

(No Model.)

2 Sheets—Sheet 1.

J. F. DOWNES.
FIRE ESCAPE.

No. 485,914.

Patented Nov. 8, 1892.

Fig. 1.

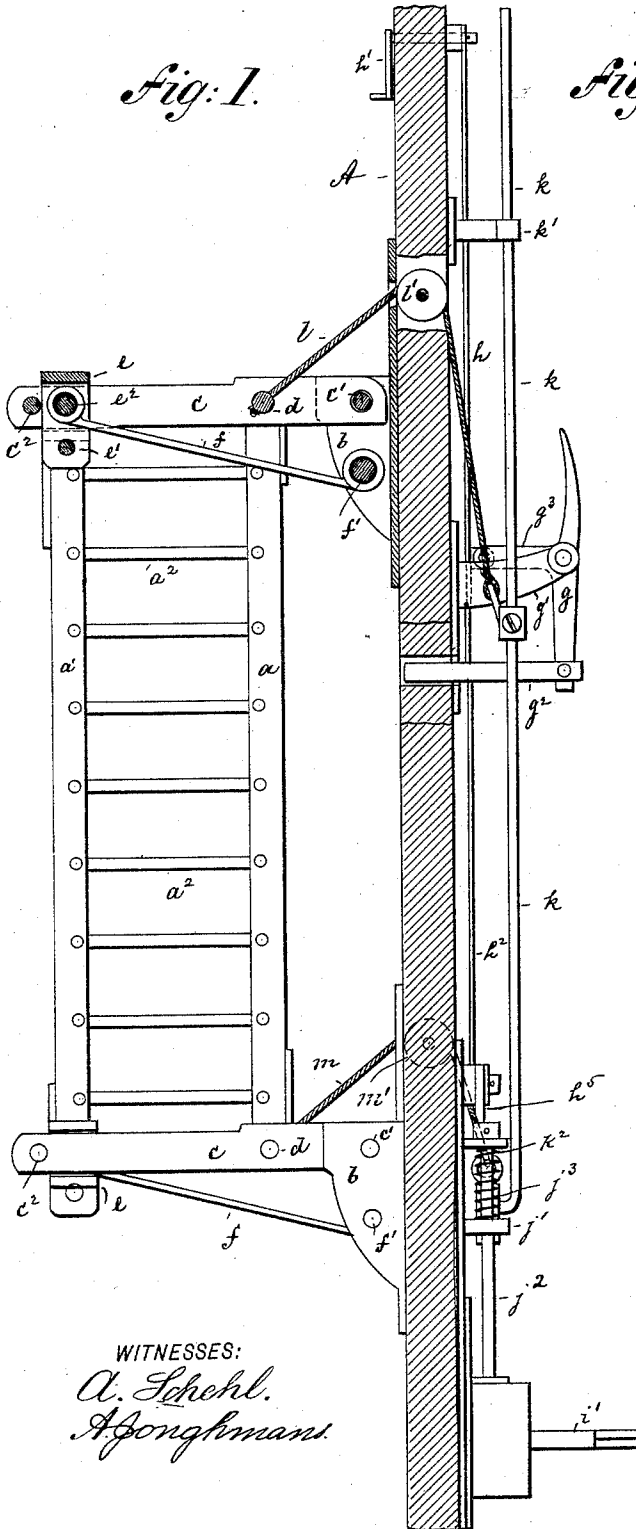
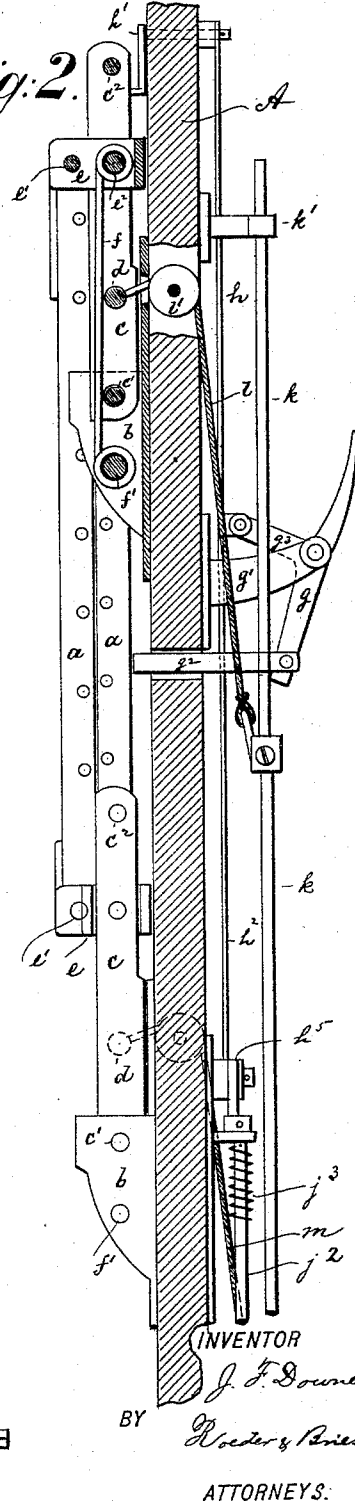


