G. F. ALLEN.

HYDROCARBON OIL BURNER.

APPLICATION FILED MAR. 30, 1920.

1,430,428. Patented Sept. 26, 1922.

2 SHEETS—SHEET 1.

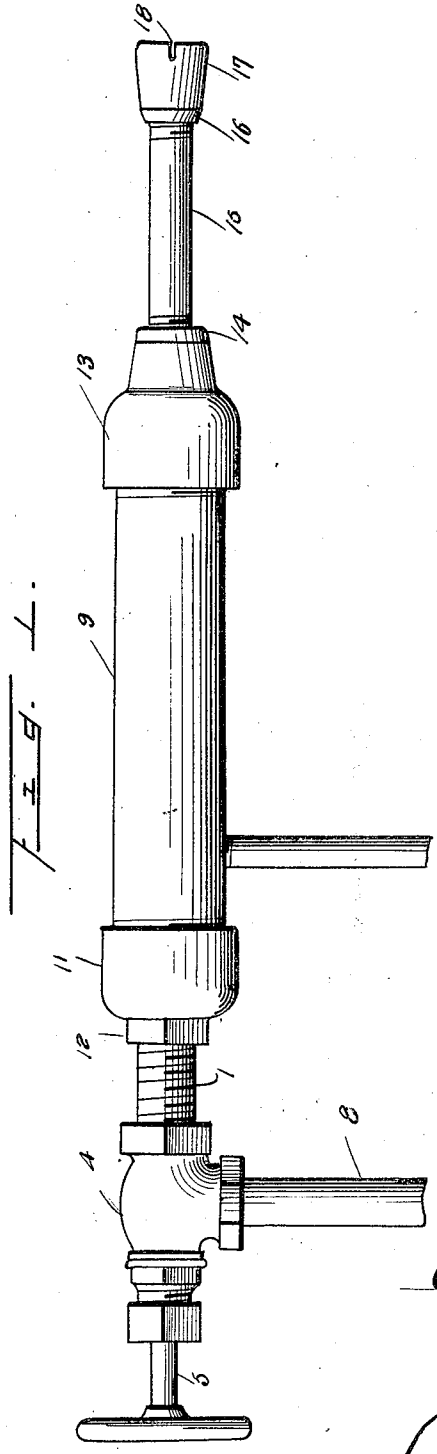


Fig. 1.

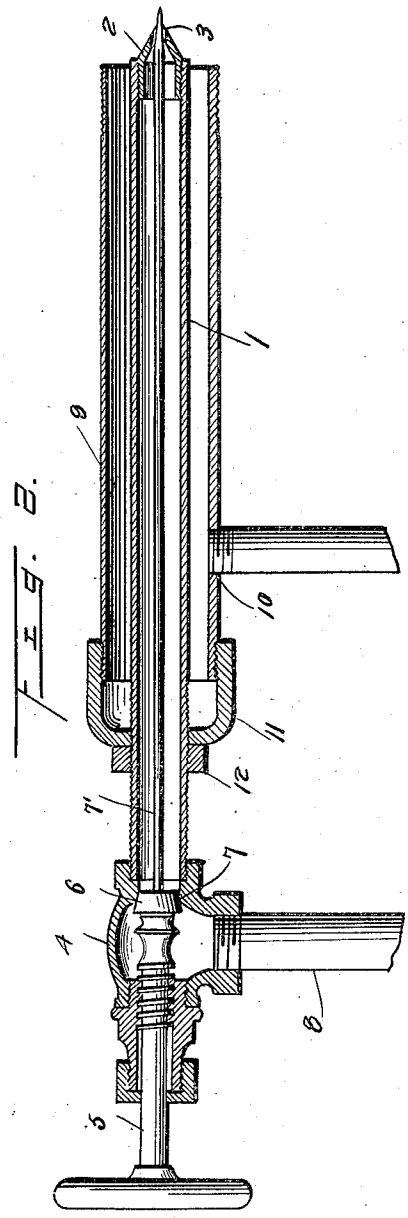


Fig. 2.

George F Allen INVENTOR.

BY

Randolph & Co. ATTORNEY.

