

No. 774,561.

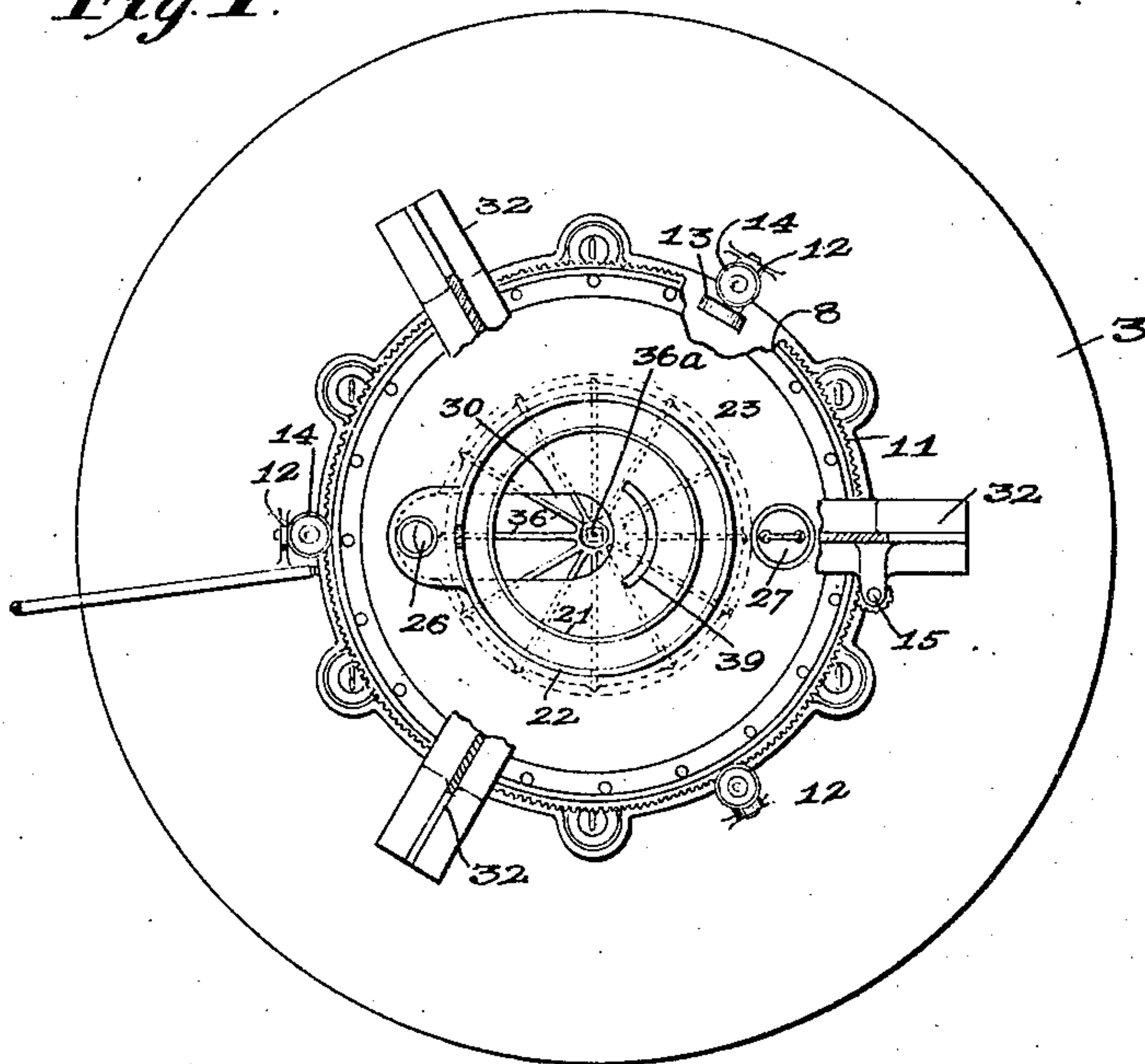
PATENTED NOV. 8, 1904.

