

(No Model.)

2 Sheets—Sheet 1.

H. P. K. PECK.

VENTILATING FIRE PLACE AND OPEN GRATE.

No. 411,393.

Patented Sept. 17, 1889.

Fig. 1.

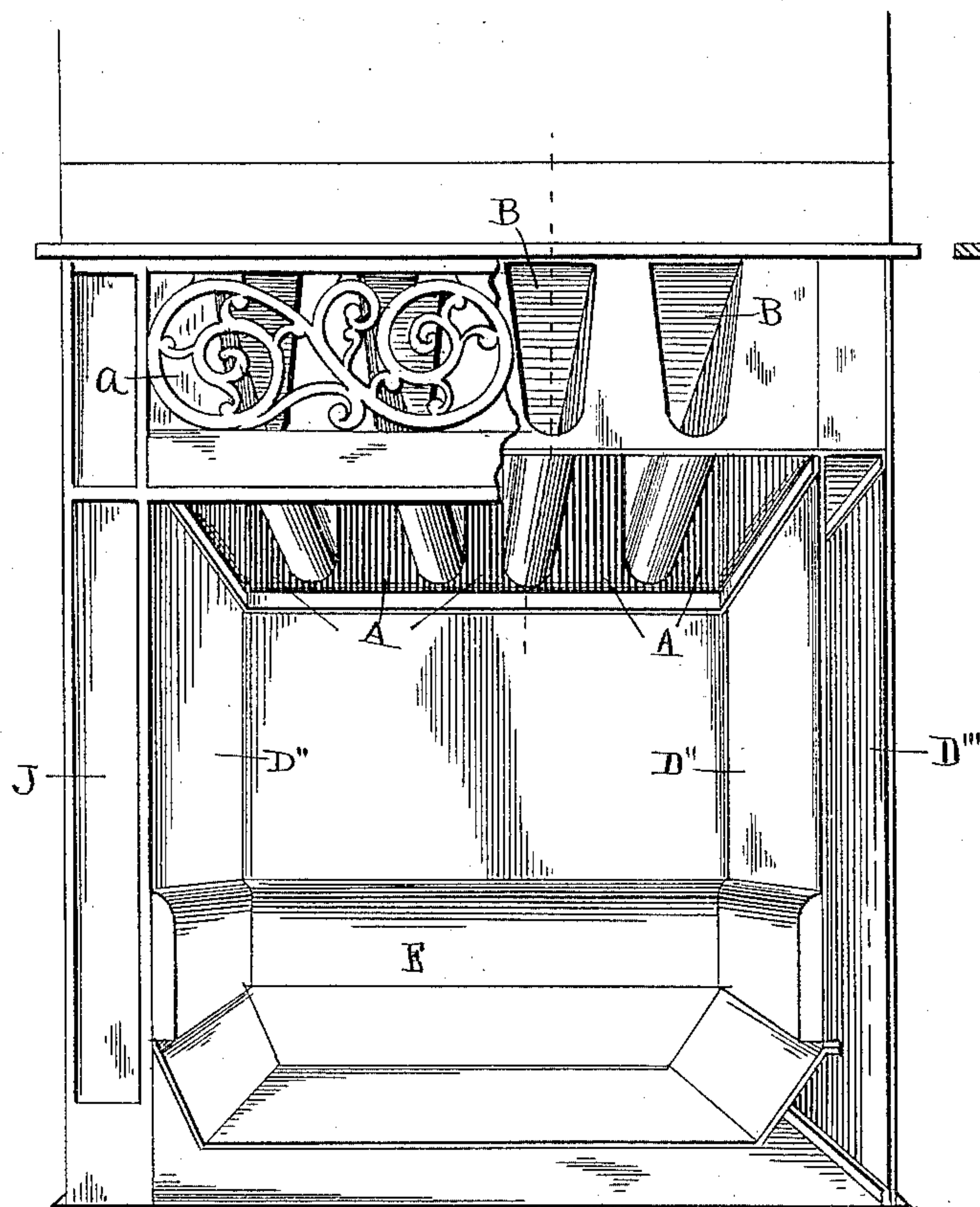


Fig. 2.

