

(No Model.)

3 Sheets—Sheet 1.

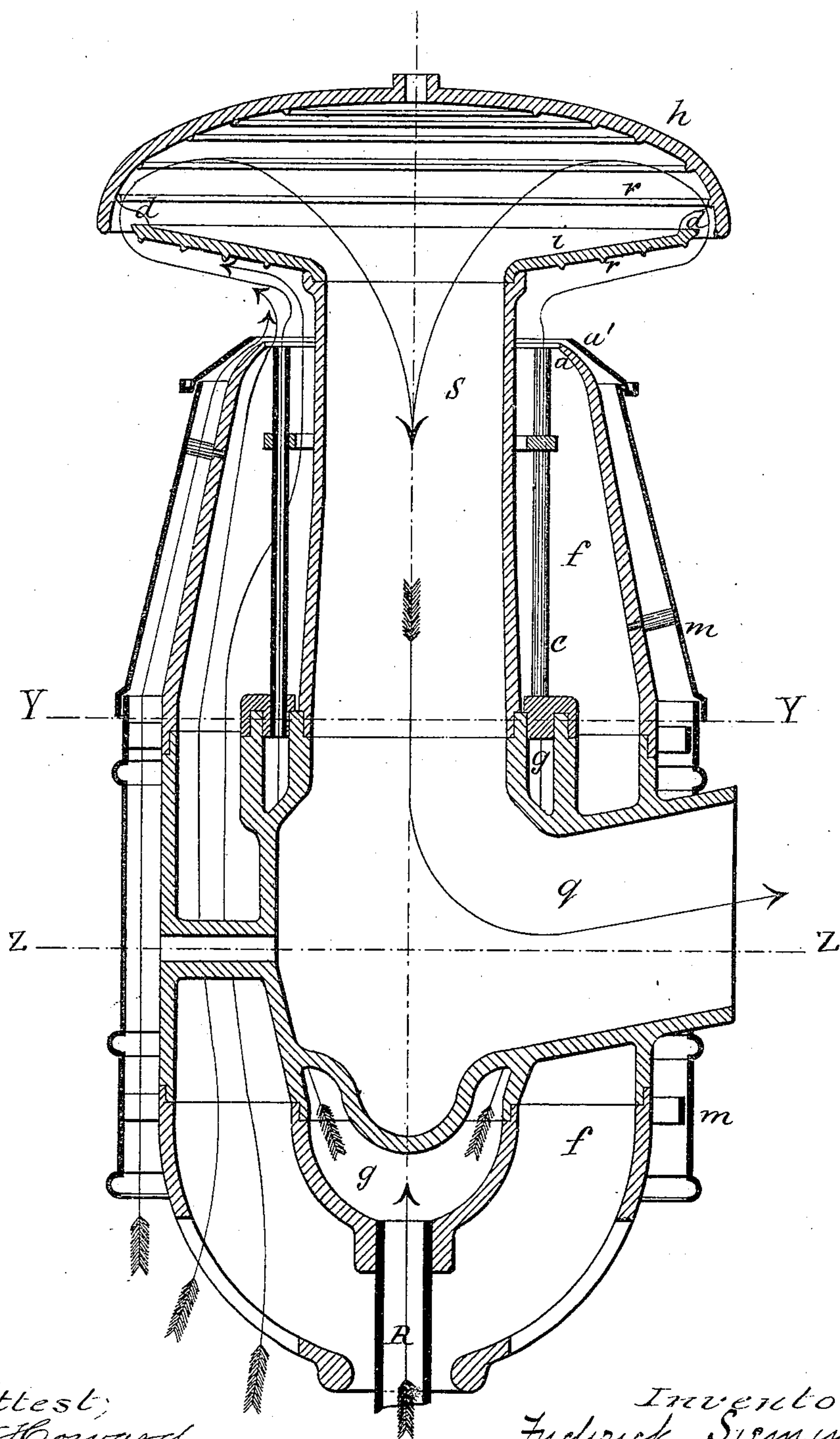
F. SIEMENS.

LAMP.

No. 270,345.

Patented Jan. 9, 1883.

Fig: 1.



Attest;
H. W. Howard.
E. H. Downs.

Inventor;
Friedrich Siemens, by
C. S. Whitman
attorney

(No Model.)

3 Sheets—Sheet 2.

F. SIEMENS.

LAMP.

No. 270,345.

Patented Jan. 9, 1883.

Fig: 2.

