

No. 621,431.

Patented Mar. 21, 1899.

P. SHEEDY & T. CARRICK.  
HYDROCARBON BURNER.

(Application filed July 21, 1898.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 2.

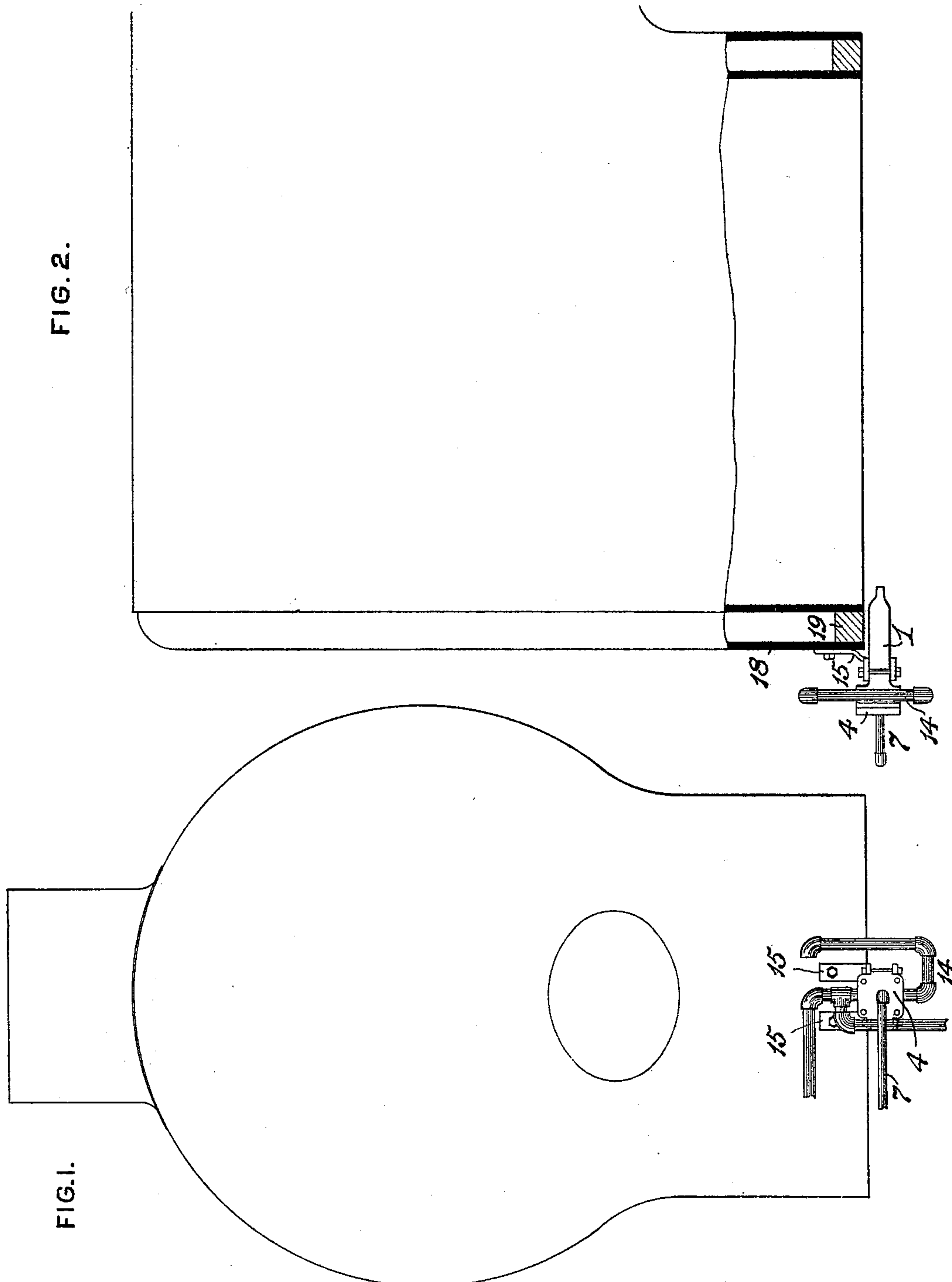


FIG. 1.