E. H. CARROLL.  
CHARGER FOR GAS PRODUCERS.

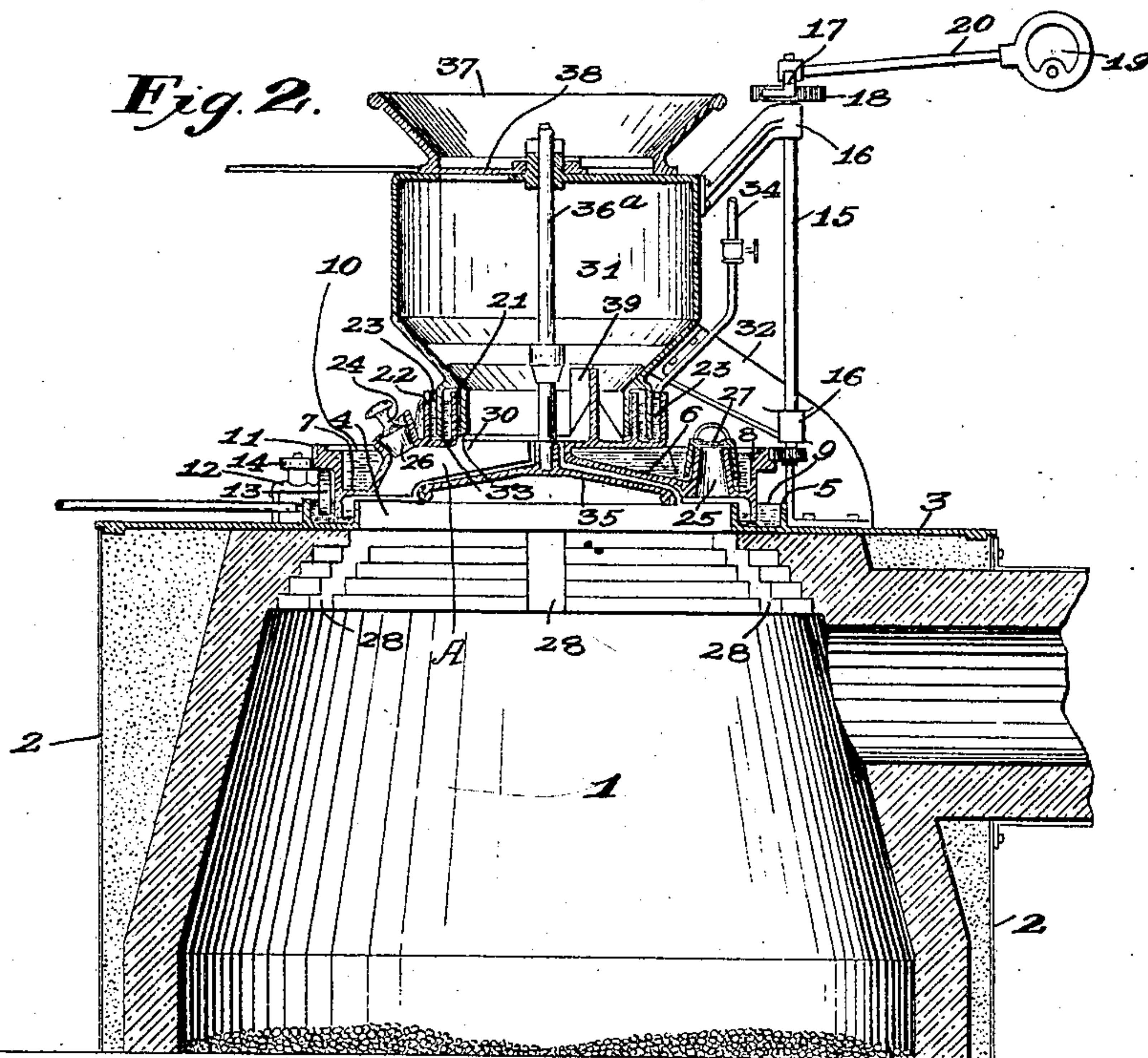
APPLICATION FILED JULY 8, 1902.

NO MODEL.

*Fig. 1.*



*Fig. 2.*



*Witnesses*

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# UNITED STATES PATENT OFFICE.

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## CHARGER FOR GAS-PRODUCERS.

SPECIFICATION forming part of Letters Patent No. 774,561, dated November 8, 1904.

Application filed July 8, 1902. Serial No. 114,782. (No model.)

*To all whom it may concern:*

Be it known that I, ELBERT H. CARROLL, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Gas-Producing, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 is a top plan view. Fig. 2 is a vertical section on the line 2 2 of Fig. 1.

The object of my invention is to provide a uniform feed of coal to the gas-chamber, which shall feed and distribute the coal continuously and maintain a slow but uniform distribution of the fuel into the chamber below.

Another object is to locate the feed mechanism and all its operative parts well above the gas-chamber and the outlet therefrom, where the parts are removed as far as possible from the intense heat from the chamber below, which necessarily is destructive and soon melts or destroys the efficiency of all metal surfaces if sufficiently close to be intensely heated.

