

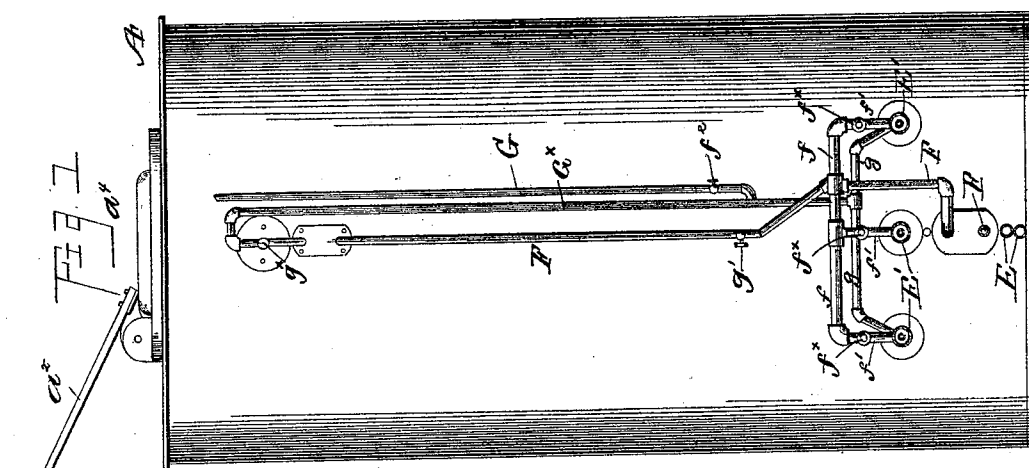
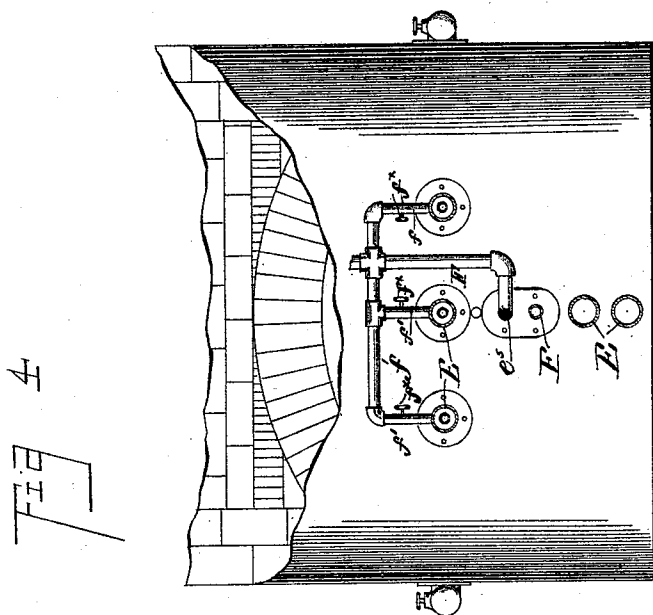
(No Model.)

2 Sheets—Sheet 1.

M. E. WILSON.
GAS MAKING APPARATUS.

No. 498,096.

Patented May 23, 1893.



