(No Model.)

A. H. HALL.

FIRE ESCAPE.

No. 303,638. Patented Aug. 19, 1884.

Fig. 1.

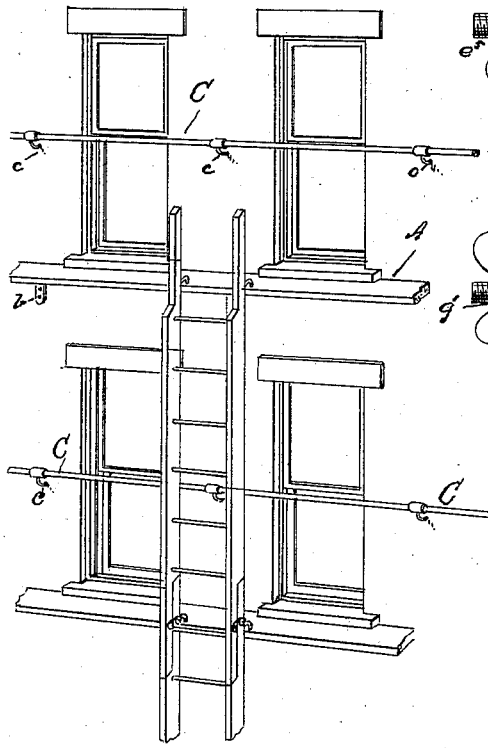

Fig. 10.

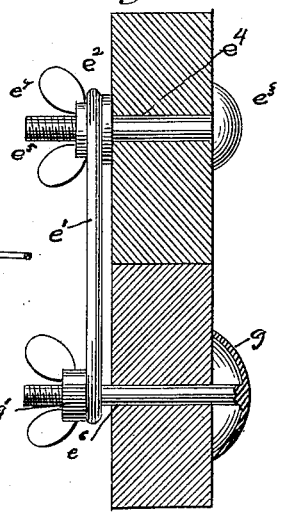

Fig. 4.

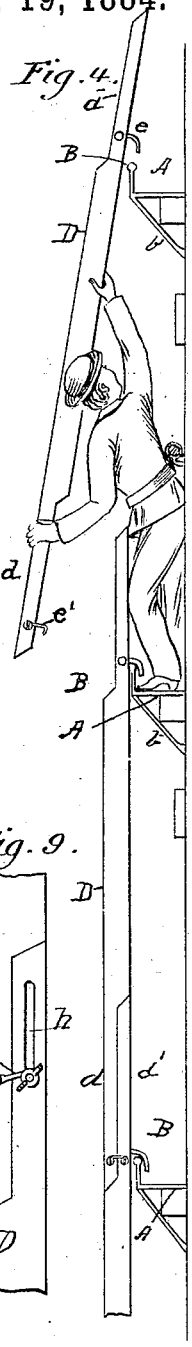

Fig. 5.

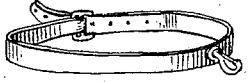

Fig. 7.

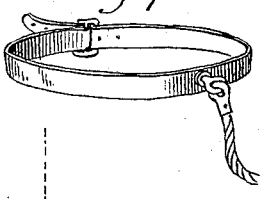

Fig. 9.

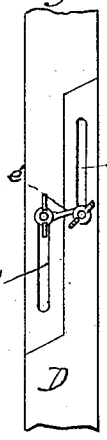

Fig. 6.

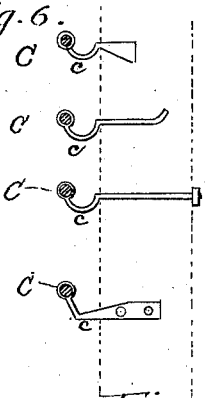

Fig. 8.

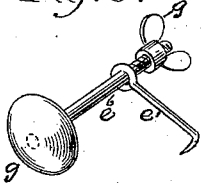

Fig. 2.

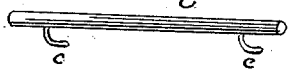

Fig. 11

Witnesses: Non-conducting material.
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A. H. Hall
By A. McStoul
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UNITED STATES PATENT OFFICE.