The invention consists in certain novel features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings, 1 denotes the gas-producing chamber, it being built in the usual way of a wall of masonry surrounded by sheet metal 2 and filled in between with some non-conducting material, as sand or the like. The upper end is corbled, as shown, and provided with a central opening, and over the top of the masonry a sheet-metal plate 3 is secured in any approved manner. This sheet-metal top 3 has a round central opening bounded by an upturned annular flange 4, which constitutes the inner edge of the opening. Concentric with this upturned flange 4 is a second flange, 5, also integral or rigidly secured to the top plate 3 and adapted to contain water therein to form a water seal.

Immediately above the top plate 3 is located the revolving coal-distributor 6. This is pref-

erably made in the form of a casting with the horizontal portion 7, which is located immediately above the flange 4 and provided at its periphery with the vertical flange 8, which extends above and below the horizontal portion 7, the portion below being concentric with the flanges 4 and 5 and depending between them, whereby a water seal 9 is formed to prevent gas from escaping beneath the flange 8. The portion of the flange 8 above the horizontal portion 7 is of sufficient height to form a water-receptacle 10 on top of the casting whereby to keep the latter cool, notwithstanding the fact that a portion of it is located immediately above the gas-producing chamber 1 below. At the upper edge the flange 8 is provided with outturned or horizontally-disposed rack-teeth 11, and at equidistant intervals the brackets 12 12 are located, three being shown in the present instance, they having each a vertically and a horizontally disposed antifriction-roller 13 and 14, respectively, roller 14 moving under the outturned teeth 11, whereby to support the casting in its revolutions and the other also beneath the teeth, but so disposed as to maintain the casting 6 centered between them as it rotates. The casting is rotated by the vertical shaft 15, which turns in the bearing 16 16 therefor and is turned with a step-by-step motion in any approved manner—as, for instance, by an escapement mechanism 17 operating in connection with a ratchet-tooth arrangement on the shaft, the escapement being moved back and forth by the eccentric 19 and pitman 20. An opening 30 is formed in the top of the casting eccentric to its axis of rotation, and concentric flanges 21 and 22 extend upward from the casting, forming a groove 23 between them. Sight-holes 24 and 25, suitably covered by a plug 26, for instance, or cap 27, as the case may be, are provided as a means for looking down into the interior of the gas-producer through openings 28 in the masonry to observe the condition therein. Coal-reservoir 31, having preferably a tapering lower portion, is stationed above the casting, where it is held on brackets 32, there be-



ing three of these shown and their lower ends being secured to the top plate 3. This coal-reservoir has an opening in its bottom for the discharge of coal into the opening 30 in the top of the casting, and at its lower edge this reservoir is provided with two depending concentric flanges 33 33, the inner one being adapted to extend inside of the upturned flange 21 and the outer one in the space 23 between flanges 21 and 22, and said space is supplied with water through a pipe 34, whereby a water seal is formed at that point. A stationary top plate 35 is supported over the center of the opening in the top of the gas-chamber, and while the upper surface of this top plate is contiguous to the lower surface of the casting it is preferably provided with radial ribs 36 36, over which the lower surface of the rotary feed-casting sweeps, whereby to cause the continuous and uniform discharge of the material contained in the reservoir above. This top plate is secured on a centrally-located rod 36<sup>a</sup>, which is secured in some convenient manner at the top of the reservoir. On top of the reservoir the hopper 37 is stationed, the usual damper 38 being provided to discharge the contents of the hopper into the reservoir below. Thus it is understood that the top plate and reservoir are stationary while the feed-casting rotates between them, water seals being formed at both the upper and lower edges of the feed-casting or at the joints between its edges and the adjacent parts, so that no gas can escape at those points, and the casting is provided with an opening which travels beneath the open lower end of the reservoir, carrying an agitating device 39, which passes up into the fuel in the reservoir and keeps it loosened.

It will be observed that the feed-casting furnishes a reservoir over most of its area for a supply of water to keep it cool in its close proximity to the top plate, which of course is the most exposed to the products of combustion, and assist largely in prolonging the life of the plate, which otherwise would soon burn out and lose its efficiency; but by having a body of water as close as possible excessive heat and burning of the top plate are prevented. The construction is such that when it does become necessary to renew a part, especially the top plate, all of the parts above may be easily lifted from the top plate 3, and any injured portion may be easily replaced.

