

No. 719,716.

PATENTED FEB. 3, 1903.

J. W. ANDERSON.

OIL BURNER AND FEED MECHANISM THEREFOR.

APPLICATION FILED JULY 28, 1902.

NO MODEL.

Fig. I

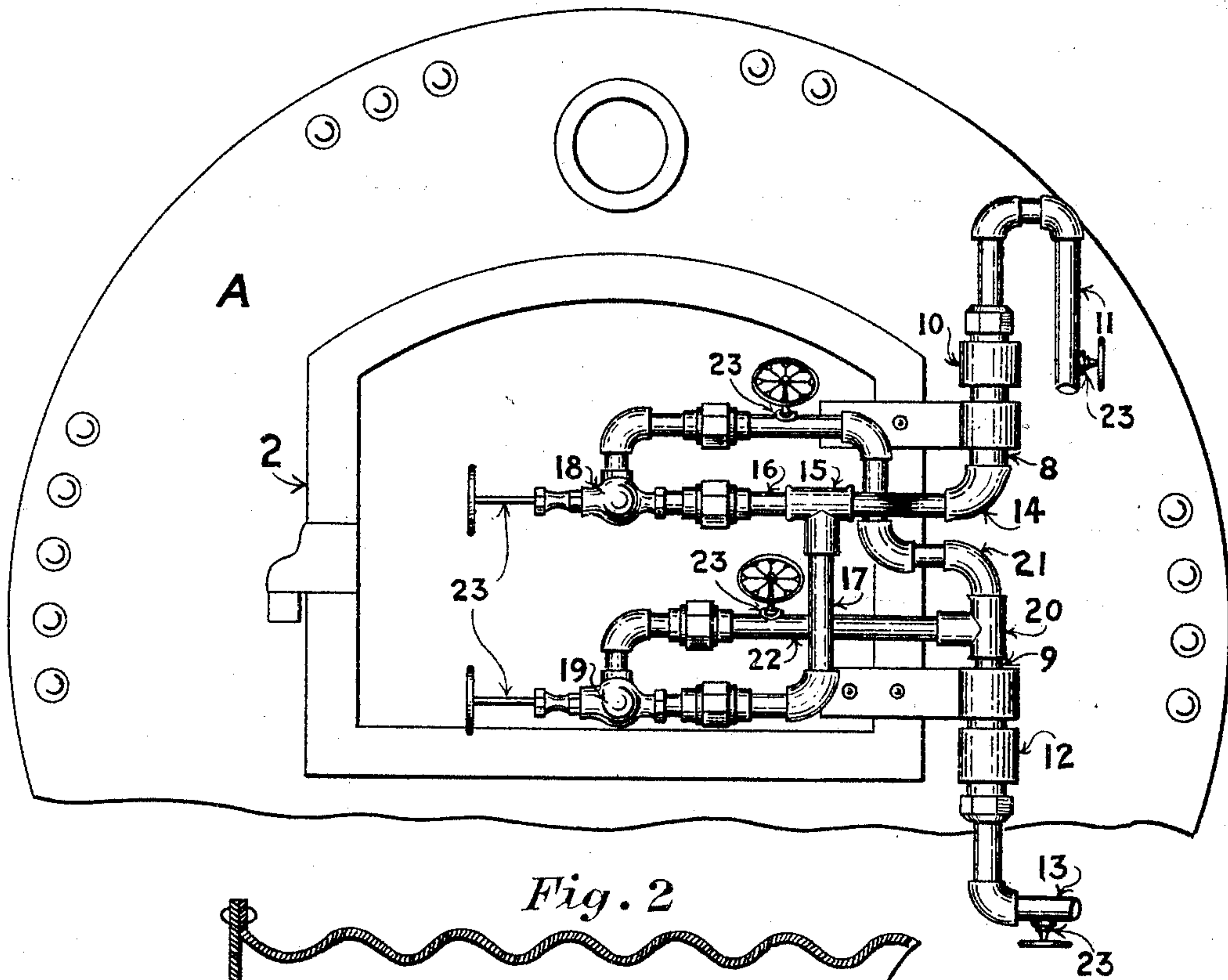


