(No Model.)

2 Sheets—Sheet 1.

J. BURT.

FIRE ESCAPE.

No. 424,460. Patented Apr. 1, 1890.

Fig. 1.

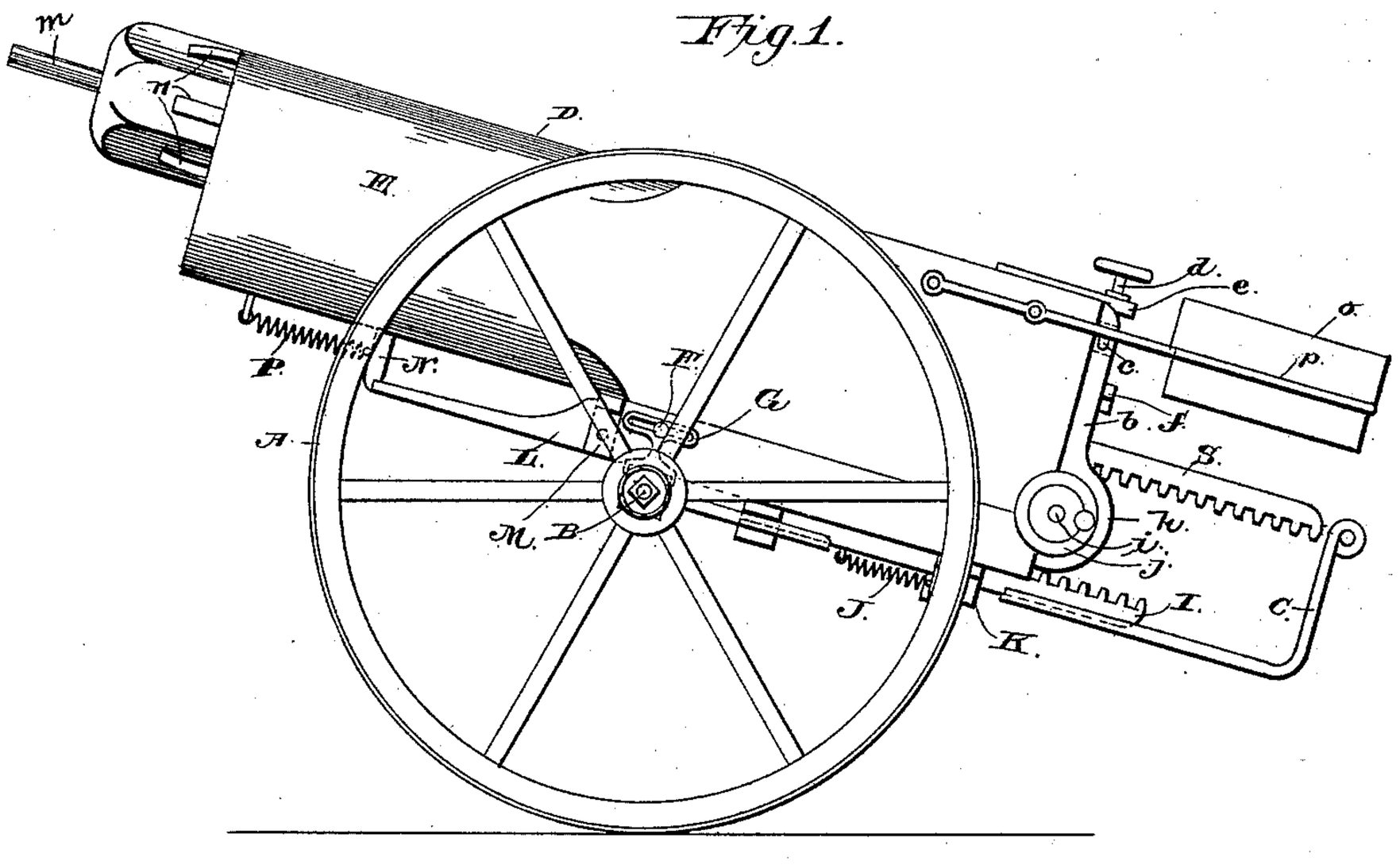
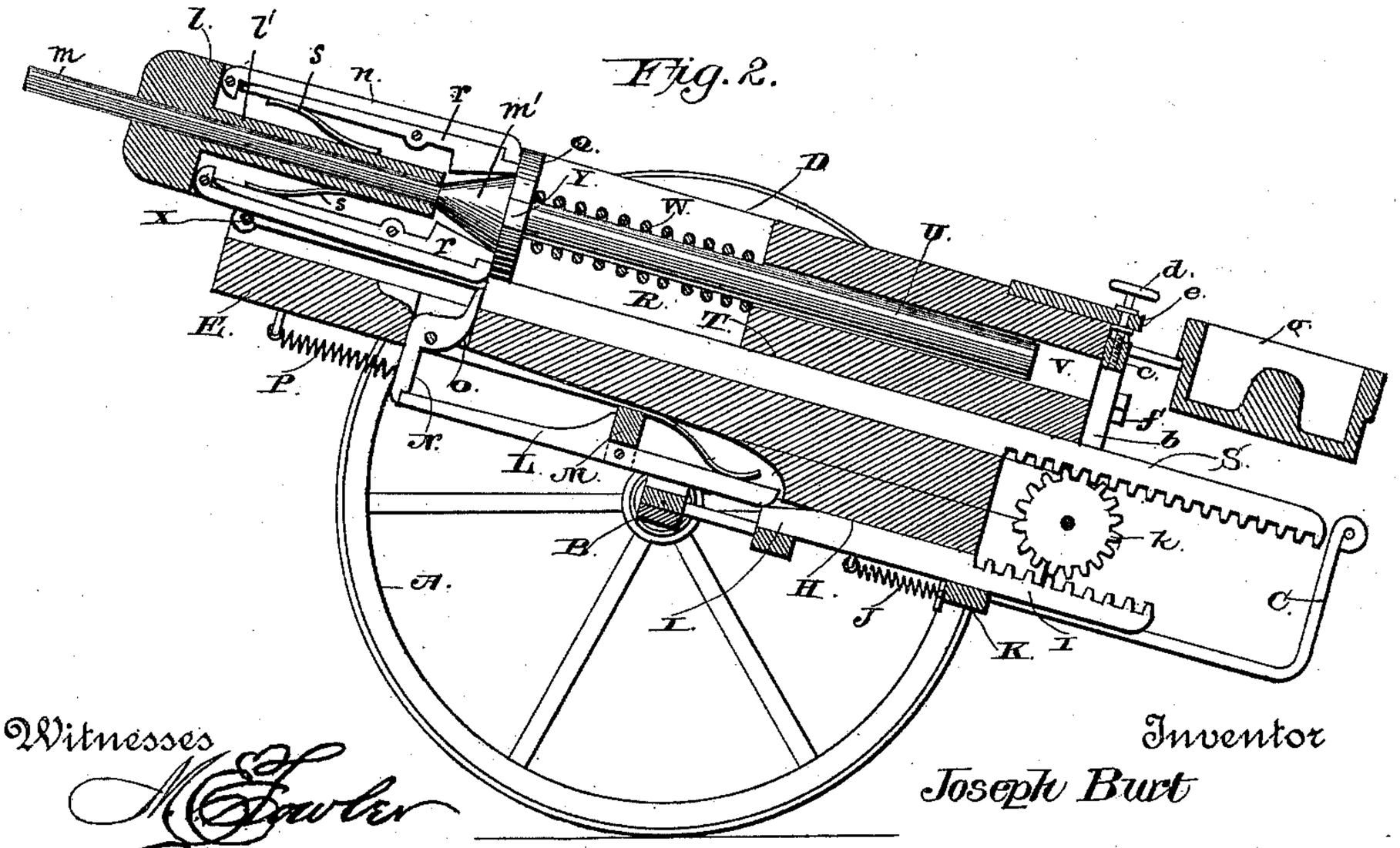


Fig. 2.



