

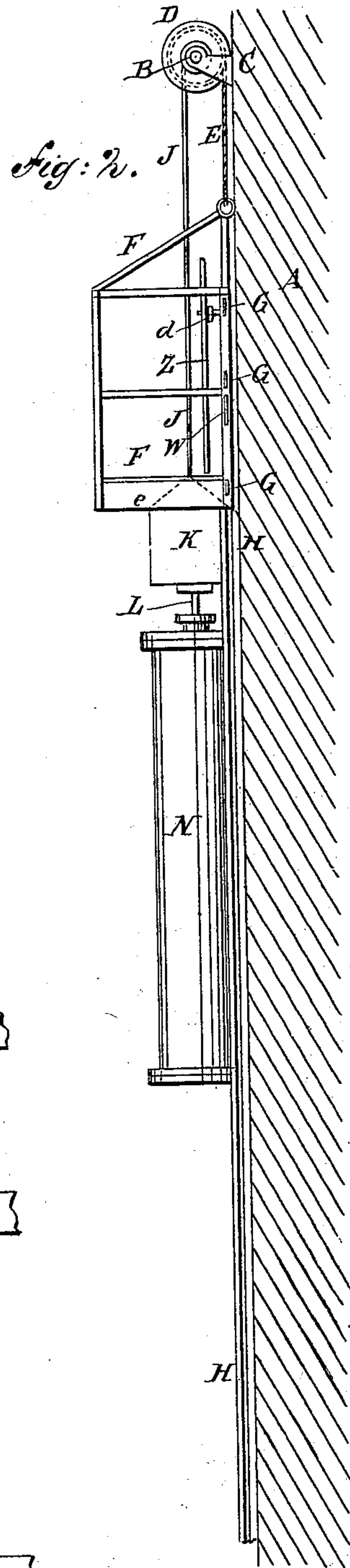
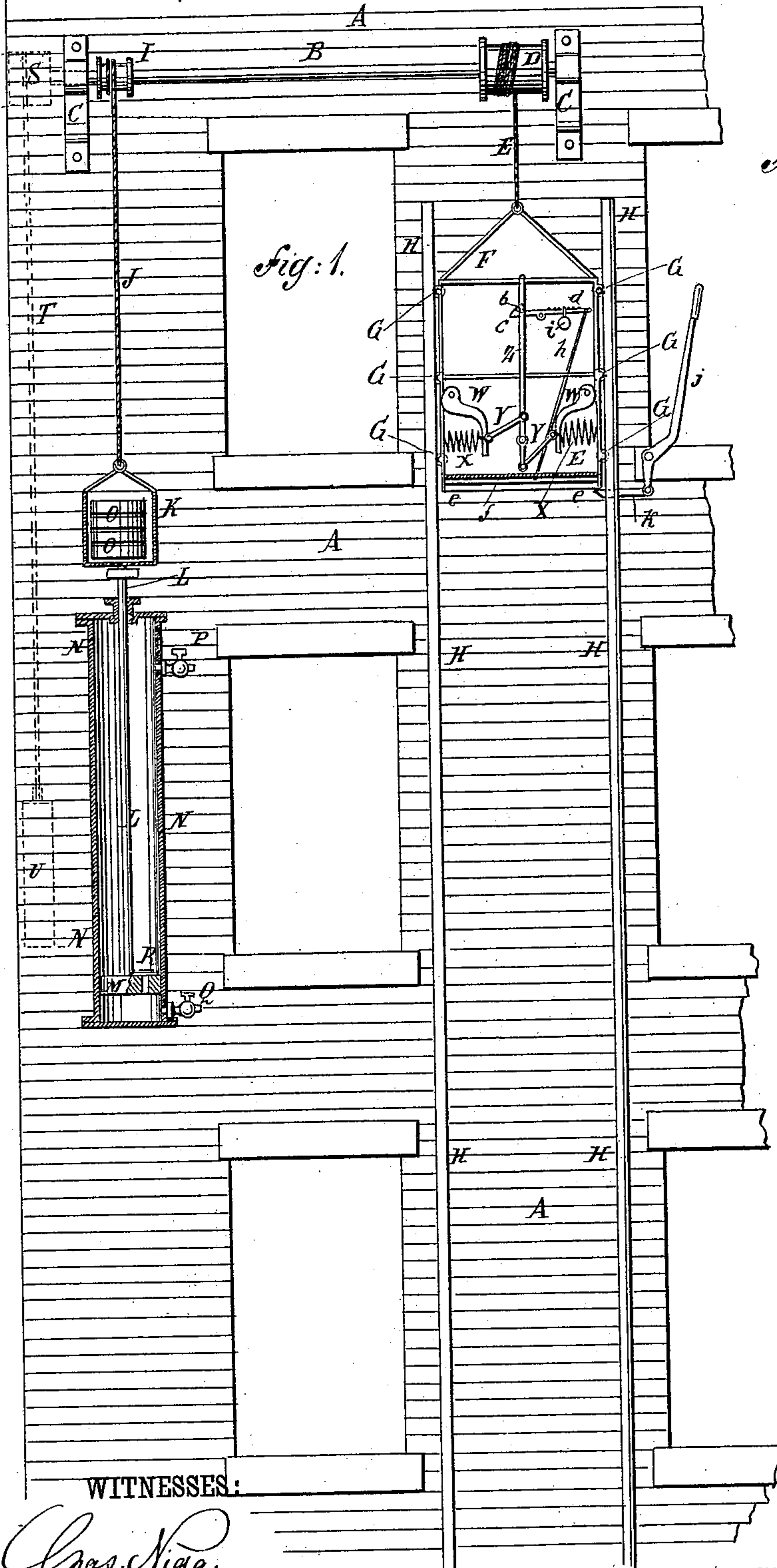
(No Model.)

