

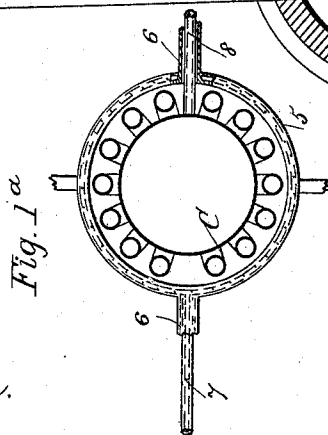
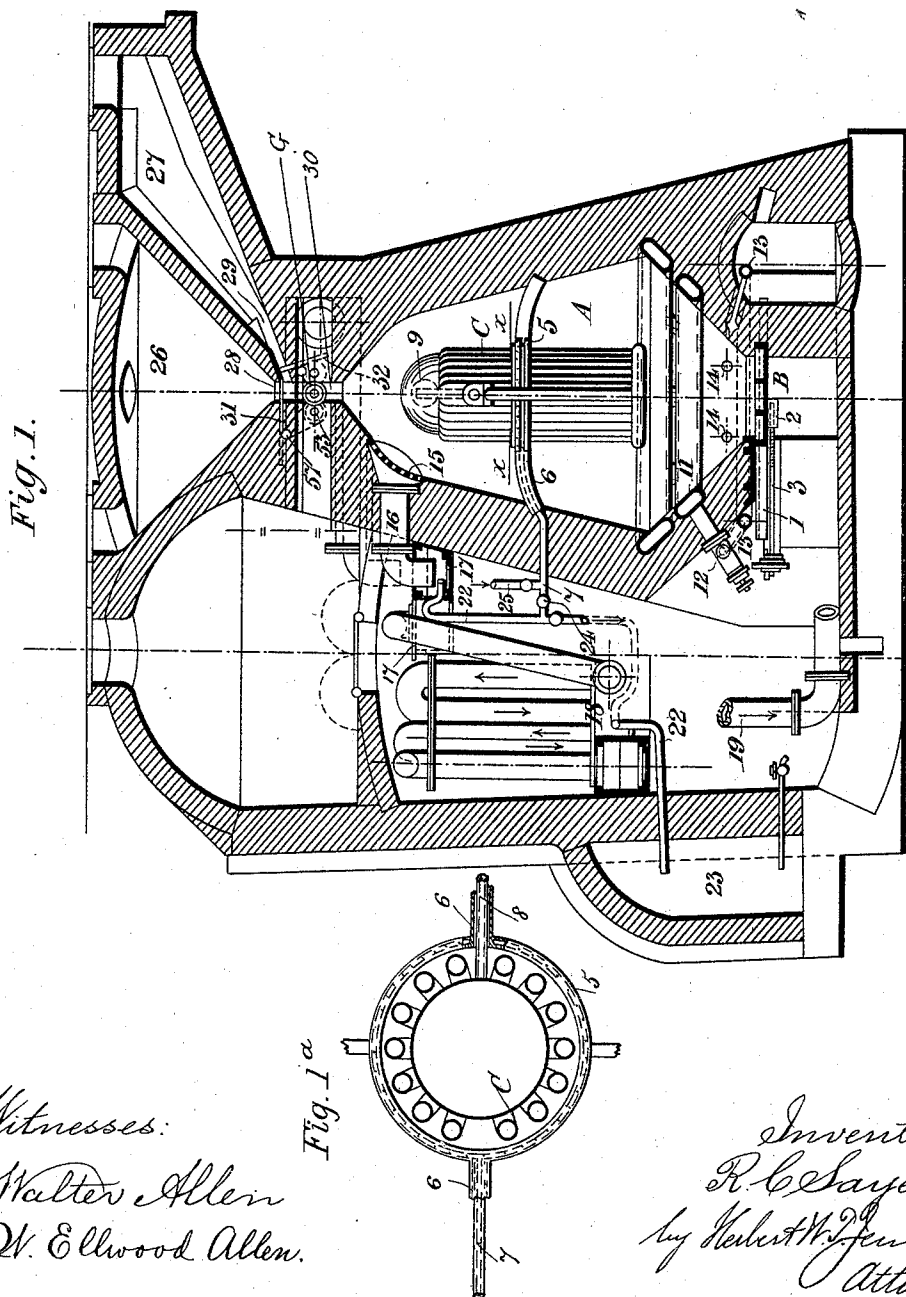
(No Model.)