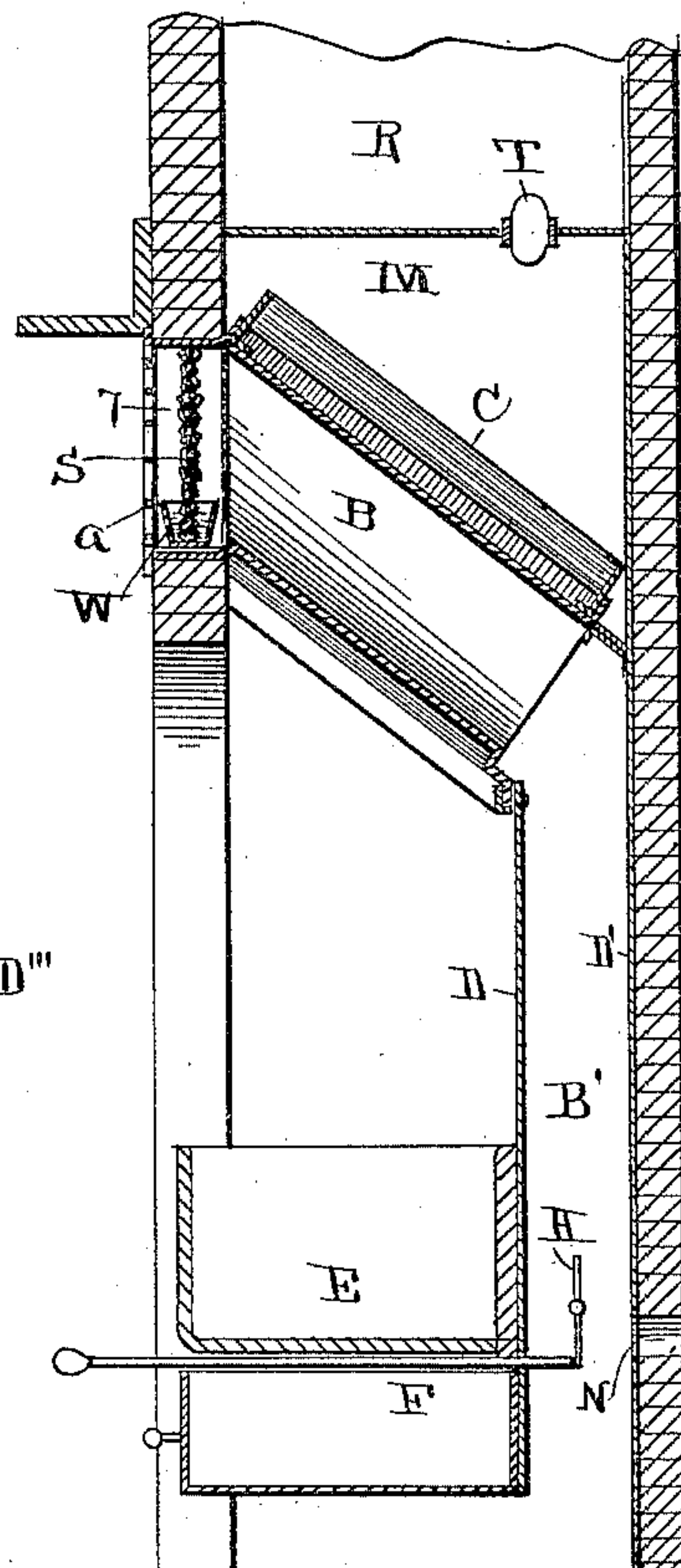
