3 Sheets Sheet 1.

James W. Tefft.

Assignor to himself, Henry Le Bosquet and Perry C. Rude.

Apparatus for Consuming Smoke and Gas.

117696 PATENTED AUG 1 1871

Fig. 1.

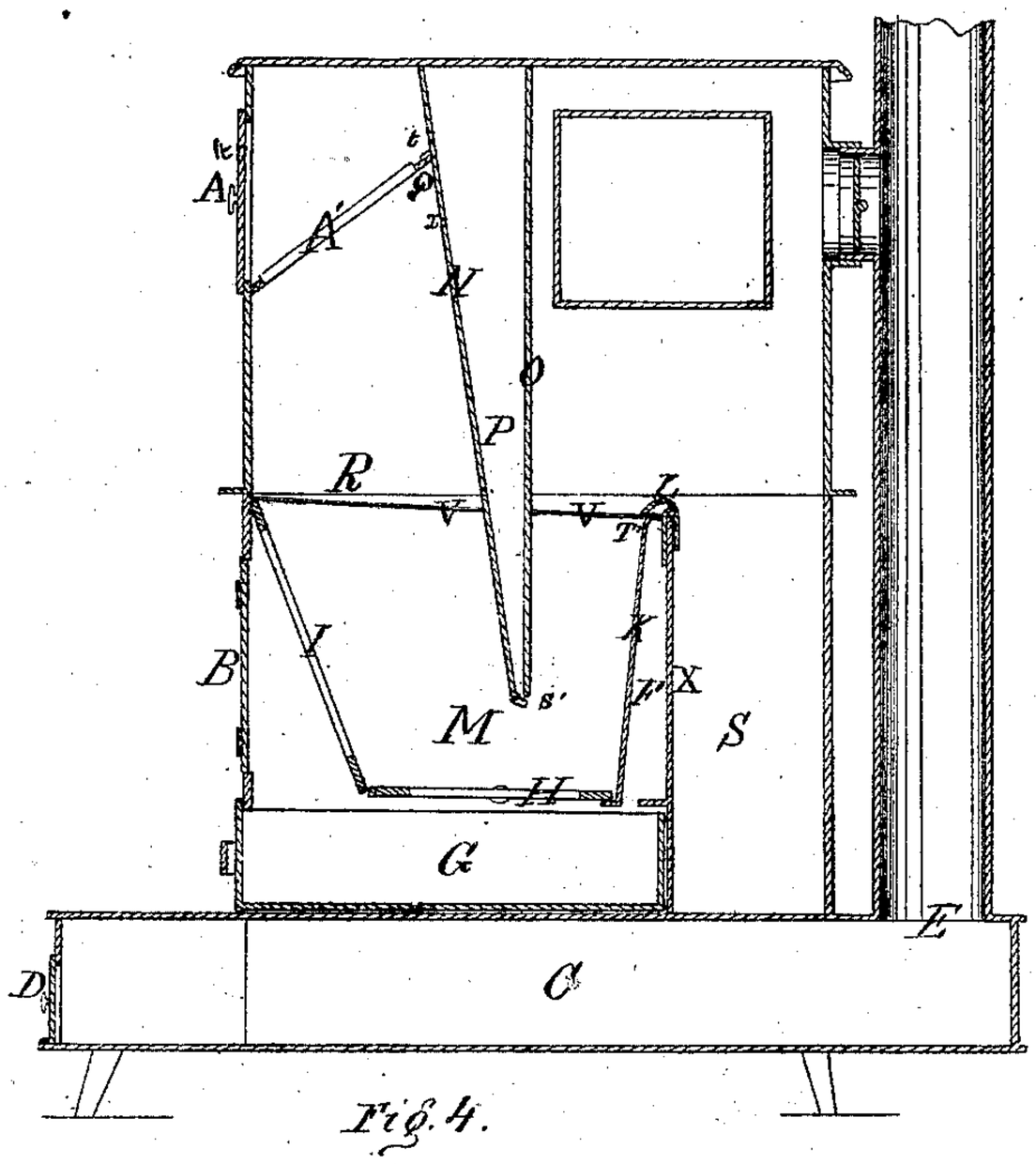
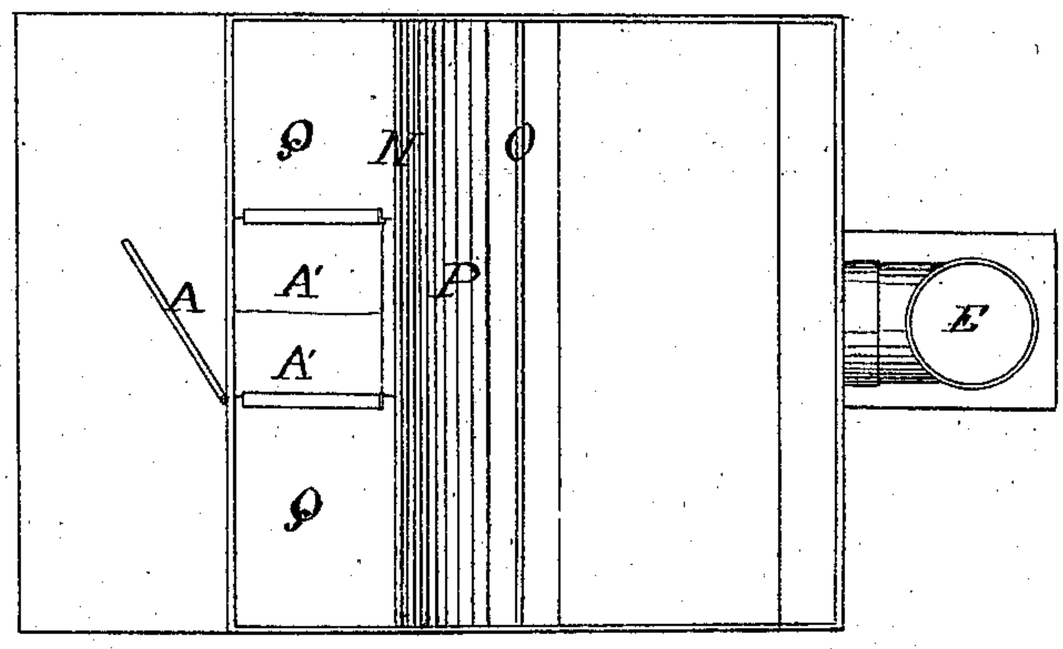


