June 22, 1937. G. A. APPLEGARTH 2,084,303

FIRE ESCAPE

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Fig. 1.

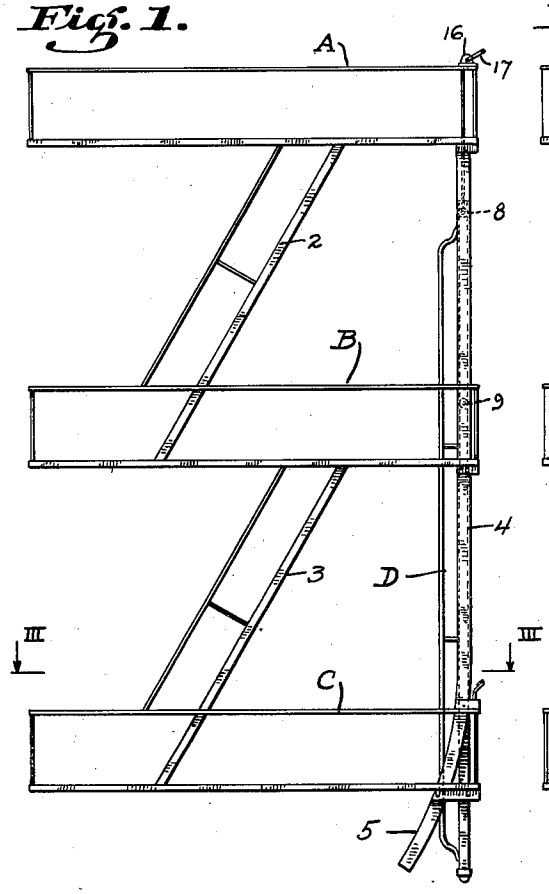


Fig. 2.

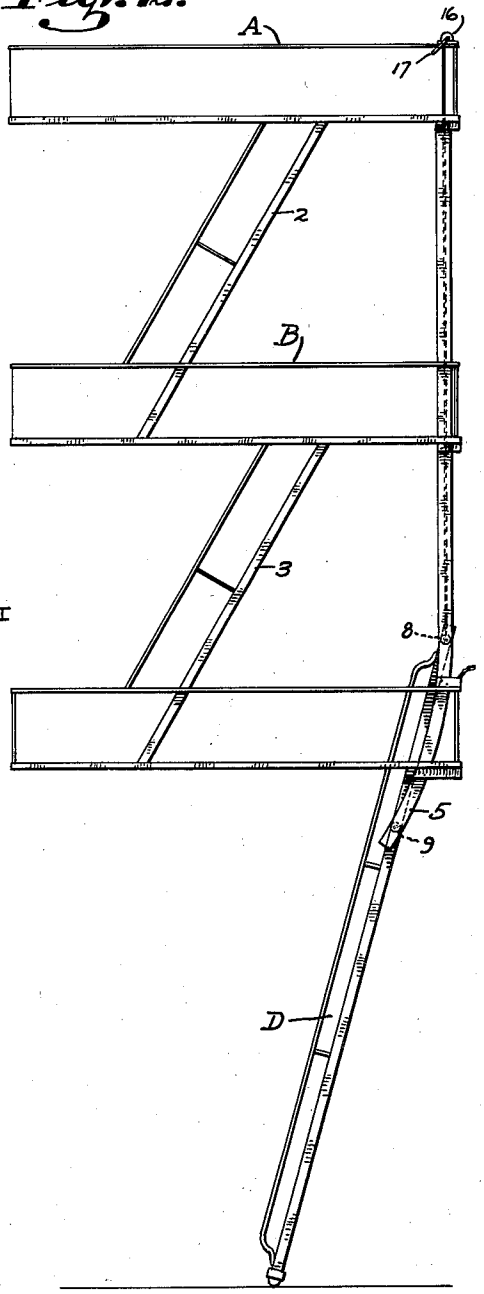
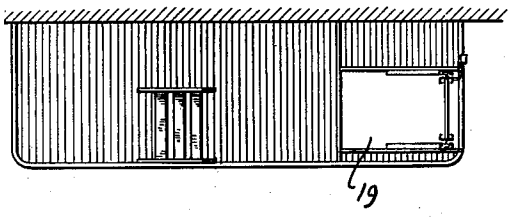


Fig. 3.



