

No. 649,005.

Patented May 8, 1900.

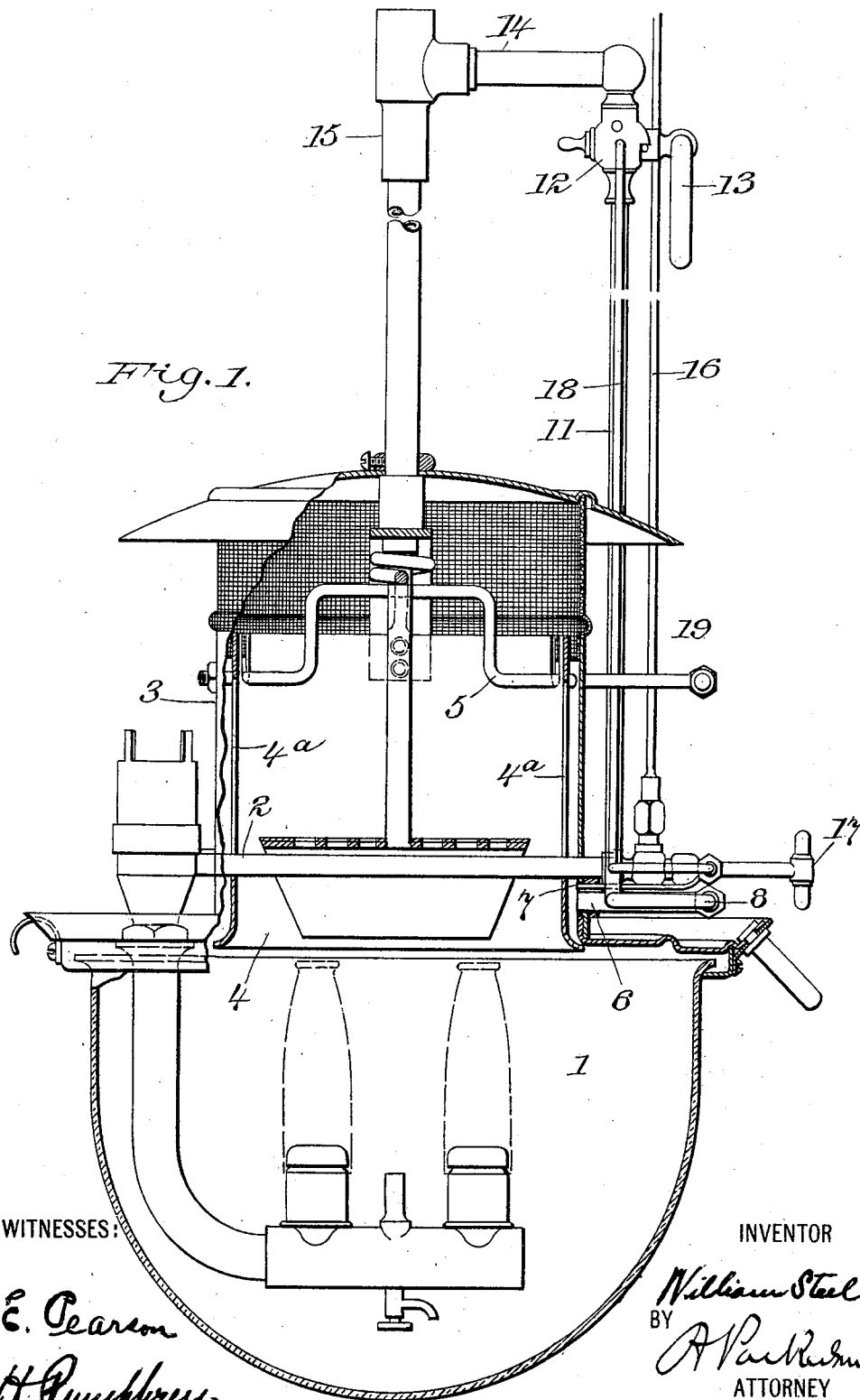
W. STEEL.

PREHEATING DEVICE FOR VAPOR LAMPS.

(Application filed Sept. 14, 1899.)

(No Model.)