6 Sheets—Sheet 1.

R. C. SAYER.
REFUSE BURNER.

No. 585,597.

Patented June 29, 1897.



Witnesses:

Walter Allen
W. Ellwood Allen.

Inventor
R. C. Sayer
by Herbert W. Farmer
Attorney

(No Model.)

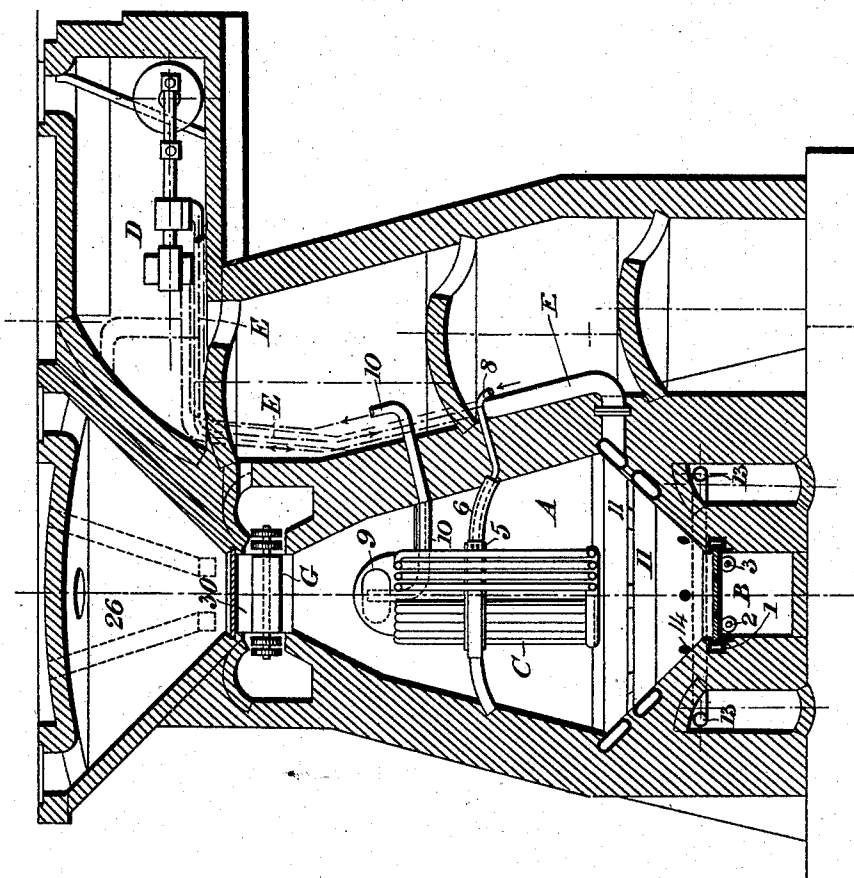
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Fig. 2.



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(No Model.)

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Fig. 4.

