(No Model.) 2 Sheets—Sheet 1.

I. S. McGIEHAN.

REFUSE BURNER.

No. 554,453. Patented Feb. 11, 1896.

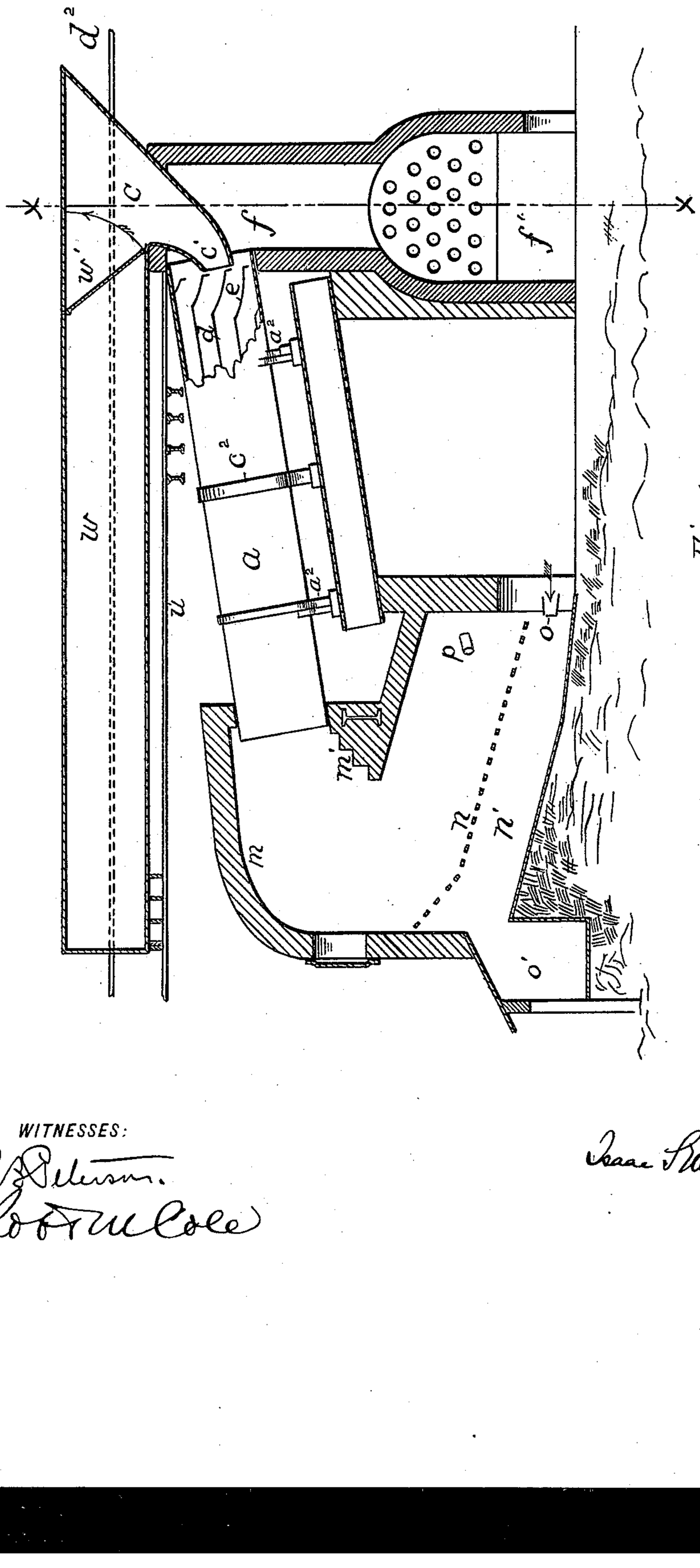

Fig. 1.

WITNESSES:

A. D. Wilson.

Robt. M. Cole

INVENTOR

Isaac McGiehan

(No Model.) 2 Sheets—Sheet 2.

I. S. McGIEHAN.

REFUSE BURNER.

No. 554,453. Patented Feb. 11, 1896.

