

(No Model.)

A. SEGUIN.

APPARATUS FOR THE MANUFACTURE OF GAS.

No. 465,146.

Patented Dec. 15, 1891.

FIG. I.

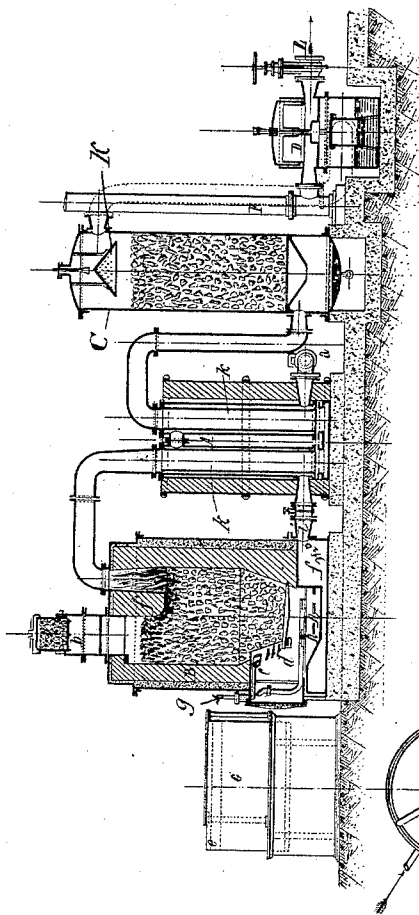
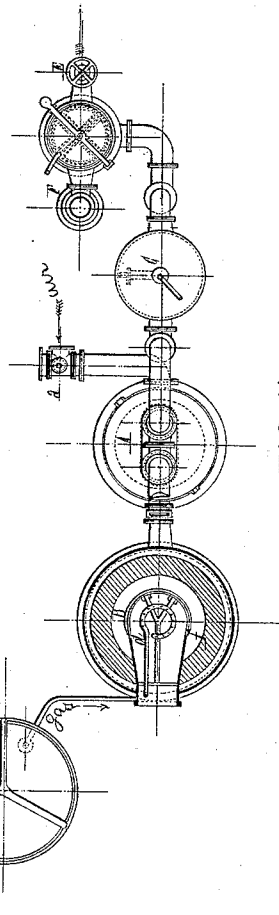


FIG. II.



Witnesses
J. M. C. C. C.,
C. S. Sturtevant,

By

Inventor:
Augustin Seguin
J. M. C. C. C.,
his Attorneys.

UNITED STATES PATENT OFFICE.

AUGUSTIN SÉGUIN, OF LYONS, FRANCE, ASSIGNOR TO THE CIE DES FONDERIES ET FORGES DE L'HORME, (CHANTIERS DE LA BUIRE,) OF SAME PLACE, AND ALEXANDRE LENCAUCHEZ, OF PARIS, FRANCE.

APPARATUS FOR THE MANUFACTURE OF GAS.

SPECIFICATION forming part of Letters Patent No. 465,146, dated December 15, 1891.

Application filed July 6, 1891. Serial No. 398,544. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTIN SÉGUIN, a citizen of the Republic of France, and a resident of Lyons, in said Republic, have invented certain new and useful Improvements in Apparatus for the Manufacture of Gas for Use in Gas-Engines, which is fully set forth in the following specification.

Gas-motors have attained at the present time a great degree of perfection, utilizing heat to a better advantage than steam-engines. Such motors have generally used gas obtained from the distillation of coal or other like gases capable of forming, when mixed in proportions with atmospheric air, a powerful explosive mixture. Ordinary illuminating-gas has also been employed because of the convenience of supply; but it is too expensive for economical use, particularly in engines of large capacity. It is therefore desirable to produce an economical and efficient substitute for the gases usually employed in gas-engines.

It has long been known that gases from generators whose heat capacity exceeds twelve hundred units to the cubic meter raised from 0° to 760° centigrade is sufficient to supply gas-motors, and as it is practically possible with good apparatus to produce from inferior fuel gas having thirteen hundred to thirteen hundred and fifty units and with superior fuel as much as fifteen hundred it is practicable and desirable to construct generators specially for supplying rich gases. To this end I have devised an apparatus the details of which will be described in connection with the accompanying drawings, in which—

Figure I is a vertical section, partly in elevation; and Fig. II, a plan, partly in horizontal section.