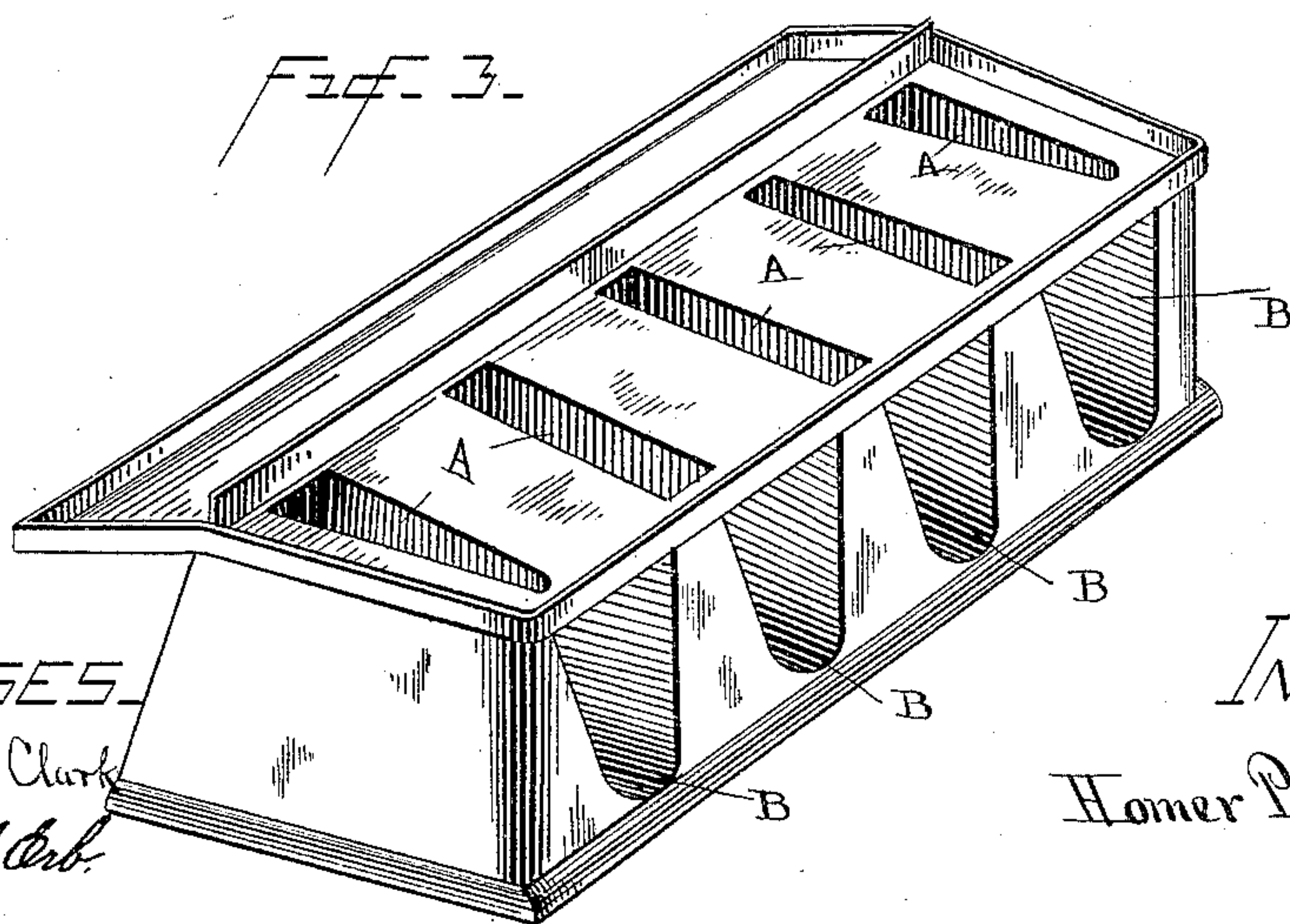