ARTHUR H. HALL, OF CHICAGO, ILLINOIS.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 303,638, dated August 19, 1884.

Application filed May 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR H. HALL, of the city of Chicago, county of Cook, and State of Illinois, have invented certain Improvements in Fire-Escapes, of which the following is a specification.

The object of my invention is to provide any number of persons in a burning building a ready means of escape simultaneously from any part of such building to the outside, and also to provide such means by which unskilled persons can rescue others safely from the outside of such building.

The above-specified object is accomplished by means of the devices hereinafter fully described with reference to the accompanying drawings, in which—

Figure 1 represents a front elevation of a building provided with my improvement; Fig. 2, a detail view of a section of a continuous rail, C, the continuous rail itself being shown in Fig. 1 as provided with brackets or staples *c*, by means of which it is attached to a wall of a building; Fig. 4, a series of scaling-ladders with their hooks, and end views of a series of ledges, A, with their rails B attached to the wall of a building; Fig. 6, a detail view of a variety of devices by which the rail C may be mounted against a wall; Fig. 5, a detail view of a belt and snap-hook to be worn by any one operating my system of ladders; Fig. 7, a like view of a belt and rope by which to lower a person to the ground by first winding the rope one or more times around the rail C; Fig. 8, a detail view, upon an enlarged scale, of the hook *e'*, and spring-disk *g*, and bolt e^6; Fig. 9, a like view of portions of two ladders connected by hook *e'*; Fig. 10, a like view of bolt e^4 for holding two ladders together, hook *e'*, and other parts; and Fig. 11 is an enlarged view of the end of rail C, showing the non-conducting filling.

The continuous rail C is preferably made in the form of a tube, and of any metal, or any other suitable material, the bore of which at each end is securely closed up with any material that may be a bad conductor of heat, as indicated by the letter c^2 in the detail figure, showing the cross-section of the rail C. The rail rests upon and is fastened to supports *c*, which are curved, as shown, in order that they may not be in the way of slipping the hands or hooks along the rail, which should stand out just far enough to allow the hands or hooks to be passed between it and the wall and a convenient distance above the ledge A for one to stand on the latter and use the rail for the hands. The ledge A should be about one foot in width, and be made of metal or other suitable material, and fastened to the wall of the building in a level with or just below the line of window-sills, and supported by the brackets *b*. The outer edge of the ledge may be bent or curved up at an angle of about ninety degrees with the base or body, and upon the top of the bent-up edge a rail, B, should be mounted and fastened, as represented in Fig. 4. The rail B may be of like form and material with rail C.

In connection with the ledge or shelf A and the described rails B and C, I have devised a scaling-ladder made up of the common rungs and two side pieces, D, each of which is cut away at each end *d* and *d'*, so that the cut-away ends of adjoining ladders may be spliced and neatly lapped together, so that when fastened together all the side pieces will be in two right lines, and a continuous ladder thus formed of any length desired. Each ladder should be of sufficient length to reach from one story to the next above it; but in order to adjust a line of such ladders each side piece, D, is provided with a slot, *h*, in the upper end, *d*, and another in the lower end, *d'*, and with a bolt, e^4, with a head, e^3, on one end of it and screw-threaded at the other, and with a corresponding screw-nut, e^5, and a seat, e^7, for the hook *e'* on the cut-away lower end of a connecting ladder. The hook *e'* is kept in the seat e^7 by a flange, e^2, on one end of the nut, and the thumb-pieces on the other end, and thus when the upper end of one ladder and the lower end of another are once hooked together they cannot be separated by any accidental motion.

In order to secure the hook *e'* against accidental displacement when once on the seat e^7, the bolt e^6 is provided and inserted through one side piece of the ladder, and has concave spring-disk *g* on one end, and the screw-nut *g'* at the other, and the disk and nut clasp the heel of the hook against the ladder and hold it rigidly.

