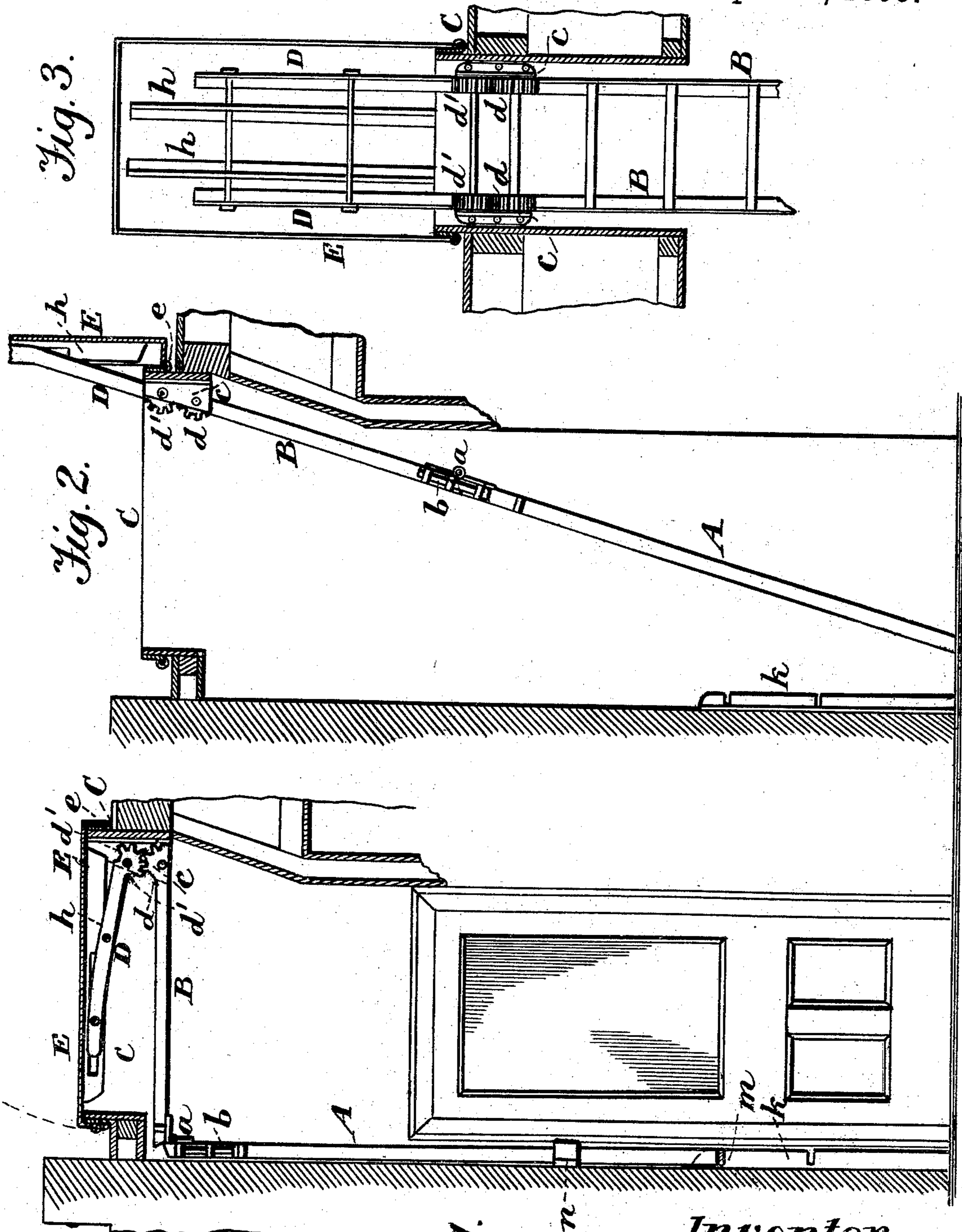


(No Model.)

R. HUGHES.
COMBINED VENTILATOR AND STEP LADDER FIRE ESCAPE.
No. 505,465.
Patented Sept. 26, 1893.



Witnesses.
A. Ruppert.
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Fig. 1.

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UNITED STATES PATENT OFFICE.

RICHARD HUGHES, OF PHILADELPHIA, PENNSYLVANIA.

COMBINED VENTILATOR AND STEP-LADDER FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 505,465, dated September 26, 1893.

Application filed April 20, 1893. Serial No. 471,225. (No model.)

