No. 733,579. PATENTED JULY 14, 1903.

J. FITTON.

HYDROCARBON BURNER.

APPLICATION FILED APR. 1, 1903.

NO MODEL.

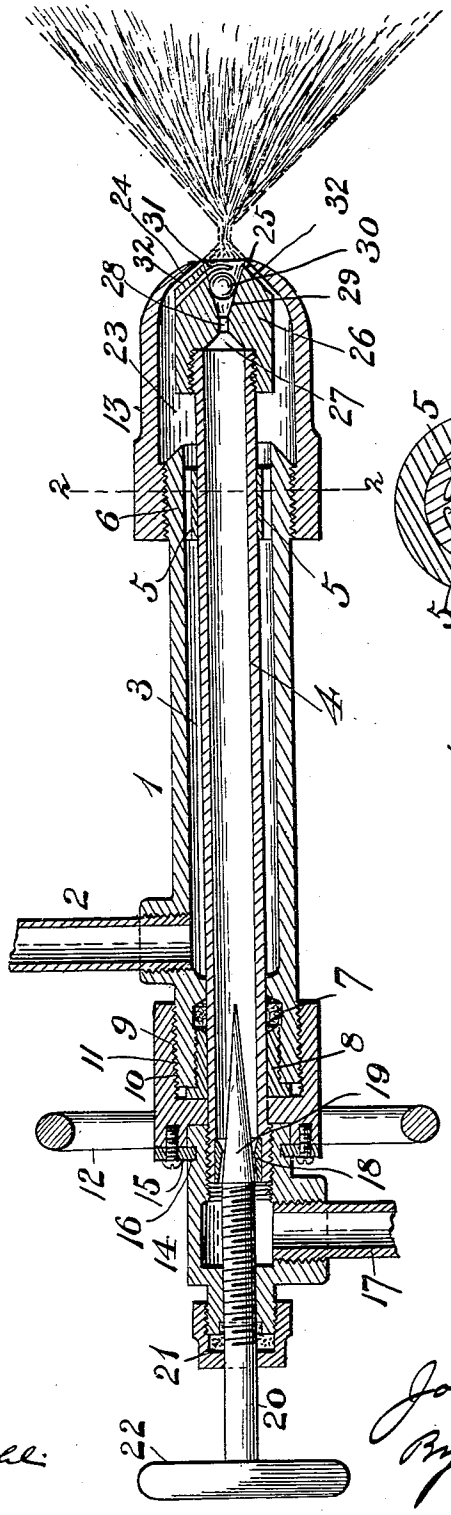


Fig. 1.

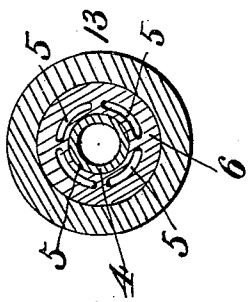


Fig. 2.

WITNESSES

F. L. Durand.

W. Parker Reinold.

INVENTOR

Joseph Fitton.

By D. C. Reinold.

Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 733,579. Patented July 14, 1903.

UNITED STATES PATENT OFFICE.

JOSEPH FITTON, OF BUFFALO, NEW YORK.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 733,579, dated July 14, 1903.

Application filed April 1, 1903. Serial No. 150,595. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH FITTON, of the United States Navy, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Hydrocarbon-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.

My invention relates to hydrocarbon-burners, has for its object a thorough atomizing of the oil and the diffusion of steam or air with the oil to produce the best results attainable in the combustion of the liquid fuel, and the invention consists in certain improvements in construction, which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a vertical longitudinal section of my improved burner, and Fig. 2 a transverse section on line 2 2, Fig. 1.

Reference being had to the drawings and the designating characters thereon, 1 indicates the body or casing provided with a pipe 2 for supplying steam or air to the annular chamber 3, surrounding the oil-pipe 4, from which the steam or air is discharged through passages 5 in the spider 6 at the inner end of the body 1. At the outer end of the casing is a stuffing-box 7, having an adjustable gland 8, externally screw-threaded to engage the internal screw-thread in the end of the body, and to the external screw-thread 9 is connected the head 10 by an internal screw-thread 11, and said head 10 is provided with a hand-wheel 12 for adjusting the oil-delivery pipe 4 with reference to the nozzle 13 on the inner end of the body 1. To the outer end of the head 10 a section 14 is connected by a two-part annular plate 15, which is secured to the outer end of the head by screws and extends into an annular groove 16 in the inner end of the section 14.