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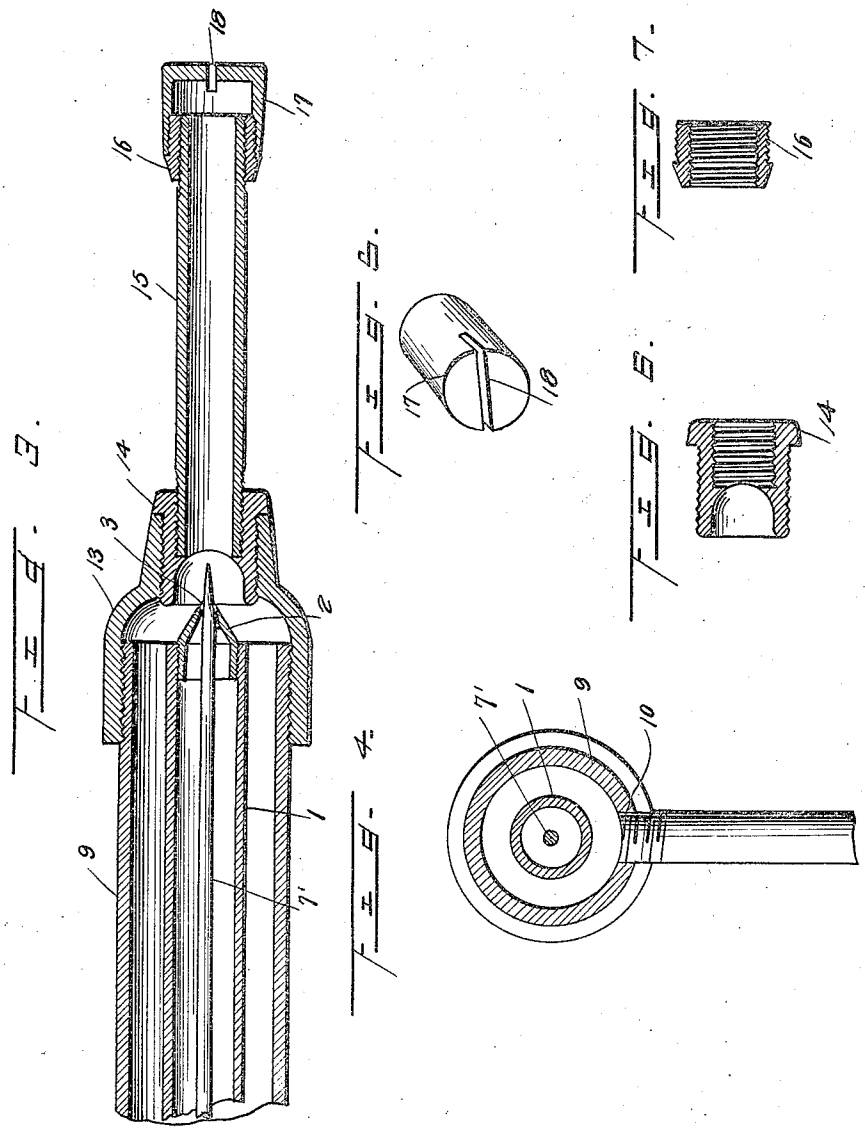


FIG. 3.

FIG. 5.

FIG. 4.

FIG. 7.

FIG. 6.

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UNITED STATES PATENT OFFICE.

GEORGE F. ALLEN, OF ORONOGO, MISSOURI.

HYDROCARBON-OIL BURNER.

Application filed March 30, 1920. Serial No. 369,845.

To all whom it may concern:

Be it known that I, GEORGE F. ALLEN, a citizen of the United States, residing at Oronogo, in the county of Jasper and State of Missouri, have invented certain new and useful Improvements in Hydrocarbon-Oil Burners; and I do hereby 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.

This invention relates to hydro-carbon oil burners and it consists in the novel features hereinafter described and claimed.

An object of the invention is to provide a burner of the character stated which is of simple and durable structure and having its parts so arranged as to economically consume mixed steam and hydro-carbon oil whereby a hot flame is produced.

With the above object in view the burner comprises a pipe closed at one end by a cone shaped tip having an outlet at the apex of the cone, a valve casing is applied to the other end of the pipe and a valve is movably mounted therein. A needle valve is carried by the first mentioned valve and is adapted to operate at the opening in the cone and valve in the casing adapted to operate and control the flow of oil through the valve casing and pipe. The pipe is adjustably mounted in a jacket into which the steam is admitted whereby the pipe is surrounded by a volume of steam, the nozzle is mounted upon the jacket and includes a pod from which the said cone shaped tip is spaced and with relation to which the said pipe may be adjusted to increase or diminish the said space. A burner tip is mounted upon the nozzle and the said tip is preferably provided with a diametrically disposed slot outlet opening through which the mixture of steam and oil may pass and at which point the mixture is ignited producing a broad flat flame.