3 Sheets—Sheet 1.



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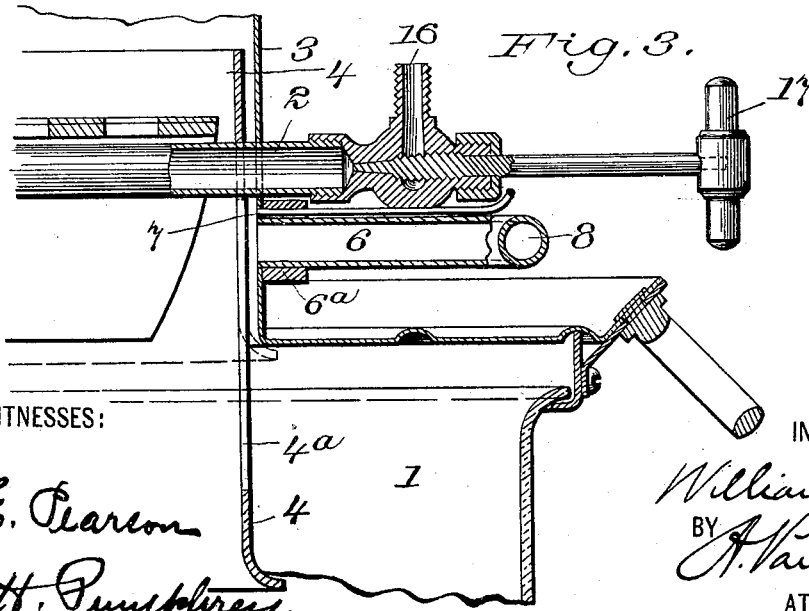
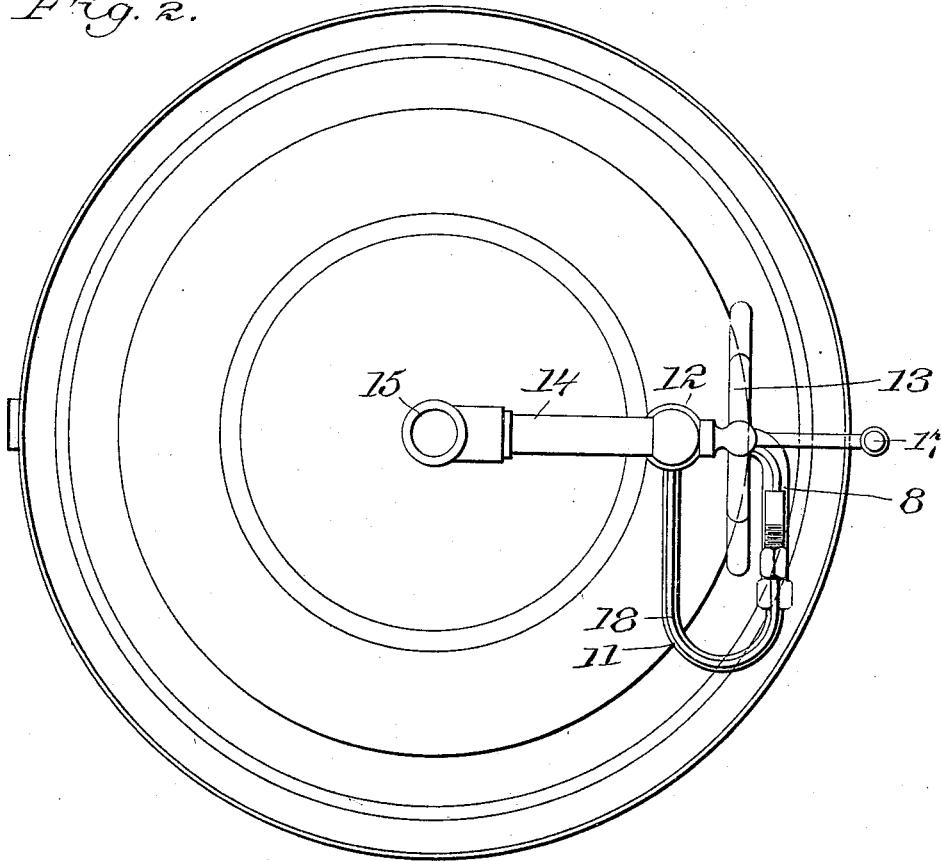
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Fig. 2.



