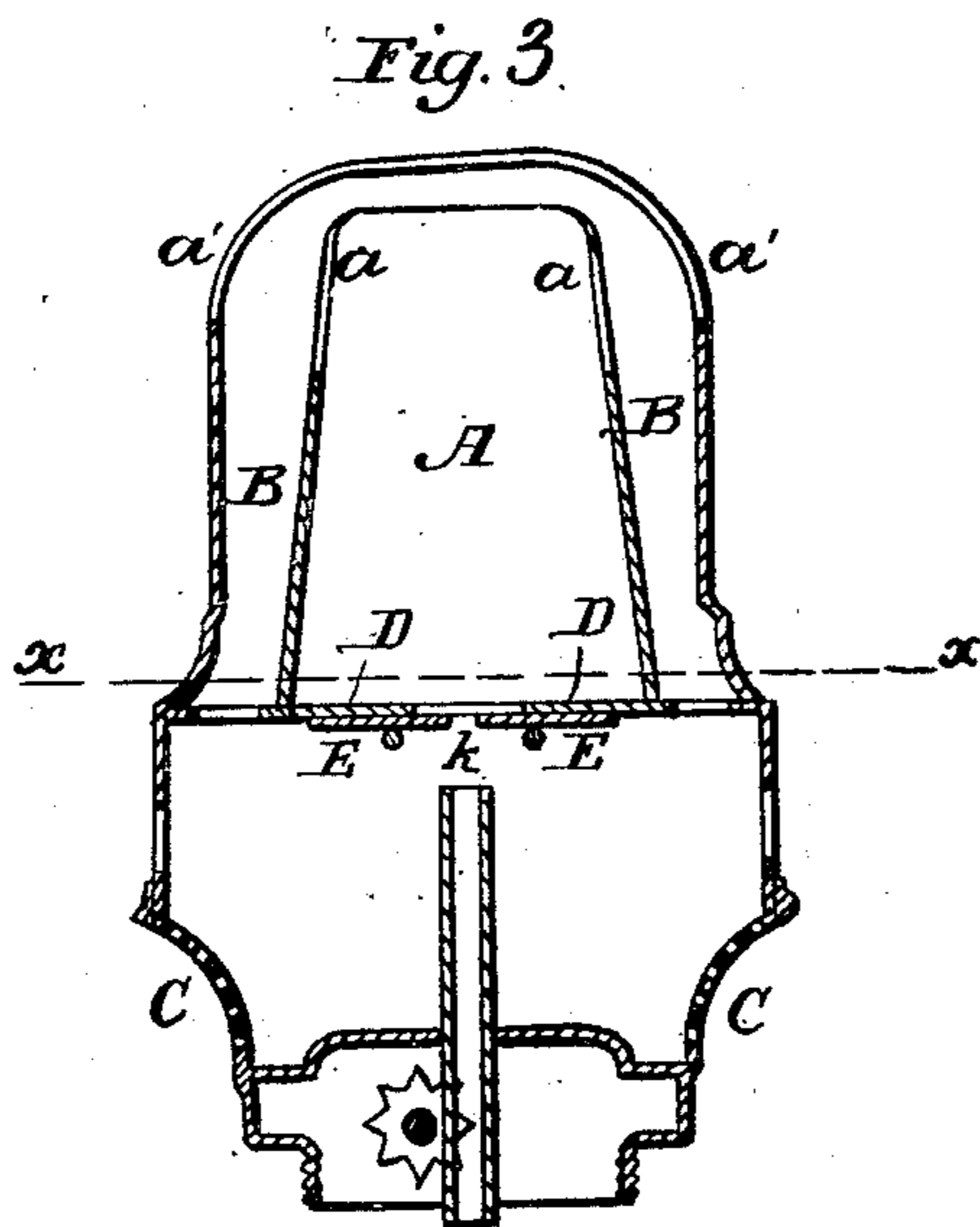
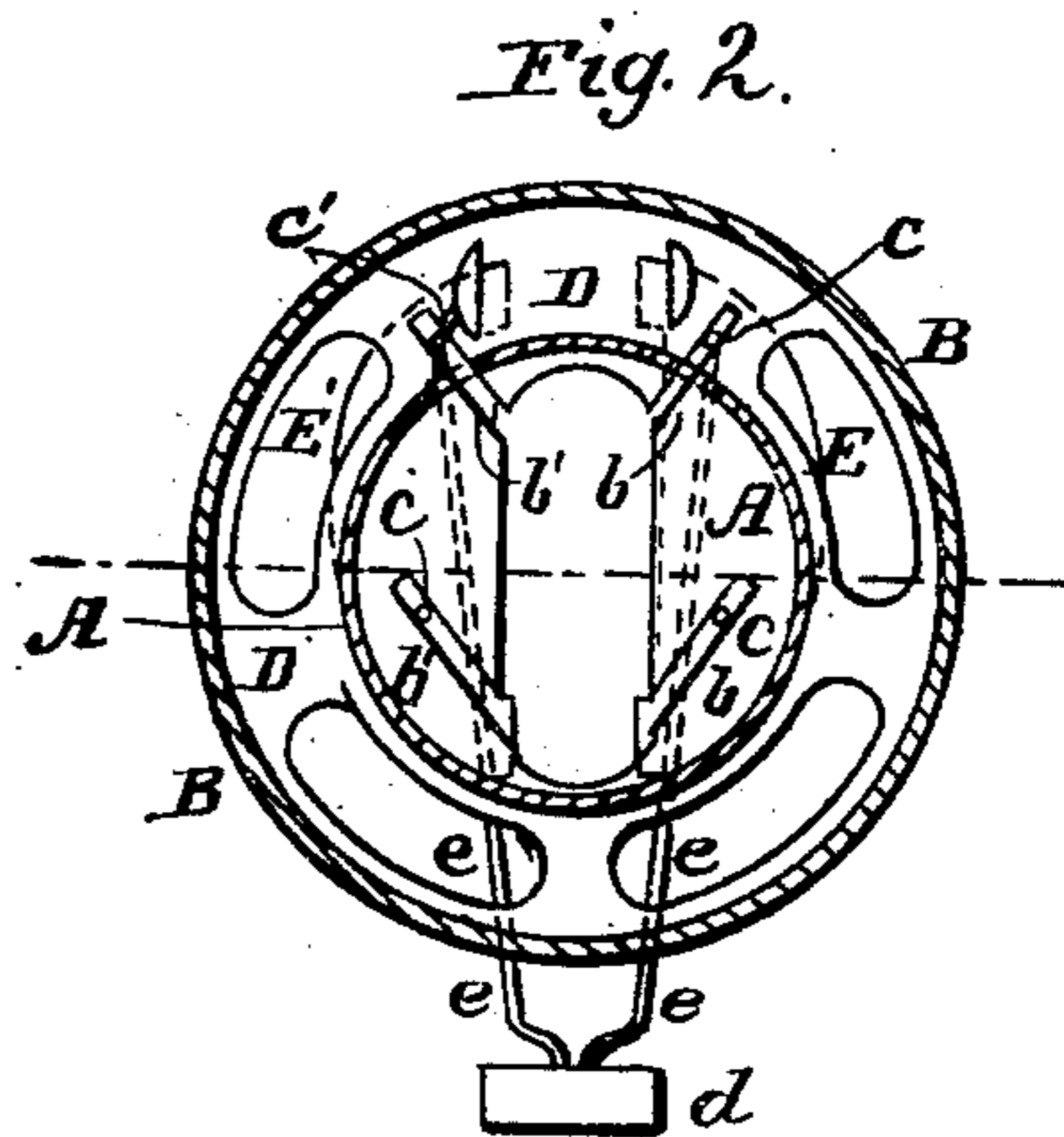
