

(No Model.)

B. F. BENNETT.

FIRE ESCAPE.

No. 295,221.

Patented Mar. 18, 1884.

Fig. 2.

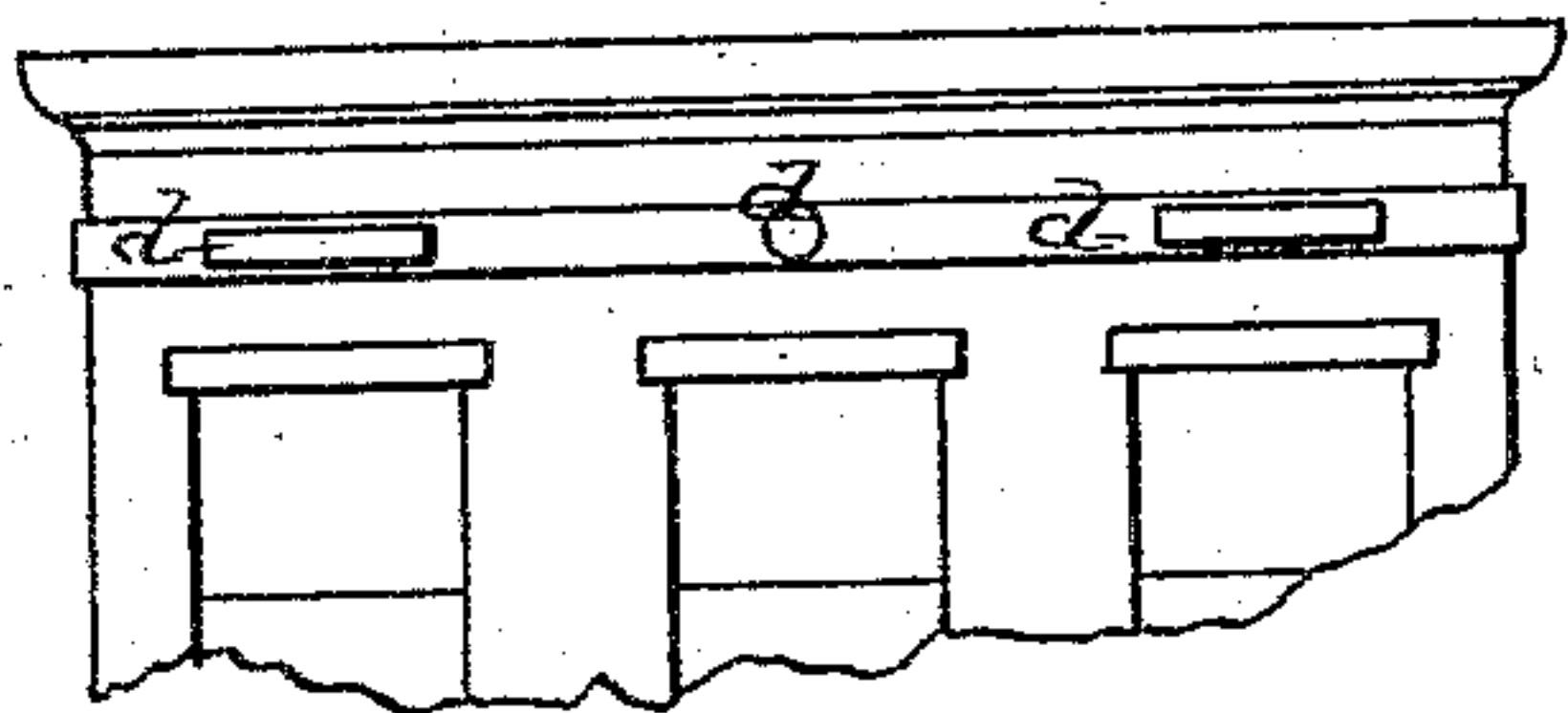


Fig. 1.