WITNESSES:

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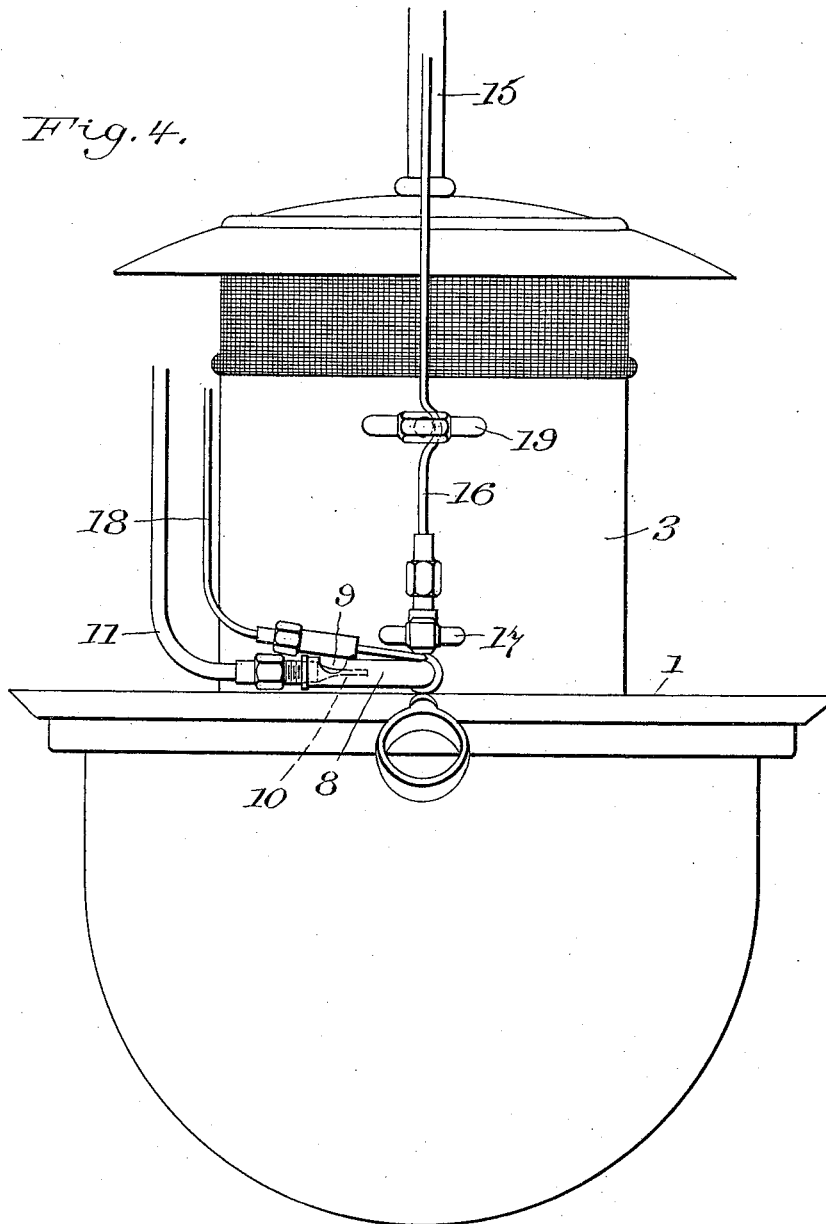
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UNITED STATES PATENT OFFICE.

WILLIAM STEEL, OF NORWOOD, PENNSYLVANIA, ASSIGNOR TO THE KITSON HYDROCARBON HEATING AND INCANDESCENT LIGHTING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

PREHEATING DEVICE FOR VAPOR-LAMPS.

SPECIFICATION forming part of Letters Patent No. 649,005, dated May 8, 1900.

Application filed September 14, 1899. Serial No. 730,452. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM STEEL, a citizen of the United States of America, and a resident of Norwood, county of Delaware, and State of Pennsylvania, have invented certain new and useful Improvements in Preheating Devices for Vapor-Lamps, of which the following is a specification.

My invention relates to vapor-burning apparatus in general, and is more specifically designed to provide an improved form of preheating apparatus for starting such vapor-burning apparatus or lamps into operation.

