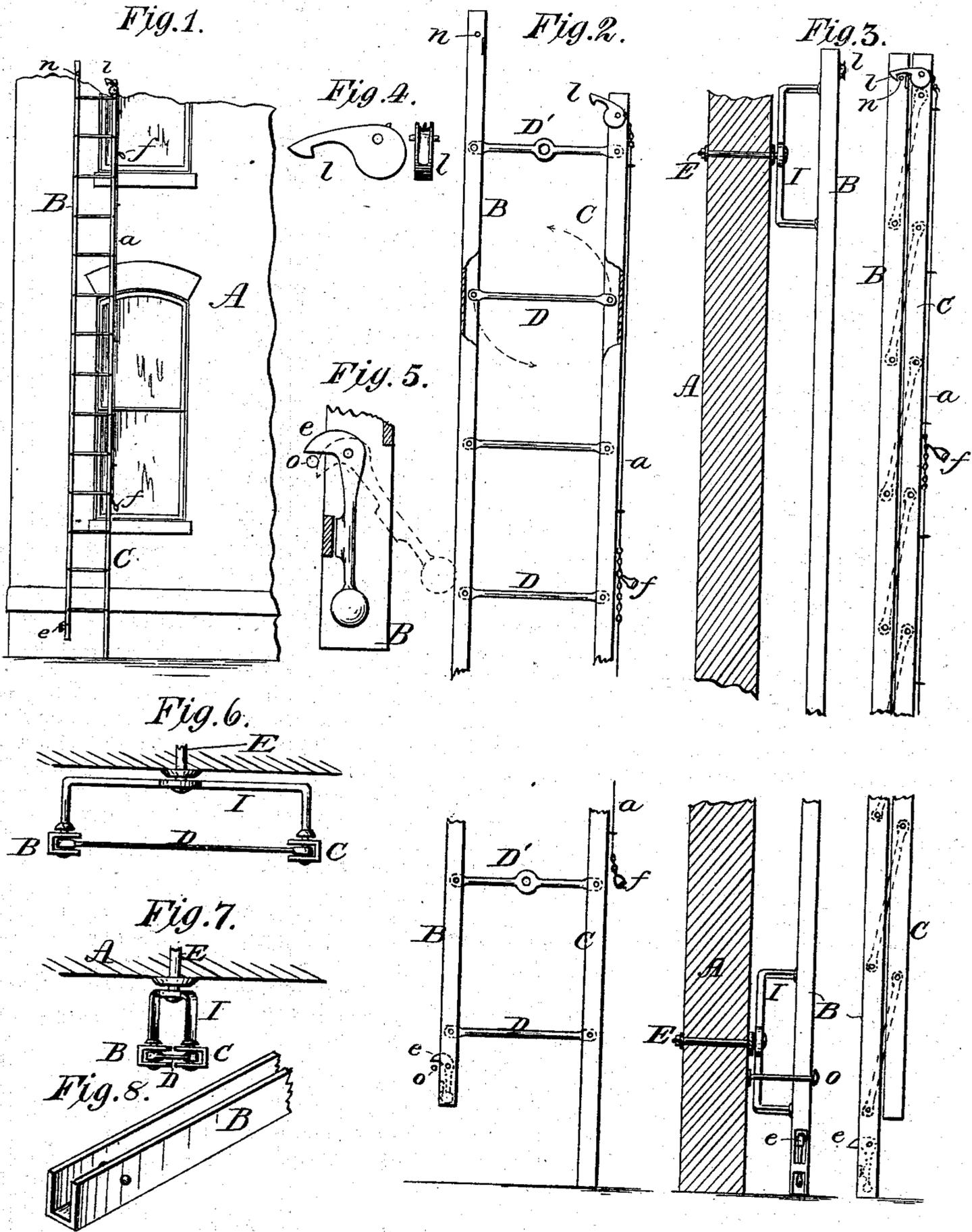


(No Model.)

D. WELSH.  
FIRE ESCAPE.

No. 278,301.

Patented May 22, 1883.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 278,301, dated May 22, 1883.

