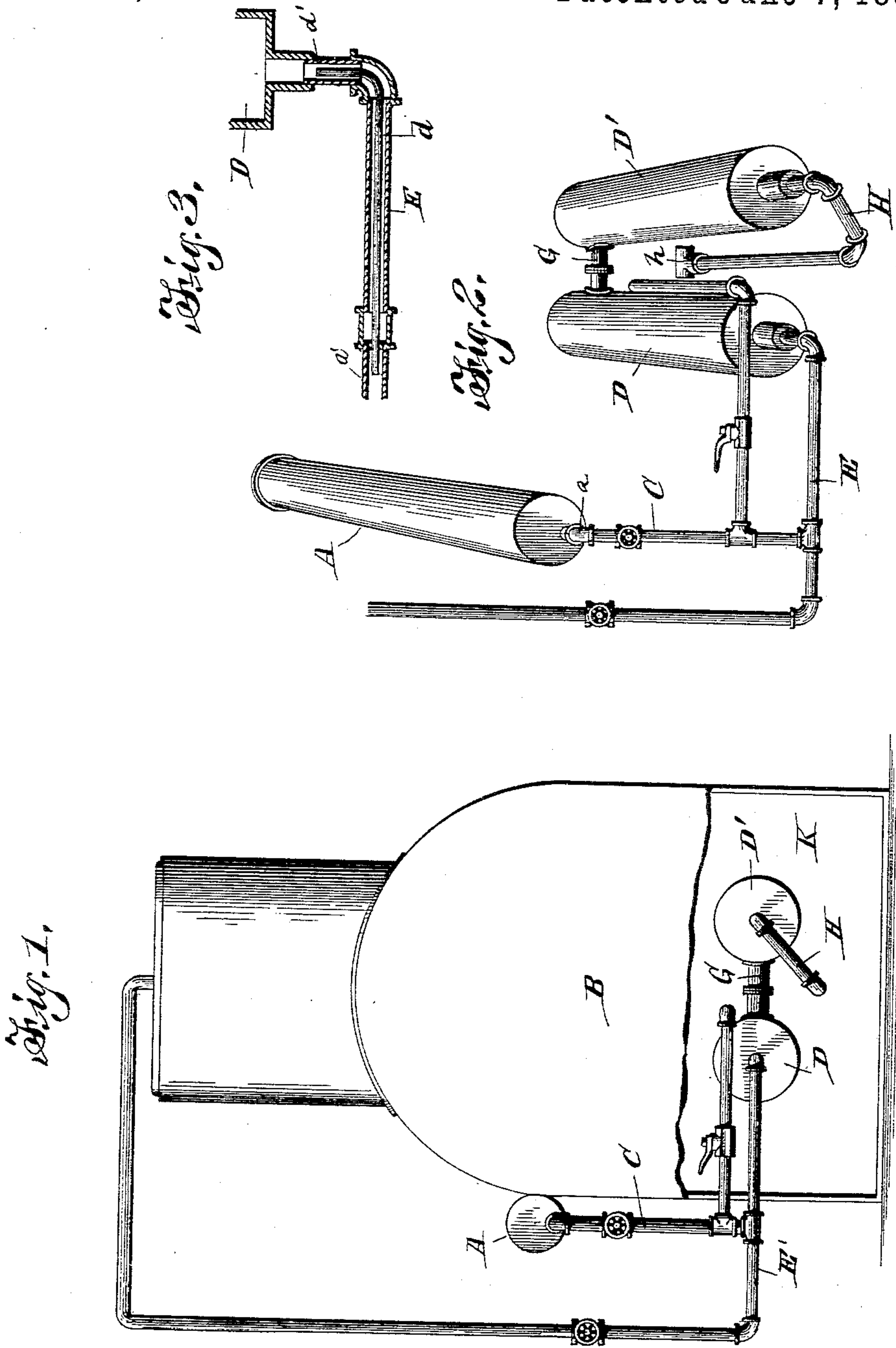


(No Model.)