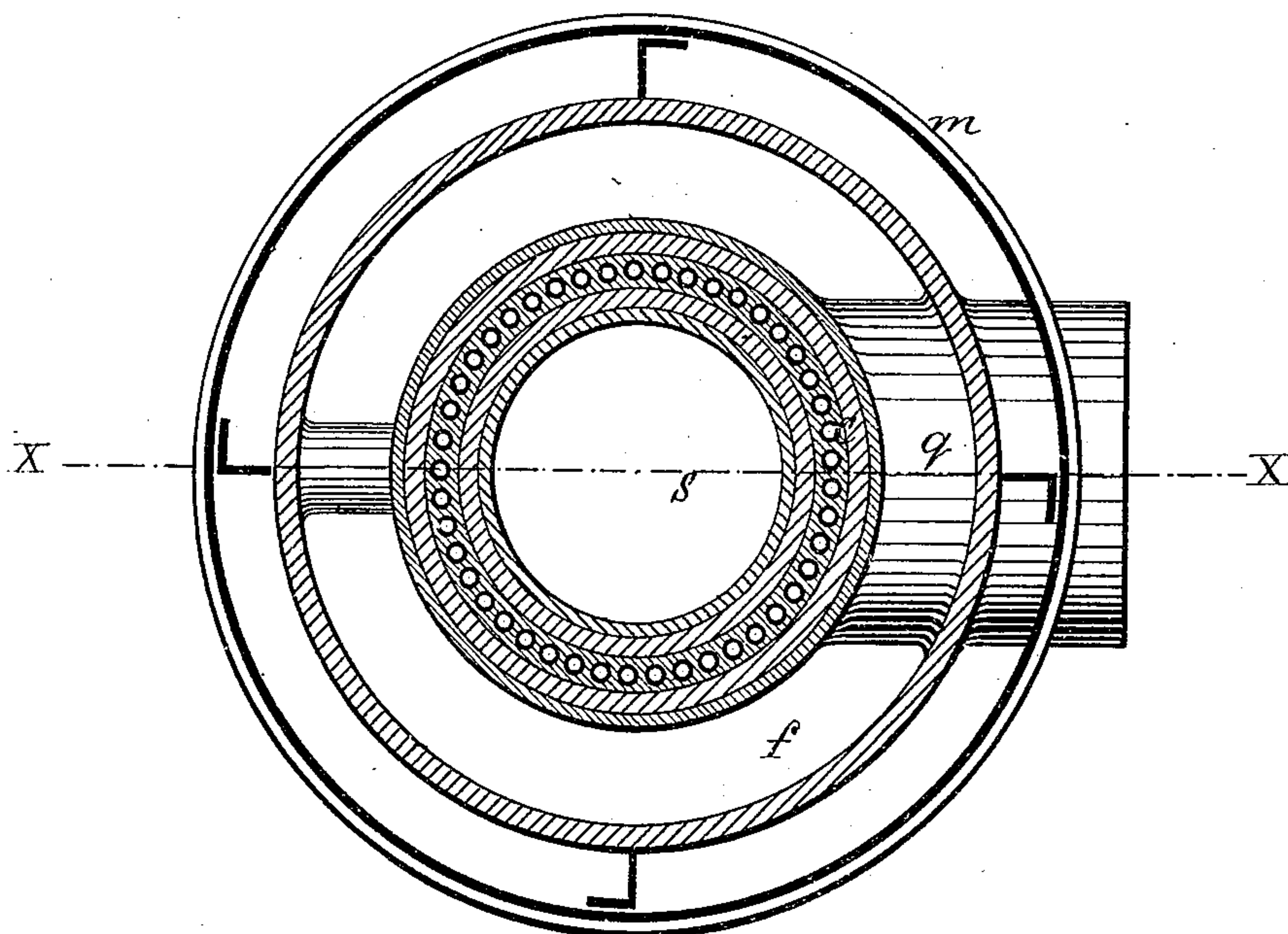