In operation fuel is lowered into the hopper in the usual way and by opening damper 38 allowed to fill the reservoir 31 below. The motion imparted to the feed-casting, as explained, is preferably a step-by-step motion; but this is continued constantly during the process of gas formation, and the purpose of my invention is to insure a positive, uniform, and continuous distribution of the coal into the gas-chamber below, and to this end the rotary feed is provided, as it effectually pre-

vents collecting and stoppage, the fuel descending through opening 30 at all times by gravity onto the surface of top plate 35, and thence it is swept in a continual stream over the edge of the top plate, from which it descends in a circuit around the fire-bed below, as indicated by the drawings at or near the outer edges of the grate. At the same time the motion imparted is comparatively slow, and by the step-by-step motion imparted the sudden jerks give a tendency to force the fuel upon the top plate over its edge, thus keeping the supply and quantity of fuel dropped into the chamber below practically continuous and uniform throughout the entire operation of the gas-producer. The gas is of course conducted off through a pipe or flue for that purpose in the top of the gas-chamber 1, as is customary.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A fuel-feed for gas-producers consisting of a stationary top plate, a fuel-supply reservoir and a rotary feed-casting interposed between the two, and provided with an opening eccentric to its axis of rotation through which the fuel drops from the reservoir onto the top plate, and from which it is swept by the movement of the feed-casting.
2. A fuel-feed for gas-producers consisting of a stationary top plate, a fuel-supply reservoir and a rotary feed-casting interposed between the two, and provided with an opening through which the fuel drops from the reservoir onto the top plate, and from which it is swept by the movement of the feed-casting, and a water seal for closing the joint between the reservoir and the feed-casting.
3. A fuel-feed for gas-producers consisting of a stationary top plate, a fuel-supply reservoir and a rotary feed-casting interposed between the two, and provided with an opening eccentric to its axis of rotation through which the fuel drops from the reservoir onto the top plate, and from which it is swept by the movement of the feed-casting, and means for imparting a step-by-step rotary motion to the feed-casting.
4. A fuel-feed for gas-producers consisting of a stationary top plate, a fuel-supply reservoir and a rotary feed-casting interposed between the two, and provided with an opening through which the fuel drops from the reservoir onto the top plate, and from which it is swept by the movement of the feed-casting, the feed-casting in close proximity to the top plate and carrying a supply of water to maintain a reduced temperature in itself and the top plate.
5. The combination with a gas-chamber having an opening in its top, and a fuel-reservoir located above the chamber, of a stationary top plate, a rotary feed-casting interposed between the top plate and the lower edge of the sup-



ply-reservoir and in close proximity to the plate, said feed-casting having an opening through which fuel descends onto the plate, and a water-chamber formed on the top of the feed-casting.

6. The combination with a gas-chamber having an opening in its top, and a fuel-reservoir located above the chamber, of a stationary top plate, a rotary feed-casting interposed between the top plate and the lower edge of the supply-reservoir and in close proximity to the plate, said feed-casting having an opening through which fuel descends onto the plate, a water-chamber formed on the top of the feed-casting, and water seals at the joints between the feed-casting and the reservoir and top of the gas-chamber.

7. The combination with a gas-chamber and a stationary top plate over the opening in its upper end, of a rotary feed-casting having an opening through which fuel descends onto the top plate, said casting having rack-teeth around its periphery, guide-rollers for supporting and centering the casting, and a shaft having a pinion thereon for rotating the casting.

8. The combination with a gas-chamber and a stationary top plate over the opening in its upper end, of a rotary feed-casting having an opening through which fuel descends onto the top plate, said casting having rack-teeth around its periphery, guide-rollers for supporting and centering the casting, and a shaft forming a pinion thereon for rotating the casting, the casting having sight-holes thereon,

one into the spout through which the fuel discharges and the other into the chamber below.

9. The combination with a gas-chamber and a stationary top plate, of a fuel-reservoir and a rotary casting having an opening therein into which fuel discharges onto the top plate and adapted to sweep the fuel in a continual uniform stream over the outer edge of the top plate, and provided with a water-chamber on its top adapted to keep its temperature and that of the top plate reduced.

10. The combination with a gas-chamber and a stationary top plate, of a rotary casting, a fuel-reservoir above the latter, and having an opening in its bottom, the casting having an agitator which rotates in the opening to loosen the fuel contained therein, and a casting provided with an opening through which fuel descends onto the top plate.

11. The combination with a gas-chamber and a stationary top plate, of a rotary casting, a fuel-reservoir above the latter, and having an opening in its bottom, the casting having an agitator which rotates in the opening to loosen the fuel contained therein, a casting provided with an opening through which fuel descends onto the top plate, and water seals formed at the joints between the upper and lower edges of the casting.

Dated this 1st day of July, 1902.

ELBERT H. CARROLL.

Witnesses:

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