

No. 667,226.

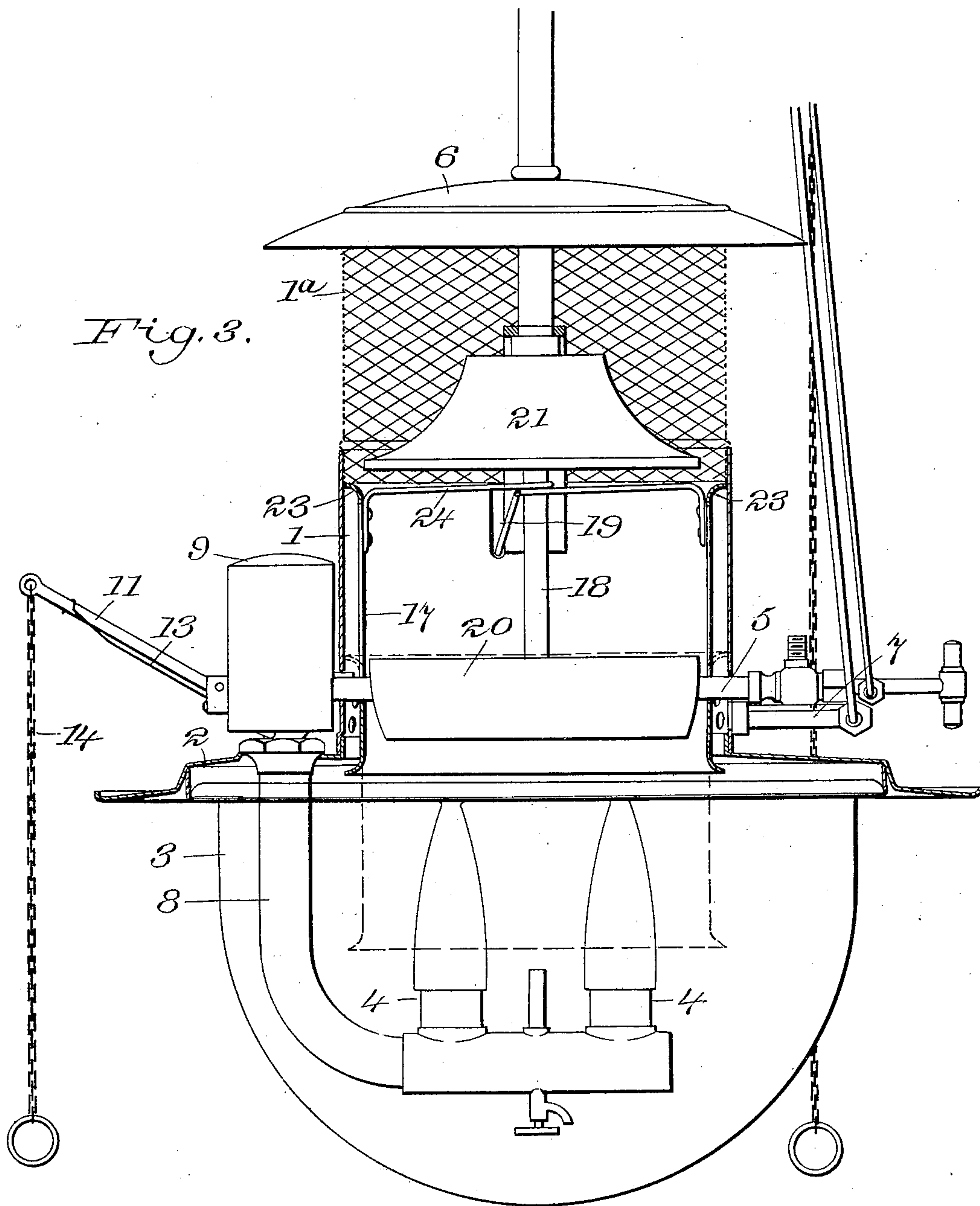
Patented Feb. 5, 1901.

A. KITSON.
CASING FOR VAPOR BURNING LAMPS.

(Application filed Nov. 27, 1899.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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CASING FOR VAPOR-BURNING LAMPS.

SPECIFICATION forming part of Letters Patent No. 667,226, dated February 5, 1901.

Application filed November 27, 1899. Serial No. 738,319. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR KITSON, a sub-
ject of the Queen of Great Britain, and a resi-
dent of Philadelphia, (Germantown,) county
5 of Philadelphia, State of Pennsylvania, have
invented certain new and useful Improve-
ments in Casings for Vapor-Burning Lamps,
of which the following is a specification.

