(No Model.)

E. J. KRAUSE.

Fire Escape Ladder.

No. 236,044. **Patented Dec. 28, 1880.**

Fig. 1.

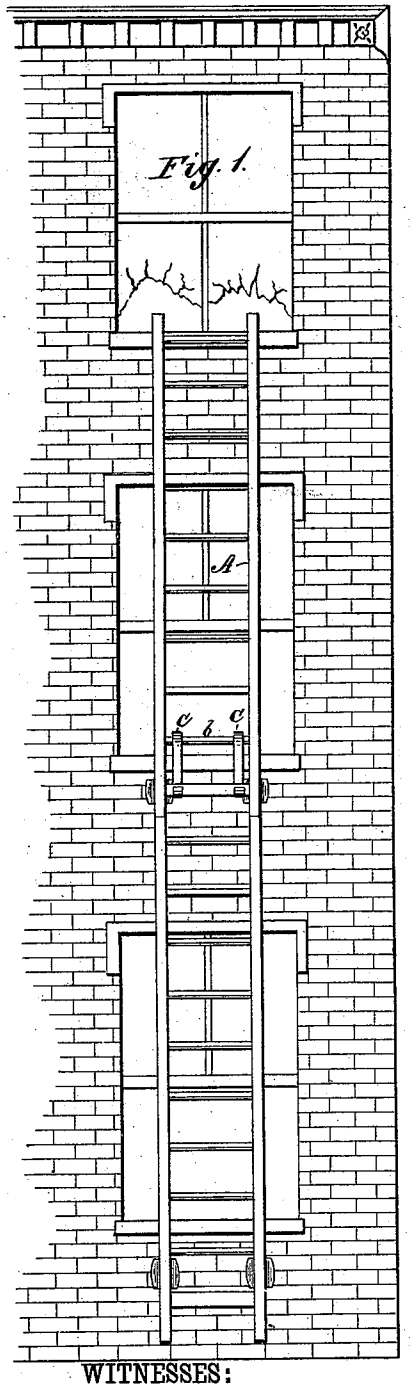


Fig. 2.

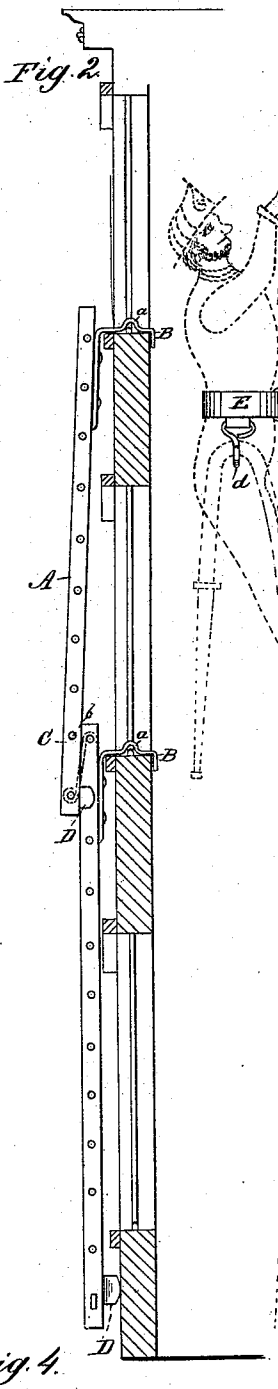


Fig. 3.

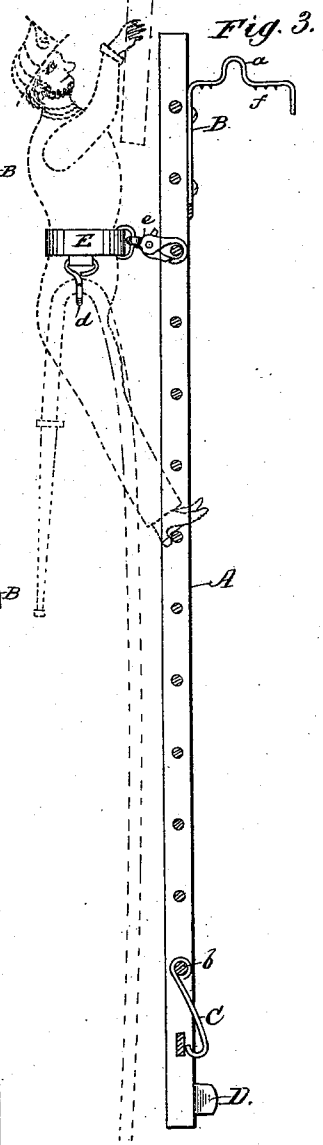
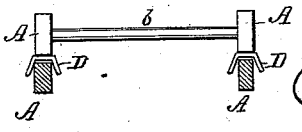


Fig. 4.



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EARNEST J. KRAUSE, OF CARLISLE, PENNSYLVANIA.

FIRE-ESCAPE LADDER.

SPECIFICATION forming part of Letters Patent No. 236,044, dated December 28, 1880.

Application filed November 2, 1880. (No model.)