In the accompanying drawings:—

Figure 1 is a side elevation of the burner.

Figure 2 is an enlarged longitudinal sectional view of the body of the burner.

Figure 3 is a similar view of the burner nozzle.

Figure 4 is a transverse sectional view through the burner.

Figure 5 is a perspective view of the burner tip.

Figures 6 and 7 are cross sectional views of burner pipe connections.

As illustrated in the accompanying drawing, the burner comprises a pipe 1 which is preferably of brass or other suitable material which will readily conduct heat. The pipe 1 is closed at one end by a cone shaped tip 2 having an outlet opening 3 at the apex of the cone. The said outlet opening is in alinement with the axis of the pipe 1. A valve casing 4 is screwed upon that end of the pipe 1 which is opposite the end at which the tip 2 is located and a valve stem 5 has screw threaded engagement with the casing 4 whereby the said valve stem moves longitudinally as it is turned in a usual manner. A valve 6 is carried at the inner end of the stem 5 and may close against a seat 7 provided at the inner surface of the casing 4. A needle valve 7′ is attached to the valve 6 and is disposed along the axis of the pipe 1. The pointed end of the needle valve 7′ is located at the opening 3 of the tip 2 and may be moved toward or away from the same as the stem 5 is turned and at the same time that the valve 6 is moved toward or away from the seat 7. An oil supply pipe 8 connects with the side of the casing 4.

A jacket 9 surrounds the intermediate portion of the pipe 1 and is spaced from the exterior thereof. The said jacket is provided at its side with a steam inlet port or opening 10. The jacket 9 is closed at one end by a head 11 which has screw threaded engagement with the intermediate portion of the pipe 1 and a nut 12 is threaded upon the said pipe 1 and bears at its face against the end of the head 11 and serves to hold the parts in the position to which they are adjusted.

A nozzle is applied to the opposite end of the jacket 9 and the nozzle includes a head 13 which is screwed upon the jacket 9. A sleeve 14 is screwed into the outer end of the head 13 and its axis is in alinement with the axis of the pipe 1 as the said pipe 1 is adjusted within the jacket 9 as hereinbefore indicated the tip 2 is moved toward or away from the inner end of the sleeve 14 and consequently the space between the inner end of the sleeve and the cone shaped

tip may be increased or diminished as desired. A nipple 15 is screwed into the sleeve 14 and a collar 16 is screwed upon the outer end of the nipple 15. A burner tip 17 is screwed upon the collar 16 and is provided at its outer end with a diametrically disposed slot 18. In operation the hydro-carbon oil is admitted into the pipe 1 through the casing 4 and from the supply pipe 8 when the valve 6 is at an open position with relation to the seat 7. At the same time steam is admitted into the jacket 9 through the inlet port 10. Consequently the intermediate portion of the pipe 1 which contains the oil is surrounded by a volume of steam and inasmuch as the said portion of the said pipe is thereby heated the oil is converted from a liquid into a vapor. This vapor escapes from the pipe 1 through the opening 3 of the tip 2 and mixes with the steam which passes through the head 13 and is sprayed into the oil through the space between the tip 2 and the inner end of the sleeve 14. This mixture passes through the nipple 15 and the tip 17 and out through the slot 18 where it is ignited and burns in a form of a broad flat thin flame.

It is apparent that by adjusting the pipe 1 with relation to the sleeve 14 that the amount of steam which is admitted into the vaporized oil may be regulated. It is also apparent that by adjusting the needle valve 7' with relation to the opening 3 in the tip 2 that the quantity of vaporized oil which is admitted to the steam may be regulated.

Furthermore it will be apparent that the adjustment of the valve 6 with relation to the seat 7 controls the quantity of liquid oil which passes through the casing 4 into the pipe 1.

Having described the invention, what is claimed is:—

A hydro-carbon burner including a casing having a valve seat, means of fuel supply leading to said casing, a valve in said casing cooperating with said seat to control the supply of fuel therethrough, a fuel supply pipe leading to said casing, a tip in the outlet end of said pipe, a needle extending from said valve and cooperating with the tip as a valve therefor, a jacket about said pipe in communication with a source of fluid supply, a head engaging said pipe and said jacket, a nozzle for said jacket having a constricted end disposed in advance of said pipe and jacket, a sleeve disposed in said constricted portion, and a burner nipple extending from said sleeve.

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

GEORGE F. ALLEN.

Witnesses:
OTTO KLOPFENSTEIN,
L. B. WETSEL.