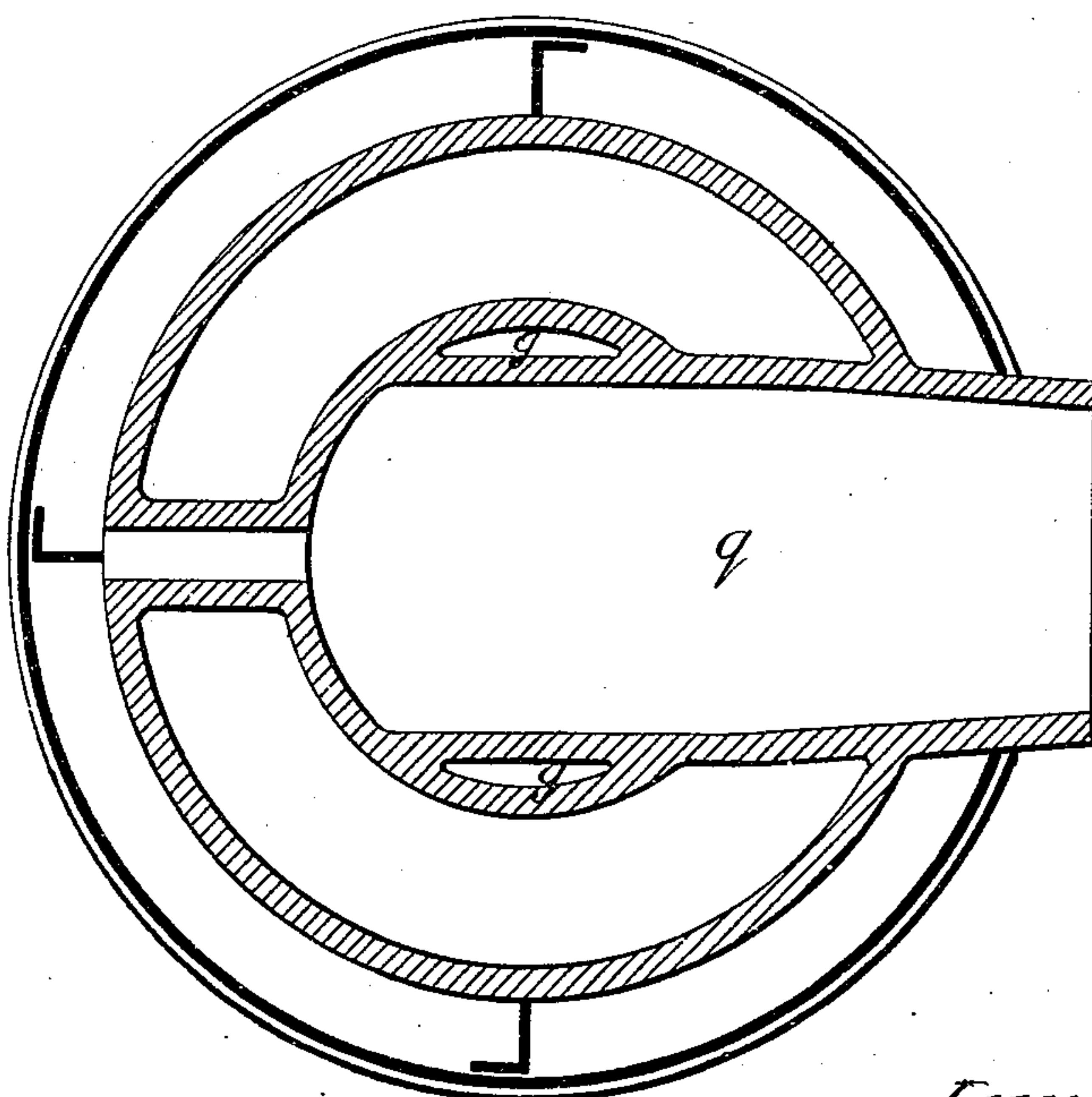