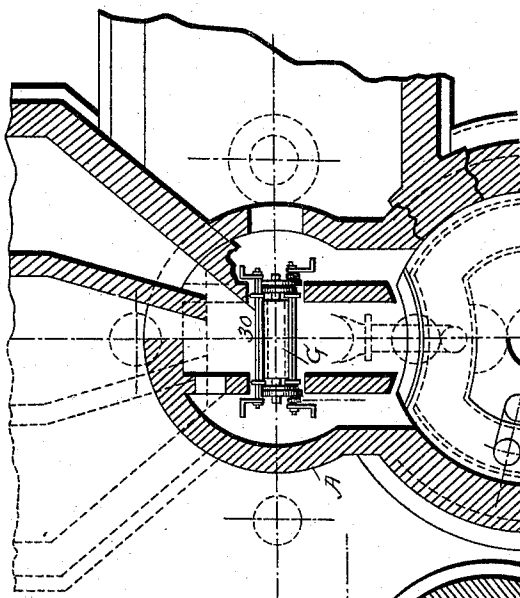
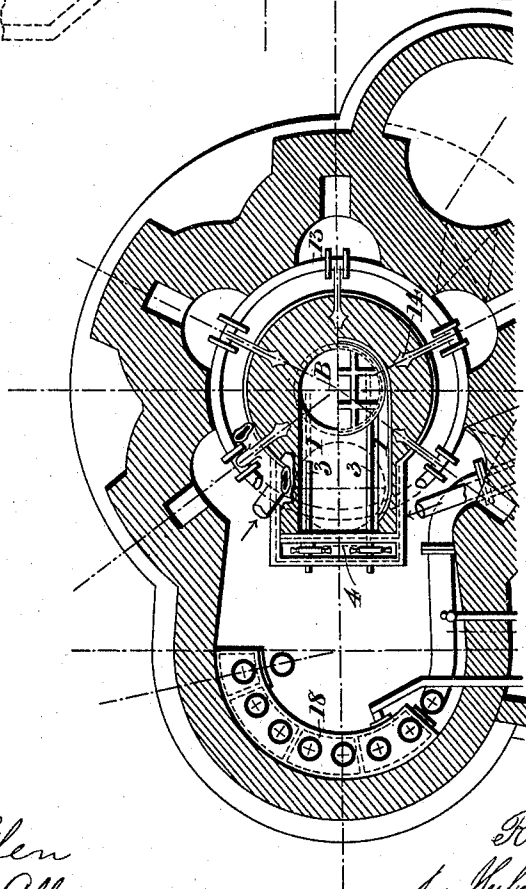


Fig. 3.



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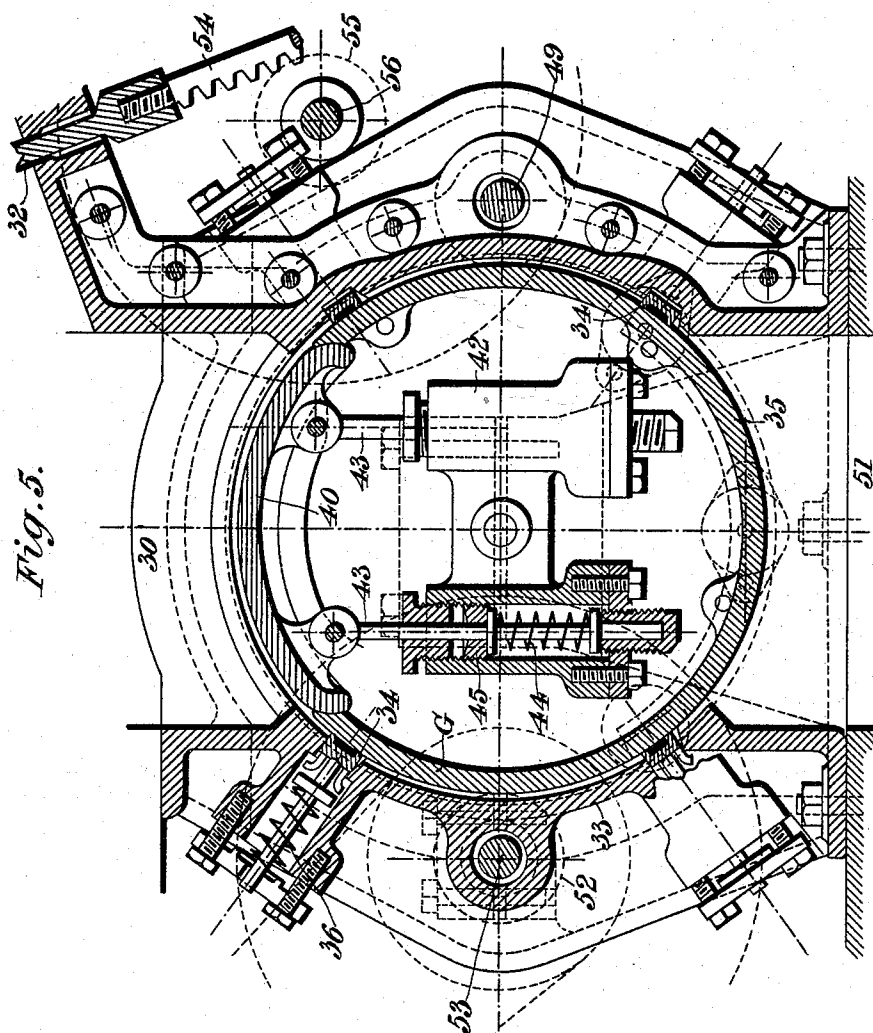
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6 Sheets—Sheet 4.

