

(No Model.)

2 Sheets—Sheet 1.

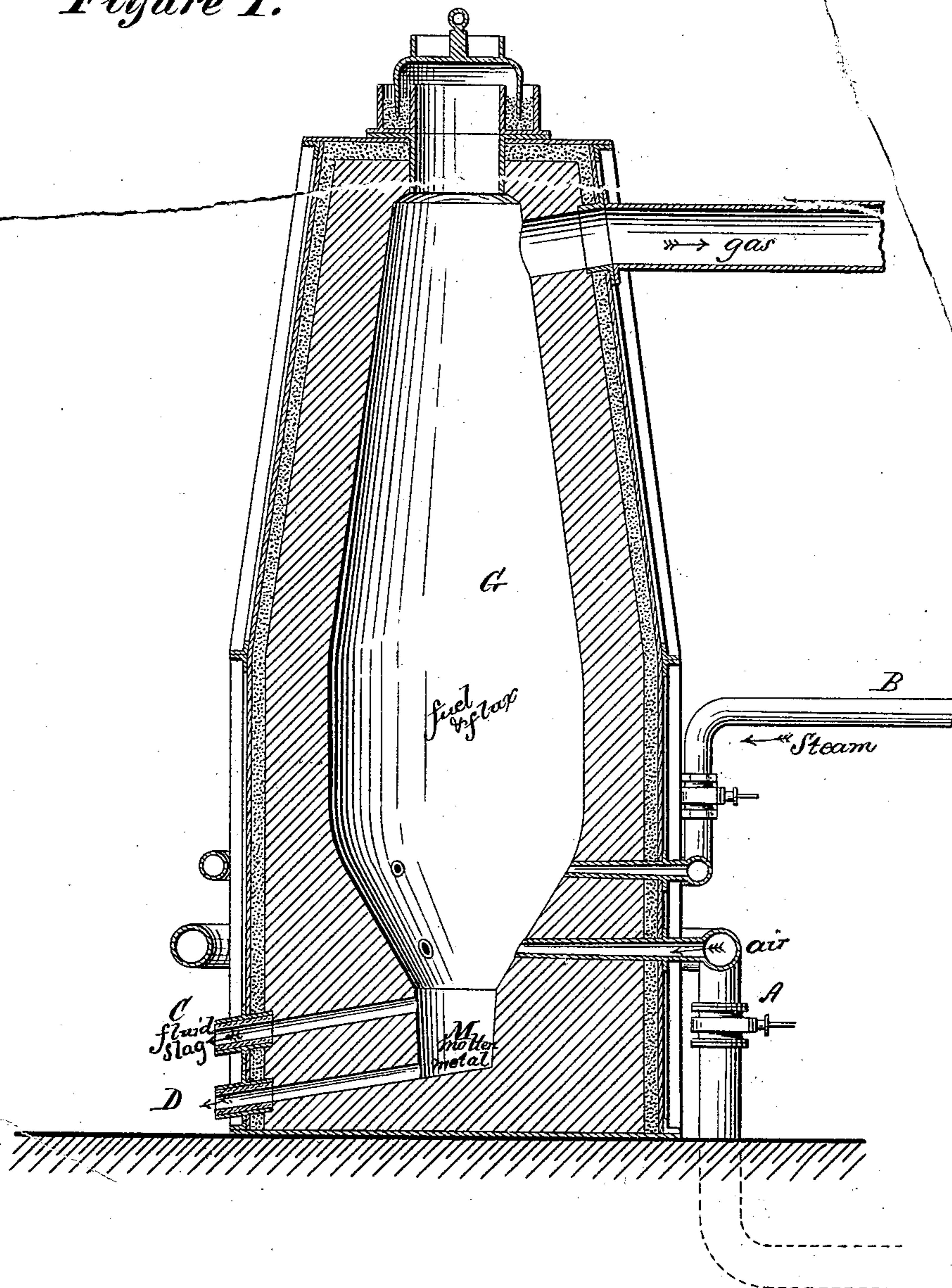
E. J. JERZMANOWSKI.

Process of and Apparatus for Generating Gas.

No. 233,860.

Patented Nov. 2, 1880.

*Figure 1.*



Witnesses:

Geo. W. Miatt  
S. J. Sullivan.

