

No. 709,941.

Patented Sept. 30, 1902.

S. M. TRAPP.
OIL BURNER.

(Application filed Sept. 23, 1901.)

(No Model.)

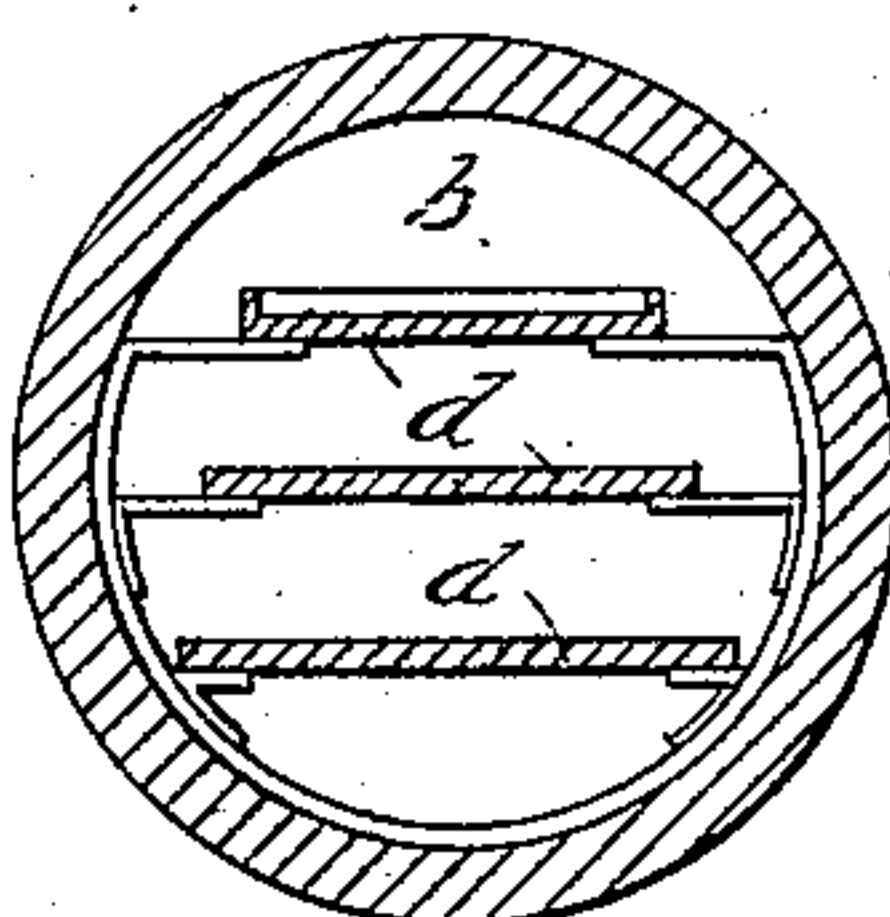
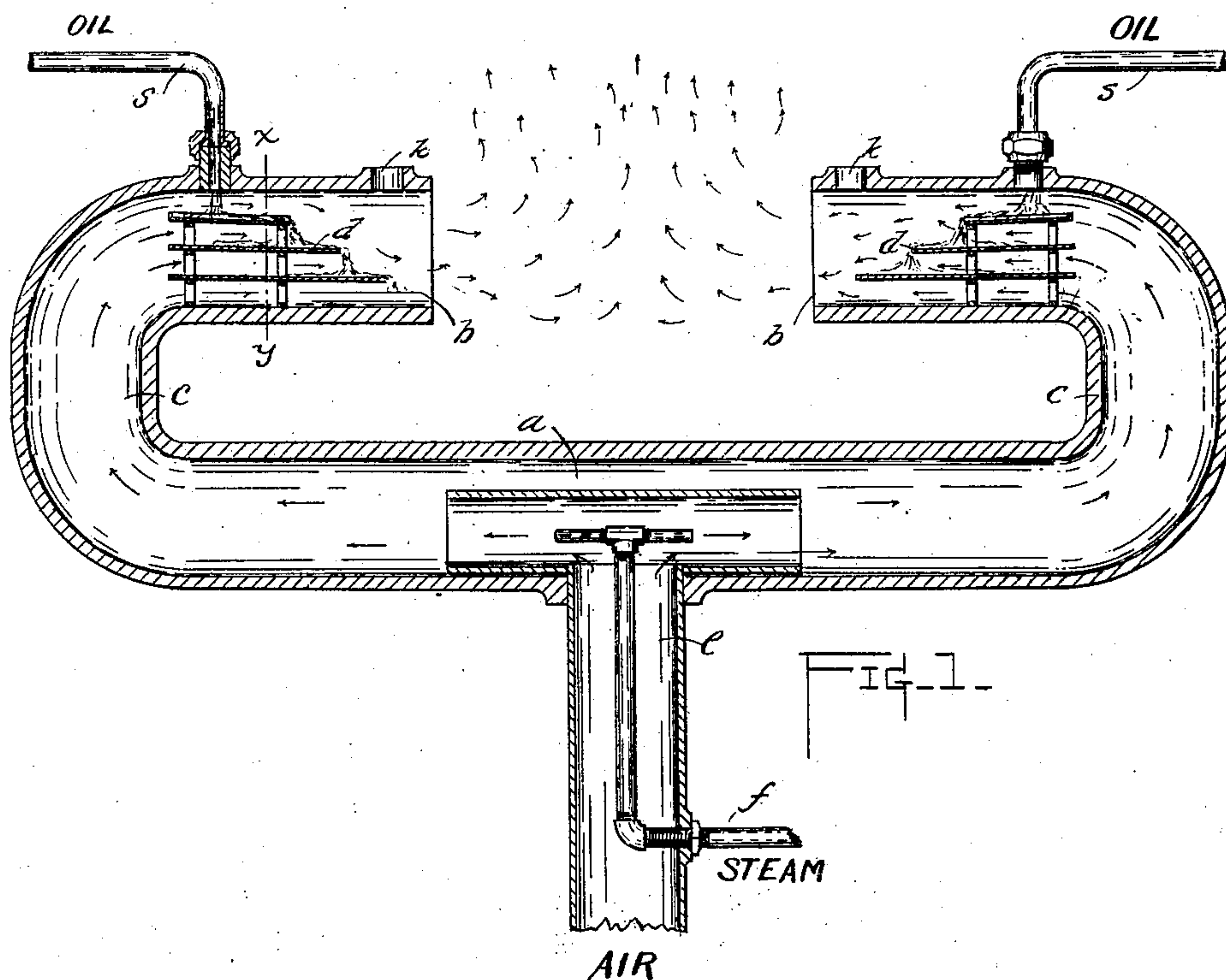


