

905,117.

3 SHEETS—SHEET 1.



R. A. Balderson
L. B. Blaming

INVENTOR

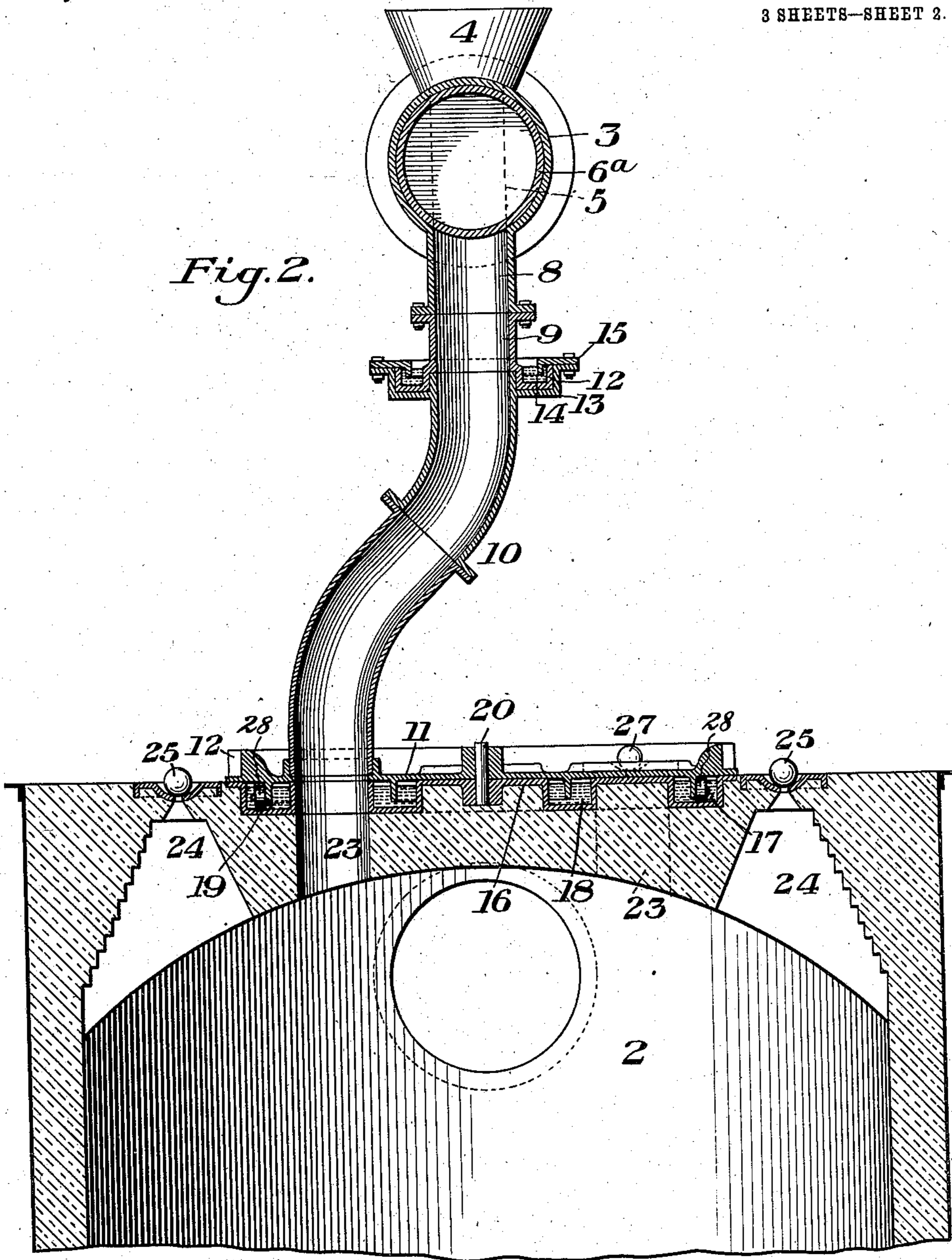
J. A. Swindell,
By Bahawee, Symes & Parneller,
his Attys.

J. A. SWINDELL.
FEEDING APPARATUS FOR GAS PRODUCERS.
APPLICATION FILED MAY 1, 1908.

905,117.

