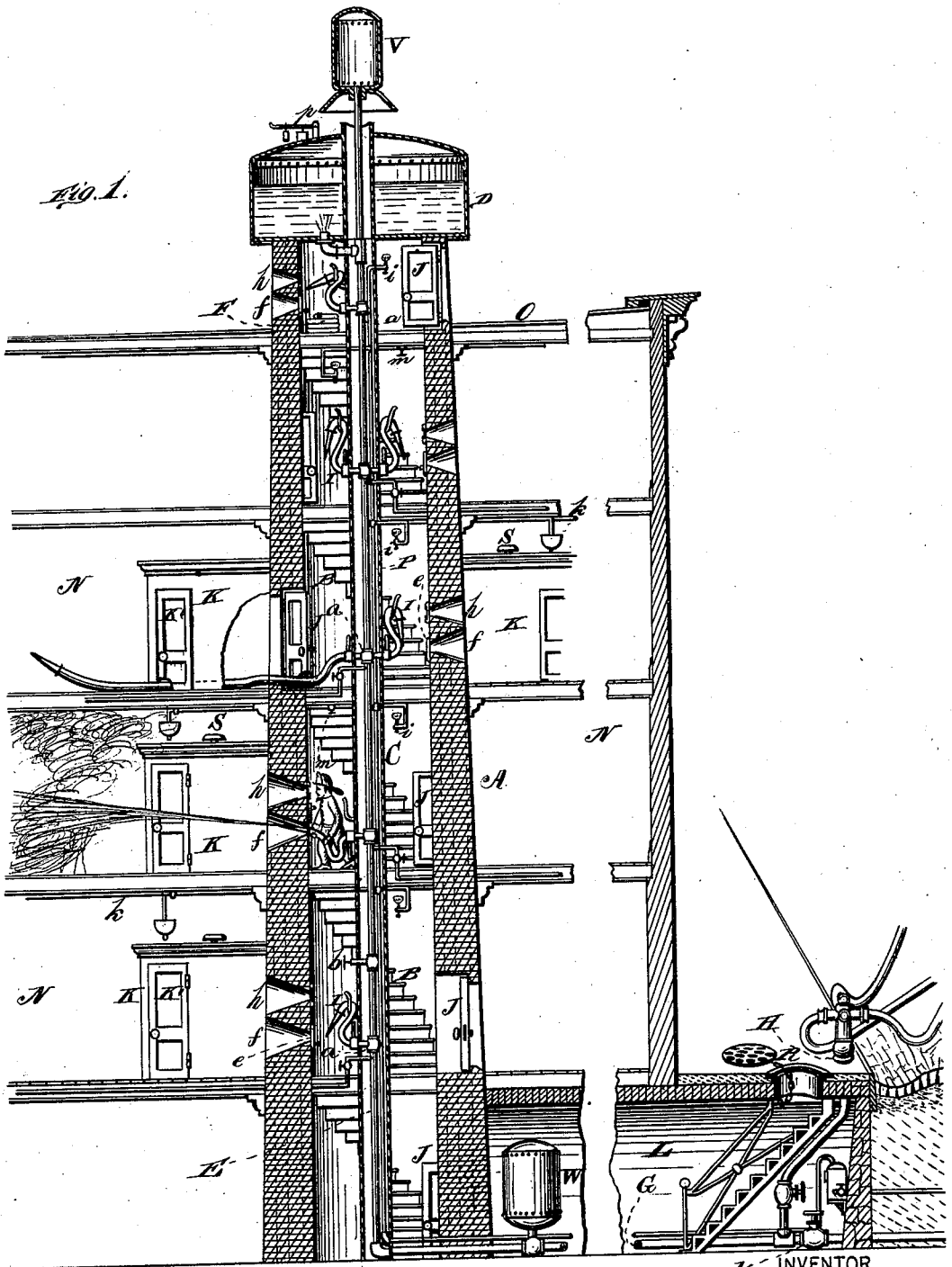
2 Sheets—Sheet 1

A. C. ELLITHORPE & C. HAAS.

Fire Extinguisher and Escape Tower.

No. 202,009. Patented April 2, 1878.

Fig. 1.