FIG. 2.

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OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 709,941, dated September 30, 1902.

Application filed September 23, 1901. Serial No. 76,269. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL M. TRAPP, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Oil-Burners, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to burners for oil or other liquid fuels, and more particularly for crude oils. In burners of this class which have come to my notice the oil is either retorted in a still, where a hard deposit is formed which soon destroys the retort, or sprayed in a liquid form into the fire-pit or furnace by an air-blast or a jet of steam through an atomizer. In the latter case the combustion is incomplete, producing a large volume of smoke and a residue of unconsumed carbon or foreign substances within the combustion-chamber, besides concentrating the flame upon the walls of the same, to their great injury.

The object of the present invention is to overcome these and other bad features found in burners heretofore in use by providing an improved construction of burner wherein the oil is thoroughly mingled with and carbonizes the air before being delivered from the burner-pipe discharge branches and which discharge branches are so arranged that the highly-charged currents emitted therefrom are instantly ignited and driven against each other to produce an intense heat at the focal point, removed from any walls, lining, or abutments whatsoever.

The invention consists in the novel arrangement and combination of parts hereinafter fully described, and particularly pointed out in the claims.

In the drawings, where similar letters indicate corresponding parts in both the views, Figure 1 is a central vertical section of a burner involving my invention; and Fig. 2 is an enlarged vertical cross-section on line $x y$, Fig. 1.

The letter a indicates the main portion of the burner-pipe, terminating in discharge branches b , which are oppositely arranged, so as to be directed toward each other by forming return-bends c in the pipe. The burner-pipe and discharge branches are formed of

graphite or like material and preferably made integral—that is, of a single piece. Positioned within each of the said discharge branches is a series of shelves d , which incline slightly from the back toward the orifice. These shelves, disposed one above the other, are of different lengths and preferably of different widths, the top one being the shorter and narrower and each successive lower one extending beyond that of the next above, thus forming “steps,” so to speak, upon which the oil is intercepted by each step after spreading upon and overflowing each shelf in succession from top to bottom. The shelves are preferably made of plate or sheet iron and are detachably secured together within the discharge branches, so as to be removed when desirable.

The oil is received by pipes s from a source of supply and falls upon the top shelf, which is lipped or flanged upon its sides and rear end to prevent the liquid spilling thereover. Air or steam are supplied, either separately or together, by air and steam pipes e and f , respectively, leading from the atmosphere or from a steam-generator. The said air and steam supply pipes extend within the main portion a of the burner and are preferably bifurcated therein to provide means for conducting their respective contents directly toward the discharge branches thereof. The air or steam after passing around the several shelves d aforesaid and being carbureted with oil emanating therefrom issue in two opposing currents to be consumed at the focal point between the discharge branches. Although this burner is primarily intended to operate under a natural draft, when the pipe f would be used solely for introducing steam to make the air supplied to the burner discharge branches humid, a forced draft may be utilized by the admission of steam under pressure through the aforesaid pipe or by attaching a blower to the air-supply pipe. The air passing through the burner-pipe is heated to a high degree by the heat absorbed through the walls of the pipe radiated thereupon from the fire. With extra heavy oils the shelves may advantageously be turned end for end, so that instead of the step ends being adjacent to the orifices of the discharge branches, as shown, they will be flush or even with the orifices, thus

carbonizing the fuel almost to the point of combustion. When the shelves are arranged in this way, then the oil-pipes would be attached to the discharge branches at holes *k*,
5 provided to deliver the fuel upon the top shelves in their changed locations.

Perfect combustion is effected by my improved burner, while it is cheap and simple in construction and easily applicable to any
10 furnace. For producing intense heat it is the most effective device yet discovered, as it insures a perfect mingling of the oil and oxygen, and the whole being delivered to the furnace is immediately ignited and consumed
15 upon its issuance in a clear flame.

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

1. In an oil-burner, the combination with
20 a burner-pipe circular in cross-section and having two oppositely-arranged discharge branches, oil-supply pipes communicating with the discharge branches, and air and steam supply pipes communicating with the
25 burner-pipe, of a series of shelves arranged in each discharge branch, beneath the oil-

supply pipes, said shelves disposed at a slight incline toward the discharge end of the discharge branches, and the uppermost shelf having side flanges and a flange at its rear
30 end, the said shelves being stepped at one end whereby the oil spreads over the surface of each shelf before being discharged therefrom, as and for the purpose described.

2. In a device of the character described,
35 the combination of a burner having integral oppositely-arranged discharge branches circular in cross-section, means for feeding air or steam to said burner, oil-supply pipes communicating with the discharge-orifices, and
40 shelves arranged within the discharge branches under the discharge of the supply-pipes, the ends of the shelves adjacent the discharge of the branches being stepped, with side and rear end flanges on the uppermost
45 shelf, as and for the purpose described.

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

SAMUEL M. TRAPP.

Witnesses:

L. B. HOWARD,
M. E. COLLINS.