

No. 753,340.

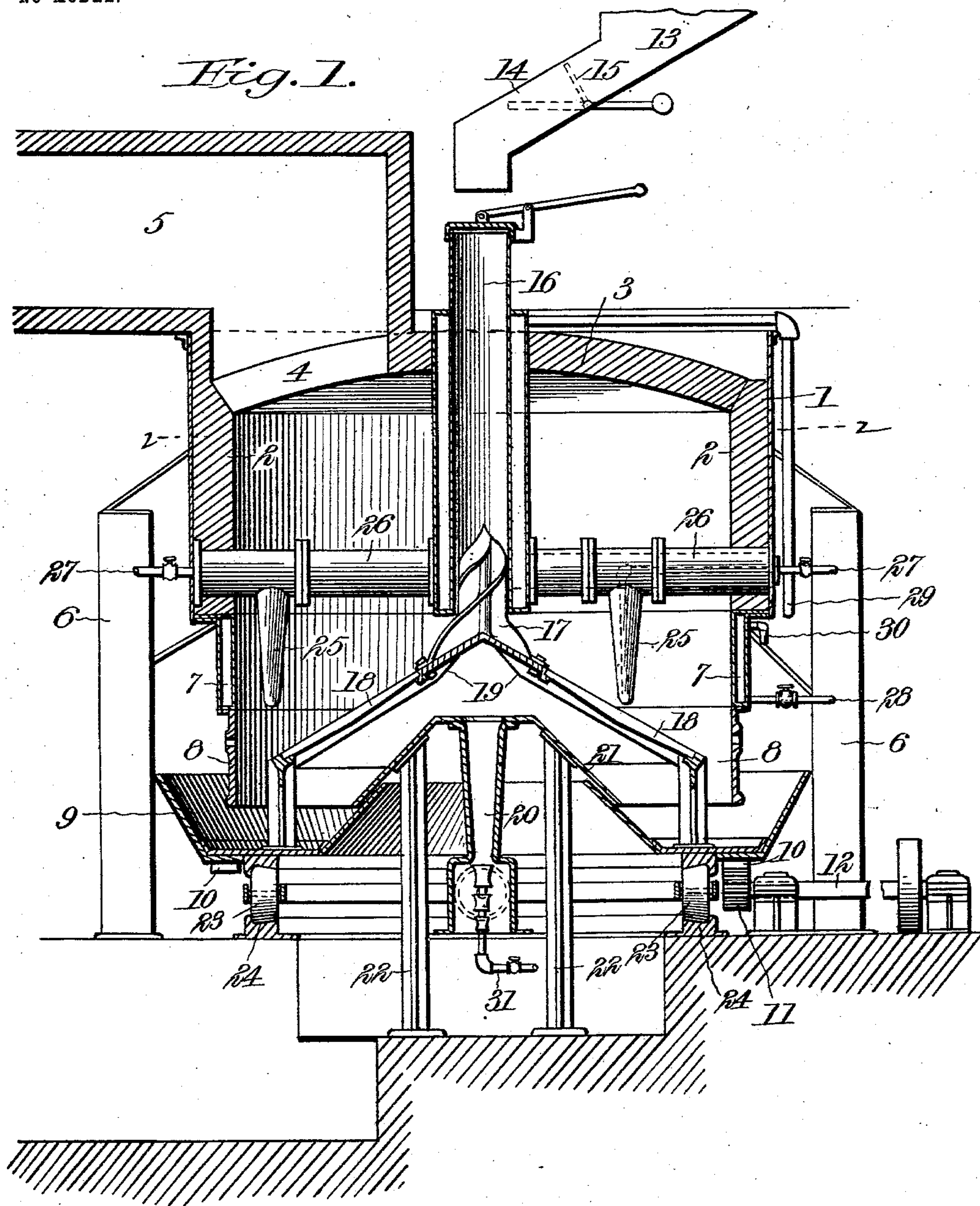
PATENTED MAR. 1, 1904.

J. M. WIGHT & H. HYATT.
GAS PRODUCER.

APPLICATION FILED MAY 7, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

C. H. Walker
Geo. E. Tew

James M. Wight
Harry Hyatt

By

Milo B. Stevens & Co.