Fig. 2

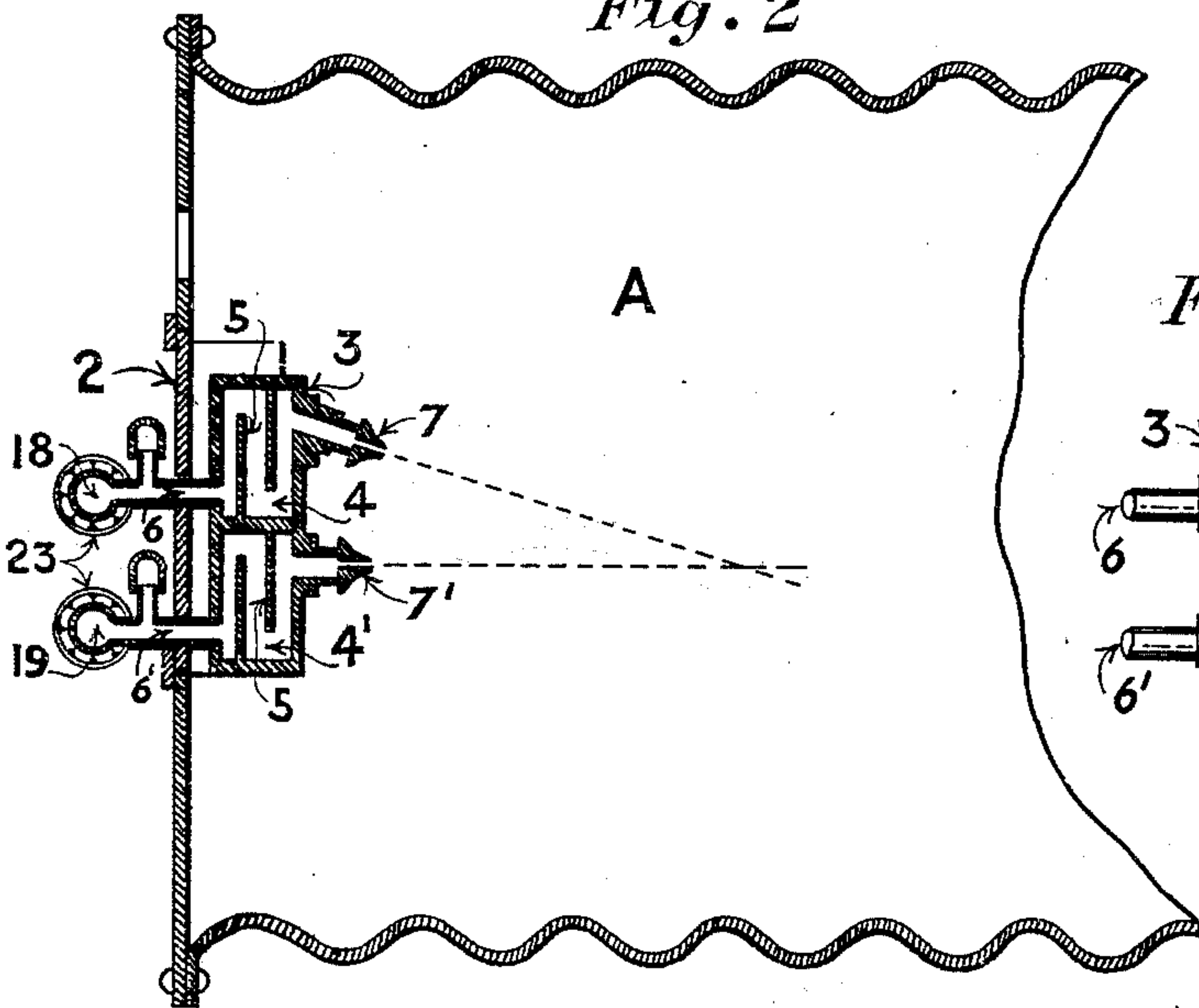
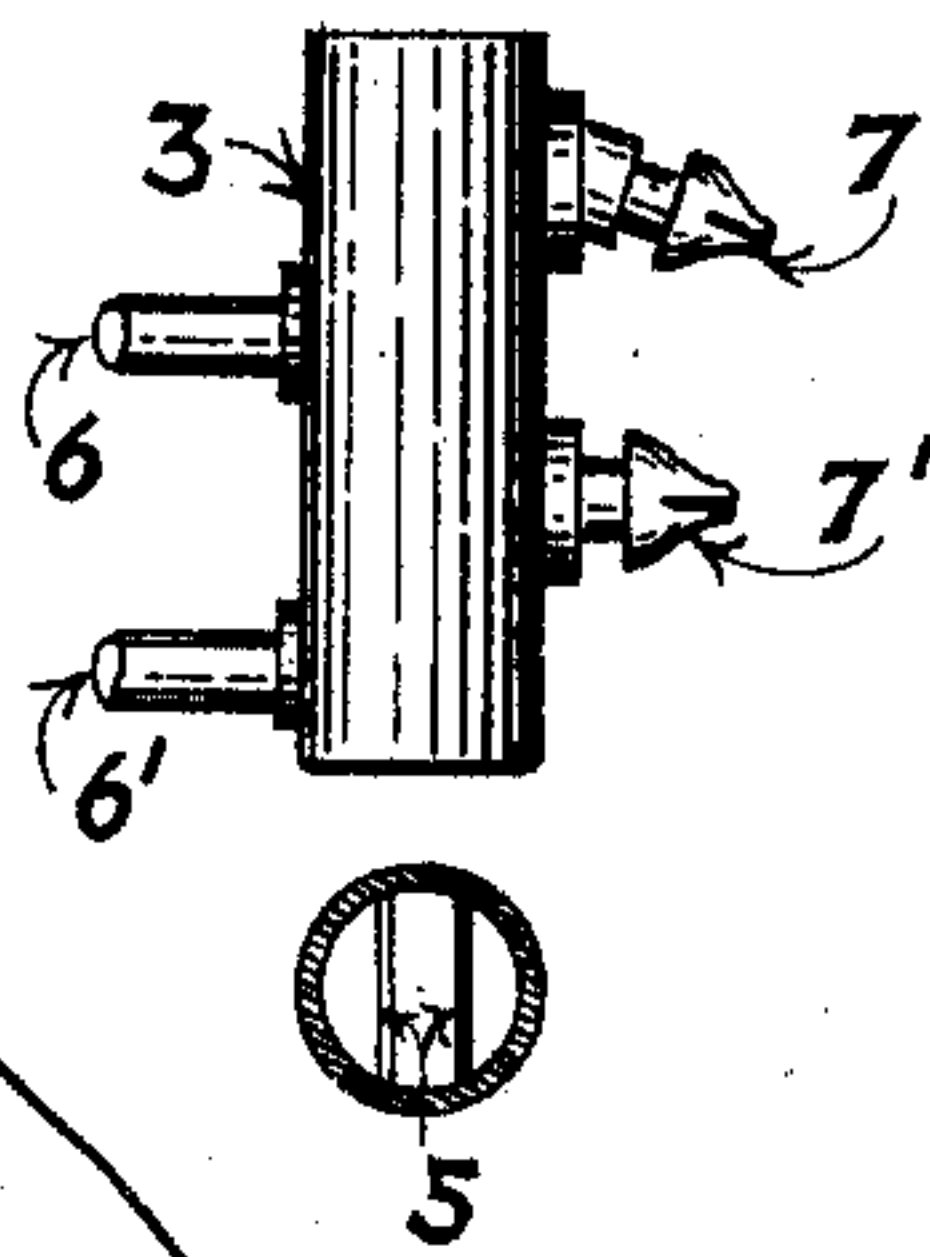


