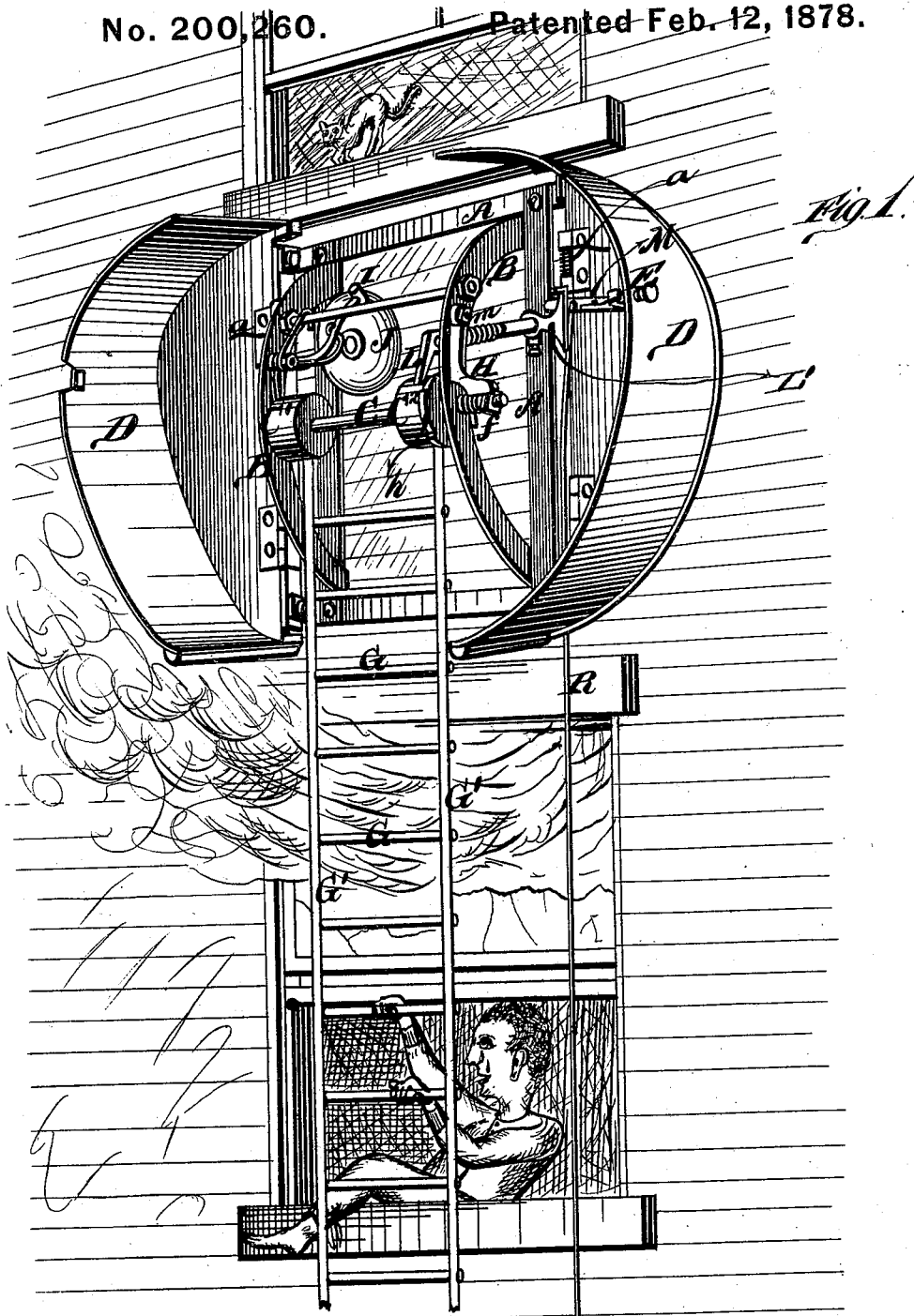


I. D. CROSS.
Fire-Escape.

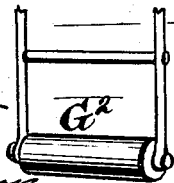
No. 200,260.

Patented Feb. 12, 1878.



WITNESSES

Robert C. Smith
George E. Upham



INVENTOR,

Ira D. Cross.

Gilmore Smith & Co.
 ATTORNEYS.

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Fig. 2.

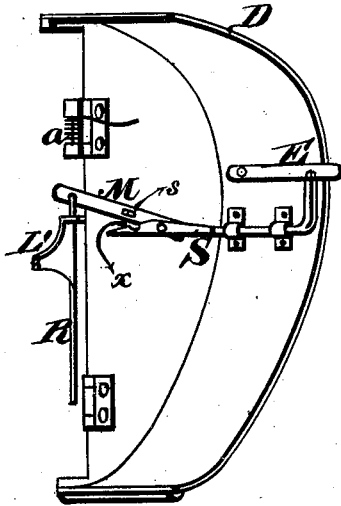


Fig. 3.

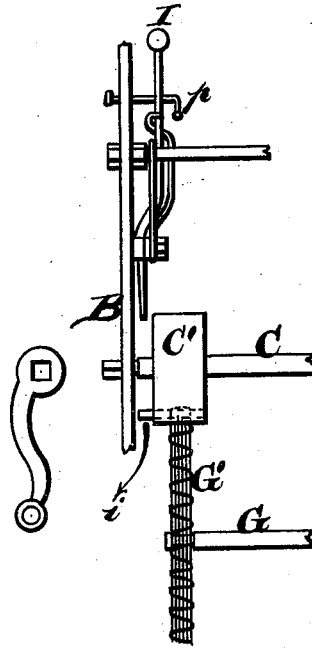


Fig. 4.

