

*H. K. Needham,
Lamp-Burner:*

Nº 75,959.

Patented Mar: 24. 1868.

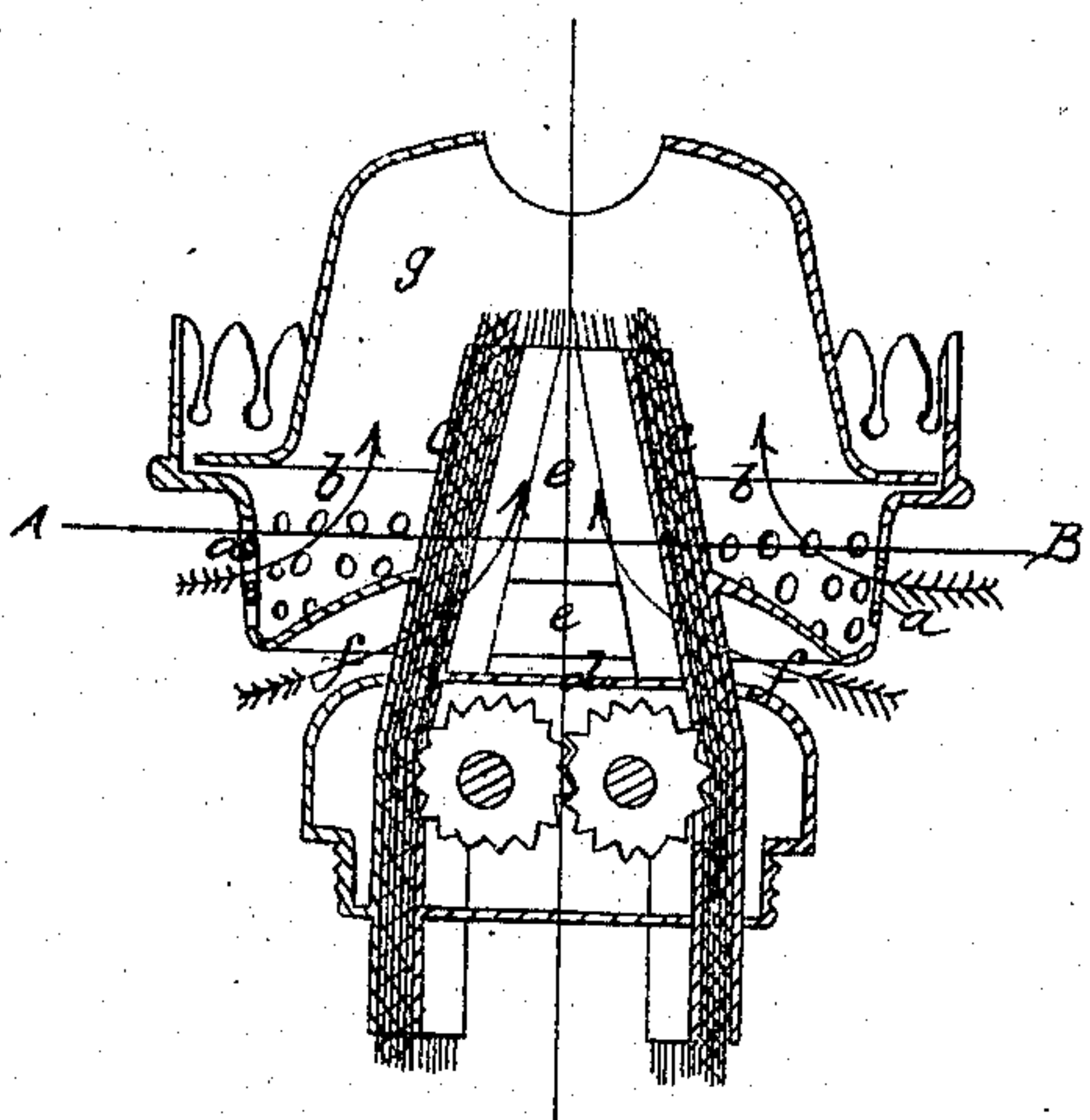


Fig. 1.

