

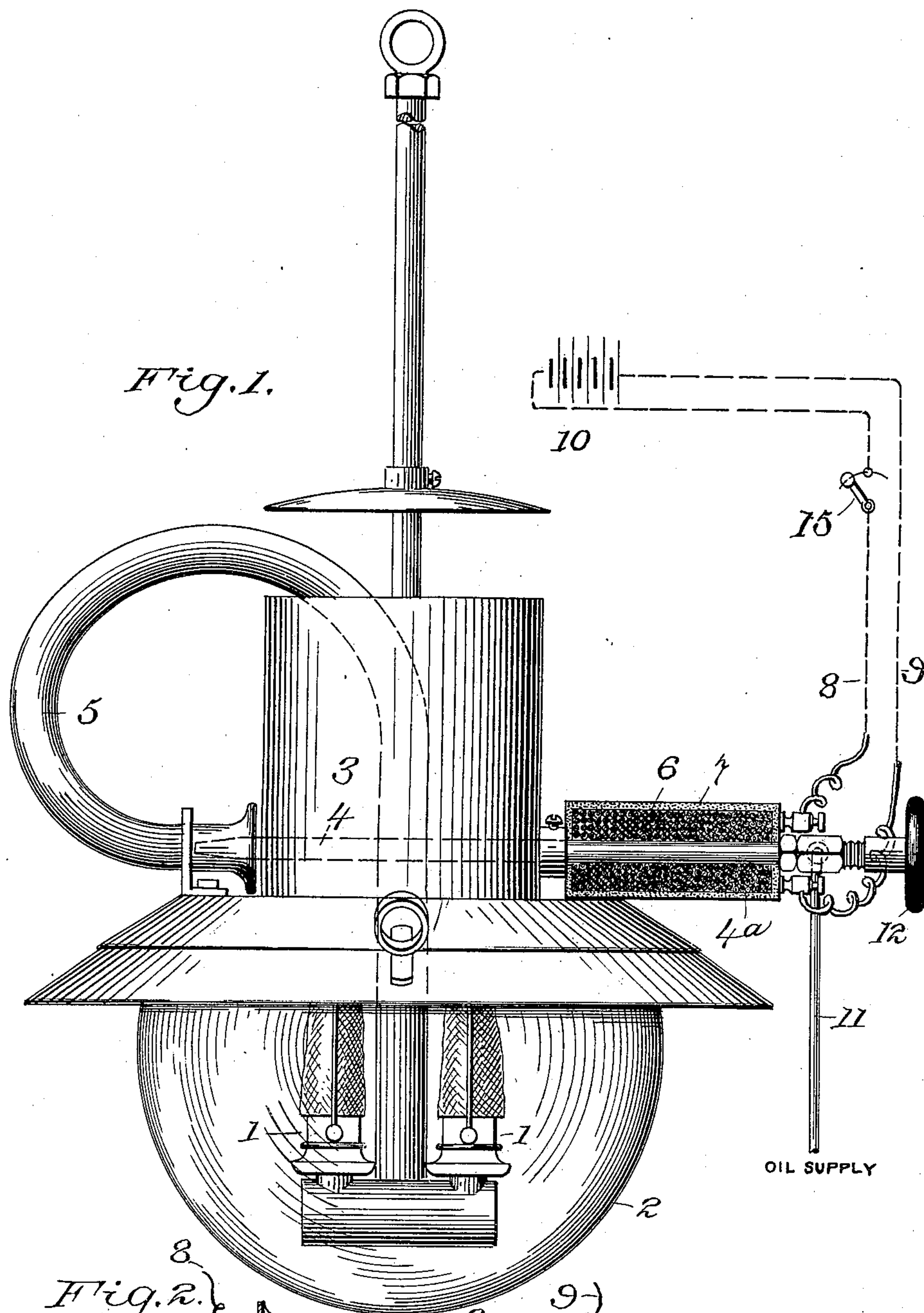
No. 613,685.

Patented Nov. 8, 1898.

A. KITSON.
VAPOR BURNING APPARATUS.

(Application filed Nov. 22, 1897.)

(No Model.)



UNITED STATES PATENT OFFICE.

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VAPOR-BURNING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 613,685, dated November 8, 1898.

Application filed November 22, 1897. Serial No. 659,425. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR KITSON, a sub-
ject of the Queen of Great Britain, residing at
Philadelphia, in the county of Philadelphia
and State of Pennsylvania, have invented a
certain new and useful Vapor-Burning Ap-
paratus, of which the following is a specifica-
tion.

My invention relates to vapor-burning ap-
paratus, and is specially designed to produce
a simple and effective apparatus for produc-
ing the initial heating necessary to start said
apparatus into action. In all forms of such
apparatus that I have heretofore designed—
such, for instance, as that illustrated in my
United States Patent No. 600,792, dated
March 15, 1898—the action is self-sustain-
ing after once put in operation by reason of
the fact that the heat given off by the burner
is employed in part to heat the vaporizing-
tube, and thus transform fluid hydrocarbon
into vapor; but in order to produce the initial
heating of said tube some extraneous source
of heat is necessary. To accomplish this in
a safe and convenient manner, I propose to
employ an auxiliary electrical heater.

The preferred form of my apparatus is illus-
trated in the accompanying sheet of draw-
ings, in which—

Figure 1 is a side elevation and partial sec-
tion of a form of vapor-burning lamp with an
ordinary electrical heating-coil arranged in
operative relation to the vaporizing-tube.
Fig. 2 is a modification in which the tube
itself is insulated and made a portion of the
electrical circuit.

