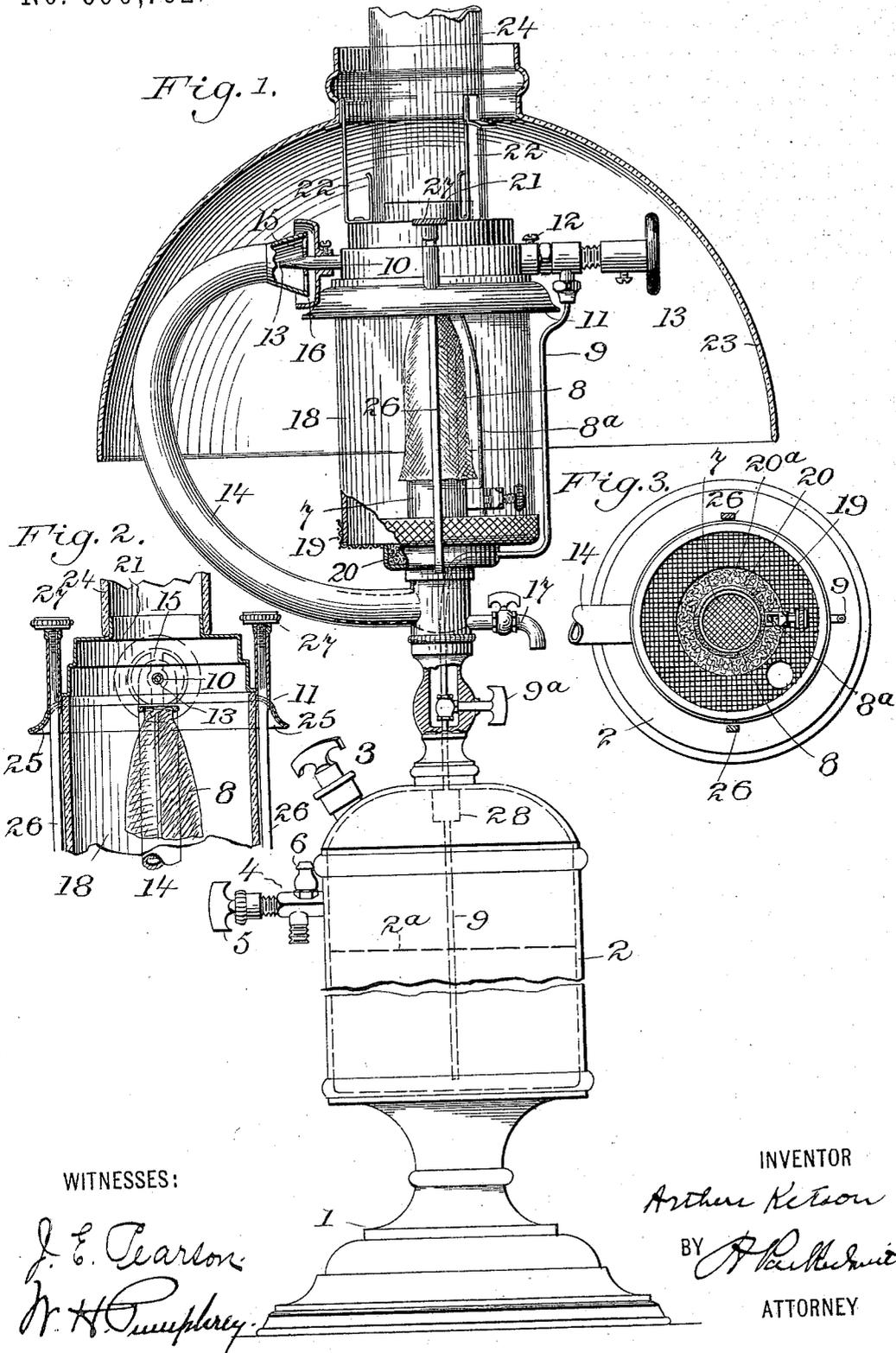


(No Model.)

A. KITSON.
VAPOR BURNING APPARATUS.

No. 600,792.

Patented Mar. 15, 1898.