Fig. 3.



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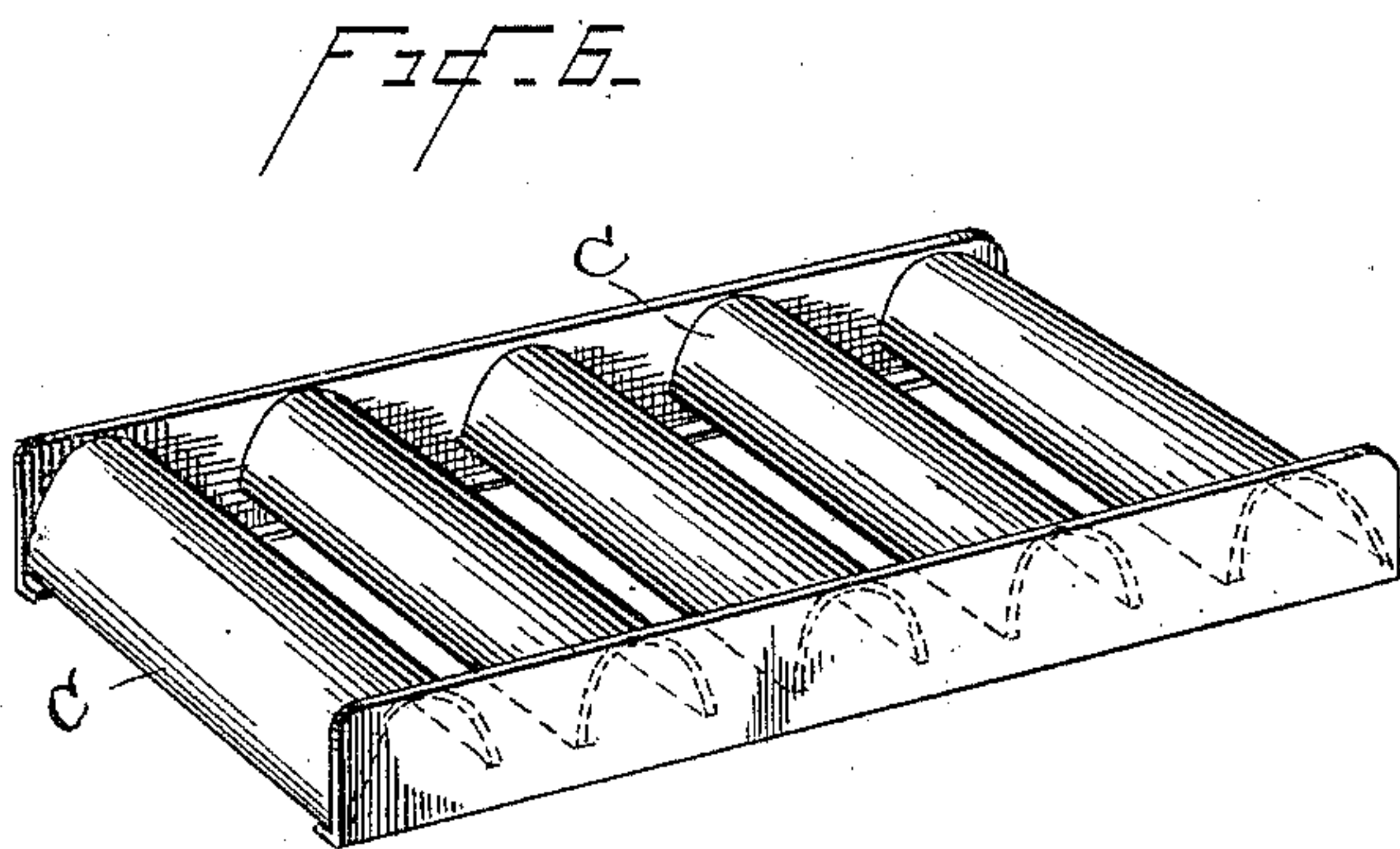
