

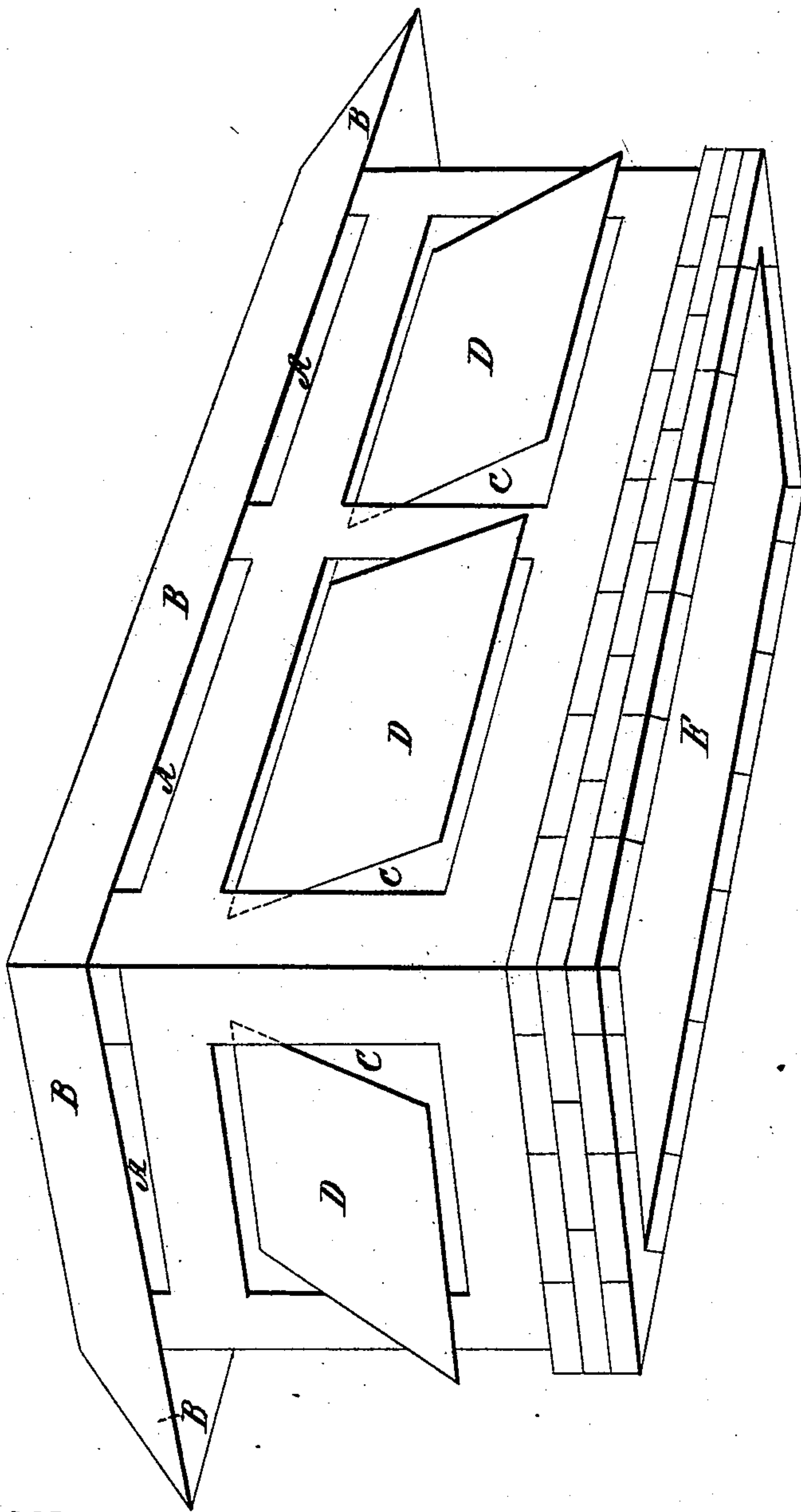
I. MAYHEW.
Chimney Cap.

3 Sheets—Sheet 1.

No. 18,100.

Patented Sept. 1, 1857.

Fig. 1.