Witnesses

M. Fowler

R. W. Bishop.

Inventor

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A. Crow & Co

(No Model.)

2 Sheets—Sheet 2.

J. BURT.

FIRE ESCAPE.

No. 424,460. Patented Apr. 1, 1890.

Fig. 3.

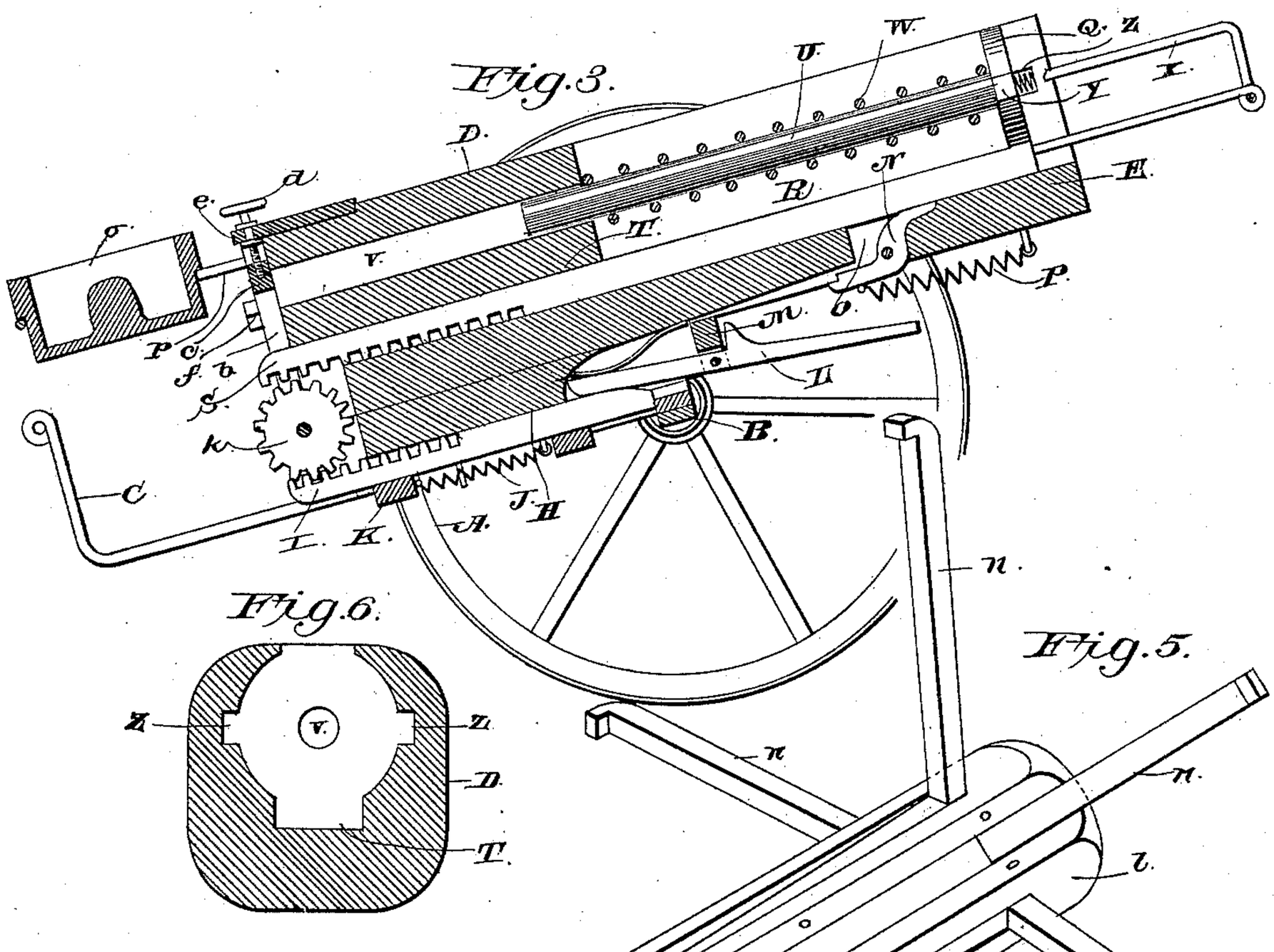
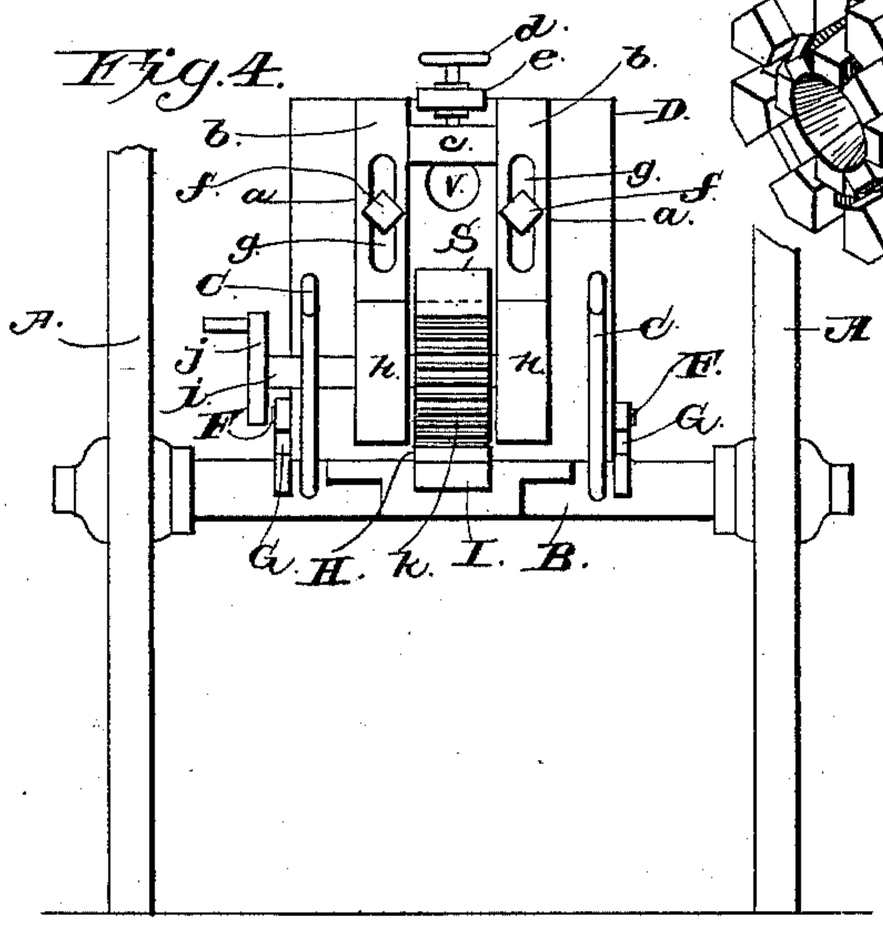


