

(No Model.)

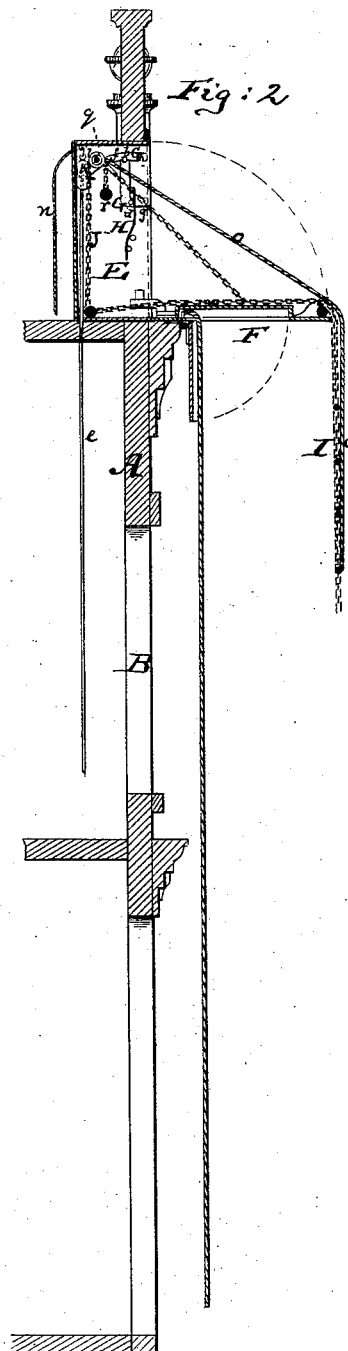
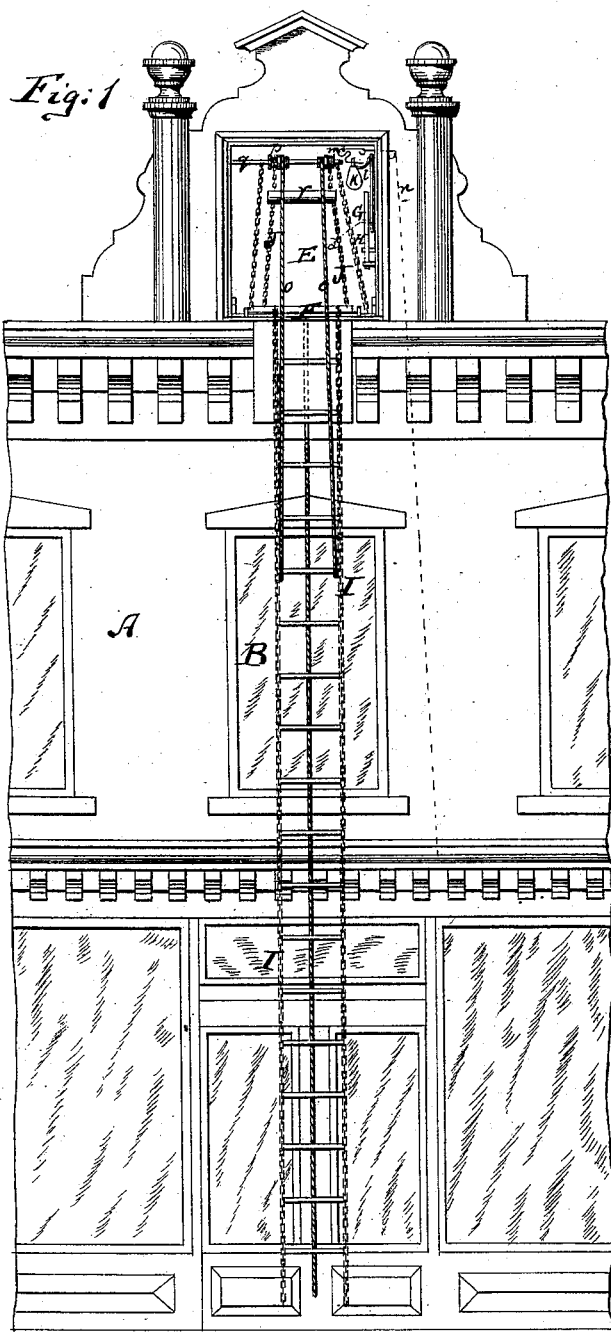
2 Sheets—Sheet 1.

J. H. TOWNSEND & E. A. DUBÉY.

FIRE ESCAPE.

No. 302,059.

Patented July 15, 1884.



