

(No Model.)

E. J. JERZMANOWSKI.
APPARATUS FOR PRODUCING GAS.

2 Sheets—Sheet 1.

No. 289,842.

Patented Dec. 11, 1883.

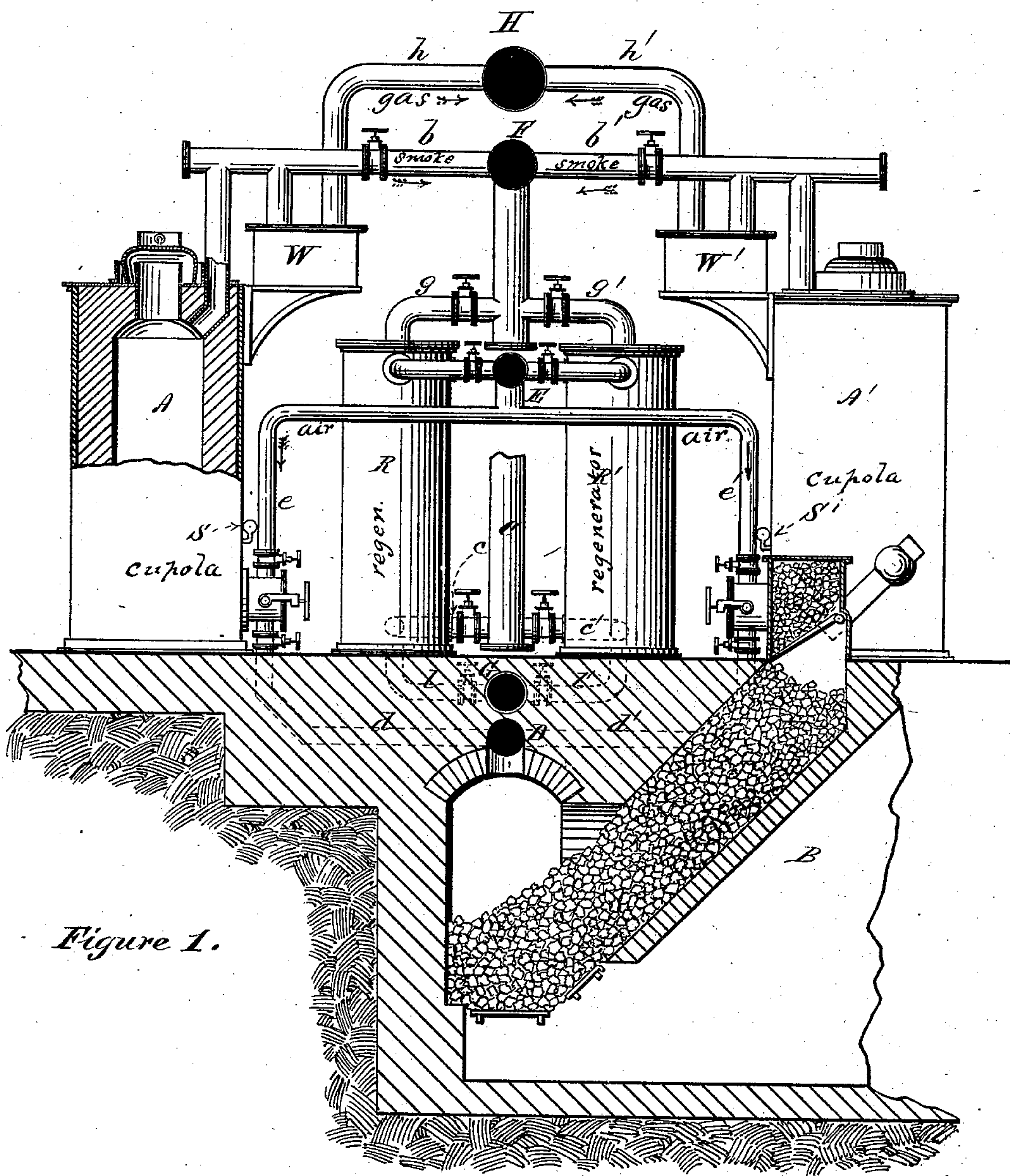


Figure 1.

Witnesses:
Leo. W. Mott
Anthony Grefj

Inventor:
Erazm J. Jerzmanowski
By his attorney,
E. N. Ockers

(No Model.)

