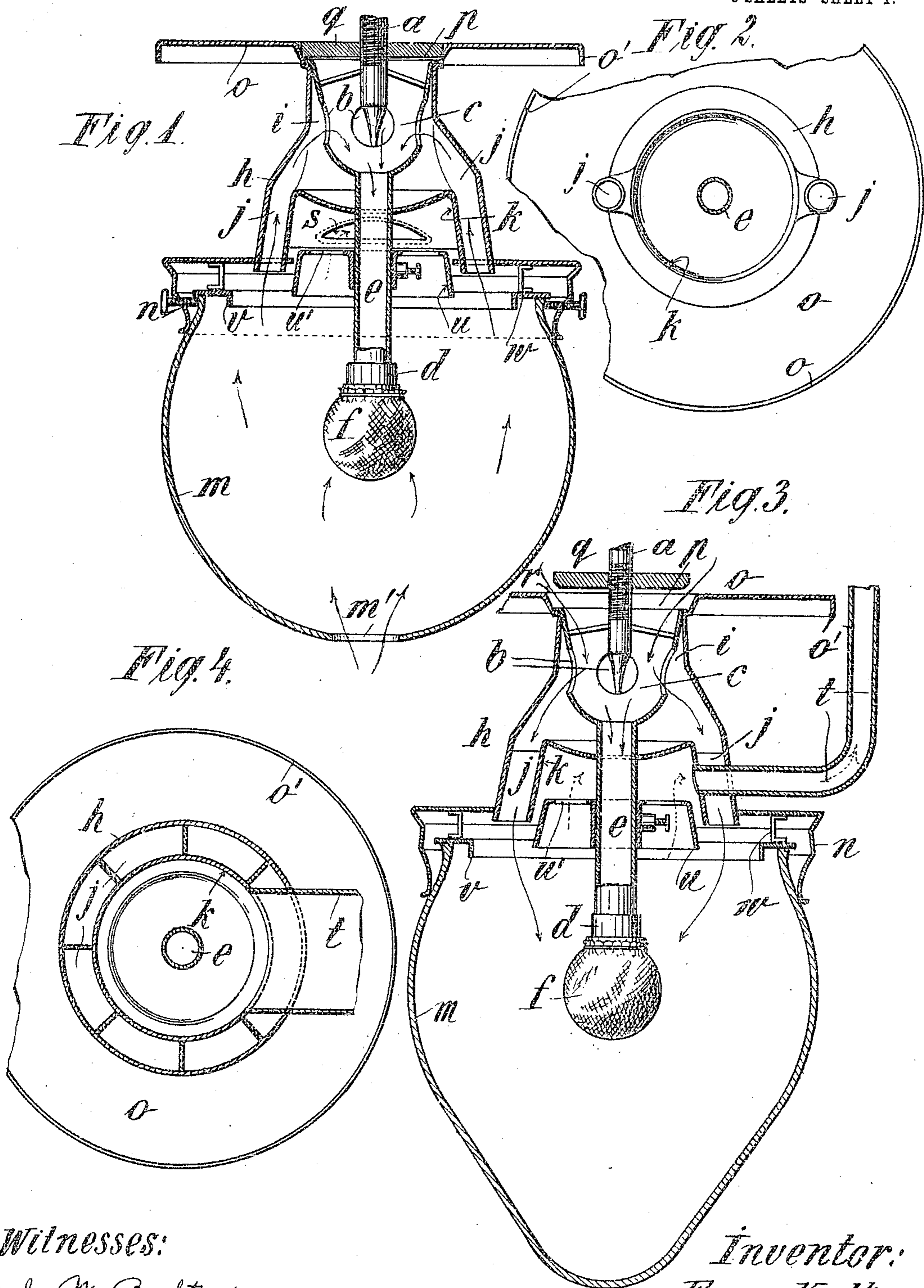


F. KRATKY.  
 INCANDESCENT GAS BURNER FOR INVERTED AND UPRIGHT INCANDESCENT LIGHTS.  
 APPLICATION FILED JAN. 24, 1907.

959,760.

Patented May 31, 1910.

3 SHEETS—SHEET 1.



Witnesses:

L. M. Boulter.  
 [Signature]

Inventor:

