

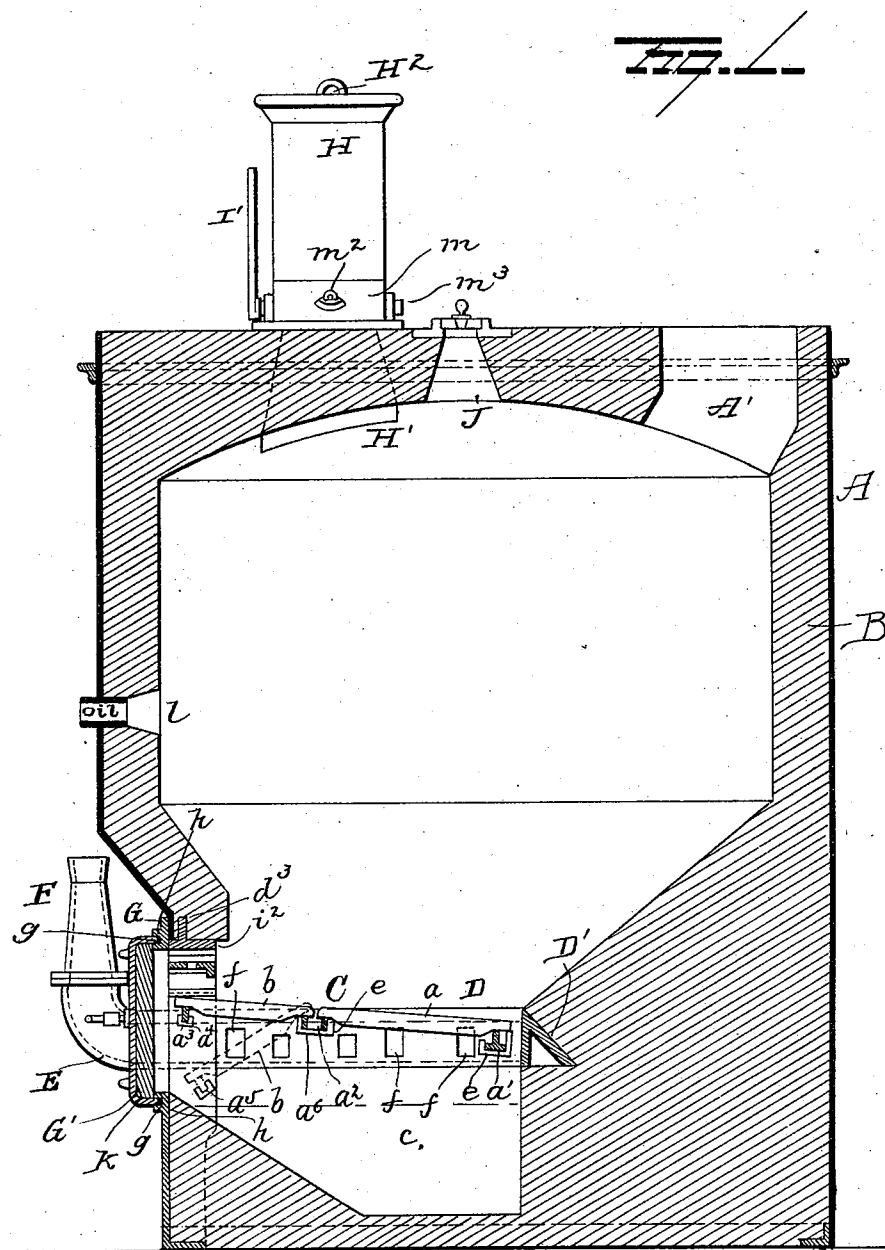
(No Model.)

4 Sheets—Sheet 1.

J. D. SWINDELL.
GAS PRODUCER.

No. 557,171.

Patented Mar. 31, 1896.



Witnesses
E. L. Nottingham
G. F. Downing.

Inventor.
J. D. Swindell
By H. A. Seymour
Attorney

(No Model.)

4 Sheets—Sheet 2.

J. D. SWINDELL.
GAS PRODUCER..

No. 557,171.