2 Sheets—Sheet 2.

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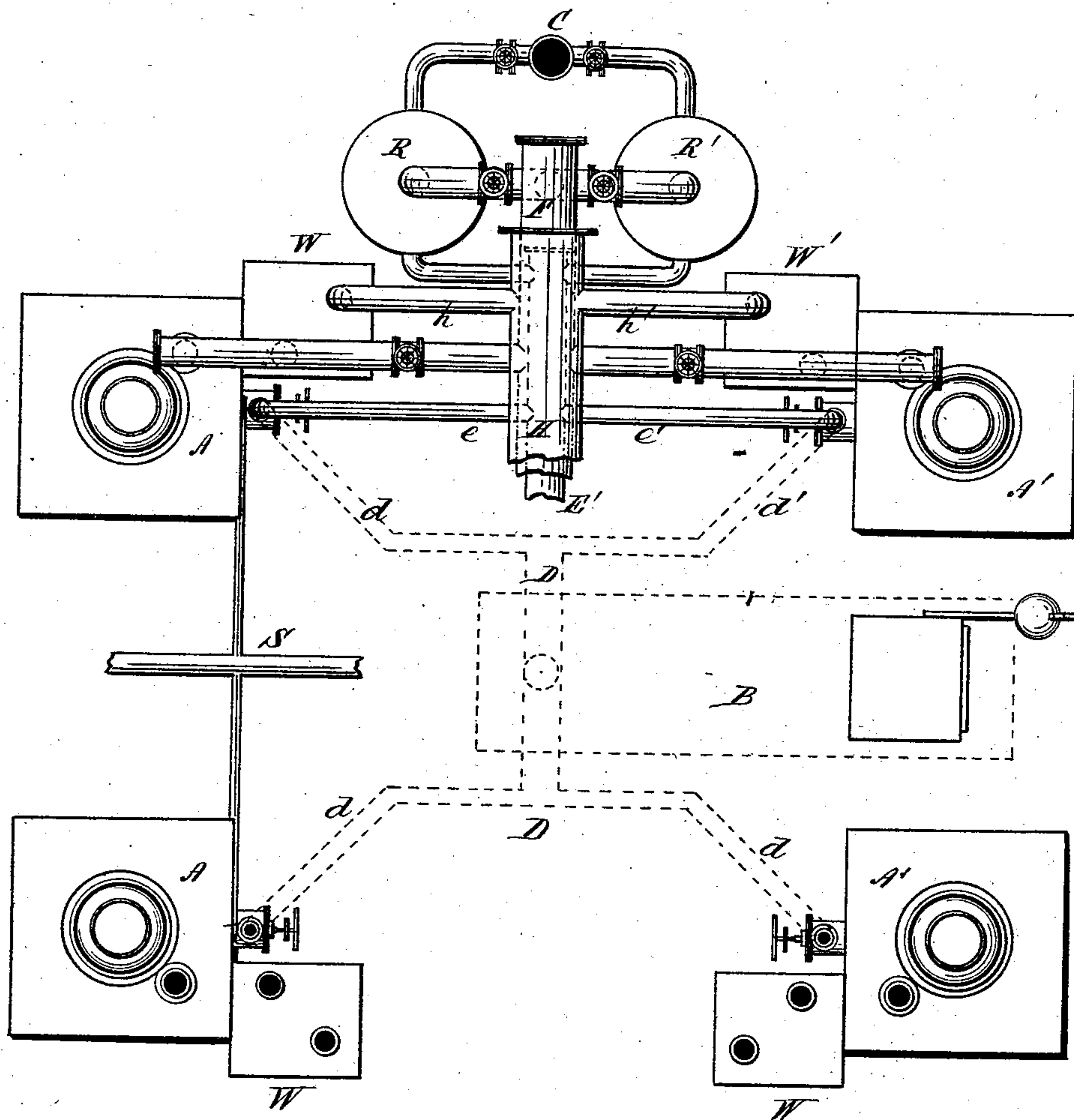


Figure 2.

Witnesses:
Geo. H. Mott
Anthony Greff

Inventor:
Erazm J. Jerzmanowski,
By his attorney,
E. N. Dickerson

UNITED STATES PATENT OFFICE.

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

APPARATUS FOR PRODUCING GAS.

SPECIFICATION forming part of Letters Patent No. 289,842, dated December 11, 1883.

