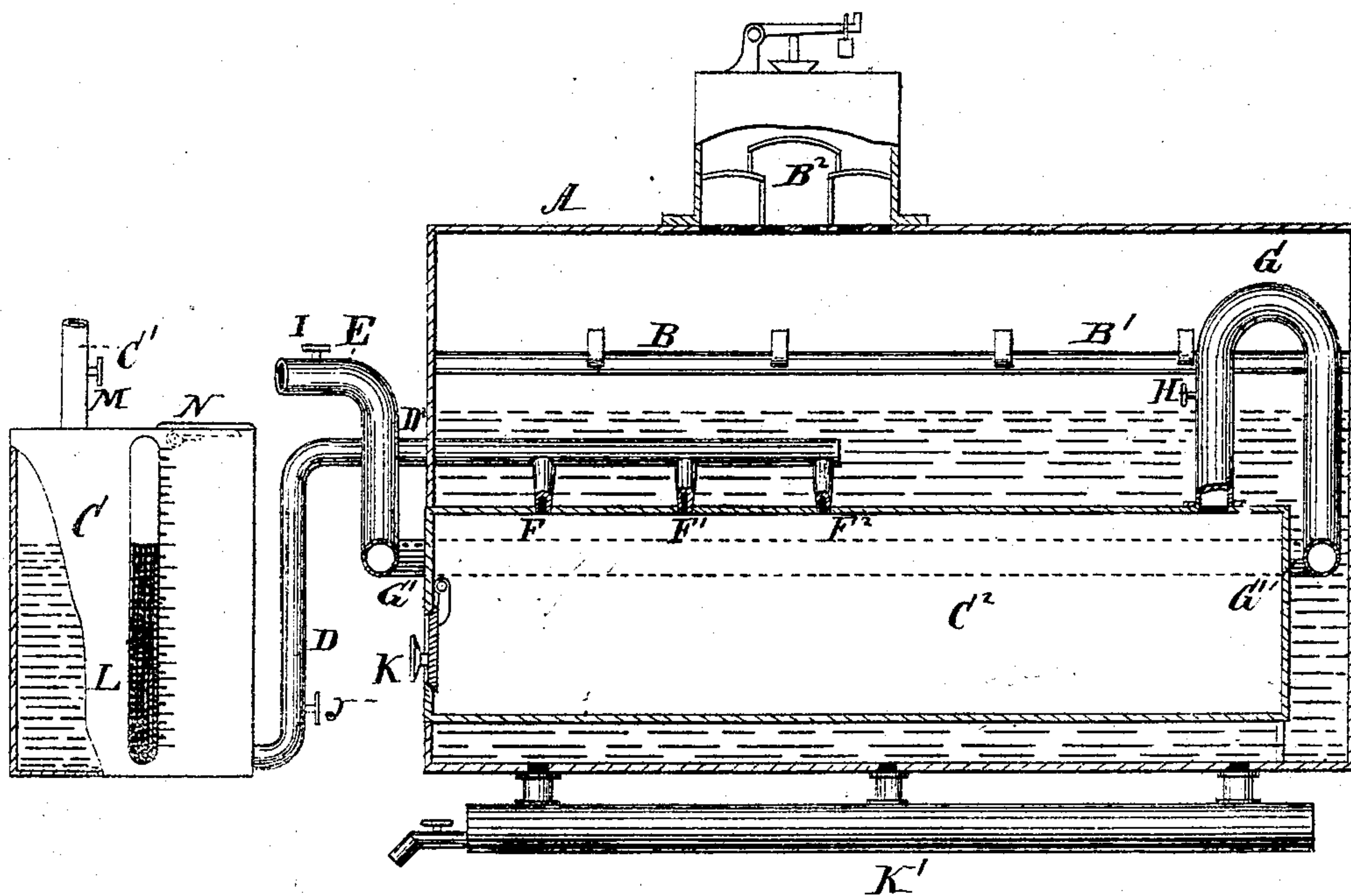


O. W. KETCHUM.

Oil-Burning Steam Generators.

No. 136,524.

Patented March 4, 1873.



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UNITED STATES PATENT OFFICE.

OLIVER W. KETCHUM, OF TORONTO, CANADA.

IMPROVEMENT IN OIL-BURNING STEAM-GENERATORS.

Specification forming part of Letters Patent No. 136,524, dated March 4, 1873.

To all whom it may concern:

Be it known that I, OLIVER W. KETCHUM, of Toronto, Province of Ontario, in the county of York and Dominion of Canada, have invented a new and Improved Liquid Fuel Pressure Combustion Steam-Generator; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification.

The invention consists in the method of burning liquid fuel, as coal-oil or petroleum, under a pressure of air from one pipe that supplies the supporter of combustion, and under pressure of air from another pipe upon the hydrocarbon which is used as the combustible. The air and the oil, being forced together from different directions, are thus brought into contact, closely intermingled, and the combustion made complete, uniform, and perfect.

In the drawing, the figure is a longitudinal vertical section.

A A is a steam-boiler, having an ordinary steam-dome with safety-valve; C, a tank or receptacle for coal-oil, petroleum, or other liquid fuel; C¹, a pipe from an air-pump entering the tank C; C², a flame-chamber in boiler; and D D', a pipe leading from fuel-tank to flame-chamber C². F F¹ F² are jet-pipes from the pipe D, entering the flame-chamber C². E is a pipe from an air-pump, entering the flame-chamber C². I is a cock in same pipe, to regulate pressure of air. G G' is a pipe curving upward from the flame-chamber above water-line in the boiler, and returning below water-mark the length of the boiler, and returning again. It is perforated with holes, increasing in size and number toward the end of the pipe. B B¹ are concave projections from the boiler, fixed over the pipe G, to act as deflectors to

throw back water cast up by ebullitions within the boiler. B² are deflectors in the dome, also to throw back water driven into the dome. H is a self-closing valve in the pipe G, to prevent the water in boiler having contact with flame-chamber when pressure is cut off from air-pump. K is an air-tight door in flame-chamber, opening inward, and containing a latch to fasten same; K', an ordinary mud-drum, with cock to relieve boiler, when required. I M are cocks in the pipes leading from the air-pump, to regulate pressure of air and supply of fuel. N is an air-tight door in fuel-tank, opening inward, and with a latch. Also, the tank is provided with an indicator of glass, showing the amount of fuel and the rapidity of feed to the fire.

The mode of operation is as follows: The air, forced into pipe C¹, drives the hydrocarbon up through the pipe D so that it is emitted in jets from the pipes F F¹ F² into the flame-chamber C²; there it meets a corresponding supply of air, which has been forced through the pipe E. The hydrocarbon then burns as fast as supplied, and the heat and other products of combustion are carried through the flame-chamber, through the pipes G G', and discharged into the water of boiler.

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

The air-tight hydrocarbon-chamber C, connected with air-pump by a pipe, C¹, and with the air-tight flame-chamber C² by a pipe, D, having jet-pipes F F¹ F², as and for the purpose described.

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