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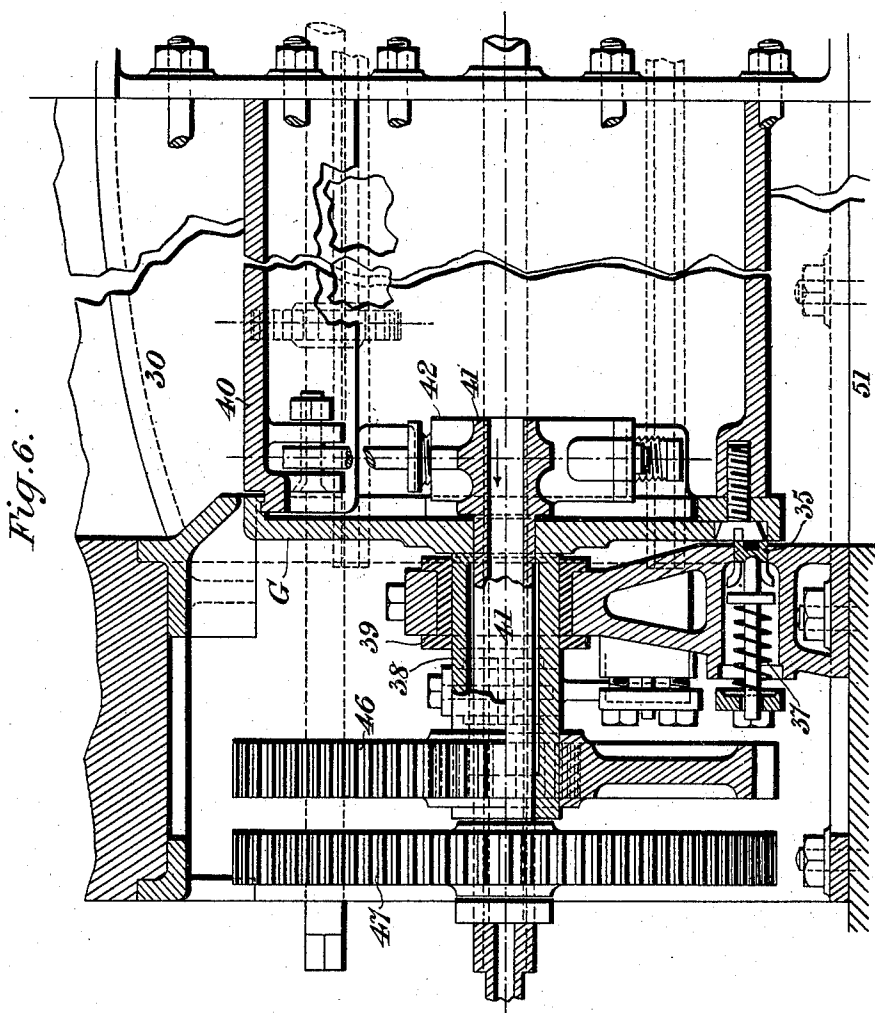
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R. C. SAYER.
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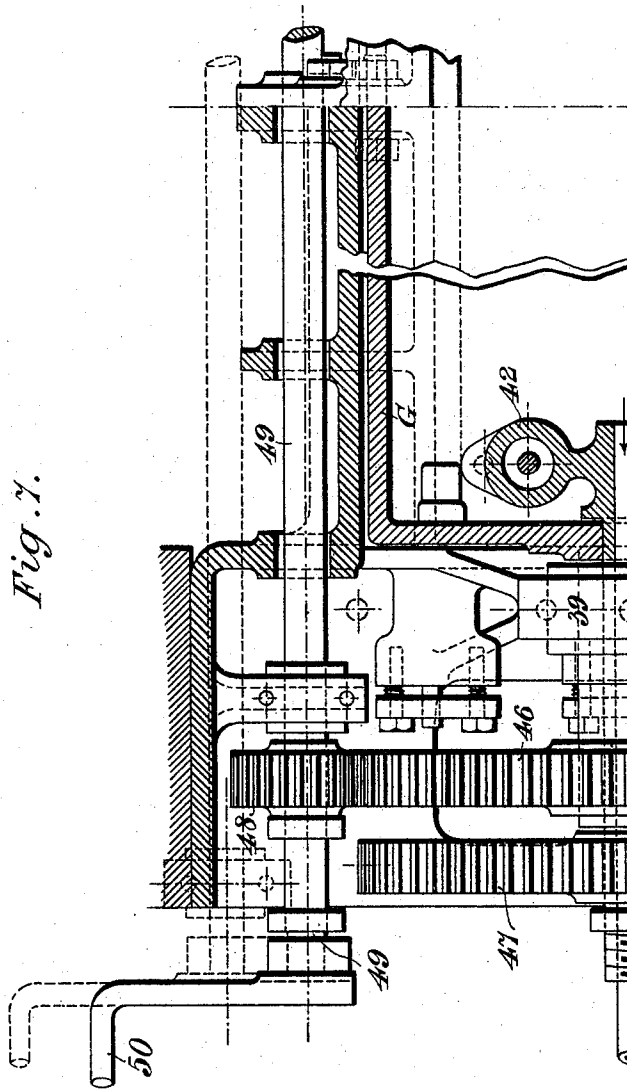
(No Model.)

