

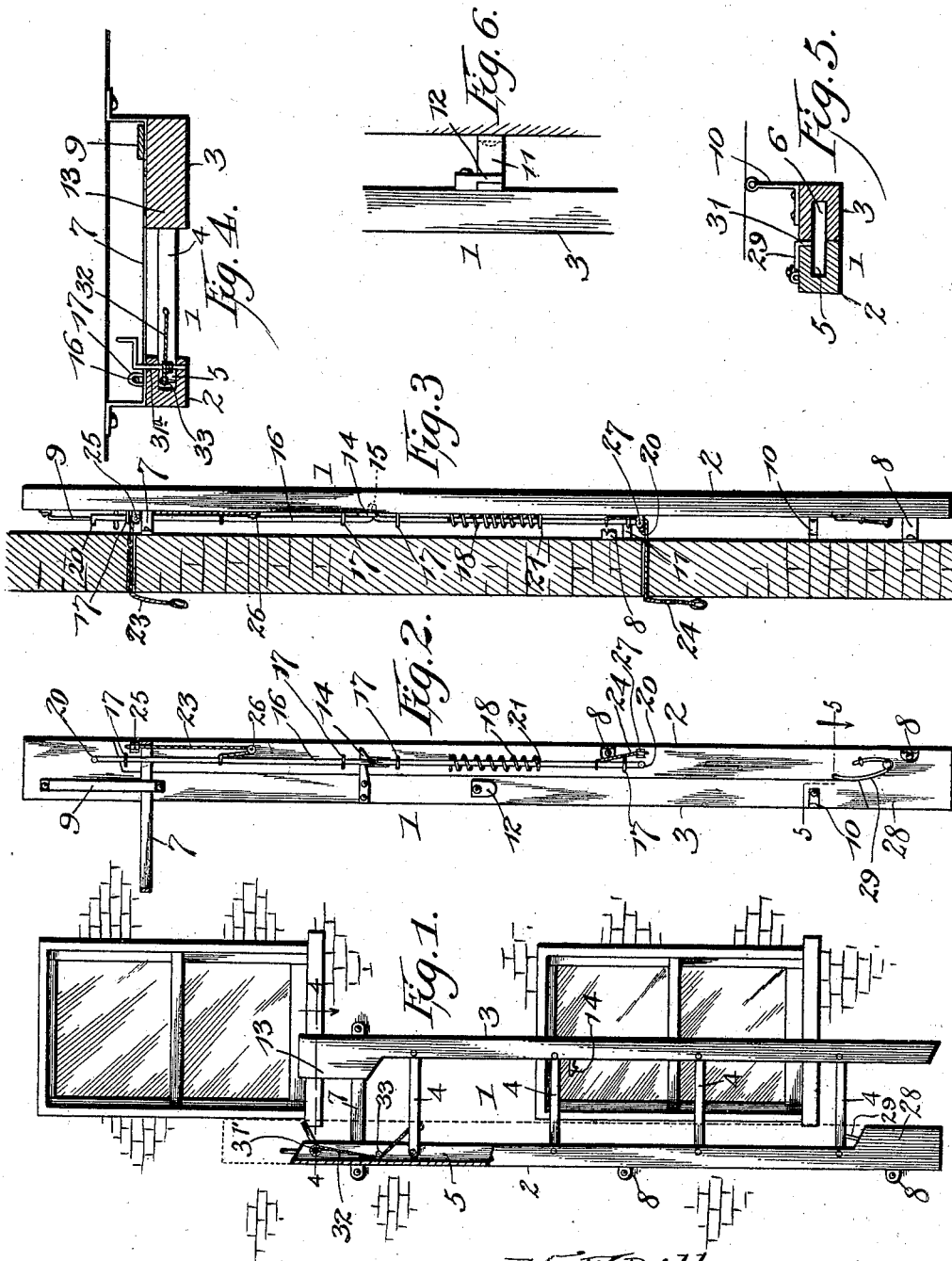
No. 647,214.

