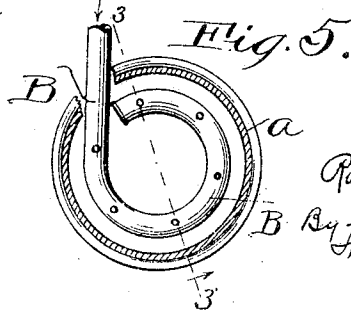
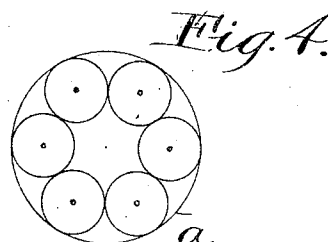
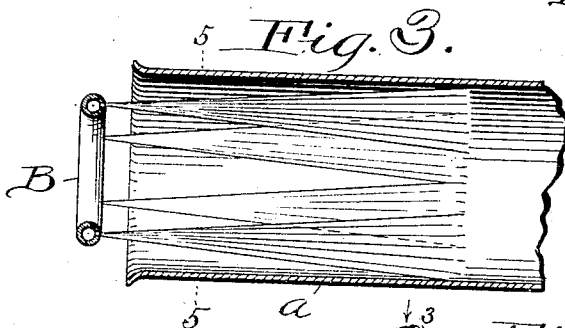
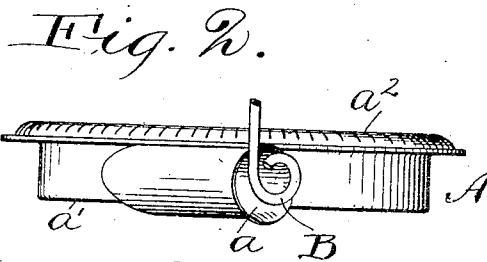
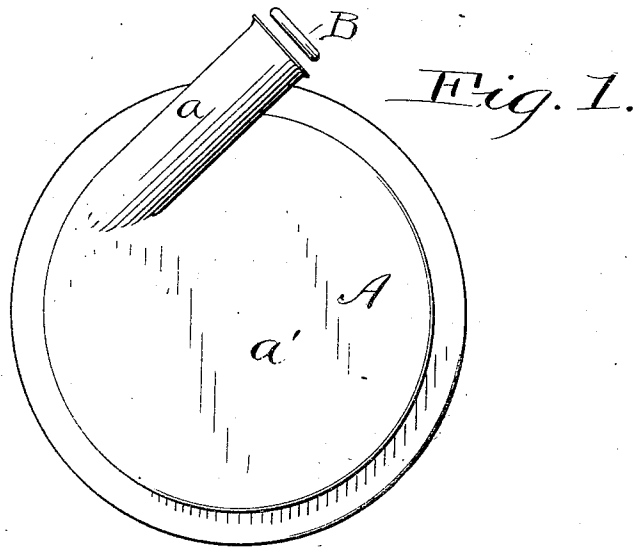


R. H. WHITE.
HYDROCARBON BURNER.
APPLICATION FILED SEPT. 7, 1907.

1,054,066.

Patented Feb. 25, 1913.



Witnesses
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UNITED STATES PATENT OFFICE

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HYDROCARBON-BURNER.

1,054,066.

Specification of Letters Patent.

Patented Feb. 25, 1913.

Application filed September 7, 1907. Serial No. 391,760.

To all whom it may concern:

Be it known that I, ROLLIN H. WHITE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Hydrocarbon-Burners, of which the following is a full, clear, and exact description.

So far as I am aware no one has heretofore produced a practically successful retort hydro-carbon burner adapted for use on steam automobiles, and capable of supplying the heat required for maintaining more than, say, 45 horse power. Much effort has been expended in this direction, but without success. The invention hereinafter described is, however, a practical solution of that problem.

The invention consists in the construction, combination and arrangement of parts hereinafter described and set forth definitely in the claim.

In the drawing, Figure 1 is a bottom plan view of a hydro-carbon burner constructed according to the present invention. Fig. 2 is an elevation thereof. Fig. 3 is a sectional side view taken on line 3—3 of Fig. 5 of the outer end of the mixing tube and the pipe in which the jet openings are formed. Fig. 4 is a transverse sectional view of said mixing tube showing diagrammatically the arrangement of said jets relative to each other and to the mixing tube. Fig. 5 is a sectional view on the line 5—5 of Fig. 3.

Referring to the parts by letters, A is the burner shell which has an impervious bottom a' , and suitable openings a^2 through its top for the escape of combustible mixture. It has a large mixing tube a , of cylindrical form, through which the mixture is discharged into the burner. The mixture consists of hydro-carbon vapor and air. Because the bottom of the burner is impervious, substantially no air to supply the combustion is furnished, save that which enters the burner with the hydro-carbon vapor through this mixing tube. Just outside the end of the tube a , but close to it, is a multiple jet nozzle B. As each jet issues from a jet opening under pressure, it rapidly expands in diameter,—said jet being in the form of a cone with the apex thereof at the jet opening. The surface of this conical jet, by friction upon the sur-

rounding air, takes into the tube with it the air to support its combustion.

The principal difficulty which prior experimenters have met in seeking to produce a high power hydro-carbon burner has been to get enough air into the burner to cause the complete combustion of the hydro-carbon vapor. This result is attained by the construction herein shown and described, by so directing, and arranging the jet openings relatively to each other and to the wall of the mixing tube that each jet will for the longest possible time be continued out of contact with the other jets and the mixing tube, and therefore completely surrounded by air. This end may be attained in the highest degree by making the jet openings substantially parallel with each other, and with the axis of the mixing tube and by arranging them in a circle around the axis of the mixing tube and at such distance therefrom that the enlarging jets will contact with each other and with the mixing tube in substantially the same transverse plane. This arrangement and disposition of the jets is the underlying principle of the invention, and is illustrated in Figs. 3 and 4 of the drawings. In Fig. 4 the small circles represent the jets, their centers being the axes of the jet openings which, as shown, are arranged around the axis of the mixing tube.

The fuel is supplied to the jet nozzle B in a vaporized condition. This previous vaporization may be accomplished in any desired manner.

I am aware that multiple jets for a hydro-carbon burner are not new; and that burners have been produced in which a plurality of jets are severally discharged into as many mixing tubes. This construction is expensive compared with that being described; is impractical for use on automobiles, because the jets and mixing tubes are, some of them, necessarily placed in inaccessible positions; and moreover, the construction does not give very satisfactory results.

I am also aware that several jets have been projected into the same mixing tube; but in those cases the jets have been directed toward each other so as to cause them to quickly intersect, upon the theory that thereby the vapor streams and air drawn in thereby would be more thoroughly mixed.

Perhaps this result is attained by the construction referred to, but it by so much reduces the volume of air drawn in by the jets,—and consequently defeats the very purpose for which the present invention is designed.

Having described my invention, I claim:

In a hydro-carbon burner, the combination of a burner shell having an imperforate bottom, vapor openings in its top, and a mixing tube connected with its side, with a pipe having at its end a coil arranged in

front of the mixing tube and substantially coaxial therewith, said pipe coil having in the face which is toward the end of the mixing tube a plurality of jet openings, the axes of which are substantially parallel with the axis of the mixing tube. 15

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

ROLLIN H. WHITE.

Witnesses:

H. R. SULLIVAN,
E. B. GILCHRIST.