G. G. RAMSAY.

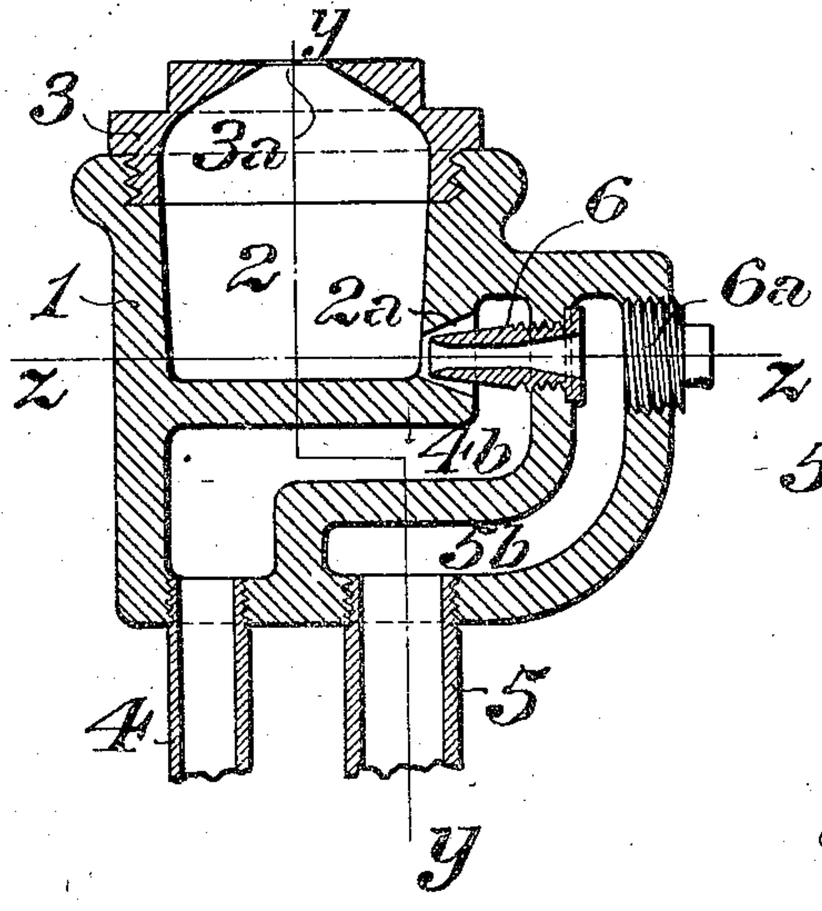
HYDROCARBON BURNER.

APPLICATION FILED SEPT. 23, 1915.

1,167,111.

Patented Jan. 4, 1916.