Fig. 2.



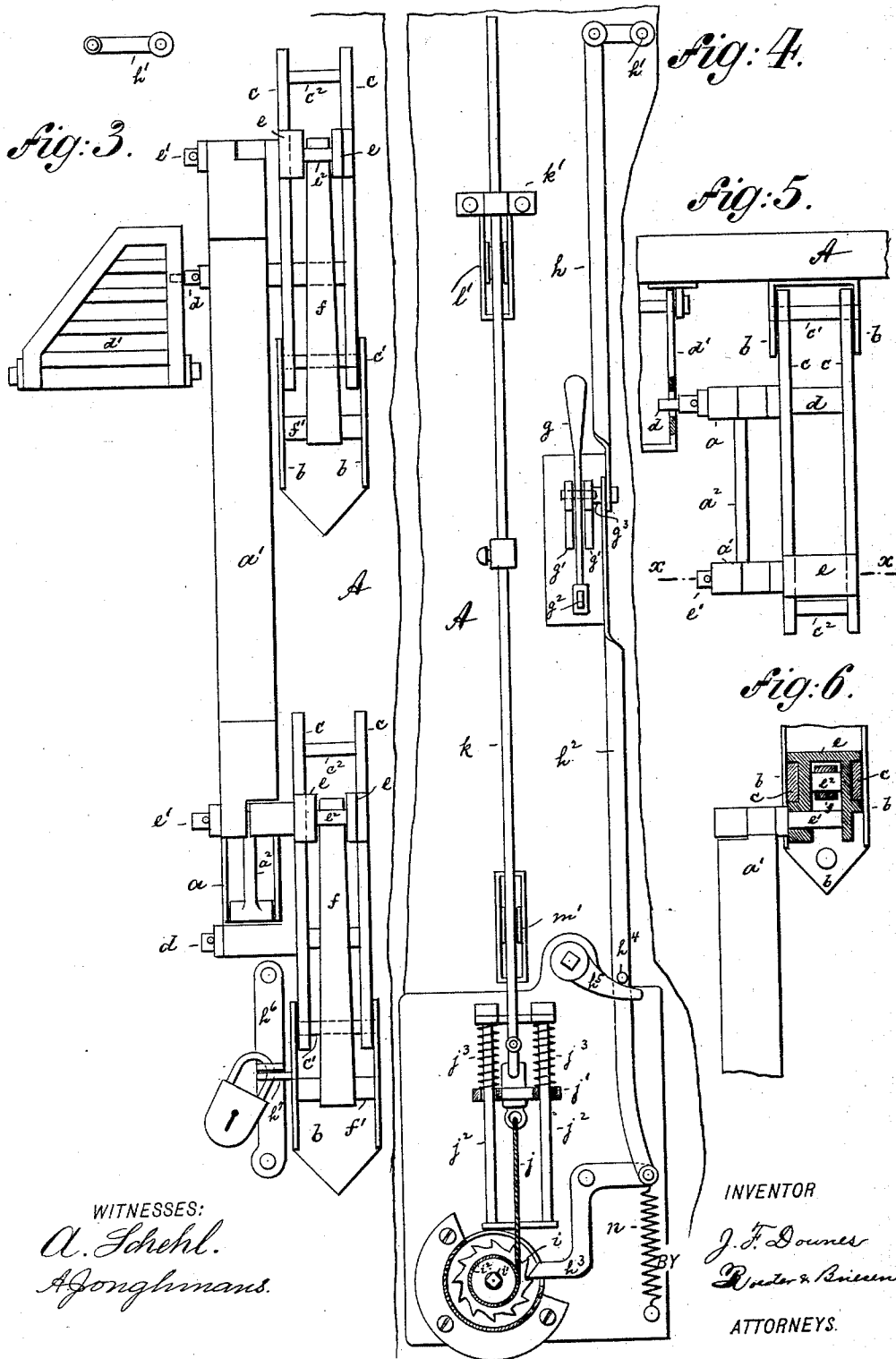
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2 Sheets—Sheet 2.