Inventor:

Eugene J. Jerzmanowski,  
By his Attorney,  
E. N. Dickerson &

(No Model.)

2 Sheets—Sheet 2.

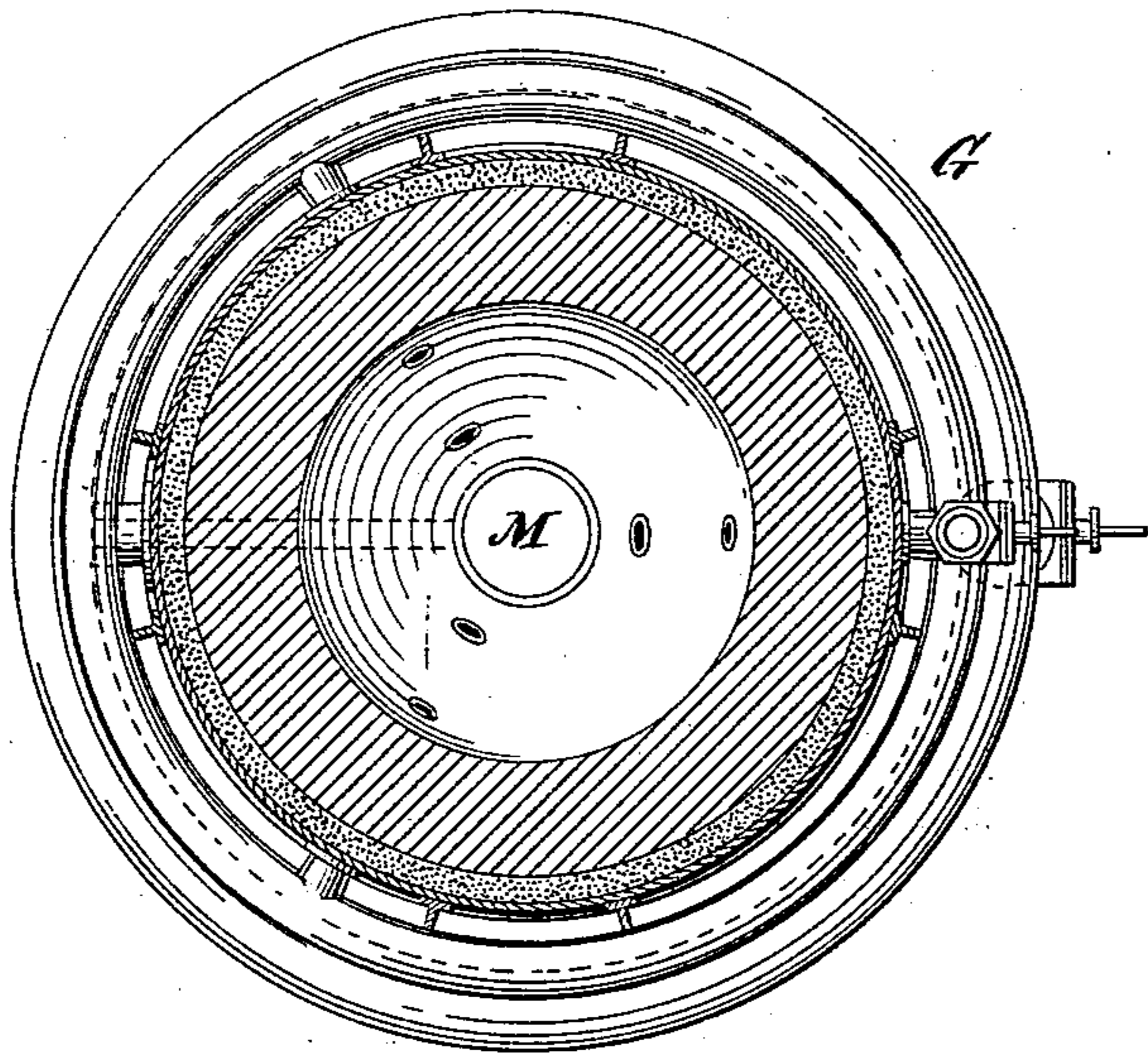
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Process of and Apparatus for Generating Gas.

No. 233,860.

