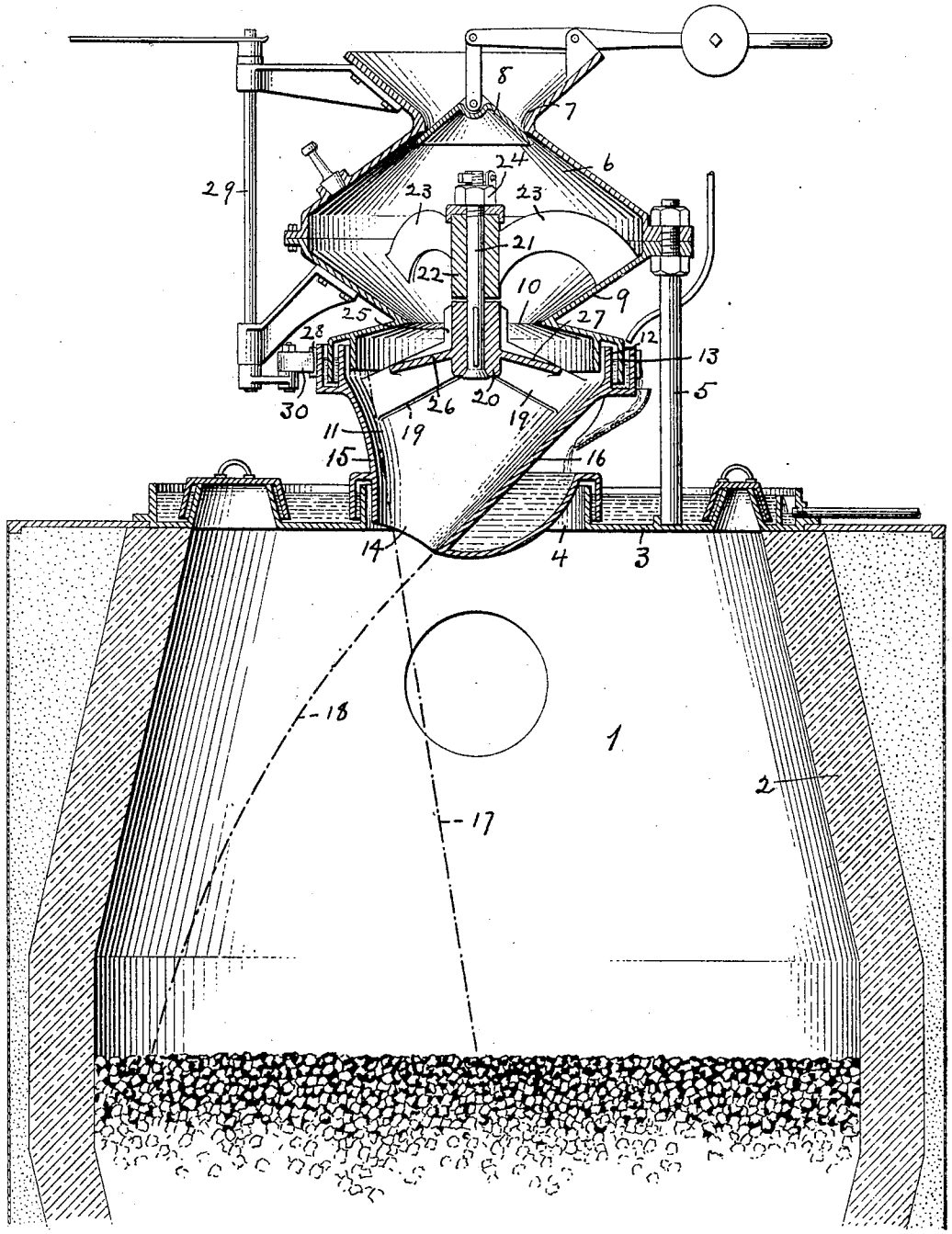
No. 809,295. PATENTED JAN. 9, 1906.

J. R. GEORGE.

GAS PRODUCER.

APPLICATION FILED JULY 10, 1903.