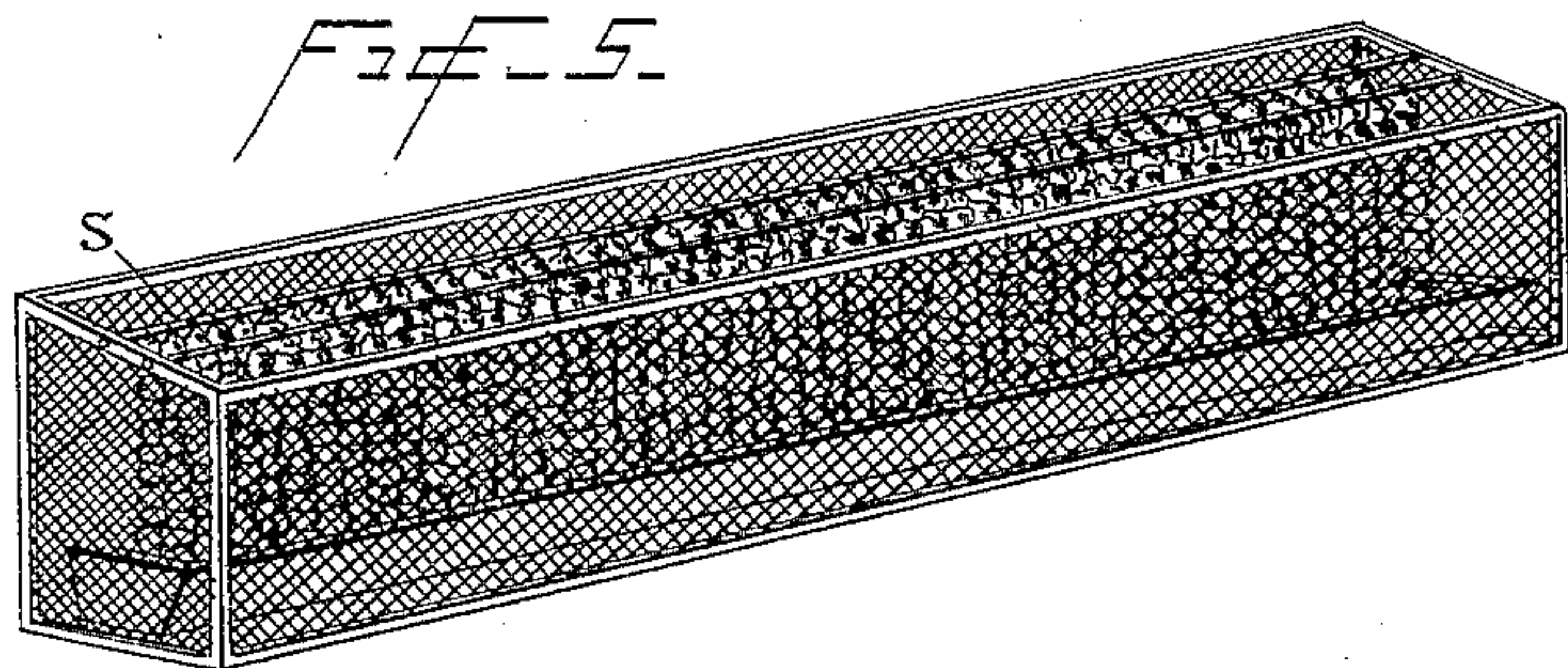
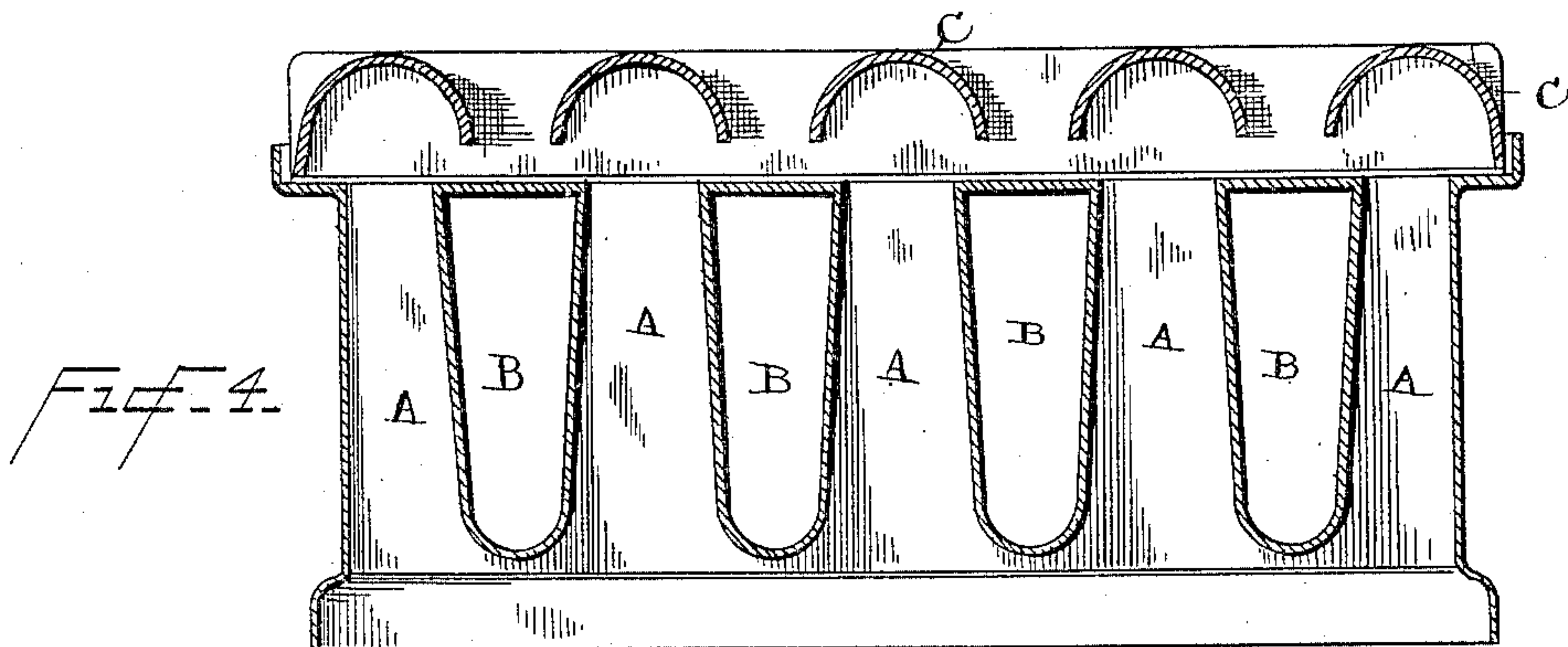
2 Sheets—Sheet 2.

