

No. 670,152.

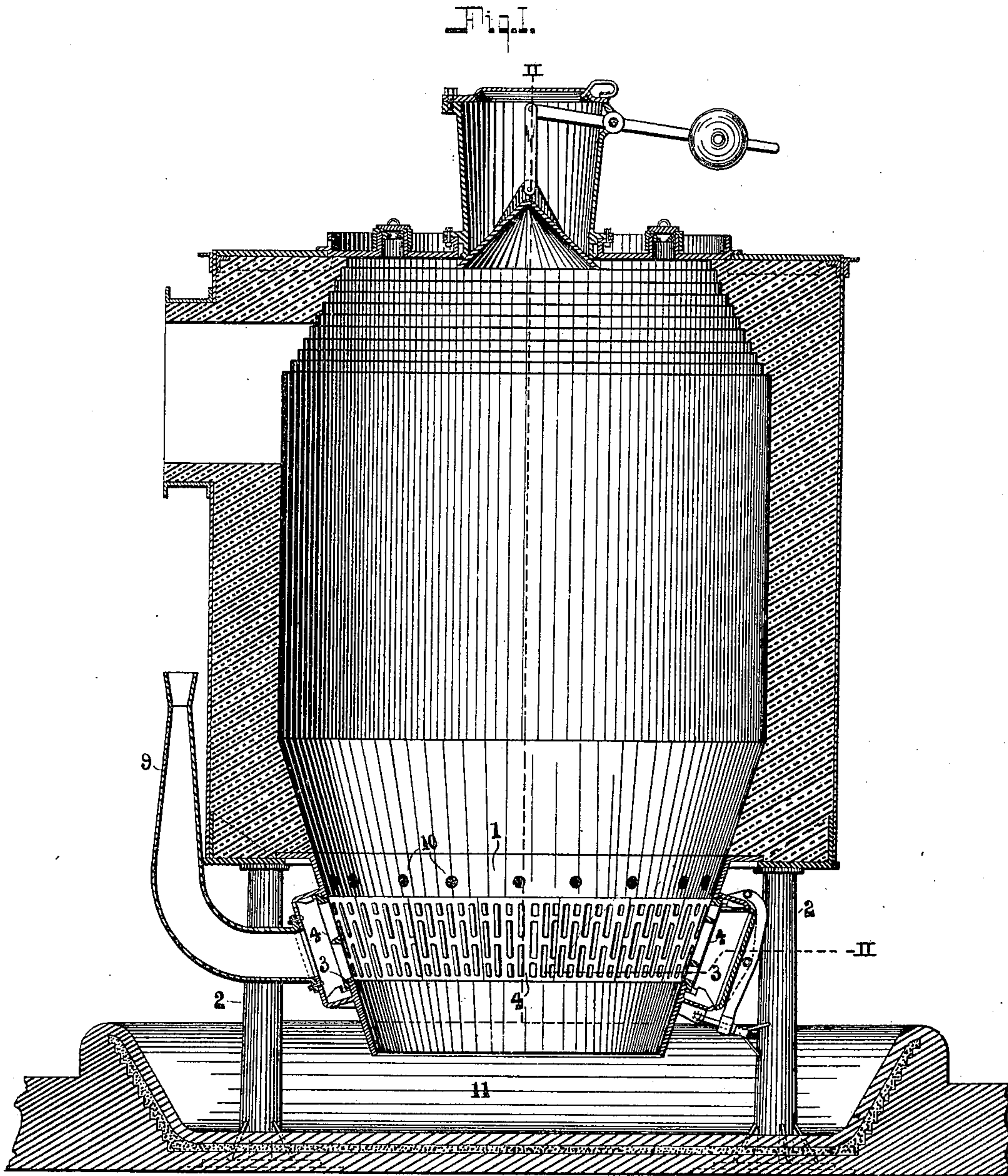
Patented Mar. 19, 1901.