Fig. 4.



Witnesses.
Theodore Bumgen
Dennis Finney

Jas W. Tefft. Inventor.
by Cox & Cox
His Attorneys.

Jas W. Tefft. 3 Sheets Sheet 2

Assignor to himself, Henry LeBosquet and Perry C. Rude

Apparatus for Consuming Smoke and Gas.

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Fig. 2.

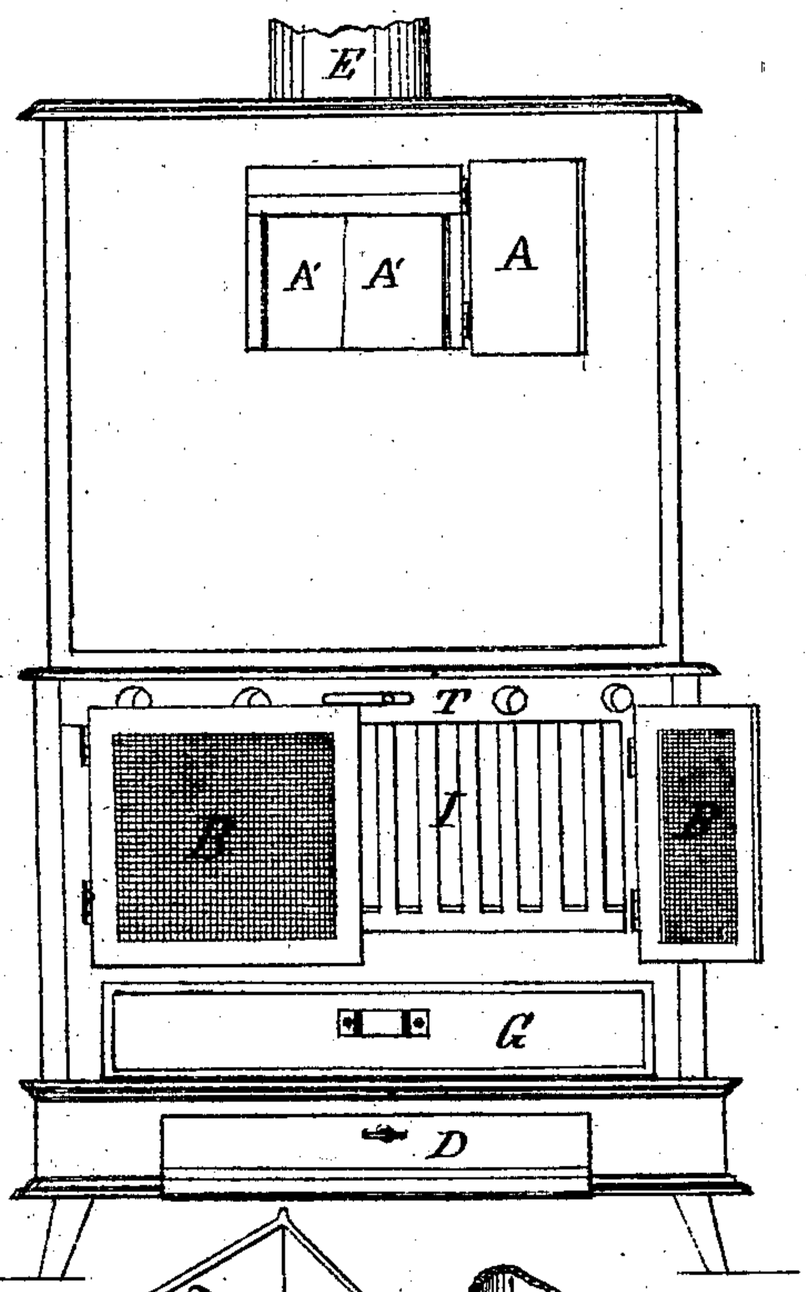
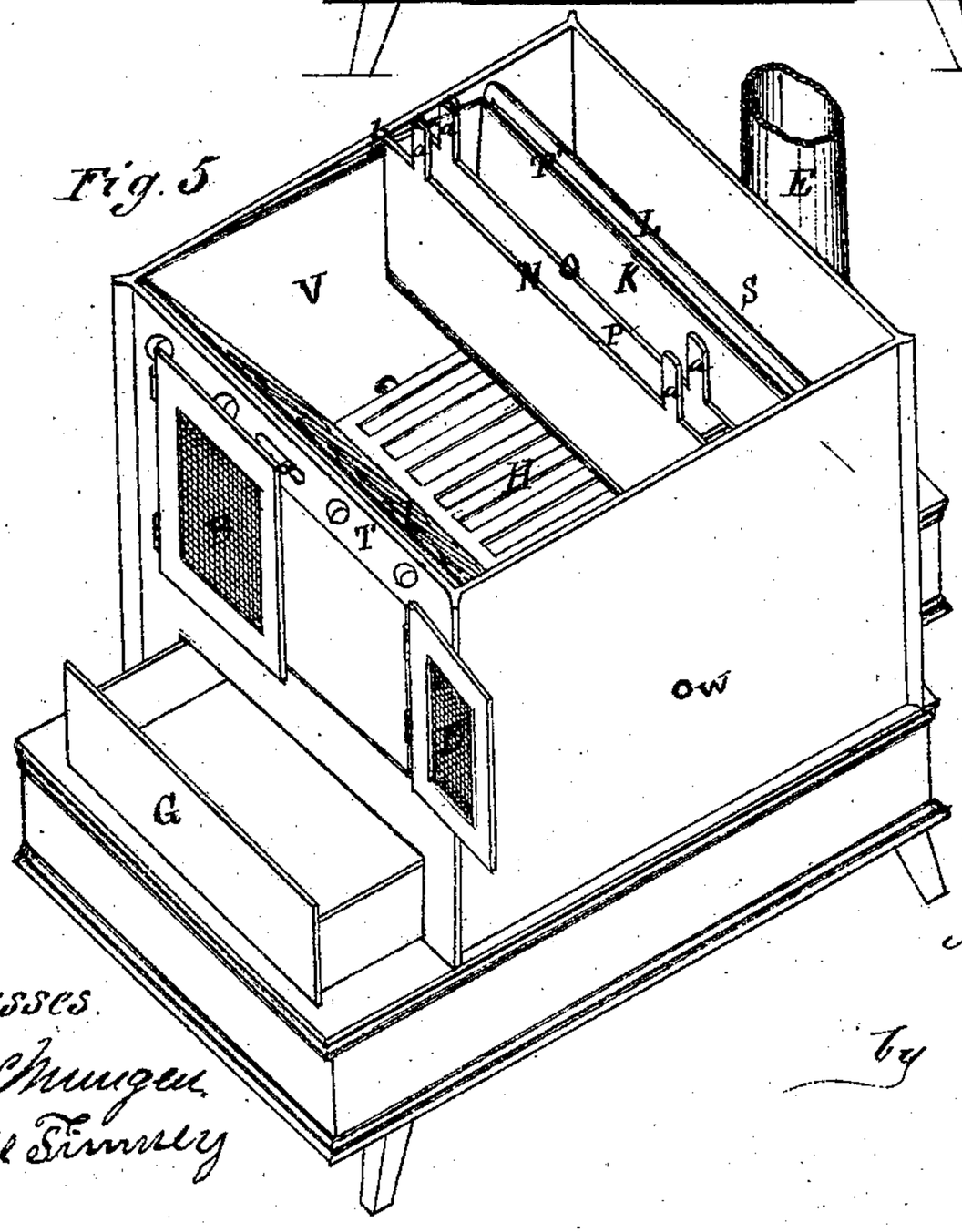


