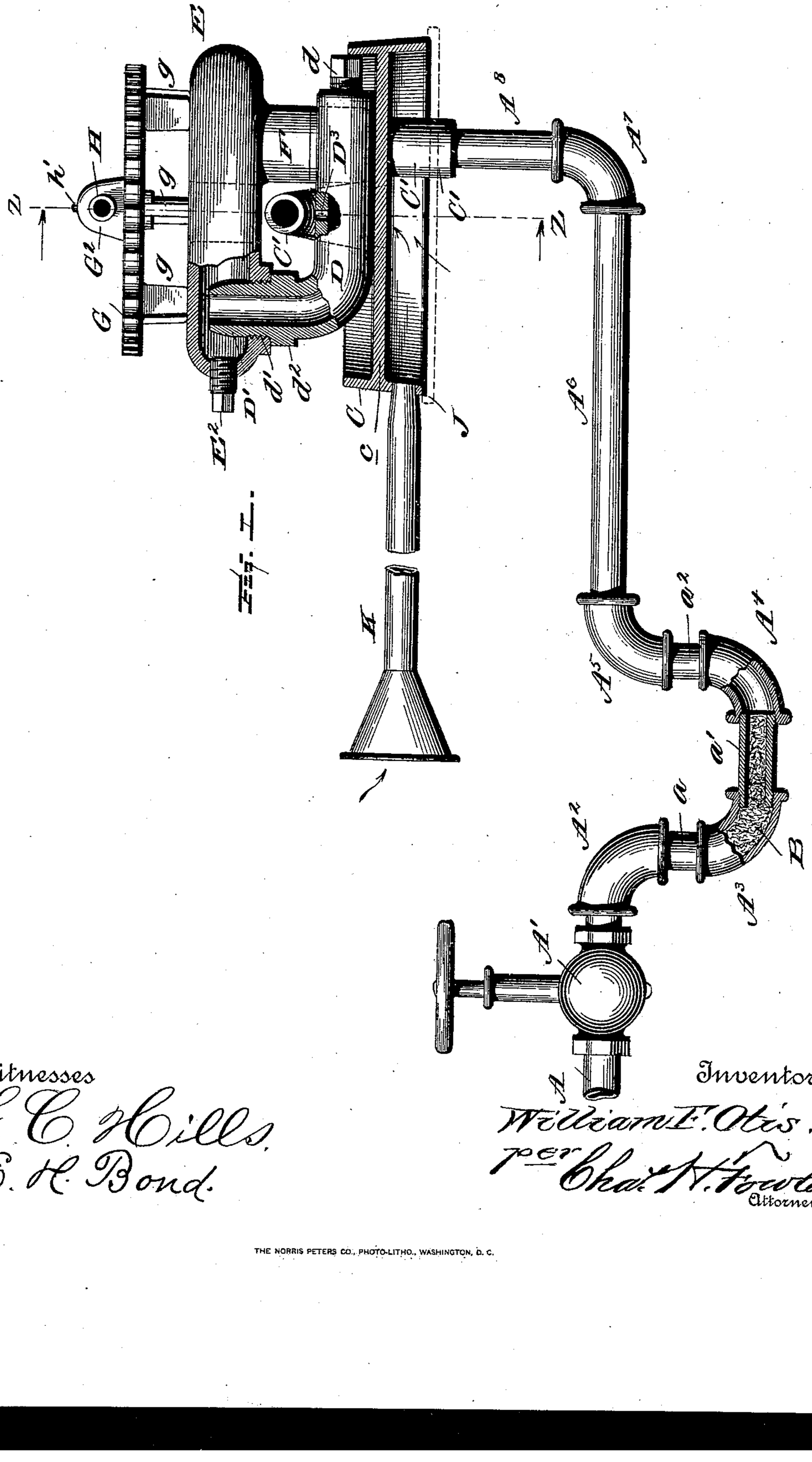
(No Model.) 2 Sheets—Sheet 1.

W. F. OTIS.

OIL BURNER.

No. 488,660. Patented Dec. 27, 1892.



Witnesses
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E. H. Bond.

