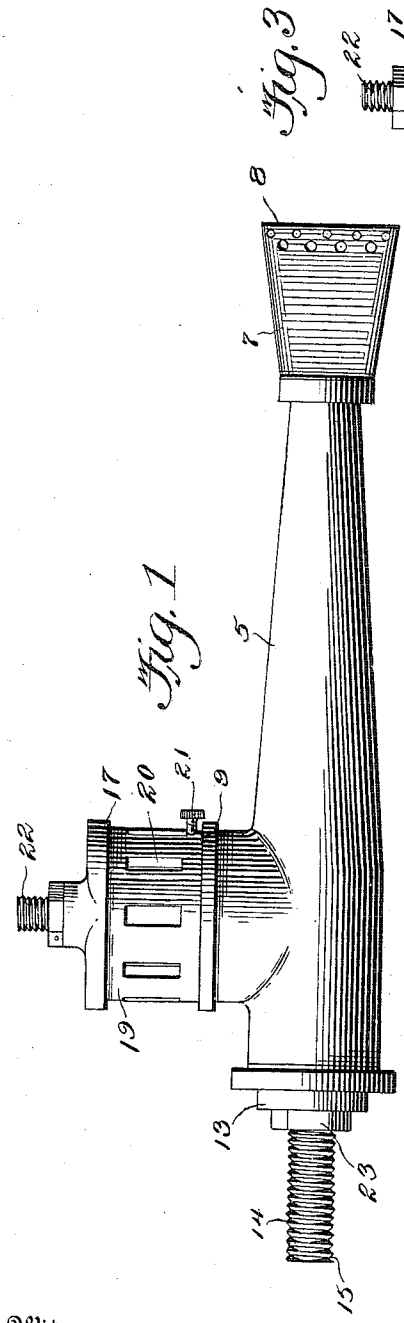
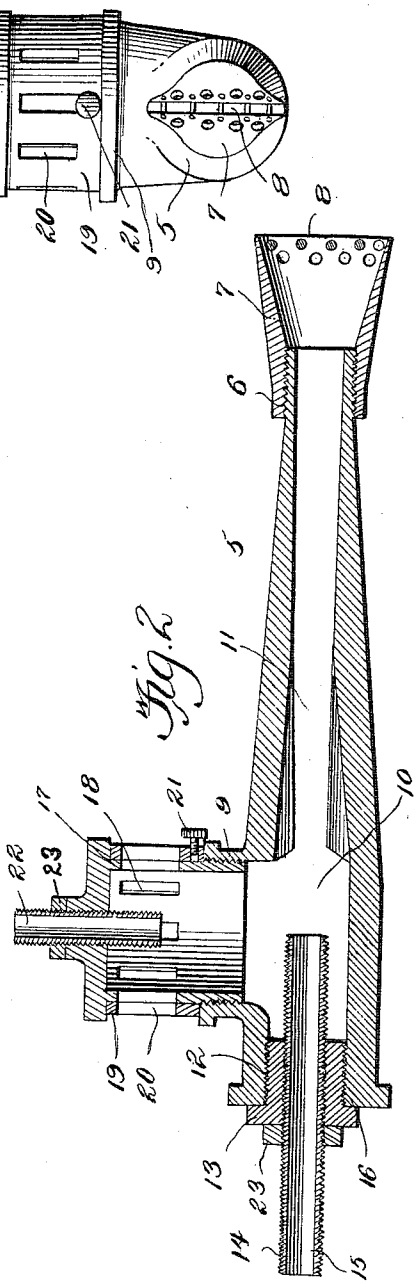
R. L. & H. R. HANNAH.

LIQUID FUEL BURNER.

APPLICATION FILED OCT. 29, 1910.

995,425. Patented June 13, 1911.





Witnesses
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[illegible]

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UNITED STATES PATENT OFFICE.

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LIQUID-FUEL BURNER.

995,425. Specification of Letters Patent. **Patented June 13, 1911.**

Application filed October 29, 1910. Serial No. 589,771.

To all whom it may concern:

Be it known that we, ROBERT L. HANNAH and HOMER R. HANNAH, citizens of the United States, residing at Waco, in the county of McLennan and State of Texas, have invented new and useful Improvements in Liquid-Fuel Burners, of which the following is a specification.

The invention relates to a burner, and more particularly to the class of liquid fuel burners.

The primary object of the invention is the provision of a burner in which liquid fuel will be mixed with a quantity of air, the fuel being sprayed into the combustion chamber, thus effecting a more thorough mixture of the fuel and air.

Another object of the invention is the provision of a burner of this character in which the fuel will be thoroughly vaporized to increase to a maximum the intensity of the flame and to promote combustion to the greatest extent possible, the burner being adapted for use in shops or the like for any desirable purposes.

A further object of the invention is the provision of a burner of this character in which the admission of air to the combustion chamber will be controlled so as to increase or decrease the heating qualities of the burner when the fuel has been ignited, and also to assure a perfect combustion of such fuel.

The burner consists in general of a casing formed with a mixing chamber in which the fuel is supplied, the fuel being drawn into the chamber by means of a steam jet and commingled with a supply of air, the latter being drawn into the said chamber by the said steam jet, thus assuring a high degree of heat on the burning of the fuel.