3 Sheets—Sheet 1.

C. R. S. CURTIS.
FIRE ESCAPE.

No. 298,292.

Patented May 6, 1884.



WITNESSES:

Chas. N. A. A.
L. Sedgwick

INVENTOR:

C. R. S. Curtis
BY *Munn & Co*
ATTORNEYS.

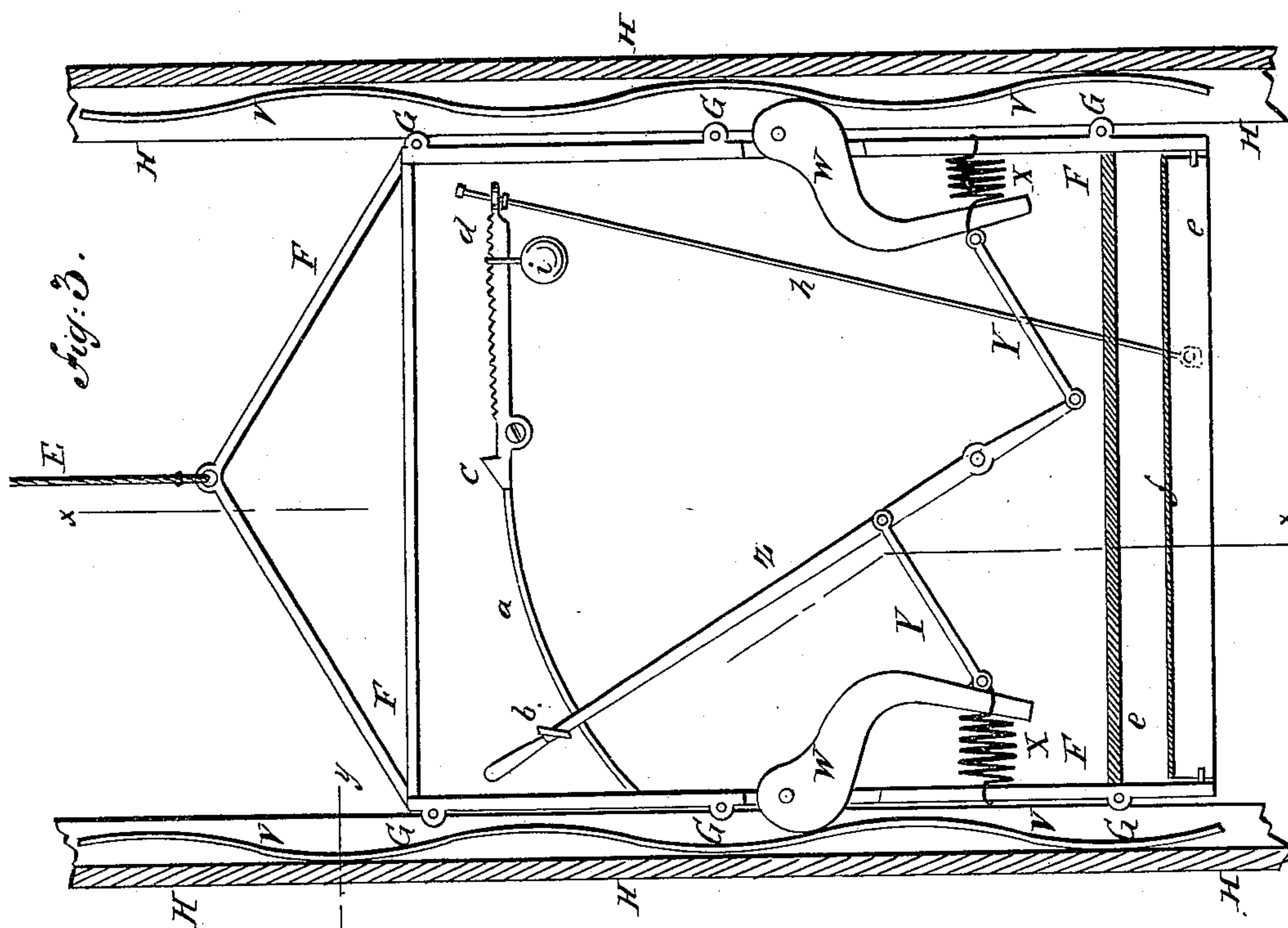
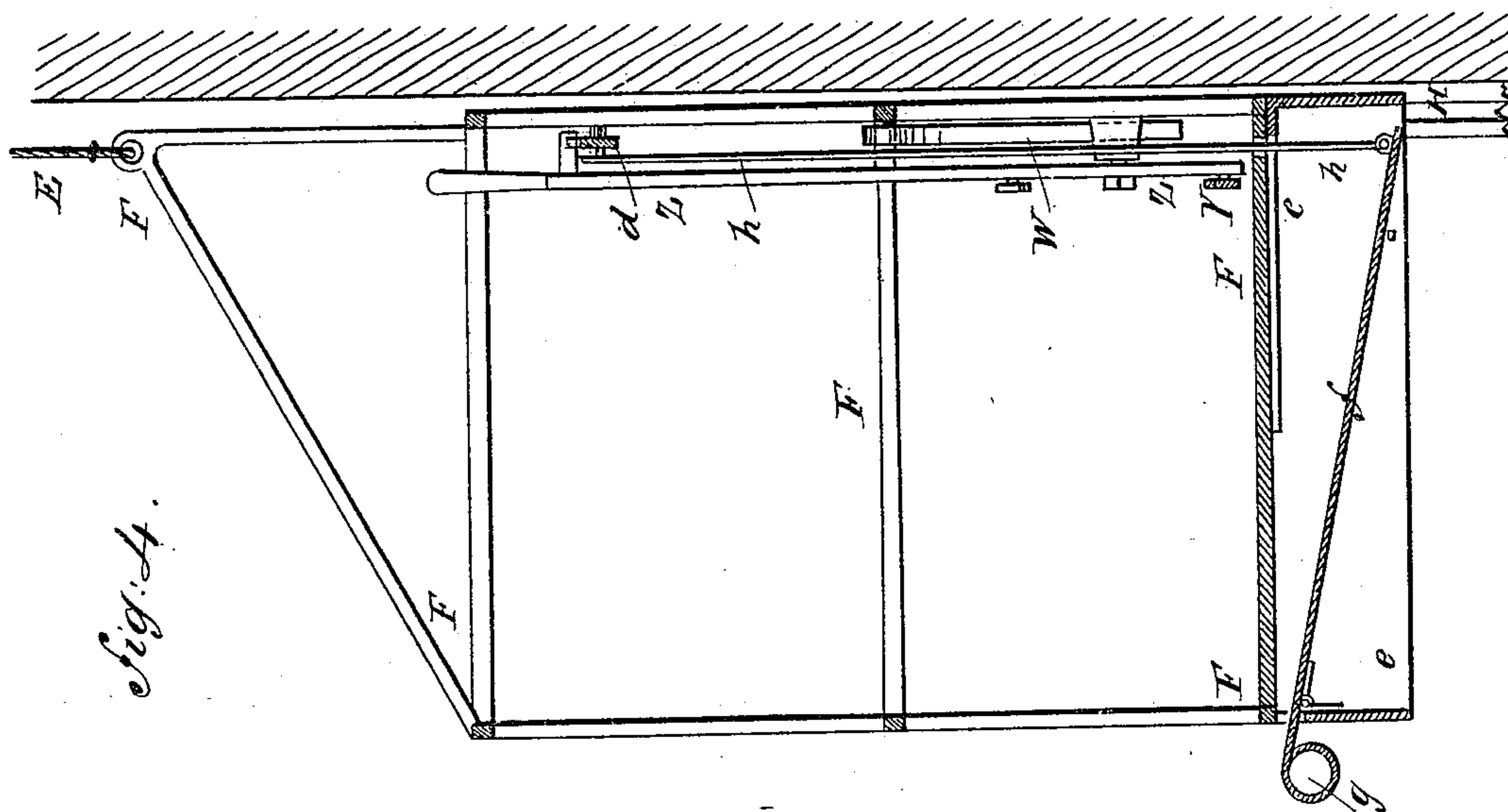
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C. R. S. CURTIS.
FIRE ESCAPE.