While the invention is applicable to all kinds of vapor-burning apparatus, it is specially designed to be used in connection with vapor-burning lamps of the type known as "cluster" lamps, such lamps having one or more burners provided with Welsbach mantles. In all such forms of vapor-burning apparatus it is of course necessary to provide some means of heating the vaporizing-tube to a temperature sufficient to vaporize the oil before the apparatus can be set into operation. Various arrangements of Bunsen burners using gas have been devised for this purpose. In some arrangements the Bunsen burner has been located beside the vapor-burner, so that its flame struck the vaporizing-tube at right angles and was compelled to traverse a considerable distance before reaching said vaporizing-tube, with the result that much of the heat was deflected from the vaporizing-tube and uncertain and inefficient action resulted. Another arrangement proposed consisted of a perforated Bunsen-burner tube extending alongside of the vaporizing-tube and discharging a number of small jets of flame upon such vaporizing-tube. While this arrangement is effective while the apparatus is new, the Bunsen-burner tube being exposed to the intense heat of the vapor-burners during their operation is soon burned out, and also the Bunsen tube in a measure absorbs the heat of the burners, which should be all concentrated upon the vaporizing-tube to produce the most efficient action of the lamp.

My invention combines the advantages of each of the above-described constructions and

avoids their disadvantages. By locating the Bunsen-burner tube outside of the lamp-chimney, where it is not subjected to the heat of the vapor-burners and yet by causing said Bunsen burner to discharge a flame parallel to the vaporizing-tube and immediately under the same, I obtain the most certain and effective action of the preheating apparatus, together with an economical use of the gas employed.

The preferred form of apparatus embodying my invention is illustrated in the accompanying three sheets of drawings, in which—

Figure 1 is a side elevation, with parts broken away and parts shown in section, of a cluster vapor-burning lamp with my invention applied thereto. Fig. 2 is a plan view of the same. Fig. 3 is a detail section of a portion of the vaporizing-tube and Bunsen burner, showing the connecting parts in their proper relation. Fig. 4 is a side elevation of the lamp shown in Fig. 1, taken in a plane at right angles to the plane of Fig. 1.

Throughout the drawings like reference-figures refer to like parts.

The lamp 1 has the vaporizing-tube 2 usually arranged in a horizontal position and extending through and across the lamp-chimney 3. An inner cylinder 4 is preferably arranged to telescope up into the chimney, being raised and lowered by the crank-shaft 5, as shown and described in the application of Wirt S. Quigley for Letters Patent of the United States executed of even date herewith, Serial No. 734,434.

The Bunsen-burner tube 6 is supported by the lamp-frame on the outside of the chimney 3 and has its discharge end so located as to throw a jet of flame along under and parallel to the vaporizing-tube 2. For this purpose the Bunsen tube is inserted in an opening in the chimney 3, as clearly shown in Fig. 3, and may be supported therein by means of the nipple 6^a. The pilot-burner 7 is preferably arranged in operative relation to the discharge end of the Bunsen burner, usually just above the same, as shown in Figs. 1 and 3. The Bunsen burner may of course be of the usual form; but I prefer to bend the outer portion thereof at an angle to the discharge

end, so as to prevent it projecting beyond the lamp-frame. The bent portion is shown at 8 in Figs. 1 and 3. The Bunsen burner has of course the usual opening 9 for admitting air and also has a gas-discharge nozzle 10. Gas is supplied to the bunsen by any convenient connection, such as the pipe 11, and gas is supplied to the pilot-burner by a second connection, such as the small pipe 18. These gas-pipes may be connected to the service-pipe in any convenient manner; but I prefer to have them both controlled by the ordinary form to a valve (shown at 12) and controlled by the handle 13 and supplied with gas through the connection 14 from the hollow suspension-rod 15, which is connected to the gas-pipe. The valve 12 being of the well-known construction and constituting no part of my invention I have not illustrated the arrangement of the internal parts and will not further describe the same.

The oil is supplied to the vaporizing-tube in the usual way through the fine tube 16 and controlled by the needle-valve 17. The crank-shaft 5 may be rotated by the handle 19 to raise and lower the cylinder 4, and said cylinder is provided with vertical slots 4^a 4^b, which permit it to move up and down around the vaporizing-tube 2. One of these slots comes opposite the discharge end of the Bunsen burner 6 when the cylinder 4 is in its lower positions, as clearly shown in Fig. 3. When the cylinder is telescoped up into the chimney, however, it shuts off the opening to the bunsen and protects the same from the action of the flame and hot gas coming up from the vapor-burners.