No. 485,914.

Patented Nov. 8, 1892.



UNITED STATES PATENT OFFICE.

JAMES F. DOWNES, OF NEW YORK, N. Y.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 485,914, dated November 8, 1892.

Application filed July 18, 1892. Serial No. 440,297. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. DOWNES, of New York city, New York, have invented an Improved Fire-Escape, of which the following is a specification.

This invention relates to a fire-escape which can be folded up close against the house when out of use and can be swung out to stand off at a distance from the house in case of fire.

The invention consists in the various features of improvement more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of the fire-escape, showing it open; Fig. 2, a similar view showing it closed; Fig. 3, a front view of the fire-escape, showing it closed; Fig. 4, a rear view thereof showing it open; Fig. 5, a top view of the arm *c*; and Fig. 6, a cross section on line *x x*, Fig. 5.

The letters *a a'* represent the two side bars of a folding ladder provided with the pivoted rungs *a²*.

b b are a pair of brackets secured to the house-front A above and below the ladder. To each bracket there is pivoted by pin *c'* an arm *c*, consisting of two parallel bars that are connected at their forward end by a pin *c²*, Fig. 5. The inner side bar *a* of the ladder is pivoted to arm *c* by a laterally-extending pivot *d*, secured to the arm *c* at such a distance in front of the pivot *c'* as the ladder is to stand off from the house when open. The end of this pivot may be made to engage a folding platform *d'*, which is thus swung down when the ladder is opened to permit access to the same. The outer side bar *a'* of the ladder is pivoted by laterally-projecting pivot *e'* to a cross-head or flanged slide *e*, engaging and free to reciprocate upon the arms *c*, Fig. 6. The cross-head *e* is pivotally connected by pin *e²* to one end of an eccentric-rod *f*, the other end of which is pivoted to the bracket *b* below arm *c* by a pin *f'*.

The operation of the device as thus far described is as follows: When the ladder is to be lowered, the arms *c* are swung outward on pivots *c'* to stand at right angles to the house-front. During this motion the eccentric-rod *f* will move the slide *e* outward to open the ladder, Fig. 1. When the ladder is closed, the slide *e* will be moved inward, so that the arms