-FIG. 2-



-FIG. 3-

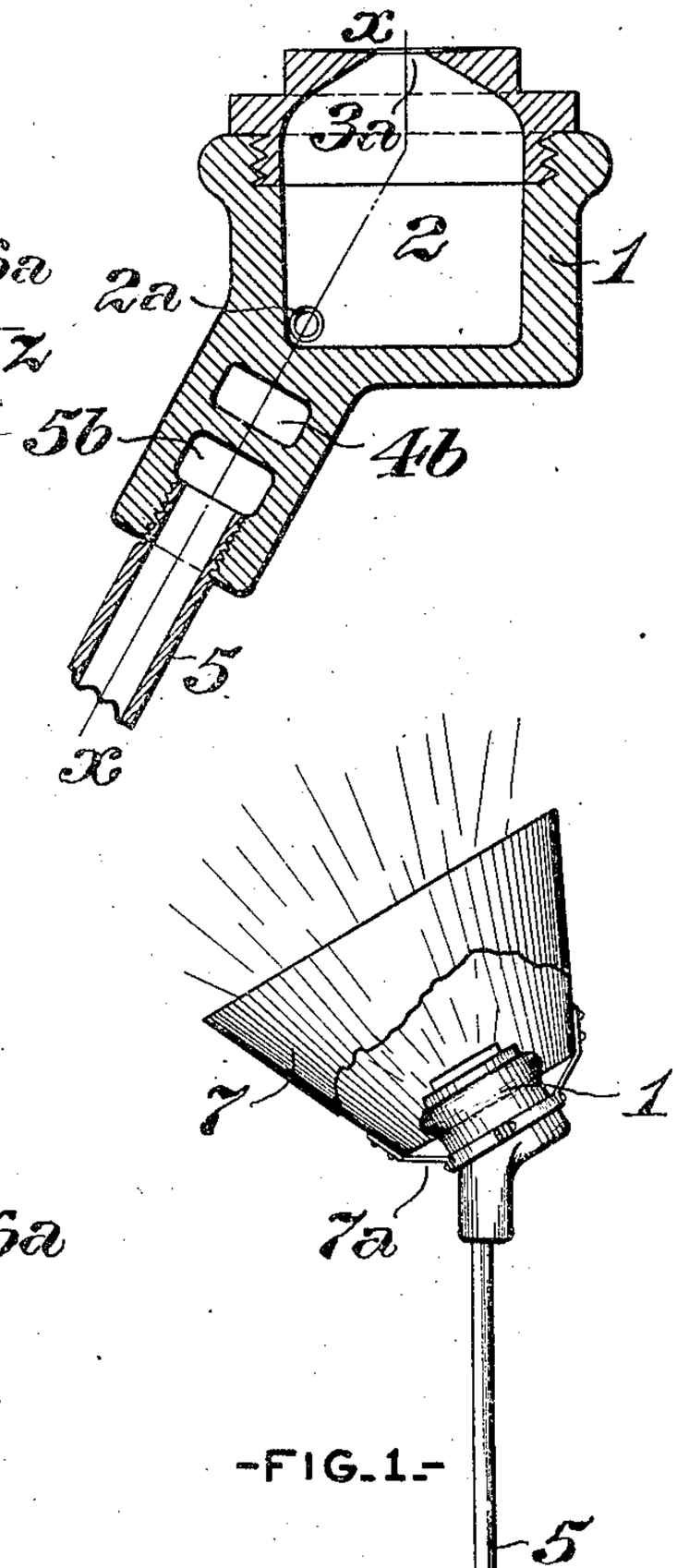
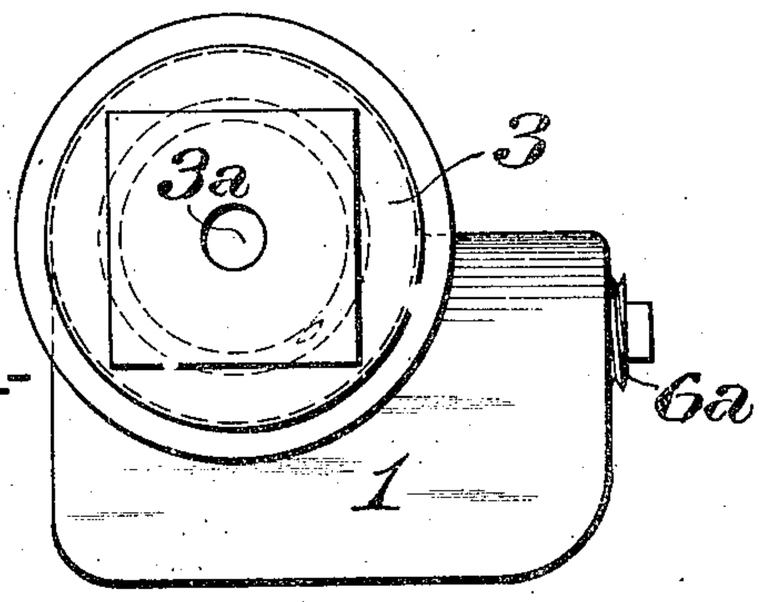
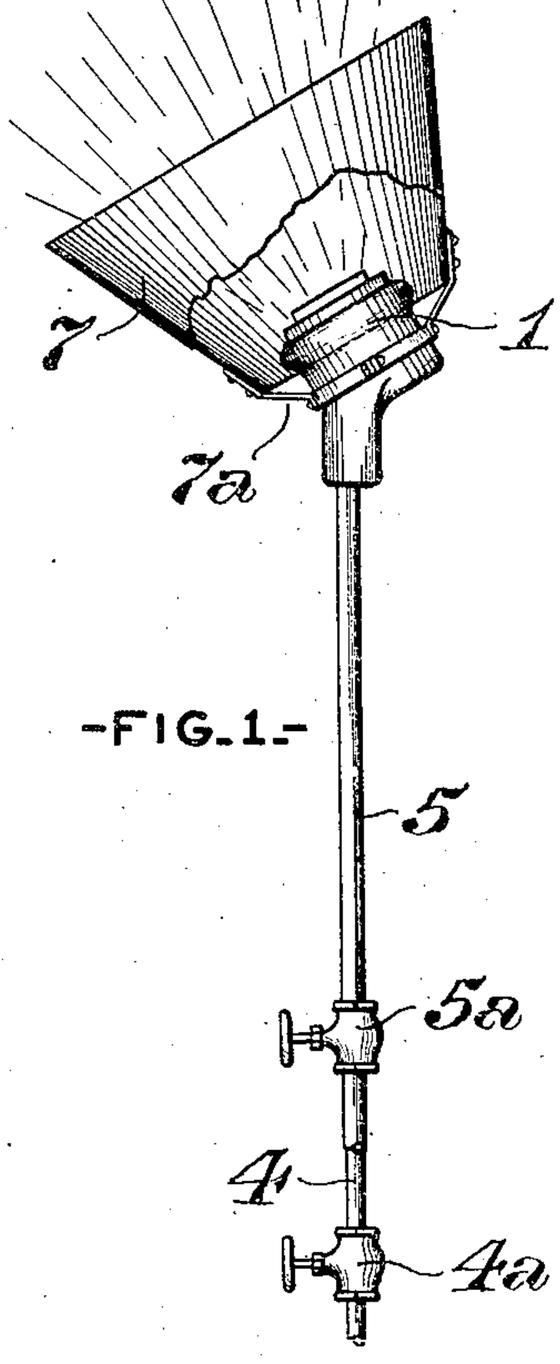


