

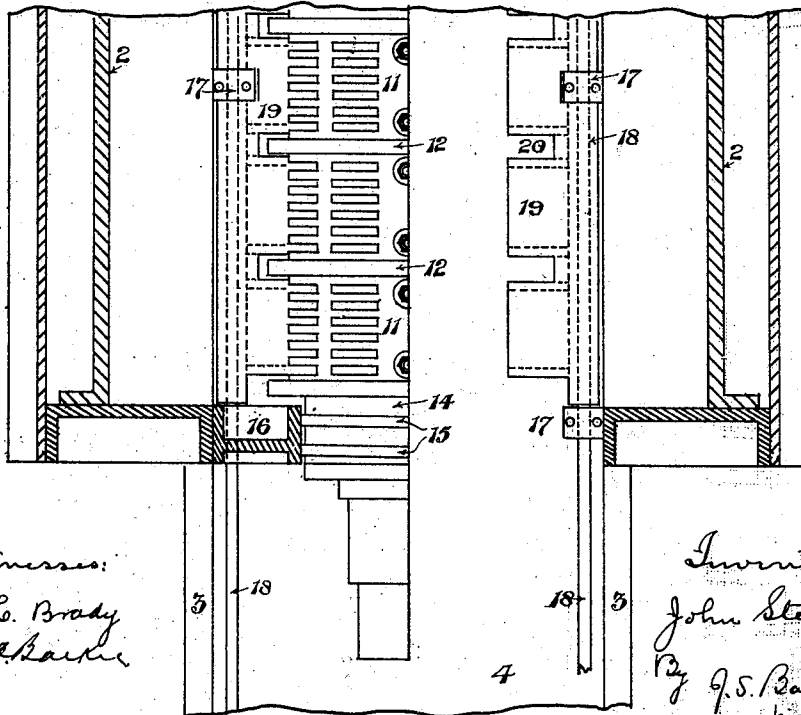
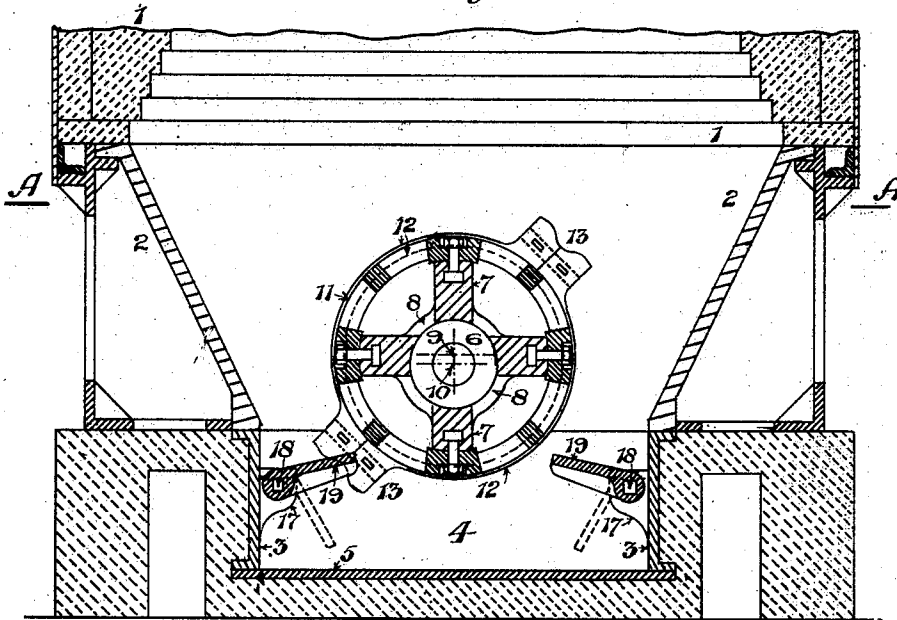
J. STEWART.
GAS PRODUCER.

APPLICATION FILED MAR. 17, 1909.

992,615.

Patented May 16, 1911.

Fig 1



Witnesses:
L. C. Brady
C. Barker

Inventor:
John Stewart
By J. S. Barker
his atty.

Fig 2

UNITED STATES PATENT OFFICE.

JOHN STEWART, OF CODNOR PARK, ENGLAND.

GAS-PRODUCER.

992,615.

Specification of Letters Patent.

Patented May 16, 1911.

Application filed March 17, 1909. Serial No. 483,986.

To all whom it may concern:

Be it known that I, JOHN STEWART, a subject of the King of Great Britain, and a resident of Codnor Park, in the county of Derby, England, have invented new and useful Improvements in Gas-Producers, of which the following is a specification.

This invention relates to improvements in and applicable to gas producers or generators of the water bottom type and provided with a fire grate fitted to revolve on a horizontal axis, the present invention having particular reference to gas producers fitted with revolving fire grates of the kind described in the specification of the U. S. A. Patent No. 885,100. In these gas producers the clinker, ashes and some of the fuel falls into and fills the water trough whereby the power required to rotate the grate is increased considerably and there are no means for efficiently controlling the length of time the fuel remains in the producer, or of controlling the expulsion of the clinker and ashes from the producer.

The present invention has for its object the application to and the combination with gas producers fitted with grates of the kind herein referred to of means whereby full control of the working of the producer is obtained, which means prevent the fuel being drawn out of the producer by the revolving grate, enable the fuel to be retained in the producer for any length of time and by which the water trough is kept clear of ashes and clinker and consequently the grate can be more easily rotated.

