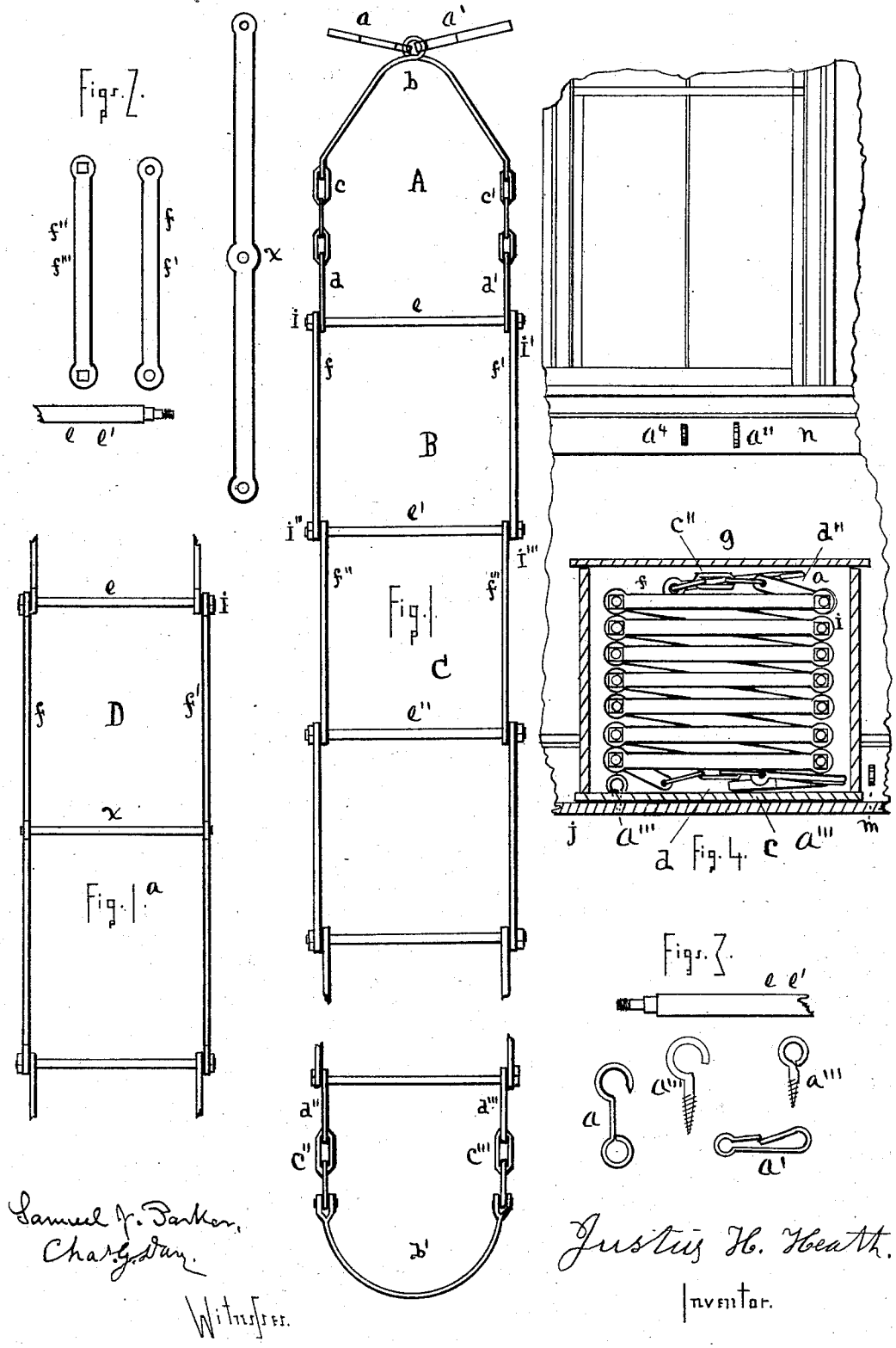
(No Model.)

J. H. HEATH.

FIRE ESCAPE LADDER.

No. 280,373. Patented July 3, 1883.



Samuel J. Parker,
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Witnesses.

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FIRE-ESCAPE LADDER.

SPECIFICATION forming part of Letters Patent No. 280,373, dated July 3, 1883.

Application filed February 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, JUSTUS HOLLISTER HEATH, of Mott's Corners, in the town of Caroline, Tompkins county, New York, have invented an Improved Fire-Escape Ladder, of which the following is a specification, reference being had to the accompanying drawings.

My object is to make a neat, convenient, strong, and easily-adjusted fire-escape ladder, which shall be out of reach of ordinary use, but readily brought into use in case of fire; and the nature of my invention will be apparent as I describe it.