Inventor
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

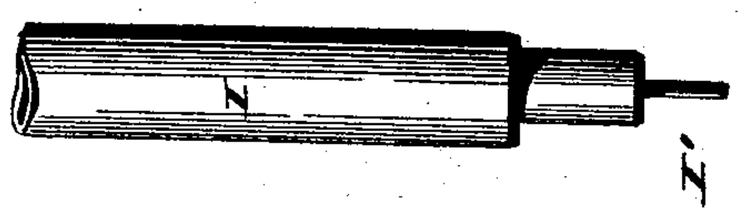

Fig. 1.

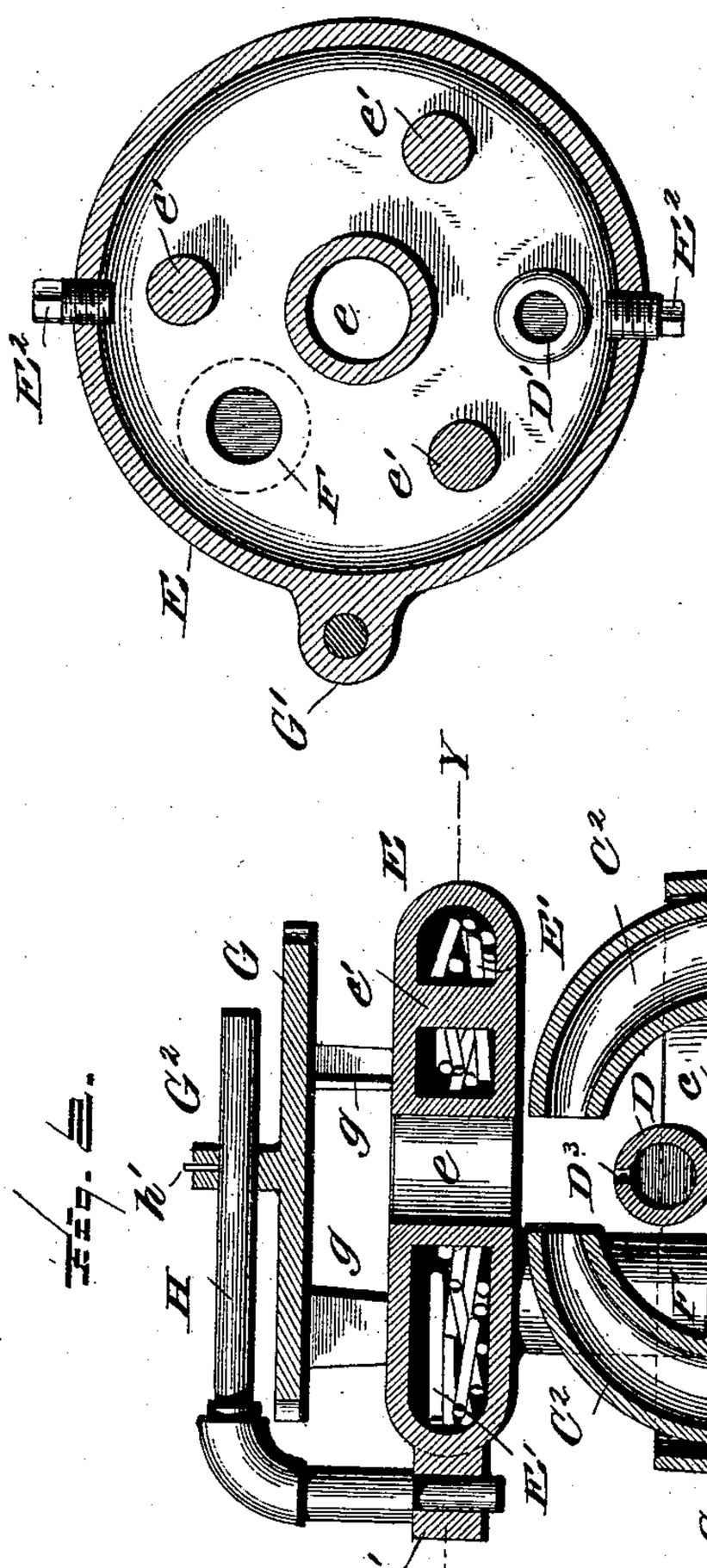

Fig. 6.