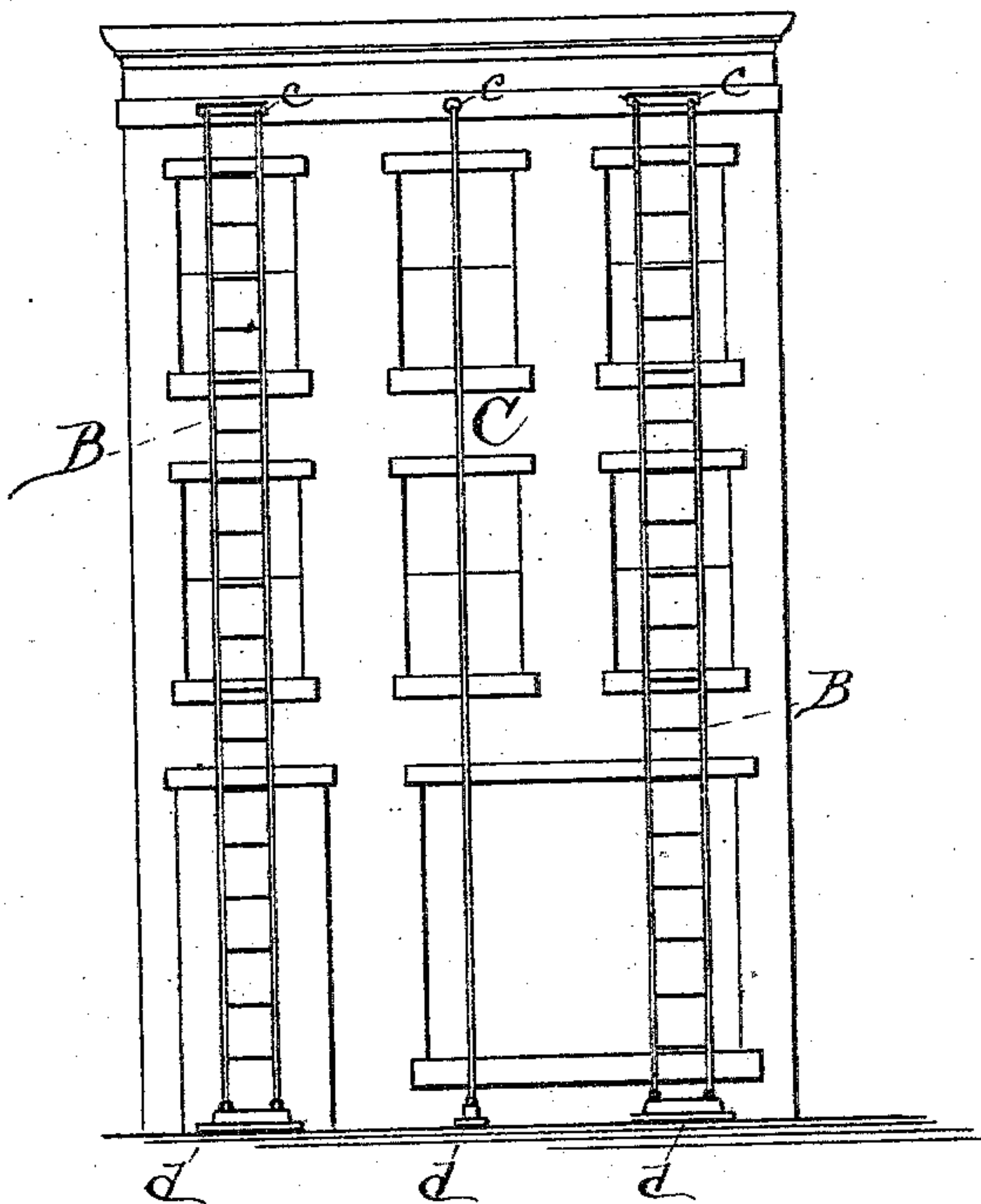


Fig. 3.