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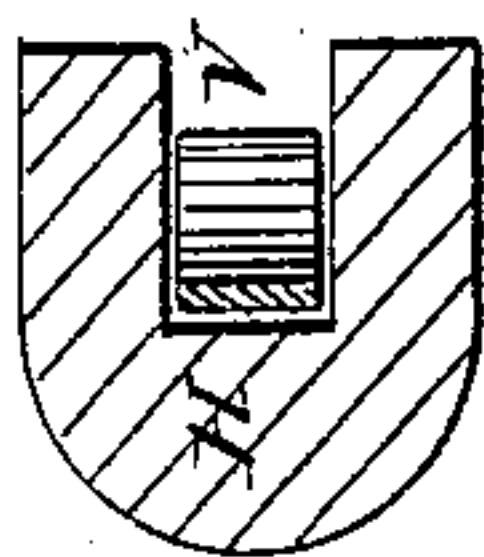
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Fig. 5.



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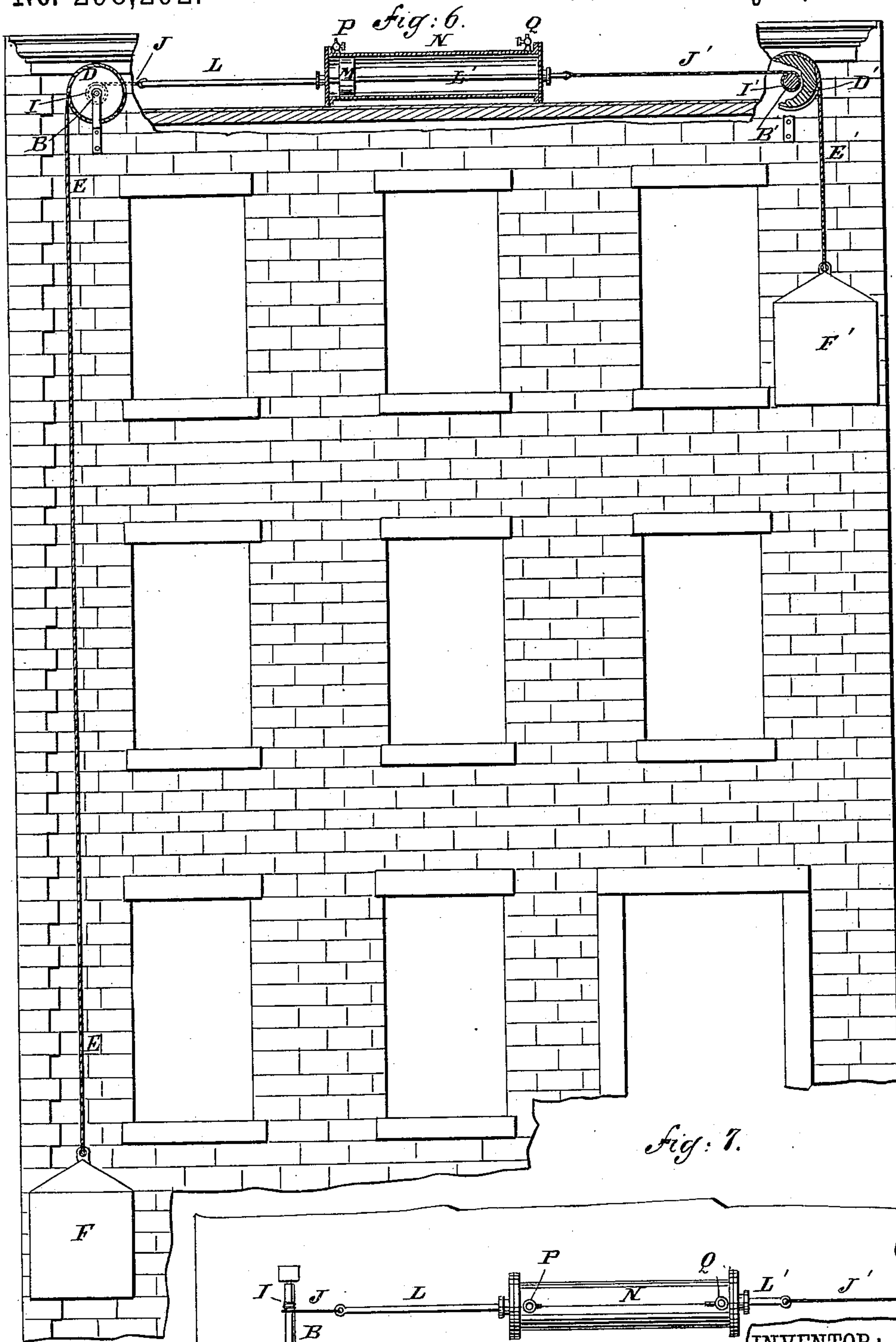
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

CHARLES R. S. CURTIS, OF QUINCY, ILLINOIS.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 298,292, dated May 6, 1884.

Application filed June 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. S. CURTIS, of Quincy, in the county of Adams and State of Illinois, have invented a new and useful
5 Improvement in Fire-Escapes, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate
10 corresponding parts in all the figures.

Figure 1, Sheet 1, is a front elevation of my improvement. Fig. 2, Sheet 1, is a side elevation of the same. Fig. 3, Sheet 2, is a sectional front elevation of the carriage and its
15 guide-posts enlarged. Fig. 4, Sheet 2, is a sectional side elevation of the same, taken through the line *x x*, Fig. 3. Fig. 5, Sheet 2, is a sectional plan view of one of the guide-posts, taken through the line *y y*, Fig. 3. Fig.
20 6, Sheet 3, is a front elevation, partly in section, of another arrangement of my improvement. Fig. 7, Sheet 3, is a plan view of a part of the same.

25 The special object of this invention is to facilitate the escape of people from burning buildings when the ordinary egress-passages have been obstructed.

The invention consists of a carriage suspended from a drum arranged upon a shaft
30 journaled in the upper part of a building, combined with a piston working in an air-cylinder and connected to a drum on the said shaft, the connecting-ropes of the carriage and piston being wound in opposite directions on the
35 arms, and the cylinder with stop-cocks in its upper and lower parts. With the carriage are connected lever-cams held against the guide-posts of the said carriage by springs, and connected with a lever by pivoted bars, whereby
40 the pressure of the said cams against the guide-posts can be controlled. Within the grooves of the guide-posts are secured corrugated metallic plates for the cams to operate against to
45 make them more effective. The carriage is provided with a hinged plate connected by a rod with the catch-bar that holds the lever when the cams are drawn back, whereby a
50 rapid descent of the carriage will release the lever and allow the springs to apply the cams, as will be hereinafter fully described.