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UNITED STATES PATENT OFFICE.

ROBERT COOKE SAYER, OF BRISTOL, ENGLAND.

REFUSE-BURNER.

SPECIFICATION forming part of Letters Patent No. 585,597, dated June 29, 1897.

Application filed July 21, 1894. Serial No. 518,197. (No model.)

To all whom it may concern:

Be it known that I, ROBERT COOKE SAYER, a subject of the Queen of Great Britain and Ireland, and a resident of 11 Clyde Road, Redland, Bristol, in the county of Gloucester, England, have invented certain new and useful Improvements in Refuse-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to refuse-burners; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a vertical section of the refuse-burner. Fig. 1^a is a sectional plan view taken on the line *xx* in Fig. 1. Fig. 2 is a vertical section taken at right angles to the view shown in Fig. 1. Fig. 3 is a horizontal section taken just above the hearth of the furnace. Fig. 4 is a horizontal section taken just above the top of the furnace. Fig. 5 is a vertical cross-section through the feed-drum. Fig. 6 is a partial vertical longitudinal section through the feed-drum. Fig. 7 is a partial horizontal section through the feed-drum.

A is a furnace of approved construction provided with a hearth B. This hearth is preferably slidable, so as to let out the ashes. Guides 1 are provided for the hearth to slide in, and 3 are screws engaging with nuts 2 on the hearth; but any other approved means may be used for sliding the hearth back and forth.

C is a boiler of any approved construction supported within the furnace A by hollow arms 6. Water is supplied to the boiler by means of a pipe 8, connected to or passing through one of the said hollow arms. An annular perforated ring 5 encircles the boiler, and a pipe 7 is connected to this ring through the other hollow arm. The pipe 7 is connected to a liquid-fuel-supply pipe 25, so that the supply of steam is not wholly dependent upon the burning refuse in the furnace. The upper part of the boiler is provided with a hood or protector 9 of any approved construction.

The steam generated in the boiler C is conducted through the pipe 10 and is used to

drive an air-compressor of any approved construction, preferably inclosed within a chamber D, connected to the furnace. The compressed air is forced through a pipe E into hollow heating-rings 11 at the lower part of the furnace, and is conducted thence through a valve 12 and pipe 13 to the twyer-holes 14; but any other approved means may be used for heating the air and injecting it into the furnace.

A chamber 26 is provided at the top of the furnace for receiving the refuse to be burned, and 27 is a chamber adjacent to the chamber 26 for holding a supply of solid fuel, such as coal. The chamber 26 has an outlet 28, controlled by a slidable plate 31, and the chamber 27 has an outlet 29, controlled by a slidable plate 32; but any other approved means may be used for controlling the relative supply of refuse and solid fuel from the respective chambers.