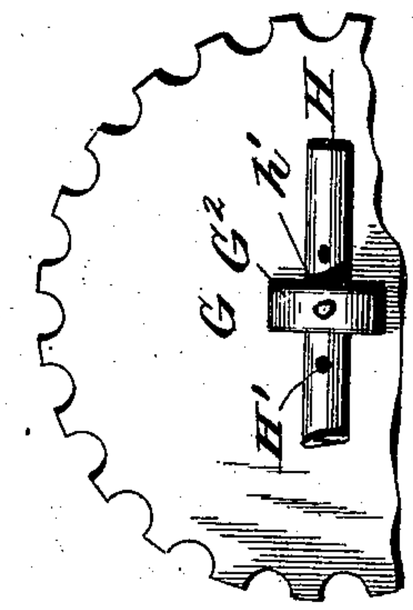

Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM F. OTIS, OF NORWALK, OHIO.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 488,660, dated December 27, 1892.

Application filed April 6, 1892. Serial No. 428,056. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. OTIS, a citizen of the United States, residing at Norwalk, in the county of Huron and State of Ohio, have invented certain new and useful Improvements in Oil-Burners; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

This invention relates to certain new and useful improvements in oil burners and it has for its objects among others to provide an improved burner which shall be simple, efficient, cheap of manufacture, and in which is provided a trap-feed with a filter for filtering the oil as it passes through the supply pipe to the generating chamber. This filter not only filters the oil but the passage of the oil is equalized and the trap obstructs the back pressure from the generator. I make provision for a forced draft when desired, and also a simple and efficient means for cleaning the vent. I provide a spreader with a scalloped outer edge, pivotally mounted above the generating chamber.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which

Figure 1 is a side elevation of my improvements with portions broken away to better show other parts. Fig. 2 is a vertical section on the line *z z* of Fig. 1. Fig. 3 is a cross section on the line *y y* of Fig. 2. Fig. 4 is a detail in top plan of the spreader. Fig. 5 is a side elevation of the cleaner.

Like letters of reference indicate like parts throughout the several views in which they appear.

Referring now to the details of the drawings by letter, A designates the supply pipe to the burner; it is designed to connect with any suitable source of supply and is provided with a valve A′ and beyond the valve it is connected with an elbow A^2, and to this elbow is connected the short coupling *a* which in turn is connected to an elbow A^3 which is joined by the coupling *a′* to the elbow A^4 which is connected by the short coupling a^2 to the elbow A^5, as seen in Fig. 1, the elbows being arranged to form a trap and in this trap is arranged some suitable material as mineral wool B for the purpose of filtering the oil in its passage therethrough and also equalizing its flow; this trap also serves to prevent back pressure from the generator.

A^6 is a pipe connected with the elbow A^5 and with an elbow A^7 at the other end and with this latter elbow is connected the pipe A^8. This is only one of the many ways in which the parts may be connected; the manner of connection depends somewhat upon the location of the burner; the form shown is designed for use in a cooking stove and I propose to employ one such burner under each lid, each being independent of the other so that one or more may be used at the same time.

C is a casting preferably circular in form and having a substantially central horizontal diaphragm *c* and with a nipple or tube C′ into which the pipe A^8 is entered. This casting is also formed or provided with the diametrically-opposite curved air tubes or pipes C^2 which are curved toward each other as seen best in Fig. 2 and their adjacent ends are arranged to terminate substantially beneath the central hole in the generating chamber which will soon be described.

Arranged at right angles to and between the pipes C^2 and resting upon the diaphragm *c* is the pipe D which has one end closed by a removable plug *d*, and its other end is curved upward and terminates in a nozzle D′ which extends within the generating chamber, being screw threaded as seen at *d′* for detachable engagement with a correspondingly-threaded opening in the bottom of the said chamber as seen in Fig. 1, and having a collar or enlargement d^2 to engage the under side of the said chamber.