H. F. BILLMEYER.
FIRE ESCAPE.

Patented Apr. 10, 1900.

(Application filed July 10, 1899.)

(No Model.)



Witnesses
A. J. [Signature]
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UNITED STATES PATENT OFFICE.

HAMLIN F. BILLMEYER, OF RUTHERFORD, NEW JERSEY.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 647,214, dated April 10, 1900.

Application filed July 10, 1899. Serial No. 723,362. (No model.)

To all whom it may concern:

Be it known that I, HAMLIN F. BILLMEYER, a citizen of the United States, residing at Rutherford, in the county of Bergen and State of New Jersey, have invented a new and useful Fire-Escape, of which the following is a specification.

The invention relates to improvements in fire-escapes.

The object of the present invention is to improve the construction of fire-escapes and to provide a folding ladder designed to be permanently mounted on a building and capable of being compactly arranged when not in use and of being readily operated from any of the stories of a building and from the interior and exterior thereof to arrange it in position for use.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is an elevation, partly in section, showing a fire-escape constructed in accordance with this invention and applied to a building. Fig. 2 is an elevation showing the inner face of the ladder, the same being folded. Fig. 3 is a vertical sectional view. Fig. 4 is a horizontal sectional view on line 4 4 of Fig. 1. Fig. 5 is a detail sectional view on line 5 5 of Fig. 2. Fig. 6 is a detail view illustrating the manner of interlocking the hook of the movable side of the ladder with the bracket.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a ladder designed to be arranged on a building, as illustrated in Fig. 1 of the accompanying drawings, adapted to be employed in connection with any structure and constructed of steel or other suitable material and composed of a fixed side 2, a movable side 3, and a series of connecting-bars 4, arranged at intervals and forming the rungs or straps of the ladder. The sides 2 and 3 are provided with longitudinal grooves 5 and 6, located at their inner edges and adapted to receive and house the connecting-bars 4 when the ladder is folded, as illustrated in Fig. 2 of the accompanying drawings. The fixed

side 2 is supported and offset from the wall of the building by a top bracket 7 and by lower and intermediate brackets 8, and the said top bracket consists of a pair of L-shaped arms or sides and a transverse connecting portion disposed horizontally and passing through a vertical guide or keeper 9. The vertical guide or keeper 9 consists of a bar or strip of metal secured to the inner face of the movable side 2 of the ladder, at the upper portion thereof, and having its ends secured to the same, the body portion of the strip or bar being offset from the side 3 of the ladder to provide a space or opening for the horizontal bracket 7. By interlocking the movable side of the ladder with the horizontal bracket in this manner the side 3 is guided in its inward and outward movement and is supported when extended. The brackets 8 are provided with reversely-arranged arms disposed at right angles to the body portion, which is horizontal, and the said arms are secured, respectively, to the side 2 of the ladder and to the wall of the building, as clearly illustrated in Fig. 5 of the accompanying drawings.

The movable side of the ladder is provided near its lower end with an inwardly-extending horizontal arm 10, adapted to bear against the wall when the ladder is subjected to the weight of a person, and the ladder is supported at a point between its ends by a bracket 11, provided with a substantially L-shaped outer portion and mounted upon the building. The L-shaped portion of the bracket 11 is engaged by a hook 12, mounted on the movable side of the ladder, at the inner face thereof, and extending downward. By this construction the ladder is firmly supported in its operative position and is prevented from bending or swaying when subjected to the weight of a heavy person.

The movable side of the ladder is provided at its upper end with an extension or enlargement 13, located directly above and adapted to rest upon the fixed side 2 of the ladder when the parts are folded, as clearly shown in Fig. 2 of the drawings, and the lower edge of the extension 13 and the upper end of the side 2 are mounted, as shown, to enable the movable portion of the ladder to swing inward and outward.

