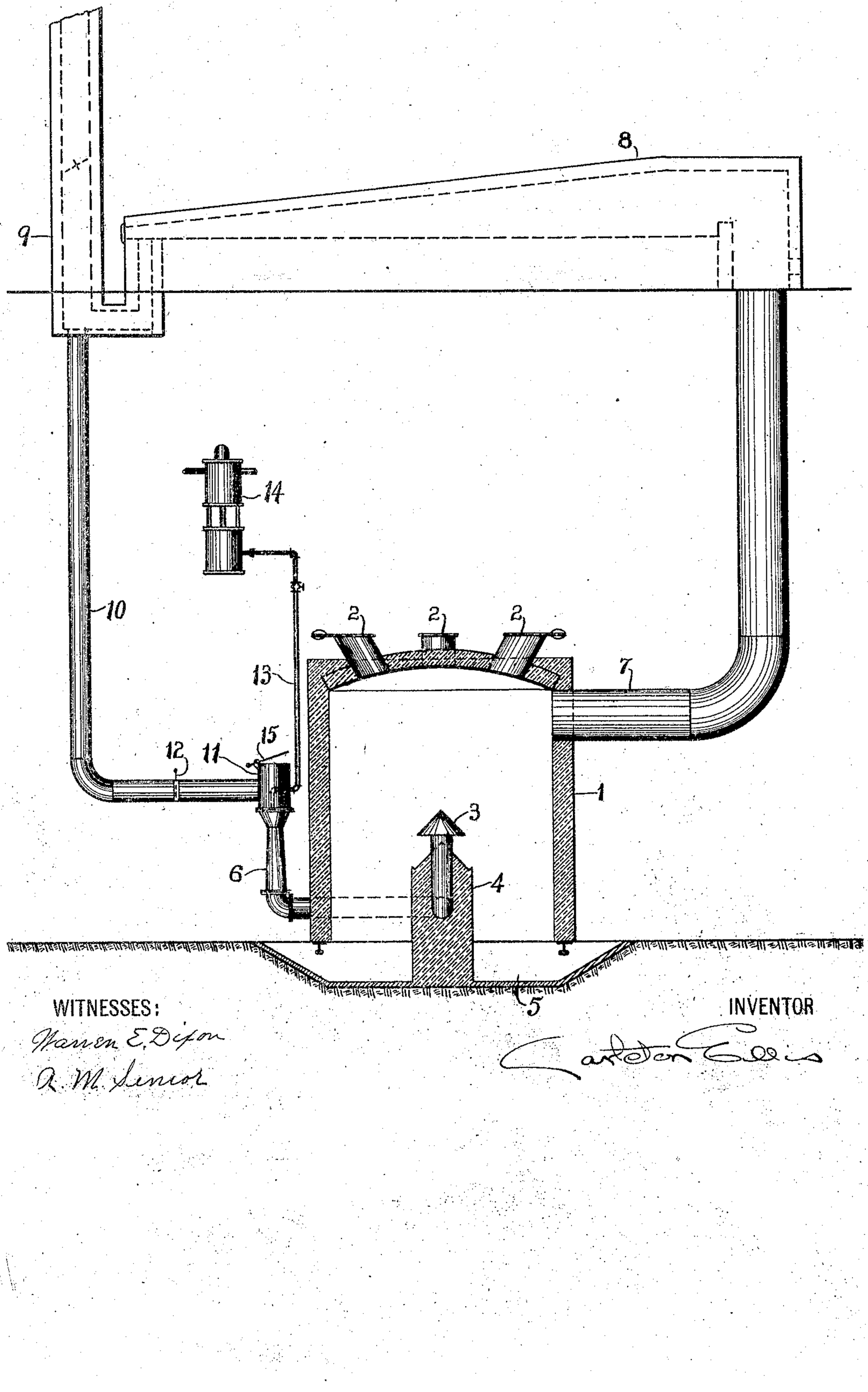
No. 815,913. PATENTED MAR. 20, 1906.