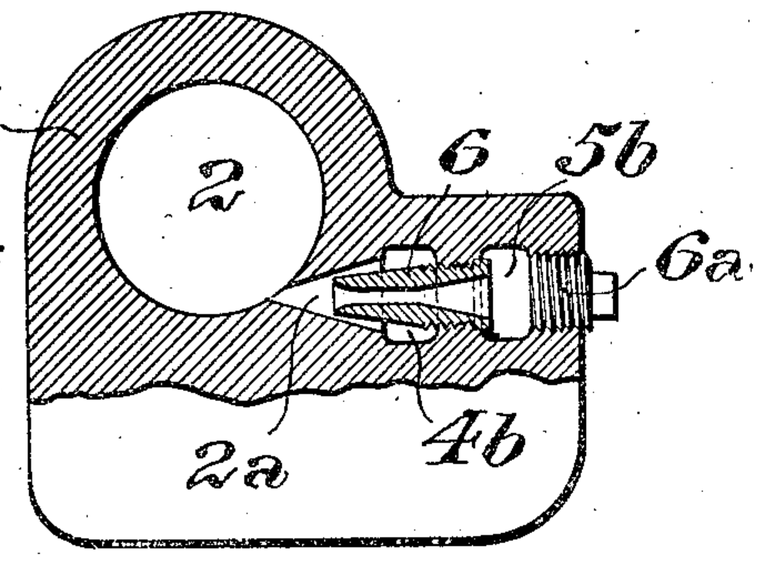
FIG. 4.-



-FIG. 1-



-FIG. 5-



WITNESSES

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HYDROCARBON-BURNER.

1,167,111. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed September 23, 1915. Serial No. 52,163.

To all whom it may concern:

Be it known that I, GEORGE G. RAMSAY, of Schenectady, in the county of Schenectady and State of New York, have invented a certain new and useful Improvement in Hydrocarbon-Burners, of which improvement the following is a specification.