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To all whom it may concern:

Be it known that I, DAVID WELSH, of Washington, in the District of Columbia, have invented certain Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to fire-escapes; and the invention consists in a jointed ladder secured to the building by means of swiveled yokes or arms in such manner that the ladder can be folded up like a parallel ruler and secured when not required for use, and so that one side of the ladder shall serve as a counter-balance to the other side, and thus enable it to be opened and closed with ease and facility, all as hereinafter more fully set forth.

Figure 1 is a front view of a portion of a building, showing the ladder in position for use. Fig. 2 is a front view of a portion of the ladder detached, showing its construction. Fig. 3 is an edge view, showing the manner of attaching the ladder to the building, and also a front view of the same closed up. Figs. 4, 5, 6, 7, and 8 are views of portions shown in detail.

Various styles of fire-escapes in the form of iron ladders attached to buildings have been devised, the most of which consist of ladders permanently attached to the outer walls of the buildings, while others consist of the well-known jointed ladder arranged to have one side raised and lowered by means of weights arranged inside of the building. The former are objectionable because they not only disfigure the buildings, but also because of the facilities they afford to burglars, while the latter style are objectionable because of the necessity for having the weights sliding up and down inside of the building, or of having tubes built in the walls for the weights to move in.

The object of my invention is to provide a simple form of folding ladder, and so attach it to the building as that one side shall act as a counter-balance to the other, thus permitting it to be easily manipulated, and so that it can be closed up to prevent its use by burglars or others outside, and can be easily and quickly opened ready for use by persons inside of the building whenever required.

The ladder consists of two side bars, B and C, of any required length and form, but preferably of the form shown in Fig. 8, and of rounds D, pivoted at their ends to these side

bars, as shown clearly in Figs. 2, 3, 6, and 7. It will be seen that a ladder thus constructed can be readily closed or shut by raising one of the bars until it is brought close up against the other, as represented in the right-hand part of Fig. 3, the movement being the same as that of the well-known parallel rule. By making the bars B C in the form transversely of a trough, as represented in Figs. 8 and 2, it will be seen that when the ladder is closed, as represented in Fig. 3, the rounds D will be entirely inclosed within the cavity in the adjoining faces of the two side bars, and that when in that condition the ladder will afford no more facility for the ascent of a burglar than would a flat bar of iron of the same size.

The ladder thus constructed is secured to the wall A of the building by means of two or more swiveled yokes, I, the form of which is clearly shown in Figs. 3 and 6. The yokes are secured to the building by a strong bolt, E, which extends through the wall, and is securely fastened by a nut and washer, or in any convenient and suitable manner, with a washer between the yoke and wall, as shown. When thus arranged it will be seen that by turning the yokes into a vertical position, or nearly so, as shown in Figs. 3 and 7, the ladder will be closed, and that when the yokes are turned to a horizontal position the ladder will be opened ready for use, as represented in Figs. 2 and 6, and these movements may be effected by taking hold of either side bar and raising the one or lowering the other.

It will readily be seen that as the yokes are pivoted on the bolts E at their center, or nearly so, the one side of the ladder will act as a counter-balance to the other side, and that consequently but little power will be required to either open or close it, thus enabling it to be done easily and quickly. In order to hold it in the closed position, I pivot to one of the bars, C, a latch, l, which is arranged to catch over a pin, n, on the other bar, B, as shown in Figs. 2 and 3, the latch itself being shown detached in Fig. 4. In order to enable persons in the building to release this latch whenever required I attach to it a wire or small rod, a, which extends down along the side of the bar to which the latch is pivoted, and which is provided with a handle, f, opposite the window of each story, except the lower one, so

that a person inside by raising the sash can at once release the latch, and by merely pulling down on the bar adjust the ladder for use.

It is obvious that, if preferred, the yokes may be pivoted a little one side of the center, in which case the ladder would open and assume the proper position for use automatically, the only difference being that a little more power would be required to raise it to the closed position again. I consider this plan preferable, because there is always great hurry and confusion in case of a fire, and it would enable a child even to put the ladder in position for use by merely pulling the rod *a*, so as to release the latch. So, too, it is obvious that, instead of the pivoted latch *l*, a spring-catch may be used, and, if found necessary, a lever may be connected to the rod, so as to operate on the spring-catch, and thus release it with less power, thus enabling children to operate it.