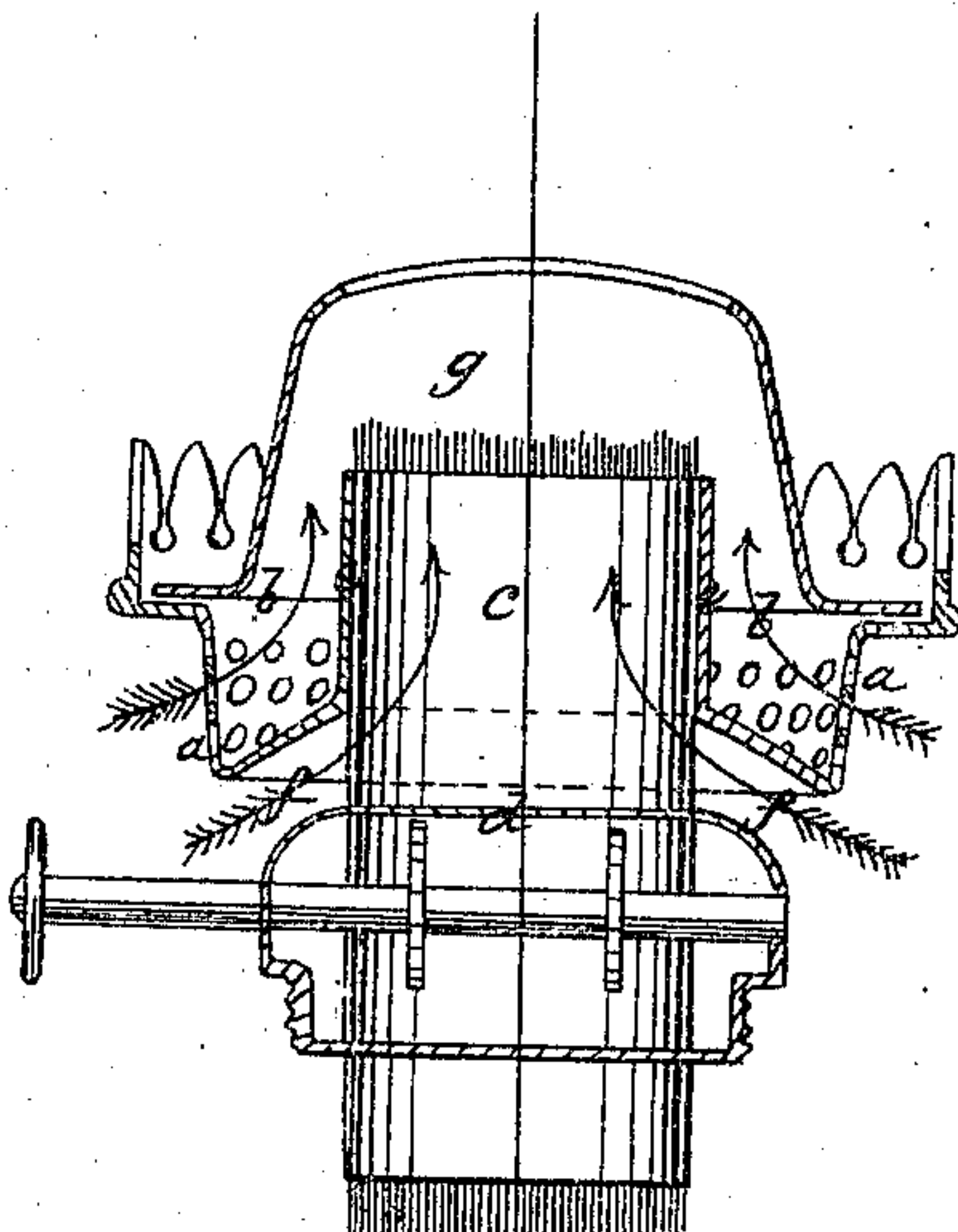


Fig. 2.