The mode of operation of my invention is as follows: A small pilot-flame is kept continuously burning at the pilot-burner 7. When the lamp is to be started into operation, the crank-shaft 5 is turned and the cylinder 4 dropped into position, (shown in Fig. 3,) thus bringing the slot 4^a opposite the discharge end of the Bunsen burner 6. The handle 13 of the valve 12 is then turned so as to supply gas to the Bunsen burner, which is ignited by the pilot-burner 7. A long tongue of blue flame then shoots across the chimney of the lamp, under and parallel to the vaporizing-tube 2. Said vaporizing-tube is thus quickly heated to the temperature necessary to vaporize kerosene-oil, and the valve 17 is then opened to admit the oil to the vaporizing-tube. The vapor thus generated issues from the vapor-burners and is ignited and the action of the lamp becomes self-supporting. The handle 13 of the valve 12 is then turned back to its original position and the supply of gas shut off from the Bunsen burner, the pilot-burner being left burning. The crank-shaft 5 is then turned back into the position shown in Fig. 1, telescoping the cylinder 4 up into the chimney 3 and closing off the discharge opening of the Bunsen burner 6. Consequently the flame and hot air coming up from the vapor-burners during the regular

operation of the lamp cannot reach the Bunsen burner and connected parts to oxidize and burn out the same.

The advantages of my invention, as above indicated, comprise the protection of the Bunsen burner and connected parts from the heat and oxidizing action of the lamp, the effective and economical use of the gas for the preheating of the vaporizing-tube and the production of a compact arrangement of tubes which have no loose parts to rattle.

It is evident, of course, that various changes could be made in the details of the construction illustrated without departing from the spirit and scope of my invention. The arrangement of Bunsen burners could be used on other forms of vapor-lamps, and different methods of making the gas connections might be employed. The shape of the Bunsen tube itself might be different from that illustrated, &c.; but all such modifications I consider merely changes of form and not of substance, the resulting construction being still within the scope of my invention.

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

1. The combination of a vapor-burning lamp having a straight vaporizing-tube, a Bunsen burner supported by the lamp-frame at one end of the vaporizing-tube and arranged to project a flame parallel to and below the vaporizing-tube, and a connection for supplying gas to said Bunsen burner.

2. The combination of a vapor-burning lamp having a vaporizing-tube, a Bunsen burner supported by the lamp-frame and arranged to project a flame parallel to and below the vaporizing-tube, and a connection for supplying gas to said Bunsen burner, said Bunsen burner being located outside of the lamp-chimney and having its discharge end opposite an opening in said chimney beneath the vaporizing-tube.

3. The combination of a vapor-burning lamp having a vaporizing-tube, a Bunsen burner supported by the lamp-frame and arranged to project a flame parallel to and below the vaporizing-tube, and a connection for supplying gas to said Bunsen burner, said Bunsen burner being located outside of the lamp-chimney and having its discharge end opposite an opening in said chimney beneath the vaporizing-tube, the outer portion of the Bunsen-burner tube being bent at an angle to the inner, or discharge, end thereof.

4. The combination of a vapor-burning lamp having a vaporizing-tube, a Bunsen burner supported by the lamp-frame and arranged to project a flame parallel to and below the vaporizing-tube, and a connection for supplying gas to said Bunsen burner, said Bunsen burner being located outside of the lamp-chimney and having its discharge end opposite an opening in said chimney beneath the vaporizing-tube, together with a pilot-burner arranged in operative relation to the

Bunsen burner, and a separate connection for supplying gas to said pilot-burner.

5 5. The combination of a vapor-burning lamp having a vaporizing-tube, a Bunsen burner supported by the lamp-frame and arranged to project a flame parallel to and below the vaporizing-tube, and a connection for supplying gas to said Bunsen burner, said Bunsen burner being located outside of the
10 lamp-chimney and having its discharge end opposite an opening in said chimney beneath the vaporizing-tube, together with a cylinder

arranged to telescope up into said chimney and provided with an opening which comes opposite the discharge end of the Bunsen burner only when the said cylinder is lowered.

Signed by me at Philadelphia, Pennsylvania, this 8th day of September, 1899.

WILLIAM STEEL.

Witnesses:

A. PARKER-SMITH,
PHOEBE A. REED.