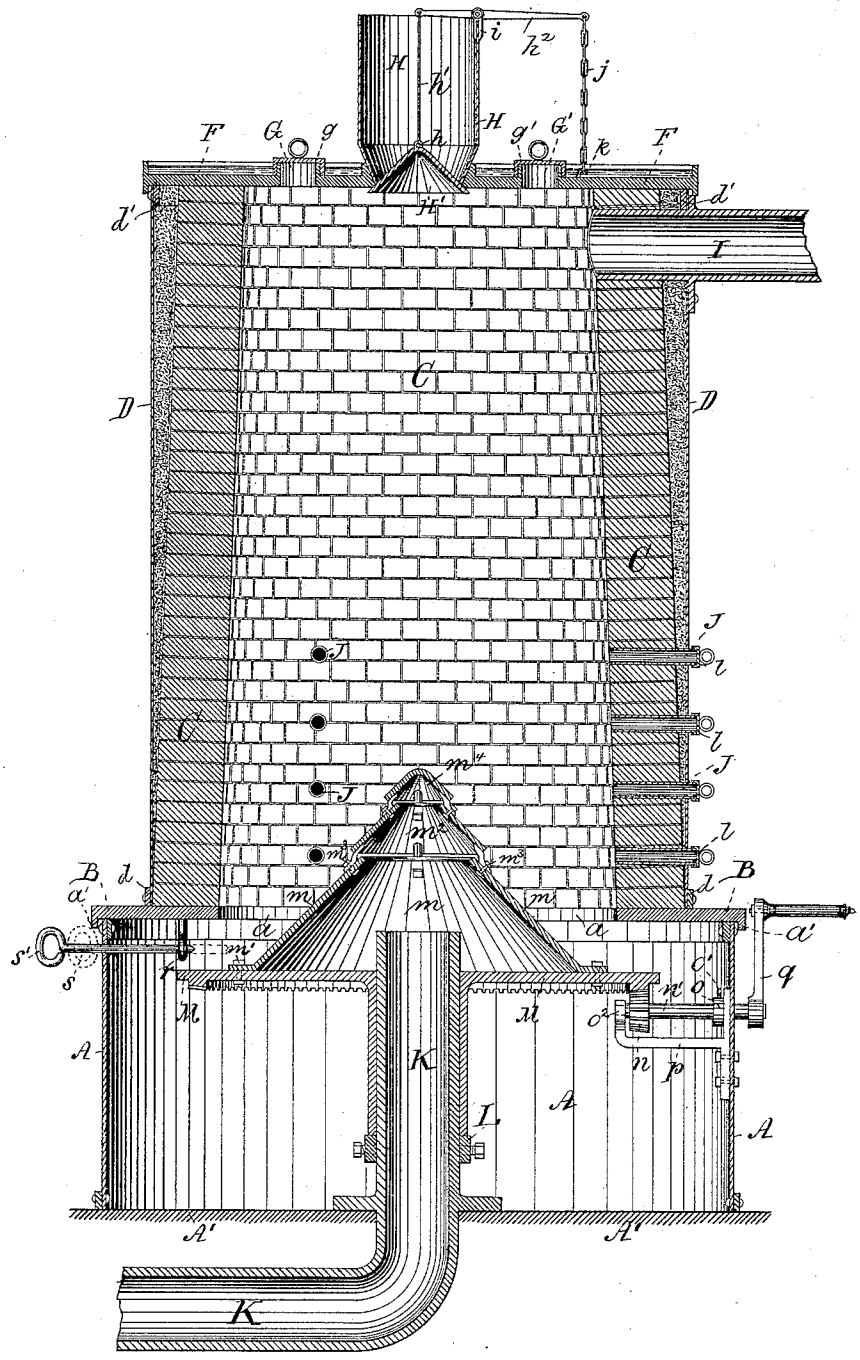
(No Model.)

W. J. TAYLOR.

GAS PRODUCER.

No. 399,796. Patented Mar. 19, 1889.



WITNESSES.
Hermann Bornemann
Thos. M. Smith.

INVENTOR.
Wm. J. Taylor.
by J. Walter Douglass

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM J. TAYLOR, OF CHESTER, ASSIGNOR TO THE TAYLOR GAS PRODUCER COMPANY, OF CAMDEN, NEW JERSEY.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 399,796, dated March 19, 1889.