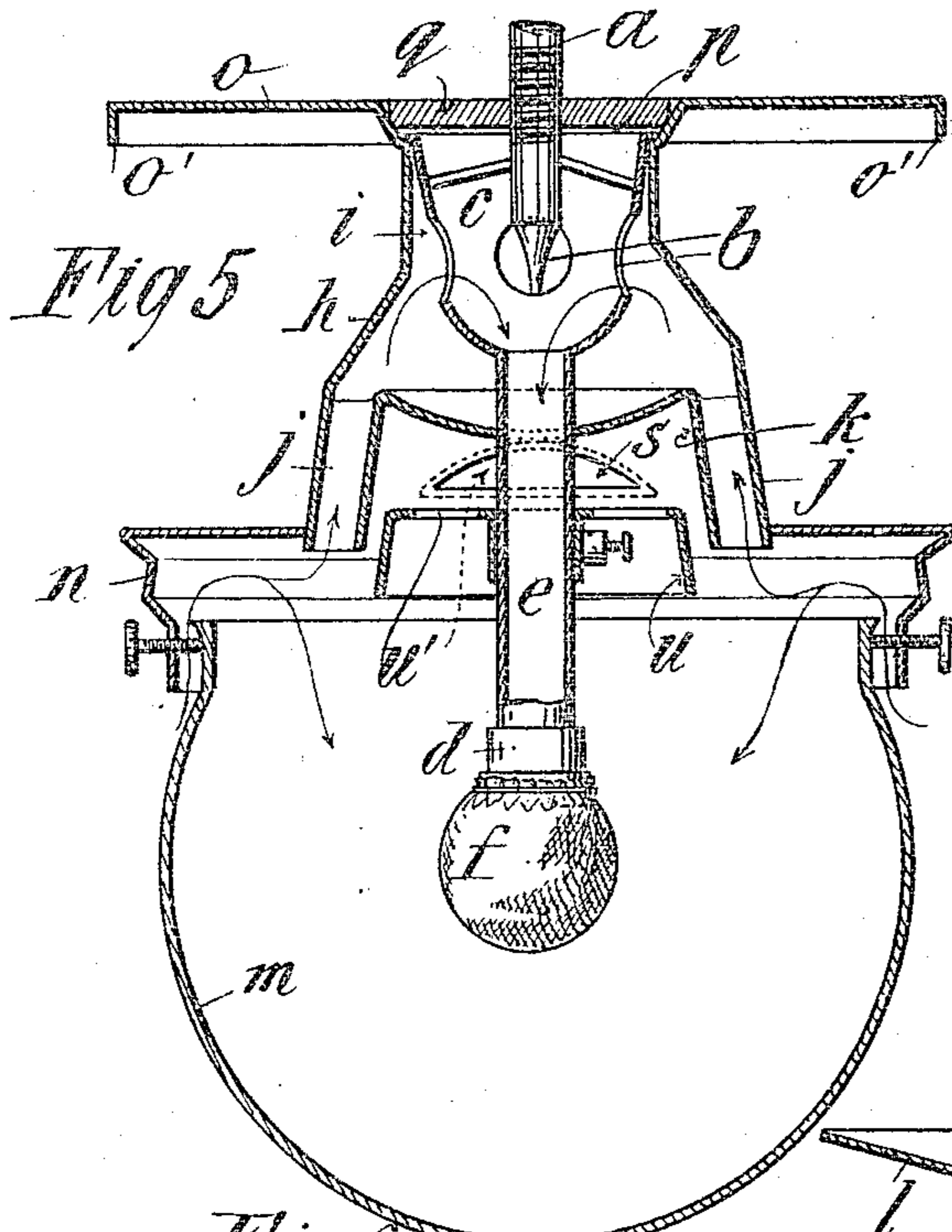
Franz Kratky  
 by W. E. Boulter  
 his Attorney.