Fig: 3.



Attest;
J. M. Howard
& H. Downs

Inventor;
Friedrich Siemens
C. S. Whitman
attorney

(No Model.)

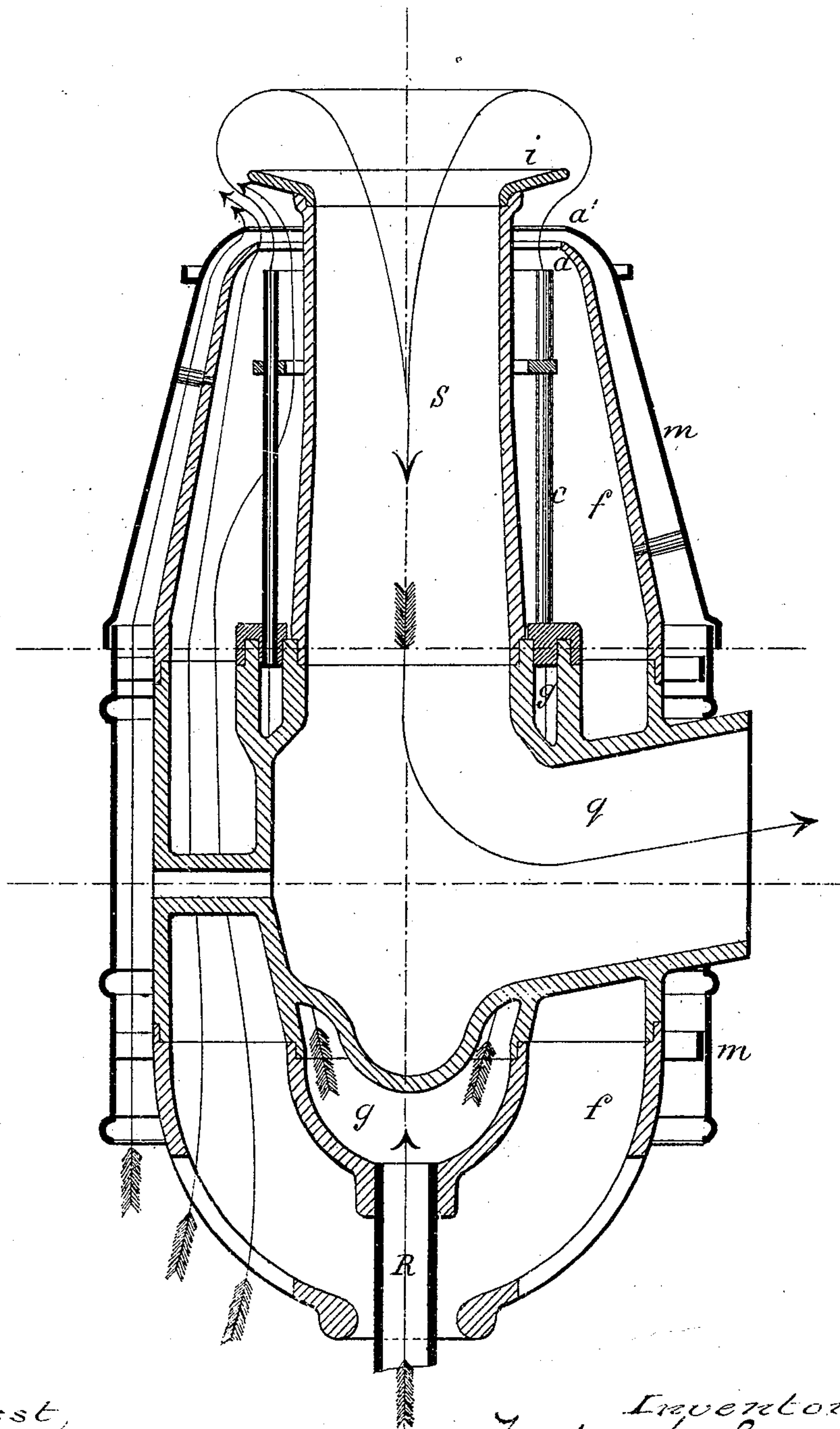
3 Sheets—Sheet 3.

F. SIEMENS.
LAMP.

No. 270,345.

Patented Jan. 9, 1883.

Fig: 4.



*Attest,
F. W. Howard
C. H. Downs*

*Inventor;
Friedrich Siemens by
C. S. Whimian
attorney*

UNITED STATES PATENT OFFICE.

FREDERICK SIEMENS, OF DRESDEN, GERMANY.

LAMP.

SPECIFICATION forming part of Letters Patent No. 270,345, dated January 9, 1883.

Application filed October 16, 1882. (No model.) Patented in England September 8, 1882, No. 4,278.

To all whom it may concern:

Be it known that I, FREDERICK SIEMENS, a citizen of Saxony, residing at Dresden, in the Empire of Germany, have invented a new and useful Improvement in Lamps, (for which I have obtained provisional protection in Great Britain, dated September 8, 1882, No. 4,278,) of which the following is a specification.

My invention relates to the construction of regenerative gas-lamps for which Letters Patent of the United States were granted to me on the 3d of May, 1881, No. 241,077.

In place of the notched air-deflectors and the cylinder of porcelain fitted on the central flue of the burner, described in the specification to the said patent, I employ, according to my present invention, guiding-surfaces for the flame, whereby this is spread out to a comparatively considerable width, while it is of less height than formerly, assuming in appearance the form of a cascade, in consequence of which I term the burner the "Cascade Burner."

