

UNITED STATES PATENT OFFICE.

JOSEPH CORBETT, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO
HENRY C. BERLIN AND THOMAS F. SHAW, OF NEW YORK, N. Y.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 566,664, dated August 25, 1896.

Application filed May 10, 1894. Serial No. 510,686. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH CORBETT, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Apparatus for Generating Steam, of which the following is a specification.

The various constructions of steam-generators heretofore known possess radical defects, which is clearly proved by the well-known fact that the power actually obtained from the fuel is far below the theoretical equivalent of the same. This is due to three different causes: first, to the incomplete combustion of the fuel and consequent waste of the same; secondly, to the imperfect absorption of the heat of the products of combustion and consequent escape of heat through the chimney; thirdly, to the loss of heat by radiation from the walls of the furnace, boilers, condensers, &c. Many attempts were made heretofore to reduce or obviate the great loss of power incidental to all systems of generators, but all these attempts were mainly directed toward improving the instrumentalities by which the combustion of the fuel was rendered more complete, the heat of the products of combustion absorbed in a higher measure, and the loss of heat by radiation diminished. No attempts, however, were made by which the various causes of waste and loss of power stated were sought to be remedied by one process and a single efficient structure by which nearly all the thermal units contained in the fuel, with the exception of a small loss of the same caused by radiation, are utilized.

The object of this invention is to furnish a power-generator in which the before-mentioned defects are almost entirely avoided, the nearly-perfect combustion of the fuel obtained, and the heat of the products of combustion and of the exhaust-steam utilized in the gradual heating and evaporating of the feed-water and in the transforming of the saturated steam of low pressure thus obtained into superheated steam of high pressure. For producing the results stated it is preferable to employ gas, obtained by any approved process from solid or liquid hydrocarbons, as

the heating medium, and produce by the heat of the same and the initial heat of the products of combustion, primarily, the superheating of the steam, which is obtained from the feed-water by the action of the products of combustion mingled with the exhaust-steam returned from the motor, the heat of which gradually transforms the feed-water into steam of low pressure, which is finally subjected to the direct heating action of the surfaces heated by the gas and transformed into superheated steam of high pressure.

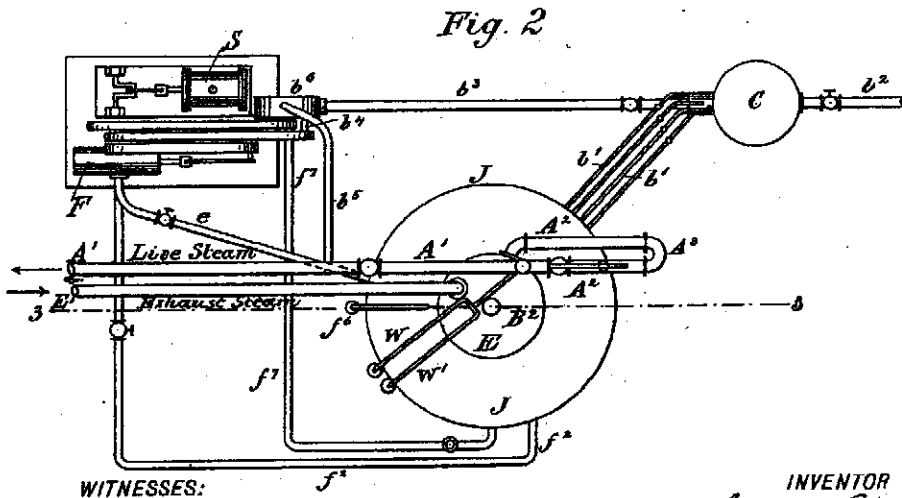
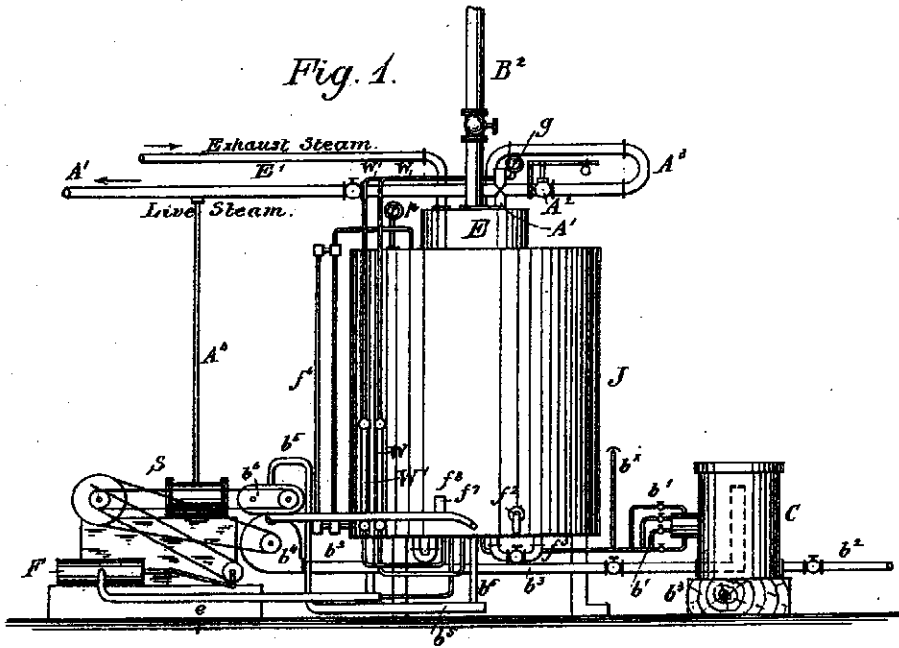
The invention consists in the construction of a power-generator which comprises a steam-tank having a central heating-chamber, in which the means for heating the tank are arranged. On the heating-chamber are a number of cups to which water or saturated steam of low temperature is supplied, said steam being superheated by contact with a coil in the steam-tank, through which the gases or products of combustion are conducted, and by contact with a heating-drum in the upper part of the steam-tank. The steam-tank is surrounded by an exterior tank, which forms with the outer surface of the steam-tank a reservoir, to the top part of which the exhaust-steam pipe is connected, while the lower end of the coil, through which the products of combustion are conducted off, is connected with the lower part of the reservoir formed between the steam-tank and its inclosing tank. The products of combustion and exhaust-steam are mingled in the reservoir referred to, so as to form a steam-jacket around the steam-tank, and then conducted through the exterior pipes of a series of concentric connecting-coils which are grouped around the steam-tank, while the feed-water is conducted through the interior pipes of said coils. The feed-water is pumped against the counter-pressure of the steam generated in the steam-tank and the interior pipe of the coils through said interior pipe into the steam-tank, while the gases are drawn by suction in a counter-current to the feed-water through the exterior pipe of the coils, so that the heat contained in the same is absorbed by and utilized in the heating and evaporating of the feed-water.

The invention consists, further, of certain details of construction by which my improved

J. CORBETT.
STEAM GENERATOR.

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WITNESSES:

J. Nusoblatky
H. R. Brennan

INVENTOR
Joseph Corbett
BY
Joseph Raegner
ATTORNEYS.