To all whom it may concern:

Be it known that I, RICHARD HUGHES, a citizen of England, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Step-Ladder Fire-Escapes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to fire escapes and consists in an improved construction for such apparatus, as hereinafter described and claimed.

It is often the case, when a building is on fire, that the only way by which persons in an upper story of the building can escape is by getting upon the roof, and the object of the invention is to provide an apparatus having an escape ladder, by means of which persons in a building may readily obtain access to the roof.

In the accompanying drawings—Figure 1 represents a sectional, side view showing my invention applied to a passage in a building, the escape ladder being shown in its closed position. Fig. 2 shows the apparatus in side view, the ladder being in its extended position for use. Fig. 3 illustrates the upper part of the ladder and its connections.

The ladder is constructed in sections and preferably made of angle-iron. The main or lower section A is hinged at its upper end to the lower end of the section B, as seen at *a*, sliding bolts *b* being provided to secure said sections in line when the ladder is adjusted in position for use, as seen in Fig. 2.

c indicates two cleats or bearing pieces which are fixed in position at one end of the frame C of the scuttle in the roof, the said bearing pieces being somewhat inclined according to the inclination of the ladder when it is adjusted in position, as shown in Fig. 2. To the bearing pieces *c* are pivotally secured the upper ends of the stiles or side pieces of the section B, and two arms D extend from said bearing pieces and are pivotally con-

nected therewith. At their pivotal connections with the bearing pieces *c*, the stiles of section B and the arms D have segmental gears *d*, *d'* fastened to them, said gears being in position to connect, so that a movement of the section B produces a movement of the arms D.

E indicates a cover to the scuttle of the roof, the cover being hinged at *e* to the frame C. To the inner side of the cover are secured two rods, or slotted strips *h* with which the upper ends of the arms D are movably connected, so that when said arms are raised by the action of the segmental gears *d*, *d'*, as the ladder is brought into position for use, the upper ends of said arms may move against the inner side of the cover E, which is raised by the movement.

When the ladder is not in use, the main section A is placed against the wall of an apartment or passage—see Fig. 1—and may be set in position, raised somewhat from the floor by two fixed uprights *k* and a cross-piece *m*, and secured to the wall by a turn-button *n*. The section A being in an upright position against the wall, the section B is in a horizontal position, extending from the top of section A to the bearing pieces *c*, being connected with the latter, and the arms D are folded over section B, the scuttle of the roof being closed. The device may thus be placed to be out of the way when not in use, but readily reached when occasion requires.

When it is desired to use the ladder, the section A is moved from the wall of the passage to rest on the floor—see Fig. 2—and is brought to an inclined position in line with section B, which latter is brought to an inclined position by the movement of the section A; the movement of the section B produces the engagement of the segmental gears *d*, *d'*, by which the arms D are raised and the scuttle is opened, the cover E being turned to a vertical position by the movement of said arms against its inner surface.

The ladder may be adjusted in a partly extended position, so that the cover E, of the scuttle, will be raised somewhat for the purpose of ventilation, by adjusting the section A to a lower position on the cross-piece *m* of

the uprights *k*, the cross-piece being removable for such purpose. As will be seen, when the apparatus is folded and the section A secured against the wall, the scuttle is closed
 5 and the cover secured, so that it cannot be raised by burglars who might get upon the roof.

I claim—

1. The combination with a ladder, constructed in sections which are hinged together, of two fixed, bearing pieces with which the uppermost section of said ladder is pivotally connected, two arms, pivotally connected with said bearing pieces, segmental
 15 gears fastened to said arms and similar gears fastened to the uppermost section of the ladder, in position to engage with the gears of said arms, and a movable cover, loosely connected with the extremities of said arms, substantially as set forth and described.
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2. The combination with a lower section of a ladder, of an upper section hinged thereto, fixed bearing pieces with which said upper

section is pivotally connected, two arms, pivotally connected with and extending from
 25 said bearing pieces, segmental gears *d*, secured to said upper section of the ladder, and similar gears *d'*, secured to said arms, in position to engage with gears *d*, substantially as set forth and described.

3. The combination with the hinged sections A and B of a ladder, of two fixed bearing pieces *c*, with which section B is pivotally connected, arms D, connected with bearing pieces *c*, gearing *d* and *d'*, fastened to section
 35 B and arms D respectively, a cover E, movably connected with arms D, fixed vertical pieces and a cross piece *m*, adjustable thereon, in position to support said ladder, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD HUGHES.

Witnesses:

WM. P. SHIBER,
 T. R. DUNN.