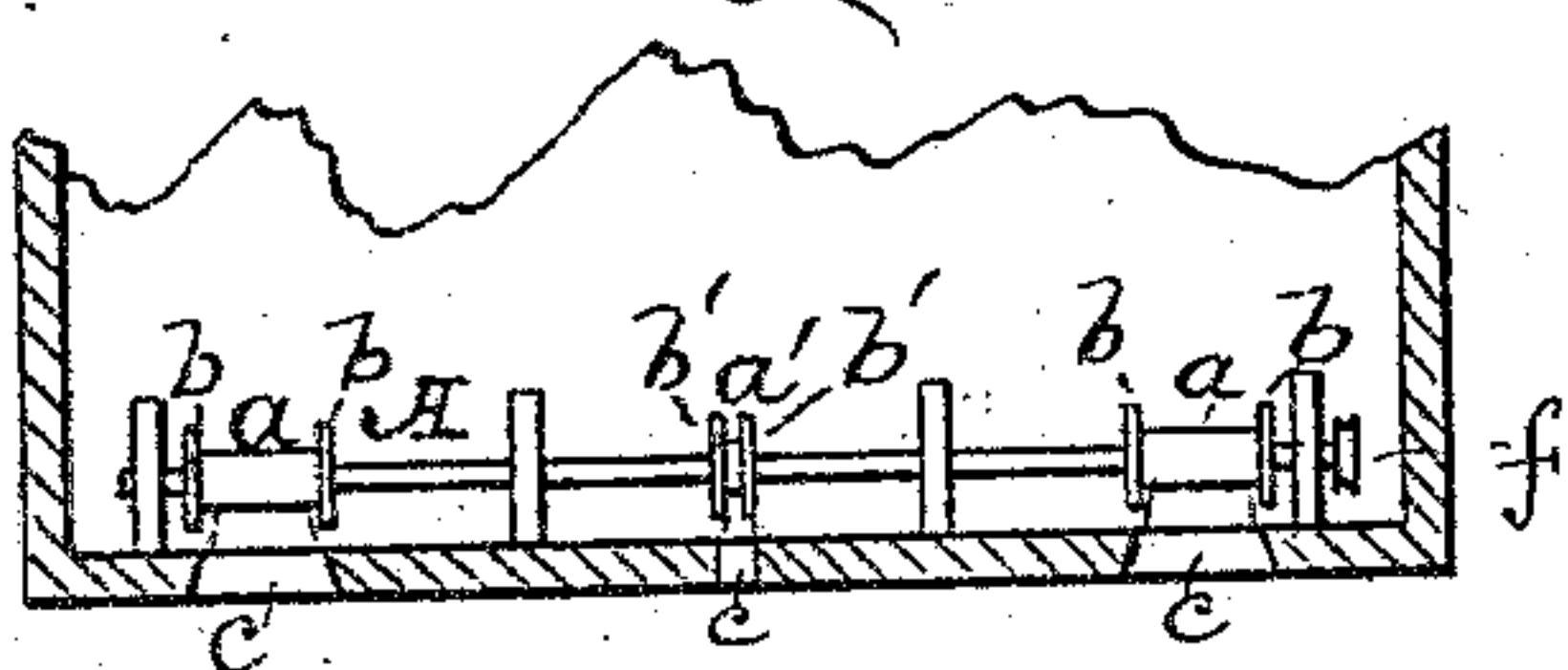


Fig. 4.

