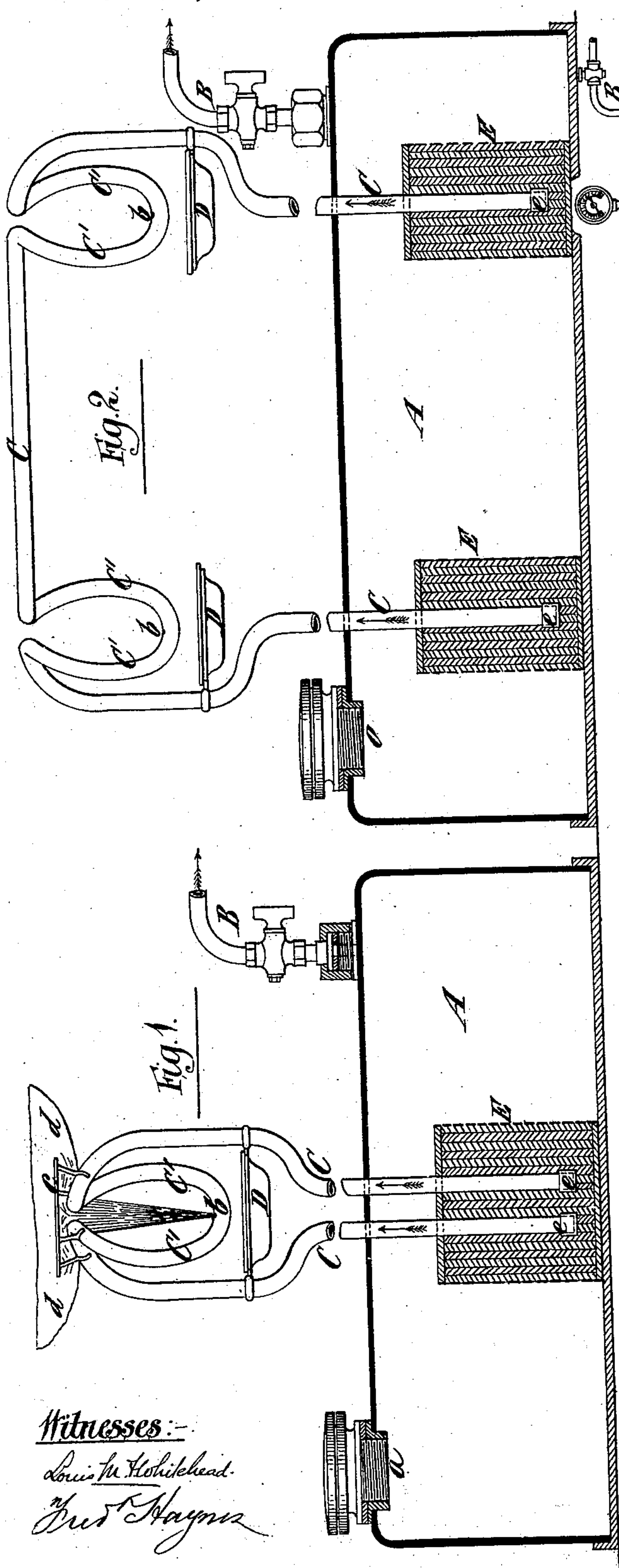


(No Model.)

E. SCHULTZ.

Burner and Apparatus for Burning Petroleum.
No. 236,095.