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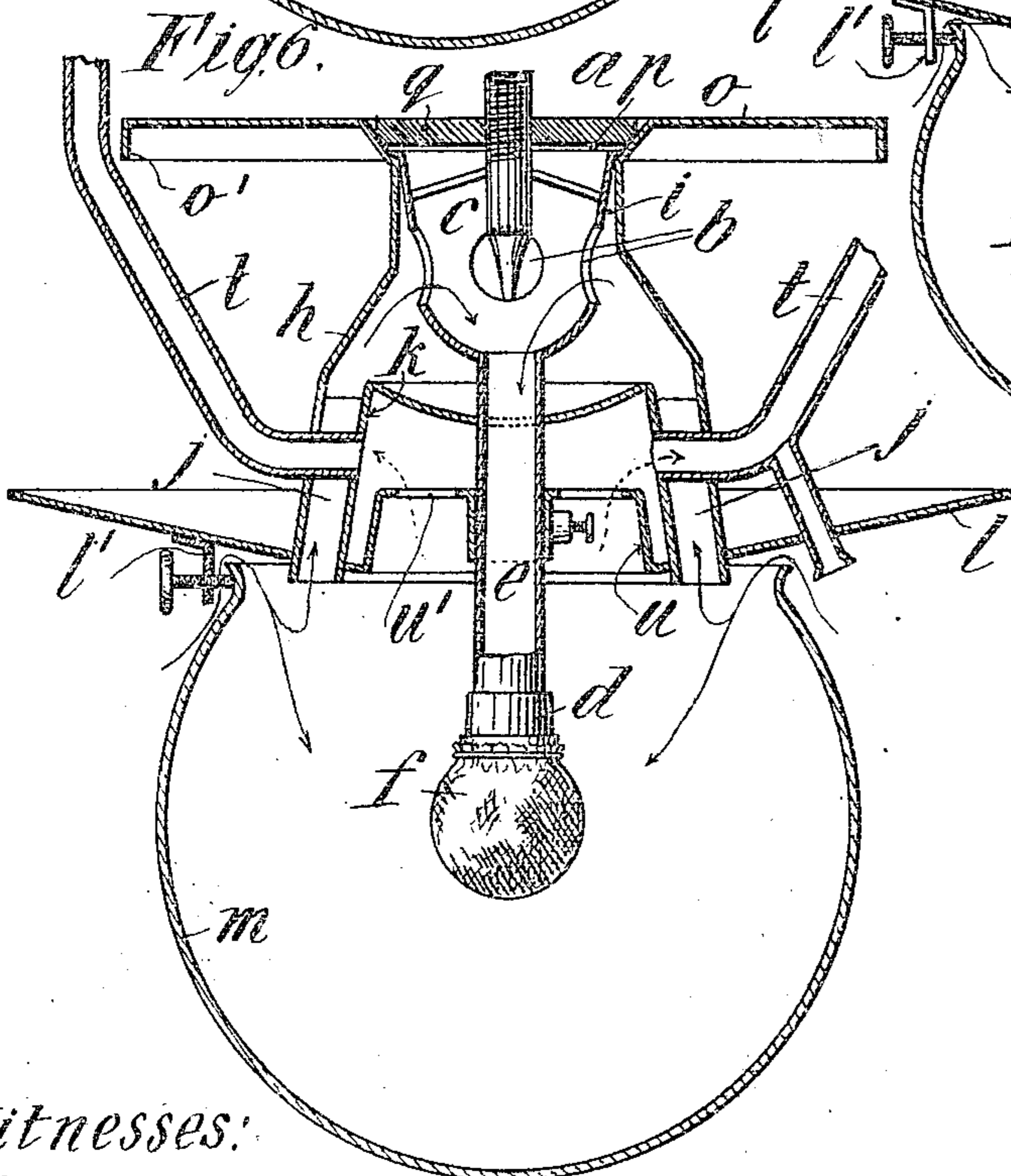
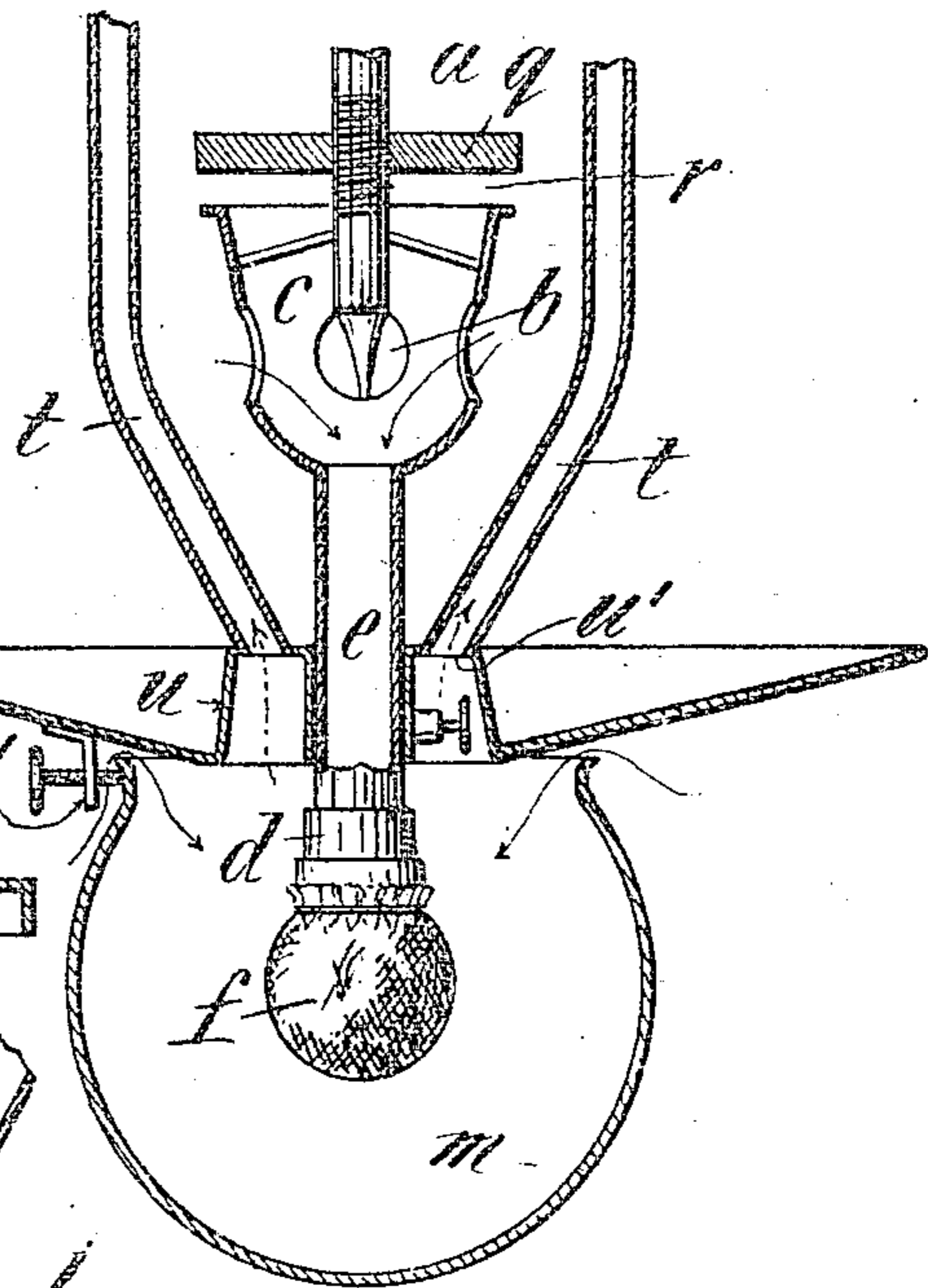
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3 SHEETS—SHEET 2.



*Fig. 7.*



Witnesses:

L. M. Boulter  
 A. H. Northrup

Inventor:  
 Franz Kratky.  
 by W. E. Boulter  
 his Attorney.

