Oct. 2, 1923. 1,469,479

T. F. KENT

BURNER

Filed Oct. 4, 1921

Fig. 1.

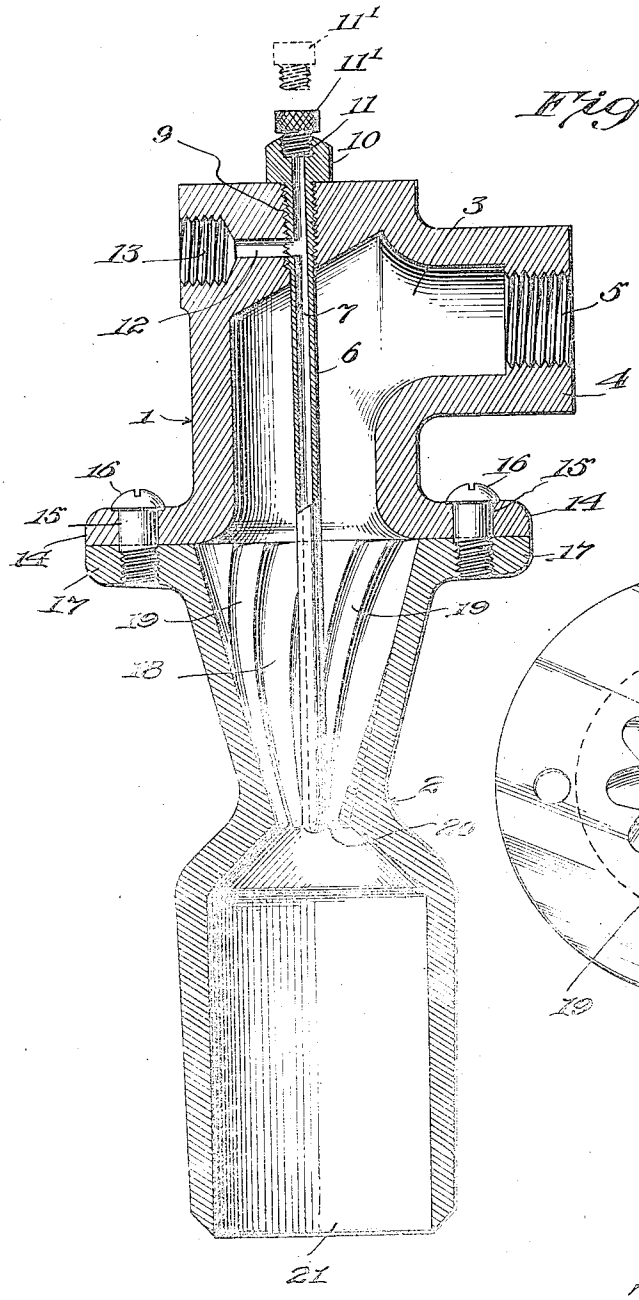
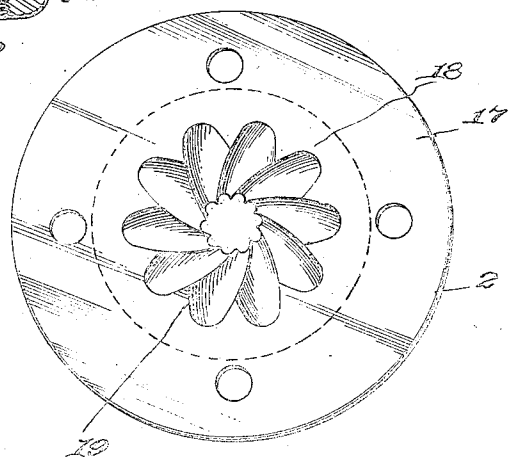


Fig. 2.



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UNITED STATES PATENT OFFICE.

THOMAS F. KENT, OF NEW YORK, N. Y.

BURNER.

Application filed October 4, 1921. Serial No. 505,307.

To all whom it may concern:

Be it known that THOMAS F. KENT, a citizen of the United States, residing at New York city, in the county of New York and State of New York, has invented certain new and useful Improvements in Burners, of which the following is a specification.

This invention relates to improvements in burners, and more especially to a burner in which a liquid or gaseous fuel is mixed with another medium, such as air or steam.

The primary object of the invention is to simplify the burner construction, making the same of few parts of substantial construction, and not likely to get out of order or clog up in operation.

A further object of the invention is to provide a burner in which the fuel tube also acts as a tube for the admission of air to be mixed with the other mediums used to support and increase combustion, and also embodies such construction as will enable the tube to be readily cleaned without interfering with the operation of the burner.