G. F. RANDOLPH.
APPARATUS FOR CONVERTING PETROLEUM, &c., INTO GAS AND BURNING
THE SAME.

No. 476,554.

Patented June 7, 1892.



Witnesses

Samuel Ker.
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UNITED STATES PATENT OFFICE.

GEORGE F. RANDOLPH, OF LITTLE GENESEE, NEW YORK.

APPARATUS FOR CONVERTING PETROLEUM, &c., INTO GAS AND BURNING THE SAME.

SPECIFICATION forming part of Letters Patent No. 476,554, dated June 7, 1892.

Application filed September 30, 1891. Serial No. 407,319. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. RANDOLPH, a citizen of the United States, and a resident of Little Genesee, in the county of Allegany and State of New York, have invented certain new and useful Improvements in Apparatus for Converting Petroleum, its Products or Residue, into Gas and Burning the Same; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is an end view showing the invention as applied to a boiler. Fig. 2 is a perspective view of the invention, and Fig. 3 is a sectional detail view.

This invention relates to apparatus for the conversion of crude-petroleum oils or any of their products of distillation or residue into gas; and it consists in the provision of suitable means for this purpose especially calculated to render the device capable for use in fire-boxes of steam-boilers or generators for furnishing the necessary heat.

In the accompanying drawings, the letter A designates a suitable reservoir located outside the generator B and into which is placed the oil or hydrocarbon to be converted. Communicating with this reservoir at *a* is a feed-pipe C, the opposite end of which discharges into a pipe E, one end E' of which connects with the steam-dome of the boiler and at the opposite end connected and communicating with the primary conversion-cylinder D.

Inside of the pipe E is a jet-pipe *d*, terminating at a point just outside the conversion-cylinder. The action of the steam in this pipe serves to draw in oil from the reservoir A and highly-heated air through a pipe communicating at one end with the pipe C, its free end terminating in a position to receive the heat of the burner. The inner portion of the pipe E around the jet-pipe serves as a mixing-chamber for the hot air and oil, which are subjected to the action of and mixed with the steam at the discharge of the jet-pipe at the point *d'*. Said jet-pipe takes its steam from the pipe E' and enters the pipe E at the point *a'* through a plug or diaphragm in such a manner as to exclude the entrance of any

steam around it. This hot air, steam, and oil forced into the cylinder D are partially converted to vapor therein, passing thence through a pipe connecting G to a second cylinder D', where full conversion takes place, the vapor being discharged through the pipe H at the burner *h* in a highly-heated and inflammable condition. The cylinders D D' are of suitable material calculated to withstand great heat, and are supported by suitable means on the fire-box K of a boiler or generator, as shown. Suitable regulators, cocks, and valves are provided for the various pipes.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. The apparatus for the purpose herein described, comprising the oil-reservoir A, feed-pipe C, discharging at its lower end into a steam-supply pipe E, the primary retort or cylinder D, into which said pipe E leads, a jet-pipe *d* within said pipe E and terminating just outside the retort D, the secondary retort or cylinder D', connected with the cylinder D, the discharge-pipe H, terminating in a burner, the hot-air supply-pipe lying in proximity to said burner at one end and at the opposite end communicating with the pipe C above its point of discharge, and the regulating cocks or valves in the several pipes, substantially as specified.

2. The combination, with the fire-box of a steam boiler or generator, of the retorts or cylinders D D', arranged side by side therein and connected one with the other, a steam-supply pipe leading from the dome of the boiler to the primary cylinder D and forming a mixing-chamber, a jet-pipe in said steam-pipe and terminating at one end just outside said cylinder, an oil-supply pipe discharging into the pipe E around said jet-pipe, a hot-air pipe, one end of which is in proximity to the burner, communicating with the oil-supply pipe above the point of discharge, and the necessary regulating cocks or valves, substantially as specified.

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

GEORGE F. RANDOLPH.

Witnesses:

HOLLIS W. MOORE,
FRANK W. ABRAMS.