

(No Model.)

C. B. TODD.

GAS BURNER.

No. 370,107.

Patented Sept. 20, 1887.

FIG. 1.

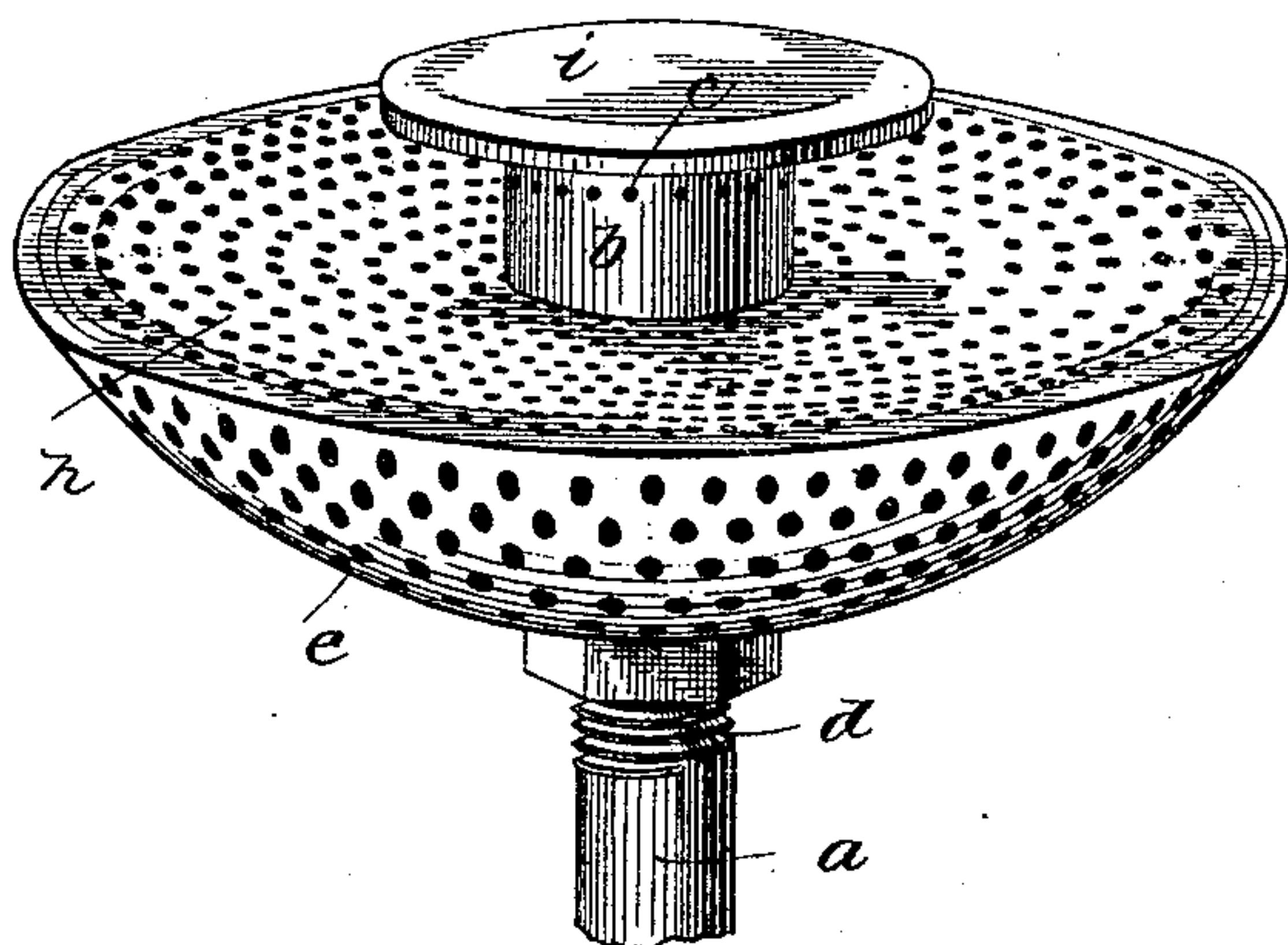


FIG. 2.