WITNESSES

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2 Sheets—Sheet 2

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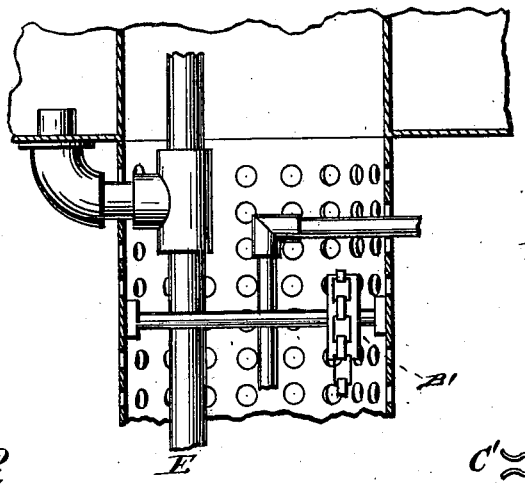
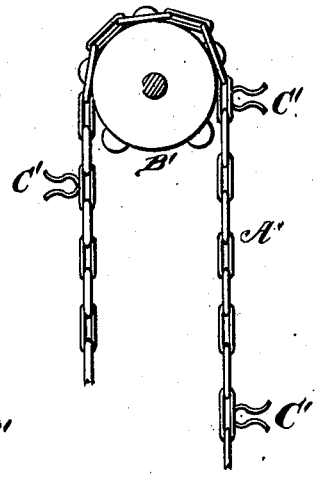
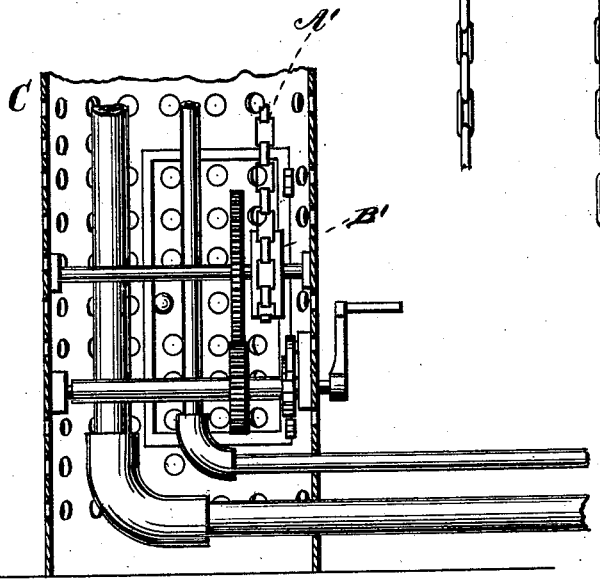


Fig. 2.

Fig. 3.





WITNESSES

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UNITED STATES PATENT OFFICE.

ALBERT C. ELLITHORPE AND CHRISTIAN HAAS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN FIRE-EXTINGUISHER AND ESCAPE-TOWER.

Specification forming part of Letters Patent No. **202,009**, dated April 2, 1878; application filed January 2, 1878.

To all whom it may concern:

Be it known that we, ALBERT C. ELLITHORPE and CHRISTIAN HAAS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fire Extinguisher and Escape; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

Our invention relates to fire extinguishers and escapes, and is intended to be applied to hotels, factories, or other large buildings, either inside or outside of the same. It may also be applied in the center of a cluster or block of buildings; and the nature of our invention consists, essentially, of a fire-proof tower, extending from the ground up to or above the top of the building, with an interior stairway its entire length, suitable communication from each story to the interior of the tower, and a communication from the bottom of the tower under the sidewalk to the street.

Our invention further consists in the construction of safety-rooms on each floor communicating with the interior tower; in the arrangement of water and gas pipes through said tower; and also in details of construction and combination of parts, as will be hereinafter more fully set forth, and pointed out in the claims.

In order to enable others skilled in the art to which our invention appertains to make and use the same, we will now proceed to describe its construction and operation, referring to the annexed drawing, which forms a part of this specification, and in which—

Figure 1 is a central vertical section of our entire invention. Figs. 2 and 3 are detailed views, showing means for carrying up hose to any floor or story of the building.

A represents the fire-proof tower, constructed of brick or other suitable strong and equally fire-proof material, resting upon a solid foundation, and made either of cylindrical or other desired form. This tower may be placed inside or outside of the building, and extend upward through the building to such height as may be deemed necessary; but preferably it should be of such height that egress can be had from the top floor of the building through said tower.