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WITNESSES.

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UNITED STATES PATENT OFFICE.

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VENTILATING FIRE-PLACE AND OPEN GRATE.

SPECIFICATION forming part of Letters Patent No. 411,393, dated September 17, 1889.

Application filed October 22, 1888. Serial No. 288,815. (No model.)

To all whom it may concern:

Be it known that I, HOMER P. K. PECK, a citizen of the United States, residing at Rye, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Ventilating Fire-Places and Open Grates; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 of the drawings represents a front elevation of the fire-place, a portion of the front casing being omitted. Fig. 2 is a transverse section of the same, exhibiting the relative position of the air-heating flues in connection with the ingress and egress passages through which the air passes to be heated and discharged. Fig. 3 represents a perspective view of the connected series of air and smoke passages or flues. A corresponding series of hoods or trough-shaped deflectors of the smoke and burning gases which arise from the coal-grate and pass through the smoke-flues are represented in Fig. 6. Fig. 4 represents a vertical transverse section of the air-flues, smoke-flues, and smoke and gas deflectors in their relative positions. Fig. 5 is a perspective view of the chamber through which the heated air issuing from the air-heating flues passes to enter the apartment to be warmed, in which chamber is located the water-tank and sponge-screen or air-purifier. Fig. 6 shows a perspective view of gas and flame deflecting hoods which constitute a separate or detachable element of the fire-place.