Patented Mar. 31, 1896.

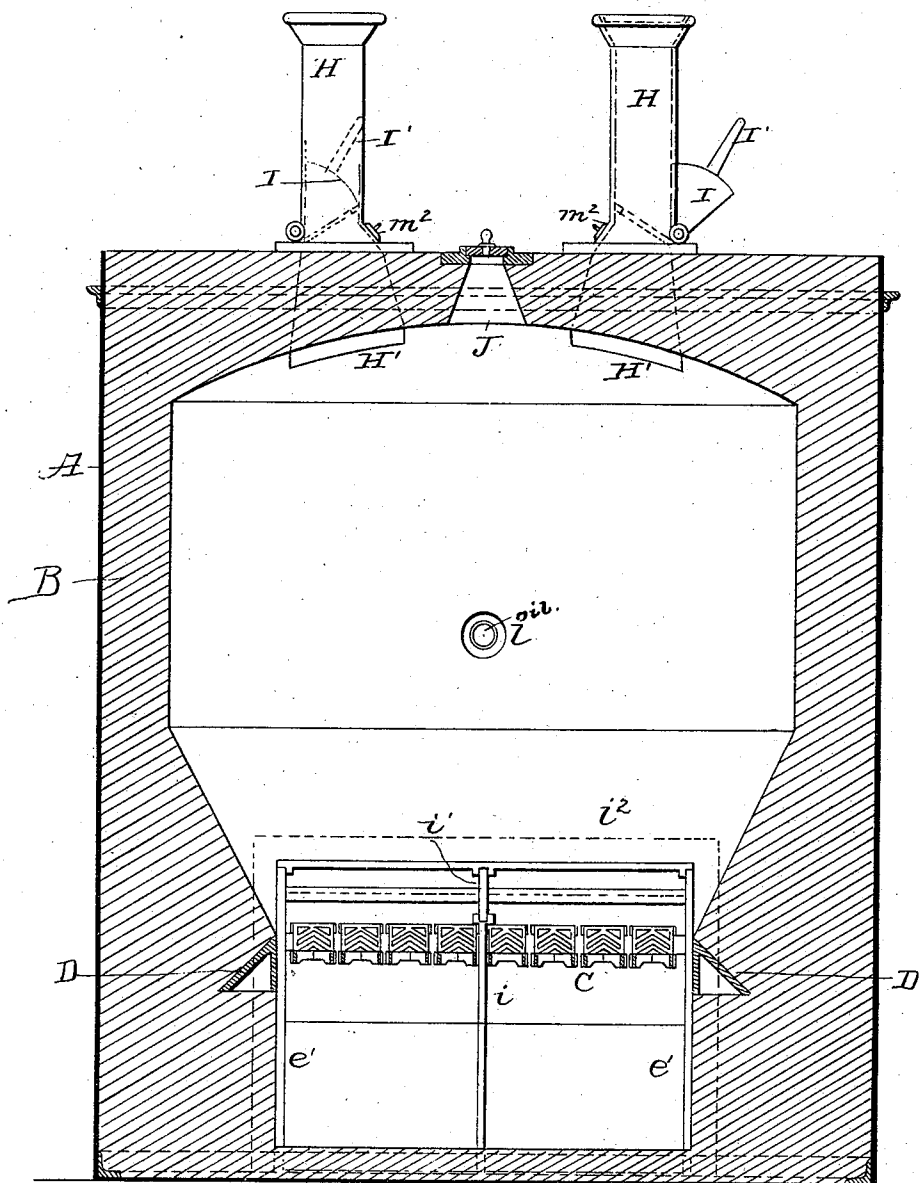


FIG. 2.

Witnesses
E. J. Nottingham
G. F. Downing.