c and the side bars *a a'* will fold flush against the wall, Fig. 2. To raise and lower the ladder, I employ the following mechanism: To a bracket *g'*, projecting rearwardly from the inner face of wall A, there is pivoted a hand-lever *g*. To the free end of this lever is pivoted a push-rod *g²*, passing through a perforation of wall A and bearing against the side bar *a* on the depression of the lever to mechanically throw the ladder outward and assist in the opening of the same. The lever *g* is provided with an arm *g³*, to which there is pivoted an upwardly-projecting bar *h*, having a crank-handle *h'*, and a downwardly-projecting bar *h²*, terminating in a pawl *h³*. The bar *h²* is provided, moreover, with a pin *h⁴*, engaging a lever *h⁵*, adapted to be revolved from the outside of the building by handle *h⁶*. If this handle is locked to a stationary lug *h⁷* on bracket *b*, Fig. 3, by a padlock, the ladder is locked in its closed position and cannot be tampered with. The pawl *h³* engages a ratchet-wheel *i*, fast on an arbor *i'*, carrying a drum *i²*. To this drum is secured one end of a rope or chain *j*, the other end of which is attached to a slide *j'*, moving on guide-rods *j²*, that carry the buffer-springs *j³*. The slide *j'* is also connected to a vertically-movable rod *k*, guided in fixed bearing *k'*. To this rod is connected the inner end of a cord or chain *l*, passing over pulley *l'* and connected at its outer end to the upper arm *c*. To an arm *k²* of rod *k* is also connected the inner end of a cord or chain *m*, passing over pulley *m'* and connected at its outer end to the lower arm *c*. In use the drum *i²* is revolved by a key engaging the arbor *i'*, so that the rope *j* is wound up and the ladder is raised or closed. In this position the ladder will be locked by the engagement of the pawl *h³* with the ratchet-wheel *i*, held thereto by a spring *n*. When it is desired to lower or open the ladder, a pressure upon hand-lever *g* will withdraw the pawl *h³* from the teeth of wheel *i* against the action of spring *n*. At the same time pressure will be applied to the side bar *a* by the push-bar *g²*, so that the ladder will be started and will fully open by its own gravity. During this motion the slide *j'* and rod *k* will be drawn upward by the chains *l m*, that are pulled out by the ladder. After the fire the arbor *i'* is again revolved to wind up rope

j and draw down slide *j'* and rod *k*, and to thus pull the ladder up by the chains *l m*.

If it is desired to open the ladder from the basement or street, this can be done by revolving the handle *h⁶*, which by lever *h⁵* and pin *h⁴* will draw the rod *h²* up to withdraw the pawl *h³* from the ratchet-wheel *i*. A like result may be attained from the upper stories by revolving the handle *h'*, that will draw the rod *h²* up by means of the rod *h*. Thus the ladder may be readily operated from all elevations.

What I claim is—

1. The combination of a pair of arms *c*, pivoted to the house front, with a slide engaging the same and with a folding ladder pivoted to the slide, substantially as specified.

2. The combination of a pair of arms pivoted to the house front with a slide engaging the same, an eccentric-arm *f*, connected to the slide, and a folding ladder having one side bar pivoted to the slide and the other side bar pivoted to the arm, substantially as specified.

3. The combination of a pair of pivoted arms composed of a pair of parallel bars with a slide engaging said bars, an eccentric-rod for operating the slide, a laterally-projecting pivot *d*, secured to the arms, a laterally-projecting pivot *e'*, secured to the slide, and with

a folding ladder connected to the pivots *d e'*, substantially as specified.

4. The combination of a pair of swinging arms with a folding ladder pivoted thereto and with a lever *g* and a push-rod *g²*, passing through the wall and adapted to bear against the folding ladder, substantially as specified.

5. The combination of a pair of swinging arms with a slide, an eccentric-rod, and a folding ladder pivoted to the slide and with a push-rod *g²* and operating-lever *g* for mechanically opening the ladder, substantially as specified.

6. The combination of a pair of swinging arms with a ladder pivoted thereto and with a drum *i²*, ratchet-wheel *i*, pawl *h³*, engaging the ratchet-wheel, a cord *j*, engaging the drum, and with a slide *j'*, rod *k*, and operating-chains *l m*, secured thereto, substantially as specified.

7. The combination of a pair of swinging arms with a ladder pivoted thereto and with drums *i²*, ratchet-wheel *i*, lever *g*, rod *g²*, rod *h²*, having pawl *h³*, and with cord *j*, slide *j'*, rod *k*, and operating-chains *l m*, substantially as specified.

JAMES F. DOWNES.

Witnesses:

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F. V. BRIESEN.