Application filed April 3, 1882. (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 Apparatus for Producing Gas, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

Water-gas is produced by the decomposition of steam in the presence of hot anthracite coal. It has been customary in practice to heat this coal by its own combustion, and subsequently to inject steam, thereby decomposing the steam, although it has been suggested that the coal might be heated by heat obtained from a separate combustion. When, however, steam is being injected into the cupola, it is obvious that the independent fire which has been used for heating the cupola will not be effectively employed, and therefore the heat which it is then generating will be lost. I have devised, therefore, a continuous process of producing water-gas by several cupolas heated from a single heat-supply, and by this arrangement I am enabled to prevent the waste of heat which would otherwise occur.

That which I believe to be new in my apparatus is specified in the claims hereto annexed.

In my drawings similar letters refer to similar parts.

Figure 1 is a vertical view, partly in section, showing my furnace for supplying heat to air superheaters or regenerators and two cupolas, and some of the connections. Fig. 2 is a plan, showing the general arrangement of my contrivance.

B represents a furnace, as shown, of the kind known as "Siemens' furnace," adapted to supply heat to four cupolas, A A'. The Siemens furnace is shown as centrally located with reference to them; but another form might be employed beside that one shown. The connections of two of the furnaces are shown in detail. The other ones are supposed to be similarly connected, and their operation will be precisely the same as that of the others. The furnace B communicates with the cupolas A A' by pipes D d d'. A connection is likewise made at the point where the products of combustion and hot gases from the furnace enter the cupolas, to allow of the injection of hot air.

This air passes to the furnace by pipes E e e'. Pipe E communicates with the upper parts of the double regenerator or air-heater R R'. Air is delivered into the bottom of this regenerator by pipes G l l'. The upper parts of the cupolas A A' are connected by pipes b b' to the pipe F, which communicates with the upper part of the regenerator by pipes g g'. The pipe E connects likewise with the upper part of the regenerators, and delivers to the pipes e e', as described. The upper parts of the cupolas connect, likewise, through the washers W W' and pipes h h' to the main gas-pipe H. The bottoms of the regenerators connect with the chimney C by the pipes c c'. Suitable valves are provided to close these various connections, as will be readily seen. Steam-pipes S S' are provided for injecting the steam into the cupolas.

The operation of my apparatus can now be readily understood. The hot gases coming from the furnace B pass by pipes D d to the cupola A. There they are met by a current of hot air delivered by the pipe e from the regenerator R. This air is forced into the regenerator by the pipe G l, and, ascending through the regenerator, becomes heated, and is thence delivered through pipe E e, to complete the combustion of the gases in the cupola A. Passing upward thence, the products of combustion escape from the cupola by the pipe b, and, passing down pipe F, enter through pipe g', the upper part of the regenerator R', and thence escape by pipe c' and chimney C. By this operation the coal in A has been thoroughly heated, as also the brick or fire-clay or other suitable material, which is located in the regenerator R'. The valves then having been properly manipulated, the hot gases from the furnace B pass through the pipes D d' to the cupola A', thence by pipe b' to pipe F, through pipe g, regenerator R, pipe c, and, finally, escape through chimney C, thereby heating the regenerator R. Meanwhile the regenerator R', which has been previously heated, is brought into requisition to supply heated air to the combustion in the cupola A' in the manner previously described, and, steam having been admitted by the pipe S to the cupola A, water-gas is produced, which passes upward through the washer W and pipe h to

the main gas-pipe H, and to holder. A corresponding operation can be meanwhile carried on in the lower cupolas, A A'.

It will be understood that the hot air and gases from the furnace are to be ignited in the generators.

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

1. The combination, with one furnace, of two generators, two air heaters or regenerators, air and steam pipes, and pipes and passages connecting the various structures, and provided with valves, all as set forth, whereby the gases from the furnace can be passed through one generator and one regenerator while the steam and air are flowing through the other generator and regenerator, and whereby the operation may be at any time reversed, as specified.

2. The combination of a heating-furnace, an independent water-gas generator, an inde-

pendent air heater or regenerator through which the air passes on its way to the bottom of the generator, and connecting pipes and passages, as set forth, whereby the products of combustion may be passed from the furnace through and used to heat both the water-gas generator and the air-heater, substantially as described.

3. The combination of a heating-furnace, an independent water-gas generator, a connection connecting said heating-furnace with the generator, for the purpose of conveying the hot gases from said furnace to the water-gas generator, an air-heater, and a connection from the bottom of said generator to the air-heater, also communicating with the top of the generator, substantially as described.

ERAZM. J. JERZMANOWSKI.

Witnesses:

GEO. H. EVANS,
WM. POLLOCK.