Inventor
J. D. Swindell
By H. A. Seymour
Attorney

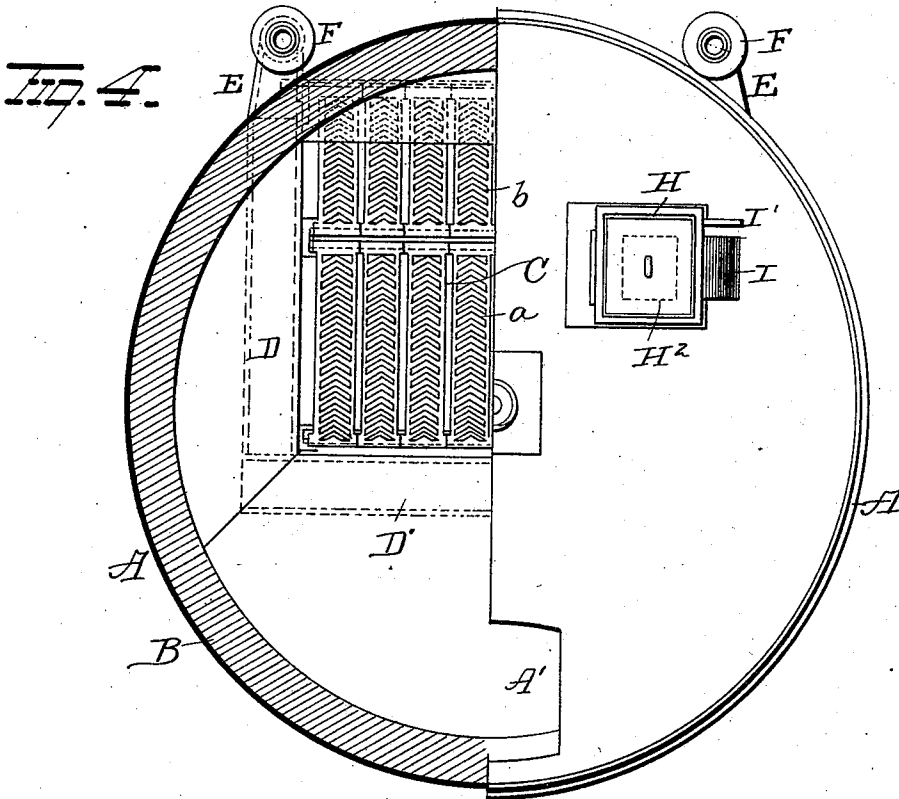
(No Model.)

4 Sheets—Sheet 3.

J. D. SWINDELL.
GAS PRODUCER.

No. 557,171.

Patented Mar. 31, 1896.