Witnesses:

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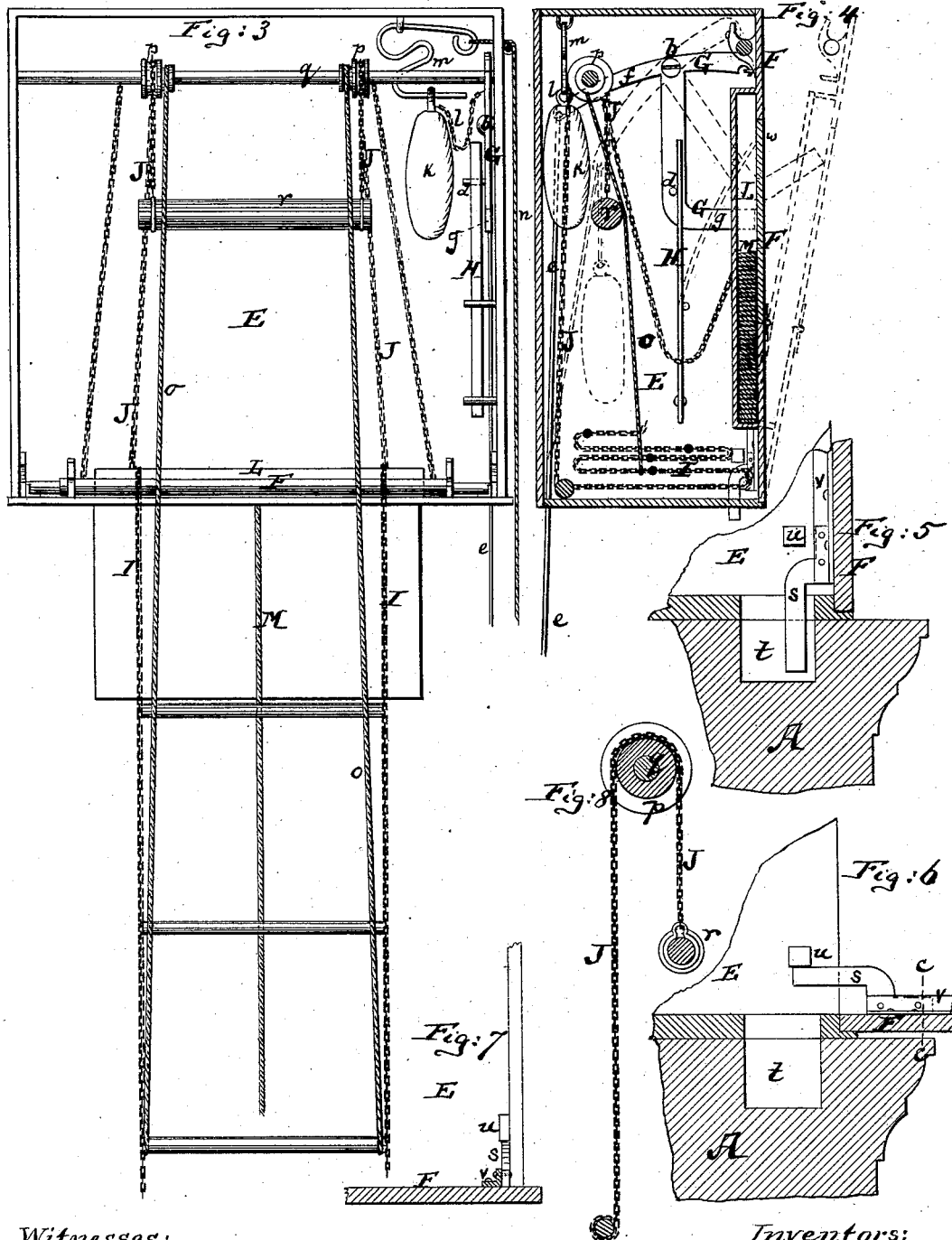
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FIRE ESCAPE.

No. 302,059.

Patented July 15, 1884.



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# UNITED STATES PATENT OFFICE.

JOSEPH H. TOWNSEND AND EDWARD A. DUBÉY, OF BROOKLYN, N. Y.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 302,059, dated July 15, 1884.

Application filed April 5, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, JOSEPH H. TOWNSEND and EDWARD A. DUBÉY, both of Brooklyn, county of Kings, and State of New York, have invented an Improvement in Fire-Escapes, of which the following is a specification.