Figure 1 is a front elevation of my ladder. Fig. 1ª is a double link of the ladder; Fig. 2, the parts of the step-links; Fig. 3, the means of attaching the upper end of the ladder to the building; and Fig. 4 shows the ladder folded in its box beneath a window.

In the figures, *a'* is the spring-snap, and *a* is a hook, by which the upper end is made fast to the staple or ring in the floor or mop-board or other portion of the building, and by which the ladder is supported; and *b* is a bail or loop that has secured to each end of it the chains *c* or *c'*. These chain-links may be as many as are requisite, as will be explained farther on. To the lower ends of these chain-links are fast the short side-bar links *d d'*. These are punctured at their lower ends by square holes, and fit a squared part of the rung *e*, so that the pieces *d d'* are in a fixed position on the rung *e*. On the rung *e*, just outside of the pieces *d d*, are placed the side pieces of the upper step-link, B, and they are fast by loose joints made by round apertures in their ends and round spaces on the rungs *e e'*, the burrs *i i'* holding them in place. Thus is constructed the first or upper step-link of the ladder. The second step-link, C, is made quite differently in one respect. The pieces *f'' f'''* have square holes in both the ends of each, that fit square portions of the rungs *e e'*, just inside of the pieces *f f'*, thus making the second link a fixed frame. The same construction of apertures, side pieces, and rungs, making any number of step-links, is repeated all the way down the ladder, be it of any length it may, until the foot of the ladder is reached, when the device A', similar to that of the top of the ladder, is repeated, consisting of the short pieces *d'' d'''*, corresponding to *d d'*, chain-links *c'' c'''*, corresponding to *c c'*, and bail *b'*, corresponding to *b*. This device at the foot of the ladder hangs downward, suspended by the ladder, and not, as at the top, the ladder suspended from it, and it is to regulate and fasten the lower end of the ladder. By the step-links, made with fast and loose joints alternately, a peculiar folding compactly of the ladder is provided for, as seen in Fig. 4. For, commencing by the pieces *d d'*, fixed to the rung *e*, as has been said, the chains and bail receive the first loose-jointed step-link folded on them, and the second or tight-jointed step-link is folded on that, and so on until all the ladder is folded.

I prefer to fold my ladder, which is made light and strong, in a box, *g*, which is seen in section about the folds of Fig. 4. The lower bent chain-link or bail, chains, and short-pieces device is at the top of the box, and by it the unfolding is commenced by putting it out of the window, when the unfolding regularly proceeds until all the chain is out of the box; and when this is done it will be found that the chains *c c'*, with bail *b*, fold over the sill of the window, and the loop or bail *b* is just inside of the window, while the chains *c c'* reach over the window-sill and the pieces *d d'* go just outside of the window, and the step-links reach to the ground, where the bail-and-chain device at the bottom is ready to fasten or control the foot of the ladder. Chain-links are placed between the staple *a'''* and hook *a''*, Fig. 4, or the bail *b* is hooked on the hook *a''*. I prefer to place my box just inside of the window, where I fasten it either to the floor *j* or to the mop-board *m* or sill-casing *n* of the window; but other places may be more convenient—as, for example, one side of the window, when the hook *a* or the snap *a'* is readily adjusted to the hook or ring *a''*, Fig. 4, a chain connecting the box-staple *a'''*, Fig. 4, with the hook or ring *a''*, Fig. 4, when the ladder-bail is hooked there for use. The snap-hook also allows the ladder to be used in another or any room where there is a staple, the ladder being detached from its box, and so on of other adjustments that might be fully described.

By the snap-hook or the hook the ladder may be secured to staples placed in the walls outside of the building—as between the win-

dows—or other similar adjustments of it be made. Thus I make a chain-ladder with step-links: at the top a flexible device; next a step-link with loose-jointed side pieces; next a framed step-link, and so on, repeating such step-links, I complete my ladder to the foot flexible part—a ladder folding compactly in a box, whose dimensions are not very cumbersome, since a ladder sixty feet long can be folded into a box about eight to ten inches wide, fourteen inches long, and fifteen inches high, strong enough to sustain a load of hundreds of pounds weight.

At *x* is a second rung, placed in the middle of a step-link. In that case the side pieces, *f f'*, &c., are made the length of two steps, which makes the box longer and less in height. Letters A A' B C D are used for whole parts, as the flexible device A, step-links B C, and double step-links D. The other advantages and uses of my invention are apparent.

I claim—

1. A chain step-link ladder constructed with framed step-links C and loose-jointed step-links B, fast by their respective rungs and alternately one above each other, and constructed and operated substantially as set forth.

2. The combination of the upper flexible loop, A, the loose-jointed step-link B, the framed step-link C, with as many such alternate step-links similar to B and C as are necessary to make the length of the ladder, and the foot flexible loop, substantially as set forth.

JUSTUS H. HEATH.

Witnesses:
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