Witnesses

L. H. Horner

Penelope Comberbach.

Inventor

Jerome R. George

By Rufus B. Fowler

Attorney

UNITED STATES PATENT OFFICE.

JEROME R. GEORGE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO MORGAN CONSTRUCTION COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

GAS-PRODUCER.

No. 809,295. Specification of Letters Patent. Patented Jan. 9, 1906.

Application filed July 10, 1903. Serial No. 164,934.

To all whom it may concern:

Be it known that I, JEROME R. GEORGE, 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-Producers, of which the following is a specification, accompanied by a drawing forming a part of the same.

The figure represents a vertical central sectional view of the upper half of a gas-producer, showing the feeding mechanism for supplying fuel to the gas-producing chamber.

The object of my present invention is to provide an improved feeding apparatus for supplying and distributing fuel to the gas-producing chamber; and I accomplish this object by the construction and arrangement of parts, as hereinafter described, and pointed out in the annexed claims.

Referring to the accompanying drawing, 1 denotes the chamber of a gas-producer, inclosed in the present instance by circular walls 2 and having a top plate or cover 3 provided with a central opening 4 for the admission of fuel. Standing upon the top plate are legs, one of which is shown at 5, and supported on the legs 5 at some distance above the top plate is a stationary coal-reservoir 6, provided at its upper end with an opening 7 for the reception of coal, normally closed by a damper 8. The coal-reservoir is contracted in diameter near the bottom, forming a hopper-shaped section 9, with a restricted passage 10 for the delivery of coal to a rotating coal-distributer 11, placed upon the coal-reservoir and the top plate of the gas-producer. The upper edge 12 of the coal-distributer is cylindrical and incloses the lower cylindrical edge 13 of the coal-reservoir. The lower portion of the coal-distributer is gradually contracted in diameter and is provided at its lower end with a delivery-opening 14, inclosed within the central opening 4 of the top plate. The upper circular end of the coal-distributer is concentric with the opening 4 in the top plate of the gas-producer; but the delivery-opening 14 is eccentric thereto, so that upon one side of the distributer its wall is substantially vertical, as at 15, with an inclined wall 16 upon its diametrically opposite side with the intervening walls of varying inclinations, so that coal passing from the reservoir 6 through the distributer adjacent to the vertical wall 15 will fall into the gas-producing chamber at a slight inclination from a vertical line, as represented by the broken line 17, and be deposited near the center of the chamber, while coal falling upon the opposite inclined side 16 will slide therefrom and be carried in a slightly-curved line, as shown by the broken line 18, nearer the outside of the gas-producing chamber.

The coal-distributer is connected by radial arms 19 with a central hub 20, which is attached to the lower end of a vertical rotating spindle 21, journaled in a fixed hub 22, which is connected by the radial arms 23 with the coal-reservoir 6. The upper end of the spindle 21 is screw-threaded and provided with a nut 24, by which the spindle 21 and suspended coal-distributer may be vertically adjusted in its supporting-hub 22. The rotating hub 20, to which the coal-distributer is attached, extends upward into the restricted coal-passage 10 in the coal-reservoir, and it is provided with radial projecting ribs 25, adapted to agitate the coal as it passes through the gassage 10. The downward flow of coal through the passage 10 from the reservoir 6 into the distributer 11 is impeded by a disk 26, the diameter of which is greater than the diameter of the coal-passage 10, so that when the coal-distributer is at rest coal passing through the passage 10 will be caught by and held by the disk 26, the diameter of the disk and the distance between it and the restricted passage 10 of the coal-reservoir being such that the coal will be held upon the disk within the angle of repose. The agitation or disturbance of the coal resting upon the disk 26, such as that caused by the rotation of the coal-distributer 11, will cause the coal to move over the edge of the disk and fall into the coal-distributer and be delivered through the opening 14 and distributed between the center and outside of the heating-chamber, the rotation of the distributer 11 placing the coal in a uniform layer within the heating-chamber. To facilitate the movement of the coal off the disk 26, its upper surface 27 is preferably slightly inclined, and the delivery of coal over the outer edge of the disk 26 can also be varied by the ver-

tical adjustment of the coal-distributer relatively to the coal-reservoir by means of the nut 24 on the screw-threaded end of the rotating spindle 21, thereby increasing or decreasing the vertical space between the contracted coal-passage 10 and the upper surface of the disk 26.