My invention relates to vapor-burning
10 lamps in general, and more specifically con-
sists of an improved form of casing for lamps
burning the vapor of hydrocarbon of their
own generation.

The object of the improvements hereinaf-
15 ter to be described is to render the action of
the lamp less liable to interruption by such
accidents as the cracking of the glass globe
through heat or the blowing out of the lamp
by strong currents of air.

20 In my Patent No. 632,492, granted Sep-
tember 5, 1899, I have shown and described
a form of lamp having a practically air-tight
casing outside of the air-inlet through the
mixing-tube and the outlet at the top of the
25 chimney. The lamp described in such pat-
ent has the advantages of operation therein
specified; but I find that in certain cases, es-
pecially where the hemispherical glass globe
surrounding the burners is made small, so as
30 to bring its walls close to the burners, the
heat generated sometimes is sufficient to
crack the globe, and thus interfere with the
perfect operation of the lamp. To obviate
this difficulty I have invented the special
35 form of lamp-casing hereinafter described,
in which a series of air-inlets are circumfer-
entially disposed about the inclosing lamp-
casing, so as to permit an additional quantity
of cold air to enter the casing near the cir-
40 cumference of the glass globe and pass down
along the walls of the same, thereby protect-
ing them from the excessive heat of the
burner. It is necessary, however, in such
case to prevent the incoming cold air from
45 impinging on the vaporizing-tube, which
must be kept hot, and as these air-openings
increase the possibility of back drafts down
the chimney which might be produced by
strong currents of air when the lamp is hung

outdoors, I also find it desirable to employ 50
a special form of draft-inducer located in the
upper part of the chimney, which shall pre-
vent such back drafts being created by side
currents.

The preferred form of apparatus embody- 55
ing the above points of improvement is illus-
trated in the accompanying two sheets of
drawings, in which—

Figure 1 is a vertical section of what is
known as a "cluster-lamp" embodying my in- 60
vention. Fig. 2 is a detailed plan view of
the draft-inducer. Fig. 3 is a side elevation
and partial section showing a slight modifi-
cation whereby the number of parts is re-
duced. 65

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

The lamp-casing is composed of the cen-
tral cylindrical chimney 1, the light-reflector
and heat-deflector 2, and the hemispherical 70
glass globe 3, supported below the same. The
upper portion of the chimney 1^a is formed of
perforated metal or wire-gauze, and above
the same is the heat and smoke shield 6, sup-
ported from the vertical central suspension- 75
rod 18.

The vaporizing-tube 5 extends across the
lower part of the chimney over the burner or
burners 4 4.

The Bunsen burner and connections 7 serve 80
to preheat the vapor-tube when the lamp is
to be started into operation.

The mixing-tube 8 has the muffler 9 over
its mouth, into which mixing-tube the jet of
vapor is discharged through the opening 10 85
in the vaporizing-tube. The lever 11, carry-
ing the needle-point 12, serves to clean said
discharge-opening when the lever is pulled
down by the chain 14 against the resistance
of the spring 13. 90

A series of air-openings 15 are disposed cir-
cumferentially about the casing and prefer-
ably in the lower part of the chimney, as
shown. An annular shield 16 is located with-
in the casing opposite these inlets and pref- 95
erably extends from the chimney above the
air-inlets inwardly and downwardly in front
of the air-inlets and then flares outwardly, as

shown, so as to discharge the downward current of cold air toward the walls of the globe 3. A telescoping cylinder 17 is guided in said annular shield 16 and can be raised and lowered by means of the cross-piece 24, which is coiled about the suspension-rod 18 and supported by the crank-shaft 19. A heat shield or saddle 20 may be supported over the vaporizing-tube.

In the modification shown in Fig. 3 the telescoping cylinder 17 itself serves also as the shield for keeping the incoming currents of cold air from the vaporizing-tube and discharging them downwardly into the globe, the upper portion of the said cylinder 17 being flared outwardly, as shown at 23, to fit the interior of the chimney 1.

The draft-inducer 21 consists of a piece of metal in the shape of a bell or approximately in the shape of the frustum of a cone. It is supported from the central suspension-rod by the wings or arms 22 and is so located that its lower edge is just below the lower line of perforations 1^a in the upper part of the chimney 1. Preferably the diameter of the lowest part of the draft-inducer is slightly less than the internal diameter of the portion of the chimney 1 opposite thereto.