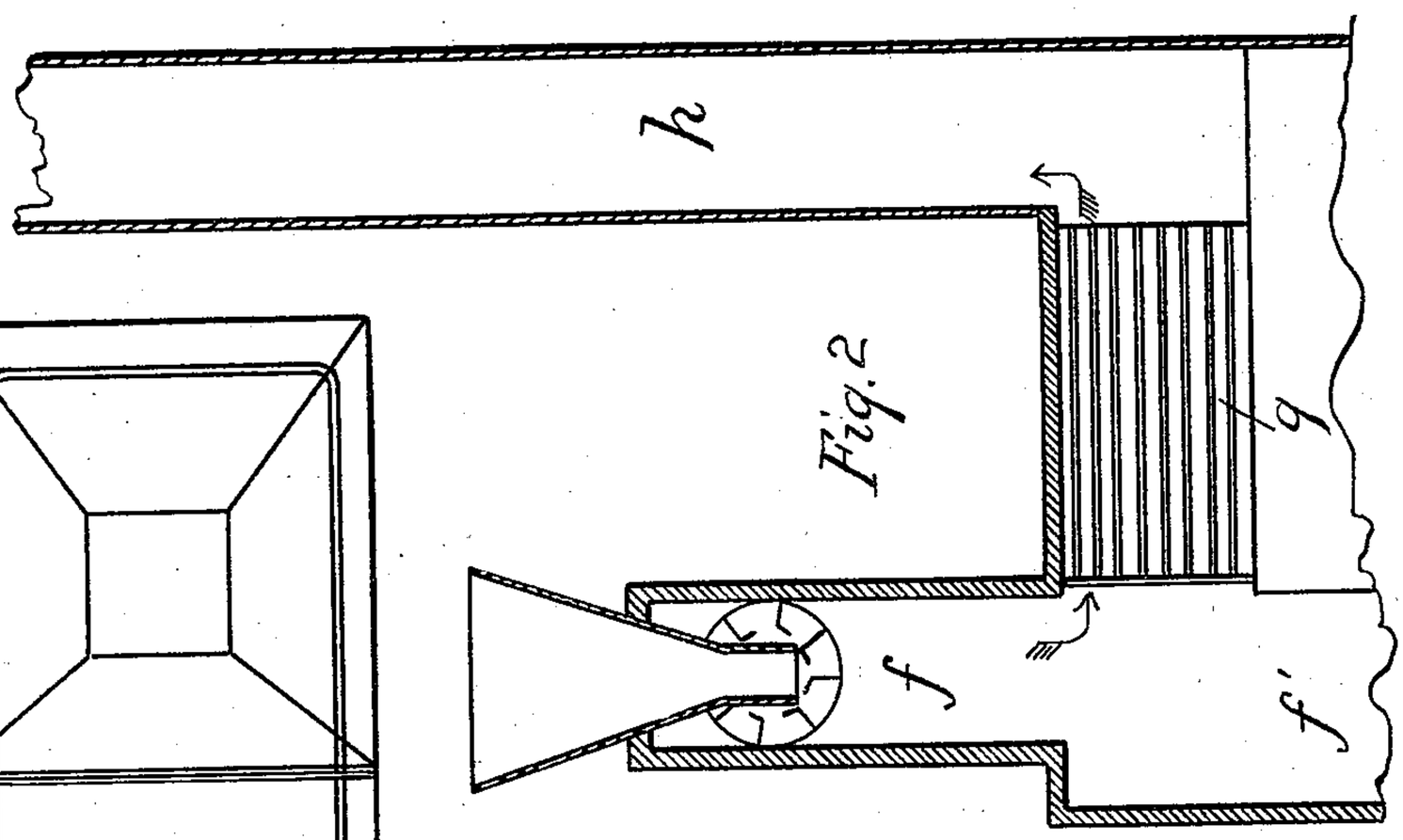

Fig. 2

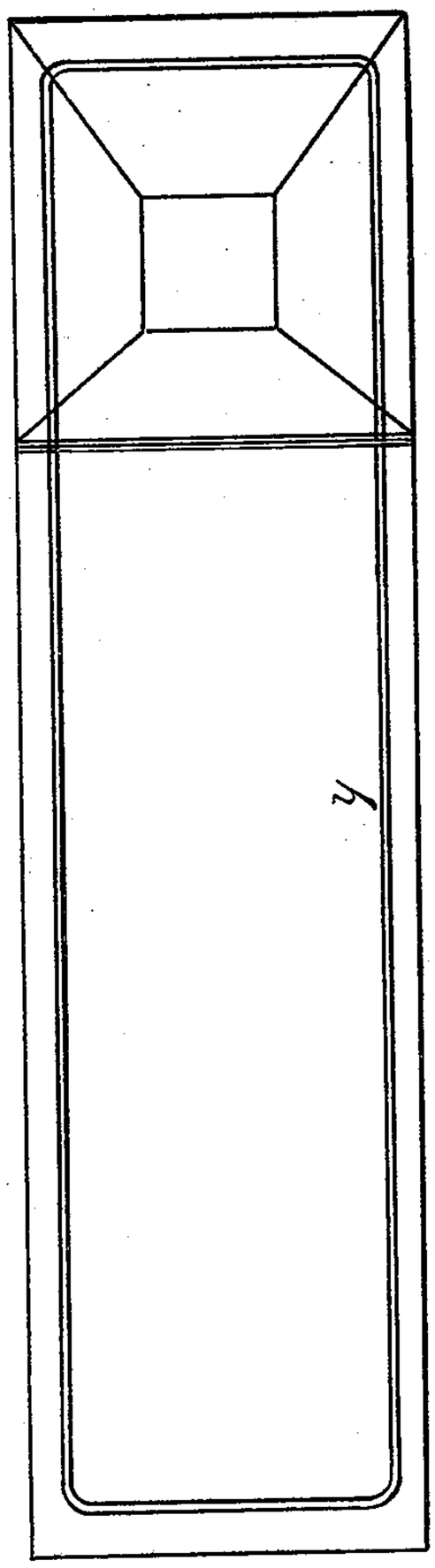

Fig. 3

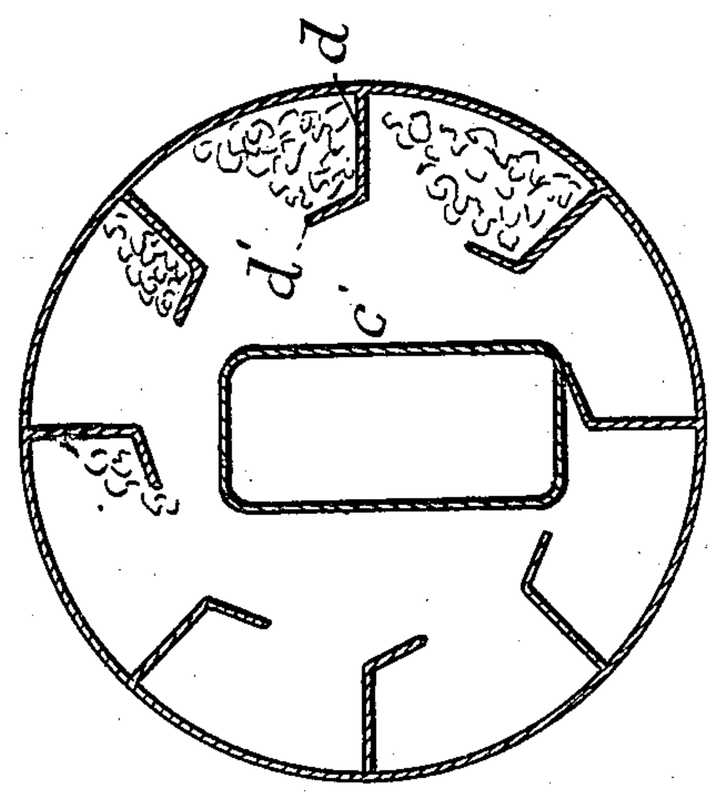

Fig. 4

WITNESSES:

A. S. Johnson.

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INVENTOR

Isaac S. McGiehan

UNITED STATES PATENT OFFICE.

ISAAC S. McGIEHAN, OF NEW YORK, N. Y.

REFUSE-BURNER.

SPECIFICATION forming part of Letters Patent No. 554,453, dated February 11, 1896.

Application filed December 2, 1895. Serial No. 570,799. (No model.)