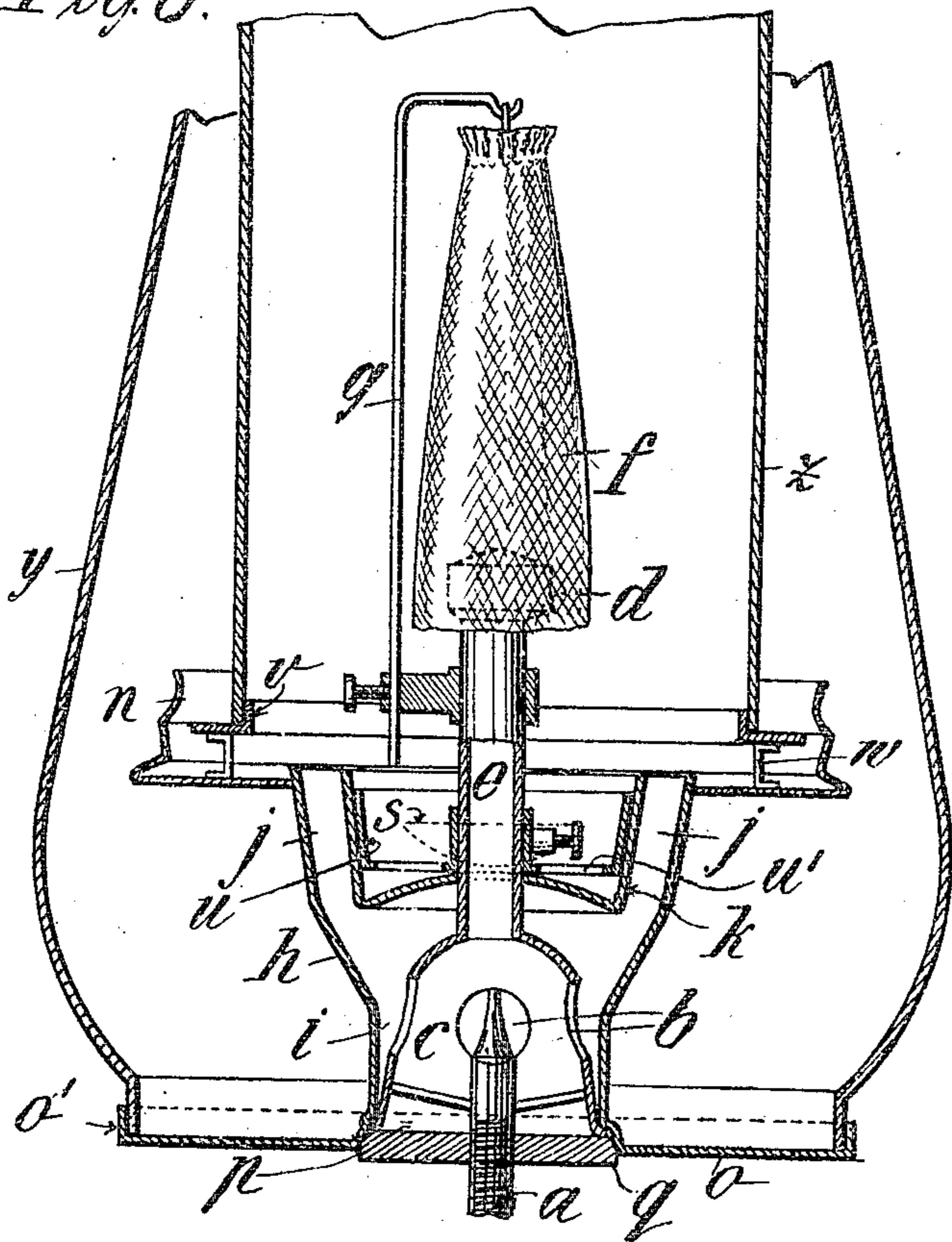
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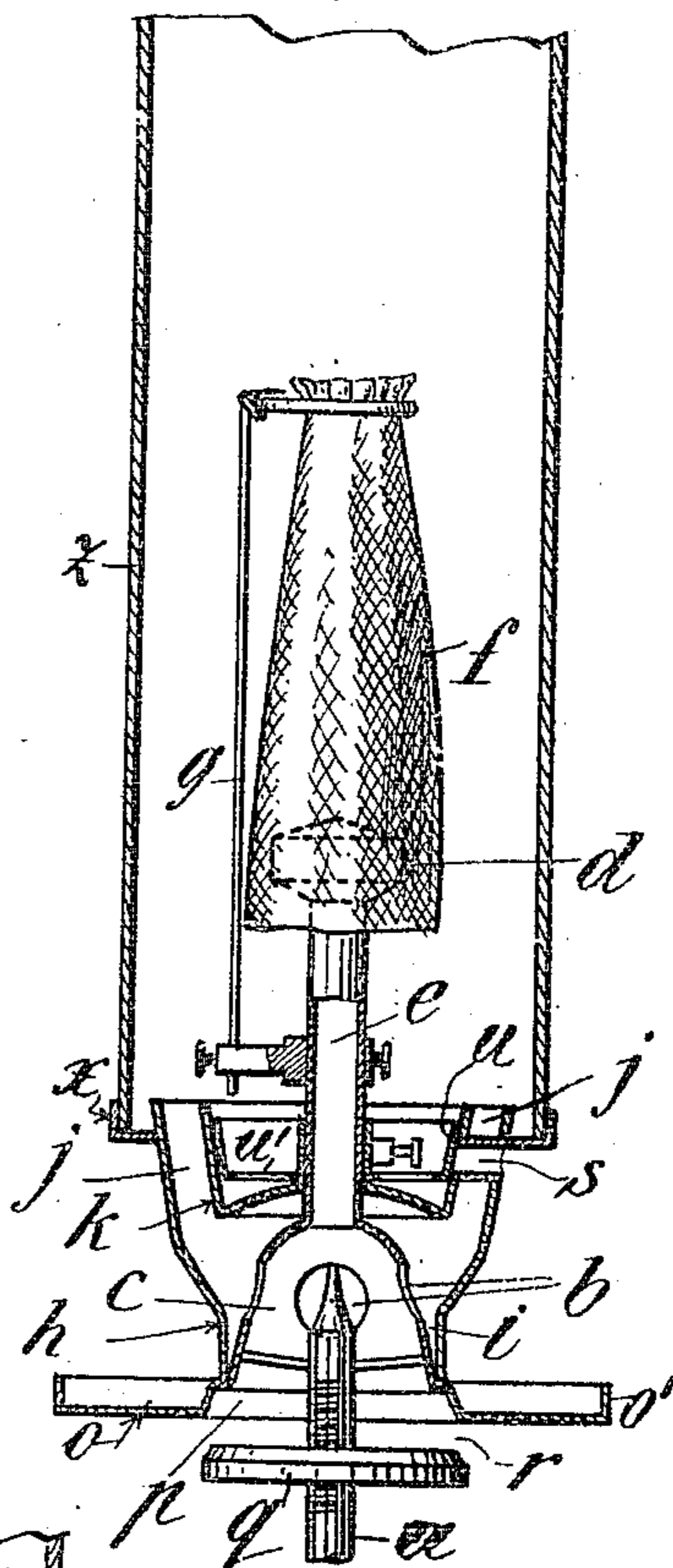
Patented May 31, 1910.

