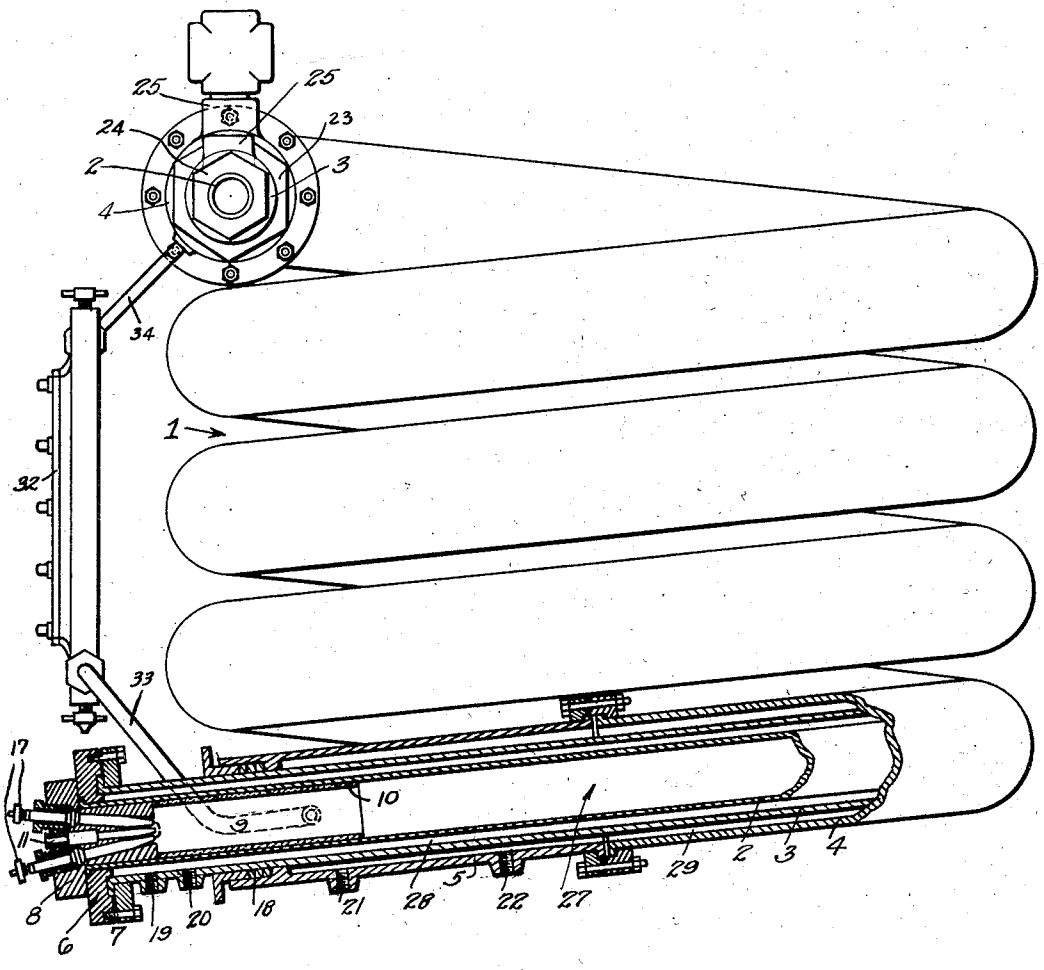
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GENERATOR

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GENERATOR

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1 Claim. (Cl. 122—348)

This invention relates to generators.

The general object of the invention is to provide a three-tube generator, comprising an innermost tubular gas pressure generator formed with a combustion chamber, an intermediate tubular generator, surrounding said innermost tubular generator and forming a primary steam chamber or boiler for generating high-pressure steam, and an outermost tubular generator surrounding said intermediate generator and forming a secondary steam chamber or boiler for generating low-pressure steam.

Other objects and advantages will appear hereinafter.

The invention involves a radical departure from current practice in generators and boilers, comprising a gas pressure generator and a steam pressure generator or boiler combined, without stack or chimney, in which the combustion chamber or fire tube of the gas generator is sealed and under gas pressure created by combustion of fuel, which pressure can be determined and regulated, and used in the same manner as steam pressure, an outlet being provided for drawing off the gas under pressure for power purposes.

In this specification and the annexed drawing I disclose my invention in the form which I consider the best, but I do not limit my invention to such form because it may be embodied in other forms, and it is to be understood that in and by the claim of this specification I intend to cover my invention in whatever form it may be embodied.

In the drawing,

The figure is an elevation, partly in section of a generator embodying my invention.