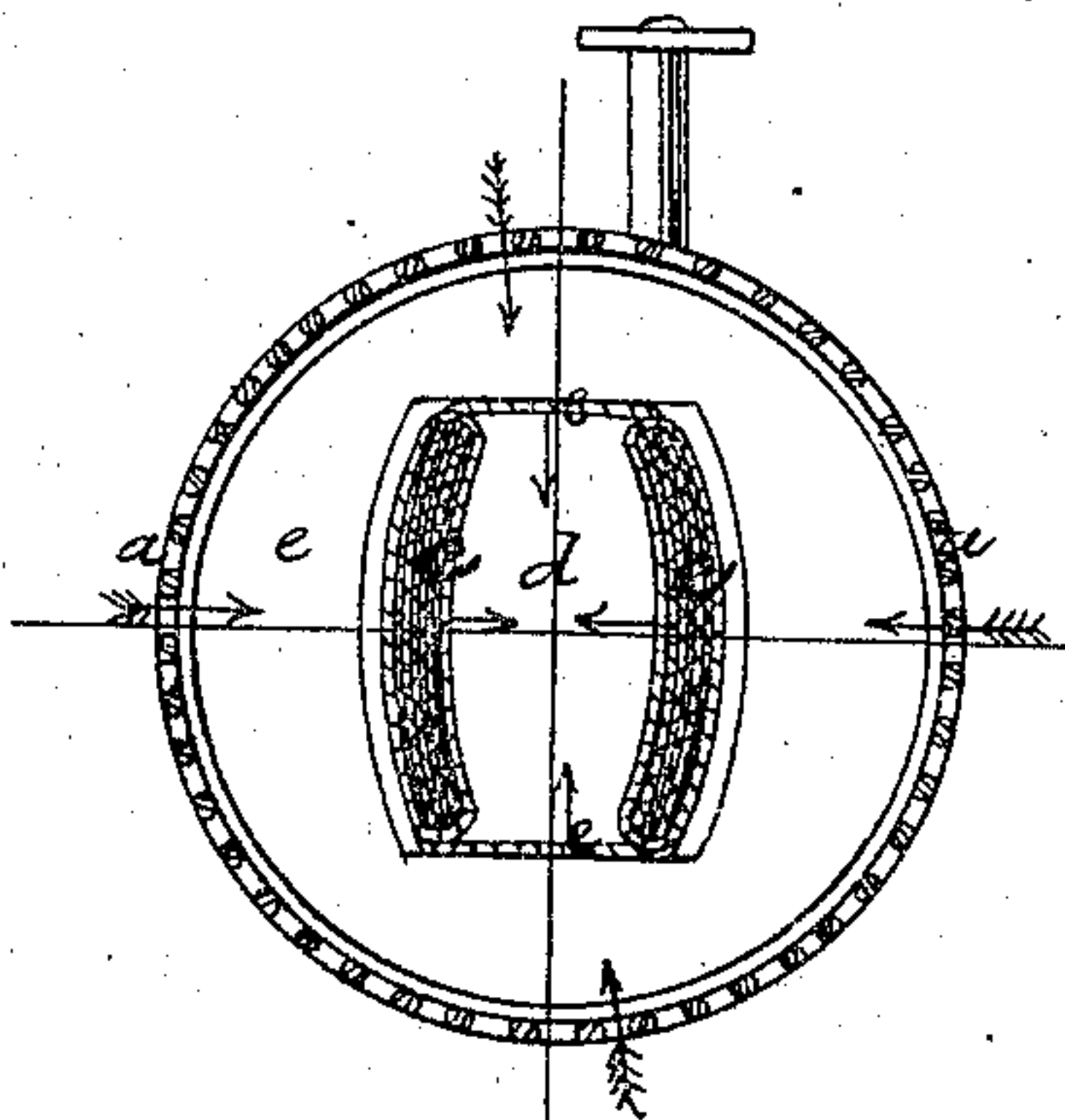


Fig. 3.