INVENTOR.
George A. Applegarth.

BY

Chas. E. Townsend.
ATTORNEY.

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Fig. 4.

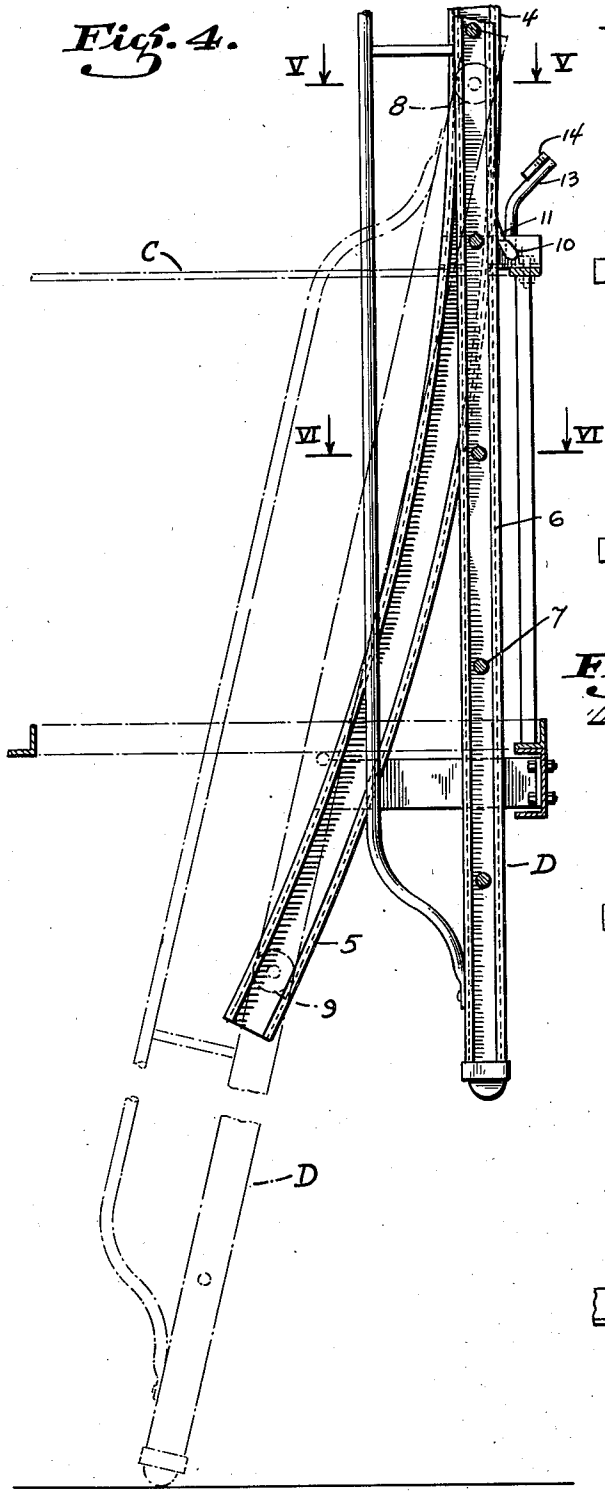


Fig. 5.