Patented Nov. 24, 1908.

3 SHEETS—SHEET 2.



WITNESSES

R. A. Balderson
E. B. Blumling

INVENTOR

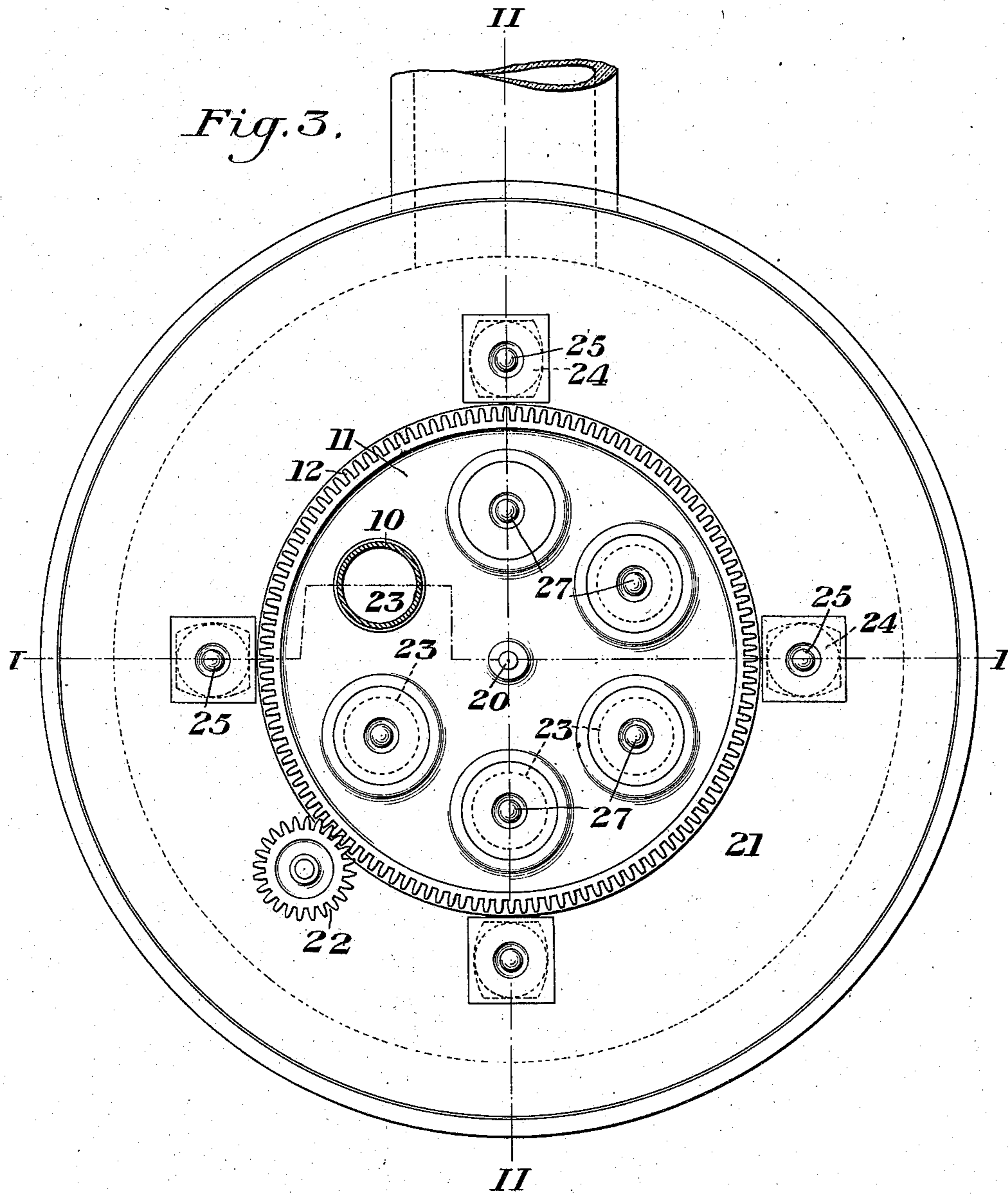
J. A. Swindell
by Bakewell, Byrnes & Carmichael,
his Attys.