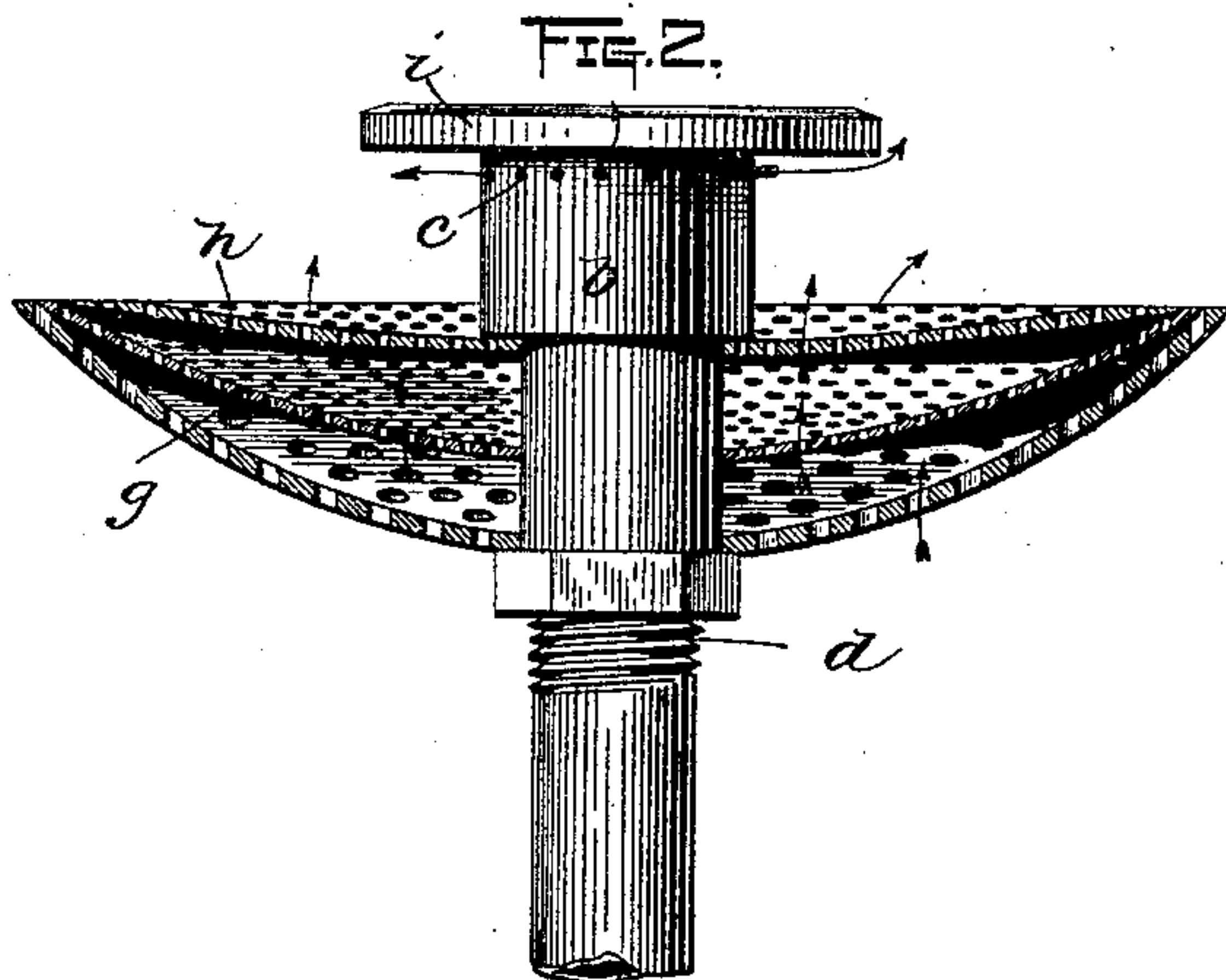
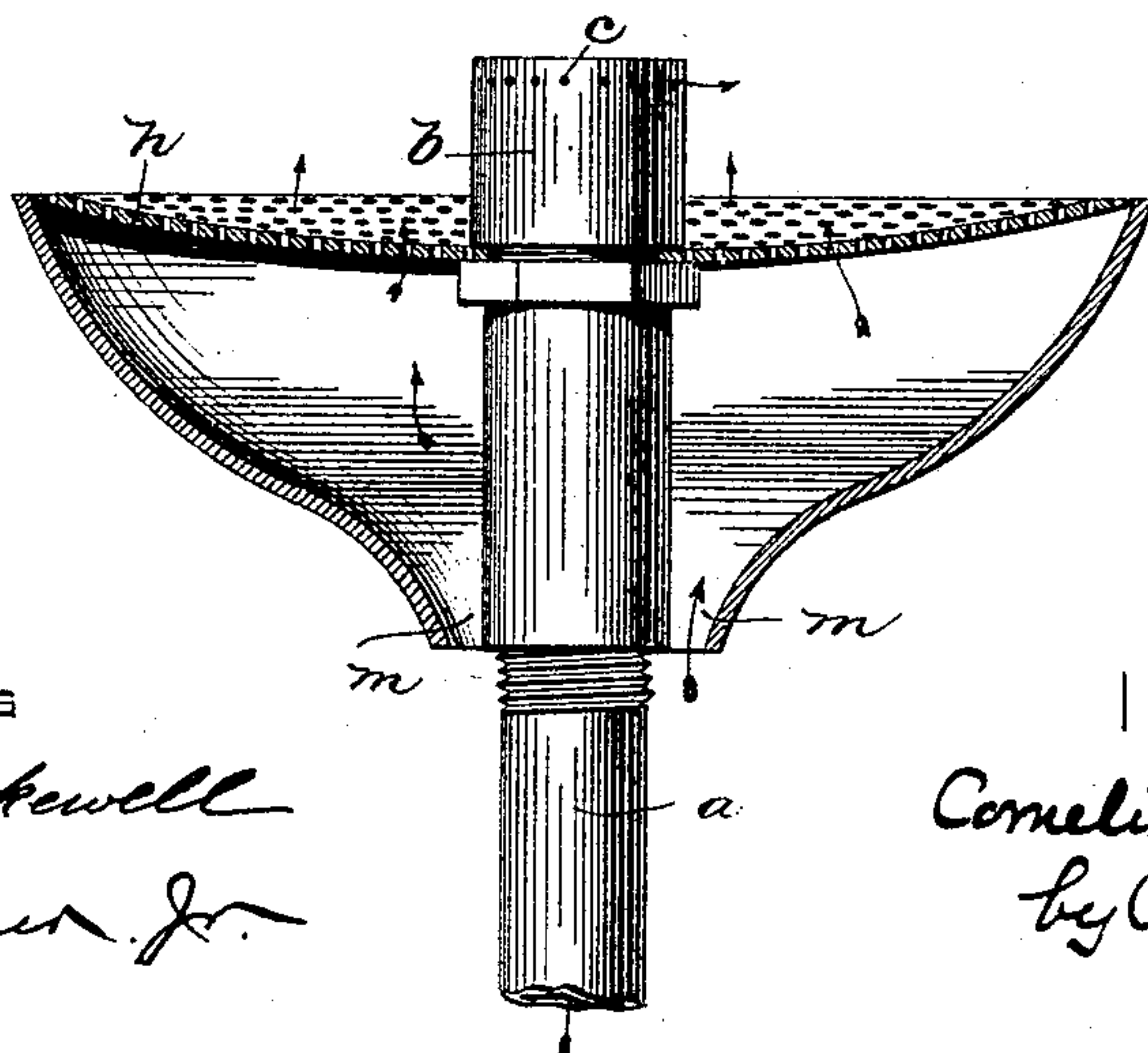


