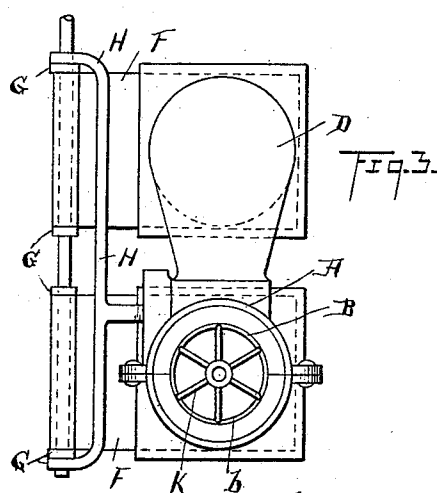
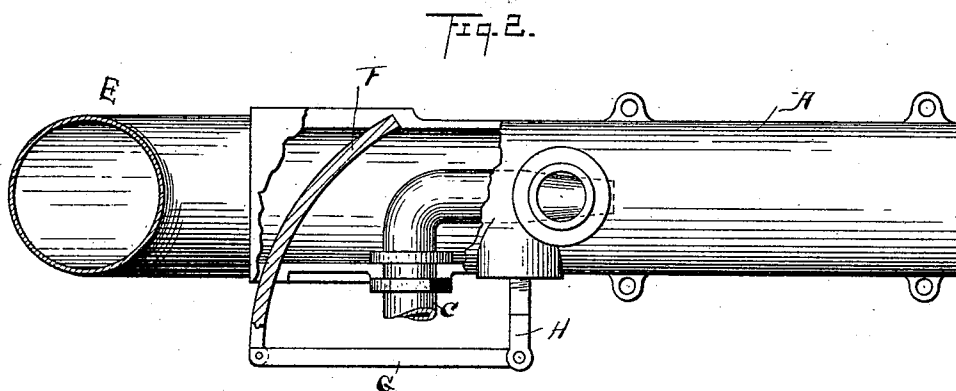
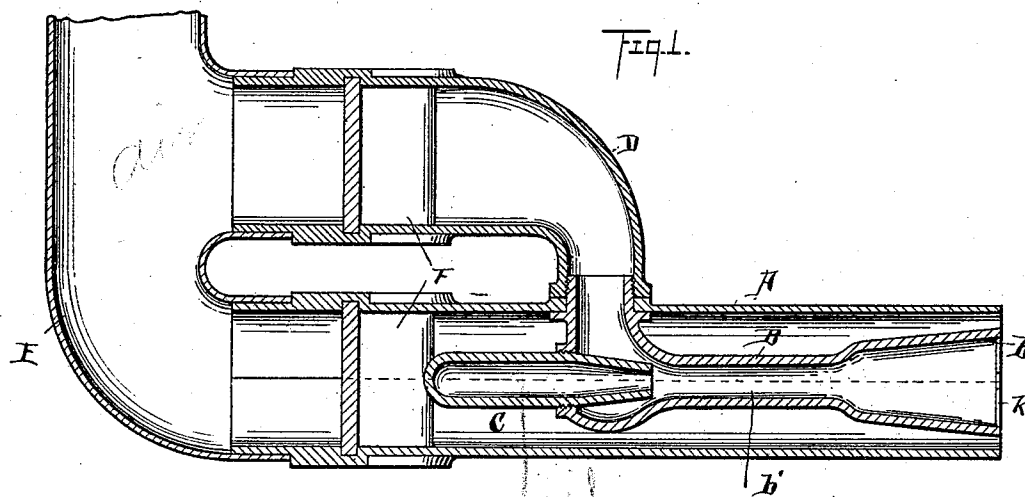


(No Model.)

T. M. PAINTER.
CRUCIBLE BURNER.

No. 459,790.

Patented Sept. 22, 1891.



Witnesses
Bill S. Gouvie.
R. B. Moser.

Inventor
Thomas M. Painter

By his Attorney

H. S. Fisher.

UNITED STATES PATENT OFFICE.

THOMAS M. PAINTER, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO
RICHARD E. OGLEBAY, OF SAME PLACE.

CRUCIBLE BURNER.