Witnesses:
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J. J. Eastman

Inventor:
I. Mayhew

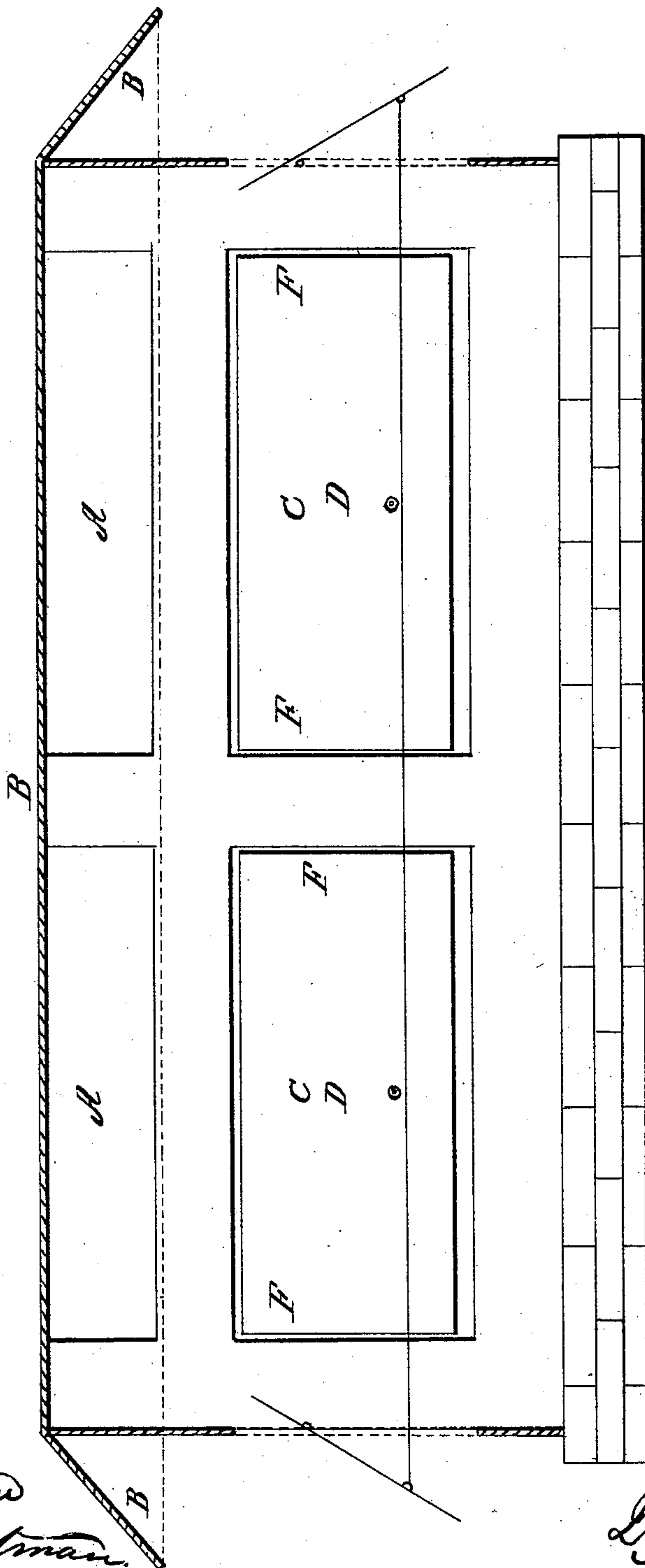
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Fig. 2.



