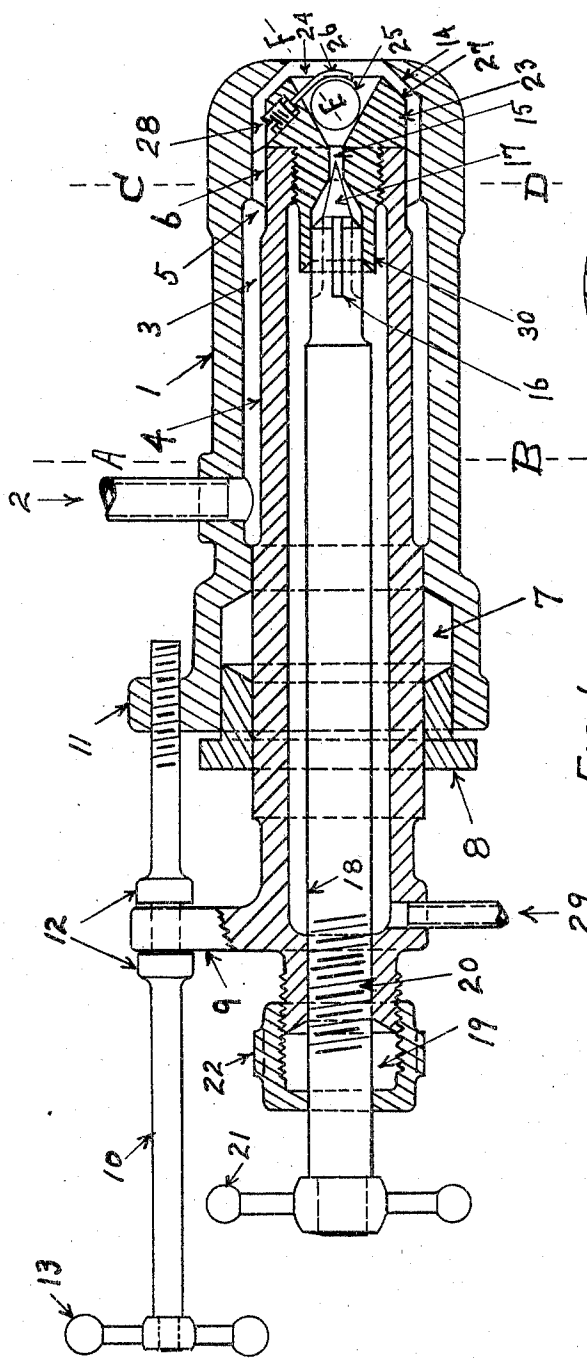
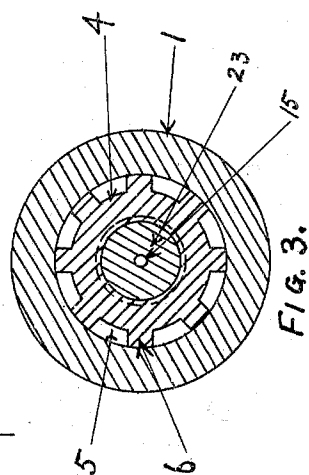
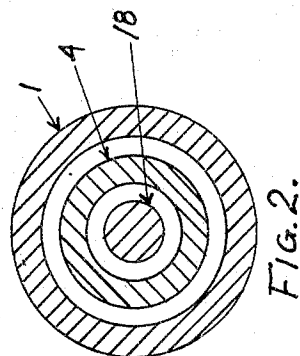
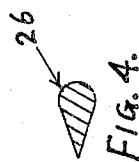


J. FITTON.
HYDROCARBON BURNER.
APPLICATION FILED JUNE 21, 1904.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JOSEPH FITTON, OF BUFFALO, NEW YORK.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 788,764, dated May 2, 1905.

Application filed June 21, 1904. Serial No. 213,529.

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, and 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 over my previous invention for which Letters Patent No. 733,579, dated July 14, 1903, have been granted to me, and 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 A B. Fig. 3 is a transverse section on line C D, and Fig. 4 is an enlarged transverse section of the guard 26 at the line E F.

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 removable oil-pipe 4, from which the air or steam is discharged through passages 5 in the spider 6 at the inner end of the body or casing 1. At the outer end of the casing 1 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 1 for the purpose of making a steam or air tight slip-joint between the casing 1 and the oil-pipe 4. The oil-pipe 4 at its outer end is provided with a lug 9, by which it is actuated through the medium of the rod 10, threaded at its end to the lug 11 on the outer end of the casing 1. The rod 10 is provided with collars or jam-nuts 12 embracing the lug 9, as also with a hand-wheel 13 at its outer end for the pur-

pose of adjusting and regulating the width of the annular valve-opening which is formed by the separation of the seat-faces 27 and 14 and through which the steam or air is admitted into contact with the oil emanating from the opening 15. (Shown at the inner end of the pipe 4.)