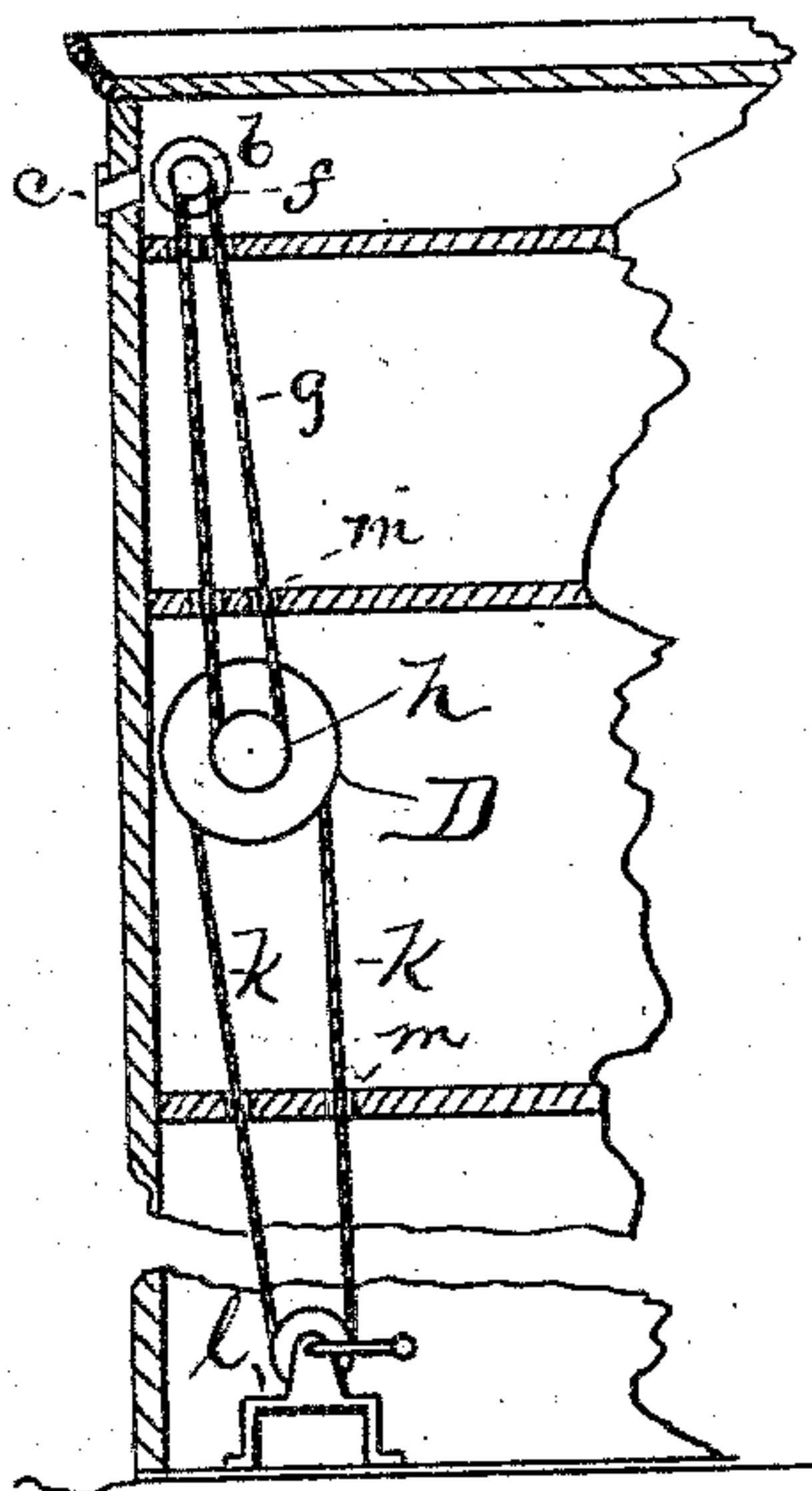


Fig. 5.