Application filed May 21, 1887. Serial No. 238,964. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. TAYLOR, of Chester, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in Gas-Producers, of which the following is a specification.

My invention relates to certain novel features of improvement in the construction of a brick-lined producer for gasifying fuel for making heating or other gas or of converting solid fuel into gaseous fuel.

The principal object of my invention is to provide a brick-lined gas-producer in which the making of gas for metallurgical or other purposes may be carried on uninterruptedly or continuously, with the formation of arches of clinker, or what are termed "bridges," in the combustion-chamber entirely obviated, and the producer provided with means for supporting the fuel and effecting thorough or complete combustion thereof, as well as the discharge intermittently or continuously of all non-combustible matter from the combustion-chamber while the producer is regularly making gas by simple mechanical devices, whereby the making of gas may be economically conducted without stopping to clean out the producer.

The invention consists of the construction of a brick-lined producer and the arrangement of the parts thereof, as hereinafter particularly described, and pointed out in the claims.

In the accompanying drawing is shown a vertical central section of my improved brick-lined gas-producer with the improved revolving bottom for supporting the fuel and permitting of the removal of the ash from the combustion-chamber of the producer, and with the mechanical means for actuating said bottom shown in application.

Referring to the drawing, A represents a cylindriform metallic sealed ash-chamber supported upon a foundation, A'.

B is a stout metallic circular plate supported by the casing of the ash-chamber A. This circular plate B has a central opening, *a*, and around the outer periphery, and preferably cast therewith, is a flanged rim, *a'*, which serves to hold this plate snugly in position against the casing of the chamber A.

C is the combustion-chamber, constructed of fire-brick in any suitable manner and arranged so as to form a cylindrical chamber of a uniform diameter from top to bottom, or slightly tapering from the bottom to the top of the producer, as shown in the drawing.

D is the main metallic casing supported upon the circular plate B, and to which casing or shell D, at the top and bottom, are riveted or otherwise secured circular metallic strengthening-rims *d* and *d'*, which afford additional strength to this casing or shell D.

Between the rear fire-brick wall of the combustion-chamber C and the main metallic casing D is formed a space which tapers preferably from the top to the bottom, and this space is filled with loam or other similar material for retaining the heat.

F is a dish or other similar form of top plate for containing and maintaining a supply of water for keeping the upper portion and parts of the producer cool.

G and G' are tubular sight-apertures cast with the top plate, F, having removable covers *g* and *g'*.

H is the hopper for feeding the fuel into the producer.

H' is the conical-shaped bell fitting snugly up against the throat of the feed-hopper, having secured to it an eye, *h*, to which a vertical rod, *h'*, is attached, which is pivoted at its opposite extremity to a cross-lever, h^2, fulcrumed to a bracket, *i*, suitably secured to the shell of the feed-hopper, and to the opposite extremity of the cross-lever h^2 is attached a chain, *j*, which is arranged so that it may be readily attached to a hook, *k*, cast with or otherwise secured to the top plate, F, when it is desired to close the hopper after the fuel has been fed into the brick-lined combustion-chamber C.

I is the horizontal gas-exit conduit secured to the main casing and extending into the brick-work C of the combustion-chamber of the producer.

J is a series of peep-holes arranged at suitable distances apart around the peripheral surface of the producer, and extending through the brick-work for permitting of an examination of the different zones of incandescence, but more particularly for ascertaining with

accuracy the dividing line between the ash and incandescent mass in the combustion-chamber. These tubular peep-apertures are provided with covers or stoppers *l*, which may be readily fitted onto or into said tubular apertures in any well-understood manner.

K is a blast pipe or conduit extending vertically upward through the foundation A′ of the ash-receiving chamber A, and is supported in position to the foundation by a flange cast with or suitably secured to the blast-pipe K.

L is a collar fitted to said blast-pipe and provided with one or more set-screws for holding it firmly to the pipe K.

M is a circular base-plate having a cylindriform sleeve cast therewith, which is fitted to the blast-pipe K, and supported thereon by the collar L. This circular base-plate is provided with a ratcheted surface on the under side near the outer periphery thereof, which meshes with a cog-wheel, *n*, secured to a horizontal shaft, *n′*, held in bearings provided therefor in the metallic shell or casing A, and in a bracket, *p*, rigidly secured to the casing A in any suitable manner. On this shaft *n′* is secured a collar, *o*, having a set-screw, *o′*, for firmly holding the same to the shaft. This collar prevents the shaft from being drawn out of its journal-bearing o^2 in the bracket *p* when the shaft is revolved by the turning of the crank *q*, as will be readily understood.