3 SHEETS—SHEET 3.

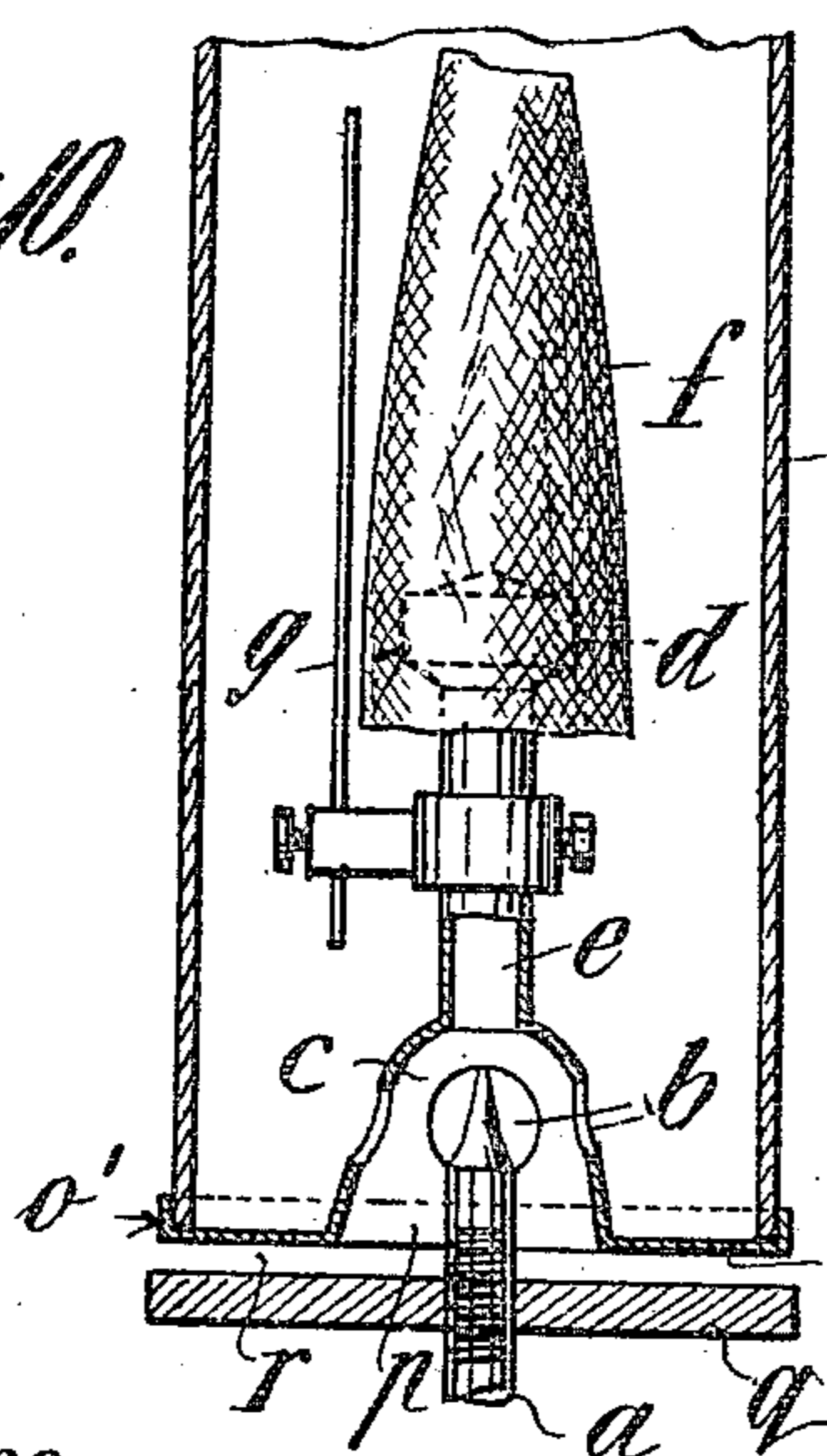
*Fig. 8.*



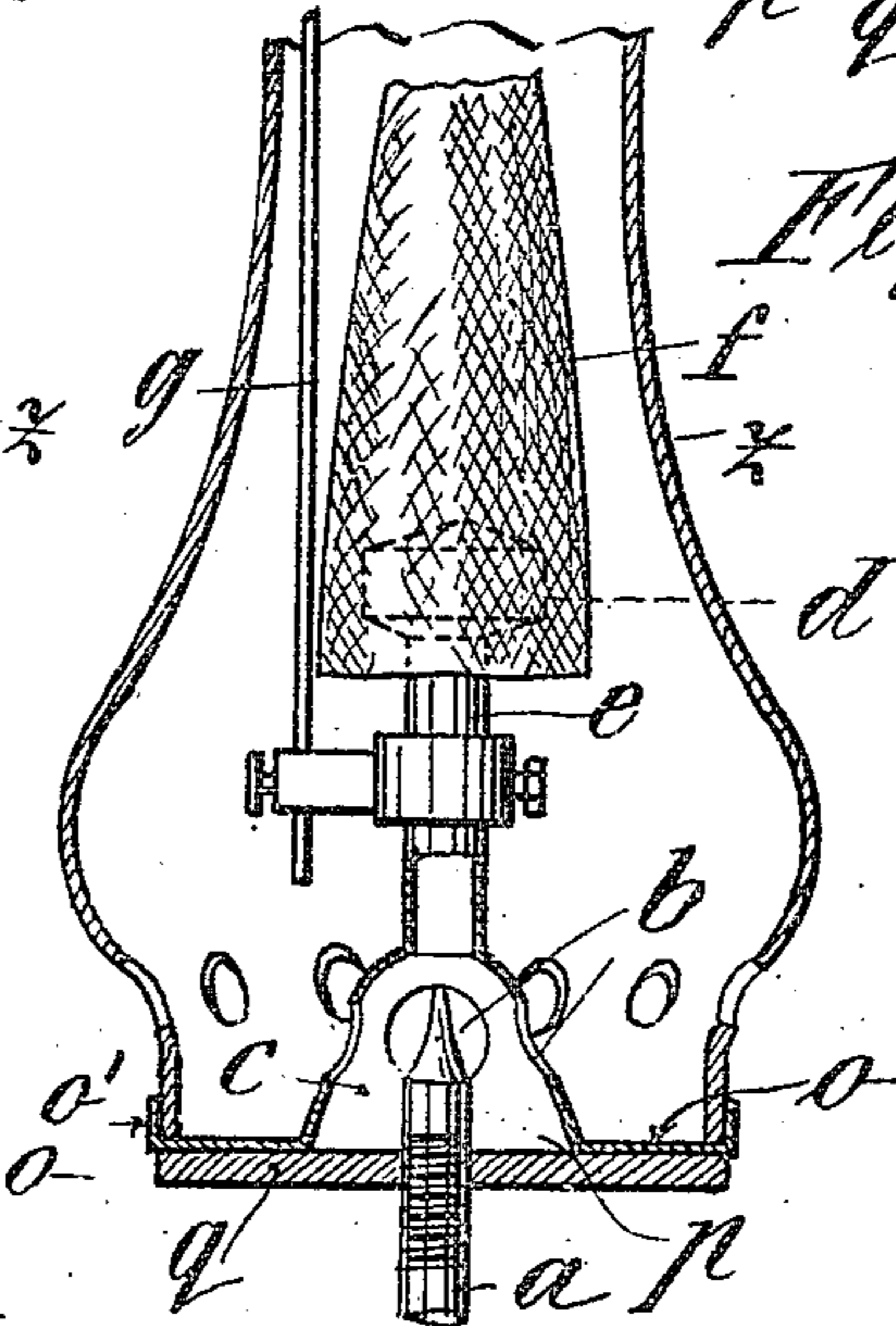
*Fig. 9.*



*Fig. 10.*



*Fig. 11.*



Witnesses:

L. M. Boulter.  
*[Signature]*

Inventor:  
 Franz Kratky.  
 by *[Signature]*  
 his Attorney.

# UNITED STATES PATENT OFFICE.

FRANZ KRATKY, OF VIENNA, AUSTRIA-HUNGARY.

INCANDESCENT GAS-BURNER FOR INVERTED AND UPRIGHT INCANDESCENT LIGHTS.

959,760.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed January 24, 1907. Serial No. 353,810.

*To all whom it may concern:*

Be it known that I, FRANZ KRATKY, a citizen of Austria, residing at Vienna, Lower Austria, Empire of Austria-Hungary, have  
5 invented certain new and useful Improvements in Incandescent Gas-Burners for Inverted and Upright Incandescent Lights, of which the following is a specification.