S. FORTER.
GAS PRODUCER.

(Application filed Sept. 20, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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INVENTOR

Samuel Forter,
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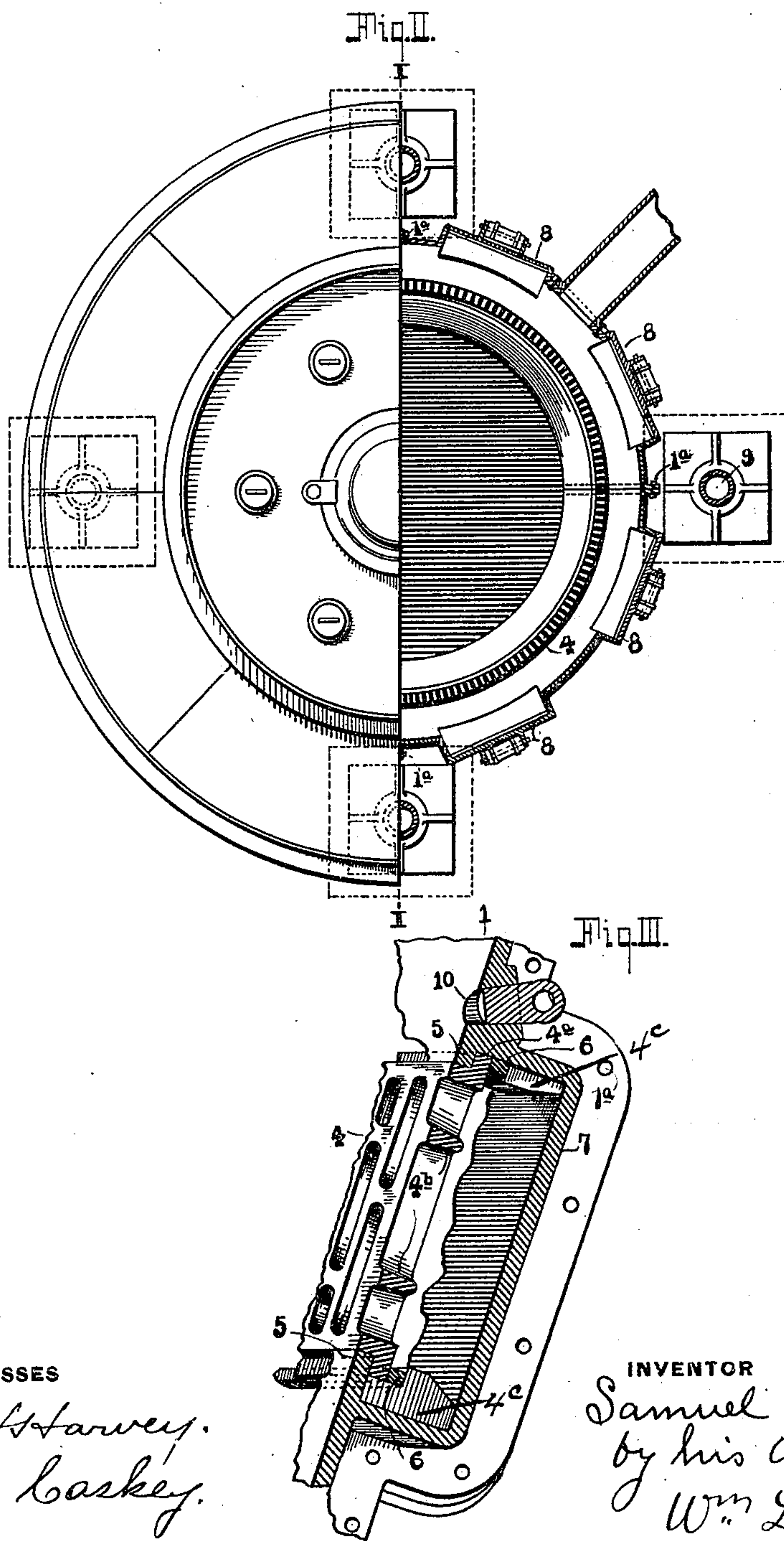
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UNITED STATES PATENT OFFICE.

SAMUEL FORTER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
FORTER-MILLER ENGINEERING COMPANY, OF SAME PLACE.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 670,152, dated March 19, 1901.

Application filed September 20, 1900. Serial No. 30,616. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL FORTER, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Gas-Prod-
5 ucers, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure I is a vertical section on line I I of Fig. II. Fig. II is a top plan view, partly in section, on line II II of Fig. I. Fig. III is a detail perspective view of a grate separable from the wind-box. Figs. IV and V are detail perspective views
15 of modified forms of grates and wind-boxes.

My invention consists of certain improvements in that class of gas-producers known as "water-seal" producers, which have the ash-outlet at the bottom closed by a water seal.