Figure 1 is a front elevation of a building having our improved fire-escape. Fig. 2 is a vertical transverse section of the wall of said building and of the fire-escape. Fig. 3 is a face view, on an enlarged scale, of the upper part of our improved fire-escape; Fig. 4, a vertical cross-section of the same; Fig. 5, an enlarged cross-section of the trap-door of the chamber which contains the fire-escape, showing the manner in which it is hinged; Fig. 6, a similar section showing the door swung open. Fig. 7 is a vertical section on the plane of the line *c c*, Fig. 6. Fig. 8 is a detail cross-section showing the brake arrangement for letting the ladder down slowly.

This invention relates to certain improvements on the fire-escape which is described in Letters Patent No. 260,627, granted to us July 4, 1882, and has for its object, in the first place, to prevent the flexible ladder, when it is unfolded and dropped to the street, from tearing its upper connections out of form, practice having satisfied us that the strain on the upper connections in such case is quite formidable. With this object in view we have supplied the ladder with a brake attachment by means of which its descent will be made more gradual and all unnecessary strain on the upper connections avoided.

The invention also relates to an improved hinge for the door of the recess or chamber that contains the ladder in its concealed condition, the hinge being of such character that it is not apt to stick by corrosion, so that the door can always be freely swung down, even if it has remained closed for a number of years, an ordinary hinge being liable to be clogged by rust in such cases.

Another feature of this invention relates to an improvement in the construction of the catch-lever by which the door is held closed and afterward pushed open, as will be hereinafter more fully described; and, finally, the present invention relates to the placing of an additional trap-door into the aforementioned

door of the chamber that contains the concealed ladder, which additional trap-door drops open when the ladder is let out and lets down a rope which will assist persons in escaping from a burning building, and which may also be used by the firemen in hoisting hose to the upper portion of the building.

In the accompanying drawings, the letter A represents the front wall of the house.

B B are windows in the said wall, and above these windows is the recess or chamber E, which by preference is erected on the brick wall, or otherwise so placed as to be rigidly held in position.

F is the door which normally closes the chamber E, said door being hinged to the wall or casing by the peculiar hinge that is shown in Figs. 5, 6, and 7. The door F has at its upper part on the inner side the jaws that support the lower weighted ladder-rung, as stated and shown in our former patent, No. 260,627.

G is the catch-lever, which holds the door F closed, said catch-lever being adapted to hook over a pin or projection on the inner side of the door F, as indicated in Fig. 4, and being pivoted at *b* to the casing of the chamber E. A spring, H, which is also contained in said casing E, bears against the outer side of a stud or projection, *d*, on the catch-lever G, and thereby holds the hook of said catch-lever properly engaged with the projection on the door F, as shown by full lines in Fig. 4. The rear arm, *f*, of the catch-lever G is connected with a pull or wire, *e*, which, when pulled, will throw the catch-lever into the dotted position shown in Fig. 4, thereby disengaging it from the door F, and causing a lower projection, *g*, on said catch to push the door F open. It will be seen that in this arrangement the catch-lever differs from that shown in the aforesaid patent, No. 268,627, — namely, in that the lever G pushes the door F open by its toe *g*, whereas in the above patent the door was pushed open by a spring, H.

We find that the positive motion of the catch-lever is more apt to insure the proper opening of the door F, and that there is no danger under this arrangement of having the door remain closed by the giving out of the power of the spring H. Suitable weights, *k*, may be connected by chains or ropes *l* with

the rear portion of the catch-lever, which chains or ropes are in the normal position of the parts—that is to say, when there is no fire, hooked on hooks *m*, that are pivotally hung within the casing *E*, and that are connected with cords *n*, which extend down through the several floors and normally hold the bills of said hooks up so as to hold the said weights *k* suspended from said hooks. In case of a fire, the cord *n* is burned and no longer serves to hold the hook *m* up, which, dropping, allows the weight *k* to fall, and thereby to swing the catch-lever *G* in such fashion as to cause the door *F* to fly open and let the ladder drop down to the street. This ladder is indicated by the letter *I* in the drawings, and is of the construction described in the above-mentioned Letters Patent, or of any other suitable construction. The catch-lever may be connected with a series of weights, *k*, each having its own rope or chain *l*, that is held normally by a hook, *m*, which in turn is held up by a separate cord, *n*, so that, the several cords *n* running to different parts of the building, the fire-escape will be automatically disengaged and the ladder let down whenever by a fire any one of the said cords *n* is partly destroyed, so that the weight *k* pertaining to it may drop.