The construction of the burner is shown at Figures 1 to 3 of the accompanying drawings, of which Fig. 1 shows a vertical section on line X X, Fig. 2; and Figs. 2 and 3 show respectively sections on lines Y Y and Z Z, Fig. 1.

The gas is introduced through the pipe R into the chamber *g*, terminating at top in an annular space, on which are fixed the small tubes *c*, forming the annular gas-burner, the gas issuing from which enters into combustion with the heated air passing up through the air chamber or regenerator *f*. Instead of employing the small tubes, I sometimes extend the annular space *g* to the same height as the tubes, the gas issuing through small holes in the same, which arrangement is more particularly applicable with heavy oil-gas. The air for combustion enters, as indicated by the arrows, at the bottom of the annular chamber or regenerator *f*, and, passing up through the latter, issues at top in contact with the gas issuing from the tubes *c*, and enters into combustion therewith, the flame being made to curve inward somewhat by the current of air directed against it by the inward-sloping edge *a* of the chamber *f*. On the top of the central flue, *s*, is placed the annular disk *i*, of metal or porcelain, projecting some distance beyond the tops of the burner-tubes, so that as the flame rises against the

under surface of this disk it is deflected and spread out thereby until it arrives to the outer edge of the disk, at which point the downward draft of the central flue, *s*, causes the combustion-gases to be drawn inward over the upper surface of the disk and down through the flue *s*, whence they escape to the chimney through the passage *q*. In order to insure that the whole of the products of combustion shall be drawn over the edge of the disk on the central flue, *s*, a cap, *h*, is provided over the disk, leaving a narrow annular opening between the two for the gases to enter. The cap rests, with four notched projections, *d*, on the edge of the disk, so as to be held securely in a concentric position thereon. The large under surface of *i* also acts as a reflector, directing the light downward, for which purpose it is by preference made of porcelain or other refractory reflecting material. The cap *h* must also be made of refractory material—that is, a bad conductor of heat—in order that the heat of the flame may be conducted as completely as possible into the flue for heating the regenerator. The surface of *i*, as also that of the cap *h*, with which the flame comes in contact, is by preference provided with circular ribs *r*, in order to prevent as much as possible the actual contact of the flame with the surfaces. The air chamber or regenerator *f*, as also the central flue, *s*, is in this case not provided with a filling for taking up heat from the products of combustion and imparting the same to the air, as it is found that the extent of surface offered by the sides of the chambers and by the burner-tubes is sufficient to effect the requisite interchange of heat. On the other hand, I provide outside the air-chamber *f* a second annular air-chamber, *m*, open at bottom for the entrance of air, and having a curved lip, *a'*, at top, by which the current of air passing up through the chamber, after taking up heat from the surface of the chamber *f*, is also made to impinge against the outer surface of the flame. This additional upward draft of air renders the flame so steady that the chimney-glass surrounding the same, as described in my former patent, may be dispensed with. I still employ such glasses, however, in some cases as protection against drafts, and for purposes of ornamentation. In addition to the above the outer air-chamber, *m*,

has the further advantage of keeping the external surfaces of the burner tolerably cool, in consequence of which they are more readily decorated, and as they radiate less heat there is no necessity of surrounding them by bad conductors of heat.

Fig. 4 shows a modified form of the burner, in which the disk *i* is made of somewhat smaller diameter, in consequence of which the cap *h* of the former arrangement may be dispensed with, as the draft of the central flue is sufficient to draw the flame inward over the edge of the disk, causing it to describe a curve, as indicated by the arrows. The other parts of the burner are precisely the same as previously described. In this case, also, although the glass chimney is dispensed with, it may still be employed in certain cases, as above stated. Also, the porcelain cylindrical extension of the flue *s*, described in my former patent, may in some cases be employed in addition to the disk *i*.

Having thus described the nature of my invention and in what manner the same is to be performed, I claim—

1. In a gas-burner having means for deflecting the products of combustion into contact with the gas-conduits, the deflecting-surfaces *a* and *i* for the flame, whereby this is first drawn inward somewhat, and is then considerably expanded outward, so as to effect an economical combustion of the gas and produce greater steadiness for the flame.

2. In combination with the directing-surface *i* for the flame, the cap *h* for collecting and guiding the products of combustion into the central flue.

3. In combination with the guiding-surface *i* and cap *h*, the annular ribs *r*, for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 29th day of September, A. D. 1882.

FREDERICK SIEMENS.

Witnesses:

RICHARD SCHNEIDER,
A. MAKELS.