Air under pressure is admitted by means of a regulating-valve *a* to the preheater A, which contains the upright pipes *k*, connected at their lower ends. The chamber A is kept hot by gases passing from the gas-generator at a temperature of from 600° to 800° centigrade. In passing through chamber A the gas in pipes *k* parts with some of its heat to

the current of air circulating around pipes *k*, whose temperature is thus raised from 200° to 300° centigrade. Leaving heater A the air enters by pipe *i* the chamber *f*, constructed as hereinafter described. This chamber is filled with hot water from the cylinder of the gas-motor. The air becomes saturated by contact with this water, and then passes into the furnace or generator B (charged with coke through a pipe *b*) to be converted into a gas suitable for use in gas-engines. The coke in furnace or generator B is in a state of incandescence. The gas there produced passes by outlet *f'* through the heating-chamber A to the purifier C, which contains a column of coke kept wet by a spray or current of cold water from a perforated sprinkler K. The column C is charged with pieces of coke, the size of the pieces preferably becoming smaller and smaller from the bottom upward. As usual in apparatus of this sort, the gas and water flow in opposite directions, so as to effect a gradual and systematic purification and cooling of the gas. From the purifier the gas passes into a holder or distributor D, from which it can be discharged by valve or gate E into a gasometer, or the gas may pass into an upright pipe F when the gate E is closed.

The distributor D may be omitted and suitable valves provided to control the flow of gas.

This general arrangement is specially characterized by the three following points: first, the means employed for saturating the air under pressure with water-vapor and for preheating it; second, the means employed for supplying gas under pressure to the gas-generator for its reduction as it flows after an arrest or when the grate becomes less brilliant on account of the coldness resulting from the decomposition of the vapor of water or from any other cause; third, the means employed for regulating the flow of gas. The means employed for these several purposes are as follows:

First. As will be seen by the drawings, the generator B is placed above the chamber *f*, forming around the ash-pan an annular basin of constant level, owing to the use of an abun-

dant flow of water. This water, which is discharged from the cylinder of the gas-motor and whose temperature is about 65°, is conveyed, as may be required, by pipe *g* to a trough *c* at the upper part of the grate, from which it falls in a shower into the ash-box after having served to cool the metallic parts of the grate. The hot water which falls into the ash-pan passes through the holes *h* into the annular basin *f*. It is in this basin that the air under pressure and preheated, as described, comes into contact with the water and becomes saturated therewith. This mixture of air and water-vapor then passes through the generator and is converted into a combustible gas rich in hydrogen. While the preheater is useful on account of the economy of fuel resulting therefrom, yet I reserve the right to use the apparatus described without the heater *A*. It is possible thus to produce suitable gas for motors; but the consumption of a greater amount of fuel is entailed.

Second. At certain times following the expenditure of the necessary heat for the decomposition of the water-vapor and air the grate partially cools. In order to revive the heat and render the fuel incandescent in this part of the generator, I arrange a gas-coil *d*, to which gas is supplied at a greater pressure than that of the gas in the generator or the vapor under the grate. In this manner the gas-jets from coil *d* are ignited, developing heat sufficient to render the fuel incandescent in a few minutes without arresting the operation. This arrangement is obviously very advantageous to start the operation after a stoppage for a greater or less period of time. For feeding gas to the burners *d* I arrange a small gasometer *G* of a construction commonly used in laboratories, but which is surmounted by a basin *e* to be filled with water. The gasometer is constructed, as will be understood, to be recharged with gas whenever its contents are exhausted by consumption of gas at the burners *d*. After a stoppage this operation may be repeated several times, if

necessary. The water in basin *e* may be replaced by a weight with suitable means for operating the gasometer.

Third. The means for obtaining a regulated flow of air consists in the employment of a valve *a*, having a number of small inlets. This valve is arranged in a branch pipe, which can be supplied with air as desired. In supplying air the valve may be turned so that one or more of the inlets will be cut off, and the pressure of the air thereby regulated.

I claim as my invention—

1. The combination of the furnace or generator, the water-chamber beneath and surrounding the ash-pan of said generator, a preheater, an air-inlet to said preheater, and a pipe leading from said furnace or generator through said preheater, substantially as described.

2. The combination of the furnace or generator, the water-chamber provided with an air-inlet and communicating with said generator for supplying water-vapor thereto, and a gas-burner arranged beneath the grate of the furnace, substantially as and for the purposes set forth.

3. The combination of the furnace or generator, the water-chamber at the bottom thereof and surrounding the ash-pan, a pipe for admitting air to said water-chamber, and a duct for water leading to said chamber through said water-pan, substantially as described.

4. The combination of the furnace or generator, the water-chamber located at the bottom of the furnace or generator and communicating therewith, a pipe for conducting air to said chamber, and a gas-burner beneath the grate of said generator, substantially as described.

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

AUGUSTIN SEGUIN.

Witnesses:

CH. CUNIT, Jr.,
E. FLANQUET.