The generating chamber E is in the shape of a circular chamber with a central opening *e* preferably about one inch in diameter, and with connecting rods or ribs *e′*; this chamber is designed to be partially filled with iron scraps E′ or other material to aid in heating the oil and make the oil vaporize. I preferably use small wires for this filling. They

may be placed within the generator or retort through a suitable opening or openings closed by a plug or plugs E^2, see Figs. 1 and 3. The pipe D is provided upon its upper side with a small vent hole D^3 which is directly under the center of the central hole *e* in the generator as seen best in Fig. 2.

F is a tube connecting the diaphragm of the casting with the generator and with which the tube or pipe C′ communicates.

G is a spreader; it is formed with scalloped or serrated edge as seen in Figs. 1 and 4 and may be supported upon the top of the generator chamber by means of the legs *g* depending from the under side of the spreader, or it may be supported by the crane H suitably mounted in a lug G′ on one side of the generator chamber as seen best in Figs. 2 and 3, the horizontal portion of the crane passing through an apertured lug G^2 on the top of the spreader where it is adjustably held in any suitable manner, as by a removable pin *h*′ designed to engage any one of a plurality of holes H′ in the horizontal portion as seen in Fig. 4.

When it is desired to clean out the vent hole D^3 in the pipe D the spreader is removed or swung round by the crane and for the purpose of cleaning said hole I have provided a cleaner I seen in Fig. 5, which consists of a rod or tube having reduced portion which carries a pick or wire point I′ designed to fit the said hole as will be readily understood.

When it is desired to use the burner where the draft is not strong enough I make provision for a forced draft, and in this case I place a bottom J beneath the bottom edge of the casting C to form a chamber beneath the diaphragm as indicated by dotted lines in Fig. 1 and in the edge of the casting below the diaphragm I provide a hole into which is fitted the smaller end of a funnel-shaped air-mixer K.

The operation will be readily understood from the foregoing description when taken in connection with the annexed drawings, and, briefly stated, is as follows;—the liquid fuel is fed through the supply pipe, through the trap, where it is filtered, and thence passes up and into the generator through the pipes A^6, A^8, C′ and F; the generation of the gases is started by letting a suitable quantity of the oil into the generator through the pipes above-mentioned and filling the generator; when the generator is full the overflow will pass out of the small vent hole D^3 in the elbow-pipe D into the pan of the casting C; when the pan is about one-third full the valve is closed and the supply shut off and the oil in the pan is then lighted; the flame will then heat the generator and vaporize the oil in the generator and the gas will pass down through the small vent and then it will light and shoot the flame up through the hole *e* in the generator and the flame will then strike the spreader. The valve is then turned to admit the liquid fuel and the device operates in the usual way. The scalloped edge of the spreader inclines the flame after it passes out from under the spreader to draw the flame up from off the generator so that the flame will not lap down on the generator and it will cut the flame up so as to get a much better result and produce more heat.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

It is deemed important that the air pipes be arranged so as to deliver the air in close proximity to the vent in the pipe D and the central opening in the generator whereby combustion is aided and better results obtained.

What I claim as new is;—

1. The combination with the casting and its diaphragm and curved air pipes, of the generator with central hole, and the elbow pipe communicating with the generator and having a vent beneath the hole in the generator, and the air pipes terminating below said hole and centrally over the vent in said pipe as set forth.

2. The combination with the casting and its air pipes, of a generator with central opening, the supply pipe communicating with the generator and the elbow pipe communicating with the generator and having vent hole beneath the opening in the generator, said air pipes being oppositely curved and terminating over the said vent hole and below the central opening of the generator as and for the purposes specified.

3. The combination with the casting having integral depending flange, horizontal diaphragm, and curved air pipes rising from the diaphragm, of the generating chamber, the pipe having vent below and between the said air pipes and having a nozzle within the generating chamber, the supply pipe and the tube connecting the diaphragm of the casting with the generator and with which the supply pipe communicates, all substantially as shown and described.

4. The combination with the casting having integral depending flange, horizontal diaphragm and curved air pipes rising from the diaphragm, of the generating chamber, the pipe having vent below and between the said air pipes and having a nozzle within the generating chamber, the supply pipe and the tube connecting the said diaphragm with the generator and with which the supply pipe communicates, and a removable funnel-shaped air-mixer, all substantially as shown and described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM F. OTIS.

Witnesses:
CHARLES SUHR,
MAME OTIS.