Fig. 3



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UNITED STATES PATENT OFFICE.

JOHN W. ANDERSON, OF SAN FRANCISCO, CALIFORNIA.

OIL-BURNER AND FEED MECHANISM THEREFOR.

SPECIFICATION forming part of Letters Patent No. 719,716, dated February 3, 1903.

Application filed July 28, 1902. Serial No. 117,218. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. ANDERSON, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Oil-Burners and Feed Mechanism Therefor; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in hydrocarbon-burners for use in boiler-furnaces and the like, in which steam and oil or oil and air are commingled to form the inflammable vapor. Its main object is to provide a burner of simple construction suitable for low-grade oils and which will give an equable distribution of heat in the fire-box without the use of baffle-walls.

Another object is to effect improvements in the manner of attaching the burner to the furnace-door and in means of connecting the burner with the source of fuel-supply, whereby the burner may be withdrawn from the furnace simultaneously with the opening of the door.

My invention consists of the parts and the constructions and combinations of parts, which I will hereinafter describe and claim.

Having reference to the accompanying drawings, Figure 1 is a general elevation of outside of fire-box, showing arrangement of pipes on door. Fig. 2 is a longitudinal section through center of fire-box and burner. Fig. 3 is an elevation of burner and transverse section with top removed.

A may represent the corrugated tube or fire-box of an ordinary Scotch marine boiler.

2 is the furnace-door, to the inside of which is secured the burner 3. The latter consists of a casing of any suitable shape, preferably cylindrical, divided centrally and transversely by a diaphragm into the upper and lower compartments 4 4'. Within each compartment are the vertically-disposed partitions or baffles 5, having their alternate ends terminating short of the adjacent walls of the compartments, so that the fuel-vapors entering at 6 6' will pass in tortuous course through the chambers and discharge from the burner-tips 7 7'. These tips are placed near the upper end of each compartment, according to the disposition of the baffles 5. The lower tip is horizontal and tends to shoot its flame di-

rectly toward the back of the furnace; but the upper tip 7 is disposed at an angle to tip 7', so that the two flames converge and meet twenty to thirty inches from the front of the furnace. The result is that the two flames scatter and fill the entire fire-box with an incandescent swirling mass of fire, which acts upon all parts of the boiler and entirely obviates the necessity of baffle-walls. In case it is desired at any time to reduce the fires the supply to one compartment may be cut off entirely, and the remaining burner will be sufficient for purposes of keeping up steam. It often happens with the single burners that if the operator does not use extreme care he will shut off the supply of oil entirely. When he comes to turn it on again, the dripping of the oil upon the hot plates will result in an explosion.

Usually it is necessary to uncouple a burner and its supply-pipes before the furnace-door can be opened in case it is desired to get at the interior of the furnace or remove the burner. I have devised a means by which the burner may be rigidly secured to the door without interfering in any manner with the opening and closing of the latter. This is accomplished as follows: The pivots of the door-hinges consist of short sections of pipe 8 9, the upper one, 8, connecting by a swivel-joint 10 with the air-supply pipe 11, the lower one connecting by a similar joint 12 with the oil-supply 13. From the lower end of pipe 8 the air is conducted through a pipe 14 toward the center of the door, whence, by means of the T 15, it is diverted into two currents, one of which leads through branch 16 and the mixer 18 to chamber 4 and the other through branch 17 and the mixer 19 to chamber 4'. The oil from pipe 9 passes up through a T 20, and thence by branch pipes 21 22 to the respective sections or mixing-chambers 18 19, where it meets the air and is partially atomized. Passing through the circuitous passages in the burner the oil and air become thoroughly commingled and atomization is completed, so that when the vapor issues from the burner-tips it is in a condition to become readily ignited. Suitable controlling-valves 23 are disposed in pipes 11 13 16 17 21 22, so that the fuel to either burner-compartment may be regulated as desired.

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

1. In a hydrocarbon-burner, the combination of a casing divided horizontally into separate compartments having no communication with each other, alternately-disposed baffles within each compartment, separate and independently-controlled oil and steam pipes one of each of which leads into each compartment of the casing, said casing having discharge-orifices, one for each compartment and arranged at an angle to each other.

2. A hydrocarbon-burner comprising a casing divided horizontally into a plurality of separated compartments, separate and independently-controlled supply-pipes leading to each of said compartments, said pipes for each compartment connecting with each other whereby the fuel-supply is mixed before delivery to the compartment, and said casing having discharge-orifices leading therefrom, said orifices converging toward each other whereby the vapors issuing therefrom are commingled.

3. A hydrocarbon-burner comprising a casing divided horizontally into upper and lower compartments, a separate and independent fuel-supply pipe entering each of said compartments and a mixing-chamber interposed

in the length of said supply-pipe, a burner-tip in conjunction with each compartment, one of said tips extending substantially horizontal, and the other tip inclined in relation thereto whereby the vapors issuing from said tips are commingled exterior to the casing.

4. In a hydrocarbon-furnace, the combination of separate fuel-feed pipes, short sections of pipe forming the pintles of the furnace-door and a swivel-joint connecting each of the short sections with one of the feed-pipes, a burner and pipes connecting the short sections of pipe with the burner.

5. In a hydrocarbon-furnace, the combination of a door, hollow pivots therefor, swiveling means connecting one end of the pivots with the oil and air fuel-supply pipes, a double-compartment burner secured to the inside of the door, short pipes entering each compartment, and pipe connections between said short pipes and each of said pivots, said short pipes serving as mixing-chambers for the oil and air preparatory to its entering the burner.

In witness whereof I have hereunto set my hand.

JOHN W. ANDERSON.

Witnesses:

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