Referring more particularly to the drawing, 1 designates a tubular coil, which may be of helical or other suitable shape. Said coil comprises an innermost tubular coil member 2, an intermediate tubular coil member 3 surrounding said coil member 2, and an outermost tubular coil member 4 surrounding said intermediate coil member. The lower portion 5 of the coil 1 extends out straight from one end of the coil, and the lower end of the intermediate tubular member 3 is closed by a head 6, which is clamped upon the lower end of said coil member by a clamp 7, the lower end of the innermost tubular member 2 extending through said head and being seated therein. In said lower end of said innermost tubular member is secured a plug 8 forming the head of a combustion chamber 9, which chamber is formed in the lower end portion of said innermost coil member, extending inwardly from said plug, said combustion chamber being lined with a fireproof sleeve 10 fitted in said end portion of said innermost coil member. The plug 8 is formed with a fuel inlet duct 11, which extends longitudinally through the plug into the combustion chamber 9. The fuel from the inlet duct 11 is ignited in the combustion chamber 9 by any suitable ignition means, such as a jump-spark ignitor 17. The lower end of the outermost tubular member 4 is constructed with a packing box 18, through which extends the lower end of the intermediate tubular member 3. The lower end portion of the intermediate tubular member 3 is provided with a water-feed inlet 19 and a blow-off outlet 20. The lower end portion of the outermost tubular member 4 is provided with a water-feed inlet 21 and a blow-off outlet 22. The upper end of the outermost tubular member 4 is constructed with a packing box 23, through which extends the upper end of the intermediate tubular member 3. The upper end of the intermediate tubular member 3 is constructed with a packing box 24, through which extends the upper end of the innermost tubular member 2. The upper end of the outermost tubular member 4 is provided with an outlet 25 for the discharge of low-pressure steam from said tubular member. The upper end of the intermediate tubular member 3 is provided with an outlet 26 for the discharge of high-pressure steam from said tubular member.

The innermost tubular member 2, together with its closed lower end, fuel inlet 11, ignition means 17 and combustion chamber 9 form a gas-pressure generator 27. The intermediate tubular member 3, together with its closed upper end, closed lower end, inlet 19, outlet 26 and blow-off outlet 20, forms a primary steam generator 28 for generating high-pressure steam. The outermost tubular member 4, together with its closed lower end and closed upper end, inlet 21, outlet 25 and blow-off outlet 22, forms a secondary steam generator 29 for generating low-pressure steam.

The lower end and upper end of the secondary steam generator 29 are connected to a water gauge 32 by pipes 33 and 34 respectively.

The operation, uses and advantages of my invention are as follows:

The combustion of the fuel in the combustion chamber 9, produced by the ignition means 17, reacting against the head 8, produces a uniform and constant pressure gas in the innermost coil member 2, which gas passes out of the upper end of said coil member through a pipe, (not shown)

connected thereto, into the cylinders of an engine, where the gas expands and drives the pistons of said engine in the same manner as steam, thus eliminating the internal combustion of the gas in the engine cylinders and the undesirable effects thereof, such as detonation or explosion and its intense heat and erosive action in the engine cylinders, loss of heat through the water jacket and radiator and the high B. t. u. loss through the exhaust of the engine, whereby the efficiency and power of the engine are greatly increased.

Fuel for combustion is fed into the combustion chamber 9, through the inlet duct 11, at a greater pressure than the pressure in said combustion chamber, governed by a conventional valve (not shown) and the fuel is ignited in said combustion chamber by the jump-spark igniter 17.

As an alternative way of delivering fuel to the combustion chamber, air is pumped directly into the combustion chamber and the fuel is injected thereinto immediately thereafter and ignited by the spark. This manner of delivering the fuel would be slightly intermittent or pulsating.

Steam from the boiler 28 is delivered therefrom through an outlet 26 and a pipe (not shown) to the cylinder of a steam engine, for driving the piston of the engine in the usual manner. Low pressure steam may be conducted from the secondary boiler 29 through its outlet 25 to low pressure machines for driving the same.

The auxiliaries are actuated by either the gas or steam and consist of conventional fuel and air pumps and feed water pump.

The gas pressure can be used for useful power of engine turbine, air motors, or other prime movers and the steam pressure for the auxiliaries or vice versa.

Equipment for my generator includes generally a main fuel tank and a fuel and air tank of about one gallon capacity, from which fuel is fed to the combustion chamber in which the fuel is kept at a constant level and replenished from the main tank by pump. Air pressure is maintained at desired pressure in this tank by reducing valve.

My generator, by eliminating stack and chimney and other heat losses conserves a great amount of heat. It has very low fuel consumption and is highly efficient.

I claim as new and desire to secure by Letters Patent:

A three tube generator comprising a coil formed of three spaced tubes, one within the other, ignition means and a combustion chamber in the inlet end of the innermost tube, the intermediate tube forming a primary steam boiler chamber and the outermost tube forming a secondary steam boiler.

JAMES E. CARLSON.