Fig. 6.

Fig. 5.

Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH BURT, OF OLEAN, NEW YORK.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 424,460, dated April 1, 1890.

Application filed November 7, 1889. Serial No. 329,468. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BURT, a citizen of the United States, residing at Olean, in the county of Cattaraugus and State of New York, have invented a new and useful Fire-Escape, of which the following is a specification.

My invention relates to improvements in fire-escapes; and it consists in certain novel features hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side view of my improved machine. Fig. 2 is a central longitudinal section of the same, showing it arranged to throw the grappling-hook. Fig. 3 is a similar view showing the position of the several parts after the hook has been thrown. Fig. 4 is an end elevation. Fig. 5 is a detail view of the grappling-hook. Fig. 6 is a detail sectional view.

In carrying out my invention I employ the carrying-wheels A, which are connected by an axle B, of any desired construction, and to the said axle I secure the shafts or draft-bars C, as shown. A mortar D is mounted on the axle and is adapted to project the grappling-hook through a window of a burning building, so that the rope may extend from the same to the ground. The body E or barrel of the mortar is provided on its sides with the lateral studs F, and the said studs are engaged by the slotted brackets G on the upper side of the axle, so that the body or barrel may be readily adjusted to fire or project the grappling-hook in any desired angle from the horizontal.

In the under side of the bottom of the barrel I form a groove H, and in the said groove I arrange a rack-bar I, which is held normally toward the rear end of the barrel by a spring J, which is secured to the rack-bar, and a bracket K, which guides and supports the said bar. The forward end of the rack-bar bears against the under side of a lever L, which is pivoted in a suitable bracket M on the bottom of the barrel, and the forward end of said lever is engaged by the lower end of a trigger N, playing in an opening or slot O in the barrel. The trigger is held normally in a vertical position by a spring P, secured to the trigger and the barrel, as clearly shown. The upper end of the trigger projects into the bore of the barrel and is engaged by the sliding follower or carrier R. The follower or carrier is provided with a rearwardly-extending rack-bar S, which fits in a longitudinal slot T in the barrel and has its teeth projecting downward, the teeth on the lower rack-bar I being projected upward. The follower is further provided with a rearwardly-projecting stem U, which plays in a socket V in the rear end or butt of the barrel or body, and a spring W is arranged around the said stem, between the head of the follower and the front end of the bore of the barrel. When the trigger is released, this spring W throws the follower toward the mouth of the barrel, and thereby throws the grappling-hook into the burning building.

The grappling-hook is supported by a forwardly-projecting supporting arm or carrier X on the follower-head Q, and the follower is prevented from being thrown from the barrel by means of the lugs Y on the said follower-head, which engage the longitudinal grooves Z in the inner side of the barrel and impinge against the front ends of the said grooves, small springs or cushions being arranged in the said front ends of the grooves to deaden the shock, as shown in Fig. 3.

In the rear end of the barrel or body of the mortar I form the vertical grooves *a*, in which the arms *b* are seated, and the said arms are connected at their upper ends by a cross-bar *c*, and a feed-screw *d*, mounted in a bracket *e* at the top of the barrel, engages said cross-bar so as to raise or lower the same and the arms *b*. These arms are held in the grooves *a* by means of the screws or bolts *f*, which pass through slots *g* in the arms into the body or barrel of the mortar. The lower ends of the arms are enlarged, as shown at *h*, and a shaft *i* is journaled in the said enlargements and provided at one end, which is projected beyond the side of the barrel, with an operating disk or handle *j*.

Between the arms *b*, I secure on the shaft *i* a pinion *k*, which is adapted to engage the rack-bars I and S to operate the device.

The grappling-hook is composed of an exterior barrel or sleeve *l* and a rod or bar *m*, loosely fitted in said sleeve and normally projected beyond the end of the sleeve. The inner end of this rod *m* has a head *m'*, upon the outer face of which the rear ends of a number of tripper-levers *r* are pressed by outwardly-bearing springs *s* on the tubular core

l'. The trippers are pivoted near their rear ends and their front ends lie closely inside the front pivoted ends of the arms *n*. When the device or grappling-hook is projected into a room, the end of the said rod will strike against the wall of the room and be forced inward. The arms *n* will be thrown radially outward from the sleeve, so that the hook will be prevented from being withdrawn through the window.

I intend in practice to provide a number of hooks for each machine, and in order that the same may be easily carried I provide the box or basket *o*, which is supported by the open frame *p* at the front end of the mortar and may serve as a seat for the driver.