To all whom it may concern:

Be it known that I, ISAAC S. McGIEHAN, of the city, county, and State of New York, have invented a new and useful Improvement in Refuse-Burners, of which the following is a specification.

This invention relates to refuse-burners, and has for its object to provide a means by which the refuse is delivered to a primary fuel-support through a rotary cylinder furnace, the primary fuel-support so arranged as to deliver the refuse to a grate located beneath the primary fuel-support, where the refuse is consumed, as will be hereinafter explained.

In the accompanying drawings, which form a part of this specification, my invention is fully illustrated with similar letters of reference to indicate corresponding parts, as follows:

Figure 1 represents a longitudinal vertical section through the center of my improved refuse-burner. Fig. 2 represents a transverse section on the line *x x*, Fig. 1. Fig. 3 is a top view showing the storage-box and mouth of the feed-chute. Fig. 4 is a cross-section through cylinder *a*.

Referring to Fig. 1, *a* represents a rotary brick-lined cylinder to which the refuse is fed by means of the hopper *c*. The cylinder *a* is provided with internally-projecting flanges, as *d*, Figs. 1 and 4. These flanges have their edges bent, as represented at *d*, so as to carry the refuse to the top of the cylinder before dumping it when being rotated in one direction, and to dump it at an earlier period of the revolution when being rotated in the opposite direction. The upper ends of the flanges *d* are also bent at an angle around the inside of the cylinder, as at *e*, in the form of an auger, so as to cut the refuse more quickly away from the end of the hopper and start it on its downward passage through the cylinder, also to prevent its feeding too rapidly by rotating the cylinder in the opposite direction.

The upper end of the cylinder *a* is adjusted within the vertical flue *f*. The hopper *c* rests on top of the same flue with its delivery end extending inside of the cylinder in such a manner as to deliver the refuse therein. The small square space marked within Fig. 4 represents the delivery end *c'* of the hopper, showing the space on each side of the same, through which the blaze and heat pass to the flue *f*.

Fig. 2, by means of the arrows, illustrates the direction which the blaze or heat travels after leaving the cylinder—to wit, down through the flue *f*, then laterally through the tubes of the boiler *g* to the chimney *h*, through which it passes away above.

The lower or delivery end of the cylinder *a* is adjusted within the furnace *m*, which is so constructed as to form a primary fuel-support, as *m'*, upon which the refuse is delivered from the cylinder *a*, where it remains in direct contact with the greatest heat of the furnace until it drops to the main grate *n* below, the arrangement of the two grates being such that the primary fuel-support delivers the refuse at or above the middle of the lower grate so that the lower grate will receive the refuse properly distributed.

Below the grate *n* is an air-space *n'*, in the front of which is the blowpipe *o* and at the rear of which is the pit *o'*, which receives the residue of fine ash which drops through the grate *n* and is blown up the incline of the air-space *n'* and deposited in the pit. Above the grate *n*, as shown at *p*, is a petroleum-feed which I sometimes use when the refuse is particularly void of combustible element.

When ashes are being fed through the hopper, the force of draft and blaze passing through the cylinder *a* will be sufficient to carry some of the very fine ash through the space beside the hopper *c* and down the flue *f*, and as this is a valuable substance I have provided at the bottom of the flue *f* the ash-pit *f'* to collect it.

Above the flooring *u* is a storage-box *w*, which has a lifting-door *w'* that connects with the hopper *c*, so that refuse can be fed from the storage-box, if necessary, while waiting for the carts, which feed to the hopper direct. Around the storage-box *w* and the hopper *c* is a spray-pipe, as *y*, through which water is sprinkled on the ashes while being dumped.

a^2 represents the rollers which the cylinder *a* turns on, and c^2 represents the gearing by which the cylinder is rotated.

d^2 is the platform which the carts operate from.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a refuse-burner, the combination of a feed-hopper, a rotatable cylinder adapted to

carry refuse material from said hopper, and means attached to the cylinder and adapted to clear away material from the mouth of the hopper, substantially as described.

2. The combination of a feed-hopper, a rotatable cylinder adapted to receive refuse material from said hopper, a combustion-chamber into which said cylinder is adapted to discharge, and a plurality of cutters carried by said cylinder and adapted to clear away material from the mouth of said hopper, substantially as described.