In the drawings illustrating the invention

Fig. 1 is a central section of the burner, and

Fig. 2 is a top plan view of one section thereof.

Referring to the drawings, the numeral 1 designates one part of the burner, and the numeral 2 the other part. The part 1 is hollow and is provided with a chamber 3, and also with a lateral extension or boss 4 internally threaded as indicated at 5 for the reception of a pipe or connection for supplying the steam or other medium that is mixed with the fuel and air to form a combustible mixture.

The numeral 6 designates the fuel and air tube. This tube is provided with a continuous duct 7, and it is enlarged near one end as indicated at 8, and provided with a thread 9 by which it is threaded into the part 1, the tube being provided with a head 10 with an opening 11 therein, forming a continuation of the duct 7. The numeral 11′ designates a screw plug fitted into the head 10 by which the fuel duct is adapted to be closed in some conditions to bring about a somewhat different operation of the burner, as will appear.

The duct 7 is intersected by a lateral passage 12 communicating with an internal screw threaded socket 13, which receives the pipe or connection which supplies the fuel, and it will be understood that this pipe may be fitted with a suitable valve for controlling the quantity of fuel, and that such valve may be located either close to the burner, or at a distant point, as may be desired.

The one end of the member 1 is flanged as indicated at 14, which flange is provided with a series of bolt holes 15 through which extend short bolts 16, which thread into a corresponding flange 17 of the member 2. The one end of the member 2 is provided with a conical chamber 18, provided with spiral-like grooves 19 converging toward the open end 20 of the chamber, and further, the member 2 is formed at its other end with a mixing chamber 21, into which the contracted end of the conical chamber opens.

In the operation the oil is supplied to the burner through the passage 12 and enters the duct in the fuel tube where it mixes with the air drawn through the opening 11 in the head 10. As before indicated, the steam or other medium to be mixed with the fuel and air is received through the opening 5 into the chamber 3 of the member 1, through which it passes through the spiral openings into the mixing chamber. The discharge of this atomizing agent sets up a violent vacuum in the mixing chamber adjacent to the ends of the grooves, consequently thoroughly breaking up the fuel and air, drawn through fuel duct 7.

If found desirable, the opening 11 in the top of the fuel duct may be closed by the screw plug shown, or by a similar device, and when this is done, the burner will operate without pressure of fuel at the point of fuel supply. In fact, when this is done, a liquid fuel, such as fuel or crude oil, is drawn forcefully into the burner by the vacuum set up in the fuel tube.

While I have illustrated the burner as formed of two pieces held together by bolts 16, it will be understood that the burner may comprise a single casting, or in other words, may be constructed in one piece.

Claims:

1. A burner of the character described formed of two members, the one member being provided with a chamber for the admission of a medium to form a part of the combustible mixture, a fuel tube carried by said member and having a duct entirely therethrough, means for supplying fuel to the fuel tube, the other member being provided with a conical chamber adjacent the

chamber of the first mentioned member, the walls of said conical chamber being convergingly grooved for the purpose set forth, and a mixing chamber in the end of the second member.

2. A burner of the character described formed of two members, one member being provided with means for the admission of a medium to form a part of the combustible mixture, a fuel tube carried by said member and having a duct entirely therethrough, means for closing or opening said duct at will, means for supplying fuel to the fuel tube, the other member being provided with a conical chamber adjacent the chamber in the first mentioned member and communicating therewith, the wall of said conical chamber having tapering grooves for the purpose seat forth, and a mixing chamber at the end of the second member.

3. A burner of the character described comprising a casting formed with a chamber at one end for the admission of a medium to form a part of the combustible mixture, a mixing chamber at the other end, a conical chamber interposed between the two mentioned chambers, the walls of said intermediate chamber being provided with spiral-like grooves converging toward the mixing chamber, a fuel tube in said casting with its one end opening the mixing chamber, said fuel tube being provided with a fuel duct entirely therethrough and opening outside the casting, and means for admitting fuel to the fuel tube.

4. A burner of the character described comprising a casting having at one end a chamber for the admission of a medium to form a part of the combustible mixture, and at the other end a nozzle formed with a mixing chamber therein, a conical chamber interposed between the first mentioned chamber and mixing chamber, the walls of said chamber being provided with spiral-like grooves, a fuel tube within the casting having a fuel duct extending entirely therethrough with one end opening into the mixing chamber, and the other end opening outside the casting, means for closing the outside opening of the fuel tube, and means for supplying fuel to the first mentioned chamber.

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

THOMAS F. KENT.

Witnesses:
N. P. LYONS,
H. L. KELLY.