Inventor
J. D. Swindell
By H. A. Seymour
Attorney

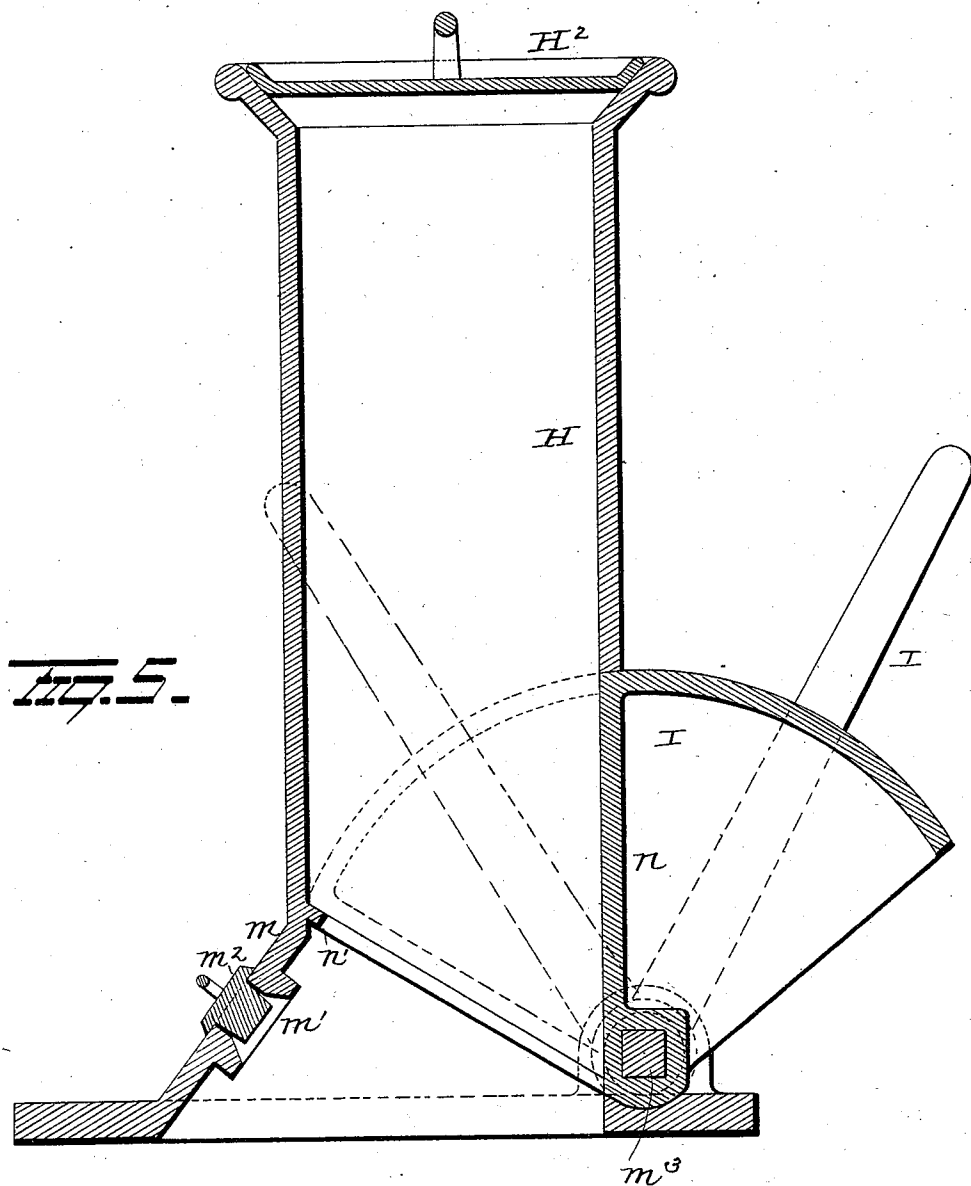
(No Model.)

4 Sheets—Sheet 4.

J. D. SWINDELL.
GAS PRODUCER.

No. 557,171.

Patented Mar. 31, 1896.



Witnesses
E. Nottingham
G. F. Downing

Inventor
J. D. Swindell
By *H. A. Seymour*
Attorney

UNITED STATES PATENT OFFICE.

JAMES D. SWINDELL, OF ALLEGHENY, PENNSYLVANIA.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 557,171, dated March 31, 1896.

Application filed April 25, 1895. Serial No. 547,163. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. SWINDELL, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Gas-Producers; and I 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.

My invention relates to an improvement in gas-producers, one object of the invention being to so construct the apparatus that the coal will be deposited therein in such manner as to avoid the liability of the consumption of the gas before it leaves the apparatus.

A further object is to so construct a gas-producer that the coal will be deposited therein in such manner that a common and regular level of the body of coal in the apparatus can be easily maintained.

A further object is to produce simple and efficient means for supplying the steam blast to the grate.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figures 1 and 2 are vertical sectional views. Figs. 3 and 4 are horizontal views, one half of Fig. 4 representing a plan view of one half of the apparatus. Fig. 5 is a detail view.

The body of my improved producer comprises a wrought-iron shell A and a lining B of fire-brick, the latter being arched at the top, as shown in Figs. 1 and 2, and having a gas-outlet A'. An ash-pit c is made in the lower portion or bottom of the producer and adapted to receive water, whereby to quickly cool ashes, &c., falling therein from a grate C. The grate C is made with a stationary series of grate-bars a supported by cross-bars a' a² and a hinged series b, the latter being supported on a cross-bar a⁶ and a cross-bar a³ located on brackets a⁴ and adapted to be dropped, as shown in Fig. 1, and its outer edge made to rest on a cross-bar a⁵, so that ready access can be had through the cleaning-door for cleaning the grates. The grate C is disposed normally in an inclined position, in-

clining from about the center of the opening d downwardly, and is supported by the cross-bars a' a² a⁶, which have bearings at their ends on projections e made on the inner sides of boxes D. The boxes D are made V-shaped in cross-section and are embedded in the fire-brick at opposite sides of the grate, the outer ends of said boxes being connected together by means of a similar box D'. The inner ends of the boxes D communicate with pipes E and the latter communicate with suitable steam-blowers F adapted to force a steam blast into the hollow boxes D, the steam having its exit from said boxes through openings f (preferably five in each box) immediately under the grate, said steam being thus permitted to pass up through the body of coal on the grate.