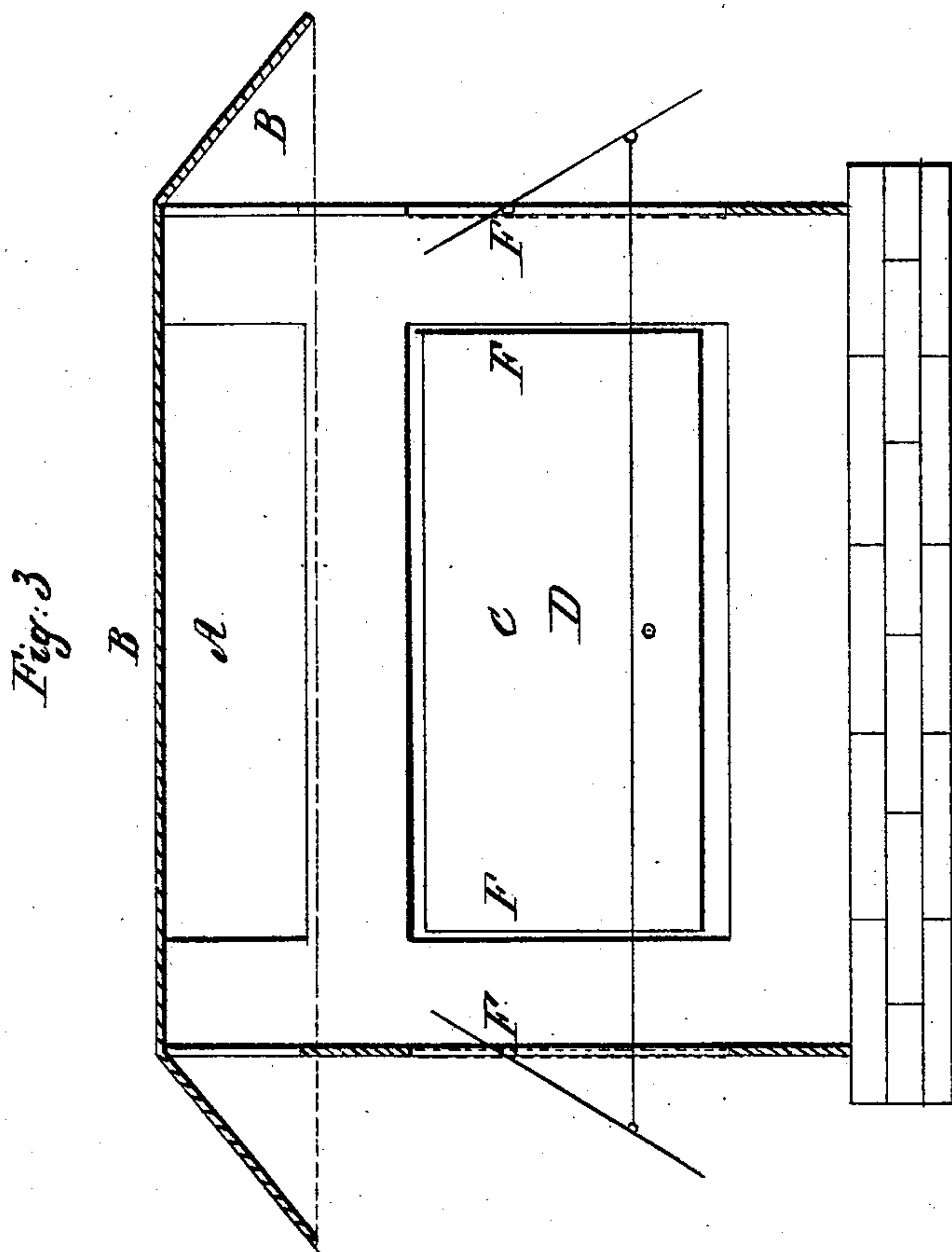
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UNITED STATES PATENT OFFICE.

IRA MAYHEW, OF ALBION, MICHIGAN.

CHIMNEY-CAP.

Specification of Letters Patent No. 18,100, dated September 1, 1857.

To all whom it may concern:

Be it known that I, IRA MAYHEW, of the village of Albion, in the county of Calhoun and in the State of Michigan, have invented
5 a new and useful Machine with the title of "Self-Adjusting Smoke, Storm, and Ventilating Chimney-Cap," the design of which is to prevent chimneys from smoking, to protect them from the ingress of storm, and
10 to ventilate apartments with which they may communicate; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and
15 to the letters marked thereon, which make a part of this specification, and in which—

Figure 1 is a perspective view; Fig. 2, a longitudinal elevation; and Fig. 3, a transverse section.

20 *Description of construction.*—The cap may be constructed of sheet or boiler iron or of other suitable material, and should be of the same size and form as the top of the chimney to which it is to be attached,
25 or the chimney may have its dimensions slightly changed, at the top, to conform to the size of the cap.

The letter E, Fig. 1, represents a horizontal section of the chimney, including the
30 flue, at the point of attachment of the cap.

The accompanying drawings have been made to represent a cap for the most common form of chimney, which is that of a rectangle, and of about half the size, at
35 the top, horizontally, in one direction, that it is in the other. The height of such a cap, above the top of the chimney, should be about equal to its width. The top or roof of the cap, is of the same size and shape
40 as the top of the chimney, and may be either flat, or slightly arched, with eaves projecting from each of its sides, at an angle of about forty-five degrees.

On each side of the cap represented in
45 the drawings, there are four openings. The two upper ones, immediately beneath the eaves, and which are never closed, are called "constant openings." The larger openings below, which are furnished with valves that
50 are sometimes open, and sometimes closed, are called "variable openings." On each end of the cap represented in the drawings, there are two similar openings, one of each kind.