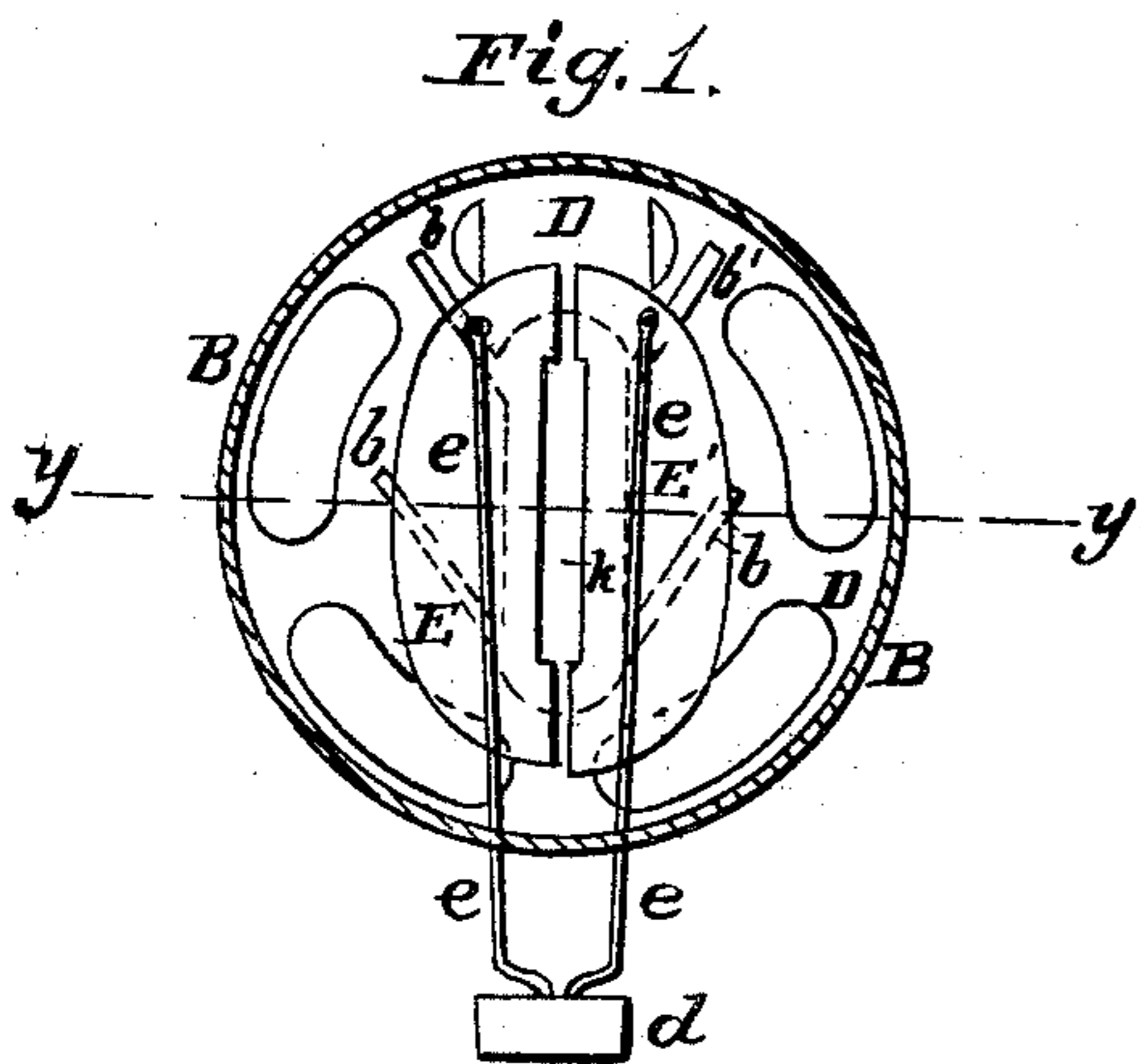