Fig. 5



Witnesses.
Theodore Thurgen.
Dennis Finney

Jas W. Tefft Inventor
by Cox & Cox
his Attorneys.

Jas. W. Tefft.

3 Sheets Sheet 3

Assignor to himself, Henry Le Bosquet and Perry C. Rude

Apparatus for Consuming Smoke and Gas.

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Fig 3

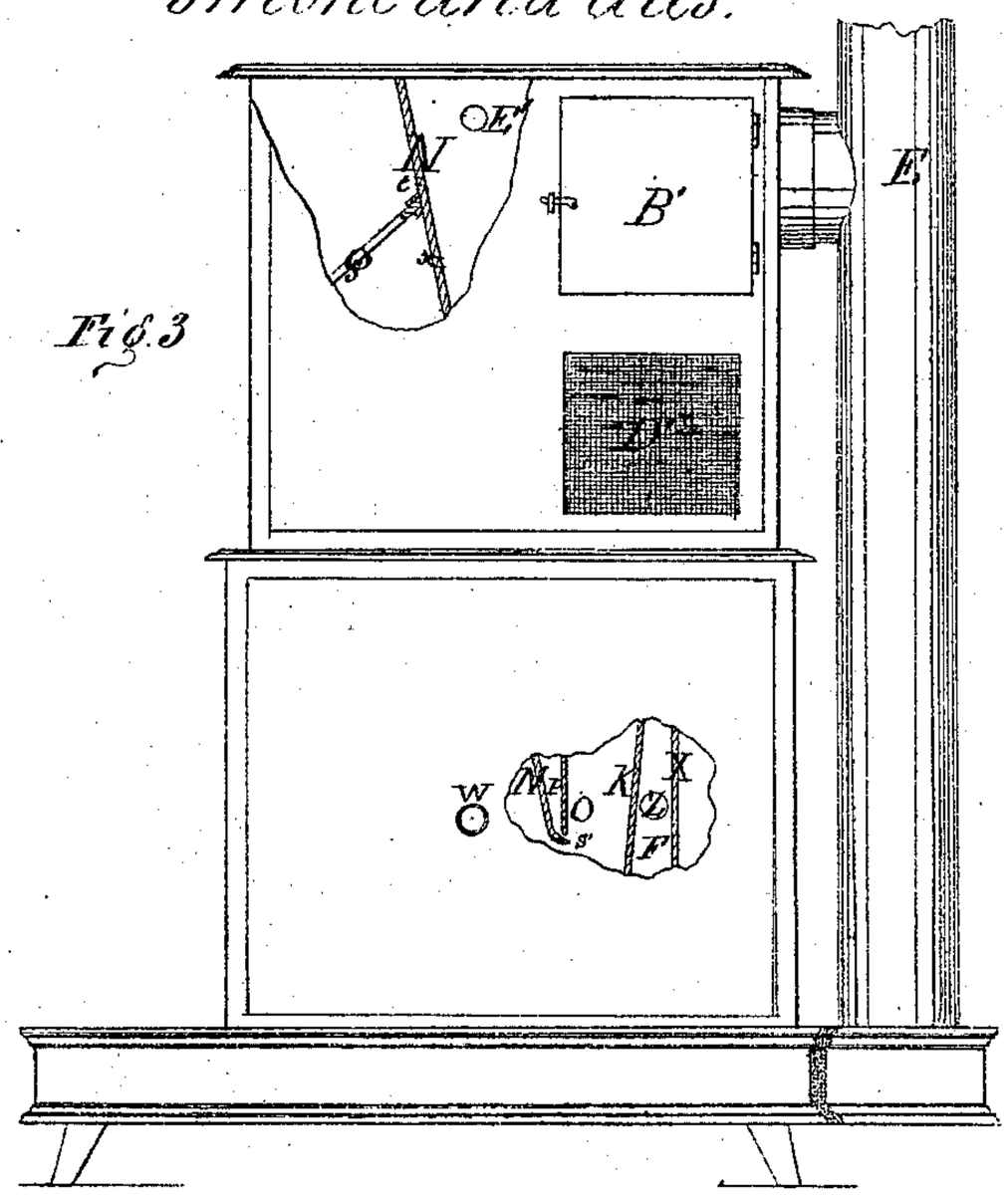


Fig 6

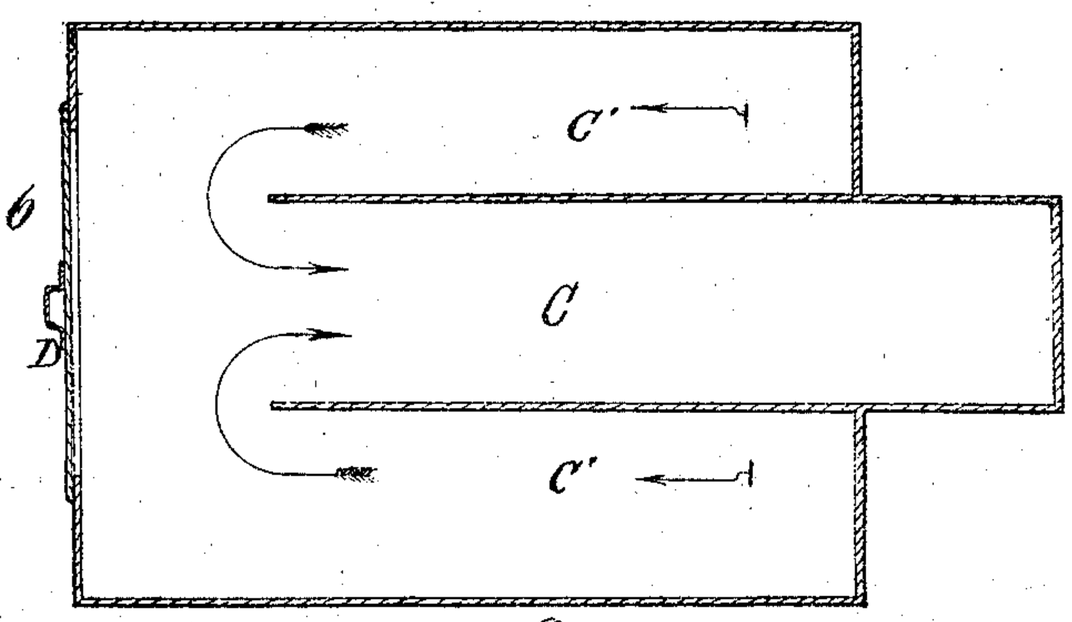


Fig 7

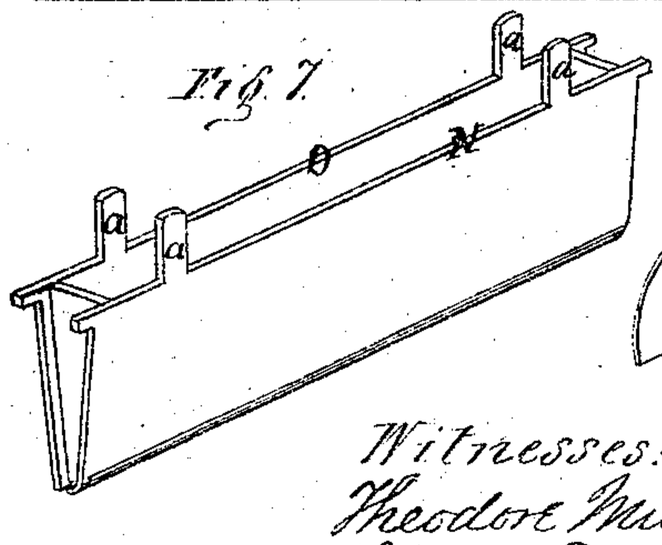
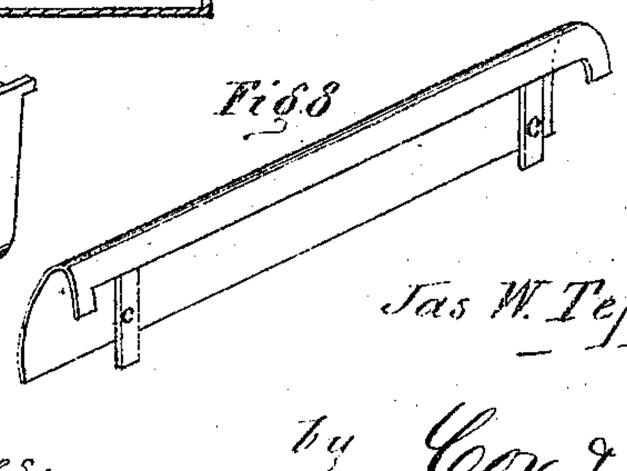


Fig 8



Witnesses:
Theodore Munger.
Dennis Finney

Jas W. Tefft. Inventor

by Cox & Cox

his Attorneys.

UNITED STATES PATENT OFFICE.

JAMES W. TEFFT, OF DES MOINES, IOWA, ASSIGNOR TO HIMSELF, HENRY LE BOSQUET, AND PERRY C. RUDE, OF SAME PLACE.

IMPROVEMENT IN BASE-BURNING STOVES.

Specification forming part of Letters Patent No. 117,696, dated August 1, 1871.

To all whom it may concern:

Be it known that I, JAMES W. TEFFT, of Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Improvement in Apparatus for Consuming Smoke and Gas, of which the following is a specification, reference being had to the accompanying drawing.

