

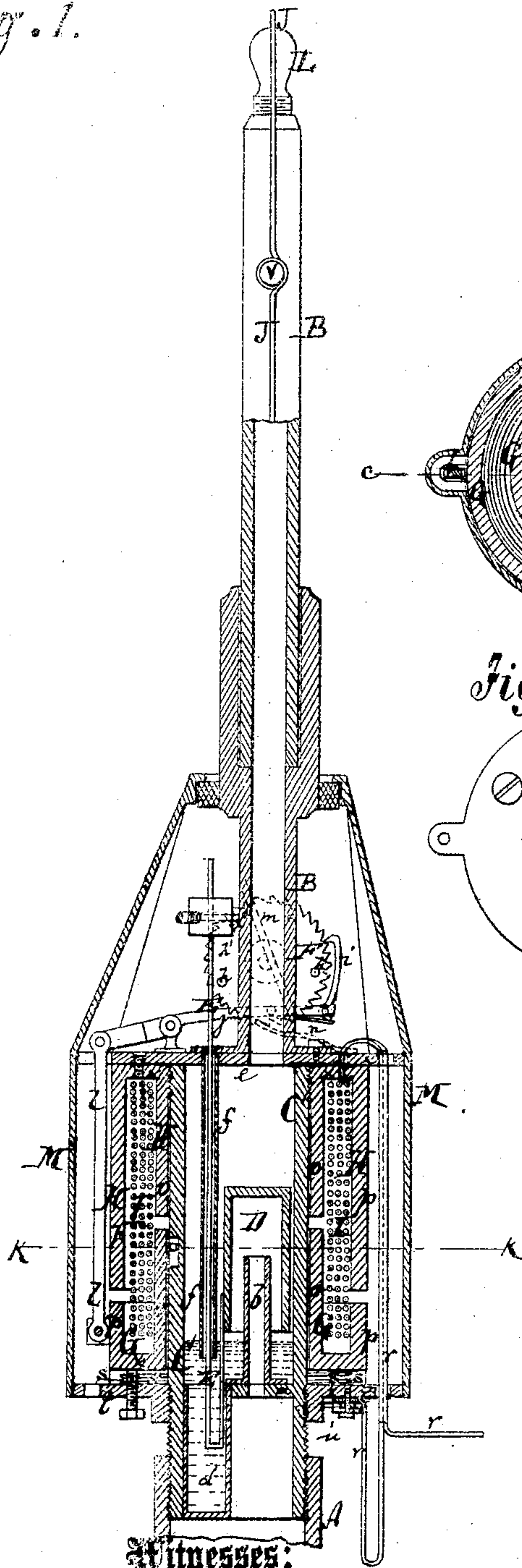
J. VANSANT.

Improvement in Apparatus for Lighting Gas by Electricity.

No. 120,469.

Patented Oct. 31, 1871.

Fig. 1.



Witnesses:

A. Bernerendorf
Alex. F. Roberts

Fig. 3.

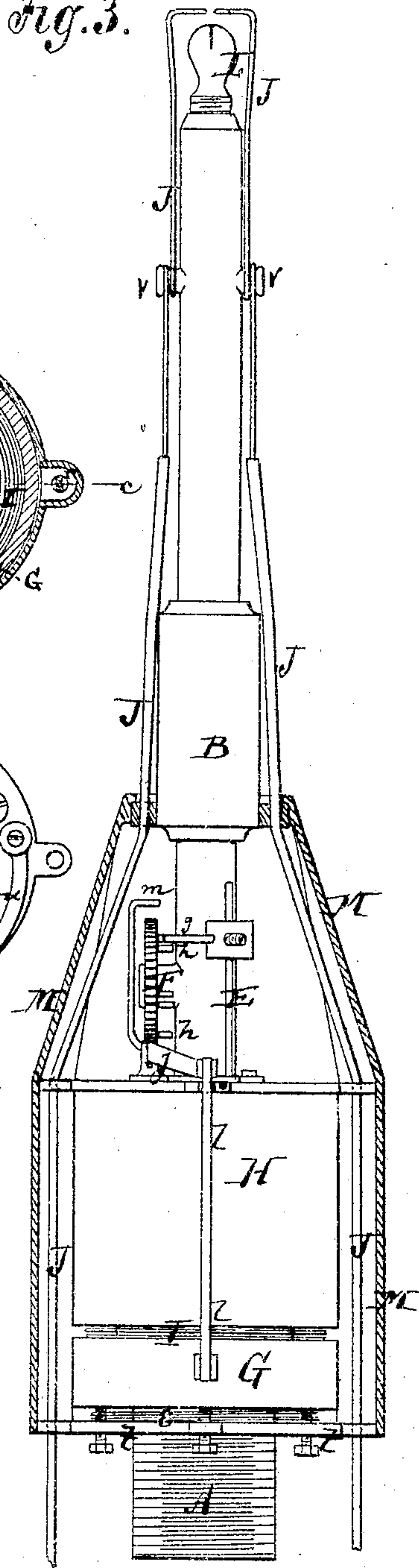


Fig. 2.

