(No Model.) 2 Sheets—Sheet 1.

A. WILLGEROTH.

HEATING AND VENTILATING APPARATUS.

No. 484,272. Patented Oct. 11, 1892.

Fig 2.

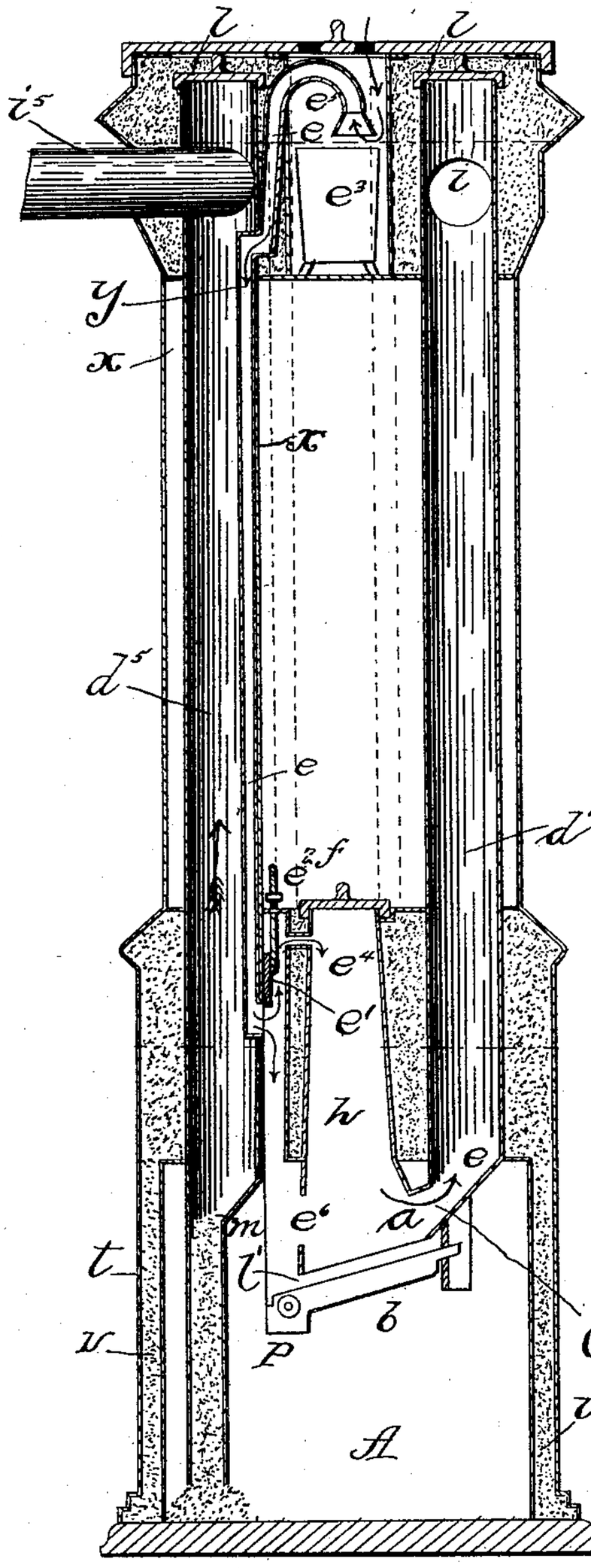
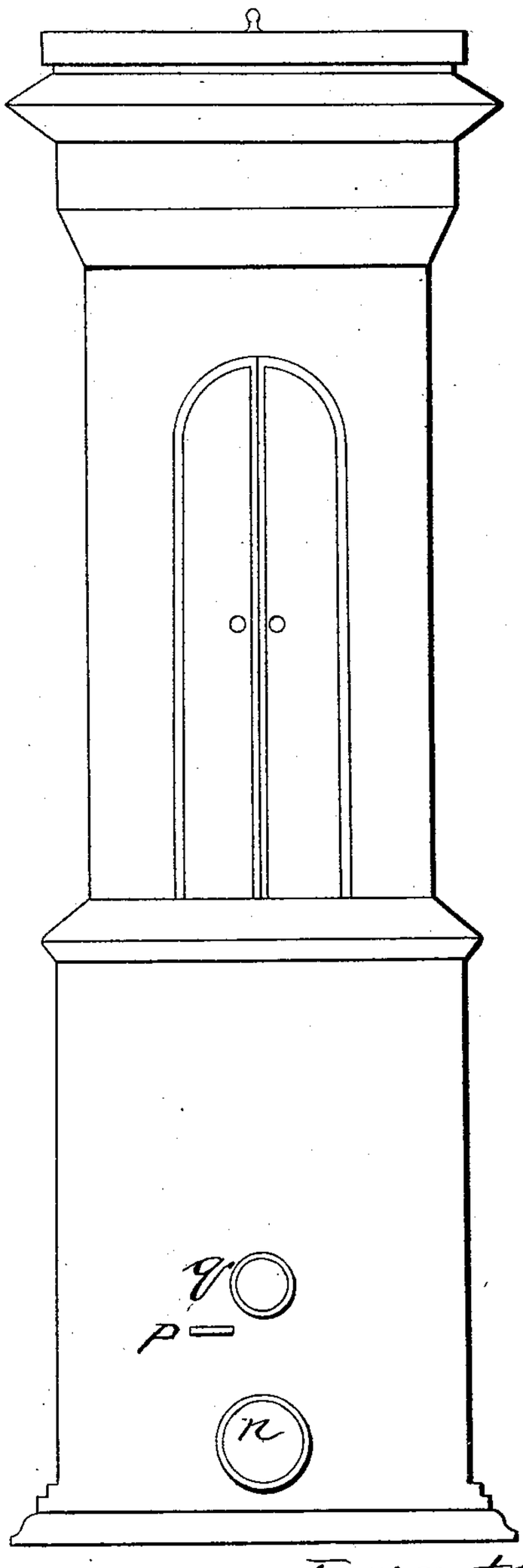