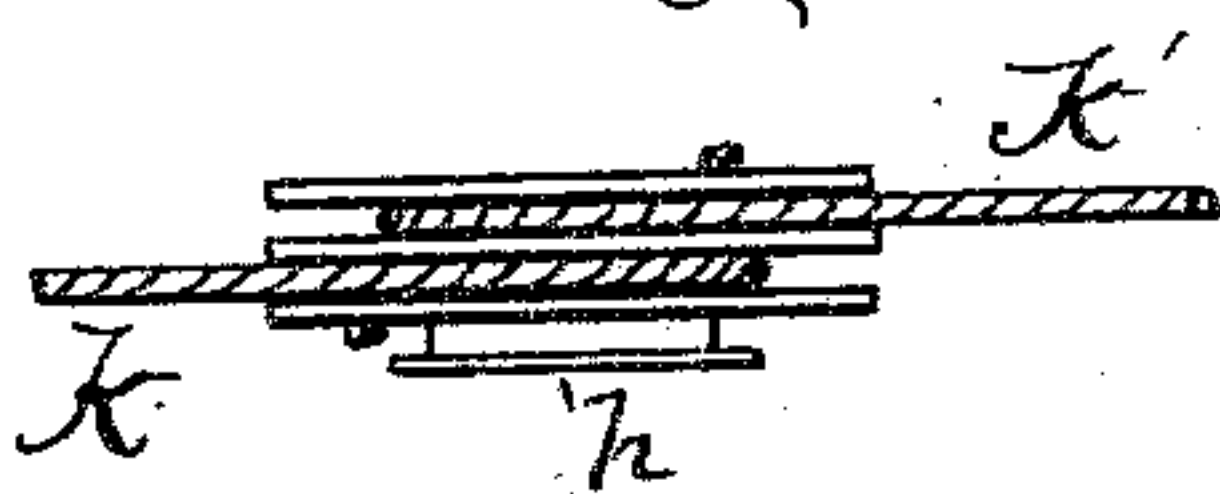
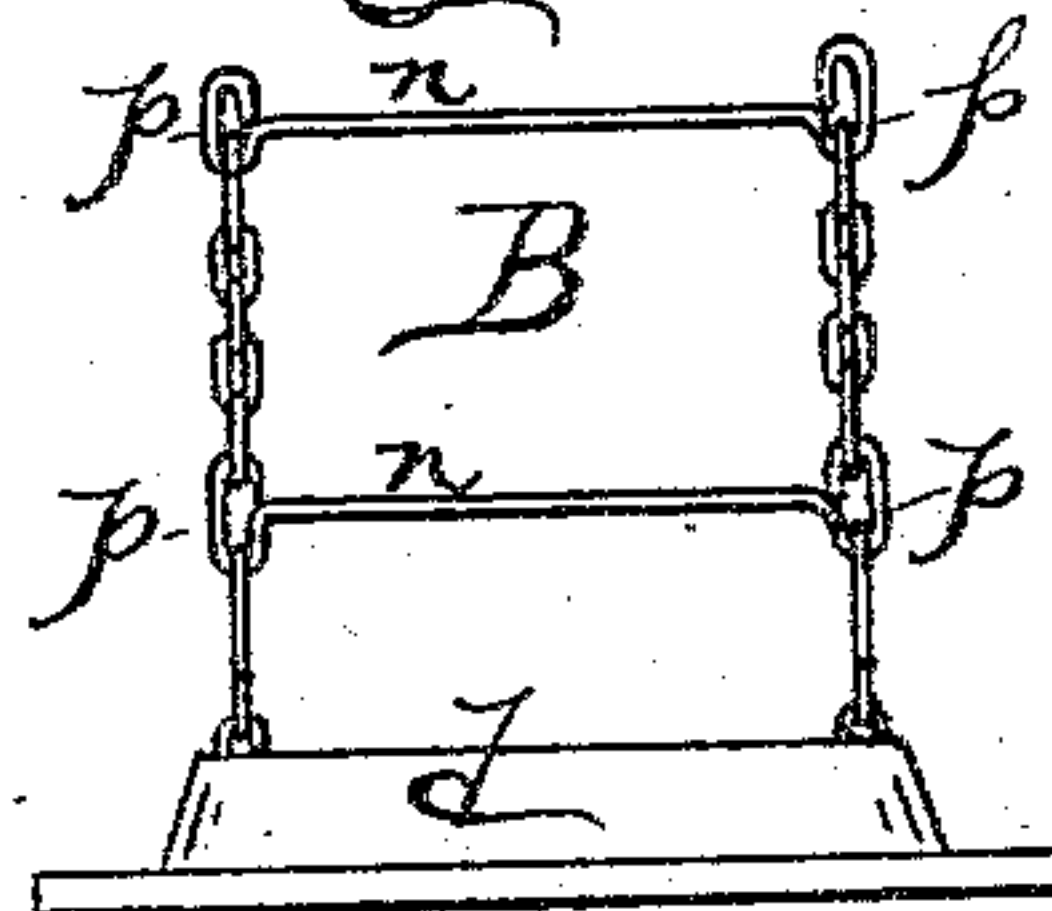


Fig. 6.



Witnesses:

D. H. Garson  
J. R. Drake.

Benjamin F. Bennett,

Inventor, by

J. R. Drake,  
att'y.



# UNITED STATES PATENT OFFICE.

BENJAMIN F. BENNETT, OF LOCKPORT, NEW YORK.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 295,221, dated March 18, 1884.

Application filed April 9, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN F. BENNETT, a citizen of the United States of America, residing at Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to permanent fire-escapes by means of flexible ladders or ropes located in high or other buildings above the floors occupied for business or living purposes, and for instant use when required.

15 The invention will be understood as hereinafter set forth and claimed.

In the drawings, Figure 1 is a front elevation of a building, showing the ladders and a single rope or chain, all suspended in position for escape therefrom. Fig. 2 is a front elevation of the upper part of a building, showing the ladder ports or openings closed by the weights; Fig. 3, a top plan, showing the ladder-shaft and reels for winding the ladders and ropes thereon, and set in the upper part of a building, the roof removed; Fig. 4, a side elevation of part of a building, in section, showing the stories and the devices for operating the ladder-shaft; Fig. 5, a detail top plan of the power-wheel, and with the ropes or belts thereon; Fig. 6, an enlarged detail, showing construction of chain ladder and the weight attached thereto.

