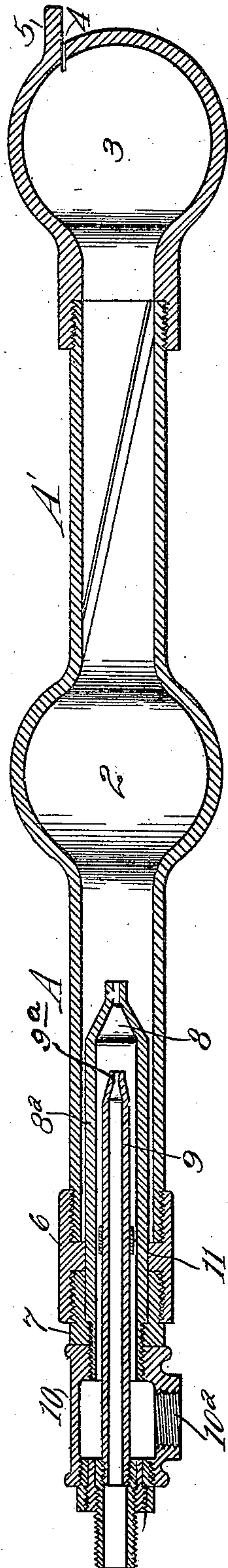


No. 848,384.

PATENTED MAR. 26, 1907.

C. N. MOORE.
OIL BURNER.

APPLICATION FILED MAR. 20, 1906.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES N. MOORE, OF DOUGLAS, ARIZONA TERRITORY.

OIL-BURNER.

No. 848,384.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed March 20, 1906. Serial No. 307,103.

To all whom it may concern:

Be it known that I, CHARLES N. MOORE, a citizen of the United States, residing at Douglas, in the county of Cochise and Territory of Arizona, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

My invention relates to an apparatus which is especially designed for atomizing and vaporizing oil to be burned.

It consists in a combination of parts and in details of construction, which will be more fully explained by reference to the accompanying drawing, in which the figure is a longitudinal section of the improved burner.

It is the object of my invention to provide an automatically-regulated supply of oil to a burner, said regulation being varied by the steam-pressure in the boiler to which the burner is applied and from which boiler steam is supplied to be mixed with the oil.

A is an exterior cylindrical casing having an enlarged globular mixing-section 2 intermediate of its length, a second fluted and cylindrical portion A' beyond the part 2, and a globular generating-chamber 3 at the outer end having a discharge passage or nozzle, as at 4, and a deflecting-lug projecting above the passage, as at 5. The operation of these parts will be hereafter more fully described.

The part A is screwed into a coupling 6, and by means of a bushing 7, screwed into the rear end of the coupling, connection is made with an oil-jet nozzle 8 of smaller diameter and fitting within the tube A. Within the tube which terminates in the nozzle 8 is another tube 9, having a nozzle at its front end located a short distance behind the nozzle 8. This tube 9 extends backwardly through a T 10, the front end of which is connected with the pipe which terminates in the nozzle 8. The rear end by means of bushings is connected with the tube 9 and with a steam-inlet passage, through which steam passes into the interior of this tube 9. The other opening 10^a of the T serves to admit oil, which passes into the T and thence into the annular space between the tube 9 and the tube 8^a, which terminates in the nozzle 8. At a point within this annular channel and between the oil-supply passage and the jet-nozzles is a collar 11, fitting the space and having passages or openings through which the oil passes to the nozzle 8.