The invention relates to that class of devices for heating purposes which is intended to consume, in the process of combustion, the gaseous products thereof, and is intended to be applicable to all varieties of heaters, being, however, in the present instance, shown as incorporated in a stove adapted to ordinary heating and cooking. The object of the invention is to consume the products of the combustion, and to thus derive the greatest possible amount of heat from all combustible matter used or evolved in such use, as well as to obviate the obstruction of pipes and flues by the deposits of smoke or gas. The object of the invention is effected by means of a depending draught-chamber or conduit, having its base open and in the fire-chamber, supplying the fuel therein with a current of air, which, in descending the conduit, creates a draught, carrying with the flames such of the products of combustion as may have escaped into the upper parts of the device. An upright draught-chamber, of generally similar construction to that above, is placed in the rear and opposite to it, and supplies the products of combustion in the combustion-chamber with a draught of air drawn from below. By these means the flames and products of combustion are subjected to two distinct currents of air. To prevent the too rapid consumption of fuel a magazine or reservoir is provided above the base of the first-mentioned draught-chamber, filling the entire capacity of the device below the plate through which the fuel is charged, the outside of which reservoir is acted upon by cold air on all sides.

Figure 1 is a vertical central section from front to rear of a device exhibiting the elements of the invention. Fig. 2 is a front elevation of same with portions of the front broken out. Fig. 3 is a side elevation of same with portions of the side broken out. Fig. 4 is a plan view of same, the top of the stove being removed. Fig. 5 is a perspective of the interior of the same through the line. Fig. 6 is a plan view of the base of same. Fig. 7 is a perspective of the base of the air or draught-chamber when made detachable. Fig. 8 is a view of the top of the air or draught-chamber when made detachable.

A in the accompanying drawing is the feed-door through which the feed is supplied. B are the grate-doors, having grated or mica fronts. T is a sliding damper. B′ is the oven-door. D′ are mica windows. The bed of the device has one flue, C, provided in front with the flue-stopper D and connected with the stove-pipe E. It has also two horizontal conduits, one on each side of the flue, connecting with the vertical conduit S. Above the bed of the stove, and between the front wall of the conduit S, the sides of lining of the stove, and the lower portion of the front thereof, is the ash-pit, provided with a drawer, G. Above the central portion of the ash-pit is placed the tilting grate H, forming the horizontal base of the fire-chamber. The inclined grate I is of the same length as the bed-grate, and may be either open or blank. The top of the inclined grate is opposite, but slightly above, the upper edge of the sliding damper T, and is inclined at such angle as to induce a gradual movement of the fuel, while in process of combustion, from the front toward the back of the stove. The rear surface of the lower portion of the grate I touches the front edge of the bed-grate H, the combined superfices of these two grates forming the bottom and front of the fire-chamber, which is provided at each end with the lining V. The back of the fire-chamber extends to a point about opposite the top of the grate I, and inclines from rear to front. A plate, K, is set or cast vertically in the stove, and extends from side to side thereof, forming the front wall of the conduit S, and placed so that its upper parts come nearly in contact with the corresponding parts of the back of the fire-chamber. The upper edge of plate X is provided with a cap or curved edge, L, the lip of which projects toward the front, extending over the top edge of the back of the fire-chamber, leaving, however, a proper space between the same and the under surface of said edge. The cap or upper part of plate X may be made detachable, as shown at Fig. 8, in which case this part consists of a curved piece of sheet metal, having one side longer than the other, and is provided near each end with ears, which project from the concavity of the cap so that the upper edge of the fixed portion of the plate X can pass