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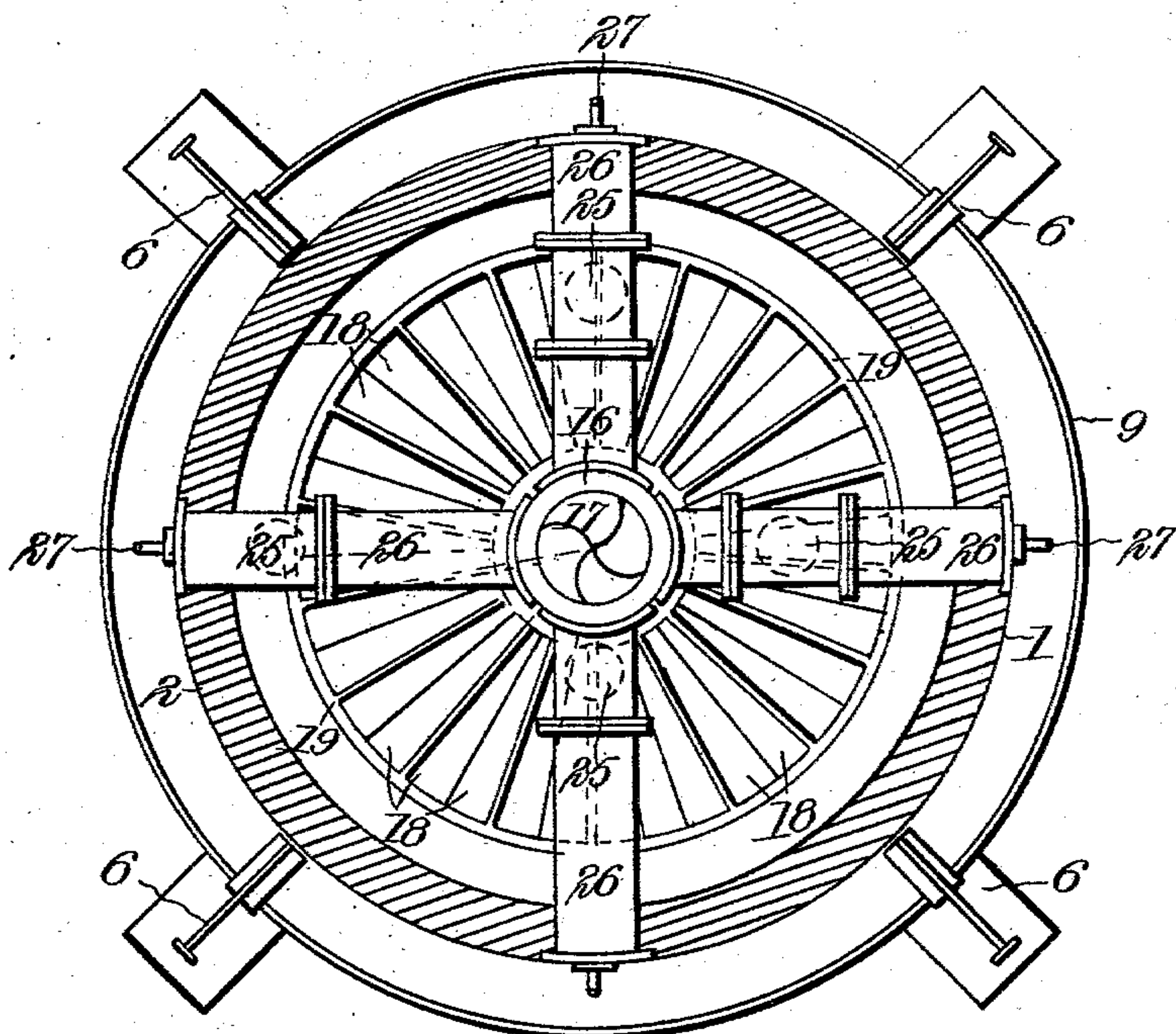
GAS PRODUCER.

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2 SHEETS—SHEET 2.

Fig. 2



Witnesses

C. H. Walker
Geo. E. Tew

Inventors

James M. Wight
Harry Hyatt
By *Milo B. Stevens & Co*
Attorneys

UNITED STATES PATENT OFFICE.

JAMES M. WIGHT AND HARRY HYATT, OF CLEVELAND, OHIO.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 753,340, dated March 1, 1904.

Application filed May 7, 1903. Serial No. 156,101. (No model.)

To all whom it may concern:

Be it known that we, JAMES M. WIGHT and HARRY HYATT, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Gas-Producers; and we 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to gas-producers capable of continuous operation, and the object of the invention is to form an improved producer characterized by improved means for charging and feeding the fuel to the fire-chamber; by improved water-cooled pokers and fire-ring; by an improved rotary grate, and by other features apparent from the following description and the appended claims.

In the accompanying drawings, Figure 1 is a central vertical section of the apparatus. Fig. 2 is a horizontal section on the line 2 2 of Fig. 1.

Referring particularly to the drawings, the producer includes a circular chamber, consisting of a sheet-metal shell (indicated at 1) having a fire-brick lining, as shown at 2, and a cover 3 of the same material. The latter has a gas-outlet 4, communicating with the gas-flue 5. At 6 are indicated supporting-legs for the chamber. At 7 is a hollow fire-ring attached and depending from the lower edge of the wall of the chamber. There is a water circulation through this ring from the inlet-pipe 28 to the outlet-pipe 30. Joined to the lower edge of the fire-ring is the ash-pot or ring 8, the lower edge of which dips below the surface of the water in the annular sealing-pan 9.

