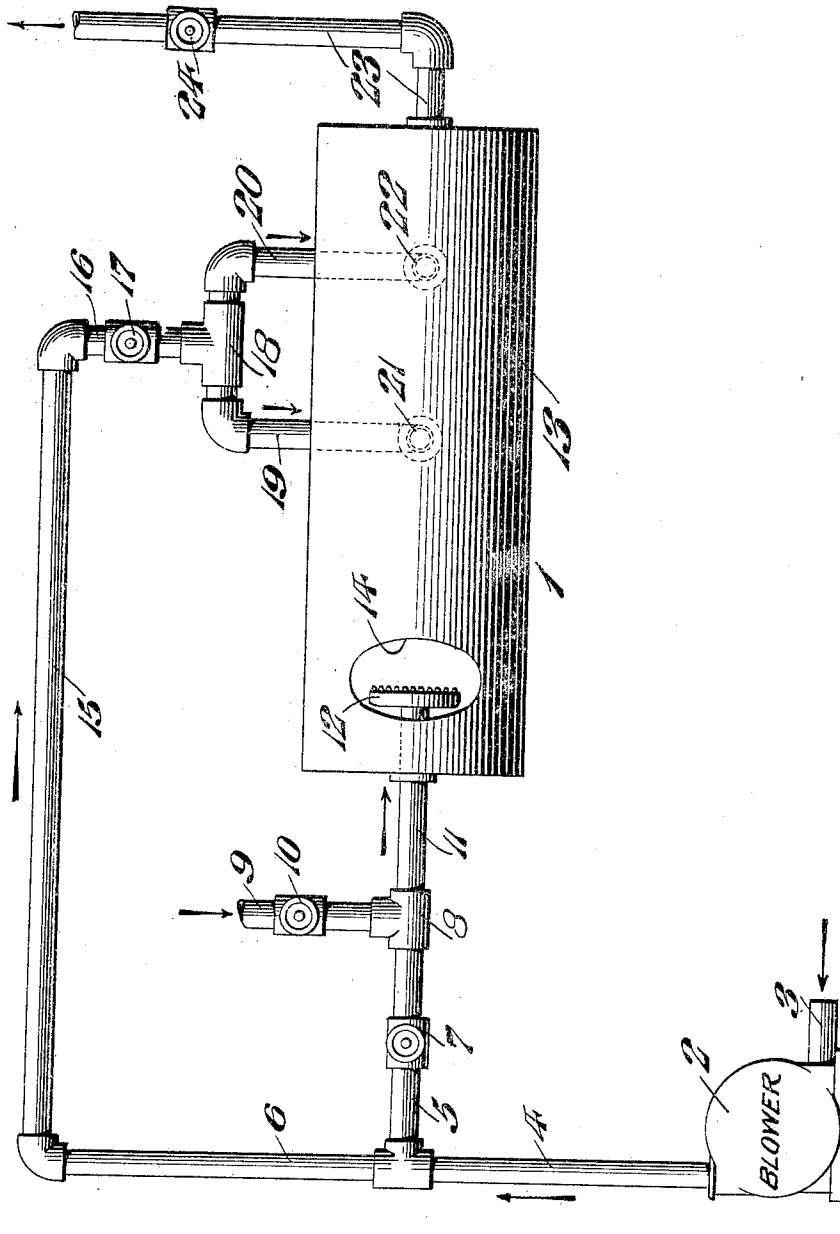


H. S. AUSTIN.
HOT AIR GENERATOR.
APPLICATION FILED JAN. 31, 1921.

1,375,664.

Patented Apr. 26, 1921.



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HENRY S. AUSTIN, OF PHILADELPHIA, PENNSYLVANIA.

HOT-AIR GENERATOR.

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Specification of Letters Patent.

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Application filed January 31, 1921. Serial No. 441,414.

To all whom it may concern:

Be it known that I, HENRY S. AUSTIN, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Hot-Air Generator, of which the following is a specification.

My invention consists of a novel construction of a hot air generator, wherein fresh air under atmospheric conditions is initially propelled or forced by a blower or its equivalent into a conduit having two branches, one branch communicating with a gas or hydrocarbon fuel inlet and the other branch communicating preferably at a plurality of points with a commingling chamber or tank in which the gas is burned and the products of combustion commingled with air are contained, the commingled heated air and products of combustion being subsequently conveyed from the air heating and commingling chamber through a suitable conduit to any desired point.

By my novel construction, I am enabled to deliver a large quantity of the heated medium or air of sufficient pressure to insure the best distribution at the delivery point or points, the air being effectively and cheaply heated by the products of combustion, thereby eliminating all stack losses and producing a maximum efficiency, provision being made for readily controlling the temperature of the heated air and for making changes in its temperature almost instantaneously.

By my novel construction, I am enabled to produce a heating medium, consisting principally of fresh air, commingled with a sufficiently small percentage of the products of combustion, so that its drying effect when combined with a rapid circulation, will be very great, and this heated air can be readily conducted or directed to the desired point for drying, roasting, cooking, oxidizing and other similar operations.