FIG. 3.



Witnesses

James H. Bakewell

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Inventor

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by Bakewell & Kerr
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UNITED STATES PATENT OFFICE.

CORNELIUS B. TODD, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
CAMPBELL BURNER COMPANY, (LIMITED,) OF SAME PLACE.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 370,107, dated September 20, 1887.

Application filed March 5, 1887. Serial No. 229,840. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS B. TODD, of
Pittsburg, in the county of Allegheny and
State of Pennsylvania, have invented a new
and useful Improvement in Gas-Burners; and
I do hereby declare the following to be a full,
clear, and exact description thereof.

My invention relates to an improvement in
gas-burners for illuminating purposes. The
purpose for which I have especially devised
it is for burning what is known as "natural
gas," which, being comparatively deficient in
carbon, burns with the characteristic blue
flame of hydrocarbon gases without emitting
much light. I have found, however, that
when natural gas is burned in connection with
heated air its illuminating properties are bet-
ter, while where the gas is heated deposits of
carbon take place, which in a short time are
sufficient to clog the burner. For this reason
the burners now in general use in connection
with gas in which both the air and gas are heat-
ed are not adapted for the use of natural gas.

It will be noticed that in my improved burner
the parts are arranged for the purpose of heat-
ing the air only, the flames being directed or
deflected toward the air-heating disks, while
no provision is made for heating the gas, but,
on the other hand, the cool air surrounding
the gas-pipe acts as a cooling agent to the same.

In the accompanying drawings, forming part
of this specification, Figure 1 is a perspective
view of the burner. Fig. 2 is a vertical dia-
metrical section of the same. Fig. 3 is a ver-
tical diametrical section of a modification.

Like letters of reference indicate like parts
wherever they occur.