A represents the ladder-shaft, which will be located in the upper part of a building, either immediately under the roof, as shown in Figs. 1, 2, and 4, or it may be placed on top of a building on the roof, if properly housed over, but always intended to be above all occupied floors. This shaft is divided into drums or reels *a a*, made just wide enough to receive the ladders B thereon, having high reel-heads *b b*, to keep them compact and wind in exact coils. The ladders, which may be of chains, ropes, or wire, all have metal "rungs" or rounds of uniform width, so that the outer part or sides of the ladder will always wind up over itself in rings or single coils. When a single rope or chain, C, is also employed, the reel *a'* and its heads *b' b'* are made so as to exactly receive the width of such rope, so that every succeeding coil made is over the other, thereby

winding and unwinding much quicker than though on a wider drum. The single ropes or chains C may be employed on a building either separately or in connection with the ladders, or alternate, as shown in Fig. 1. To the ends of each of these ladders and ropes or chains is attached a metal weight, *d*, which not only give stability to said ladders, &c., as they unwind, so that they will drop straight, but also act as covering or closing plates to the openings or port-holes *c c c*, made through the wall or battlement of the building, and through which said ladders and ropes emerge, and when wound up these plates *d d* are drawn into said openings, thus closing them from the outside. The bottom of each plate will either set into or just in front of the ports, and from the street will look like ornaments to the front. To insure their not sticking in these holes *c*, they are made as in Fig. 6, the inner part beveled off or rounding, and the ports *c* also made slanting directly up to or near the reel, so that the ladders, &c., will slide out readily.

75 The ladder-shaft A is operated as follows: On the end of or other suitable position on the shaft is a pulley, *f*, carrying an endless belt or rope, *g*, running in connection with a pulley, *h*, on the shaft of a power-wheel, D, situated in the story below or elsewhere, and having three high reel-heads, giving two narrow divisions, each just the width of the belt or rope, so as to insure the winding in single coils thereon of each belt, as shown in Fig. 5. This power-wheel is rotated in either direction by means of a double windlass, *l*, situated usually in a basement or lower story, by two belts or chains, *k k'*, (see Figs. 4 and 5,) one, *k*, fastened to the wheel and running in one direction, the other, *k'*, fastened in the other division and running in the opposite direction. This arrangement will give a quick and powerful movement to the power-wheel D, and also the ladder-shaft A; but in buildings not of great height the wheel D may be dispensed with, and the belt may run directly from a drum or windlass, *l*, to the pulley *f* on the ladder-shaft; or the power-wheel D may be directly on the ladder-shaft, all these being regulated by the extent of the building and the amount of power required, which may be steam, water, or hand. The ladder-shaft, in large blocks, might be in sections, and each



section operated by its own windlass and belt. The ends of the ladders are provided with hooks, so that the weights *d* may be removed, and the hooks caught into eyes or rings set in the sidewalk, to prevent the ladder swaying, and thus keeping it perfectly "taut." The whole device is out of sight and out of the way, the ladders reeled up at the top of a building, and the operating devices entirely at one side, out of the way. Usually one man can, by turning the crank of the windlass *l*, run down all the ladders in a few seconds.

As before stated, the ladders may be of rope; but the rounds will always be of iron, and of a uniform length to insure proper winding up.

The chain ladders I construct as follows: The rounds *n* are formed or forged at their ends into a link, *p*, and by these are united to the usual side chains composing the ladder, as clearly shown in Fig. 6. The bottom round is supplied in all cases with hooks.

I consider it very important that each rope or ladder reel up in single coils, as before explained, as thereby a large increase of power or "purchase" is gained by each successive coil in winding, and it also unwinds faster as it runs down, also preventing sticking on the drum, as is often the case when wound in spirals.

I do not wish to confine myself to the exact means shown to operate the ladder-shaft A, as many other simple devices can doubtless be employed to advantage.

I claim—

1. In combination with the ladder-shaft A, the pulley *f* thereon, the belt *g*, the power-wheel D, with its two divisions and ropes, or belts *k k'* therein, its pulley *h*, and a double windlass, *l*, all arranged and operating substantially as and for the purpose specified.

2. A fire-escape consisting of a ladder provided with a weight at the outer end, and a reel to which the ladder is attached at the inner end, and upon which it is wound, in combination with a shaft on which the reel is placed, a power-wheel, D, and windlass *l*, with belts or connections *g m*, whereby the ladder is operated.

In testimony whereof I affix my signature, in presence of two witnesses, this 27th day of March, 1883.

BENJAMIN F. BENNETT.

Witnesses:

J. R. DRAKE,  
GEO. A. BENNETT.