The lining or face-plate G for the opening d is secured to the front of the structure and at its edges is made with ribs or flanges to produce recesses g for the reception of the upper and lower edges of the cleaning-doors G', and in said recesses asbestos packing h is located. In the center of the opening d a vertical plate or partition i is located and preferably made in two parts, the upper part i' being connected with a plate i², which constitutes a lining for the upper wall of the opening d, and said plate is made with a flange d³ adapted to enter the fire-brick of the structure. The vertical walls of the opening are also lined with plates e'. The front edge of the plate or partition i is made with flanges j having a recess j' for the reception of the inner edges of the cleaning-doors, the asbestos packing h being also inserted in said recess. The cleaning-doors may be made of iron or other suitable metal and are lined with fire-brick k.

The wall of the producer is made with an opening l for the accommodation of a jet or spray of suitable construction, whereby to inject oil in the form of a spray into the apparatus above the body of coal therein.

Hoppers H H communicate with inlet chutes or hoppers H' in the top of the producer in the center thereof, so as to discharge coal exactly in the center of the grate, and each hopper H is provided with a cover H². The lower portion of the wall of each hopper H is made inclined, as at m, and provided with a poke-hole m', which is normally closed by means

of a stopper m^2 . Each hopper is cut away for the accommodation of a gate I, secured to a shaft m^3 mounted at the lower edge of the hopper, the upright portion n of said gate
 5 constituting a portion of the wall of the hopper when the gate is open, and when the gate is closed its free edge rests on a flange n' projecting inwardly from the wall of the hopper. An arm I' is secured to the shaft m^3 of each
 10 gate, by means of which to open and close the latter.

By the employment of two feeding-hoppers located centrally in the top of the producer the coal will be dropped on the center of the
 15 grate, which will result in keeping the grates evenly covered, and the coal can be easily kept level by the use of an instrument inserted into the furnace through a single poke-hole J.

20 Heretofore it has been the practice to use bell-hoppers, which throw the coal to the outer sides of the gate, thus necessitating the drawing of the coal over the grate by an operator, which requires much labor and is a
 25 source of considerable expense.

As the coal is dropped in the center of my improved producer, only one poke-hole J is necessary instead of several. Unless the coal is kept nearly level air will find its way up
 30 through the body of coal and consume the gas before it leaves the producer, thus showing the importance of maintaining the grate evenly covered and the body of the coal kept level. In using oil in connection with coal a
 35 solid even bed of coal is very desirable for the uniform generation of gas.

With my producer a cheap grade of coal may be used and the gas will be enriched with crude petroleum, which results in the
 40 production of very superior gas.

My improvements are very simple in construction, comparatively cheap to manufacture and effectual in all respects in the performance of their functions.

Slight changes might be made in the details 45 of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details of construction herein set forth; but, 50

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

1. In a gas-producer, the combination with a furnace having a hopper on top opening into 55 the furnace, said hopper having a lateral opening, of a gate pivotally connected to the hopper, and means for swinging this gate in and out of the hopper, said gate constructed and arranged to operate in and close the lat- 60 eral opening in the hopper and to open and close the opening into the furnace, substantially as set forth.

2. In a gas-producer, the combination with a grate, of three communicating boxes extending around the sides and rear of said 65 grate, said boxes having outlets beneath the grate and sloping roofs which deflect the steam in the boxes upward through the body of the coal on the grate, and means for forcing a 70 steam blast out through the openings, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES D. SWINDELL.

Witnesses:

A. L. CONNER,
 J. KENNEDY.