The end of the pipe 4 toward the end of the burner where the oil is ignited is provided with a needle-valve 17, operated by the stem 18 through the means of the hand-wheel 21. The valve end of the stem 18 slides in a guide 30, formed on the inner end of the nozzle 23, for the purpose of holding the valve 17 centrally in position relatively to the passage 15 and has grooves 16 formed into same to admit the passage of the oil, the supply of which to the furnace is regulated by the valve 17. The stem 18 is provided with a threaded section 20 and a stuffing-box 19, with its gland 22, for effecting an oil-tight slip-joint between the stem 18 and the pipe 4.

The valve-seat of the valve 17 forms the receiving side of the nozzle 23, which is preferably connected to the pipe 4 by screw-threads, as shown, and in addition to the conical valve-seat for the valve 17 it is provided with a contracted parallel passage 15 and a conical or flaring-walled discharge-mouth 24, in which is a ball 25, secured against displacement by a guard 26 on the upper side of the ball, as shown, this guard in cross-section at the line E F being preferably of the form shown by the enlarged view Fig. 4 for the purpose of preventing the oil adhering thereto and discharging into a stream outside of the burner. The guard 26 is held in place by means of the set-screw 28 bearing on its head, as shown, for the purpose of its convenient removal or renewal. The nozzle 23 is provided with a conical seat 27, which is parallel to the angle of the seat 14 on the body 1 and forms a valve-opening for regulating the supply of air or steam by means of the hand-wheel 13. The pipe 4 is provided with a spider-bearing around its periphery at its inner end, as shown by the transverse section, Fig. 3, for the purpose of keeping the pipe 4 in alinement, so that the annular valve-opening 14 will be maintained at a uniform width

under the distorting influence of the furnace-heat.

The oil is supplied to the burner through the inlet 29 of the pipe 4 under pressure by means of a suitable pump, (not shown,) and by its discharge through the aperture 15 it causes the ball 25 to revolve rapidly, and the ball is drawn toward its seat by the outflowing stream of oil, its intensity of pressure in that direction being proportional to the velocity of the oil due to the pressure under which it is forced through the aperture 15, so that the thickness of the annular sheet of oil varies according to the intensity of the force with which the ball tends toward its seat.

By the form or design of construction herein shown the oil is first introduced into the pipe 4, which is surrounded with the jacket or chamber 3, and in the case of using steam its fluidity is increased from the heat imparted to it by the steam and flows more readily through the valved aperture, by means of which its quantity from the conduit-pipes into the burner is more finely regulated than in the case of my previous invention herein mentioned, especially with the heavier or thicker oils.

The form of construction herein shown also enables the oil being introduced through the valved nozzle-opening 15 under the delivery or initial pressure of the supply, and thereby affords a higher exit velocity in its discharge through said opening 15 than is the case in my previous invention mentioned, especially when the amount of oil being fed to the burner is less than the maximum discharge capacity of the burner, and causes the ball to be drawn toward its seat with greater force, and consequently producing a thinner sheet of oil to be projected against the sheet of steam or air with higher velocity than is the case in my said previous invention, and thereby more thoroughly atomizes the oil and effects its combustion with

less expenditure of steam or air than that required by my said previous invention.

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

1. A hydrocarbon-burner consisting of an oil-delivery pipe 4, provided with an oil-inlet connection 29, and a valve-stem 18, and a stuffing-box 19 for said stem, and spider-bearing 6, and also provided with a discharge-nozzle 23, said nozzle having a valve-stem guide 30, valved passage 15, valve-seat 27, and a diverging mouth 24, said mouth containing a ball 25, and guard 26, said guard being held in place with a screw 28; in combination with a casing 1, forming the walls of a chamber 3 having outlet-passages 5 through the spider-bearing, said casing formed with a valve-seat 14 and a stuffing-box 7, for the oil-pipe and provided with an inlet-opening 2, and an adjusting-stem 10; all substantially as and for the purposes set forth.

2. A hydrocarbon-burner consisting of an oil-delivery pipe 4, provided with an oil-inlet connection 29, and a valve-stem 18, and a stuffing-box 19 for said stem, and spider-bearing 6, and also provided with a discharge-nozzle 23, said nozzle having a valve-stem guide 30, valved passage 15, valve-seat 27 and a diverging mouth 24, said mouth containing a ball 25, and guard 26; in combination with a casing 1, forming the walls of a chamber 3 having outlet-passages 5 through the spider-bearing, said casing formed with a valve-seat 14 and a stuffing-box 7 for the oil-pipe and provided with an inlet-opening 2 and an adjusting-stem 10; all substantially as and for the purposes set forth.

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

JOSEPH FITTON.

Witnesses:

PAUL P. BANHOLZER,
ROBT. D. KINNEY.