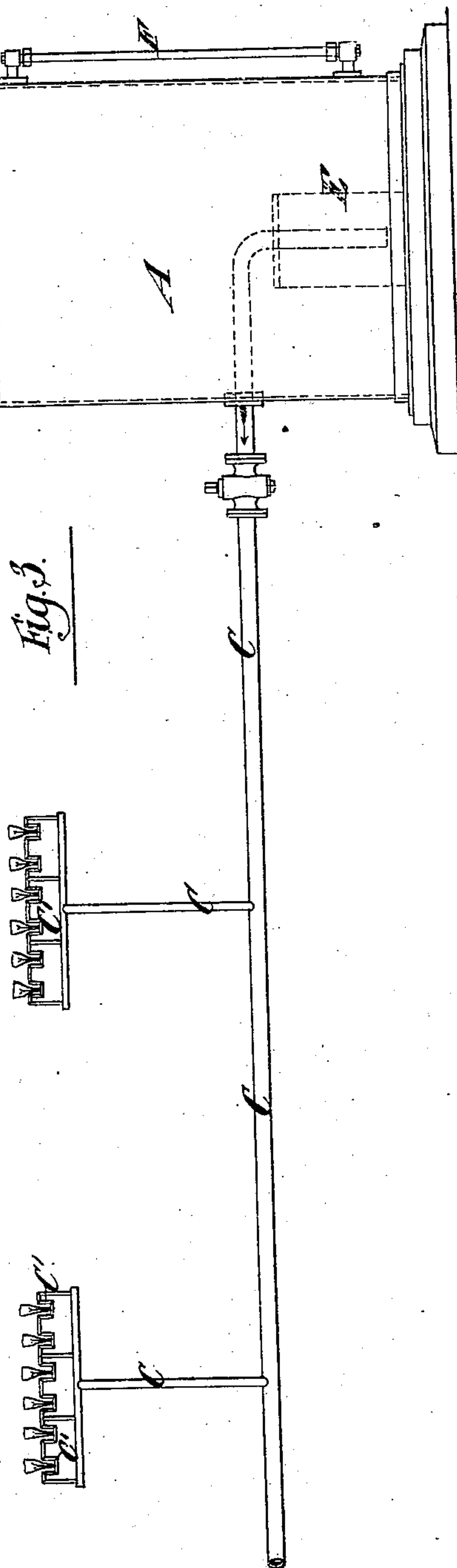
Patented Dec. 28, 1880.



Witnesses:-

Louis M. Whitehead.

Wm. H. Hays.



Inventor:-
Ernest Schultz
by his Attorneys
Brown & Brown

UNITED STATES PATENT OFFICE.

ERNST SCHULTZ, OF HAMBURG, GERMANY, ASSIGNOR TO HIMSELF AND
RUDOLPH WULFF, OF AARHUS, DENMARK.

BURNER AND APPARATUS FOR BURNING PETROLEUM.

SPECIFICATION forming part of Letters Patent No. 236,095, dated December 28, 1880.

Application filed October 8, 1880. (No model.)

To all whom it may concern:

Be it known that I, ERNST SCHULTZ, of Hamburg, in the Empire of Germany, have invented certain new and useful Improvements in Burners and Apparatus for Burning Petroleum, of which the following is a specification.

My invention relates to lamps without wicks, and in which the kerosene or other hydrocarbon liquid is heated prior to its issuance from the orifice at which it is ignited, so that it will be more readily and completely consumed; and the object of my invention is to provide in a very simple manner for so heating the tube through which the kerosene or other liquid passes to the flame by means of the heat of the flame itself.

To this end my invention consists in a burner for a lamp for illumination, composed of a tube, one or both ends of which may be inserted into an oil-reservoir, and which is bent so as to form a depending loop open at the top, and provided with one or more small orifices in the upper side of its lower portion, so that the oil which issues from the orifice or orifices has first to pass very slowly down each side of the loop, where it is subjected to the great heat of the flame produced by the ignition of the oil issuing from said orifice or orifices. The open top of the loop affords provision for the free spreading of the flame without in the least obstructing it, and I thus produce a desirable flame for illuminating purposes.

My invention also consists in the combination of such a burner-tube with an oil-reservoir possessing certain novel characteristics, which will be hereinafter described.

In the accompanying drawings, Figure 1 represents a vertical section of an oil-reservoir and side view of a burner-tube embodying my invention. Fig. 2 represents a similar view of a lamp in which a single tube is bent so as to form two burners; and Fig. 3 represents an elevation of an oil-reservoir and two groups of burners supplied therefrom.