55 The upper openings, marked A, A, A, Figs. 1, 2 and 3, and which should in the

aggregate, be somewhat larger than the flue of the chimney, are always open; the drip, or eaves of the roof, marked B, B, B, in the same figures, falling about half an inch
60 below these openings, as shown by the drawings. The openings, marked C, C, C, which are of the same length, and twice the width of those marked A, A, A, are furnished with valves marked D, D, D, which valves are
65 hinged at the ends to the frame of the cap, at one-third their width from the top, as indicated by F, F, F, in the drawings, Figs. 2 and 3. These valves should be so hung as to admit of their yielding readily to the
70 action of the wind, and either swinging freely out at the bottom, or taking a perpendicular position, as shall be indicated by the direction and force of the passing current.

75 Each pair of opposite valves is joined by a connecting rod, or wire, near their lower edge, on the inside. These rods should be of such length as to keep the opposite valves severally open at an angle of about thirty
80 degrees, when the cap is not acted upon by the wind; and they should be attached to the valves by hinges, so as to yield to the gentlest pressure.

Description of operation.—When the cap
85 is in a state of rest, or not sensibly affected by the wind, the smoke will pass freely out through all the openings, both constant and variable, all the valves of the latter standing equally open. In case of wind, there
90 will be a current through the upper openings, all of which are open, the smoke passing freely out through the leeward openings; and the further effect of the wind upon the action of the cap, will be, to close,
95 partially, at least, the windward valves upon which it directly acts; and, through the agency of the connecting rods, to open, to a correspondingly greater distance, the leeward valves. By this agency alone the
100 variable windward openings will be diminished, and the leeward ones enlarged, to a degree corresponding with the force of the wind, until the leeward ones are opened to twice their width when the cap is in a state
105 of rest, the windward ones being then entirely closed. The smoke will now pass freely out through all the leeward openings. Moreover, all the wind which at any time enters the cap, is, by its mode of construction, compelled to take an upward direction; and that which does not pass imme-
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diately out through the upper leeward openings will in its downward deflection either strike upon the upper portions of the opposite valves, which already project increasingly inward, by the transmitted action of the current upon the windward valves, and thus further open them in its passage out through the upper portions of the variable openings; or, by the action of the passing current, be drawn outward through the larger portions of these openings below; which, by both of these agencies, are now more widely open. In all cases, through the agency of the connecting rod, a current, in passing through the cap, and both in its ingress, and egress, acts in such a way as at once to diminish the variable windward openings, and to enlarge the leeward ones. While the cap will thus effectually exclude all storms, of whatever kinds from the chimney, it will, at the same time, increase its draft and ventilating power; for, as we have seen, the stronger the passing current of wind, the less the windward, and the greater the leeward, openings; both of which agencies unite in causing the said current to increase at once the draft of the chimney, and the ventilating power of the cap. And this will hold true whatever may be the position of the cap, or the direction and force of the wind. And if, in case of a storm of sleet, or from any cause, the action of the valves should for a time be interrupted, the draft of the chimney will not be materially obstructed; for the upper openings, under the projecting eaves, which are constantly open and protected, are, in the aggregate, of greater capacity than the flue of the chimney.

40 *Different forms of cap.*—The cap represented in the accompanying drawings has, in its horizontal section, the form of a rectangle; but it may be made so that its

horizontal section shall be square, hexagonal, octagonal, or of such other form as 45 may be desirable, and its action will be equally perfect. When employed on the smoke pipe of a stationary engine, or locomotive, one of the last named forms is preferable. 50

Security against fire.—The cap itself acts as a protection against fire, in case of chimneys burning out. But where greater security is desired, it may be had, by placing a screen over the top of the chimney before 55 the cap is attached.

Attachment of cap.—The cap should fit snugly to the outside of the chimney, and pass down some four or six inches, to a projecting band, upon which it shall firmly rest, 60 and be securely attached to the chimney by hooks and eyes.

The cap as a ventilator.—The cap may be made of wood, and of larger dimensions than required for chimneys, and be effectually employed as a ventilator, for barns, 65 and other buildings. By attaching to it a tube, it may be used with great advantage, in ventilating cellars, vaults, cisterns, wells, etc. 70

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

The constant openings, A, A, A, immediately beneath the drip of the roof, B, B, 75 B, in combination with the larger variable openings, C, C, C, which are furnished with valves D, D, D, hung at points F, F, F, and separated by the connecting-rods below, as exhibited in the drawings, and for the purpose specified. 80

IRA MAYHEW.

Witnesses:

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