A represents a building to which my improvement has been applied.

B is a shaft which revolves in bearings C, attached to the upper part of the building A. 55

To the shaft B is attached a drum, D, to which is secured and around which is wound a chain or wire rope, E.

To the end of the rope E is attached a carriage, F, the frame of which is provided with
60 guides G, to slide in grooves in posts H and cause the said carriage to move up and down in a straight line.

To the shaft B is attached a second drum, I, to which is attached the end of a chain or wire
65 rope, J. The rope J is wound around the drum I in the opposite direction from the rope E on drum D, so that one of the said ropes will be wound up as the other is unwound. The other end of the rope J is secured to the
70 frame or box K, attached to the upper end of the piston-rod L, the piston M of which works in an air-tight cylinder, N, secured to the lower part of the building A or some other
75 suitable support.

In the box K are placed weights O, of sufficient gravity to overbalance the carriage F
and raise the said carriage automatically when unloaded and released.

In the side of the cylinder N, at a little distance from its upper end, and at its lower end,
80 are formed openings, in which are secured stop-cocks P Q, to regulate the ingress and egress of air above and below the piston M, and in the piston M is formed an opening
85 closed by a valve, R, opening upward. With this construction, when the carriage F has been loaded and is released, its gravity will overbalance the weight O, and cause the said carriage to descend and the piston M to move
90 upward through the cylinder N, compressing the air in the upper part of the said cylinder, and forming a partial vacuum in the lower part of the cylinder, the stop-cocks P Q having been previously adjusted with reference to the prob-
95 able weight of the load to be carried down by the carriage, so that the resistance of the compressed air and of the partial vacuum will prevent the carriage F from descending with
100 too great rapidity. When the carriage F has been unloaded and released, the gravity of the weight O will raise the said carriage to its

former position, the valve R preventing the piston M, in its downward movement, from meeting any appreciable resistance from the air. If desired, a third drum, S, provided
5 with a chain or wire rope, T, and a weight, U, of sufficient gravity to overbalance and raise the carriage F, can be attached to the shaft B, as indicated in dotted lines in Fig. 1. In this case no more weight should be placed
10 in the box K than enough to lower the piston M.

To the guide-posts H, at the bottoms of their grooves, is attached a corrugated plate, V, of metal, for the cams W to engage with. The
15 cams W are pivoted to the frame of the carriage F, and are held against the facing-plates V by the tension of the spiral or other shaped springs X, attached at one end to the frame of the carriage F, and at the other end to the
20 levers of the said cams W.

To the levers of the cams W are pivoted connecting-bars Y, the other ends of which are pivoted to the lever Z upon the opposite sides of and equally distant from the pivoting-
25 point of the said lever. The lever Z is pivoted to the frame of the carriage, and its upper part moves along a guide-bar, *a*, attached to the frame of the said carriage, and has a pawl, *b*, attached to it, to engage with the
30 catch *c* of a bar, *d*, pivoted to the frame of the carriage F, when the cams W are to be held away from the corrugated plates V. With this construction the force with which the
35 cams W are held against the plates V can be regulated by adjusting the lever Z to allow the carriage F to descend with greater or less rapidity, and to compensate for the greater or less load that may be in the said carriage.

Beneath the floor of the carriage F is secured a box, *e*, which is open at the bottom, and is provided with a plate, *f*, pivoted at a little distance from one edge to the frame of the carriage F, so that the said plate, when
45 left free, will hang in an inclined position, as shown in Fig. 4. The plate *f* is partially balanced by a bar, *g*, attached to its short arm. To the long arm of the plate *f* is attached the end of a rod, *h*, which passes up through the bottom of the carriage F, and is connected at
50 its upper end with the rear end or handle of the catch-bar *d*. With this construction, as the carriage F moves downward at ordinary velocity, the plate *f* retains its position; but should the said carriage acquire too great a
55 velocity in its descent the pressure of the air will force the plate *f* upward and cause the rod *h* to raise the rear end of the catch-bar *d* and release the lever Z, allowing the springs X to press the cams W against the plates V and
60 check or stop the motion of the carriage automatically. The plate *f* is held from being operated by the wind, and is set to resist any desired pressure by a weight, *i*, suspended adjustably from the catch-bar *d*.