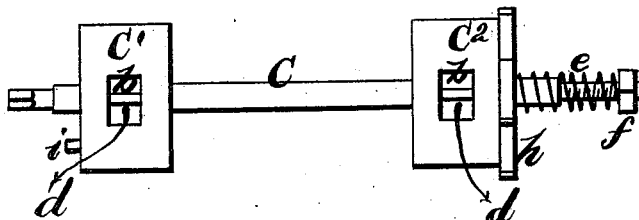
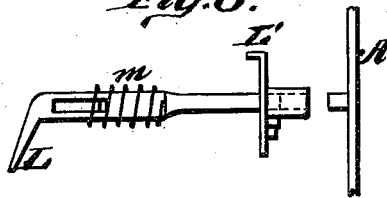


Fig. 5.



Fig. 6.



WITNESSES

Robert G. Smith,
George E. Upham,

INVENTOR .

Ira D. Cross.
Gilmore, Smith & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

IRA D. CROSS, OF RENO, NEVADA.

IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. **200,260**, dated February 12, 1878; application filed July 28, 1877.

To all whom it may concern:

Be it known that I, IRA D. CROSS, of Reno, in the county of Washoe and State of Nevada, have invented a new and valuable Improvement in Fire-Alarms and Safety-Ladders; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a perspective view of my fire-alarm and safety-ladder as applied; and Figs. 2, 3, 4, 5, and 6 are details thereof.

My present invention relates to certain improvements upon a combined fire-alarm and safety-ladder for which Letters Patent were granted to me July 24, 1877, No. 193,489; and it consists in means for releasing the doors, and the devices for holding the ladder from running down and for releasing the same, all as hereinafter more fully set forth.

The annexed drawings, to which reference is made, fully illustrate my invention.

A represents the frame-work, with the arched side pieces B B forming bearings for the shaft C. D D are the hinged doors, thrown outward by springs *a a*, and, when closed, held together by the spring-catch E.

The ladder is composed of suitable rounds or cross-bars G G, secured to woven-wire bands G¹ G¹, and provided with a heavy cross-bar or roller, G², at the bottom. This ladder is connected to the shaft C by means of two smooth pulleys or wheels, C¹ C², secured on the shaft, and each provided with a recess, *b*, in its periphery. In these recesses the ends of the wire bands G¹ are fastened by means of bolts or pins *d d*, substantially as shown.

One end of the shaft C is made square, for the application of a crank to wind up the ladder, while the other end of said shaft is formed with screw-threads, and has a nut, *f*, placed thereon, with a spiral spring, *e*, placed between said nut and the arched side piece. H is the pivoted arm to hold said nut while the ladder runs down to contract the spring and act as a gradual brake. On the outer side of

the pulley or wheel C¹ is a projecting pin, *i*, which for each revolution of the shaft C, while the ladder runs down once, operates the bell-hammer I to strike the bell or gong J.

The pulley or wheel C² is formed with a ratchet-wheel, *h*, into which takes a pawl or dog, L, to hold the ladder from running down. This dog moves horizontally in or on guides in the frame and side piece, and its end is turned downward to engage with the teeth of the ratchet-wheel *h*, the pawl being drawn or forced inward by means of a spring, *m*. From the pawl or dog L extends an arm or plate, L', toward the door or cover on that side of the apparatus.

The spring-catch E is applied to this door, and an angular shaft, S, placed in bearings below said catch, inside of the door, for releasing the catch. To the inner arm of this shaft is pivoted a lever, M, which has a projecting pin, *s*, to fit into a notch, *x*, in said arm, when the lever *m* forms a prolongation of the lever-arm S.

To close the apparatus, the arm H is thrown up and the bell-hammer I held raised from the bell by a pin, *p*. The lever M is under the arm L', holding the dog L away from the ratchet-wheel; or it may be turned on its pivot, so as to be above said plate, when the dog will take into the said ratchet-wheel.

By means of a crank on the end of the shaft C the ladder is then wound up, and the pawl holds it in this position. The nut is then run out to the end of the shaft, the arm H turned down on the nut, and the bell-hammer let down by moving the pin *p*. The right-hand door or cover is then closed, when the end of the lever M will stand at right angles with and close to the outer edge of the plate L'. The other cover or door is then also closed, the two being fastened by the spring-catch E.

R is the wire or cord running down in eye-bolts fastened on the outside of the building, and its upper end attached to the end of the lever M. By pulling on this wire or cord the lever M turns the shaft S, which releases the spring-catch E, when the springs *a* throw the doors or covers D open. In so doing the lever M comes behind the plate or arm L', and re-

leases the pawl or dog L from the ratchet-wheel *h*, allowing the ladder to pass down and the alarm be sounded, in the same manner as described in my former patent above referred to.

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

1. The combination, with the spring-doors *DD* and catch *E*, of the angular shaft *S*, having a notch, *x*, on its inner arm, and the lever *M*, pivoted thereto and provided with the pin *s*, substantially as and for the purposes herein set forth.

2. The combination, with the ladder and the pulleys to which it is attached, of the ratchet-wheel *h*, spring-dog *L*, with arm or plate *L'*, the lever *M*, and swinging door *D*, substantially as and for the purposes herein set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

IRA D. CROSS.

Witnesses:

JOHN F. MYERS,
W. H. WIESTER.