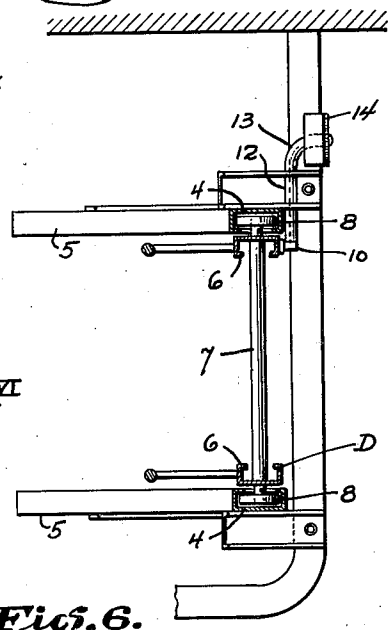
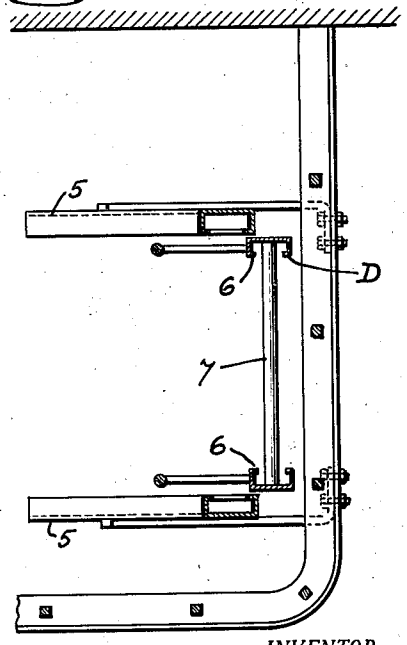


Fig. 6.



INVENTOR.
George A. Applegarth.

BY

Chas. E. Townsend.
ATTORNEY.

Patented June 22, 1937 2,084,303

UNITED STATES PATENT OFFICE

2,084,303

FIRE ESCAPE

George A. Applegarth, San Francisco, Calif.

Application March 18, 1935, Serial No. 11,645

3 Claims. (Cl. 228—17.3)

This invention relates to fire escapes such as are applied to the exterior face of a building, and especially to a stairway or ladder for connecting the lowermost balcony of a fire escape to the street or sidewalk.

Fire escapes, which are applied to the exterior of a building, usually consist of a balcony for each floor with permanent stairways or ladders between them so that persons escaping during a fire can climb down from one balcony to another until the sidewalk is reached.

In some instances the lowermost balcony is provided with a stairway or ladder which is held in a raised position and which must be released or lowered in case of fire or a similar emergency. A number of different types of ladders of this character have been employed but with questionable results, as the mechanism required for raising and lowering ladders and for releasing them when required, is usually costly, heavy and complicated, and, furthermore, due to the continuous exposure to weather the mechanism is liable to rust, jam, and when an emergency arises the mechanism may be inoperative.

The object of the present invention is to generally improve and simplify the construction and operation of ladders of the character described; to provide a structure which is simple in construction, of comparatively little weight, and which can be readily applied to present structures; to provide a simple mechanism for supporting the ladder in raised position, said mechanism also functioning to release the ladder when required for use; to provide a mechanism for supporting and releasing the ladder which is not liable to rust, jam or stick, or become otherwise inoperative; and, further, to provide means for automatically inclining the ladder when released and lowered so that it can be more easily and quickly descended.

The invention is shown by way of illustration in the accompanying drawings, in which—

Fig. 1 is a front view of a fire escape, said view showing the ladder which connects the lowermost balcony with the ground in raised position;

Fig. 2 is a view similar to Fig. 1, showing the ladder connecting the lowermost balcony with the ground in lowered position;

Fig. 3 is a plan view of the lowermost balcony;

Fig. 4 is an enlarged detail view of the lower curved ends of the trackways whereby the descending ladder is guided and tilted to assume an inclined position when the lowered position is reached;

Fig. 5 is a cross section on line V—V of Fig. 4;

Fig. 6 is a cross section on line VI—VI of Fig. 4.

Referring to the drawings in detail, and particularly Figs. 1 to 3, inclusive, A, B and C indicate balconies such as used on fire escapes of the type applied to the exterior of a building, and 2 and 3 permanent stairways or ladders connecting the same. A ladder, generally indicated at D, is employed for connecting the lowermost balcony C with the street or sidewalk. This ladder is normally held in raised position, as shown in Fig. 1, and is only lowered in the case of a fire or similar emergency. The means for supporting the ladder in raised position, together with means for releasing, lowering and guiding the ladder will be as follows.