The burner shown is designed for mill-lights,
or burners used without shade or chimney for
the illumination of factories and other open
places exposed to drafts of air. The gas is
fed through a supply-pipe, *a*, into the cap *b*,
which forms the jet or burner proper, and is
provided with an annular series of lateral
perforations, *c*, preferably situate in one hori-
zontal plane. The cap *b* is closed at the top,
and is attached to the feed-pipe *a* by being
screw-threaded, as shown at *d* in Fig. 2.
Mounted upon and concentric with the pipe
a, below the perforations of the burner-cap, is

a concave cup-shaped disk, *e*, which forms the
base of what I will herein denominate a
"heating-chamber," while placed within this
base, and likewise concentric with the pipe *a*,
are one or more superposed concave disks, *g*
and *h*. The radii of curvature of these parts
are successively greater than the part *e*, so that
when in position they are somewhat separate
from each other, thereby forming one or more
superposed chambers, *eg* and *gh*, or one cham-
ber, *eh*, divided into two parts by a middle
partition.

Each of the concave disks *e*, *g*, and *h* may
be perforated with many holes, so as to per-
mit free passage of air through the chambers
and out of the perforations of the upper cup,
h, which are situate just beneath the gas-holes
of the burner-cap *b*. The direction of the lat-
ter holes is horizontal, as has been noticed, so
that the flame as it issues thence is caused to
impinge upon the rim of the lower disk or
cup, *e*, and the outer part of the surface disk,
h, thereby raising these parts to a considerable
heat. The cap *b* may be surmounted by a hori-
zontal plate or deflector, *i*, which extends cir-
cumferentially considerably above the periph-
ery of the cap. The effect of this part is to
reflect heat from the burning gas down upon
the surface of the topmost disk and through
its perforations within the chamber *eg* and *g*
h. As a matter of construction, I prefer to
make the disk of considerable thickness of
metal, since the heat is thereby caused to
spread evenly throughout these parts by con-
duction.

In Fig. 3 the outer cup, *e*, is formed without
perforations, an annular passage, *m*, between
the base of the cup *e* and the pipe *a* permit-
ting the passage of air to the air-chamber *eh*.
The disk *g* may also be omitted, and also the
deflector *i*.

The operation of my improvement when
thus constructed will be readily understood.
The combustion of gas as it issues from the
lateral jets *c* creates a vacuum above the disk
h and induces the air for combining with the
gas through the burner-chamber *eh* and
through the perforations of the several disks
composing the same or the passage *m*. The
disks are, however, heated by the burning gas-

flame issuing from the lateral jets, and by contact and radiation give up their heat to the passing air, which in turn becomes so hot as to perceptibly increase the illumination of the gas in a very short time from the first ignition of the same.

The advantages of my improved burner are very great. The flame produced is of larger area and possesses much greater illuminating properties than that produced by an ordinary burner. This is caused by the lateral jets causing the gas to pass horizontally into the ascending currents of heated air which arise from the air-chamber, and where the burner, as herein described, is used in connection with natural gas a brilliant white flame is produced, which is due to the combination of the air-chamber and the lateral gas-jets, for upon the removal of the air-chamber the flame becomes yellow and loses its brilliancy, and should vertical gas-jets be employed the flame would practically be non-illuminating.

I do not desire to claim, broadly, in a gas-burner a heating-chamber having perforated disks or sides.

I am aware of English Letters Patent No. 2,755 of 1882, and German Letters Patent No. 15,467 of 1881, and do not desire to claim the devices therein shown.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a gas-burner, the combination of the burner *b*, having lateral jet-openings *c*, and an air-chamber having a perforated top situate below the jet-openings of the burner, so that the air-chamber shall be adjacent to the burner and arranged to heat the air, substantially as and for the purposes described.

2. In a gas-burner, the combination of the burner *b*, having a central deflector, *i*, and jet-openings *c*, situate below the deflector, and cup-shaped perforated disks *e* and *h*, arranged below the jet-openings of the burner and the deflector, so as to form an air-chamber adjacent to the burner and arranged to heat the air, substantially as and for the purposes described.

3. In a gas-burner, the combination of the burner *b*, having a central deflector, *i*, and jet-openings *c*, situate below the deflector, separated perforated disks *e* and *h*, and interposed disk *g*, arranged below the jet-openings of the burner and the deflector, so as to form an air-chamber adjacent to the burner and arranged to heat the air, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 2d day of March, A. D. 1887.

CORNELIUS B. TODD.

Witnesses:

W. B. CORWIN,
JAMES K. BAKEWELL.