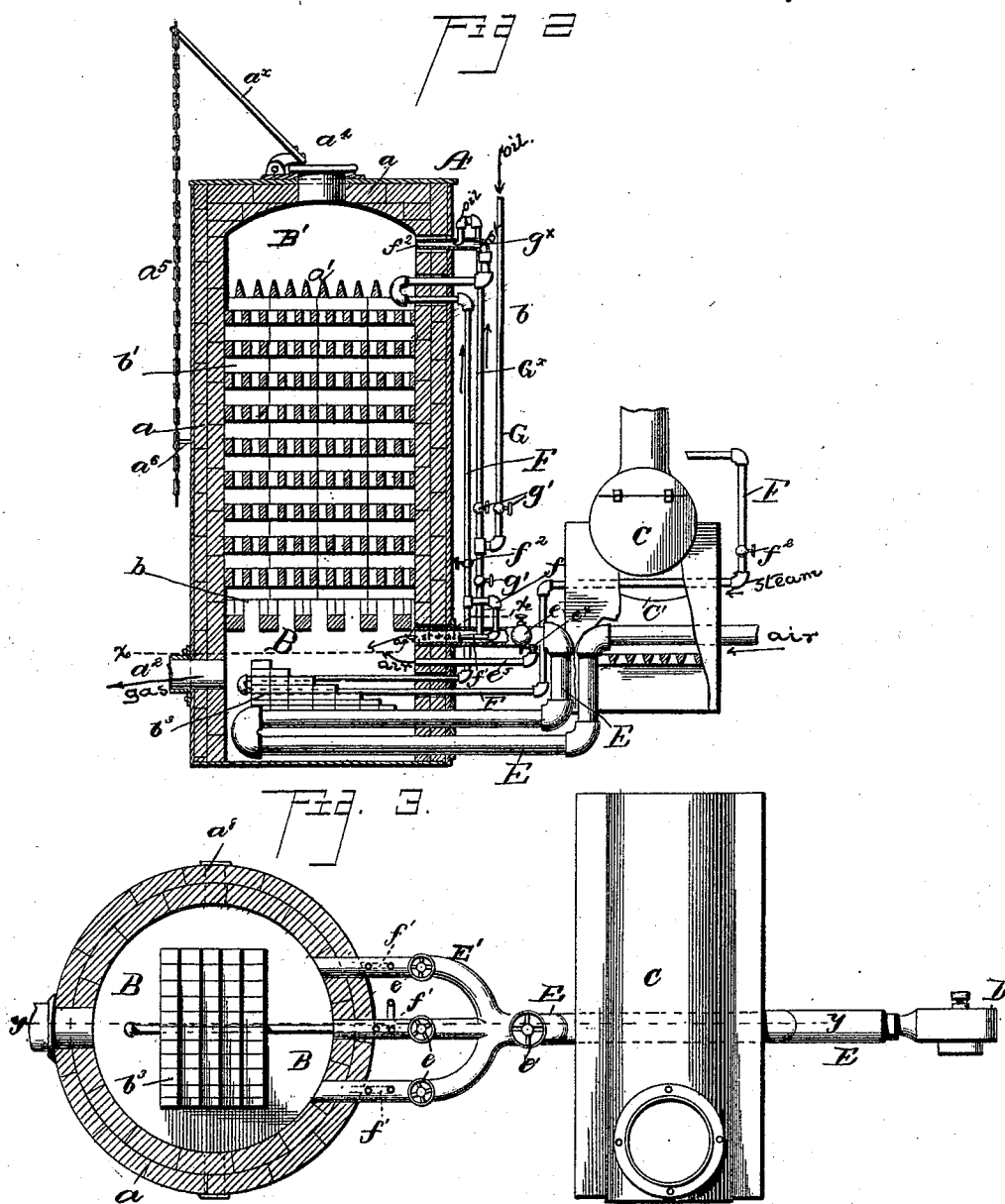
Witnesses
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UNITED STATES PATENT OFFICE.

MINNIE E. WILSON, OF INDIANAPOLIS, INDIANA.

GAS-MAKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 498,096, dated May 23, 1893.

Application filed March 9, 1893. Serial No. 465,330. (No model.)

To all whom it may concern:

Be it known that I, MINNIE E. WILSON, a citizen of the United States of America, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Gas-Making Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved apparatus for making illuminating and fuel gas, and it has for its object to expedite the decomposing of the elements that constitute the gas, also to regulate the candle-power of the gas, and to these ends the invention consists of the novel combination and arrangement of parts substantially as hereinafter more fully disclosed and pointed out in the claim.

In the accompanying drawings, Figure 1, is a front elevation of the generator of my improved gas making apparatus. Fig. 2, is a broken sectional elevation of the apparatus taken on the line $y-y$ of Fig. 3. Fig. 3, is a broken, horizontal section of the same on the line $x-x$ of Fig. 2. Fig. 4, is a broken enlarged front view of the generator.

In the embodiment of my invention, I employ a preferably cylindric generator A comprising an outer metal shell or casting, having a fire-brick lining a , and a combustion chamber B in its lower part, above which said generator is filled in, up to a certain point, with suitable refractory material, as for instance checker or baffle brick work b' superposed upon the open brick work arch b of said combustion chamber.

In the combustion chamber B is a mass or pile of baffle laid brick work b^s , against which the flames of the injector, of ordinary construction, strike and are given by the form of said baffle brick work an upward direction instead of being permitted to strike the wall directly opposite. The top or upper bricks of said checker-work b' are conical or pointed as at a' , the points or apices thereof being presented upward, the purpose of which is to prevent the accumulation thereon of hydrocarbons, as would otherwise be the case. The generator, above the conical-ended or pointed bricks a' , constitutes a supplemental chamber B'. In the side of the generator A, where it forms the back-wall of the combustion

chamber B is the gas-outlet a^2 , and in the top of said generator is an opening a^3 for the escape of the products of combustion, covered by a hinged or pivoted plate a^4 conveniently operated or opened and closed, by a lever a^x secured thereto, at one end, in an inclined position, and having depending therefrom a wire or chain a^5 which, among other ways, may be held, by slipping or catching it upon a pin a^6 projecting from the casing or shell of the generator.

C is a steam boiler, and C' is the furnace therefor, arranged contiguously to the generator A, and D is a rotary blower or fan from which extends a pipe E, passing through the furnace C' and thence extended into and returned through, the combustion chamber B of the generator A, and branched off preferably into three arms or branches E' opening farther up into the combustion chamber introducing therein blasts of hot air, the air as will have been noticed, having been heated where the pipe E passed through said furnace, and into and out of said combustion chamber. The pipe E and its branches or arms E' are provided with air-controlling valves e' respectively to control as just intimated, the amount of air or blast fed to the combustion chamber B and from the pipes E to its branches or arms E' as circumstances may require.