The rail C may be made in sections, as shown

in Fig. 2, and the sections mounted upon the wall between the windows only, and in that case the ends of the sections may be connected by means of chains in case of fire, or the ends of the sections may be carried inward to points near the sash-frames on each side, in order that persons escaping may seize hold of them conveniently.

The space between the broken lines in Fig. 6 represents the thickness of a wall of a building, and it will be obvious to any one skilled in house-building how the supports *c* may be fastened into it without further description.

A few words will suffice to explain the use of my appliances. When the alarm of fire is given the inmates of the house can open the windows, and, avoiding all danger of suffocation while attempting to escape by the usual stairways, can get out upon the ledges A and hold fast by the rails C, and in case flames and smoke issue from the windows they will be perfectly safe until assistance can be rendered from the outside of the building.

In operating the described ladders, a supply of which should be kept in a convenient place near the ground, one or more rescuers will begin by taking the first ladder and hooking it over the first rail B and ascending it to the second story, carrying along a second ladder and hooking it over the next rail B above and hooking its lower end to the upper end of the first, and so on until the topmost story is reached and a continuous line of ladders formed. While this is being done the inmates may make their escape from the different stories to the ledges A, and thence down the line of ladders, or, in case of the helplessness of any of them from age or fright, such may be let down by the use of the belt and rope, as shown in Fig. 7.

The belt and hook shown in Fig. 5 is for the use of rescuers to enable them to attach their bodies securely to the rails, so that they may have free use of both hands, and the ladder-hooks are adapted to be moved freely along the rails the entire length of the wall whether a single one merely be in use or a series of them connected together.

In case a single ladder is used, the rigid hook *e* may be hooked over rail B, and then the adjustable hook *e'* may be adjusted and placed over the next rail B below.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The ledge A, fastened by one of its edges to the wall just below the line of window-sills, with its other edge bent up at about a right angle, and provided with rail B, the body adapted to support persons and the rail adapted for sliding along lengthwise of hooks or hands, substantially as described.

2. The combination of the rail C, mounted above the ledge A, and fastened securely to the wall at a convenient distance above the line of window-sills as a hand-rail, with ledge A, fastened by one of its edges to the wall just below the line of window-sills, while its other edge is bent up at about a right angle, and provided with rail B, the body of the ledge adapted to support persons and its rail to the sliding along of ladder-hooks, substantially as described.

3. The ladder having two side pieces, D, cut away at each end upon opposite sides, as shown, to adapt them to splicing with another like ladder, the lower end of each side piece being provided with a slot, *h*, and the upper end with a like slot, *h'*, such cutting away and such slots being adapted to render the splicing snug and strong, a line of such ladders adjustable in length, substantially as and for the purpose described.

4. The device composed of bolt e^6, provided with a head on one end and a screw-thread on the other, and the screw-nut *g'* and a side piece, D, adapted to hold hook *e'* secure against accidental displacement, substantially as described.

5. The combination of the hook *e'* and the nut e^5 on bolt e^4, provided with wings or flanges on one end and a flange, e^2, on the other, adapted to form a seat, e^7, for splicing hooks and prevent their accidental displacement, substantially as described.

6. The combination of the bolt e^6, provided with disk *g* on one end and hook *e'*, mounted on its middle portion, and nut *g'* on the other end, and the bolt e^4 with head e^3 and nut e^5, the whole adapted to fasten two of the described ladders together adjustably, substantially as described.

7. The tubular rail C, rendered partially a non-conductor of heat by having each end of every section thereof filled with a non-conductor of heat, substantially as described.

8. The described spliceable scaling-ladder provided with hooks *e* in combination with ledge A, having its outer edge bent up at an angle with its body and provided with rail B, substantially as described.

9. The described ladder, having rigid and immovable hook *e* on its upper end, and the adjustable hook *e'* on its lower end, adapted to hold to an upper rail B and a lower rail B at the same time, substantially as and for the purpose described.

ARTHUR H. HALL.

Witnesses:
FREDERICK C. GOODWIN,
E. F. RUNYAN.