SPECIFICATION forming part of Letters Patent No. 459,790, dated September 22, 1891.

Application filed December 1, 1890. Serial No. 373,167. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. PAINTER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Crucible Burners; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in crucible burners in which petroleum-oil, either in its crude form or in some of its distillations or products, is adapted to be used.

Referring to the accompanying drawings, Figure 1 is a vertical longitudinal central section of my improved burner. Fig. 2 is a plan view thereof with the upper portion, shown in Fig. 1, removed and the central part of the burner broken away to disclose the oil-inlet pipe. Fig. 3 is a front elevation of the burner.

This burner is designed to be used with an air-blast, in which warm or cold air may be used, or in which steam may be substituted for air, or the two may be mingled. The idea is to atomize and volatilize the oil as it is conveyed into the burner, and to siphon the resultant vapor through the burner by means of the blast into the furnace.

Any convenient way of making the parts may be adopted—that is to say, the burner may be made in several different distinct pieces, or it may be made in one piece, more or less, according as the manufacture may be convenient. As here shown, I have a central tubular body A, open at both ends, and a small inner tube B, elbow-shaped at its rear end and extending laterally through the tube A at substantially right angles about midway the length of said tube. The inner tube B has a flaring mouth *b*, terminating at the end of the outer tube, and a contracted neck *b'* in its middle portion and a bulb or enlargement at its elbow, where it is provided with an opening for the oil-pipe C. This pipe C has its nozzle projecting into the elbow to the mouth of the neck *b'*, so that the blast of air, or whatever it may be, which enters through the elbow will siphon the oil or vapor out of the said horizontal pipe C and carry it for-

ward into the furnace. A joint D of suitable construction is shown as connected with the extremity of the elbow of the inner pipe B and extending back with its end parallel to the end of the tube A. An air or other gas-pipe connection E is fixed upon the extremities of the tube A and the elbow-pipe D, so that the blast will be divided, and a part will be conveyed through the tube B to do the siphoning hereinbefore referred to and a part will be carried around the outside of the tube B to be delivered into the furnace. This outer blast has a free but contracted space at the delivery end of the tube A and extends entirely around the inner tube B, so that if any oil were to escape through the tube B it would be siphoned out by this outer blast and atomized or vaporized, the same as occurs about the nozzle of the tube C in the tube B.

The tube A and the elbow D are provided with valve-seats, and valves F, curved as shown, are supported on links G, pivoted on a fixed arm H. These valves have a pivotal connection with the links G, and are adapted to be opened more or less, according as more or less draft or blast is desired.

The operation of the burner will be understood from the foregoing description and need not be especially defined. The inner tube B at its mouth is provided with wires or radiating rods or strips *k*, which are adapted to break up the current of gas and air or steam passing through said pipe and to mix and commingle the elements.

It is practicable to employ this burner with natural gas or the like, if desired.

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

1. The main cylindrical tube, the inner elbow-tube having a flaring mouth and a contracted central neck, the oil-supply tube extending into the elbow of the inner tube, and the air draft or blast delivered through the inner tube B and the other around the outside thereof through the main tube, substantially as described.

2. The outer cylindrical tube, the inner elbow-tube extending through the outer tube about midway its length, the oil-pipe having

its nozzle traversing the elbow of the inner tube past the inlet of said tube, the separate upper curved pipe through which the blast is delivered to the inner tube, and the blast-pipe connection at the rear having one channel leading through the main tube and one through the upper outer tube, substantially as described.

3. The burner herein described, consisting of the main tube provided with a double set of draft-channels at its rear, one of which leads to the inside of the main tube and one to an inner tube, and separate curved valves for said draft-channels hinged on pivot-supports and said inner tube, substantially as described.

4. The main outer tube, the elbow-tube therein provided with a flaring mouth having cross-pieces at its delivery end, and a contracted neck centrally, in combination with an oil-supply pipe leading into the inner tube past the elbow thereof, and an air-blast delivered through the inner tube and through the outer tube about the inner tube, substantially as described.

Witness my hand to the foregoing specification this 10th day of October, 1890.

THOMAS M. PAINTER.

Witnesses:

H. T. FISHER,
NELLIE L. McLANE.