

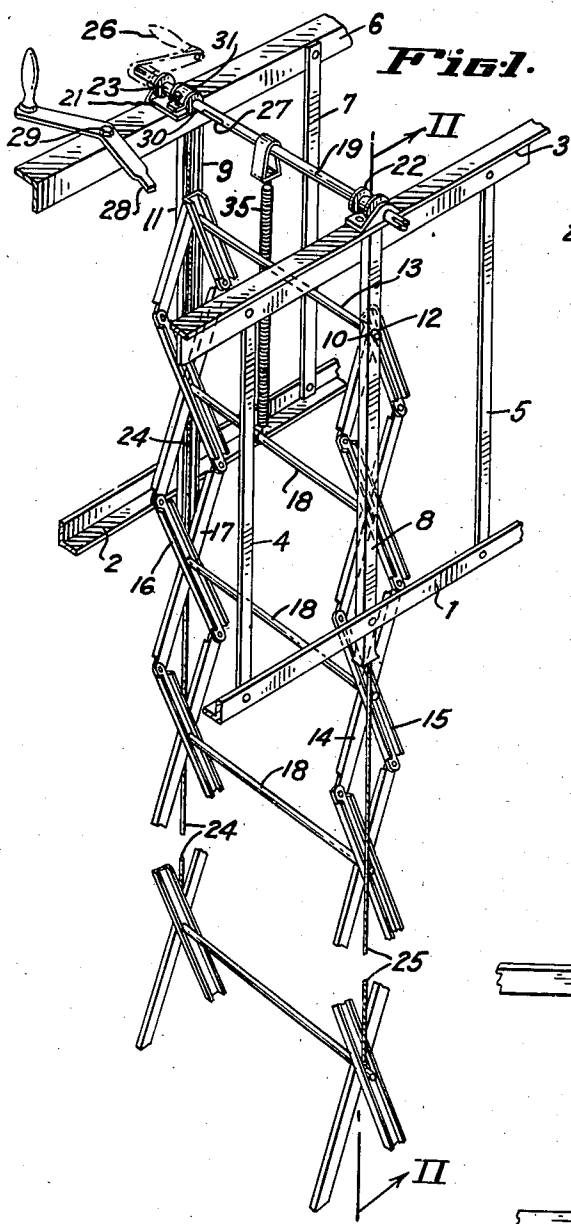
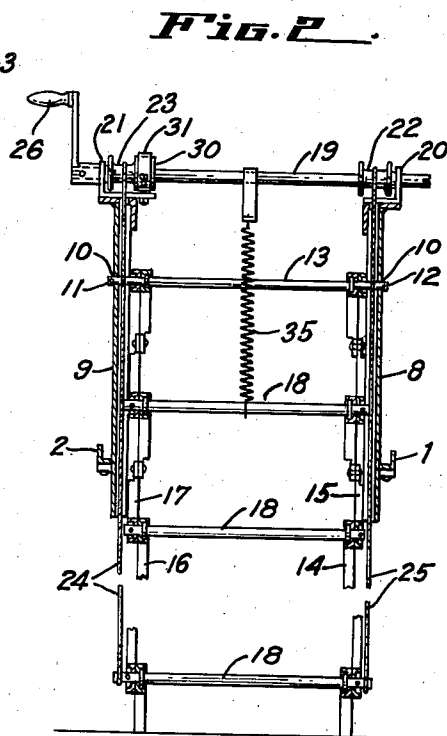
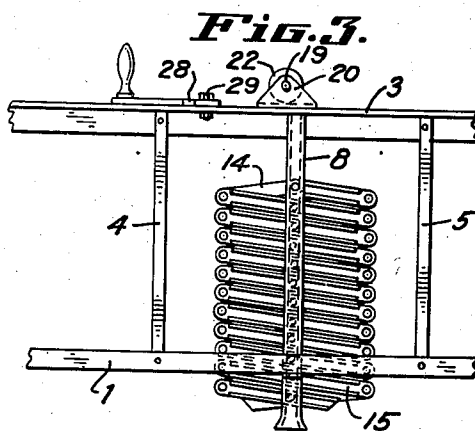
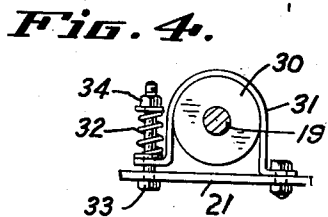
April 14, 1942.

H. N. PATTERSON

2,279,594

FIRE ESCAPE

Filed Oct. 2, 1940



INVENTOR.
HAROLD N. PATTERSON

BY

Bredwin Vale
ATTORNEY

UNITED STATES PATENT OFFICE

2,279,594

FIRE ESCAPE

Harold N. Patterson, San Francisco, Calif.

Application October 2, 1940, Serial No. 359,366

3 Claims. (Cl. 228—19.2)

This invention relates to fire escapes and more particularly to collapsible emergency ladders therefor.

Among the objects of the invention is to provide a ladder that may be folded into a compact mass when not in use, and automatically unfolded into full operative condition when released.

Another object is to provide a ladder in this class that is attachable to standard fire escape balconies to serve as the last unit between the first balcony and the ground; or that may be directly attached to the wall of the building adjacent to windows.