20 The objects of my invention are to simplify the construction, to distribute the air necessary for combustion and gasification more uniformly over the whole bed of fuel, and to give ready access from the outside to the
25 grates or openings through which the air passes.

Heretofore in all producers of the water-seal type in which the fuel rests on a solid bed of ashes the air has been admitted to the
30 fuel through openings or grates located inside of the producer, and should they get clogged up with clinkers it is almost impossible to free them from such clinkers, as they are not readily accessible from the outside.
35 In my invention I place the grates or openings for the admission of air in the circumference of the hopper, which incloses the lower part of the fuel-bed and also contains the ash-bed. I provide for a wind-box all around the
40 hoppers. This wind-box I provide with air-tight doors, which when opened give access to the air-openings or grates for the purpose of cleaning them from clinkers that may accumulate. I admit the air to the wind-box
45 through two blast-nozzles located on diametrically opposite points of the wind-box. Inside of the wind-box I provide openings or grates, through which the air is forced into the fuel. These openings or grates are distributed uniformly all over the circumference,
50 thus insuring a perfectly uniform flow of air.

The openings for the admission of air can either be cast in the hopper or separate grates can be inserted.

I prefer to use grates of small dimensions, 55 which can easily be removed through the doors and replaced by new ones, if the case requires. As the grates are inclined at a steep angle with the horizontal, the air entering through them is forced toward the center of the producer, thus preventing the
60 larger portion of the air from creeping along the side walls, where it generally tends to flow unless deflected toward the center. The arrangement of the grates allows me to in- 65 crease the grate area independent of the inside dimensions of the producer by simply giving the grates sufficient length. The producer can also be applied for natural draft, in which case it is only necessary to keep the
70 doors of the wind-box open, so that the air for the grates is admitted direct from the atmosphere instead of the blast-nozzles.

In the construction of my gas-producer I provide an inverted conical-shaped hopper- 75 base 1, suspended from and supported by columns 2 2. Preferably the hopper-base 1 is made in sections and bolted together by means of bolts 1^a, as shown in Fig. II. In the inverted conical portion of the hopper- 80 base 1 is an annular opening 3. Grates 4 4 are placed in this opening and secured by flanges 4^a 4^a against projections 5 5 of the hopper-base 1 by means of wedges 6 6. Surrounding the grates 4 4 is the wind-box 7. Located at 85 intervals along the interior of the bottom and top of the wind-box 7 are lugs 4^c 4^c. Secured to the face of the wind-box 7 are air-tight doors 8 8.

9 9 are blast-nozzles connected to the wind- 90 box 7 and placed diametrically opposite to each other.

10 10 are poke-holes in the hopper-base 1 and located above the grates.

11 is the water seal. 95

Assuming the producer ready for operation, it would contain a proper amount of coal, partly ignited, resting on a body of ashes. The ashes would reach from the bottom of the water seal 11 to approximately a horizon- 100 tal line through the center of the grates 4 4. Air under pressure would be forced through

nozzles 9 9 into wind-box 7 and out through the grates 4 4 into the ashes and also through the body of ignited coal contained in the producer.

5 The blast of air entering the producer is directed by the angular projections 4^b 4^b toward the center, thus aiding the combustion and gasification of the coal.

I do not limit my construction to an inverted conical-shaped lower end of a gas-producer having grates secured thereto, as a producer having its lower end at any angle would be part of my invention when combined with means for cleaning or removing
15 the grates or supplying air through an annular wind-box surrounding the exterior of the hopper-base of a gas-producer.

Having described my invention, what I claim is—

20 1. In gas-producers a hopper-base, detachable grates secured within said hopper-base, a wind-box encircling said hopper-base and means for forcing air into and from said wind-box.

2. A gas-producer, its hopper-base suspended on columns, detachable grates secured within said hopper-base, a wind-box encircling said grates and means for supplying air to said wind-box. 25

3. In a gas-producer the combination of a suspended hopper-base, openings in said base, detachable grates in said openings and supported by said base, a wind-box surrounding said grates and means for admitting air to said wind-box. 30

4. In a gas-producer, the combination of a suspended hopper-base, openings in said hopper-base, detachable grates in said openings, a wind-box surrounding said grates, air-tight doors in said wind-box and means for admitting air to said wind-box. 35 40

Signed at Pittsburg, Pennsylvania, this 18th day of September, 1900.

SAMUEL FORTER.

Witnesses:

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