In order to prevent the ladder *I*, when it drops, from straining its connections with the casing *E*, we have supplied it with a brake mechanism, which consists of a pair of cables, *o*, that are fastened at their lower ends to the ladder *I* at a distance of, say, ten (or more or less) feet from its upper end, while the upper ends of these cables are fastened to and wound around pulleys *p*, that are mounted upon a shaft, *q*, which is hung in the casing *E*. Over this shaft *q* passes a weighted chain, *J*, which is fastened at one end, and loaded by a weight, *r*, at the other end, as more clearly shown in Fig. 8, and which by its weight acts as a frictional brake on the shaft *q* and prevents it from revolving very readily or rapidly. While the ladder *I* is folded up in the casing, the upper parts of the cables *o* are wound around the pulleys *p*. When the door *F* is swung open and the ladder *I* drops down, and before the ladder *I* reaches its lowermost position—that is, the street—it will begin to draw on the cables *o* and will not be able to completely descend until it shall have unwound the cables from the shaft *q*. This unwinding of these cables from said shaft is resisted by the frictional apparatus that consists of the loaded chain *J*, and it follows that as the shaft *q* unwinds slowly the ladder itself will not reach its final position as a fire-escape with any degree of suddenness, nor jerk its upper fastening, but, on the contrary, will be slowly and gently let down, so as to avoid all strain and injury to the parts by which it is held suspended. We do not desire to limit ourselves to the particular kind of frictional brake herein described—that is to say, to the loaded chain *J*—as a powerful spring bearing

on the shaft *q* will in many instances answer the same purpose; but we believe that the chain *J*, with its weight *r*, is the best form of brake for such purpose, as experience shows that springs are apt to lose their force by age, while the weight will always remain operative.

Instead of having two cables *o* attached to the flexible ladder *I*, as is more fully indicated in Fig. 3, and which is the more desirable form for the purpose, one cable may in many cases be used with advantage; but two will be best, because they can be placed near the ends of the rungs of the ladder and will not be in the way of a free use thereof.

The hinge for the door *F* is more clearly shown in Figs. 5, 6, and 7, and consists of an L-shaped projection, *s*, attached to the inner side of the door *F* near its bottom, there being one such projection, *s*, at each extremity of said door. This L-shaped projection *s*, when the door is closed, as in Fig. 5, dips with its then vertical part into a well or recess, *t*, which is formed in the bottom of the casing *E*, or in that part of the structure on which the casing *E* stands; but when the door is opened, as in Fig. 6, the same part which was the vertical part of the projection *s* is in a horizontal position, and bears then against the under side of a stud or button, *u*, that projects inwardly from the inner face of the casing *E*.

The manner of fastening the projection *s* to the door *F* is by preference that shown in Fig. 1, namely: A sort of angle-iron, *v*, is fastened to the inner face of the door, and to this is secured the shorter limb of the L-shaped projection *s*. It will be clearly perceived that this kind of a joint or hinge is not liable to be injured by rust or exposure or to be clogged in any way, but that, on the contrary, it will always be operative, and will nevertheless constitute a firm and reliable means of holding the door in either of its two extreme positions.

In order to add to the efficiency of this fire-escape, we have provided the door *F* with a sunken chamber, *L*, which is closed by a smaller door, *w*, and in this chamber *L* is contained, in the normal condition of the apparatus, a coiled or folded rope, *M*. When the door *F* flies open—that is to say, into the horizontal position—the small door *w*, which is hinged in it, drops open by its own weight and allows the rope *M* to drop to the street, the upper end of said rope remaining fastened to the door *F* or to the casing *E*. This rope may then be used by parties desiring to escape from the burning building or by the firemen, who, ascending on the ladder *I*, may use the rope *M* to hoist hose or other contrivances to be used in the endeavor to extinguish the fire.

We claim—

1. The combination of the door *F* with the latch-lever *G*, and with mechanism, substantially as described, for moving said latch-lever automatically, the latch-lever having the

projection *g*, which reaches contact with the door *F* to throw it open when the latch-lever is moved by the said mechanism, substantially as herein shown and described.

5 2. The combination of the flexible ladder *I* with the cable *o*, shaft *g*, casing *E*, and with the brake *J r*, applied to said shaft *g*, substantially as and for the purpose described.

10 3. The combination of the door *F*, having L-shaped projections *s s*, with the casing *E*, having recess *t* and buttons *u*, substantially as and for the purpose described.

4. In a fire-escape, the door *F*, combined with the casing *E* and ladder *I*, and with the compartment *L*, which is formed on said door, 15 smaller door *w*, and rope *M*, substantially as and for the purpose specified.

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