W. W. BATCHELDER.

Vapor Burner.

No. 57,276.

Patented Aug. 21, 1866.



Witnesses:
M. Bailey
Jos. L. Coomes

Inventor:
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by J. P. Pollock his atty

UNITED STATES PATENT OFFICE.

W. W. BATCHELDER, OF NEW YORK, N. Y.

IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. 57,276, dated August 21, 1866.

To all whom it may concern:

Be it known that I, W. W. BATCHELDER, of New York, in the county and State of New York, have invented certain new and useful Improvements in Coal-Oil Burners; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to accompanying drawings, in which—

Figure 1 represents a plan view from beneath of that part of a coal-oil burner to which my improvements are applied. Fig. 2 is a horizontal section on the line *x x*, Fig. 3; and Fig. 3 is a vertical section on the line *y y*, Fig. 1.

My invention relates to coal-oil burners in which the oil is vaporized and mixed with atmospheric air so as to form a gas, which is ignited at the point where it issues from the top of the burner, and burns with a clear flame without the aid of a chimney.

The object of my invention is to so arrange the parts of such a burner that, no matter how little light is desired, or to what extent the flame is diminished, there shall be no smoke nor disagreeable odor generated, but the gas formed shall still continue to burn with a clear and steady flame.

My invention consists in interposing between the wick tube or holder and the vaporizing-chamber of a coal-oil burner, as above described, a movable and adjustable diaphragm so arranged that the slot or opening in it through which the products of combustion enter the vaporizing-chamber may be made larger or smaller, according as the wick is raised or lowered, or, in other words, according to the degree of light required. The slot or opening in the diaphragm should be in the same vertical plane with the opening in the wick-holder from which the wick projects; and, in order to secure a more steady flame, I arrange both of these openings so that they shall be at right angles, or nearly so, to the slot in the top of the vaporizing-chamber through which the gas escapes.

To enable others skilled in the art to understand and use my invention, I will now proceed to describe it by reference to the accompanying drawings.