Fire-places for heating air by passing it through chambers and conduits surrounding and above the fire-grate, and thence conducting it into a room or apartment to be warmed thereby, have been long in public use. Among the early inventions of this nature is that described in Charles Neer's patent of May 31, 1853, in which air is heated by being drawn through a chamber at the back of the coal-grate, thence through pipes arranged transversely above the fire-grate into an air-chamber, also over the grate, and from there it may be conducted to any apartment through pipes.

Furnaces with air-chambers above the fire-pot have been long in use, into which outdoor air is admitted and thence when heated conducted to rooms to be warmed thereby, and steam-boilers and furnaces each have also been made so as to conduct the burning gases and other products of combustion through tubes which pass through a receptacle for either water or air, and which had provisions or means for introducing water or air and for egress of steam generated or the air thereby heated. Such being the well-known state of the art, my improved fire-place might in a general sense be said to be included within the familiar domain of articles of this class, yet in its peculiar details, purposes, and operations it will be found on examination to differ essentially from all such articles hitherto produced.

A prominent element of my present invention consists in the means I have devised for more completely burning the gas and smoke generated from the fuel, and consequently more effectively heating the air drawn through chambers and flues for warming the rooms of a dwelling-house. These means I term a series of "hoods" or "inverted troughs" connected to plates which support them at their ends, and arranged over the open smoke-flues of a fire-place, vertically adjustable, and provided with alternate smoke-flues and air-flues above the coal-grate placed at and within the throat or mouth of the chimney upon the plates of the fire-place.

Another important element of my invention consists in means of cleansing and moistening, and, if desired, disinfecting and agreeably odorizing the heated air as it is admitted to apartments of a house, and for these purposes I have devised a peculiar sponge screen, diaphragm, or strainer connected with or communicating at the bottom with a water-tank and arranged to intercept and yet permit the heated air to pass through interstices of the dampened sponges and out of the chamber in which such screen and tank are located in front of the air-heating tubes to an apartment, the object being to cleanse, moisten, and tincture, and to impart aromatic odors to the dry air which is heated by passing in contact with hot plates and flues of

the fire-place. The sponge-screen is a kind of diaphragm extending vertically and longitudinally across the hot-air chamber and reaching into the water-tank, which also extends the entire length of the ornamental grating and is located at the bottom thereof, and being composed of pendent wires with sponges upon them that are in contact with each other the fluid in the tank will be carried up by capillary attraction and diffuse itself throughout, the entire screen or diaphragm, and the heated air in its passage through the interstices of this wet sponge-screen will become moistened and impregnated or tintured with whatever disinfectant or aromatic substance may have been introduced, dissolved, or commingled with the water of the tank. The combination of the series of hoods with the smoke and air flues is such that each hood is arranged to occupy a position directly above and in suitable proximity to the smoke-flues to cause a reversion of the current of burning gas and smoke and deflect them downward upon the upper surfaces of the air-heating tubes from opposite directions, whereby the combustion of the smoke and gas will be increased while in immediate contact with the air-flues, and consequently a higher degree of heat will be communicated to the air-heating tubes or flues.

In the drawings, D D' denote the back plates of the fire-place, between which air entering from without through opening N or elsewhere is heated as it is drawn up behind the grate E and passes through the hot-air flues B. Thence it passes through chamber 7 and the sponge-screen S, and finally through the ornamental grating *a* into the apartment to be warmed thereby. Of course this fire-place like any open grate will radiate heat from the burning fuel.

D'' D''' denote the side plates of the fire-place, and the chambers between them respectively at each side communicate with the air-chamber B' at the back of the fire-place. The left-hand front of the fire-place in Fig. 1 is covered by the facing J. A part of the ornamental grating *a* in front of chamber 7, in which the tank W and screen S are located, is omitted, so as to exhibit the outer ends of the air-heating tubes B, which pass directly across the fire-place above the coal-grate E.