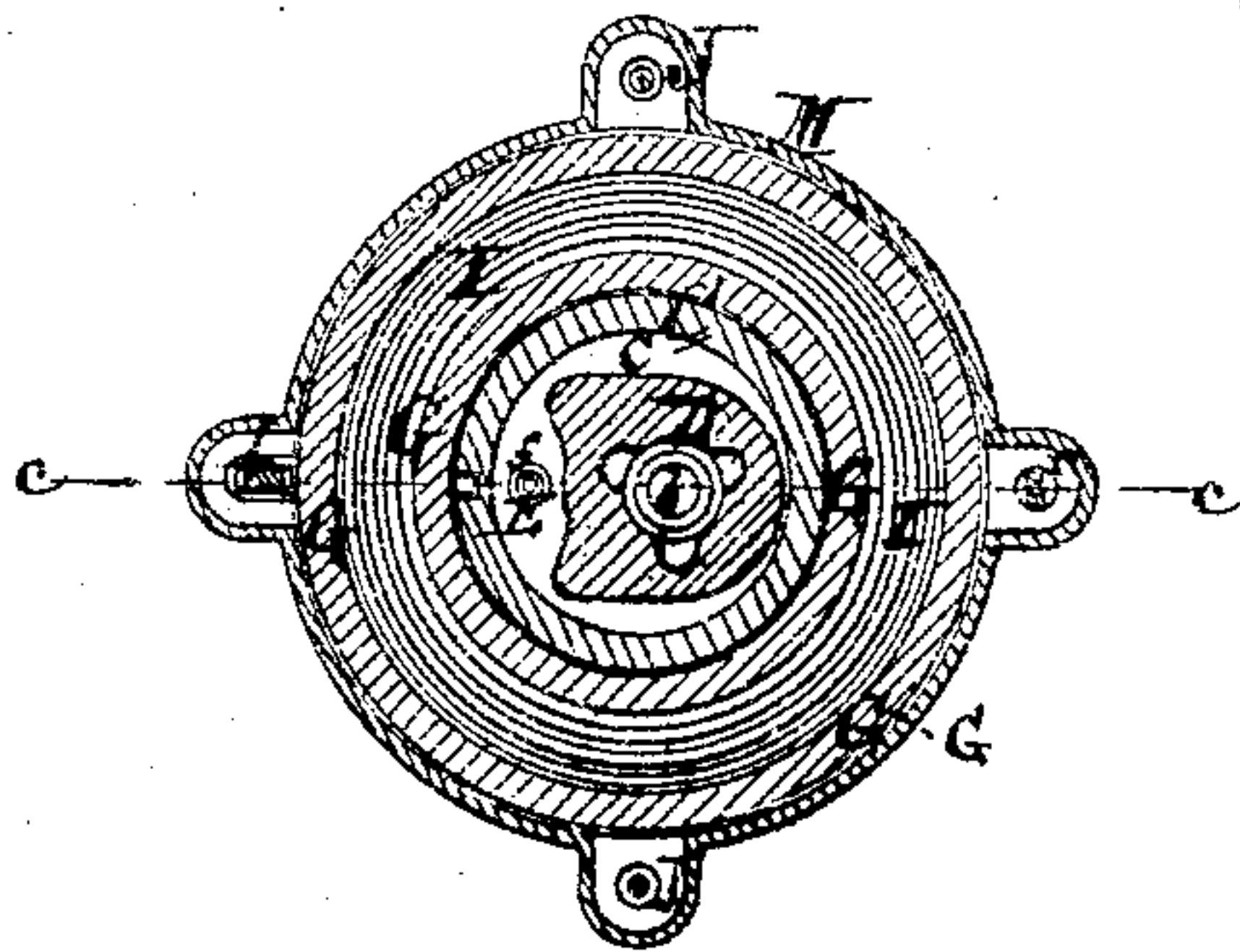