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*Patrick Sheedy,*  
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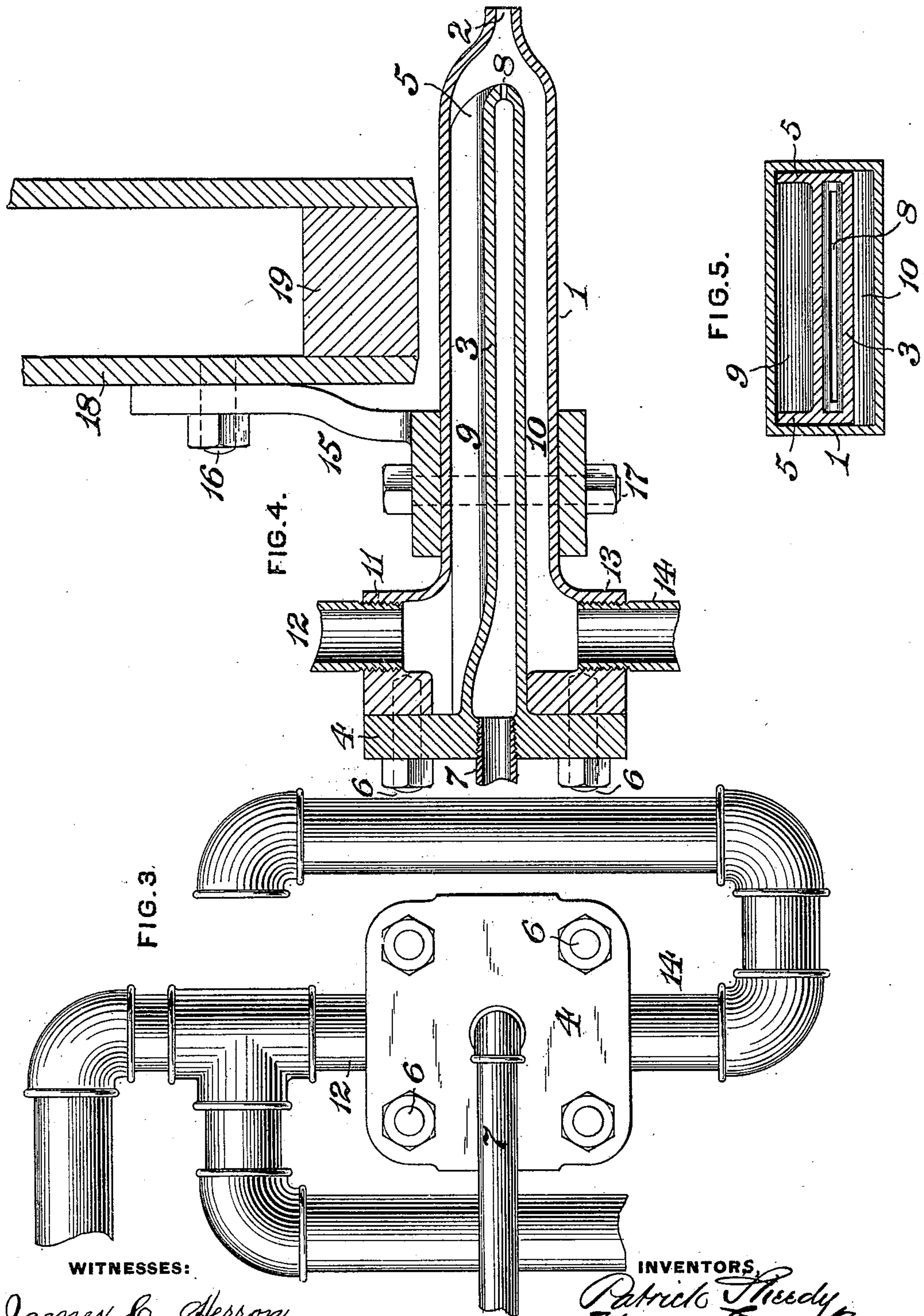
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# UNITED STATES PATENT OFFICE.

PATRICK SHEEDY AND THOMAS CARRICK, OF LOS ANGELES, CALIFORNIA.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 621,431, dated March 21, 1899.

Application filed July 21, 1898. Serial No. 686,484. (No model.)

*To all whom it may concern:*

Be it known that we, PATRICK SHEEDY and THOMAS CARRICK, of Los Angeles, in the county of Los Angeles and State of California, have invented a certain new and useful Improvement in Hydrocarbon-Burners, of which improvement the following is a specification.

The object of our invention is to provide an appliance for burning fuel-oil which shall be of simple and inexpensive construction, ready applicability in connection with locomotive and other steam-boiler furnaces of any of the various forms now in service, and by which the oil shall be heated prior to its admixture with air and atomized in a thorough and effective manner for combustion.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is an end view in elevation of the fire-box of a locomotive-boiler with our improvement applied; Fig. 2, a side view, partly in section, of the same; Fig. 3, an end view, on an enlarged scale, of the burner detached; Fig. 4, a vertical longitudinal central section, and Fig. 5 a transverse section through the same.

