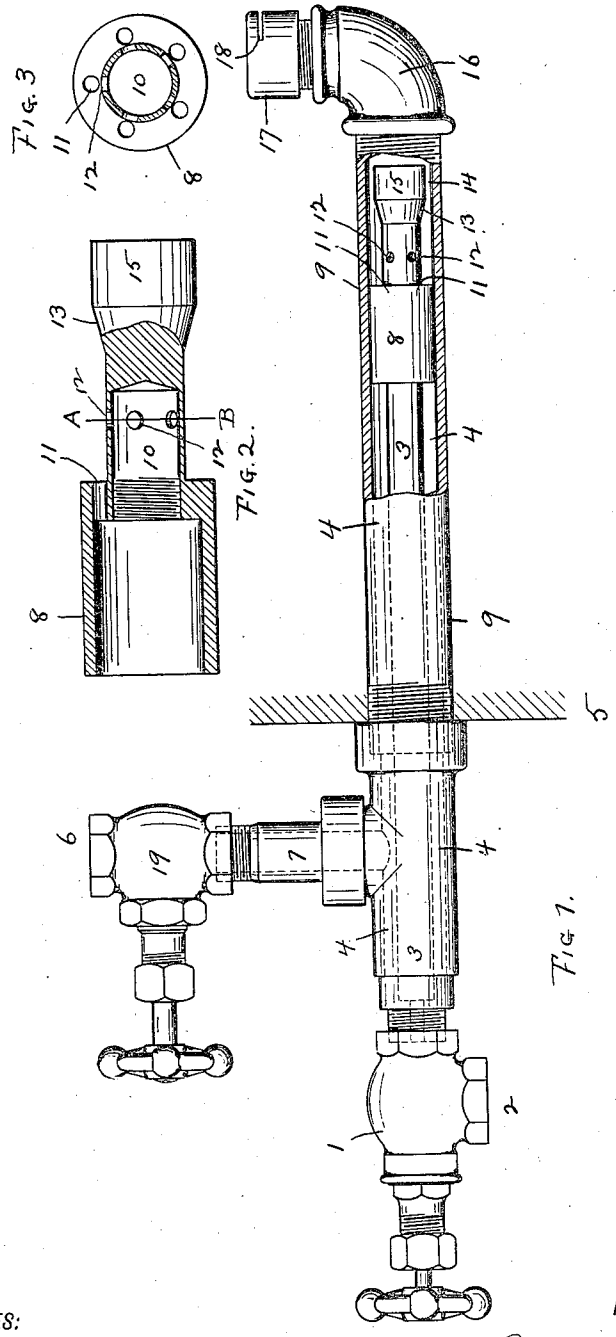
G. BEST.

HYDROCARBON BURNER.

APPLICATION FILED APR. 6, 1915.

1,199,149.

Patented Sept. 26, 1916.



WITNESSES:

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GEORGE BEST, OF PORTLAND, OREGON.

HYDROCARBON-BURNER.

1,199,149. Specification of Letters Patent. Patented Sept. 26, 1916.

Application filed April 6, 1915. Serial No. 19,487.

To all whom it may concern:

Be it known that I, GEORGE BEST, a citizen of the United States, residing at Portland, in the county of Multnomah, State of Oregon, have invented an Improved Hydrocarbon-Burner, of which the following is a specification.

The invention relates to improvements in hydrocarbon burners for use with crude oil or petroleum, particularly the California oils with heavy asphalt base.

It has for its object the providing of a simple, economical and easily cleaned burner in which steam is intimately mingled with the oil in a mixing chamber just prior to ignition.

Figure 1 is a longitudinal side view, with a section showing the mixing device 8 in place. Fig. 2 is a longitudinal section of the mixer 8. Fig. 3 is an end view, looking at a cross section through AB, showing the relative positions of the steam holes 11 and the oil holes 12.