J. A. SWINDELL.
FEEDING APPARATUS FOR GAS PRODUCERS.
APPLICATION FILED MAY 1, 1908.

905,117.

Patented Nov. 24, 1908.

3 SHEETS—SHEET 3.



WITNESSES

R. A. Balderson
G. B. Blanning

INVENTOR

J. A. Swindell,
by Baker, Byrnes & Parmelee
his Atts.

UNITED STATES PATENT OFFICE.

JOHN ALBERT SWINDELL, OF RESERVE TOWNSHIP, ALLEGHENY COUNTY, PENNSYLVANIA.

FEEDING APPARATUS FOR GAS-PRODUCERS.

No. 905,117.

Specification of Letters Patent.

Patented Nov. 24, 1908.

Application filed May 1, 1908. Serial No. 430,295.

To all whom it may concern:

Be it known that I, JOHN ALBERT SWINDELL, of Reserve township, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Feeding Apparatus for Gas-Producers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are vertical sections of one form of apparatus embodying my invention; and Fig. 3 is a horizontal section on the line III—III of Fig. 1, Figs. 1 and 2 being taken on the lines I—I and II—II respectively of Fig. 3.

My invention has relation to apparatus which has been especially designed for feeding gas producer furnaces, although it may be used for feeding other furnaces.

The object of my invention is to provide means of simple, economical and efficient character by means of which successive uniform charges of fuel may be fed to the furnace and equally distributed within the same; also to provide means of this character in which there are no parts exposed to the heat of the furnace which are of a character to be injured by such heat, and in which the parts are effectively provided with water seals which will prevent the escape of gases from the furnace in the operation of the parts.

The precise nature of my invention will be best understood by reference to the accompanying drawings, in which I have shown one embodiment thereof, it being premised, however, that various changes may be made therein by those skilled in the art without departing from the spirit and scope of my invention as defined in the appended claims.

In these drawings, the numeral 2 designates the upper portion of a gas producer furnace, which may be in general of any approved construction.

3 designates a cylinder provided with a feed hopper 4 opening therein and designed to register with an opening or pocket 5 formed in a longitudinally reciprocable piston 6 seated within the cylinder, and which is actuated by any suitable motive device such as the power cylinder 7. The cylinder 3 is provided with an outlet opening 8 at the bottom at one side of the feed-hopper 4, said opening extending through a depending pipe section 9, which is connected by a water-seal-

ing joint with a rotating bent pipe 10 which rises from a plate 11 rotatably mounted on the top or roof of the furnace 2. The water-sealing joint between the pipes 9 and 10 may be conveniently formed by the interfitting flanges 12 and 13 on said pipes, which flanges are shaped to provide a water space or pan 14 having a cover or guard plate 15, the two flanges 12 and 13 being fitted together to constitute a rotary bearing for the pipe 10.

The plate 11, to which the pipe 10 is secured, is mounted to rotate upon a metal plate 16 secured to the top or roof of the furnace, said plate having therein two concentric circular troughs or channels 17 and 18 into which extend circular flanges 19 on the under side of the plate 11, this construction providing an efficient water seal between the two plates. The plate 11 is mounted to rotate about a central pin or shaft 20, and is provided with peripheral gear teeth 21 engaged by a pinion 22, which may be actuated by any suitable motor (not shown).

Formed through the roof or cover of the furnace are a number of feed openings 23, which are arranged in a circular series, and which extend upwardly through the plate 16 in position to successively register with the discharge opening at the lower end of the pipe 10 as said pipe is rotated. Instead of forming a number of these openings, I may, however, form a circular slot extending throughout the major portion of the top of the furnace.

24 designates an outer series of openings, extending through the top of the furnace and normally closed by balls 25. The rotary plate 11 is preferably also formed with a series of poke holes 26 closed by balls 27. By rotating the plate 11 to bring these holes 26 or some of them in line with the feed openings 23, a suitable poker may be introduced into the furnace at points inside of the poke holes 24.

I preferably provide the plates 11 and 16 with interposed anti-friction bearings. In the construction shown, the upper plate 11 has a series of rollers 28 which contact with the upper surface of the plate.