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

1 1 represent the burners of the apparatus,
which are preferably arranged to heat man-
tles of refractory material, such as the well-
known Welsbach mantle, to incandescence
for the purpose of giving light. 2 is a glass
bowl surrounding said burners.

3 represents generally the lamp-hood and
chimney above the burners, and 4 is a vapo-
rizing-tube therein mounted and within the
heating-zone of the burners, preferably im-
mediately over the same.

5 is a mixing-tube into which the vaporiz-

ing-tube discharges a jet of vapor and which
conducts said vapor and the necessary quan-
tity of air entrained by said jet down to the
burners 1 1.

The vaporizing-tube projects a certain dis-
tance beyond the lamp-hood for the purpose
of attaching the oil-supply pipe 11 and the
valve-controlling mechanism 12, and, if nec-
essary, this projecting portion may be slightly
increased in length, as shown at 4^a, in order
to accommodate a surrounding coil of high-
resistance electrical conductor 6, which in
the form shown in Fig. 1 would be covered
with some refractory electrical insulating
substance—such as, for instance, asbestos.
The coil should also be incased in a covering
7 to protect the same and keep it in shape, and
this covering 7 should also be preferably of
some refractory non-heat-conducting mate-
rial, such as asbestos millboard.

The two ends of the heating-coil 6 are of
course connected to wires 8 and 9, which lead
to some source of electrical current 10, which
may be a primary battery, a secondary bat-
tery, or a dynamo.

In the modification shown in Fig. 2 the sep-
arate heating-coil is dispensed with, and the
vaporizing-tube 4 is itself insulated at its
points of support by nipples of hard fiber 13
13, and the wires 8 and 9 of the electrical sup-
ply-circuit are connected to opposite ends of
the tube itself. It then becomes necessary
to insulate the supply-pipe 11 from said vapo-
rizing-tube, and this is done in any conven-
ient way, as by inserting the nipple of hard
fiber 14 at the point of attachment to said
tube. The valve-wheel 12 should also be
made of or covered with hard rubber or other
insulating material to protect the operator
from possibility of getting a shock when ma-
nipulating the needle-valve controlling the
discharge from the vaporizing-tube.

The method of operating my invention is
as follows: When it is desired to start the
lamp, the current is turned on at the switch
15, controlling the electric circuit, and the
heating-coil 6 becomes hot, transmitting the
heat to the vaporizing-tube and raising the
latter to the temperature necessary to vapo-
rize oil. Oil is then admitted through the

supply-pipe 11 by opening a valve, (not shown,) and the vapor which is generated when the oil enters the hot tube passes out through the other end of said vaporizing-tube 5 and forms a jet which may be controlled by turning the valve-wheel 12. This jet entrains a certain quantity of air to form a highly-combustible mixture in the mixing-tube 5, and is conducted by said tube to the burners 11, where it is ignited. After a short time the heat of the burners is sufficient to maintain the vaporizing-tube at the necessary temperature and the current is shut off from the electric heater by opening the switch 15.

In the modifications shown in Fig. 2 the same mode of operation is followed, except that the vaporizing-tube 4 is there made of high electrical resistance by forming it of some substance possessing such quality of electrical resistance and the current is transmitted through the said tube direct, thus heating the tube.

The advantages of this form of apparatus are that the inconvenience in the use of the ordinary form of alcohol-cup and the danger resulting from the unskilful use of alcohol are avoided, and the initial heating of the vaporizing-tube is effected with certainty, safety, and rapidity.

Of course this electrical heating attachment may be used with other forms of vapor-burners than the one shown, and numerous modifications of the arrangement of the electrical heater may be employed. I prefer the form illustrated in Fig. 1, however, because the heating-coil is there placed on the end of the vaporizing-tube nearest to the oil-supply, and thus insures the complete vaporization of the oil before it reaches the remaining portions of the vaporizing-tube.

The broad feature of the combination of the vapor-burner and incandescent mantle therefor and a vaporizing-tube with proper connections to the burner and located within the heating-zone of the burner-flame I do not

claim herein, as the same is shown, described, and claimed in my pending application, Serial No. 663,495, filed December 27, 1897.

The construction shown in Fig. 2 of the drawings and modifications thereof, in which a portion of the vaporizing-tube is itself included in the electric circuit, are not herein claimed, but are described and claimed in my pending application, Serial No. 681,594, filed May 24, 1898.

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

1. The combination with a vapor-burning lamp of the vaporizing-tube thereof, the vapor-burner beneath the tube, an oil-supply pipe attached to one end of said tube, and an electrical heater arranged in operative relation to the end of the vaporizing-tube nearest the attachment of the oil-supply pipe, substantially as described.

2. The combination with a vapor-burning lamp having a hood, and the vaporizing-tube thereof projecting beyond said hood, of a heating-coil formed of an insulated electric conductor wound about the portion of the vaporizing-tube projecting beyond the lamp-hood, substantially as described.

3. The combination with a vapor-burning lamp having a hood, and the vaporizing-tube thereof projecting beyond the hood of said lamp, of the heating-coil, formed of an insulated electrical conductor wound about the portion of the vaporizing-tube projecting beyond the lamp-hood, and a casing of non-heat-conducting material surrounding said heater and said portion of the vaporizing-tube, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

ARTHUR KITSON.

Witnesses:

A. PARKER SMITH,
LILIAN FOSTER.