This invention relates to incandescent gas  
10 burners burning both inverted and upright and refers more especially to a regulating disk which is adapted to be moved away from and toward the rear external mouth of the mixing chamber.

15 This invention has for its primary object according to the type of the draft and protective glass chimneys used to enable the internal air supply and the external air supply to be fed to one point only of the  
20 burner and also, according to the distance of this disk from the mouth, to determine the cross sectional area of the air inlet or effect the regulation of the air supply; furthermore it serves as a wind guard and, in  
25 the case of inverted lights, it serves to prevent foreign bodies from falling into the mixing nozzle.

The drawing shows several constructional forms or methods of arrangement of the  
30 burner for vertical and upright light.

Figure 1 is a section of an inverted lamp wherein the mixing nozzle is closed toward the rear and the feeding of the entire quantity of air takes place through the lower  
35 aperture in the glass globe. Fig. 2 is a part sectional inside view of the air chamber surrounding the mixing chamber. Fig. 3 shows a similar burner to that of Fig. 1 with the whole quantity of air required fed through  
40 the apparatus, the glass globe being completely closed. Fig. 4 is an end elevation of the air chamber surrounding the mixing chamber. Fig. 5 shows the same burner as Fig. 1 but in the present case all the air re-  
45 quired is fed over the gallery around the edge of the closed glass globe. Fig. 6 is the same burner as Fig. 5 for diffusive lighting. Fig. 7 is a sectional elevation showing the construction of an ordinary inverted Auer  
50 burner for diffused light. Fig. 8 shows the same burner as Fig. 1 for use with a vertical light. Fig. 9 is a somewhat modified constructional form thereof, and Figs. 10 and  
55 11 show the arrangement and method of operation of the regulating disk, applied to an ordinary Auer incandescent burner.

In all its constructional forms the burner consists of an injector tube *a*, a mixing chamber *c* surrounding the same and provided with air inlets *b*, and the mixing tube *e* carrying the burner head *d*. 60

In using the burner for inverted light the mantle *f* is carried in the usual manner by the burner head *d*, a crutch *g* being used for this purpose in the case of an upright light. 65 Now according to the present invention there is arranged upon the injector tube *a* a disk *q* the size and shape of which corresponds to the rear aperture *p* of the mixing chamber *c*, and which can be moved toward or  
70 away from the said aperture. Whether the disk is to lie close to the mouth of the mixing chamber and close it, or if it is to leave it free, depends upon the type of air supply and upon the draft and protecting glass or  
75 chimney used. The supply of the entire quantity of air required (mixing air and air for combustion) takes place at a single point. To this end the mixing chamber *c* is surrounded at a suitable distance by a  
80 jacket *h* which leaves between it and the mixing chamber an air space *i* which communicates by means of tubes *j* (Figs. 1 and 2) or of an annular space *j* (Figs. 3 and 4) with a chamber comprised within the glass  
85 globe *m*; the annular space is formed by the jackets *h* and *k*. The tubes *j* or the jackets *h*, *k*, pass through the bottom piece of a gallery *n*, which, whether the burner be used for inverted or upright light, may serve for carrying the glass globe *m*. At its rearward  
90 end the jacket *h* has a flange-like extension *o* with a turned down rim *o'*, which serves to protect the lamp from dust falling down and also as a reflector, and if necessary it  
95 serves to carry the glass globe (Fig. 8). The plate *q* adjustable on the injector tube *a* not only closes the mouth *p* of the air chamber *c* or opens it, but is also intended to prevent the direct penetration of gusts of wind prejudicial both to the mantle and the globe, while  
100 with inverted light it prevents foreign bodies from falling into the mixing chamber.

The drawing shows the position of the regulating disk opposite the mouth of the  
105 mixing chamber in accordance with the method selected of feeding the burner. According to Fig. 1 the regulating disk *q* may be screwed down into the mouth *p*. The globe *m* is carried by the gallery *n* provided  
110 with supports *w*. Upon the mixing tube *e* is mounted an adjustable cap *u* having open-

ing  $u'$ .  $s$  is an opening in the jacket  $k$ . In the inverted arrangement seen in Fig. 1 the cap  $u$  is adjusted to uncover the opening  $s$ , and said cap  $u$  then serves to catch the ascending gases of combustion which are guided through opening  $u'$  into the opening  $s$ . The air passing through the aperture  $m'$  in the globe  $m$  passes on the one side direct to the illuminating surface of the mantle  $f$ , and on the other side through the tube  $j$  or annular space into the air chamber  $i$ , whence it is sucked up through the opening  $b$  of the injector tube  $c$  by the current of gas which carries it along into the mixing tube  $e$ . At the same time the mixed air is suitably heated, whereby better combustion and greater lighting power is obtained.

In a modified construction according to Fig. 3 the gas burns in a completely closed glass globe. In this case the regulating disk  $q$  is screwed back out of the air chamber aperture  $p$ , and the whole quantity of air flows through a passage  $r$  directly into the mixing chamber  $c$ , thence a part of this air is carried along by the stream of gas into the mixing tube  $e$ , while the other portion is conveyed, by the suction action set up in the closed globe  $m$  by the escaping gases of combustion, through the openings  $b$  of the mixing chamber into the next chamber  $i$  and thence through the tube  $j$  into the interior of the glass globe, whereby a very steady flame and a perfect combustion of the mixture of air and gas are realized.