Witnesses

*Andrew B. Howland,
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Inventor

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United States Patent Office.

HIRAM K. NEEDHAM, OF TITUSVILLE, PENNSYLVANIA, ASSIGNOR TO
HIMSELF AND RICHARD E. HEARN, OF SAME PLACE.

Letters Patent No. 75,959, dated March 24, 1868.

IMPROVEMENT IN LAMP-BURNERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HIRAM K. NEEDHAM, of the city of Titusville, county of Crawford, and State of Pennsylvania, have invented certain new and useful Improvements in Lamps for burning crude petroleum, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification, and to the letters of reference marked thereon.

The object of my invention is to so construct a flat or curved-wick lamp-burner that crude petroleum and other volatile hydrocarbons can be burned therein with perfect safety and complete combustion; and at the same time the cost of the burner shall be such as to bring it within the reach of all. To accomplish this, I make use of two flat or curved wicks and wick-tubes, and in order that the crude particles of the oil shall be drawn up to the flame and entirely consumed, without smoke or unpleasant odor, it is necessary to supply exceedingly strong and steady currents of air to both the outer and inner surface of the flame. Due precautions must also be used that the parts of the lamp liable to contact with the oil shall not become sufficiently heated to cause an undue generation of gas within the lamp, and consequent risk of explosion. The accompanying drawings illustrate the details of my invention—

Figures 1 and 2 being vertical cross-sections of my burner, and

Figure 3 a horizontal section on line A B.

It will be seen that the external form of the burner is quite similar to the ordinary kerosene-burner, and it is intended to be substituted for that in common lamps.

a represents the body or casing of the burner, a portion of which is perforated, to admit air to the outer surface of the flame through the air-passage *b*. I use two flat wicks, placed within the wick-tubes *c c*, which tubes I make curved in their horizontal section, substantially as shown. These wick-tubes are secured to the lower portion, *d*, of the burner, which is screwed into the collar of the lamp in the usual manner. I construct a diaphragm, *e*, between the casing *a* and lower part *d*, which diaphragm extends entirely across the burner, with the exception of the space between the wick-tubes. A portion of the diaphragm *e* also extends upwards to the top of the wick-tubes, and connects their edges solidly together, as shown. An air-passage, *f*, is left under the diaphragm, communicating with the external air. This passage may be open at the sides, as shown, or provided with a perforated casing. The wick-tubes are brought nearly together at their tops, and united at their edges, as shown, for the purpose of contracting and quickening the current of air passing upwards between them.

The effect produced is as follows: The flames from the two wicks unite at their edges, and, by means of the diaphragm *e*, two distinct and separate air-passages, *b* and *f*, are formed, the former supplying air to the outer and the latter to the inner surfaces of the flame. A cone, *g*, is provided, modified to suit the peculiar form of flame.

By the above-described arrangement, I obtain a perfect combustion of crude petroleum, at a slight cost as compared with refined oils, while a much more intense light is produced. The lower portion of the burner cannot become heated, being protected by the constant current of cool air passing through the space *f*. The wicks may be raised simultaneously by means of the two sets of toothed wheels geared together, so that both may be operated from one projecting shaft, as shown. In the drawings, the direction of the air supplying the outer and inner surfaces of the flame is indicated by red arrows.

I do not claim broadly the use of two flat or curved wick-tubes, nor the supplying of air to the interior of the flame, except under the mode of construction set forth; but

What I claim as my specific invention, and desire to secure by Letters Patent, is—

The described arrangement and combination of the wick-tubes *c c*, base-plate *d*, and diaphragm *e*, the latter extending upwards, and connecting the edges of the wick-tubes, so as to form separate and distinct internal and external air-passages *f* and *b*, as shown, and the whole so constructed that it may be applied to an ordinary lamp-collar, substantially as and for the purposes set forth.

Dated at Titusville, Pennsylvania, this 29th day of July, A. D. 1867.

Witnesses:

ANDREW B. HOWLAND,
M. W. POND, Jr.

H. K. NEEDHAM.