
 STELLA CILLEY.