The object of my invention is to provide a simple, compact, and inexpensive appliance, of portable type, for atomizing and effecting the combustion of hydrocarbon fuel, which may be readily connected to and detached from sources of fuel and fluid pressure supply, and in the operation of which the combustion of the liquid may be effectively and economically maintained.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings: Figure 1 is a side view, in elevation, of a hydrocarbon burner embodying my invention; Fig. 2, a longitudinal section, on an enlarged scale, through the atomizer casing, on the line *x x* of Fig. 3; Fig. 3, a similar section, on the line *y y* of Fig. 2; Fig. 4, an outer end view; and, Fig. 5, a transverse section, on the line *z z* of Fig. 2.

In the practice of my invention, I provide a casing, 1, in which is formed a cylindrical swirl chamber, 2, the outer end of which is closed by a removable cap, 3, which is screwed into the swirl chamber, and is provided with a central discharge outlet, 3^a. A hydrocarbon supply pipe, 4, and a fluid pressure supply pipe, 5, controlled by regulating valves, 4^a and 5^a, respectively, are connected to the casing, 1, and open, respectively, into passages, 4^b and 5^b, formed therein. A hydrocarbon jet passage, 2^a, leads from the passage, 4^b, into the swirl chamber, 2, adjacent to the bottom thereof, said passage being located substantially tangentially to said chamber, as shown in Figs. 3 and 5. A fluid pressure jet nozzle, 6, is fitted detachably in the partition wall of the casing which separates the passages, 4^b and 5^b, said nozzle projecting into, and being concentric with, the hydrocarbon jet passage, 2^a. The nozzle, 6, is inserted and removed, as required, through an opening in the wall of the casing, 1, which is closed by a screw plug, 6^a.

The casing, 1, is inclosed within an open ended and outwardly flaring flame bonnet, 7, which is connected to the casing, at its inner end, by arms, 7^a, and which serves to protect the flame issuing from the discharge outlet of the swirl chamber, from the disturbing action of currents of air, while insuring the mixture of a sufficient quantity of air with the atomized hydrocarbon which is sprayed from the outlet, to insure its perfect combustion.

In the operation of the appliance, the valve, 5^a, of the fluid pressure supply pipe is first opened, and a jet of steam or air under pressure is passed through the swirl chamber. Igniting flame is then applied at the discharge outlet, 3^a, and the hydrocarbon valve, 4^a, is opened and adjusted to the degree of combustion desired. The injection of hydrocarbon liquid and of steam or air under pressure, into the swirl chamber, in a direction tangential thereto, imparts a rapid and rotary motion to the hydrocarbon within the chamber, and effects its thorough atomization therein, and its discharge from the outlet, 3^a, in a highly inflammable spray or vapor, which, when ignited, is shielded from disturbance, by the surrounding flame bonnet, 7.

I claim as my invention and desire to secure by Letters Patent:

1. In a hydrocarbon burner, the combination of a casing having a cylindrical swirl chamber formed therein, a detachable cap closing one end of said chamber and having a central discharge outlet, a hydrocarbon jet passage formed in the wall of said chamber adjacent to the end thereof farther from the cap and substantially tangential to the chamber, a fluid pressure jet nozzle fitted in said passage, hydrocarbon and fluid pressure supply pipes leading into the casing and communicating, respectively, with said passage and said nozzle, and valves independently controlling said supply pipes.

2. In a hydrocarbon burner, the combination of a casing having a cylindrical swirl chamber and two adjoining fluid supply passages formed therein, a detachable cap closing one end of said chamber and having a central discharge outlet, a hydrocarbon jet

passage formed in the wall of said chamber adjacent to the end thereof farther from the cap and substantially tangential to the chamber, a fluid pressure jet nozzle fitted detachably in the wall separating the fluid supply passages and extending into the hydrocarbon jet passage concentrically therewith, a detachable plug fitted in the wall of the casing concentrically with the hydrocarbon jet passage, supply pipes leading into the casing and communicating with the supply passages thereof, and valves independently controlling said supply pipes.

GEORGE GLASSFORD RAMSAY.

Witnesses:
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