According to Figs. 5 and 6 the air supply is effected around the edge of the globe  $m$  which in Fig. 5 is carried by a non-perforated gallery  $n$  but upon which it does not bear closely while in Fig. 6 the globe is supported from a reflector  $l$  against which latter it does not fit closely; in Fig. 5 the air passes through the space between the glass globe and the gallery on the one hand to the mantle, and in Fig. 6 the air passes through the tube  $j$  into the air chamber  $i$  and into the mixing chamber  $c$ . In every case the escape of the gaseous products of combustion, which rise upward in the space inclosed by the inner jacket  $k$ , takes place through an opening  $s$  or through pipes  $t$  attached to the jacket  $k$ .

In Fig. 7 I show the application of my invention to an Auer inverted burner wherein a reflector  $l$  is used serving as a support for the globe  $m$  and shaped to provide the central tube-like extension  $u$  which conducts the products of combustion to the pipes  $t$ .

The burner according to Fig. 1 can be used right away, without adding or removing any parts, for upright light as shown in Fig. 8, only the opening  $s$  through which the waste gases of combustion escape in the case of inverted light, must be closed and instead of the globe  $m$  open at the bottom a lamp chimney  $z$  must be placed on the supporting ring  $v$  provided on the gallery for the pur-

pose. In the case of upright light the cap  $u$  is pushed back into the jacket  $k$  and fastened there whereby it closes the opening  $s$ . The arrangement is such that the jacket  $k$  serves at the same time as a device to catch any parts of the mantle that may fall off, so that they can never find their way into the mixing chamber  $c$ . The inner side of the cap  $u$  is preferably made bright so that, in the case of inverted light, it can also act as a reflector. As the mouth  $p$  of the air chamber  $i$  is closed by the plate  $q$ , the air flows around the gallery  $n$  and the lower edge of the lamp chimney  $z$  carried by a ring  $w$  and is distributed on the one side through the tube  $j$  in the air chamber  $i$  and to the injector tube  $c$  and on the other side in the interior of the lamp chimney  $z$  to the mantle  $f$ . The flange-like extension  $o$  of the jacket  $k$  can at the same time be used as a support for a protecting glass  $y$  of tulip or bell shape.

Fig. 9 shows a modified form of the burner for upright light the gallery  $n$  being omitted, and the outer jacket  $k$  of the air chamber  $i$  is provided with a supporting ring  $x$  for the chimney  $z$ . In this case on screwing back the regulating disk  $q$  the whole supply of air enters through a slot  $r$  into the air chamber  $i$  whence, as in the modification according to Fig. 3, it distributes itself in the mixing chamber  $c$  and through the tube  $j$  to the mantle  $f$ . The distance of the disk  $q$  from the mouth regulates the quantity of the air to be sucked up. In this case also the turned up edge  $o'$  of the flange  $o$  can be used for carrying a fancy globe or a shade  $y$  or also the lamp chimney  $z$  itself when there is no supporting ring  $x$  on the jacket  $k$ .

Figs. 10 and 11 show the arrangement of the regulating disk to the simple upright Auer burner, the arrangement being such that the under edge of the mixing chamber  $c$  itself is broadened to a flange  $o$  and its mouth  $p$  can be regulated or closed by the plate  $q$ , while the edge  $o'$  of the flange serves to carry the lamp chimney  $z$ . Now according as a solid (Fig. 10) or a perforated lamp chimney  $z$  (Fig. 11) is used, the regulating disk or the mouth  $p$  of the mixing chamber is kept open or closed and, in the former case, by suitably adjusting the disk  $q$  opposite the mixing chamber the supply of air can also be regulated to correspond to the gas pressure.

The type of air supply depends upon local conditions. In places where there is a low gas pressure the feed of air is preferably through a slot  $r$  between the closing plate  $q$  and the mouth  $p$  of the air chamber as then, especially with upright burners, the draft action of the lamp chimney supports the action of the injector tube, while for instance with a sufficient gas pressure, but with an arrangement of the lamp in places where it is subjected to strong drafts the air

supply is carried out best around the gallery *n*.

What I claim is:—

1. An incandescent gas burner as described  
5 comprising a mixing tube, an injector tube,  
a mixing chamber carried by the mixing  
tube and surrounding said injector tube and  
having air inlets, and also having an ex-  
ternal mouth or aperture *p*, a disk *q* ad-  
10 justable toward and from the aperture *p* for  
closing and opening the latter as described,  
and a jacket *h* surrounding the mixing  
chamber and leaving an intervening air  
space and having a flange-like extension *o*  
15 for the purposes set forth.

2. An incandescent gas burner as de-  
scribed comprising a mixing tube, an injec-  
tor tube, a mixing chamber carried by the  
mixing tube and surrounding said injector

tube and having air inlets and also having 20  
an external mouth or aperture *p*, a disk *q*  
adjustable toward and from the aperture *p*  
for closing and opening the latter as de-  
scribed, a jacket *h* surrounding the mixing  
chamber and leaving an intervening air 25  
space, tubes *j* communicating with the said  
air space, a jacket *k* surrounding the mix-  
ing tube and having an opening *s*, and a cap  
*u* adjustably mounted on the mixing tube  
and adapted to cover and uncover the open- 30  
ing *s*.

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

FRANZ KRATKY.

Witnesses:

WILHELM ZORGER,  
ALVESTO S. HOGUE.