

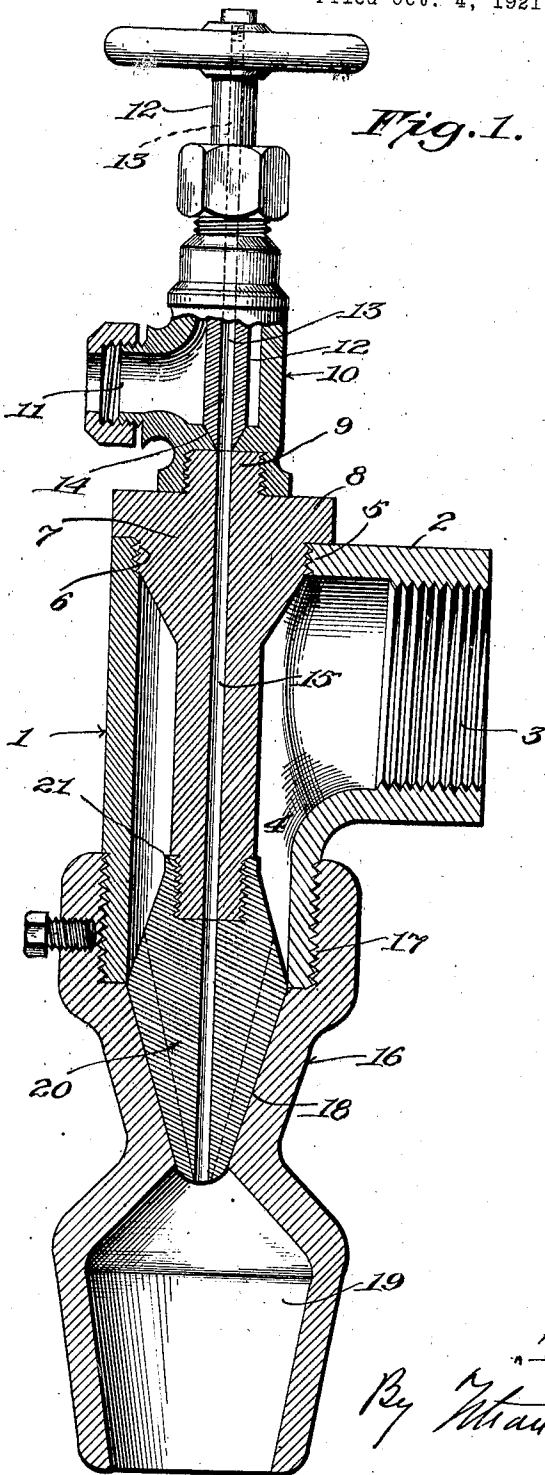
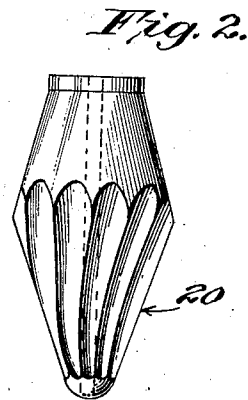
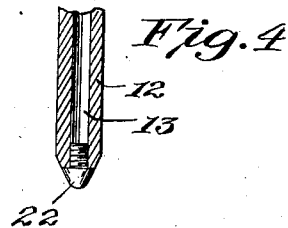
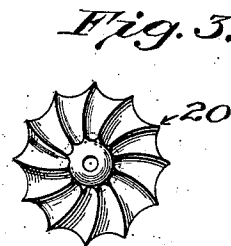
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T. F. KENT

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BURNER

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UNITED STATES PATENT OFFICE.

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

BURNER.

Application filed October 4, 1921. Serial No. 505,308.

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 particularly to that type of burners 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 so construct the burner that the fuel-duct thereof may be readily cleaned while the burner is in operation.

A further object of the invention is to provide convenient and readily operable means for controlling the quantity of fuel supplied to the nozzle thus giving to the burner the capacity of controlling the flame both as to quantity and character.

Other objects and advantages of the invention will become apparent from the following description.

In the drawings illustrating the invention Fig. 1 is a central vertical section of the burner.

Fig. 2 is an elevation of the fuel controlling head, and

Fig. 3 is a plan view thereof.

Fig. 4 is a detail sectional view of the lower part of the valve stem showing the manner in which the stem may be plugged or closed, which may be desirable under some conditions.