To the base-plate M is attached a hollow frustum of a cone, *m*, by means of bolts and nuts *m′*, or in any other suitable manner. To the hollow frustum *m* is attached a hollow frustum, m^2, (smaller in diameter than the frustum *m*,) by means of two or more supporting-brackets cast preferably with the frustum m^2, and so constructed and arranged as to permit of the securing of one frustum to the other by means of bolts and nuts m^3, and at the same time to leave an annular space or passage between the two frustums for the free and direct passage of the air, or steam and air, under pressure admitted into the interior of these frustums *m* and m^2 through the conduit or pipe K into contact with the more or less incandescent fuel in the combustion-chamber C for effecting combustion thereof. To the hollow frustum m^2 is attached a conical-shaped hood, m^4, which is held to the frustum m^2 in a manner similar to that already fully described; but of course it will be understood that any desired number of hollow frustums may be used in the construction of a revolving bottom of the type hereinabove explained; and hence I do not wish to limit myself to the use of the number shown in the drawing. This revolving bottom, it should be borne in mind, must necessarily be diametrically so proportioned to the combustion-chamber C, and be supported in position at such a distance therefrom, that the superimposed more or less incadescent mass will be supported thereby until revolved by the attendant in charge of the producer. Into the circular plate B, supported by the casing of the ash-chamber A, are secured two or more depending eyes, *r*, forming supporting-guides for a similar number of bars, *s*, inserted through the casing of the ash-chamber A and through the depending eyes or guides *r*, as shown in the drawing. These horizontal bars *s*, with their handles or rings *s′*, operated from the outside of the casing A, are for the purpose of agitating the mass whenever it shall be found that the non-combustible matter and ashes are passing or being ground down between the combustion-chamber C and the revolving bottom faster in one place than in another. This may be obviated most satisfactorily by the mere pushing in of one or more of these bars for agitating the mass at such point or parts, thereby rendering it possible to have at all times a uniform grinding down and discharge of the non-combustible material and ash from the combustion-chamber into and over the bottom, when actuated as hereinbefore described, into the ash-chamber A beneath.

The mode of operation of the improved brick-lined producer hereinbefore described may be briefly explained in the following manner: The fuel is fed into the central cylindriform brick-lined combustion-chamber, C, by the lowering of the bell H′ a sufficient distance, and when the proper quantity of fuel has been supplied to the combustion-chamber the bell H′ is drawn upward snugly against the throat of the hopper, and the air, or steam and air, by forced draft or otherwise, admitted through the blast-pipe K into the interior of the revolving bottom and discharged radially, or nearly so, through the annular spaces between the hollow frustum composing the bottom into contact with the fuel in the chamber C for effecting combustion, and the gas arising from the combustion of the fuel discharged through the horizontal gas-off-take flue I for utilization; and whenever it shall become necessary during the time that the producer is making gas to remove the non-combustible matter from the combustion-chamber C the bottom may be revolved by the attendant in charge, and the ashes together with the clinker, accumulating in the brick-lined combustion-chamber, will pass downward onto the base-plate M, where the mass will be supported until discharged over the outer periphery thereof into the sealed ash-chamber A by the turning of the crank *q*, without, however, stopping the producer while it is regularly making gas.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination, a gas-producer provided with a vertical blast-pipe having a flange which rigidly supports said pipe in the base of the ash-chamber thereof, a collar supported in position on said pipe by means of screws, a bottom with a sleeve fitting onto said pipe, and means, as described, for rotating said

bottom, substantially as and for the purposes set forth.

2. The combination of a gas-producer provided with a rotatable bottom, depending eyes *r*, and agitating-bars *s*, supported in said eyes above said bottom, said bars operating to cause accumulating non-combustible material in the combustion-chamber of the producer to be ground downward faster in one place than another over said bottom, and means, as described, for revolving said bottom, as shown and described, and for the purposes set forth.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WM. J. TAYLOR.

Witnesses:
HERMANN BORMANN,
THOMAS M. SMITH.