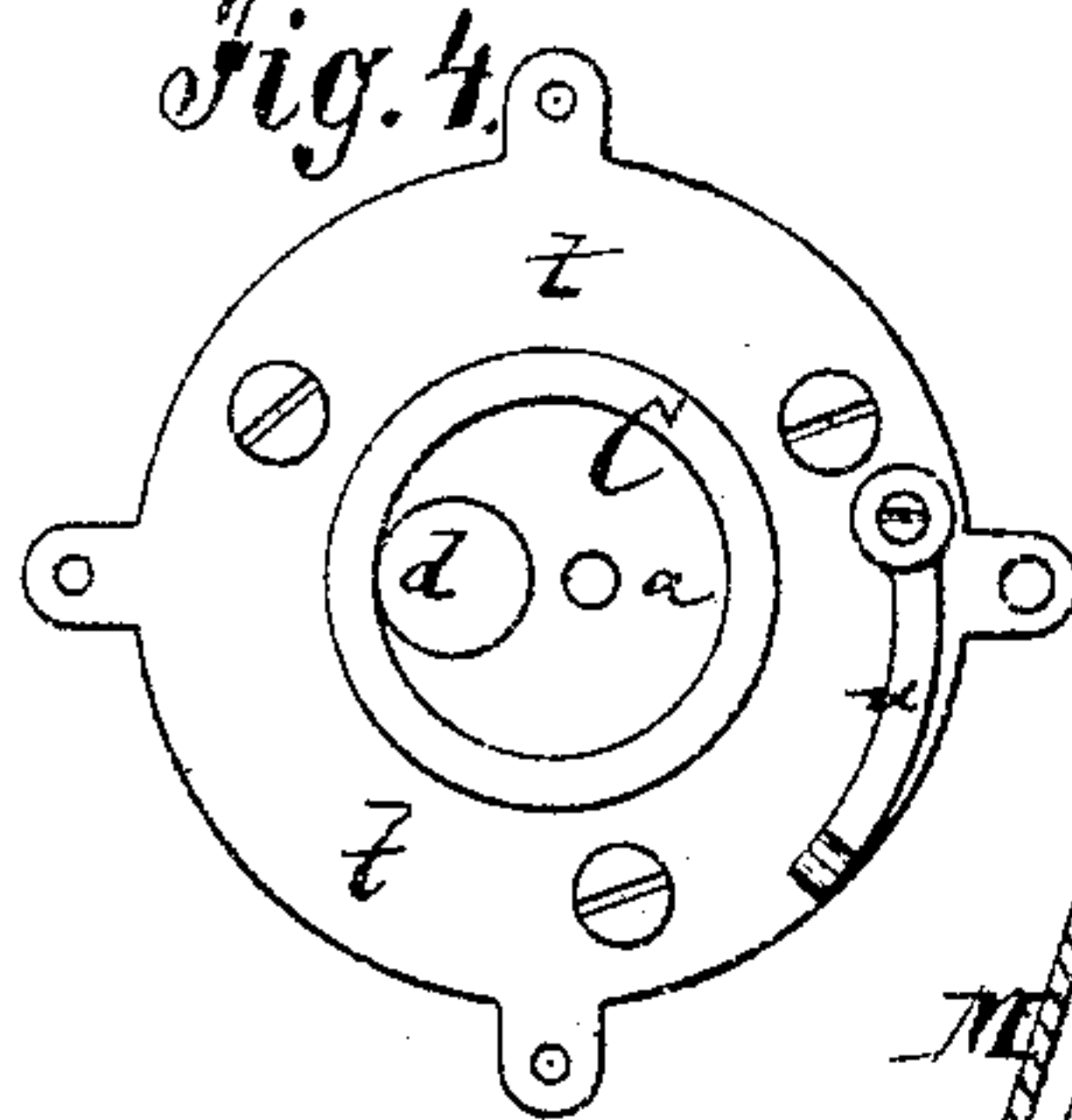