between the ears *c* and the interior of the back or long portion of the cap, the front edge of which is provided with an opening extending its entire length, except small portions on each end, which serve to support the front of the cap, Fig. 8, thus affording an opening above the top of the back of the fire-chamber M. The space between the rear surface of the back of the fire-chamber and the front surface of the plate forms the vertical draught-chamber or air-conduit F, and is provided with the apertures Z, as shown. The plates N and O extend from one side of the stove to the other, and are secured, at a proper distance from the front and rear thereof, in such position that their upper edges are properly separated; but as the plates extend downward they approach each other until they are but slightly separated at their lower edges, which are opposite the horizontal center of the back of the fire-chamber. The lower edge of the plate extends over and slightly to the rear of the lower edge of the plate, leaving an interval between said portions of the said plates. The space between the plates N and O forms the draught-chamber or depending air-conduit P, which is provided with the apertures, as shown. The plate N has a series of holes, properly separated from each other, above and below the junction of the covering-plate Q. The lower portion or base of the draught-chamber may be made detachable, as shown at Fig. 7, and when thus constructed consists of a metal trough, closed at each end, and provided with ears fitting between small uprights *b* on the upper edge of the lining V. The base, Fig. 7, has also projections at each side near its ends, which fit upon the outside of the lower part of the fixed portions of the plates N and O. One of the lower edges of the base extends over the other, in a manner similar to that above described, in case when the base is a part of the plates N and O. The covering-plate Q, provided with the sliding-doors A′, is placed at a proper distance below the front part of the top of the stove, and inclines from rear to front, so that the aperture between the sliding doors A′, when open, is directly opposite the door A, the upper edge of the covering-plate Q being secured to the exterior surface of the plate N; the lower edge to the interior of the front of the stove below the bottom of the door A. The reservoir R extends the entire length of the fire-chamber M, being that portion of the interior of the stove between the line of combustion below, the covering-plate Q above, the front surface of plate K in the rear, and the interior surface of the front of the stove above the line of combustion and below the front edge of the covering-plate Q in front.

The fuel being placed in the fire-chamber and the process of combustion commenced, the reservoir can be filled, thus affording to the action of the fire a surface of fuel equal to the horizontal plane between the plate and grate. The depending draught-chamber P conveys a horizontal sheet of cold (and, after the combustion progresses sufficiently to heat the plates N and O, of warm) air to the surface of the burning fuel at the point S′, and across the entire breadth of the fire-chamber from one side to the other, this draught being supplied directly with air through the apertures E′, and indirectly through those at *t′* in the door A, thence through the holes *t*, thus carrying off and into the combustion any gases that may escape from the doors A′ into the space above. Said draught is also supplied with air through the apertures *x*, which thus carries off any gases that may be confined in the upper part of the reservoir. At the same time the vertical draught-chamber F supplies the products of the combustion at the point T′ with a similar sheet of air to that above mentioned, this chamber being supplied with air through the apertures Z. The draught-chambers P and F thus feed the combustion and the gaseous products thereof with oxygen, rendering the same inflammable and causing their consumption. After passing above the top of plate X the heated air is drawn downward through the vertical conduit S, thence forward through the conduits C′ around the same into the flue C, and thence into the pipe at its rear end.

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

1. The draught-chamber P extending into the fire-chamber M and provided with a slot, S′, across its whole end or base, as and for the purposes described and shown.

2. The combination of the draught-chambers P and F, when constructed and arranged substantially as shown and specified.

3. The apertures *t* in the draught-chamber P, arranged relatively to the apertures in the door A, as and for the purposes shown and described.

4. The detachable base of draught-chamber P, as shown at Fig. 7, when provided with a slot across its whole base or end.

5. The reservoir R, filling the entire capacity of the device below the plate A′ and in front of the plane of the front surface of the chamber P, and being of greater depth at its base than at its top, substantially as shown and described.

6. The combination of the chambers P and F, constructed and operating as shown and described, with the reservoir R, substantially as shown and described.

In testimony that I claim the foregoing improvements in apparatus for consuming smoke and gas, as above described, I have hereunto set my hand and seal this 15th day of April, 1871.

J. W. TEFFT. [L. S.]

Witnesses:
R. C. CHRISTY,
A. C. BIDWELL.