F is a steam-pipe leading from the boiler C, and, like the hot air pipe E, extending into, and returned through, the combustion chamber B of the generator A, to superheat the steam passing through said pipe. The pipe F then, after extending upward a short distance, branches off horizontally into arms f and from these arms depend right angled arms or branches f' provided with regulating valves f^x and entering the branches or arms E' of the hot air pipe E, with their horizontal portions arranged in and concentric with, said arms E', from which, it will be seen that the superheated steam will be injected by the action of the hot air blast into the combustion chamber, thus providing for the heating of the generator at a high temperature or degree. The pipe F is still farther extended upward and again into the generator A in its upper part, and returned, thus further superheating the steam passing through said pipe.

The pipe F is then, after being extended slightly farther upward, caused to re-enter and open into the generator in the form of a jet-tube f^2 thus providing for introducing steam into the generator at this point.

G is the oil or hydrocarbon pipe provided with valves g' for controlling the feeding of the oil therethrough, and connecting with a tank or supply of oil, and branching off into a pipe G^x the lower end of which branches off into three arms or branches g opening into the steam branch pipes f' thus providing, with the hot air and steam pipes, for the simultaneous feeding of hot-air, steam and oil into the combustion chamber B of the generator for heating up the latter, preparatory to making or generating gas.

The upper end of the pipe G opens as at g^x into the jet or spraying tube f^3 of the steam pipe F, thus providing for the simultaneous feeding of superheated steam and oil to the generator to expedite the decomposing of the steam and oil, while by the introduction of the air into the combustion chamber along with the oil and steam, where the gas is fixed, I am enabled to regulate, as is obvious, the candle-power of the gas.

It will be particularly noticed that the steam is introduced into the generator in the maximum heated condition by practically superheating the same two or three times and that otherwise wasted heat is utilized in the combustion chamber of the generator for that purpose.

Among other features of this invention I deem of vast importance, is utilizing the hot gas as it descends through the incandescent checker or baffle brick work into the chamber B on its way out through the gas outlet a^2 , thus heating the steam pipe F to a high temperature prior to using said steam in the burners, and for assisting the decomposing of the oil in the upper chamber B' as the oil and steam are introduced therein from the injector or spraying tube f^3 of the pipe F.

The operation is as follows: The cover a^4 having been lifted, uncovering the opening a^3 and the operating rod and chain of said cover secured by the retaining pin a^6 commingled steam, oil and air are sprayed or fed to the combustion chamber B, by opening the valves e , e' , f^2 and g' of the pipes E E', F and G, respectively and there ignited, the steam being superheated by its pipe passing through the boiler-furnace C' and said combustion chamber, and the air heated by its pipe also passing through said furnace and combustion chamber, as previously stated. The combustion of the commingled oil, superheated steam and hot air thus introduced into the combustion chamber of the generator serves to heat up the latter to a very high temperature and

thus expedite the subsequent operation of making the gas. After thus proceeding until the approximate temperature has been obtained in the generator, combustion is discontinued in the chamber B, and the cover or plate a^4 lowered to close the opening a^3 , and the gas making process, proper, begun by feeding oil, with the superheated steam, through tube or pipe f^3 into the upper chamber B' of the generator, the commingled oil and superheated steam passing in a volatilized condition through the highly heated wicker brick-work and finally out through the jet a^2 , in the form of a good quality of illuminating gas and fuel gas, the candle-power of which is regulated by the required manipulation of the valve e^4 in the branch air pipe e^5 , introducing air into chamber B, as well understood. The alternate process of heating up the generator and making gas is thus continued throughout the working of the apparatus. If desired, however, the generator may be so arranged, or have two separately operated chambers, as to provide for a continuous making of gas, one chamber making gas, while the other chamber is being heated up in readiness for the next make of gas, and so on. It will be also observed that the introduction of the air at the pipe e^5 low down in the generator in regulating the candle power of the gas prevents the cooling or chilling of the checker brick work therein as heretofore experienced.

I claim—

In gas making apparatus, the combination of a generator having a lower combustion chamber, a boiler and its furnace, an air-blast generator, a hot-air pipe connected to the latter and passing through said furnace, and returned through said combustion chamber and connected with the upper part of said combustion chamber, a superheated steam pipe passing through said furnace and returned through said combustion chamber, and having branches connecting with said hot air pipe, where it connects with the upper part of said combustion chamber, and returned through said generator, near its upper end, and finally connecting with said generator, and a hydrocarbon pipe having branches connecting with branches of said steam pipe, within the hot air pipe where it connects with the upper part of said combustion chamber, and connecting with the said steam-pipe where it connects with said generator, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

MINNIE E. WILSON.

Witnesses:

R. M. SMITH,

CHARLES COTTON.