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN VANSANT, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN APPARATUS FOR LIGHTING GAS BY ELECTRICITY.

Specification forming part of Letters Patent No. 120,469, dated October 31, 1871.

To all whom it may concern:

Be it known that I, JOHN VANSANT, of San Francisco, in the county of San Francisco and State of California, have invented a new and useful Improvement in Electric Gas-Lighting-and-Extinguishing Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 represents a vertical central section of my improved gas-lighting-and-extinguishing apparatus, the line *cc*, Fig. 2, indicating the plane of section. Fig. 2 is a transverse section of the same on the line *kk*, Fig. 1. Fig. 3 is a side view of the same. Fig. 4 is a bottom view of the same.

Similar letters of reference indicate corresponding parts.

My invention consists in the means for lighting and extinguishing gas by electricity, as hereinafter fully described and subsequently pointed out in the claims.

A in the drawing represents the lower part of a gas-pipe, of which B is the upper portion, supporting the burner. Between the parts A B of the gas-pipe is interposed a cylindrical chamber, C. This chamber has a bottom, *a*, with an aperture in it for admitting the gas from below. A small tube, *b*, projects from the bottom *a* around the said aperture. It serves as a valve-seat and prevents the mercury or other liquid contained within the chamber C from running out. D is a cap or valve suspended over the open end of the tube *b* from a rod, E, which extends first downward into a well, *d*, and thence upward through the cover *e* of the chamber C. The well *d* is suspended below the bottom *a* of the chamber, and therefore filled with mercury. A pipe, *f*, suspended from the cover *e*, surrounds the rod E and dips into the mercury so as to prevent the escape of gas from the chamber around the rod. A pin, *g*, projecting from the upper part of the rod E above the cover F, is supported by pins *h* that project from a face of the ratchet or toothed wheel, F. This wheel receives intermittent rotary motion by means of a pawl, *i*, which is connected more or less directly with the movable magnet so as to operate the wheel F and thereby control the positions of the rod E and cap D substantially on the principle described in my

aforesaid Letters Patent. The cap D is so made that its cross-section is larger than that of the vacant space around and within it, so that the motion of the mercury will exceed that of the cap when the latter is dipped to shut off the gas. Thereby the pressure of the mercury and its efficiency for preventing the passage of gas from A to B is materially increased, and thereby the object of the mercury attained with a shorter movement of the cap. The pawl *i* is represented as being pivoted to a lever, *j*, which is, by a rod, L, connected with the movable magnet G. But the lever may, if desired, be dispensed with, and other suitable connection between *i* and G substituted. To the lever or its equivalent is also secured an arm, *m*, which acts as a chock on the wheel F, preventing the impetus given by the pawl from impelling it further than just one tooth at each motion. *n* is a detent against the wheel F, preventing it from turning in the wrong direction. The movable magnet G is arranged around the gas-pipe, and consists of an iron bottom, X, which has an inner projecting wall or ring, *o*, directly around said pipe, and an outer wall or ring, *p*. The latter is shorter than the ring *p*, so as to contain about the same amount of material. The fixed magnet H is like the movable one, and resembles an inverted iron trough fixed around the chamber above the magnet G. A helix, I, of insulated wire, is arranged within both magnets, as shown, and has its ends connected, by conductors *r r*, with a suitable battery. Whenever a current is passed through the helix the magnets will be charged to attract each other, the lower one being thereby raised against H. The requisite movement of the pawl is thus obtained.

This style of magnets although of particular value for my apparatus is also advantageous for other purposes. The central piece of iron *o* within the helix, connected by iron *x* with the peripheral piece of iron *p* that surrounds the helix I, constitutes, together with the said other parts *p* and I, a magnet which covers in three sides of the helix and whose extremities are opposite poles, of which each is a continuous pole. The same may be of circular, prismatic, oval, or other suitable form.

A weak spring, *s*, sustains and counterbalances to a requisite extent the magnet G. It rests upon a plate, *t*, which is screwed or otherwise secured

to the gas-pipe. One of the conductors *r* is connected with a metallic spring, *u'*, which is insulated from the plate *t*, but secured to the same. Whenever a part of the circuit is out of order the inspector can, by pressing said spring against the plate *t*, establish a ground-connection and ascertain the section of the line not in order, one pole of the battery being at the same time connected with the ground. In my former invention I provided the gas-pipe with a separate stop-cock for admitting or shutting off the gas by hand in case the electric apparatus became out of order. In the present case I do not require the same, as when the gas is to be admitted or shut off by hand it is only necessary to turn the wheel until the rod *E* elevates the cap or drops the same over the tube *b*.

The upper part of the gas-pipe is made of porcelain or equivalent insulating material, and has two projecting pins, *V V*, around which the wires *J J*, that extend to the burner, are coiled. The burner *L* is made of lava or other equivalent material. The wires *J* are incased in gutta-percha or other insulating covering nearly as far as the pins *V*; but at, around, and above said pins they are made of German silver or other bad heat-conducting wire rod, and uncovered. The pins *V* serve to support the wires and to allow the coiling of the wire, whereby the heat transmitted to the wires by the flame of the burner is radiated

and prevented from injuring the gutta-percha covering below. *M* is a case or shell, of some non-magnetic material, surrounding and embracing the moving mechanism, as shown, to prevent its injury.

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

1. The combination, with a single fixed coil, of two tubular magnets, one fixed and the other movable, as set forth.
2. The combination of two magnets, *G H*, with the single helix *I*, substantially as herein shown and described.
3. The cap *D* made larger in cross-section than the empty space around and within it, for effecting an increased motion and pressure of the mercury, as specified.
4. The radiating coils of bad heat-conducting wire, supported by pins *V* on the insulating-pipe, as and for the purpose specified.
5. The insulated spring *u*, connected with one end of the helix wire, and so arranged as to effect a ground connection when required, as set forth.

JNO. VANSANT.

Witnesses:

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