At 16 is indicated a jacketed charging-tube, receiving coal from the coal-bin 13, through the chute 14, controlled by the gate 15. This tube is cooled by a circulation of water between the walls thereof, entering from the tubular poker-support 26 and out through the

overflow-pipe 29. The tubular poker-supports 26 are joined to the jacket of the charging-tube at the inner end and are supported at their outer ends in the wall of the chamber. Depending from these supports are the hollow pokers 25 at various distances from the center of the chamber. Cooling-water for the pokers is supplied through the pipes 27, which discharge within the pokers near the lower ends or points thereof, and the water flows thence through the tubes 26 and the jacket of the charging-tube. The pokers are relatively stationary and are properly positioned to project into and stir the fuel on the rotary grate 18. Said grate is conical in form and the apex thereof is directly under the charging-tube. It carries at the apex a feed-screw and spreader 17, which projects upwardly into the tube and by its rotation serves to give a uniform feed and distribution of the coal from the charging-tube to the grate. The grate is supported within and upon the water-pan 9 and rotates therewith. The pan is rotated by a driving-shaft 12 through annular gear 10 on the bottom of the pan and pinion 11 on the shaft, and the pan rides on rollers 23, which travel on a track 24.

The blast—mixed steam and air—is supplied through steam-pipe 31 and nozzle 20, which latter extends vertically through the central opening in the water-pan. The nozzle is provided with a cone 21, which dips below the water in the water-pan and seals the blast. The nozzle and cone are supported by standards 22 thereunder. The mouth of the nozzle is below the grate, so that the blast is distributed under the whole area thereof. This obviates one of the greatest objections met in this type of producer—that is, the localization of the combustion around a comparatively small blower-nozzle when the nozzle projects through the grate. This means that when enough pressure is used to permeate the mass of coal the combustion near the nozzle is so intense that the ashes melt, forming clinkers which are very difficult to remove and also forming “chimneys” or openings through the coal, allowing uncombined air to get in

the gas, and thus dilute it. By having the mouth of the nozzle below the grate these objections are obviated.

In operation the coal is charged into the feeding-tube 16 and by means of the feed-screw and spreader 17 is carried out of the tube on to the conical grate 18, which rotates with the pan 9. The blast maintains combustion and by means of the water seal is forced through the fuel. The pokers 25, which extend into the fire, break it up as the grate is revolved and allow free passage for the air and gas and prevent the formation of clinkers. As the coal is consumed the ashes work down between the outer edge of the grate and the ash-ring 8 into the water-pan 9, whence they may be removed by scooping or otherwise. The water circulation through the fire-pot, feeding-tube, and pokers prevents injurious heating of said parts, and the construction avoids hand-poking and consequent objectionable escape of gas.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a gas-producer, the combination with a chamber, and a rotary conical grate therein, of a coal-feeding tube in the chamber above the grate, and means carried at the apex of the grate to feed the coal from the tube.

2. In a gas-producer, the combination with a chamber, and a rotary grate therein, of a coal-feeding tube extending downwardly into the chamber above the grate, and a feed-screw carried by the grate and working at the lower end of the tube.

3. In a gas-producer, the combination with a stationary chamber, and a traveling grate thereunder, of a stationary coal-feeding tube having hollow walls, extending into the chamber, and hollow pokers connected to the tube, said walls and pokers having a fluid circulation therethrough.

4. In a gas-producer, the combination with

a rotatable grate, and an annular water-pan thereunder, of a fire-pot around the grate, and a blower-nozzle the mouth of which is under the grate and extending through the central opening in the pan, said pot and nozzle being water-sealed in the pan.

5. In a gas-producer, the combination with a grate and fire-pot relatively rotatable, of an annular water-pan below the grate, in which the pot is water-sealed, and a blower-nozzle extending upwardly through the opening in the pan, and water-sealed therein, the mouth of the nozzle being under the grate.

6. In a gas-producer, in combination, a chamber, a central fluid-cooled coal-feeding tube extending through the top of the chamber down to the fire, a rotating conical grate under the chamber, having a feed-screw at its apex extending into the tube, and stationary water-cooled pokers extending into the chamber over the grate.

7. In combination, a rotatable annular water-pan, a grate carried thereby, a blower extending through the opening in the water-pan and having a depending flange sealed in the pan and the nozzle of which opens underneath the grate, and a fire-pot above and around the grate and sealed in the pan.

8. In a gas-producer, the combination of an annular water-pan, a fire-pot the lower edge of which is sealed therein, a grate above the water-pan and carried thereby, and a blast-nozzle extending through the central opening of the pan and sealed therein, and opening under the grate.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES M. WIGHT.
HARRY HYATT.

Witnesses:

JOHN A. BOMMARDT,
LOTTIE NEWBURN.