Another object is to provide a collapsible lower unit for fire escapes that precludes unauthorized intrusion from below.

A further object is to provide a collapsible ladder that has the required stability in the operative condition.

Other objects and advantages will appear as the description progresses.

It has been customary for the fire department to erect portable ladders between the ground level and the lower balcony for the descent of the tenants of a burning building. This elemental procedure has two major disadvantages, the department may be delayed in arriving, which leaves the tenants marooned on the balcony; and the firemen are diverted from their primary fire fighting duties at a critical time.

It is the function of the present invention to provide automatic means for descent from the lower balcony independent of the fire department.

In this specification and the accompanying drawing the invention is disclosed in its preferred form. But it is to be understood that it is not limited to this form; because it may be embodied in modifications within the spirit of the invention as defined in the claims following the description.

In the one sheet of drawings:

Fig. 1 is a perspective view from above of a fire escape constructed in accordance with this invention.

Fig. 2 is a front view detail of the upper portion of the same, shown in partial section on the line II—II, Fig. 1.

Fig. 3 is a side elevation of the same in the inoperative condition.

Fig. 4 is an enlarged detail in side elevation of the decelerating brake.

In detail the construction illustrated in the drawing, referring first to Fig. 1, comprises the conventional fire escape balcony having the lower

floor beams 1, 2 that are usually supported by brackets protruding from the wall of the building, not shown. The upper rail 3 is supported above the beam 1, by the usual rods such as 4, 5. Such balconies have a central opening, with the guard rail 6, supported above the floor beam 2 by rods such as 7, and the channel guides 8, 9 attached to the rails 1, 3 and 2, 6 respectively. The channel guides are provided with holes at 10 to receive the extended ends 11, 12 of the top rung 13 to support the weight of the ladder.

The ladder is constructed on the lazy-tongs principle. The sides of the ladder are formed of channel sections such as 14, 15 and 16, 17 pivoted together at their respective ends, and at their centers on the cross rungs 18, 18. The ladder is thus free to extend, as in Fig. 1, or collapse, as in Fig. 3.

The ends of the rungs 18 protrude past the side sections and are adapted to enter the flared lower ends of the side guides 8, 9 as the ladder is raised. This gives stability to the upper portion of the ladder by preventing the ladder from swinging on the ends 11, 12.

The ladder is hoisted by means of the transverse shaft 19, journaled in the bearings 20, 21 fixed to the tops of the rails 3, 6 respectively. The drums 22, 23 are fixed to this shaft in alignment with the guides 8, 9. The cables 24, 25 are wound about these drums and extend downward within the guides and are attached to the protruding ends of the lowermost rung of the ladder. One end of the shaft 19 is squared to receive the removable hand crank 26 for winding up the cables. This shaft is provided with the slot 27 to receive the end of the latch 28, pivoted at 29 on the top of the guard rail 6, to lock the ladder in the elevated position.

To retard the descent of the ladder the shaft 19 has the brake drum 30 fixed thereon and partially encircled by the brake band or shoe 31. One end of this band is fixed to the bracket base of the bearing 21, and has its free end extended beneath the spring 32 surrounding the bolt 33 which extends upwardly through the bracket base. The tension of this spring may be regulated by the running nut 34, to predetermine the deceleration of the descending ladder, see Fig. 4. The descent of the ladder may be further retarded by the addition of the extension spring 35 extending between the shaft 19 and the rung 18. The tension of this spring increases with the descent and softens the impact of the lower end of the ladder with the pavement. The length of the ladder and architectural condition may re-

quire modifications of the structure described. The ladder may descend vertically as shown, or obliquely to the perpendicular, as desired, by appropriate angular rearrangement of the guides 8, 9.

The invention operates substantially as follows: With the ladder elevated as shown in Fig. 3, when the latch 28 is swung out of engagement by the convenient handle thereon, the ladder opens and drops by gravity until it assumes the position shown in Fig. 1. The ladder is elevated to inoperative condition by applying the handle 26 and winding up the cables 24, 25, and engaging the latch 28 with the slot 27.

Having thus described this invention, what is claimed and desired to secure by Letters Patent is:

1. A fire escape comprising opposed vertical channel guides; a transverse shaft extending across the top ends of said guides; a collapsible ladder having its top rung extending through said guides and its succeeding rungs slidably guided in the channels of said guides; a hoisting

cable attached to the lower portion of said ladder and wound around said shaft.

2. A fire escape comprising opposed vertical channel guides; a transverse shaft extending across the top and attached to the top ends of said guides; a collapsible ladder having lazy-tong sides with the top rung fixed to said guides and the succeeding rungs slidably guided in the channels of said guides; hoisting cables attached to the lower portions of said ladder and extending upwardly through said channels and wound around said shaft; and means for decelerating the rotation of said shaft.

3. A fire escape comprising opposed vertical guides; a transverse shaft extending across the top ends of said guides; a collapsible ladder having its top rung fixed to said guides and its succeeding rungs slidably engaging said guides; a hoisting cable attached to the lower portion of said ladder and wound around said shaft; and a resilient member attached to said shaft and to one of said succeeding rungs.

HAROLD N. PATTERSON.