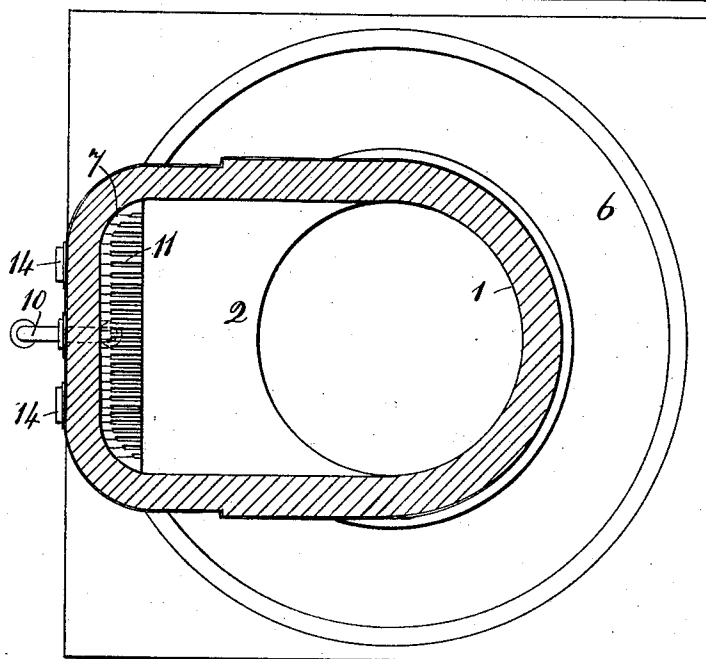
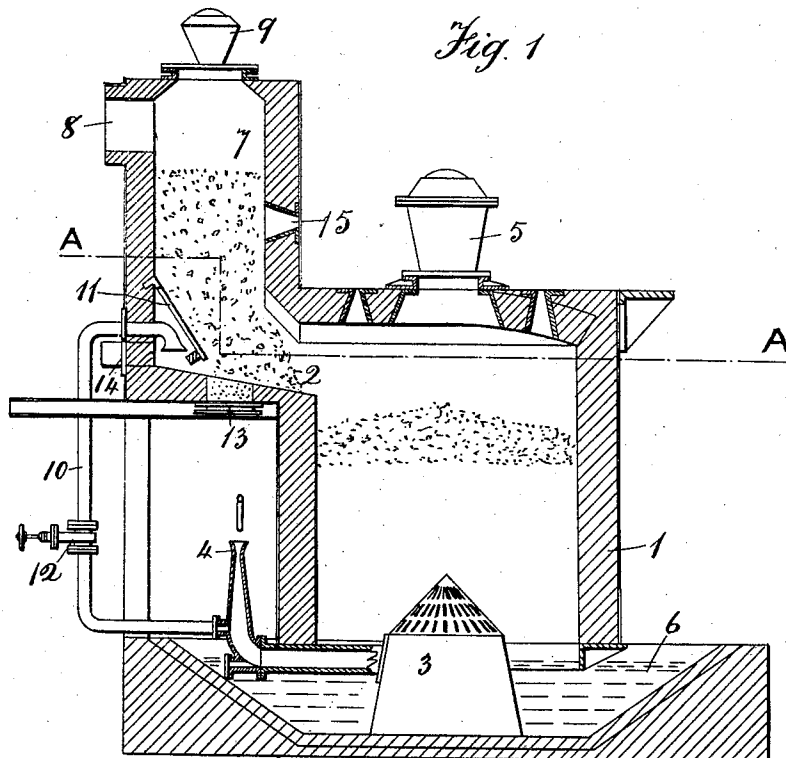


No. 874,458.

PATENTED DEC. 24, 1907.

W. TOWNS.
GAS PRODUCER.

APPLICATION FILED NOV. 13, 1905.



Witnesses

W. B. Johnson
F. C. Spencer.

Inventor

William Towns.

UNITED STATES PATENT OFFICE.

WILLIAM TOWNS, OF LIVERPOOL, ENGLAND.

GAS-PRODUCER.

No. 874,458.

Specification of Letters Patent.

Patented Dec. 24, 1907.

Application filed November 13, 1905. Serial No. 287,152.