The operation of the device will be as follows: First a small jet of steam is admitted

into the tube 9 and discharges through the jet-nozzle 9^a at the front of said tube. A small jet of oil is then admitted through the supply-opening 10^a and passes through the annular channel between the pipes 8^a and 9 and to the jet-nozzle 8, through which it is discharged by the steam into the atomizing-chamber 2, where the spray thus delivered is swirled about within the chamber, thus breaking the particles up more finely. From this spherical atomizing-chamber the spray passes through the internal fluted passage A', where the mixing and atomizing are continued to a higher degree. The outer spherical head 3 is subjected to an intense heat, and the now thoroughly mixed and atomized product enters this chamber and is transformed into a gas, which is discharged through the jet opening or nozzle 4, from which it issues in perfect condition for combustion without further action upon it. From this device this burner may be made to discharge a flame sufficient for any power from five to three hundred horse power, according to the character of the combustion-chamber in which it is used.

The automatic feature of the apparatus operates as follows: The pressure upon the oil at the feed-valve being taken at any figure, as, say, eighty pounds boiler pressure, one hundred and fifty pounds at the atomizing-nozzle, when the required boiler-pressure is attained, set the steam-valve as required to produce the desired action, and as the power to be applied through the engine or other connection using steam is increased the pressure from the boiler through the steam-jet makes an increased pressure on the atomizer 8, and the back pressure acting through the intermediate channel between the pipes 8^a and 9 and through the sleeve or collar 11 resists the entrance of the oil and correspondingly reduces the supply and also the steam-pressure. Whenever the pressure is decreased by increase of load or more rapid use of the steam, the pressure in the atomizing pipe or passage is also decreased and the supply of oil is again increased. Thus when the apparatus is properly set the supply of oil will be automatically controlled to regulate the steam-pressure within small limits.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination in an oil-burner, of an interior steam-pipe and jet-nozzle, an ex-

terior oil-pipe having a contracted jet-nozzle, an exterior tubular chamber with which said pipes are concentric, an enlarged spherical chamber within said outer tube within which
5 the mixed jets of steam and oil are first expanded and atomized, said oil and steam jet nozzles being anterior to the spherical mixing-chamber, a second spherical head within which the temperature of the mixed steam
10 and oil is raised, and a gas produced, means within that portion of the tubular chamber between the two chambers for further mixing and atomizing the mixed oil and steam delivered from the mixing-chamber, and a
15 burner-nozzle opening from said head, said burner-nozzle having a deflecting-lip which overhang the discharge-opening thereof.

2. In an oil-burner, an outer tube having a hollow spherical gas-generating head, with a
20 burner-nozzle, said nozzle having a deflecting lip or lug projecting above it, a second spherical atomizing-chamber, means forming a connecting-passage between the outer and inner heads, said passage being fluted between its ends anterior to the generating-head, and oil and steam jet nozzles located
25 within the outer tube and anterior to the spherical mixing-chamber.

3. In an oil-burner, an exterior tube having a hollow spherical head with burner-nozzle and deflecting-lip at the outer end, a second spherical atomizing and mixing chamber, and a fluted passage connecting the two

spheres, a pipe located within the outer pipe having a jet-nozzle at its front end adapted
35 to discharge into the first of the mixing-chambers, a steam-pipe concentric with and anterior to the oil-supply pipe having a jet-nozzle in line with the nozzle of the oil-pipe, and means whereby the varying pressure of
40 the steam controls the admission of the oil.

4. In an apparatus for burning oil, an interior steam-pipe, an oil-pipe concentric therewith and forming an annular passage between the two, a collar or sleeve located in
45 the length of said passage, a jet-nozzle at the front of the steam-pipe, and a second jet-nozzle in the front of the oil-pipe through which the steam is discharged, and by which an increase of steam-pressure reacts through
50 the oil-passage to check the flow of oil, an exterior pipe concentric with said steam and oil pipes, an enlarged atomizing and mixing chamber located in front of the oil-jet, a
55 fluted passage extending forwardly from said mixing-chamber, a spherical heating-head into which the mixed products are delivered, and a burner-nozzle through which the vaporized products are discharged.

In testimony whereof I have hereunto set
60 my hand in presence of two subscribing witnesses.

CHARLES N. MOORE.

Witnesses:

T. S. DOUGLAS,
JOHN MAHE.