Referring to the drawings, the numeral 1 designates a hollow casting having a lateral extension or boss 2, internally threaded as indicated at 3 for the reception of a connection such as a supply pipe through which the chamber 4 receives the medium that mixes with the fuel in the operation of the burner. This casting is apertured at one end as indicated at 5, and internally threaded to receive the thread 6 of a plug 7, provided with a flange 8, which forms an annular shoulder resting against said casting. The plug is further provided with an externally threaded boss 9 received by the internally threaded end of the needle valve 10, which valve is hollow, and is provided with a laterally extension 11 threaded for the reception of a suitable oil pipe through which the burner receives this element of the combustible mixture.

The numeral 12 designates the valve stem, which is provided with a central bore or air-duct 13, which extends entirely through said stem. There is provided in the bottom of the valve chamber a seat 14 for the stem, and the plug 7 is provided for its entire length with a corresponding bore or fuel-duct 15, which registers with the bore in the valve stem, as clearly shown. To the other end of the casting or member 1 is a nozzle 16, which is threaded to the member 1 as indicated at 17, the nozzle being provided intermediate of its length with a conical seat 18, and its end is shaped to form a mixing chamber 19 in which the elements are further mixed at the point of combustion.

The conical seat referred to is provided for the conical head 20, which is also provided with a bore or fuel-duct 20', which conical head is threaded upon the end of the plug 7, as indicated at 21. A portion of this head is grooved circumferentially in somewhat spiral form, the grooves converging toward the end of the head, as clearly illustrated in Figures 2 and 3.

In operation the burner receives its fuel through the fuel pipe leading into the chamber of the leader valve, and is, at the end of the stem of the valve, mixed with air which is drawn into the bore 13 in said stem, and the oil and air thus mixed at the point mentioned passes through the plug and plug head, and mixes in the mixing chamber 19 with the medium, steam, etc., which is supplied to the burner through the member 1.

More or less of this medium may be mixed with the other elements of the combustible mixture that passes through the valve, plug and conical head, by merely adjusting the nozzle toward and away from the member 1, which obviously will increase or diminish the quantity of the medium passing through the member 1.

From the foregoing it will be seen that should any particles of carbon or foreign substances which might lodge upon the seat of the needle valve, they can be discharged into the fuel-duct by opening the needle valve, since it will be noted that the ducts or bores in the various parts form a continuous fuel-duct, and a rod pushed through the needle valve stem will force any deposit into the mixing chamber of the nozzle, all of which can be done without interrupting the operation of the burner.

The fuel supply is regulated by adjust-

ment of the valve stem to and from its seat, and this supply of fuel, when once regulated by the needle valve, cannot be cut off by back pressure produced by abnormal pressure of the atomizing agent, for the reason
 5 that the atomizing agent is discharged in a manner to produce increased suction in the fuel-duct with any increase of pressure of said atomizing agent.

10 As shown in Figure 4, the end of the valve stem 12 may be plugged or closed by any suitable means, for instance by the plug 22, as in cases where it is desired to lift the fuel oil, in which case the burner will operate
 15 without pressure of fuel at the point of fuel supply.

It will be understood that the conical head 20 may be integral with the member 7, and also in some instances the nozzle 16 may be integral with the member 1 instead of threaded thereon as shown.

Claims.

1. In a burner of the character described, in combination, a needle valve whose stem
 25 is hollow throughout, said needle valve being provided with a fuel chamber, and means of attachment to a fuel supply, a member secured to the valve and having a fuel-duct therethrough, said member carrying at one
 30 end a conical head having circumferential grooves thereon, a member surrounding the

first mentioned member and forming a chamber for the reception of a medium to be mixed with the fuel, a nozzle secured to the hollow member and provided with a seat for
 35 the conical head, and means for adjusting said nozzle to and from said head for the purpose set forth.

2. In a burner of the character described, in combination, a needle valve whose stem is hollow throughout, said needle valve being provided with a fuel chamber, and means of attachment to a fuel supply, a member secured to the valve and having a fuel-duct
 40 therethrough, said member carrying at its ends a conical head having circumferential grooves thereon, a member surrounding the first mentioned member and forming a chamber for the reception of a medium to be mixed with the fuel, a nozzle secured to the
 50 hollow member and provided with a seat for the conical head, said nozzle being shaped to form a mixing chamber at the point of combustion, and means for adjusting the nozzle to and from the head.
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In testimony whereof I affix my signature in presence of two witnesses.

THOMAS F. KENT.

Witnesses:

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