Suitably secured to the several balconies and connecting them are a pair of spaced channel-shaped guide tracks or ways 4, the lower ends of which extend slightly below the lowermost balcony and are bent or curved as indicated at 5 to function as cam surfaces to cause the ladder to assume an inclined position, such as shown in Fig. 1, when lowered.

The stairway or ladder consists of a pair of side rails channel-shaped in cross section, such as indicated at 6—6, which are connected by rungs 7. The uppermost rungs are extended beyond the outer faces of the side rails of the ladder and carry rollers 8—8, which extend into and are guided by the guideways 4—4. Another rung, a suitable distance below the uppermost rung, is similarly extended and provided with rollers 9—9, which also extend into the guideways. Hence, when the ladder is lowered it will descend in a vertical position until a short distance above the ground. At this point the rollers 9 will enter the lower curved portions 5—5 of the guideways, causing the ladder to swing about the upper rollers 8 and when the ladder finally reaches its lowermost position, as shown in Figs. 2 and 4, it will be inclined as clearly shown. This inclining of the ladder during lowering of the same is automatically accomplished and is of considerable importance as it materially facilitates the ease and speed with which individuals can descend.

The means employed for supporting the ladder and for releasing the same when it is to be lowered comprises a pawl or latch 10, see Fig. 4, which engages a lug 11 on the ladder. The latch is secured on the shaft 12, which is pivotally secured to the railing of the lowermost balcony and this shaft is bent to form a crank arm 13, terminating in a handle 14. When the ladder is raised

the latch will assume the position shown in Fig. 4, and in this position it supports the ladder against descent. When it is desired to release the ladder to lower the same, it is only necessary to grasp the handle 14 and push it outwardly, thus causing the pawl 10 to swing out of engagement with the lug and release the ladder.

Means must also be employed for controlling the speed of descent of the ladder and for raising or returning it to elevated position. The means employed is more or less in standard use and for this reason will not be referred to.

The ladder proper is conveniently arranged in the present structure and may be provided with hand rails as shown. It is accessible for ascent and descent and, due to its inclined position, firemen can readily climb up and down even though burdened with an unconscious individual, or the like.

Due to the simplicity of construction the equipment here shown may be applied to fire escapes already in use and, if anything, reinforces and strengthens the same as the guide rails connect the several balconies. Cutting away of the railings or any of the structural supporting parts is eliminated, as both the guide rails and the ladder proper are applied by merely removing a small portion of the floor covering on each balcony, the lowermost balcony being obviously provided with an opening, such as shown at 19, to permit free access to the ladder when lowered.

While certain features of the present invention are more or less specifically described, I wish it understood that various changes may be resorted to within the scope of the appended claims. Similarly, that the materials and finish of the several parts employed may be such as the manufacturer may decide, or varying conditions or uses may demand.

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

1. In a fire escape, a plurality of superimposed balconies, a pair of vertically disposed spaced channel members secured to the respective balconies and extending slightly below the lowermost balcony, said extending ends being curved, a ladder guided between the channel members, means for raising and lowering the ladder, and means on the upper end of the ladder projecting into the curved lower ends of the channel members whereby the ladder is swung to assume an inclined position when fully lowered.

2. In a fire escape, a plurality of superimposed balconies, a pair of vertically disposed spaced channel members secured to the respective balconies and extending slightly below the lowermost balcony, said extending ends being curved, a ladder guided between the channel members, means for raising and lowering the ladder, and spaced rollers carried by the upper end of the ladder and projecting into and guided by the channel members, said rollers entering the curved lower ends of the channel members when the ladder is lowered and causing the ladder to assume an inclined position when fully lowered.

3. In a fire escape a balcony, a ladder adapted to be raised or lowered with relation thereto, a pair of channel-shaped guide members extending above the balcony to a height substantially equal to the length of the ladder and forming a guide therefor when the ladder is raised or lowered, a pair of curved extensions on the lower ends of the guide members extending slightly below the balcony, and means on the upper end of the ladder projecting into the curved lower ends of the channel members when the ladder is lowered whereby the ladder is swung to assume an inclined position when fully lowered.

GEORGE A. APPLEGARTH.