With these and other objects in view, the invention consists of the construction, combination and arrangement of parts, as will be more fully hereinafter described, illustrated in the accompanying drawings, and pointed out in the claims hereunto appended.

In the drawings: Figure 1 is a side elevation of a burner constructed in accordance with the invention. Fig. 2 is a vertical longitudinal sectional view thereof. Fig. 3 is an end elevation.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings by numerals, 5 designates the body of the burner comprising a forwardly tapering shell, the same being formed at one end with an external thread 6, with which is detachably engaged a burner cap or tip 7, the latter being flattened at opposite sides to form a contracted elongated mouth opening 8 to permit a flat spray to be ejected from the cap. It is of course obvious that the tip or cap 7 may be readily removed when found desirable. Spaced from the top of the body 5 is an internally threaded circular flange or nipple 9, the same communicating with a mixing chamber 10, the latter being in communication with a tapered bore 11 extending longitudinally through the body 5 of the burner. The rear end of the body 5 is internally threaded, as at 12, in which is engaged an adjustable sleeve 13, through which latter is passed a steam inlet pipe 14, the same being provided with external threads 15 adjustably engaging internal threads 16 formed in the sleeve 13, whereby the said steam pipe 14 may be adjusted in the said sleeve so as to protrude to the desired degree within the mixing chamber 10 in the body 5 of the burner.

Detachably threaded in the annular flange or nipple 9 is an inverted cup 17 in the side wall of which are provided air inlet openings 18, and surrounding this cup 17 is a rotatable collar 19, the latter being provided with inlet openings 20 adapted to register with the openings 18. Engaged in the collar 19 is a binding screw 21, which latter serves to lock the collar 19 in adjusted position. It will be obvious that upon adjustment of the collar 19 upon the inverted cup 17, the size or extent of the openings may be increased or decreased at will, thus regulating the supply of air through the inverted cup 17 into the mixing chamber 10 in the body 5 of the burner.

It will be obvious that when steam is admitted into the mixing chamber 10 in the body 5, it will effect a suction therein, thus drawing in air through the openings 18 in the inverted cup 17 for its commingling with fuel admitted to the mixing chamber, as will be hereinafter more fully described.

Threaded in the top of the inverted cup 17 is an oil inlet pipe 22, which latter supplies fuel to the mixing chamber 10, the said oil or fuel being sucked into the chamber 10 when steam is admitted through the steam pipe 14. Thus it will be seen that the

oil admitted into the mixing chamber 10 from the pipe 22 will be thoroughly mixed with the air admitted through the openings 18 in the inverted cup 17, both the oil and air being drawn into the mixing chamber 10 by the presence of a vacuum produced by the admission of the steam from the pipe 14, which steam will take up the mixture of both oil and air and drive the same into the bore 11 of the burner, whence it will be forced through the tip or cap 7 under the pressure of the steam, thereby causing the fuel to be atomized through the latter.

Threaded on the steam and fuel pipes 14 and 22, respectively, are jam nuts 23, the latter serving to prevent the loosening of the said pipes after the same have been adjusted.

In operation, the steam enters the mixing chamber 10 of the burner body 5 through the inlet pipe 14 and passes into the bore 11 in the said burner body which produces a vacuum in the said bore 11 and causes the oil to enter the mixing chamber 10 through the pipe 22, and also the admission of air through the openings 18 into the mixing chamber simultaneously with the oil, the oil and air being taken up by the steam and carried with the same into the tip 7. Here, the oil and steam will be impeded in their movement by reason of the contracted mouth portion 8 of the tip, whereby a thorough mixture of the oil and steam is effected, and the oil is heated to a very high degree before leaving the tip. Also the impeding of the oil and steam in the tip 7 will result in the accumulation of considerable pressure in the tip and the oil is thoroughly atomized when leaving the same.

As heretofore stated, the admission of air through the openings 18 in the inverted cup 17 of the burner may be controlled or regulated on the turning of the collar 19 at will.

What is claimed is:

1. A burner of the class described, comprising a forwardly tapering shell having a mixing chamber and a bore extending longitudinally therein, an inverted perforated cup detachably connected with the shell, a rotatable collar surrounding the cup and having perforations adapted for registration with the perforations in the cup, means for locking the collar in adjusted position, independent steam and oil pipes having connection with the shell and cup respectively, and means for adjusting the said pipes in the shell and cup respectively.

2. A burner of the class described, comprising a forwardly tapering shell having a mixing chamber and a bore extending longitudinally therein, an inverted perforated cup detachably connected with the shell, a rotatable collar surrounding the cup and having perforations adapted for registration with the perforations in the said cup, means for locking the collar in adjusted position, independent steam and oil pipes connected with the shell and cup respectively, means for adjusting the pipes in the shell and cup respectively, and a contracted tip detachably mounted at the delivery end of the shell.

In testimony whereof we affix our signatures in presence of two witnesses.

ROBERT L. HANNAH.
HOMER R. HANNAH.

Witnesses:
A. H. BELL,
J. B. DUNCAN.