Fig 1.



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by Ellis Spear
Atty

(No Model.) 2 Sheets—Sheet 2.

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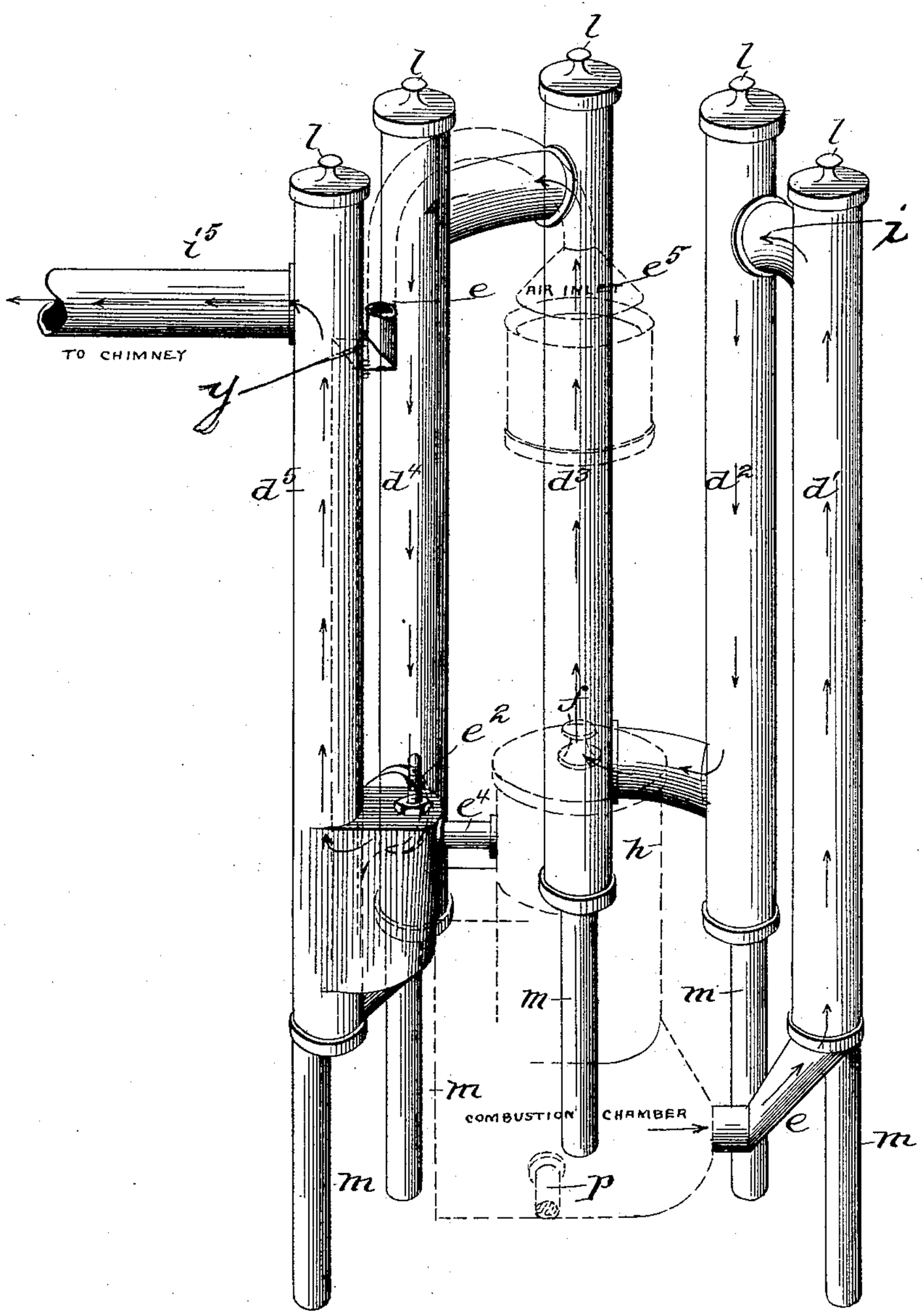
Fig. 3.