C. ELLIS.

GAS PRODUCER.

APPLICATION FILED JULY 1, 1905.



WITNESSES:

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GAS-PRODUCER.

No. 815,913. Specification of Letters Patent. Patented March 20, 1906.

Original application filed May 11, 1905, Serial No. 259,925. Divided and this application filed July 1, 1905. Serial No. 267,920.

To all whom it may concern:

Be it known that I, CARLETON ELLIS, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Gas-Producer Apparatus, of which the following is a specification.

This invention is a division of copending application Serial No. 259,925, relating to gas-producer apparatus, and especially to those in which products of combustion or a portion thereof from any convenient furnace yielding stack-gases carrying carbon dioxid are delivered to the producer and passed through the bed of fuel therein. I have discovered that these combustion products owing to the presence of carbonic acid may be made the means of keeping down the temperature of the producer and of avoiding the production of soot, slag, or clinker in objectionable amounts. I have also found that the use of such products of combustion brings about a more uniform combustion of the fuel with consequent equality of temperature throughout the fuel mass, whereby the troubles heretofore experienced through the burning out of the boshes or other metallic parts of the producer are practically eliminated.

Carbon dioxid in passing through a bed of ignited fuel of considerable depth will be reduced to carbon monoxid and in so doing will absorb heat, as the splitting off of an atom of oxygen from CO^2 by the carbon of the fuel from carbon monoxid is an endothermic change. This reaction has in addition to the advantages above mentioned the advantage that the reaction of reduction resulting in the endothermic absorption of heat takes place with greater facility than in the case of steam and results in the operation of the producer at a much lower temperature than that possible by the use of steam.

This invention comprises novel improvements in apparatus for carrying into effect the endothermic reaction above mentioned and also includes certain useful arrangements of conduits, dampers, and jets, whereby a portion of the stack-gases may be diverted from their usual course into the producer.

In the accompanying diagrammatic drawing, 1 is a gas-producer having feed-hoppers, 2, twyers 3, blast-baffle 4, and water seal 5. The twyers 3 are connected with the blower 6.

7 is a gas-outlet pipe extending to the furnace 8, which is shown of a reverberatory type, but may be of any form of construction desired.

From the stack 9 a passage 10 leads to a cap or sleeve 11, situated on the blower 6. A damper 12 is introduced into this passage.

13 is an air-pipe leading from the air-compressor 14 to the blower 6.

15 is an adjustable damper covering the opening of the sleeve 11.

The method of operation is as follows: A bed of fuel of sufficient depth to produce a combustible gas of good quality and containing little or no free oxygen is brought to a suitable state of ignition in the gas-producer 1. The air-compressor 14 is put in operation forcing a jet of air into the blower 6, thereby creating a suction in the passage 10. Adjustment of the damper 12, and, if necessary, of the damper 15, is made so that a mixture of air and products of combustion is formed, which when entered into the producer effects a simultaneous exothermic and endothermic reaction, by virtue of which the temperature of the producer is maintained constant at any desired point.

What I claim is—

1. In a gas-producing plant, the combination of a gas-producer, a source of products of combustion, a pipe connection from the source to the producer and an interposed collar in said pipe connection carrying an air-jet nozzle and having valve-controlled communication with the atmosphere.

2. In a gas-producing plant, the combination of a gas-producer, a source of products of combustion, a pipe connection from the source to the producer having a valved inlet open to the atmosphere and an air-injector in said pipe connection between the inlet and the producer.

3. In a gas-producing plant, the combination of a gas-producer, a fuel-burning furnace provided with a waste-gas outlet, a pipe connection from the outlet to the producer having a valved inlet-pipe open to the atmosphere, and an air-injector in said pipe connection between the inlet and the producer.

Signed at New York city, in the county of New York and State of New York, this 29th day of June, A. D. 1905.

CARLETON ELLIS

Witnesses:
WARREN E. DIXON,
JAS. K. CLARK.