In the practice of our invention we provide a mixing-chamber 1, which is of rectangular or oblong transverse section and is formed of suitable cast or wrought metal. The mixing-chamber 1 is inwardly tapered at its discharge end to a narrow burner-opening 2, which extends for substantially its entire width, and its opposite or supply end is faced off to make a tight joint with a head or flange 4, which is formed on one end of a hollow or tubular steam-table 3, which extends through the mixing-chamber from its supply end to a plane at a short distance from its burner-opening 2. The steam-table 3, which is of rectangular transverse section, fits neatly within the mixing-chamber and is preferably provided with vertical side flanges 5, fitting against the inner walls of the mixing-chamber. A steam-supply pipe 7, controlled by an ordinary regulating-valve, which is not shown, is connected to the head 4 of the steam-table, and a steam-discharge passage 8 is formed in its opposite end. The steam-table is secured to the mixing-chamber by bolts or studs 6, passing through its head 4, and may be readily at-

tached to and detached from the mixing-chamber as required. When fixed in position in the mixing-chamber, the steam-table forms the dividing-wall between an upper oil-passage 9 and a lower air-passage 10 therein, said passages communicating adjacent to the burner-opening 2.

The mixing-chamber is provided at or near the supply end of the oil-passage 9 with a threaded nozzle 11 or other suitable connection for an oil-supply pipe 12, leading to a tank or receptacle containing the fuel-oil which is to be burned, and a similar nozzle or connection 13 is provided at or near the supply end of the air-passage 10 for a pipe 14 for the supply of air, which may, if desired, be previously heated in any suitable known manner. In cases in which the air is not to be heated and can be admitted directly without access of dust or other foreign matter the pipe 14 may be dispensed with and the air admitted through the open connection 13.

The mixing-chamber is supported in such relation to the fire-box of a locomotive or other steam boiler that the flame from its burner-opening may be directed into the same at the location and angle desired, and one or more of the appliances may be used with a boiler-furnace or fire-box, in connection with suitable fire-brick deflecting or bridge walls, of any preferred construction. These latter devices are well known to those skilled in the art and do not form any part of our present invention. In the instances shown the mixing-chamber is connected by hangers or brackets 15 and bolts 16 17 to the back sheet 18 of a locomotive fire-box, but may be suspended from the mud-ring 19 thereof, if preferred.

In the operation of the appliance a current of steam from the boiler enters and passes through the steam-table 3 and escapes from the discharge-passage 8 thereof into the mixing-chamber at the junction of the oil and air passages 9 and 10 thereof. The current of steam highly heats the steam-table and effects an induced traverse of oil and air through the passages 9 and 10. The oil is heated in its passage over the steam-table and is thereafter commingled with air and effectually atomized by the jet of steam escaping from the passage 8, the resultant mixture being ignited at the burner-opening 2 of the mixing-chamber and



giving, as has been found in practice with both locomotive and stationary engine boilers, an effective and economical utilization of the oil as fuel therein.

5 The appliance is inexpensive in construction and of such form and compass as to enable it to be applied in any desired and convenient location relatively to a furnace or fire-box. The steam-table performs the functions  
10 of both a conduit and a heater, and being easily and quickly attached and detached the interior of the mixing-chamber is readily accessible whenever desired. The form of the discharge-passages is such that there is but  
15 little, if any, tendency for either of them to become clogged in operation.

We claim as our invention and desire to secure by Letters Patent—

1. In a hydrocarbon-burner the combination of a chamber having an oil and an air  
20 inlet at one end and a burner-opening at its opposite end, with a hollow partition between said oil and air inlets extending longitudinally of said chamber from its rear to near its  
25 front or burner end, said partition having a steam-inlet at its rear end and an outlet at its front end within said chamber, substantially as described.

2. In a hydrocarbon-burner the combination of a chamber having two inlets at one  
30 end and a burner-opening at its opposite or discharge end, with a hollow or tubular steam-table forming a partition between said inlets and extending longitudinally of said chamber to near its front or burner end, a head on  
35 said steam-table forming the rear wall of and detachably attached to said chamber, a steam-supply connection to said steam-table, and

an outlet opening into said chamber near its burner end, substantially as described. 40

3. The combination, in a hydrocarbon-burner, of a mixing-chamber, of rectangular or oblong transverse section, and having a burner-opening at its discharge end and connections for oil and air pipes, adjacent to its  
45 supply end, and a hollow or tubular steam-table, of substantially similar form in transverse section, forming a partition between said oil and air pipes and extending through the mixing-chamber from the supply end  
50 thereof to a short distance from the discharge end, and having a steam-pipe connection at its supply end and a discharge-passage at its opposite end.

4. The combination, in a hydrocarbon- 55 burner, of a mixing-chamber, of rectangular or oblong transverse section, and having a burner-opening at its discharge end and connections for oil and air pipes, on opposite  
60 sides, adjacent to its supply end, a hollow or tubular steam-table extending entirely across the mixing-chamber from the supply end thereof to a short distance from the discharge  
65 end and forming, with the walls of the mixing-chamber, oil and air passages therein, which communicate at one end with the oil and air connections, respectively, and at the  
70 other end with each other, a steam connection at the supply end of the steam-table, and a discharge-passage in the discharge end thereof.

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