The operation is as follows:—The fuel to be fed to the furnace is delivered into the hopper 4, the piston 6 being moved into the position shown in Fig. 1 so that the pocket 5 is filled with the fuel. The motive device 7 is then actuated to move the piston 6 to bring the pocket 5 into line with the dis-

charge opening 8. The fuel is thus discharged from the pocket 5 through the opening 8 into the bent pipe 10 and through said pipe into the furnace as soon as the lower end of said pipe is brought to register with one of the feed openings 23. In this manner successive measured charges of fuel are fed to the furnace and deposited at successive points around its circumference, thus securing a practical uniform distribution of the fuel in the furnace.

Inasmuch as the pipe 10 will at all times be more or less filled with fuel, the escape of gases from the furnace into the cylinder 3 is very largely prevented. The piston 6 is also extended as shown at 6^a, for the purpose of closing the opening 8 when the piston is in the position shown in Fig. 1. The water seal between the pipes 8 and 10 and the water seal between the plates 11 and 16 effectually prevent the escape of any gases at these joints. It will be further noted that there are no distributing devices adjacent to the point of discharge at the top of the furnace to be affected by the heat, the cylinder 6 being sufficiently far away from the furnace not to be affected. The entire device is simple, and positive in its operation, consisting of but few parts, and those of a character which are not likely to become deranged.

It will be obvious that various changes may be made in the construction and arrangement of the parts. Thus, any suitable form of rotary sealed joint may be provided between the pipe sections 8 and 10; the water seal between the plates 11 and 16 may be of any suitable character; and the means for rotating the pipe 10 and for operating the piston 6 may be varied. Instead of using water to seal the joints between the sections 8 and 10, and between the plates 11 and 16, sand or other suitable material may be employed.

What I claim is:—

1. In furnace feeding apparatus, the combination with feeding apparatus arranged to discharge successive measured quantities of fuel and having a depending portion through which the discharge is effected, of a bent feed pipe into which the depending portion is arranged to discharge, the lower end of the depending discharge portion, and the upper end of the bent pipe having flanges, said flanges being each of trough form, and one of them fitting within and bearing upon the other and a guard plate secured to said flanges and depending into the trough of the upper flange to form a water-seal; substantially as described.

2. In furnace feeding apparatus, the combination with a furnace having a plurality

of feed openings at its top, of a plate secured to the furnace top and having a corresponding number of aligned feed openings, a second plate rotatably mounted on the first named plate, and a bent feed pipe secured to and discharging through the last named plate, the first named plate having a space between two of its feed openings of greater extent than the diameter of said pipe to thereby provide means for preventing the discharge of the contents of the pipe into the furnace when the second plate and pipe are rotated over said blank space; substantially as described.

3. In a furnace feeding apparatus, the combination with a furnace having a closed top portion of refractory material with a feed opening extending therethrough, a plate normally closing the said opening and mounted to rotate on the furnace top, a bent feed pipe secured to and discharging through the plate, a fuel feeding device above the upper end of said pipe, said pipe and the fuel feeding device having interfitted flanges arranged to rotate one upon the other and forming a water sealing vessel, and a flanged cover or guard plate secured to one of said flanges; substantially as described.

4. In furnace feeding apparatus, the combination with a plate secured to the top of the furnace and having a plurality of feed openings therethrough arranged in a circular series, and also having concentric water channels or troughs therein one at each side of the series of feed openings, of a second plate rotatably mounted thereon and normally closing the feed openings, and a feed pipe attached to said plate and extending upwardly therefrom, said rotatable plate having depending lips or flanges which extend into the said troughs or channels; substantially as described.

5. A furnace feeding apparatus, in combination with a furnace having an arched top of refractory material and having a plate secured to its upper surface, with a plurality of feed openings extending downwardly through said plate, a second plate rotatably mounted upon the first-named plate and carrying a feed pipe arranged to discharge therethrough, means for effecting a water seal between the two plates, and poke openings in the rotatable plate adapted to be brought into line with the feed opening in the first-named plate; substantially as described.

In testimony whereof, I have hereunto set my hand.

J. ALBERT SWINDELL.

Witnesses:

H. M. CORWIN,
GEO. H. PARMELEE.