The movable portion of the ladder carries

a catch 14, mounted on the inner face of the side 3 and extending inward horizontally therefrom and engaged by an arm 15 of a vertically-movable locking-rod 16, mounted in suitable guides 17 at the inner face of the side 2. The vertically-disposed locking-rod is actuated by a coiled spring 18 and is provided at its ends with arms or handles 20, preferably located adjacent to the windows of the building and adapted to be depressed from the exterior thereof, whereby the arm 15 is disengaged from the catch to permit the movable side of the ladder to swing outward. The spring which is disposed on the locking-rod has its lower end bearing against a support 21, and its upper end engages a shoulder or stop on the rod. The locking-rod is also adapted to be operated from the interior of the building by means of flexible connections 23 and 24, consisting, preferably, of chains extending through suitable perforations of the adjacent wall of the building and passing over guide-pulleys mounted on the fixed side of the ladder. The upper flexible connection 23 is arranged on upper and lower guide-pulleys 25 and 26, and its outer end is connected to the rod at a point above the lower guide-pulley, whereby when it is pulled upon it will remove the locking-rod downward and disengage the arm 15 from the catch. The lower flexible connection passes under a pulley 27 and is connected with the rod at a point above the same, whereby it is adapted to reciprocate the locking-rod similar to the upper flexible connection.

The fixed side 2 of the ladder is provided at its lower end with an enlargement 28, similar to the enlargement 13 of the upper end of the movable side 3, and the lower end of the latter and the upper end of the enlargement are cut at an angle, as shown.

When the locking-bar is disengaged from the catch, the movable section of the ladder is thrown outward automatically by a spring 29 a sufficient distance to clear the enlargements and to cause the movable section to complete its opening movement by gravity. The spring, which is substantially V-shaped, is composed of two sides and is provided at its angle or bend with a spring-coil. One side of the spring is secured to the fixed side of the ladder, and its other side is free and engages the movable side 3 of the said ladder, which is provided at the inner edges of its sides with recesses to receive an arm 31 of the spring.

The ladder is returned to its folded position by means of a shaft or windlass 31^a, fulcrumed on the fixed side 2, near the upper end thereof, and provided with a drum or pulley arranged in the groove 5 and having a chain 32 or other suitable flexible connection secured to it. The flexible connection 32 passes beneath a guide-pulley 33 and is attached to the uppermost connecting-bar 4, and the inner end of the shaft or windlass is provided with a crank-handle located adjacent to a window

of the building. By rotating the shaft or windlass the movable side of the ladder will be swung upward to carry the catch into engagement with the arm 15 of the locking-rod. The shaft is adapted to turn freely in its bearings and it is readily rotated by the movable side of the ladder when the same swings downward.

It will be seen that the fire-escape, which is simple and comparatively inexpensive in construction, is capable of compactly folding when it is not in use and of housing the connecting pieces or steps of the ladder and that it may be readily operated from the interior or the exterior of a building to arrange it in position for use. It may be readily returned to its folded position, and the overlapping enlargements, which are located at the top and bottom of the ladder, assist in supporting the movable side of the same, and the spring operates to throw the movable side outward sufficiently to cause the enlargement of the movable side to clear the upper end of the fixed side and to carry the lower end of the movable side beyond the enlargement of the fixed side, so that the opening movement will be completed by gravity.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What is claimed is—

1. A device of the class described comprising a folding ladder having fixed and movable sides and provided with connecting-pieces, a catch mounted on one of the sides, a continuous longitudinally-movable spring-actuated rod mounted in suitable guides on the other side and provided with an arm for engaging the said catch, and flexible connections extending from the said rod from different points on the same, and arranged to be operated at the different stories of a building, substantially as described.

2. A device of the class described comprising a folding ladder having fixed and movable sides, and provided with connecting-pieces, a horizontal bracket arranged at the top of the ladder, supporting the fixed side and forming the guide for the movable side, a keeper or loop mounted on the movable side and receiving the bracket, lower brackets supporting the fixed side, an arm located at the lower portion of the movable side, a hook carried by the movable side, and a fixed bracket designed to be mounted on a building and arranged to interlock with the hook, substantially as described.

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

HAMLIN F. BILLMEYER.

Witnesses:

FRANK R. WILSON,
JOHN STAGG.