The mode of operation of my invention is as follows: When the lamp is in operation, there is of course a strong upward draft through the chimney 1. This draws in cold air through the air-openings 15, and as the upward movement of such air is prevented by reason of the fact that the shield 16 extends out to the chimney-walls at its upper end the cold air is drawn downward to fill the partial vacuum produced in the globe 3 and is discharged in a circular film against the walls of said globe by the outwardly-expanded lower lip of the shield 16. This cold air passes down along the walls of the globe in the direction shown by the arrows and then up past the burners through the chimney. It is thus heated before it strikes the main portion of the vaporizing-tube 5. The small portion of said vaporizing-tube between the walls of the chimney and the annular shield is not sufficient in extent to be seriously affected by any cold air which strikes it, and, moreover, a body of heated air accumulates in the upper portion of the space between the chimney and the shield above the air-openings 15, which keeps even this small portion of the vaporizing-tube immersed in a bath of warm air.

The telescoping cylinder 17 can be raised and lowered in the manner and for the purposes described in the pending application of Wirt S. Quigley, Serial No. 730,434, filed September 14, 1899, its lower position being shown in dotted lines in Figs. 1 and 3, and the shield 16 also serves as a guide for said telescoping cylinder. In the modification shown in Fig. 3 this telescoping cylinder serves also as the annular shield, its upper part being expanded,

as shown at 23, and thus a cheaper form of lamp is produced.

The increasing of the number of air-inlets to the lower part of the lamp-casing, as above described, of course renders it easier to force a current of air down the chimney in the shape of a back draft. When the lamp is hung outdoors, high winds sweeping across the upper and open part of the chimney tend to produce such back drafts and interfere with the operation of the lamp. Accordingly where the air-inlets are used it is desirable to employ the cone-shaped draft-inducer 21, which has its lower portion just below the openings in the upper part of the chimney. Any side drafts will then strike the inclined sides of this draft-inducer and be led up over the top of it instead of being turned down the chimney. The current blowing across the upper end of the draft-inducer will also tend to produce an upward draft through it, and thus assist instead of counteracting the normal draft of the lamp.

The advantages of the invention are, as before stated, in the prevention of the glass globe 3 from being cracked and broken by the heat and in the prevention of back drafts, such as might otherwise occur where these additional inlets are employed.

It is evident, of course, that various changes could be made in the details of construction illustrated without departing from the spirit and scope of my invention. The air-inlet might be of different shape and might be otherwise located, so long as they are disposed circumferentially around the casing. The annular shield might be varied in form, and the same is true of the draft-inducer 21, so long as they are made in proper shape to possess the functions above described.

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 supporting-frame and chimney, the glass globe supported beneath, together forming an inclosing casing for the lamp, said casing being provided with a series of air-inlet openings, the burner in said globe, the vaporizing-tube extending across the chimney over the burner, and the annular shield located within the chimney, extending inwardly therefrom and downwardly in front of the air-openings and below the vaporizing-tube, together with means for raising and lowering said annular shield in said chimney.

2. The combination in a vapor-burning lamp of the lamp-casing provided with air-inlets disposed circumferentially about the same, and an annular shield movable within the casing and extending downwardly in front of the air-inlets and outwardly below the level of said air-inlets.

3: In combination with vapor-burning apparatus of the lamp-casing, comprising a central cylindrical chimney, the upper portion

of which is perforated, a heat-shield above the chimney, a drop-cylinder movable up and down within the chimney, a truncated cone forming substantially a continuation of the drop-cylinder but separated therefrom to provide an annular outlet between the same for the escape of gases.

4. The combination with vapor-burning apparatus, of the lamp-casing, comprising a central cylindrical chimney the upper portion of which is perforated, a heat-shield above said chimney, and the draft-inducer, consisting of a hollow truncated cone of metal, suspended in the chimney with its upper end adjacent to the heat-shield and below the top line of perforations to permit transverse drafts through the chimney above the hollow cone.

5. The combination of the lamp-casing comprising a central cylindrical chimney provided adjacent to its lower end with a series of air-inlet openings, the upper portion of the chimney being perforated, a heat-shield above said chimney, and the draft-inducer consist-

ing of a hollow truncated cone of metal suspended in the chimney, its base providing an annular outlet which is slightly below the bottom line of perforations in the said upper portion of the chimney, together with a glass globe supported below the chimney, the burner in said globe and the vaporizing-tube extending across the chimney over the burner.

6. The combination with vapor-burning apparatus of the lamp-casing, comprising a central cylindrical chimney, the upper portion of which is perforated for a considerable portion of its length, a heat-shield mounted on the upper end of the chimney, and the hollow truncated cone of metal suspended in the chimney with its lower end below the lower line of perforations and its upper end below the uppermost line of perforations.

Signed by me at New York, N. Y., this 23d day of November, 1899.

ARTHUR KITSON.

Witnesses:

W. H. PUMPHREY,
THOMAS TITUS SMITH.