In the drawings:—Figure 1 is a sectional elevation of the lower part of a producer fitted with a rotary grate and showing also the application of means for controlling the action of the producer, and Fig. 2 is a sectional plan on the line A, A, Fig. 1, with one half of the grate removed.

The lower part of the producer 1 is made with inclined side plates 2 which rest upon the side plates 3 of the water trough 4, the bottom of which is formed by a plate 5 attached to the side plates 3. The grate shown in the drawing is provided with a central hollow drum 6 on the outer surface of which there are a number of longitudinal ribs 7 and between such ribs there are openings 8. The ribs project radially from a center 9 which is eccentric to the drum center 10, and to the outer face of the ribs a circular fire grate 11 is attached, such

grate being built up in sections of any suitable size. The ends of adjacent sections of the grate are arranged to form circumferential grooves for receiving rings 12 which are provided with claws 13 and are prevented from turning relatively to the grate. The cylindrical grate formed as described is of such diameter and is so mounted that there remain considerable spaces to either side thereof and between it and the side walls of the producer, through which ashes and clinkers may pass, these being fed downward from time to time by the revolution of the grate. The claws 13 carried by the grate are arranged in rows parallel with the grate axis, such rows being disposed diametrically opposite each other; and the claws are of such length that when the grate is set with them in a horizontal position, they substantially bridge the spaces at the sides of the grate and operate to assist in supporting the fuel mass. In gas producers where a deep bed of fuel is maintained, the ash, clinker, and burning fuel in the lower part of the producer, form a more or less coherent mass so that the claws on the grate when set as just described are sufficient closures for the spaces at the sides of the grate; but when the grate is rotated they operate to stir up the lower mass of the fuel bed and feed down the ash and clinkers. At the ends of the drum are collars 14 which are fitted with spring rings 15 which revolve in contact with openings in the end framing 16.

The side plates 3 of the water trough are provided with brackets 17 which form bearings for the square shafts 18 by which doors 19 are carried. The shafts 18 are considerably below the axis of the cylindrical grate so that when the doors are swung inward to positions approximately horizontal, they are directly below but at a considerable distance from the claws 13 of the grate when the latter are in a horizontal position. These doors are provided with edge slots 20 for the claws 13 to pass through and normally are held with their inner edges comparatively near the surface of the rotating grate, but they may be lowered to the dotted line position. The surface of the doors may be solid as shown or the doors may be in the form of a grating.

In a producer fitted as herein described the trough 4 is kept full of water and the doors are normally held in the full line po-

sition. The doors thus support the fuel at the sides of the producer and prevent it falling into the trough and they also prevent fuel or ashes being drawn out of the producer by the rotation of the grate, or they can be used for regulating the quantity of matter removed from the producer by the rotation of the grate. When however it is desired to clean the producer by the removal of the clinker and ashes from the bottom part of the same, the grate is brought to rest with the claws in a horizontal position so that they act as supports to the fuel. The doors are then lowered and the clinker and ashes fall into the water trough from which they are removed in the usual manner. The doors are afterward raised to their full line position and are held there until it is again required to clean out the producer.

What I claim is:—

1. In a gas producer combustion chamber of the water bottom type, the combination with a gas producer of a cylindrical grate mounted in the lower part thereof and of a size to leave open spaces between the periphery of the grate and the side walls of the chamber, claws carried by the grate and arranged in diametrically opposed longitudinal rows and adapted when brought to rest in a horizontal position to substantially bridge the said spaces at the sides of the grate and thus operate as supports for the fuel bed, and hinged doors movable independently of the movements and position of the grate, the said doors when moved to an approximately horizontal position being below the claws carried by the grate when they are set horizontally, and at a considerable distance from them, substantially as set forth.

2. In a gas producer of the water bottom type, the combination with a gas producer combustion chamber of a cylindrical grate

mounted in the lower part thereof, the grate being of a size to leave spaces between its periphery and the side walls of the chamber, a water trough below the grate, claws carried by the grate and arranged in diametrically opposed longitudinal rows, the claws being adapted when set horizontally to substantially bridge the spaces at the sides of the grate and thus serve as supports for the fuel bed, and doors hinged in the water trough and movable independently of the movements and position of the grate, the said doors when set to approximately horizontal positions being below and at a considerable distance from the claws carried by the grate when they are set horizontally, substantially as set forth.

3. In a gas producer of the water bottom type, the combination with a gas producer combustion chamber of a cylindrical grate mounted in the lower part thereof and of a size to leave open spaces between the periphery of the grate and the side walls of the chamber, claws carried by the grate and arranged in diametrically opposed longitudinal rows and adapted when brought to rest in a horizontal position to substantially bridge the said spaces at the sides of the grate and thus operate as supports for the fuel bed, and hinged doors movable independently of the movements and position of the grate, the said doors when moved to an approximately horizontal position being below the claws when the latter are set horizontally and at a considerable distance from them, and the edges of the doors when thus set approaching closely the periphery of the grate and their edges being slotted to allow the passage of the claws as the grate is rotated, substantially as set forth.

JOHN STEWART.

Witnesses:

WILLIAM H. POTTER,
HARRY ROPER.