The upper and lower edges of the coal-distributer 11 are water-sealed in the usual manner of water-sealing the joints in the feeding devices of gas-producers. The rotating coal-distributer 11 is provided with teeth 28, by which the distributer is rotated by means of any suitable actuating mechanism, consisting in the present instance of a rocking shaft 29 and a pawl 30; but the method of rotating the distributer forms no part of my present invention, and therefore is not herein described in detail.

In the operation of feeding coal to the heating-chamber by my improved feeding mechanism coal is freely carried by gravity through the passage 10 of the coal-reservoir owing to the inclined or hopper-shaped sides 9 of the distributer until it strikes upon the upper surface 27 of the disk 26, which impedes the direct downward flow of coal by gravity, causing it to be deflected from the center outwardly over the edge of the disk 26, from which it is carried by gravity vertically downward, a portion passing through the opening 14 of the coal-distributer and the remaining portion impinging against the inclined sides of the coal-distributer by which the direction of the coal is changed, as already described, thereby causing the coal delivered through the opening 14 to be distributed over the surface of the fuel in the heating-chamber and in an area largely in excess of the area of the delivery-opening 14. When the rotation of the coal-distributer stops, the flow of coal from the reservoir 6 is then checked by reason of the coal resting upon the disk 26 being held within the angle of repose.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a gas-producer, the combination with the heating-chamber having an opening at its top for the admission of fuel, of a fuel-reservoir placed above said opening and having an opening in its bottom for the delivery of fuel to a distributer, a distributer between the opening in the heating-chamber and the opening in the reservoir, said distributer consisting of a rotating shell smaller at its lower than at its upper end, with an opening at its upper end larger than the delivery-opening of said reservoir and concentric with its axis of rotation, and with an opening at its lower end eccentric with its axis of rotation, and a disk inclosed in said distributer having its diameter larger than the diameter of the delivery-opening in said reservoir, with an annular space around said disk for the passage of fuel.

2. In a gas-producer, the combination with the heating-chamber having an opening at its top for the admission of fuel, of a fuel-reservoir placed above said opening, said reservoir having a hopper-shaped bottom with a concentric opening therein for the delivery of fuel to a distributer, a distributer between the opening in the heating-chamber and the delivery-opening of said reservoir, said distributer consisting of a rotating shell smaller at its lower than at its upper end, with an opening at its upper end larger than the delivery-opening of said reservoir and concentric with its axis of rotation, and with an opening at its lower end eccentric with its axis of rotation, and a disk inclosed in said distributer, having its diameter larger than the diameter of the delivery-opening in said reservoir, with an annular space around said disk for the passage of fuel.

3. In a gas-producer, the combination with the heating-chamber having an opening at its top for the admission of fuel, of a rotating fuel-distributer placed above said heating-chamber and consisting of a shell, with a passage therethrough for fuel, said distributer having an opening at its upper end concentric with its axis of rotation for the admission of fuel, and an opening at its lower end eccentric to its axis of rotation for the delivery of fuel, with the sides of said distributer having a varying inclination to a vertical plane, whereby the fuel in passing through said distributer is projected into the heating-chamber at different angles, a disk inclosed in said distributer, with an annular space around it for the downward passage of fuel, and means for delivering fuel to said distributer upon the central portion of said disk, substantially as described.

4. In a gas-producer, the combination with a heating-chamber having a top plate provided with an opening for fuel, of a rotating fuel-distributer above said top plate, said distributer consisting of a shell having a passage therethrough for fuel, and having a delivery-opening at its lower end for the delivery of fuel to the heating-chamber, a concentric disk inclosed in said distributer near its upper end, with an annular space between said disk and the wall of the distributer, and means for supplying fuel to the central section of said disk.