H denotes the air-ingress damper, and F the ash-box. The hoods or combustion-deflectors C are not shown in Fig. 1, but are represented in their proper position above the flattened smoke-flues in Fig. 2, also as detached in Fig. 6.

The series of combined air-flues B and combustion-flues A, together with the wide flanges which form the chamber 7 and the narrow flanges at the edges of the wide flanges, by means of which the combined series of flues is tightly fastened to the upper edges of the side plates and back plates of the fire-place, as shown in Fig. 3, will be cast as one piece.

Above the series of hoods C, within the

chimney R, there is a gas or a smoke combustion chamber M, provided with a damper T, to regulate the draft. The ornamental grating *a* is removable to afford access to the water-tank W and screen S. The wires of this screen, upon which small sponges are secured by thrusting the wires through them, are suspended upon a rod upon which they are hooked, may be adjusted laterally in relation to each other, whereby the screen may be made more or less compact as a sheet of sponge. This capability of adjusting enables the ingress of hot air to be increased or diminished, according to the requirements of heat and ventilation of the apartment into which the heated air will enter.

It may properly be observed that fire-places constructed with these improvements serve most effectively to change the atmosphere of an apartment by the constant introduction of fresh external air, which is warmed to any desired degree, and before it becomes vitiated is expelled and replaced by pure air by the natural draft of the fire-place, the impure or vitiated air being drawn off through the chimney. This perfect ventilation continues uninterruptedly so long as combustion of fuel proceeds in the coal-grate and the ingress-damper H is open.

It is apparent that this improved fire-place, with its capabilities of ventilating and imparting to the heated air moisture and aromatic odors and disinfecting rooms in which it is used, will be found especially adapted to chambers, where pure air is so important, and of great advantage in rooms of invalids, in hospitals, &c.

Having described my invention, I claim and desire to secure by Letters Patent—

1. A fire-place and a fresh-air passage in the rear of said fire-place and in operative contact therewith, in combination with a series of alternated smoke and fresh-air flues, said fresh-air flues establishing communication between said fresh-air passage and the apartment and said smoke-flues establishing communication between said fire-place and the chimney, and a series of deflecting-hoods above and parallel with said smoke-flues, the spaces between said deflectors being above said air-flues, substantially as set forth.

2. A fire-place, a fresh-air passage in the rear of said fire-place and in operative contact therewith, and a series of alternated smoke and fresh-air flues, said fresh-air flues establishing communication between said fresh-air passage and the apartment and said smoke-flues establishing communication between said fire-place and the chimney, in combination with a series of vertically-adjustable deflecting-hoods above and parallel with said smoke-flues, the spaces between said deflectors being above said air-flues, substantially as set forth.

3. A fire-place, a fresh-air passage in the rear thereof and in operative contact therewith, a hot-air chamber above said fire-place

and in direct communication with the apartment, flues connecting said fresh-air passage and said hot-air chamber, and an open liquid-holding reservoir within said hot-air chamber, in combination with a screen or diaphragm extending across said hot-air chamber and in operative contact with the liquid in said liquid-reservoir, substantially as set forth, whereby the air heated by said fire-
10 place must pass through said screen before entering the apartment.

4. A fire-place provided with projecting lips or ledges, a fresh-air passage in the rear of said fire-place and in operative contact there-
15 with, and a series of alternated smoke and fresh-air flues, said fresh-air flues establishing communication between said fresh-air pas-

sage and the apartment and said smoke-flues establishing communication between said fire-place and the chimney, in combination with 20 a series of vertically-adjustable inverted trough-shaped deflecting-hoods above and parallel with said smoke-flues, the spaces between said deflectors being above said air-flues, vertical plates to which said hoods are 25 secured, and adjusting rods or pendants supporting said vertical plates, said rods or pendants having notches co-acting with said lips or ledges on the fire-place, substantially as set forth.

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Witnesses:

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