The inside capacity of the tower should be such as to permit of a spiral or winding stairway or other suitable means for ascent and descent.

B represents an iron stairway, extending from the base to the top of the tower. C is an iron air-column, arranged, preferably, in the center of the tower, and made of any suitable thickness. This column is perforated, as shown, so as to freely ventilate and draw from the tower all smoke and foul air, and said column should extend from the base to and above the top of the tower.

On top of the tower A rests a water-tank, D, made with a central opening to receive the upper end of the air-column C, and thus afford free ventilation to the inside of the tower and stairway.

E represents an iron stand-pipe for the conveyance of water, and is located, preferably, within the air-column C; but it may be located in any part of the tower. This pipe E extends from the tank D down to the base of the tower, and then extends to and connects with the water-main G. It has also a connection with a dry hydrant, H, in the street, as shown.

In the stand-pipe E are hose-connections *a a* upon every floor or story, which hose-connections may be used in such number and in such places in the stand-pipe as may be required. The stand-pipe is also provided with cut-off valves *b b* for the purpose of controlling the water in the tank D. The stand-pipe E is thus at all times protected from fire, smoke, and frost.

d is a cut-off valve for the purpose of severing the water-connection between the street-main G and the stand-pipe E whenever engine-power is applied to the stand-pipe through the medium of the dry hydrant H, so that the water pumped by the engines cannot be forced back into the street-main, but must pass up through the stand-pipe to supply the tank D, and also for use through hose in case of fire.

I represents the hose and nozzles connected to the hose-connections *a* of the stand-pipe, ready for use.

Upon each floor in and through the tower A are made funnel-shaped holes or openings *f*, having their smaller ends on the inner side of the tower, through which openings the water,

by means of the hose I, can be projected from the tower into the building. Above the openings *f* are similar openings *h* through the tower, and provided with isinglass at their inner ends to permit of observation into the building. The inner ends of the openings *f* are provided with close-fitting iron drops *e* for closing said openings securely against smoke when not in use.

The tower A is further provided on each floor with one or more metal doors, J, opening into the tower, and thus affording egress and ingress upon every floor of the building.

Outside of the doors J, upon each story of the building, is formed a safety-room, K, with inwardly-opening doors K′. These safety-rooms are more particularly designed for use in hotels, so that persons escaping from fires can find ready and easy access to the tower A and stairway B, and at the bottom of said stairway, through a tunnel, L, to the street, said safety-rooms and tower furnishing a central point upon each floor from which firemen can render prompt and efficient assistance. N represents the different stories of the building, and O is the roof thereof. F represents reserve coils of hose, which may be attached when required. S represents alarm gong-bells connected with the tower or safety-rooms, and upon each story of the building, to be provided with suitable bell-pulls upon each story, connected together, so that, if used upon either floor, all the gongs will be sounded simultaneously for any desired length of time, thus giving a general fire-alarm. L is the fire-proof archway or tunnel, which connects the tower A with the street or open space outside of the building, and through this archway or tunnel all pipes running up the tower may pass, making their connections reasonably remote from the building. This archway or tunnel L affords easy and safe ingress and egress to and from the tower, and supplies the same with fresh air through the scuttle R, though, if desired, air-pipes may connect with the archway from more remote points, to insure greater safety in furnishing air. The archway or tunnel affords the fire department a ready and safe access to every floor in the building without encountering fire or suffocating smoke, the latter of which is most dreaded by firemen.

P represents gas-pipe with burners *i i* upon each landing or story, to light the tower when desired, and said pipe should preferably take its connection through the archway and outside of the building. The entire building is supplied with gas from the pipe P through branch pipes *k k*, and for each story there is a stop-cock, *m*, so that the gas can be shut off from any one or more of the floors without interfering with the others.

In the same manner water may be supplied to every floor or story of the building, and shut off from any one or more of them without interfering with the others.

The dry hydrants or dry connecting-pipes H may be located upon the sidewalk or any other contiguous place outside of the building. Each hydrant-pipe must be provided with a cut-off valve near its junction with the main leading through the archway.

There may be as many of these hydrant or engine connections as required, to which fire-engines may attach in sufficient numbers to afford an ample supply of water and to bring to bear such concentrated force upon the stand-pipe E as may be requisite.