To all whom it may concern:

Be it known that I, WILLIAM TOWNS, a subject of the King of Great Britain, residing at Liverpool, in the county of Lancaster, England, have invented new and useful Improvements in or Connected with Gas-Producers, of which the following is a specification, reference being had to the accompanying drawings, on which—

Figure 1 is a vertical central section and Fig. 2 a horizontal section at the line A. A. on Fig. 1 of a gas producer constructed according to my invention.

The invention relates to apparatus for producing combustible gas by burning bituminous coal with an insufficient supply of air, and the object is to provide means whereby the crude gases thus produced will be enriched and purified from tar, soot, &c.

The invention consists essentially in passing the crude gases through incandescent non-bituminous carbonaceous material, such as coke, which when exhausted for purification purposes may be pushed into the gas producer as a part of the fuel supply.

Referring to the drawings 1 is a gas producer of any usual kind having the gas outlet 2 at the upper side, 3 blower for supplying air or air and steam to the bottom of the fuel in the producer, 4 air injector, 5 fuel supply hopper, 6 well for ashes.

7 is an approximately vertical chamber lined with refractory material and disposed adjacent to the producer 1, the gas outlet 2 of which leads into the lower side of the chamber 7.

8 is the gas outlet from the upper part of the chamber 7. The chamber 7 is nearly filled and maintained so, with non-bituminous carbonaceous material by means of the charging hopper 9.

10 is a pipe for admitting air say from the injector 4 to the lower part of the chamber 7 but so as not to come in contact with the gas coming from the outlet 2 thus preventing combustion of such gas: and 11 are grate bars for partly supporting the carbonaceous material and allowing better distribution of the air: In this arrangement, at the side of the column of carbonaceous material opposite to that at which the gas from the producer enters, 12 is a valve for regulating the air supply, 13 door for emptying chamber 7, 14 doors through which a pusher can be

inserted to push exhausted material from the bottom of the chamber 7 into the producer 1.

15 are sight holes to observe the condition of incandescence in chamber 7 and to form a guide for the proper regulation of air to said chamber.

In operation the non-bituminous carbonaceous material in the chamber 7 is ignited and raised to incandescence by air blown in through the pipe 10 either continuously or intermittently: the crude gases from the producer 1 pass through the outlet 2 up the column of incandescent material and out through the outlet 8: any CO_2 present being thereby decomposed into CO and any tarry vapors, soot &c. being also converted into permanent gases, or intercepted by the carbonaceous material and thereby in-time carried down through the producer 1 into the ash well 6. In addition to the direct purification and enrichment, the above described arrangements allow of the producer 1 being worked at a higher temperature than usual, whereby less tarry vapors and soot are produced than hitherto has been the case.

It is necessary that the air supply to the chamber 7 be carefully regulated so as to maintain the carbonaceous material therein at incandescence without admitting air sufficient to convert any of the final gases into CO_2 . It is necessary as above mentioned that such air be admitted to come in contact with the hot coke or other carbonaceous substance only and not with the crude gas from the producer. The air is therefore admitted into the column of coke by an inlet at some distance from that of the entrance of the gas from the producer, into the column of coke.

What I claim is:—

1. The combination with a gas producer of a vertical purifying chamber arranged laterally to the gas producer and provided with a gas outlet at its upper end and constructed to contain nonbituminous material and having an approximately horizontal lateral passage from the lower part into the upper part of the producer and a regulable air supply to the chamber disposed on the opposite side thereof to the crude gas inlet and separated therefrom by the mass of nonbituminous carbonaceous material substantially as described.

2. The combination with a gas producer of a vertical purifying chamber arranged later-

ally to the gas producer and provided with a
gas outlet at its upper end and constructed to
contain nonbituminous material and having
an approximately horizontal lateral passage
5 from the lower part into the upper part of
the producer, a grate disposed on the oppo-
site side of the chamber to the crude gas in-
let and separated therefrom by the mass of
nonbituminous carbonaceous material, and a

regulable air supply to the chamber under 10
the grate, substantially as described.

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

WILLIAM TOWNS.

Witnesses:

W. B. JOHNSON,
F. C. SPENCER.