Similar letters of reference designate corresponding parts in all the figures.

Referring, first, to Fig. 1, A represents an oil-reservoir, made in any suitable manner and provided with a filling-mouth, *a*, and an inlet-pipe, B, through which air or liquid may be

introduced to produce a pressure within the reservoir, as more clearly hereinafter described.

C designates a burner-tube, both ends of which are inserted in the oil-reservoir, a tight joint being made where they pass through the top of the reservoir, so as to prevent leakage of oil. At the highest part of this burner-tube is a burner, C', which consists of a loop having an open top and formed by bending downward the portion of the tube between the two vertical portions or legs.

As clearly shown, the loop is in the form of an ellipse, the tube nearly coming together at the upper end thereof, and upon the upper side of the tube, at the lowest portion of the loop, at *b*, is one or more very fine orifices, through which the oil is expelled or ejected in the form of spray by means of pressure applied in the oil-reservoir, and wholly consumed by the flame.

In order to heat the oil in the burner before ignition, I place under the burner a small pan or cup, D, in which a small quantity of alcohol or spirit may be burned. After the ignition of the lamp the flame produced will heat the oil, which passes very slowly down both sides of the loop, to a high temperature, and when it issues from the small orifice or orifices at *b* it and the vapor generated by the heat will be entirely consumed, creating little or no smell.

The pressure to force the oil up through the burner-tube C to the burner may be produced by means of an air-pump applied to the pipe B; or the said pipe may communicate with a tank containing oil arranged at a higher level than the oil-reservoir A.

If desirable, a plate, *e*, having prongs or legs for attachment to the burner-tube C, may be employed for spreading the flame *d*, which would otherwise be a thin vertical flame.

In order to filter the oil before it passes into the burner-tube C, the ends of said tube are inserted into a filter, E, which consists of top and bottom plates and a cylindric or other form of case composed of wire-gauze and filled with layers of felt, cotton, sponge, or other filtering material. The ends of the burner-tube which are inserted into the filter are each closed by a cap, *e*, in which is one or more fine orifices for the passage of oil.

The apparatus shown in Fig. 2 differs from that just described only in that it is provided with a burner-tube, C, in which are two burners, C', formed in the same manner as the burner in Fig. 1.

Fig. 3 represents an apparatus in which one end only of the burner-tube C is inserted into the oil-reservoir A. The reservoir is provided with a pipe, B, for the inflow of oil or air to produce pressure, and with a glass gage, F, to indicate the level of the oil in the reservoir.

The pipe C is represented as provided with two groups of burners, C', each burner being composed of a loop, as above described, except that the loops, instead of being elliptical, are angular or square. The loops might be of any other form desirable.

It will be observed that the loop or burner C', being open at the top, forms no obstruction to the free extension or spreading of the flame in any direction, and that I therefore provide a burner specially adapted for purposes of illumination.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A burner for a lamp for illumination, composed of a tube bent so as to form a depending loop, open at the top, and provided in the upper side of its lower portion with one or

more small orifices, substantially as and for the purpose specified.

2. The combination of an oil-reservoir, a pipe for the inflow of air or oil to produce a pressure therein, and a burner for illumination, composed of a tube inserted into said reservoir and bent so as to form a depending loop, open at the top, and provided in the upper side of its lower portion with one or more small orifices, substantially as and for the purpose specified.

3. The combination of an oil-reservoir, a pipe for the inflow of oil or air to produce a pressure therein, a filter arranged in said oil-reservoir, a burner-tube, the end or ends of which are inserted into said filter, and a depending loop formed by bending said tube, and having in the upper side of its lower portion one or more small orifices, substantially as and for the purpose specified.

4. The burner-tube C, bent to form the depending loop C', the upper side of the lower portion of which has one or more small orifices, and the perforated caps *c*, closing the ends of said tube, substantially as specified.

ERNST SCHULTZ.

Witnesses:

A. SCHAPER,
F. ENGEL.