65 I have described my improvement as a fire-escape, but do not wish to confine myself to

that application, as it can be used as an elevator in mines, hotels, and other places with equal advantage.

In the construction shown in Figs. 6 and 7 70 the cylinder N is placed upon or above the roof of the building, in the rear of and parallel with the upwardly-projecting top of the wall, and is secured to brackets or other support attached to the said wall. The cylinder N is 75 provided near its ends with stop-cocks P Q, and within it is placed a solid piston, M. The piston M is provided with two piston-rods, L L', which project through stuffing-boxes in the ends of the cylinder N, and to the ends of 80 which are attached the ends of two wire ropes, J J'. The other ends of the wire ropes J J' are attached to and wound in opposite directions around two small drums, I I', secured to the ends of two shafts, B B'. The shafts 85 B B' pass out through the upwardly-projecting wall of the building, and revolve in bearings attached to the said wall and to the roof of the said building.

To the projecting outer ends of the shafts 90 B B' are attached larger drums D D', to which are attached the ends of wire ropes E E'. The wire ropes E E' are wound upon their drums in the opposite direction from each other and from the corresponding ropes, J J'. 95

To the ends of the ropes E E' are attached two carriages, F F', which are constructed and operated in the manner hereinbefore described. One of the carriages F F' is made a little lighter than the other, so that when the 100 apparatus is left free the lighter carriage will always be raised ready for use. With this construction the double apparatus will have about twice the carrying capacity of the single apparatus, and the cost of construction will be 105 but little increased.

To the balcony of the window or to the wall of the building is pivoted a lever, *j*, Fig. 1, to the lower end of which is attached a catch, *k*, which slides in a bearing secured to the 110 wall of the building or to one of the guide-posts H, in such a position that the forward end of the said catch will engage with the carriage and support it while being loaded. The lower side of the forward end of the catch *k* 115 is beveled, so that the said catch will be pushed back by the carriage in its ascent. The catch *k* is pushed forward when the carriage has passed, to prevent the said carriage from descending, when partially loaded, by the 120 weight of the lever *j*, or by a spring connected with the said lever. With this construction, when the carriage is ready to descend, the person in charge draws the upper end of the lever *j* inward, which draws back the catch *k* 125 and frees the said carriage.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a fire-escape, the combination, with a shaft journaled in the upper part of a building, 130 of a carriage suspended from a drum thereon and a piston working in an air-cylinder and

connected to drum on the said shaft, the connecting-ropes of the carriage and piston being wound in opposite directions on the drums, substantially as herein shown and described.

5 2. In a fire-escape, the combination, with the carriage F, shaft B, provided with the drums D I, and ropes E J, wound in opposite directions thereon, of the piston M and the cylinder N, having stop-cocks P Q in its up-
10 per and lower parts, substantially as herein shown and described, whereby the descent of the said carriage will be resisted by compressed air above the piston and a partial vacuum below it, as set forth.

15 3. In a fire-escape, the combination, with the carriage F, the shaft B, the ropes E J, the piston M, having valve R, and the cylinder N, of the weight O, substantially as herein shown and described, whereby the said carriage will
20 be raised automatically when unloaded and released, as set forth.

4. In a fire-escape, the combination, with the carriage F and guide-posts H, of the lever-cams W, the springs X, the connecting-

bars Y, and the lever Z, substantially as herein 25 shown and described, whereby the descent of the said carriage can be controlled, as set forth.

5. In a fire-escape, the combination, with the guide-posts H, provided with corrugated 30 plates V and the spring-pressed cam-levers W, of the lever Z, provided with the pawl b, the connecting-rods Y, and the bar d, provided with the catch c, substantially as herein shown and described.

6. In a fire-escape, the combination, with 35 the carriage F, the lever Z, and pivoted catch-bar d, of the hinged plate f and the connecting-rod h, substantially as herein shown and described, whereby the air-pressure caused by 40 the rapid descent of the carriage is made to release spring-operated cams and check the descent, as set forth.

CHARLES R. S. CURTIS.

Witnesses:

FRANK R. TUBBESING,
LEONARD GILL.