Patented Nov. 2, 1880.

*Figure 2.*



*Witnesses:*

*Geo. W. Miatt*

*S. J. Sullivan*

*Inventor:*

*Erazm J. Jerzmanowski,*  
*By his Attorney.*

*E. M. Dickerson*

# UNITED STATES PATENT OFFICE.

ERAZM J. JERZMANOWSKI, OF NEW YORK, N. Y.

## PROCESS OF AND APPARATUS FOR GENERATING GAS.

SPECIFICATION forming part of Letters Patent No. 233,860, dated November 2, 1880.

Application filed May 28, 1880. (No model.)

*To all whom it may concern :*

Be it known that I, ERAZM J. JERZMANOWSKI, of the city, county, and State of New York, have invented a new and useful Improvement in Processes of and Apparatus for Generating Gas, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

My invention relates to an improved generator and an improved method of using the generator, by means of which the entire combustible fuel is used for the production of gas. In the ordinary method of producing water-gas or carbonic oxide from coal an open-bottom generator is used, the general result being that part of the fuel is unconsumed and escapes between the bars, and other disadvantages from the destruction of the apparatus are also experienced.

By means of my improvement a generator with a closed solid bottom or hearth may be used, and the coal-refuse is melted and carried off as melted slag in a manner to be explained.

In order to insure that the ashes after liquefaction do not solidify in the generator, I make use of what I denominate a "heat-magazine" in the bottom of the generator, which consists of a body of molten material, preferably iron or lead; or any other metal not easily oxidizable in the presence of coal might be substituted. This metallic heat-magazine is maintained in a condition of liquefaction at the bottom of the generator.

My generator may be constructed in many well-known ways, the general configuration of one of which is shown in the drawings, of which—

Figure 1 represents a vertical section, and Fig. 2 a horizontal section.

G represents, generally, the generator, which is of a kind frequently employed in the production of water-gas, with the exceptions before noted. The generator is to be filled with hard coal, soft coal, charcoal, or other material rich in carbon. A test should be made of the fuel to be used in order to determine what is the character of the ash produced by its combustion. In case the fuel is determined to be si-

licious in character different earths containing clay and lime should be added. In case it turns out to be calcareous earths containing clay (silicate of aluminium) are to be used, so as to make the ash liquefiable and to form a readily-fusible slag. Silicates previously obtained and broken pieces of glass can also be advantageously mixed with the flux. In the usual method of using generators of this class air is first introduced by a pipe, A, causing a high combustion and heat in the generator. The resulting gas may be used for any of the well-known purposes for which such gases are used. The air being shut off steam may be introduced in the well-known way through pipe B, making water-gas. The air or steam may be superheated, if desired.

In the bottom of the generator is arranged the hearth M, which consists of a chamber adapted to receive and contain a sufficient amount of melted metal to serve the purpose referred to. The metal is highly heated and fused by the injection of the air, and retains its heat after the steam is blown in, whereby any slag which falls upon it is melted and floats upon its surface. This slag may be withdrawn by the tube C, and on occasion the melted iron may also be withdrawn through the outlet D, and may also be used over again, as desired.

By employing the fusible and removable heat-magazine referred to the destruction of grate-bars is prevented, since none are used, and also the ash is readily passed into the liquid slag and withdrawn.

I might employ various constructions to accomplish this result, the principle of my invention being the employment of a heat-magazine and of suitable fluxes, as above described.

I am aware of the use of fluxing materials to produce slags in gas-producing blast-furnaces, and of the use of fused metals on the bottoms of closed retorts having no blast-pipes, neither of which features alone constitutes my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A closed gas-generator having a coal-chamber and steam and inlet pipes, and provided with a fusible hearth consisting of molten

metal, arranged to receive and heat the slag and ashes from the chamber, substantially as set forth.

2. The within-described improvement in the  
5 manufacture of gas, consisting in the process of producing a fluid slag in the gas-fuel, and preventing its clogging in the base of the generator by mixing with the body of coal materials

which will flux with the ashes, and discharging the slag upon a body of molten metal, substantially as set forth.

ERAZM J. JERZMANOWSKI.

Witnesses:

S. F. SULLIVAN,  
WM. A. POLLOCK.