This burner is of the chamber type, wherein the oil and steam are more or less intimately mingled within the body of the burner and pass out from the tip as a mixture and then owing to the expansion of the steam, the oil is rapidly broken into minute particles. A thorough mixture before the oil and steam are discharged at the tip is found to greatly aid in the completeness of the atomization, which is the prime object of all burners, and the means by which this is accomplished is the principal feature of the invention.

The oil is fed in at 2, through needle valve 1, to the internal oil pipe 3, which is centered inside a larger pipe. The steam coming in at 6, through valve 19 and nipple 7, passes into the chamber 4 and completely surrounds the oil pipe 3. The furnace front is at 5 and the valves described are on the outside. The oil pipe 3, inside the larger pipe 9, continues inside the furnace and terminates in the mixer 8. This mixer fits tightly inside of the pipe 9 and its central chamber part 10 has suitable threads therein which enable the mixer to be screwed to the end of the oil feed pipe 3. The chamber 10 is closed at one end and has, in this instance, five small openings 12, about one eighth inch in diameter, equally spaced around it and at right angles to the direction of pipe 3. The larger hollow section of the mixer, 8, also has five similar openings or holes, 11, drilled in its solid end, these holes being spaced just exactly as are the holes 12, but their direction is the same as pipe 3 and therefore the openings 11 and 12 are in juxtaposition, but their directions of discharge are at right angles to each other. The end 15 of the mixing device is solid and slightly larger than the outside diameter of chamber 10 part and tapers toward the latter, as at 13, and this forms a slight baffle which throws the mingled oil and steam into still closer contact as they are driven through the narrow passage 14, between 15 and the inside wall of pipe 9. An L 16 is screwed to the end of pipe 9 and a nipple and slotted cap 17 complete the burner.

As before stated oil is fed through 2 and the oil pipe 3; steam comes in at 6 and fills chamber 4, heating up the oil in pipe 3. Good working pressures are about 150 pounds for the steam and 80 pounds for the oil. As the heated oil is discharged in separate jets through openings 12, each jet of oil is immediately struck by a jet of steam issuing out of openings 11 at right angles to the jets of oil and the commingled oil and steam is blown against the baffle or spreader 13 and through the narrow passageway 14. The condition of the oil and steam in 16 is an intimate mixture, the mechanical agitation of the particles being added to the effect of the high pressures and when the mixture is finally discharged through the narrow slot 18, the expanding steam thoroughly atomizes the oil and upon ignition complete combustion takes place.

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

1. In a fuel oil burner, the combination with a T shaped initial section, having a side steam inlet and an end oil inlet, of a steam pipe screwed into the forward end of said T, an inner oil pipe arranged concentrically within said steam pipe, a plug screwed to the forward end of said inner oil pipe, the outer wall of said plug fitting tightly the inside wall of said steam pipe, a counterbored recess in said plug communicating at its rear end with the steam pipe and having longitudinal discharge passages at its forward end, a smaller chambered section of said plug which receives the oil pipe, with outlets therein in line with and at right angles to the said steam outlets, a solid front part of said plug of larger diameter which

forms an annular passage between it and the inside wall of the steam pipe, an elbow attached to the end of the steam pipe and curving upward, a cap closing the outer end of said elbow and a narrow horizontal discharge slot in said cap.

2. A fuel oil burner having in combination an outer steam pipe, an inner oil pipe arranged concentrically within said steam pipe, a plug attached to the forward end of said inner oil pipe, the outer wall of said plug fitting tightly the inside wall of said steam pipe, the rear end of said plug having several longitudinal discharge passages for the steam, a smaller chambered section of said plug which receives the oil pipe, with several radial outlets therein in line with the longitudinal steam passages, a solid front part of said plug, conically shaped from its smaller diameter to its larger diameter, which latter forms an annular passage between it and the inside wall of the steam pipe and a burner head connected to the forward end of the steam pipe.

In witness whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE BEST.

Witnesses:
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