5. In a gas-producer, the combination with a heating-chamber having an opening at its top for the admission of fuel, of a distributer above said opening, consisting of a rotating shell with its lower end the smaller and provided with an opening eccentric to its axis of rotation for the delivery of fuel to the heating-chamber, a disk carried by said distributer, with an annular space between said disk

and the inner wall of said distributer, substantially as described.

6. In a gas-producer, the combination with a heating-chamber having an opening at its top for the admission of fuel, of a fuel-distributer above said opening and consisting of a rotating shell having a passage therethrough, with the lower end of said shell the smaller and provided with an opening eccentric to its axis of rotation, a disk carried by said shell, with its upper surface slightly inclined from its center downward, and having an annular space between said disk and the inner wall of said distributer, substantially as described.

7. In a gas-producer, the combination with a heating-chamber having an opening for the admission of fuel, and a fuel-reservoir placed above said opening and having an opening in its bottom for the delivery of fuel to a distributer, of a fuel-distributer between said heating-chamber and said reservoir, said fuel-distributer having an annular admission-opening for the admission of fuel of greater diameter than the opening in the bottom of said reservoir, and concentric with its axis of rotation, with the inner wall of said distributer at a varying inclination to a vertical plane, and a delivery-opening eccentric with its axis of rotation.

8. In a gas-producer, the combination with a heating-chamber, having an opening in its top for the admission of fuel, and a fuel-reservoir placed above said opening and having an opening in its bottom for the delivery of fuel to a distributer, of a fuel-distributer between said heating-chamber and said reservoir, said fuel-distributer having an annular eccentric admission-opening for the admission of fuel of greater diameter than the opening in the bottom of said reservoir, means for conducting the fuel from said opening in the bottom of said reservoir to said annular admission-opening, and an eccentric delivery-opening at the bottom of said distributer.

9. In a gas-producer, the combination with the heating-chamber, of a fuel-distributer, consisting of a rotating shell placed above the heating-chamber with the lower end of said shell the smaller, a central hub in said shell, arms connecting said shell and said hub, a disk supported by said hub concentrically with said shell, with an annular space between said disk and said shell for the passage of fuel, a shaft held in said hub, a journal-bearing above said distributer for said shaft, and means for supplying fuel to said distributer, substantially as described.

10. In a gas-producer, the combination of a heating-chamber, having an opening at its top for the admission of fuel, a rotating hollow fuel-distributer above said opening with its upper end concentric and with its lower end eccentric with said fuel-opening, means for rotating said distributer, means for closing the central section of the fuel-passage at the upper end of said distributer whereby an annular fuel-passage is formed at the upper end of the distributer, and means for supplying fuel to said distributer, substantially as described.

11. In a gas-producer, the combination with a heating-chamber having an opening at the top for the admission of fuel, of a rotating fuel-distributer placed above said opening, said distributer having a concentric annular passage at its upper end and an eccentric delivery-opening at its lower end, means for rotating said distributer, a fuel-reservoir above said distributer having a hopper-shaped bottom with a delivery-opening therein smaller than the annular passage in said distributer, substantially as described.

12. In a gas-producer, the combination with a heating-chamber having an opening in its top for the admission of fuel, of a fuel-reservoir placed above said opening and having a hopper-shaped bottom provided with a concentric opening for the delivery of fuel, a central hub inclosed in said reservoir, arms connecting said hub with the wall of the reservoir, a shaft journaled in said hub, a hub attached to the lower end of said shaft, arms connecting said second hub with a rotating shell having its upper end concentric with said shaft and having its lower end inclosed in the fuel-opening of the heating-chamber and provided with an opening eccentric to its axis of rotation and a disk inclosed in said distributer with an annular space between said disk and the inner wall of said distributer, and with the diameter of said disk greater than the delivery-opening in said reservoir, substantially as described.

Dated this 27th day of June, 1903.

JEROME R. GEORGE.

Witnesses:

PENELOPE COMBERBACH,

RUFUS B. FOWLER.