The vaporizing-chamber *A* is tubular in form, being compressed and brought together at the

top, so as to form a slot, *a*, from which the vapor passes. It is surrounded by a dome, *B*, in which a corresponding opening, *a'*, is formed, as is seen in any ordinary burner of this kind. The dome has its seat in a flange formed for its reception in the lamp cap or top *C*. At the lower end of the generating-chamber *A* is a stationary plate or diaphragm, *D*, which is secured to the sides of the dome *B*. This plate has an opening in the center at right angles, or nearly so, to the slot *a* in the top of the vaporizing-chamber *A*, through which the products of combustion, when the wick is ignited, pass into the chamber *A*. It also has openings around its sides, through which the air ascends into the dome *B*. To the under side of this plate are secured the segmental plates *E E'*, which form the movable or adjustable diaphragm. They are secured one on each side of the opening in the stationary diaphragm *D*, their straight edges being opposite each other. In this latter plate or diaphragm, and on both sides of the opening referred to, are cut the diverging slots *b b' b' b'*. These slots commence at the central opening, and thence extend a suitable distance in a diagonal direction, as shown in Figs 1 and 2, the two slots on the same side of the opening being parallel to each other. To the upper side of the movable plates *E E'* are fastened pins or studs *c c' c' c'*, which fit in the slots just described.

The plates are actuated, as shown in the drawings, by means of wires or small rods *e*, which are pivoted or secured to the under side of each plate, and, thence extending out through the sides of the dome *B*, are brought together and held by a knob or button, *d*, of wood or other suitable non-conductor of heat.

The effect of this arrangement is as follows: If the wires be pulled by means of the knob *d*, the plates *E E'*, which constitute the movable part of the diaphragm, will, by means of the pins or studs *c c'* sliding in the slots *b b'*, be drawn together, as shown in Fig. 1, until their opposite and parallel edges are in contact. When in this position the products of combustion must pass through the small slot or opening *k*, which is formed by cutting out a small recess in each edge. If the knob *d* be now pushed in toward the dome *B*, the studs *c c'*

will be forced back in the slots $b b'$, thus separating the segmental plates $E E'$ and causing the gradual enlargement of the opening in the diaphragm until the plates are moved back so as to expose the whole opening, as shown in Fig. 2.

As shown in Fig. 3, the diaphragm is arranged so that the opening in it shall be at right angles to the opening in the top of the vapor-chamber A .

In order to use the burner, the wick in the wick-holder F is first lighted, and then the dome B is set in place, care being taken to have the diaphragm open to its full extent. A light is then applied to the opening in the top of the burner, and in a moment or two the gas which has been generated by the mixture of the vapor with the atmospheric air escapes from the top of the burner and becomes ignited.

Now, in order to prevent the escape of the smoke and disagreeable odor which are usually noticeable in ordinary lamps of this kind, the movable diaphragm is adjusted by means of the knob d and wires e until the opening in its center is just sufficient to allow the products of combustion to pass into the chamber A , without being large enough to allow the smoke, &c., to be generated.

If the wick be lowered, the opening in the diaphragm should also be made smaller, and if the wick be raised the opening should be proportionately enlarged. By this means it will be found that, whether the flame be large or small, it can always be made to burn clearly, steadily, and without smoke.

I do not limit myself to the precise arrangement of parts herein shown and described, for the opening in the adjustable diaphragm may be in a direction corresponding to that of the

opening in the top of the burner, instead of being at angles thereto, as above described, though I consider the latter arrangement more advantageous, for the reasons hereinbefore stated.

The movable diaphragm itself may also be actuated in many different ways from that herein shown without departing from the principle of my invention.

What I claim, therefore, and desire to secure by Letters Patent, is—

1. Regulating and steadying the flame of a coal-oil or other similar lamp in the manner and by the means herein specified—that is to say, by interposing between the vaporizing-chamber and wick tube or holder of a lamp-burner constructed as above described a movable and adjustable diaphragm, as and for the purposes hereinbefore shown and set forth.

2. The movable and adjustable diaphragm, as herein described, the same consisting of a perforated stationary plate, in combination with movable plates of segmental or other suitable shape, constructed and arranged for operation substantially as and for the purposes herein set forth.

3. In combination with the vapor-chamber and surrounding dome and the wick-tube of a coal-oil or other burner, as described, the movable and adjustable diaphragm, constructed as herein specified, the whole being arranged for operation substantially as set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

W. W. BATCHELDER.

Witnesses:

M. BAILEY,

HENRY MANDEVILLE.