V is an air-chamber upon the top of the stand-pipe E, which, in connection with the water and air tank D, will impart the requisite force to the stream at the highest elevation of the tower. W is another air-chamber arranged on the pipe connecting the main with the stand-pipe in the archway or tunnel L.

It will thus be seen that our invention combines and unites the requisite appliances and elements to subdue fire and to save life. It affords ample and secure means of escape from burning buildings, and at the same time affords more ample protection to the building and property endangered, as well as more securely protecting the lives of the firemen while engaged in the extinguishment of the flames.

Our invention makes available and accessible the principal element—water—in the water-column. It concentrates the fractional and separate steam-engine powers to a given point upon a protected water-column. It inspires confidence and insures safety to the members of the fire department, and at the same time places them in close proximity to the fire, with an ample supply of water and absolute protection from accident by falling obstructions or from suffocation by smoke.

The tank D on top of the tower A is a closed pressure-tank, and provided with an overflow-valve, *p*, as shown in Fig. 1. This is of great importance, for, when one or more engines are connected with the water-column E, the valve *d* to the main being closed, when the pressure exceeded the strength of the tank, said tank would burst; but with the overflow-valve, as soon as the pressure exceeds, say, one hundred pounds, this valve opens and the water flows over onto the roof of the building.

It will be noticed that the power of the engine or engines works against the air-pressure in the chamber V as well as that in the tank D, and we thus convert the water stand-pipe E into or form a perfect hydraulic column, which causes a steady and uniform stream of water to be thrown from each and every hose connected to said pipe.

For the purpose of carrying up hose to any floor or story within the fire-proof tower A, we use an endless chain, A′, passing around pulleys B′ B′, arranged upon suitable shafts, one at the top and the other near the bottom of the tower. At suitable intervals on this chain are secured spring-clamps C′ C′, in either one of which the hose may be quickly inserted and held, and then the chain rotated by a crank or other suitable means, so as to elevate the hose

to any height desired, when it is easily taken out of the clamp for use. This device is arranged within the ventilating-shaft C, which said shaft is provided with suitable doors on each story, to gain access to the chain for taking out and hanging on the hose.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A fire-proof tower erected within or adjacent to a building, and forming communication with each and every story of the building, and provided with suitable means for ascent and descent, and its base connected by an archway or tunnel with the street or space around the building, substantially as and for the purposes herein set forth.

2. In combination with a fire-proof tower erected within or adjacent to a building, and provided with one or more doors leading into every story of the building, one or more safety-chambers arranged upon each floor outside of the doors leading into the tower, substantially as herein set forth.

3. The air-column C, perforated as described, and arranged within the fire-proof tower, for the purposes herein set forth.

4. The water-pipe E, connected through the bottom archway or tunnel with the main, and arranged within the fire-proof tower, and provided with suitable hose-connections, substantially as and for the purposes herein set forth.

5. The combination of the tower A, tank D, air-column C, and water stand-pipe E, with air-chamber V, substantially as and for the purposes herein set forth.

6. The fire-proof archway or tunnel L, in combination with the tower A and air-entrance R, for the purposes herein set forth.

7. One or more outer dry hydrants, H, connected with the column stand-pipe E by means of a pipe leading through the archway, and arranged for connection with fire-plugs by means of fire-engines, to provide increased force and volume of water in said stand-pipe, substantially as herein set forth.

8. The combination of the stand-pipe E, horizontal connection-main G, with cut-off valve *d*, and hydrants H, substantially as and for the purposes herein set forth.

9. As a means for protecting life and property from fire, a fire-proof tower, with means of ascent and descent, erected within or adjacent to a building, with an archway or tunnel leading from its base to the street, an interior ventilating-shaft, water and gas pipes passing up through the tower, and having independent cocks and pipes for each floor, doors leading from each floor into the tower, and pipe-holes and observation-holes through the walls thereof, all substantially as and for the purposes herein set forth.

10. The hose-elevator, as described, consisting of the endless chain A, pulleys B′ B′, and spring-clamps *c′ c′*, arranged on suitable shafts inside the ventilating-shaft C, substantially as and for the purposes specified.

11. In combination with a fire-proof tower erected within or adjacent to a building, the water-pipe E, protected within and by said tower, substantially as specified.

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CHRISTIAN HAAS.

Witnesses:
CASSIUS M. JENNINGS,
FRED T. ELLITHORPE.