The construction and arrangement of the several parts of my device being thus made known, the operation and advantages of the same will, it is thought, be readily understood. When it becomes necessary to use the machine, it is drawn to a point near the burning building, a grappling-hook is placed in the carrier, and the follower then withdrawn into position for firing. The arms *b* are then lowered, so as to bring the pinion *k* into engagement with the lower rack-bar, and the said pinion is then rotated so as to slide the rack-bar toward the rear or free end of the barrel. The rear end of the rack-bar will thus be caused to act on the lever L, so as to release the same from the trigger, when the spring W will at once throw the follower outward until its motion has been arrested by the lugs Y, impinging against the ends of the grooves Z, when the inertia of the grappling-hook will carry the same out from the barrel and into the burning building. When the hook enters the room of the building, it will be automatically secured, in the manner hereinbefore described, and a rope, which has been previously secured to the hook (in a manner well understood and forming no part of my invention) will depend therefrom to the ground, so as to afford a means of escape for the inmates of the building. The arms *b* are then raised so as to bring the pinion *k* into engagement with the upper rack-bar S, after which the said pinion is rotated to draw the said rack-bar forward and thereby return the follower to its initial position with the spring W compressed, so that another grappling-hook may be thrown into the building, if so desired. The lower rack-bar and the trigger will be automatically returned to their initial positions by the springs attached thereto, as will be readily understood.

It will be observed that I have provided a device which is simple in its operation and by the use of which any desired number of escape-ropes may be furnished, according to the size of the burning building, or by which ladders may be quickly raised for the use of the firemen. The mortar can be easily turned to any desired angle, so as to throw the projectile or grappling-hook to any desired point of the building, and when the machine has been properly aimed the hook can be easily and quickly thrown.

Having thus described my invention, what I claim, and desire to have secured by Letters Patent, is—

1. The grappling-hooks for fire-escapes, consisting of a sleeve, a rod mounted in the sleeve, and a series of arms pivoted to the said sleeve and adapted to be projected therefrom, as set forth.

2. The combination of the barrel, the follower therein adapted to carry the grappling-hook, a spring arranged within the barrel to project the follower, a trigger in the bottom of the barrel engaging the follower, and means for releasing the trigger from the follower, as set forth.

3. The combination of the barrel, the follower therein having its head provided with a supporting-arm adapted to carry a grappling-hook, the spring adapted to project the follower, the trigger engaging the follower, and means for releasing the trigger from the follower, as set forth.

4. The combination of the barrel, the follower therein, the spring adapted to project the follower, means for returning the follower, the trigger adapted to engage the follower, and means for releasing the trigger from the follower, as set forth.

5. The combination of the barrel, the follower mounted therein, the spring adapted to project the follower, means for restoring the follower, the trigger mounted in the barrel and adapted to engage the follower, the lever pivoted on the barrel and engaging the trigger, the spring secured to the trigger and the barrel, the rack-bar mounted on the under side of the barrel and acting on the lever, the pinion on the end of the barrel to move the rack-bar in one direction, and the spring secured to the rack-bar to move it in the opposite direction, as set forth.

6. The combination of the barrel, the follower therein, the upper rack-bar extending from the follower, the spring to project the follower, the lower rack-bar, intermediate devices between said rack-bar and the follower to hold the follower within the barrel, the vertically-movable shaft on the end of the barrel, and the pinion on the said shaft adapted to engage the rack-bars, as set forth.

7. The combination, with the barrel, the upper and lower rack-bars therein, the vertically-movable arms on the end of the barrel, the shaft journaled in said arms and carrying a pinion adapted to engage the rack-bars, the cross-bar connecting said arms, and the feed-screw mounted on the barrel and engaging said cross-bar, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOSEPH BURT.

Witnesses:

WM. E. HAWKS,

C. H. MCCREADY.