The gaseous products of combustion pass out of the furnace A through a strainer 15 and pipe 16 into a hydraulic main 17, which is of any approved construction. The tar deposited in the hydraulic main is passed through the pipe 22 into the chamber 23, and the pipe 22 is connected to the pipe 7 by a valve 24, so that the tar can be let into the furnace and burned with the liquid fuel. The gases and vapors from the hydraulic main 17 are passed into a condenser 18, of any approved construction, and are discharged through the pipe 19 and disposed of in any approved manner.

A chamber 30 is arranged between the passages 28 and 29 and the furnace A, and G is a feed-drum arranged in the said chamber. The drum G works in a casing 33 and is kept air-tight therein by straight packing-pieces 34, which bear against its periphery, and curved packing-pieces 35, which bear against its ends. The packing-pieces 34 are pressed against the drum by springs 36 and the packing-pieces 35 are provided with springs 37 for a similar purpose.

Hollow trunnions 38 project from the ends of the drum and are journaled in stationary bearings 39, of any approved construction. A toothed wheel 46 is secured on one of the trunnions 38 and affords a means for revolving the drum. Motion may be imparted to

the wheel 46 by any approved driving mechanism, such as a crank 50, secured on a shaft 49, which is provided with a pinion 48, gearing into the wheel 46.

- 5 The drum G is provided with a cover 40, which is supported by stems 43, slidable in brackets 42. The cover 40 covers the inlet and outlet hole of the drum and is normally pressed outward by the springs 44, carried
10 by the brackets 42. The brackets 42 are mounted on trunnions 41, which are journaled in the hollow trunnions 38. Motion is imparted to the cover by means of a toothed wheel 47, secured on one of the trunnions 41,
15 and the said wheel 47 is revolved by any approved driving mechanism, such as that used to revolve the wheel 46.

In Fig. 5, 53 is a driving-shaft on which a pinion 52 is secured for the purpose of driving the wheel 47.
20

- The slidable plates 31 and 32 are operated in any approved manner. In Fig. 5 the plate 32 is shown provided with a rack 54, which is engaged by a toothed pinion 55, secured on
25 a driving-shaft 56. The plate 31 may be operated by similar mechanism, and in Fig. 1 the driving-shaft 53 is shown connected by a drive-chain and sprocket-wheels with a shaft 57, which carries the toothed rack-pinion for
30 sliding the plate.

The operation of the furnace is as follows: The burning refuse and fuel in the furnace heats the water in the boiler C, and the steam from the boiler drives the air-compressor,
35 which supplies the necessary blast to the furnace, so that combustion is supported within it. The tar is collected in the hydraulic main from the gaseous products of combustion and is conducted back into the furnace, together
40 with a continuous but small supply of liquid

fuel, such as petroleum, so as to maintain a continuous combustion. The refuse and solid fuel is let into the furnace intermittently through the cylinder G and the refuse is burned within the furnace, the combustion
45 being rendered complete and continuous by the liquid fuel and tar.

What I claim is—

1. In a refuse-burner, the combination, with a blast-furnace, of a boiler arranged inside
50 the said furnace, hollow arms supporting the said boiler, a perforated ring encircling the boiler, a supply-pipe for liquid fuel connected to the said ring and passing one of the said hollow arms, and a feed-water pipe passing
55 through the other hollow arm and connected to the boiler, substantially as set forth.

2. In a refuse-burner, the combination, with a furnace, of a feed-drum mounted on hollow
60 trunnions 38, a cover for the feed-drum, stems 43 and springs 44 for supporting the said cover, and brackets 42 carrying the said stems and springs and provided with trunnions 41, journaled in the said hollow trunnions, substantially as set forth.
65

3. In a refuse-burner, the combination, with a furnace, of a revoluble feed-drum, a casing inclosing the feed-drum, straight packing-strips 34 bearing against the periphery of the feed-drum, curved packing-strips 35 bearing
70 against the ends of the drum, and springs pressing the said packing-strips against the drum and keeping it air-tight in the casing, substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.
75

ROBERT COOKE SAYER.

Witnesses:

STEPHEN APPELGATE,
LIONEL AUGUSTUS WILSON.