Witnesses
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F. B. Keefer.

Inventor
August Willgeroth
by R. S. & P. Greenforth,
His Attorney

UNITED STATES PATENT OFFICE.

AUGUST WILLGEROTH, OF STADTOLDENDORF, GERMANY.

HEATING AND VENTILATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 484,272, dated October 11, 1892.

Application filed January 2, 1889. Serial No. 295,162. (No model.) Patented in Germany January 1, 1888, No. 45,461.

To all whom it may concern:

Be it known that I, AUGUST WILLGEROTH, of Stadtoldendorf, in the Duchy of Brunswick and German Empire, have invented a new and useful Heating and Ventilating Apparatus, (no patents being obtained by me anywhere for this invention, save in Germany, No. 45,461, dated January 1, 1888,) of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to heating and ventilating apparatus.

The invention is illustrated in the annexed drawings, in which—

Figure 1 shows an outer view of the stove, and Fig. 2 a longitudinal section through the same. Fig. 3 is a perspective view of the heating and conveying pipes for the products of combustion.

Heating or warming apparatus as hitherto used are attended with disagreeable and health-endangering effects, consisting more especially of smoke and dust which penetrate through the joints and doors of the stoves into the rooms where the same are located and of the waste occasioned by non-use of the greater part of the combustible gases by allowing them to escape without being burned. In consequence of these defects I have been induced to design or invent a heating apparatus, which, while it effects a great saving, affords simplicity of construction and not only prevents smoke and dust from penetrating into the space in or in connection with which it is placed, but also carries away dust, the smoke of tobacco and cigars, and other health-endangering vapors or gases that are created in dwelling-rooms.

The apparatus comprises a tightly-closed ash-pit A, which at the same time serves to heat the air used in the furnace to support combustion of the fuel, and seldom requires to be cleared out during the cold season. This clearing out is effected through the door *n*.

a is the fireplace, having a hanging grate *l'*, (the real hearth of the fire.) At the lower part of the hopper *h* is provided the bridge C, which causes the gases produced to be more readily burned, and communicates through the smoke-pipe *d'* and knee *i'* with the pipe i^5 of the chimney by way of the pipes d^2, d^3, d^4, and d^5. Above the center of the fireplace *a* is arranged the coal-hopper *h*, which receives sufficient coals to last a considerable time and delivers them, as required, to the fireplace *a*. The combustible matter can pass away only through the fire, and in passing the point C is ignited. The ventilating-pipe *e* is fixed in the heating pipe d^5, so as to heat the air received into its upper flared end and used in the fire to a high degree, and it can be regulated by the valve *e'* by means of the screw e^2, by which means, while it is open, air that has been made moist or damp by the water in the bucket e^3 is admitted to the grate, and so burns the gases more effectually, the air entering partly through the opening e^4, but the main part through the opening e^6 in the hermetically-closed preparatory heater.

The walls of the pipe d^5, Fig. 1, are shown at *x x* on each side, and it will be seen that the pipe or air-passage *e* enters the pipe d^5 at the point *y* and extends down within the space thereof to the valve *e'*.

The water in the bucket e^3 is heated by its proximity to the conducting-pipes and the heating-space beneath it. The air enters the pipe e^5, as shown by the arrow, Fig. 2. The covers *l* are lifted off through suitable openings above them formed in the casing.

The state of the fire is observed through the cover or door *n*.

The cleaning of the smoke-conduit is effected through the covers *l*, which are seated in sand, in order to produce a hermetical closing.

For the reception of soot and its removal I use the funnels *m*, and the removal or cleaning can be effected during the firing, as the soot need not be drawn or passed over the grate.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In combination, the fire-box, the conduits for the products of combustion, including the pipe d^5, the ventilating-pipe *e*, extending from the top of the heater to the fire-box, the openings e^4 and e^6, and the valve *e'*, arranged to control the admission of air through the opening e^4, leading to the top of the hopper, the said opening e^6 leading to the fire-box.

2. In combination, the lower casing contain-

ing the fire-box and ash-pit, a series of vertical conduit-pipes for the products of combustion, connected to each other, each of said pipes having a funnel extension *m* at its lower end extending into the ash-pit, substantially as described.

3. In combination, the lower casing containing the fire-box, ash-pit, and hopper with filling or sealing material, the upper casing, also having sealing material, the series of vertical conduit-pipes extending from the lower to the upper casing, the funnels *m* at the lower ends of the said pipes, and the movable covers seated in the sealing material and closing the upper ends of the pipes, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

AUGUST WILLGEROTH.

Witnesses:

PAUL FISCHER,

B. ROI.