WITNESSES:

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KITSON HYDROCARBON HEATING AND INCANDESCENT LIGHTING COM-
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VAPOR-BURNING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 600,792, dated March 15, 1898.

Application filed November 1, 1897. Serial No. 657,027. (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 Appa-
ratus, of which the following is a specifi-
cation.

My invention relates to vapor-burners, and
is more specifically designed to produce a self-
contained vapor-burning lamp or table-lamp
having certain features of construction in so
far as the vapor producing and burning appa-
ratus are concerned, which are applicable
to hanging and other forms of vapor-lamp,
however.

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

Figure is a side elevation and partial section
of the lamp, broken away in parts. Fig.
2 is a detail cross-section of my improved
form of reflector with vaporizing-tube mount-
ed therein. Fig. 3 is a detail view of the alco-
hol-cup and skeleton extensions for support-
ing the globe.

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

1 represents the standard or base, which
rests upon the table and on which the lamp
is supported.

2 is the main body or reservoir of the lamp,
which may be made of any convenient or arti-
stic form.

3 is the connection controlled by a valve or
plug through which the reservoir or body of
the lamp may be charged with oil.

4 is a second connection through which the
portion of the lamp-body above the level of
the oil 2^a may be charged with compressed
air by a foot pump or connection with any
other supply of compressed air.

5 is a valve or plug for opening and closing
said connection.

6 is a small safety-valve mounted on said
compressed-air connection inside of the valve.

7 is the ordinary form of burner, similar to
that illustrated in my pending application,
Serial No. 648,353, filed August 16, 1897.

8 is an incandescent mantle which is pref-
erably used in combination with said burner,
being sustained by any suitable support 8^a.

19 is a skeleton or perforated extension or
flange on the alcohol-cup 20, which surrounds
the burner, which cup may contain a body of
asbestos 20^a or other incombustible absorbent
material. This skeleton extension 19 sup-
ports the globe 18, which is preferably made
in cylindrical form, although I use the term
"globe," inasmuch as other forms of sur-
rounding envelop may be employed. This
globe 18 is of glass or other translucent ma-
terial.

9 is a supply-tube which extends from
nearly the bottom of the interior of the res-
ervoir or body of the lamp 2 up through the
standard supporting the burner and along the
side of the globe 18 to one end of the vaporiz-
ing-tube 10. This vaporizing-tube, with its
needle-valve 13, is similar in construction to
that illustrated in my above-mentioned pend-
ing application, and is adjustably mounted
in the reflector 11, being held in place by the
set-screw 12. 9^a is a valve in said supply-tube
9 for shutting off the supply of oil when the
lamp is not in operation, and 28 is a strainer
or filter therein.

14 is a curved mixing-tube connected to
and supported from the base of the burner 7
and extending up to the upper portion of the
lamp, where it terminates opposite the noz-
zle of the vaporizing-tube 10. The upper end
of this vaporizing-tube is not attached to the
upper portion of the lamp, but is preferably
supported by a sliding joint with the ext-
remity of the vaporizing-tube by means of
the spider 15, whose central boss slides freely
on said vaporizing-tube.

16 represents a muffler or a small metal col-
lar for breaking up the current of air drawn
into the mixing-tube by the jet of vapor from
the vaporizing-tube and so preventing the dis-
agreeable hissing sound which is common in
this form of vapor-lamp when not provided
with some apparatus of this nature.

17 represents a small drip-cock placed at
the lower portion of the hollow base of the
burner for the purpose of drawing off any

small amount of oil which may be discharged from the mixing-tube by unskilled manipulation of the apparatus.

21 represents a central opening in the reflector 11 for the passage of the hot gases generated in the lamp.

22 22 represent two of several shade-supports attached also to the upper side of the reflector, and 23 is any convenient form of shade mounted on said supports and overhanging the upper portion of the apparatus. 24 is a chimney mounted on said reflector and over the central opening therein. Said reflector 11 is preferably provided with a lining of porcelain or similar material 25, (shown in Fig. 2,) which will protect it from the destructive action of the hot gases. The reflector may rest upon the upper end of the globe 18 by gravity, but I prefer to rigidly hold the parts together by means of two or more rods 26, which extend from the base of the burner up along the outside of the globe and through the reflector, each terminating in a thumb-screw 27. By removing the thumb-screw the lamp may be quickly and easily taken apart.