To the above ends my invention consists of a novel hot air generator, which is simple in construction, easily controlled and wherein a maximum efficiency is obtained at the same time eliminating all stack losses, as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawing a form thereof which is at present preferred by me, since it will give in practice satisfactory and reliable results, although

it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

The figure represents a diagrammatic view of one form of an apparatus wherein my novel invention can be carried out.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings:—

1 designates my novel construction of hot air generator, the same comprising a blower or equivalent device 2 of any desired or conventional type, the air under atmospheric conditions entering the blower at the point 3 and being discharged therefrom into the conduit or main 4.

The main 4 has leading therefrom two pipes or branches 5 and 6, the pipe 5 having a controlling valve 7 therein and discharging into the T 8 with which the gas inlet pipe 9 communicates, the latter being provided with a valve 10 and the commingled air and gas being discharged into the pipe 11 and going thence to the burner 12 where it is ignited.

The burner 12 is located within the commingling chamber 13, which may be made of cast iron and is provided with the lighting and sight hole 14. The main body of the air to be heated passes through the pipe 6 into the pipe 15, thence into the pipe 16, which is provided with the valve 17 and thence into the T or similar fitting 18, from which the two branches 19 and 20 lead, said branches discharging into the commingling chamber 13 at the points 21 and 22; the heated air being conducted from the tank 13 through the pipe or conduit 23 which may be provided with the valve 24 to the desired point.

The operation is as follows:

The blower 2 having been started, it will be seen that the incoming air is discharged into the outlet pipe 4, a portion of the air passing through the branch 5 and commingling with the gas, hydrocarbon or other fuel or heat agent supply, which is introduced into the pipe 9 under pressure. The commingled air and gas then passes through the pipe 11 to the burner 12, at which point they are ignited and the products of combustion owing to the pressure in the pipes 9

and 11 travel forwardly or to the right toward the inlets 21 and 22. The main body of the air under pressure after passing through the pipes 6, 15, 16, 19 and 22 passes into the tank 13 at the points 21 and 22, where it is commingled with the heated products of combustion issuing from the burner 12 and the commingled air and products of combustion are then discharged or conveyed through the pipe 23 to the desired point, the latter pipe being controlled by the valve 24, if desired.

It will be seen from the foregoing that by the proper manipulation of the valve 10, the supply of the gas, hydrocarbon or other fuel or heating agent can be readily regulated and by the proper manipulation of the valve 7, the supply of air to be commingled with the gas or other hydrocarbon which flows to the burner 12 is readily controlled, and through the medium of the valve 17, the supply of fresh air to be heated which flows into the commingling chamber 13 through the pipes 19 and 20 is readily controlled.

It will be seen from the foregoing that by my invention I am enabled to deliver a large quantity of the heated medium of sufficient pressure to insure the best distribution at the delivery point or points through the outlet pipe 23.

It will further be seen that I heat the air entering the tank 13 by the pipes 19 and 20, solely by the products of combustion from the burner 12, thereby producing a maximum efficiency with a minimum loss of radiation.

I am further enabled by the manipulation of the valve 17 to have the temperature of the air easily controllable and to make changes in the temperature almost instantaneously.

It will further be seen that by the manipulation of the valve 17, the amount of fresh air entering the pipes 19 and 20 can be readily controlled and combined with a sufficiently small percentage of the products of combustion which can be controlled by the valve 10, so that the drying effect of the commingled air and products of combustion when combined with rapid circulation, will be very great.

I have found that by using gas for fuel under the ordinary pressure as delivered in the ordinary main, I have been able to build up the pressure at the outlet pipe 23 of three ounces per square inch, without its shutting off the gas flow, which pressure is sufficient for all ordinary distribution problems, and it will be apparent that by installing a booster pump of any conventional type on the gas line 9, I can produce any required pressure at the outlet pipe 23, provided only that it is equalled by the gas pressure in the pipe 9 and considerably exceeded by the air pressure in the pipe 4.

While I have referred to gas as the preferred heating medium or fuel, it will be apparent that any equivalent fuel can be used in place of gas, provided it is of a fluid nature and capable of being delivered through pipes and burned on being commingled with the proper quantity of air.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an apparatus of the character described a tank, a burner therein, an air blower, a pipe leading from said air blower and having two branches, one branch communicating with the gas pipe leading to said burner and the other branch conveying fresh air to said tank in advance of said burner, said air and gas pipes being provided with suitable valves for controlling the flow of gas and fresh air.

2. In an apparatus of the character described, a blower 2 having a pipe 4 leading therefrom, branches 5 and 6 leading from said pipe 4, a gas inlet pipe 9 having a valve therein, a pipe 11 into which said pipe 9 discharges, a commingling chamber, a burner contained with said chamber and supplied with fuel and commingled air through said pipe 11, branches 19 and 20 in communication with said pipe 6 and leading into said chamber in advance of said burner for conveying fresh air into said chamber, and a valve in the pipe leading to said branches 19 and 20.

HENRY S. AUSTIN.

Witnesses:

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