3. The combination of a feed-hopper, a rotatable cylinder as specified to receive material from said feed-hopper, and flanges within said cylinder adapted to feed the material through the same when it is rotated, the ends of said flanges terminating in cutters situated near the discharge end of the feed-hopper so as to clear away material therefrom, substantially as described.

4. The combination with a feed-hopper, of a rotatable cylinder into which said hopper is adapted to discharge, and an auger situated within said cylinder and adapted to clear away material from the mouth of the feed-hopper, substantially as described.

5. A rotatable cylinder, open at one end to receive a mass of refuse material, and provided with internal longitudinally-disposed flanges, said flanges being bent at their edges, so that when the cylinder is revolved in one direction, portions of the refuse material will be carried to a higher point than when the cylinder is rotated in the opposite direction, and the cylinder being inclined so that when the material falls it will be gradually fed forward within the cylinder, in combination with a combustion-chamber into which said cylinder is adapted to discharge, substantially as described.

6. The combination of a cylinder, a primary fuel-support situated at the discharge end of said cylinder, a combustion-chamber surrounding said primary fuel-support, and a secondary fuel-support situated within the combustion-chamber and below said primary fuel-support, substantially as set forth.

7. The combination with a combustion-chamber, of a cylinder adapted to contain refuse material and to deliver it to said combustion-chamber, of a protective shelf situated at the discharge end of said cylinder and adapted to retain material thereon while it is being acted upon by the flames of the combustion-chamber, substantially as described.

8. The combination with a combustion-chamber of a cylinder adapted to contain refuse material and to deliver it to said combustion-chamber, of a shelf or primary fuel-support situated at the discharge end of said cylinder and at substantially the middle point of the combustion-chamber and a secondary fuel-support situated within the combustion-chamber and below the primary fuel-support.

9. The combination of a cylinder, a primary fuel-support situated at the discharge end of said cylinder, a combustion-chamber surrounding said primary fuel-support, a grate situated within the combustion-chamber and below said primary fuel-support, an ash-pit situated below the said grate and terminating in a pocket, and an air-blast pipe, adapted to discharge into said ash-pit, substantially as described.

10. The combination of a combustion-chamber, a grate within the same, means for feeding fuel to said combustion-chamber, an air-blast pipe situated below the grate; the floor below the grate terminating in a pocket, and a suitable outlet-flue whereby the blast may serve not only to affect the combustion but to clear the space below the grate of ashes, substantially as described.

11. The combination of a combustion-chamber, a grate within the same, an ash-pit below the grate, a pocket communicating with the ash-pit, an air-blast pipe within the ash-pit, means for feeding refuse material to the combustion-chamber and adapted to carry products of combustion, and a pocket in communication with said means whereby the air-blast may serve to affect combustion and to clear the ash-pit of ashes, and whereby the second-named pocket may receive the lighter material which is carried through the means aforesaid by the blast, substantially as described.

12. The cylinder *a* downward-draft flue *f* supporting the hopper *c* in combination with the furnace *m* provided with the primary fuel-support *m'*, grate *n* and air-space *n'*, substantially as described.

13. The combination of the furnace *m* provided with the primary fuel-support *m'*, the main fuel-support *n* and the ash-pit *n'* with the cylinder *a*, the downdraft-flue *f*, containing the hopper *c* and boiler *g*, the chimney *h*, and an air-blast pipe *o*, substantially as described.

14. The combination of the rotating cylinder *a* with the downward-draft flue *f*, provided with hopper *c* at its upper end; the feed end *c'* of the hopper leaving sufficient space each side thereof to permit the fine ash and blaze to pass from the cylinder *a* down the flue *f*, and deposit the said ash in the pit thereof, substantially as described.

15. The vertical flue *f* carrying the hopper *c* with the boiler *g* and chimney *h* substantially as described, in combination with the rotating cylinder *a*, as and for the purpose set forth.

In testimony that I claim the foregoing improvement in refuse-burners as above described I have hereunto set my hand this 30th day of November, 1895.

ISAAC S. McGIEHAN.

Witnesses:
SAMUEL S. BROWNE,
ROBT. M. COLE.