The general mode of operation of my apparatus is as follows: Oil being charged into the lamp body or reservoir 2 up to the line 2^a, or thereabout, compressed air is admitted through the connection 4 at the necessary degree of pressure after the oil connection 3 has been closed. Any excess pressure which may tend to burst any of the connections or interfere with the proper operation of the lamp is prevented by the safety-valve 6. The globe 18 rests upon the skeleton extension 19 of the alcohol-cup, and the reflector 11 is mounted on the upper end of said globe, its outer circumference fitting closely down over the same. The chimney 24 being in place, a small quantity of alcohol is poured on the asbestos in the alcohol-cup and lighted. The flame heats the mantle 8 to incandescence and the vaporizing-tube to the necessary temperature to vaporize the oil. Oil is then admitted by opening the cock 9^a and the needle-valve 13. The pressure of the compressed air in the lamp-reservoir forcing the oil up through the supply-tube 9, the vapor of oil issuing from the nozzle of the vaporizing-tube entrains the necessary quantity of air into the mixing-tube 14, and the latter delivers the combustible mixture to the burner 7, where it becomes ignited, and thus the action of the lamp becomes self-supporting.

The advantages of my construction reside in its being portable and in the special arrangement of the surrounding globe 18, surrounding the incandescent mantle and open to the air at the bottom, whereby a strong current of intensely-heated gases and air is thrown up against the reflector 11 and thereby focused on the vaporizing-tube 10. So great is the heat to which the vaporizing-tube is thus subjected that I find that the oil is not only vaporized, but changed to a fixed gas

which does not condense when cool. This adds to the brilliancy of the light produced and prevents the collection of oil in the burner and its connections. The mixing-tube 14, being supported only from the base of the burner, can expand and contract without wrenching the parts or weakening the joints under the varying degrees of heat to which it is subjected when the lamp is lighted or not lighted, and the sliding joint which its upper end forms with the vaporizing-tube permits said expansion and contraction, while at the same time it affords a support to the upper end of said vaporizing-tube. The chimney 24, being mounted over the vaporizing-tube and keeping the hot gases confined for a certain distance after they have left the vaporizing-tube, prevents any possible access of cold air to said vaporizing-tube and thereby steadies the action of the vaporizing apparatus as well as increasing the efficiency of the same.

It is evident that various changes could be made in the various details of my apparatus without departing from the spirit and scope of my invention so long as the relative arrangement of the parts shown in the drawings and the principle of operation described in the specification are maintained.

The broad feature of the combination of a vapor-burner, an 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.

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

1. In a vapor-burning lamp the combination of the burner and connections, the incandescent mantle therefor, the translucent globe surrounding said incandescent mantle, the reflector mounted over said burner and resting on said globe and having a central opening for the passage of the hot gases and the vaporizing-tube extending across said opening, substantially as described.

2. In a vapor-burning lamp the combination of the burner and connections, the incandescent mantle, the globe surrounding said mantle, and open to the air at the bottom, the reflector which has a central opening for the passage of hot gases, the outer circumference of which reflector fits over the top of said globe, and the vaporizing-tube extending across the opening in said reflector, substantially as described.

3. In a vapor-burning lamp, the combination of the burner and connections, the incandescent mantle, the globe surrounding said mantle, and open to the air at the bottom, the reflector which has a central opening for the passage of hot gases, the outer circumference of which reflector fits over the top of said globe, and the vaporizing-tube extending across the opening in said reflector, together

with the chimney mounted on said reflector over said opening, substantially as described.

4. In a vapor-burning lamp, the combination of the burner and connections, the incandescent mantle, the globe surrounding said reflector which has a central opening for the passage of hot gases the outer circumference of which reflector fits over the top of said globe, and the vaporizing-tube extending across the opening in said reflector, together with the chimney mounted on said reflector over said opening, the shade-supports attached to said reflector and shade supported thereon, substantially as described.

5. In a vapor-burning lamp, the combination of the burner and its connections, the globe of translucent material surrounding said burner, the chimney mounted above said globe, and the vaporizing-tube located between said globe and the chimney, 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.