The section 14 is provided with an oil-supply pipe 17 and with the oil-delivery pipe 4, and in the outer end of the pipe 4 is a valve-seat 18, engaged by a needle-valve 19, whose rod 20 extends through the stuffing-box 21 and is provided with a wheel 22 for adjusting the valve and regulating the supply of oil to the delivery-pipe 4.

The nozzle 13 is of greater diameter than the body 1 and is provided with a chamber 23, and on the inside of the discharge end of the nozzle 13 is an angular or inclined seat 24, surrounding the discharge-opening 25 in the end of the nozzle, and on the discharge end of the oil-delivery pipe 4 is a nozzle 26, connected thereto by screw-threads, as shown, and is preferably provided with a conical chamber 27, a contracted parallel passage 28, and a conical or flaring walled discharge-mouth 29, in which is a ball 30, secured against displacement by a guard 31 on the upper side of the ball and within the mouth to prevent the oil adhering thereto and discharging in a stream outside of the burner. The nozzle 26 is provided with an angular or inclined seat 32, which is parallel to the angle of the seat 24 on the nozzle 13 and forms a valve to regulate the supply of steam or air, and the nozzle 26 is adjusted to regulate the discharge of the steam or air by the hand-wheel 12.

The oil is supplied to the burner under pressure by a suitable pump, (not shown,) and in its discharge through the nozzle 26 causes the ball 30 to revolve rapidly, and the ball is drawn toward its seat by the velocity of the oil due to the pressure under which it is supplied, so that the thickness of the annular sheet of oil varies inversely to the pressure of the oil, or, in other words, the higher the pressure of the oil the thinner is the sheet of oil projected against the sheet of steam. The oil striking the ball is sprayed or discharged in a thin annular sheet and by contact with the conical wall of the mouth 29 has its velocity reduced and issues from the nozzle 26 in an annular sheet, which is projected against an annular sheet of steam or air issuing at nearly a right angle to the oil, and the steam or air having a higher velocity than the oil and being discharged into the oil at nearly a right angle to the path of the oil thoroughly atomizes the oil, is diffused therewith beyond the burner, and the combustion of the oil effected at a greatly reduced expenditure of steam than is required by the burners in present use.

In the practical operation of the burner the oil and the steam or air issue from the end of the burner in a hollow converging coniform body, then assumes a short cylindrical body, and then spreads out and assumes a diverging conical body, substantially as shown in Fig. 1, or as a whole the gaseous body is in the form of two cones with their apexes adjacent to each other and connected by a short cylindrical body and burns in the diverging conical body, in which part the oil is thoroughly commingled with the steam or air.

Having thus fully described my invention, what I claim is—

1. A hydrocarbon-burner having an oil-delivery pipe provided with a nozzle having a diverging mouth at the end thereof, a ball and a guard for the ball within said mouth, and a conical seat on the nozzle surrounding said mouth; in combination with a casing having a chamber surrounding the oil-pipe, and a nozzle at the end of the casing having a seat at its end parallel to the seat on the end of the nozzle on the oil-pipe, forming an annular converging passage to discharge a fluid at the extreme end of the burner in a sheet at approximately a right angle to the sheet of oil discharged from the diverging mouth of the nozzle on the oil-pipe, whereby the oil is atomized and sprayed beyond the end of the burner.

2. A hydrocarbon-burner having an oil-delivery pipe provided with a diverging mouth at the end of the pipe, and a chamber adjacent to said mouth and connected therewith, a ball and a guard for the ball within said mouth, and a conical seat surrounding the mouth; in combination with a casing provided with a fluid-chamber surrounding the oil-pipe, and a nozzle at the end of the casing having an internal seat whose angle is parallel to the angle of the seat on the end of the oil-distributing nozzle, and constructed to discharge a fluid in a sheet at the end of the mouth of the oil-distributing nozzle and across the oil discharged therefrom at the end of the burner, whereby the oil is atomized and sprayed beyond the end of the burner.

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

JOSEPH FITTON.

Witnesses:
D. C. REINOHL,
W. PARKER REINOHL.