To all whom it may concern:

Be it known that I, EARNEST JULIUS KRAUSE, of Carlisle, in the county of Cumberland and State of Pennsylvania, have invented a new and Improved Fireman's Ladder and Fire-Escape; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has for its object to provide an improved fireman's ladder and fire-escape of the class in which hooks are attached to the upper end of the same for the purpose of engaging a window-sill, and thus holding the ladder suspended alongside the wall of a building.

My improvements are embodied in the construction and combination of devices hereinafter described and claimed.

In accompanying drawings, forming part of this specification, Figure 1 is a front view of a portion of a dwelling having my improved ladder applied thereto for ascending and descending. Fig. 2 is a sectional view of the same. Fig. 3 is a side view of the ladder enlarged. Fig. 4 is a cross-sectional view illustrating one of the functions of the guides.

The letter A indicates a wooden ladder, and B B large iron hooks which are attached to the upper end of the same. C C are hinged hooks, and D D guides or lateral stays attached to the lower end of the ladder. The upper hooks, B B, are designed to engage with a window-sill, and to this end are made of sufficient length to span and embrace the widest sills. In order that the hooks may hold the ladder as firmly as possible when suspended from sills which are of ordinary or less width, I provide the hooks B with an upward curve or bend, *a*, at a point about midway between the ladder proper and the middle of the length of their horizontal portion. Such bend *a* has the nature of a supplementary or second hook, whose office is to engage with the base-bead, Fig. 2, of the window-frame. By such construction the hooks are adapted to sills of varying width, so that the ladder will be held with the requisite firmness on narrow sills as well as broad ones.

The hooks C C are hinged to one of the lower rungs, *b*, of a ladder, A, for use in securing the latter to the upper end of another ladder, as illustrated in Figs. 1 and 2—that is to say, the hooks C engage one of the upper rungs of the lower ladder, and are thus adapted to support the upper one on the lower—that is to say, hooks C not only prevent disconnection of the lower and upper ends of the respective ladders when properly adjusted for use, as shown, but they also enable a fireman standing on the lower ladder to support the upper ladder upon it while adjusting such upper ladder to its place, or while resting preliminarily to renewing the attempt.

The devices D D consist of metal plates or bars which are secured to the parallel bars of the ladder, and whose ends are bent inward at an obtuse angle, thus forming two arms which may subserve several functions. One is to embrace the longitudinal bars of another ladder when one is suspended above and in line with the other, as shown in Figs. 1, 2, 4, and thus prevent lateral movement and displacement of the lower end of the upper one. They also serve as guides for the upper ladder when it is slid down or up on the other, as is sometimes required in order to adjust it higher or lower. Another function is to hold the lower end of the lower ladder, Figs. 1, 2, away from the side of a building, and also to prevent lateral movement of the same.

My improved ladder is used as follows: Suppose a four-story house to be on fire, and three firemen, each provided with a ladder, A, to have arrived. Fireman No. 1 will attach his ladder to a window-sill of the second story, (the hooks B may be thrust through the window-frame if the sash happens to be closed,) and he at once ascends to near the top. No. 2 will then hand his ladder to No. 1, who will elevate it and attach it to the sill of the window next above in the third story. No. 1 then ascends the second ladder and No. 2 the first ladder. No. 3 next hands his ladder to No. 2, who passes it up to No. 1, and the latter attaches it to the sill of a window in fourth story. This operation is substantially illustrated in Fig. 1.

To enable the firemen to perform this operation with greater safety, ease, and dispatch, I employ a body-belt, E, Fig. 3, which is provided with a spring-hook, *e*, for attachment to the rungs of a ladder, and an open hook, *d*, for suspending water-hose while the fireman is ascending or descending. With such belt at-

tached a fireman may secure himself to one of the upper rungs of a ladder, as shown in Fig. 3, and thus have his hands free for use in hoisting or lowering ladders or directing the hose-nozzle, &c. The hook *c* slides on the belt to enable the fireman to turn more freely without twisting the hose or becoming entangled in it.

To make a retreat from the burning building, each fireman goes down a ladder, and (save the one who stood on the lower ladder) each fastens himself to the top of the next one below. The uppermost man (No. 1) then unhooks the ladder above him and delivers it to the second man, who gives it to the next, and so it is finally placed on the ground. The men then descend another ladder and repeat the operation, and so on until all the ladders have been removed.

For such dwellings as have half-underground basements I intend to provide a ladder having hooks B B attached about the middle of its length.

In Fig. 3 the hooks B B are provided with teeth *f* on the under side. The function of these teeth is to take into the window-sill and prevent the hooks B slipping laterally.

I do not claim, broadly, a fireman's ladder having pivoted hooks, fixed braces or stays, and rigid arms provided with teeth; but

What I claim as new is—

1. The improved ladder having the rigid hooks B B, which are extended horizontally, provided in the middle with a vertical bend, *a*, and bent downward at the ends, as shown and described, for the purpose specified.

2. The fireman's ladder having hooks C C, which are hinged to one of its lower rungs and curved at their free ends, as shown, so that they will engage a rung of another ladder placed beneath the one having such hooks, as shown and described.

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Witnesses:

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