As one side bar will move up and the other down as the ladder opens, and as both are pivoted to the arms of the pivoted yokes, it is necessary that some means be provided for securing the parts rigidly in position when opened for use, as otherwise, if persons in passing up or down a ladder should bring their weight to either side it would cause the ladder to close, thus rendering it of no use. This may be provided for in various ways. One of the simplest plans is to arrange the ladder as shown in Fig. 1—that is, to so locate it that when released the bar that moves downward, which in this case is the bar *C*, will rest upon the pavement or on any solid projection of the wall, or on any solid plate, lug, or bar inserted in the wall at the proper point. It is obvious that the ladder could be used in that condition, provided the persons were careful to keep their weight on that side; but as in the hurry and confusion of a fire people would not stop to consider that necessity, or might not be aware of it, I provide the other bar, *B*, with a weighted hook or catch, *e*, as shown enlarged in Fig. 5, which has its point beveled or inclined, so that as the bar rises the hook will strike against a bolt, *o*, projecting from the wall at the proper point, as indicated in Figs. 1, 2, and 3, and be tipped, as indicated in dotted lines in Fig. 5, so as to pass the bolt *o*, and then, being brought back to its normal position by gravity, will cause its hooked end to engage upon the bolt *o*, thus locking both bars *B* and *C* rigidly in position. It is obvious that, instead of this pivoted hook *e*, spring-catches (more or less in number) may be used and made to catch on bolts located at suitable positions on the wall, these being mere mechanical details, which may be varied at will of the constructor.

While I have described the ladder as being secured to the building by means of the pivoted yokes *I*, it is obvious that they may be dispensed with by merely enlarging two or more of the rounds and making a hole through them, as shown at *D'*, Fig. 2, and then pivot-

ing them directly on the bolts *E*, which in that case will be made to project farther, so as to hold the ladder at the proper distance from the wall to afford room for the hands and feet. The only difference would be that as the bolts *E* would necessarily occupy a position between the side bars, *B* *C*, the latter could not be brought close together unless the adjoining edges of the side bars should have recesses cut or formed in them at the points where they would come opposite the bolts *E* when closed. This may be done, if desired, and in some cases I propose to so make and arrange the parts, though as a general rule I consider the use of the yokes preferable. So, too, it is obvious that the rod or cord *a*, for releasing the catch *l*, may be arranged inside of the building, so as to be accessible on each floor, and thus prevent burglars or others from using or tampering with it, this being a matter of choice to be determined by the owner or occupant of the building.

From the foregoing description the manner of using the device will be readily understood, it only being necessary, in case of a fire, to seize the handle *f* on either story and give it a pull. That will release the latch *l*, when, if the ladder be eccentrically pivoted, as described, it will instantly and automatically assume the open position, ready for use; or, if it be evenly balanced, it will require but a slight effort to make it assume the proper position by pulling down the bar *C*, which can easily be done by a woman or a child of any considerable size. By these means I obviate the objections to the use of open stationary ladders, which so disfigure the fronts of buildings in cities, and at the same time I prevent thieves and burglars from making use of the fire-escape as a means of gaining access to the building. As the side bars may be made of very light iron or steel, especially if made in the form shown or concave, which is equally good for the purpose, it will be seen that my improved ladder or fire-escape may be applied to buildings with but little, if any, more objection than an ordinary lightning-rod or rain-spout, which latter it will very much resemble when closed.

Having thus described my invention, what I claim is—

1. A fire-escape consisting of a collapsible ladder pivoted to the building, substantially as described, whereby one side of said ladder shall be made to serve as a counter-balance to the other side, as and for the purpose set forth.

2. In combination with a jointed or collapsible ladder, the pivoted yokes *I*, or equivalent means for securing said ladder to a building, substantially as described, whereby it can be opened and closed with ease, as set forth.

3. In combination with a jointed ladder pivoted to operate as described, the latch *l*, or equivalent device for holding or fastening the side bars together, as set forth.

4. In combination with a jointed ladder pivoted to open and close, as described, the catch *e*, or equivalent device for locking or securing

the ladder rigidly in position when opened, as set forth.

5 A fire-escape consisting of a jointed ladder pivoted so that one of its side bars shall rise and the other fall in opening or closing, provided with a catch having a rod or cord extending to the several stories for releasing

the parts when desired for use, and a catch or device for holding it securely in position, all substantially as herein set forth.

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