J. VANSANT.

ELECTRIC GAS LIGHTING AND EXTINGUISHING APPARATUS.

No. 113,370 Patented Apr. 4, 1871.

Fig. 1.

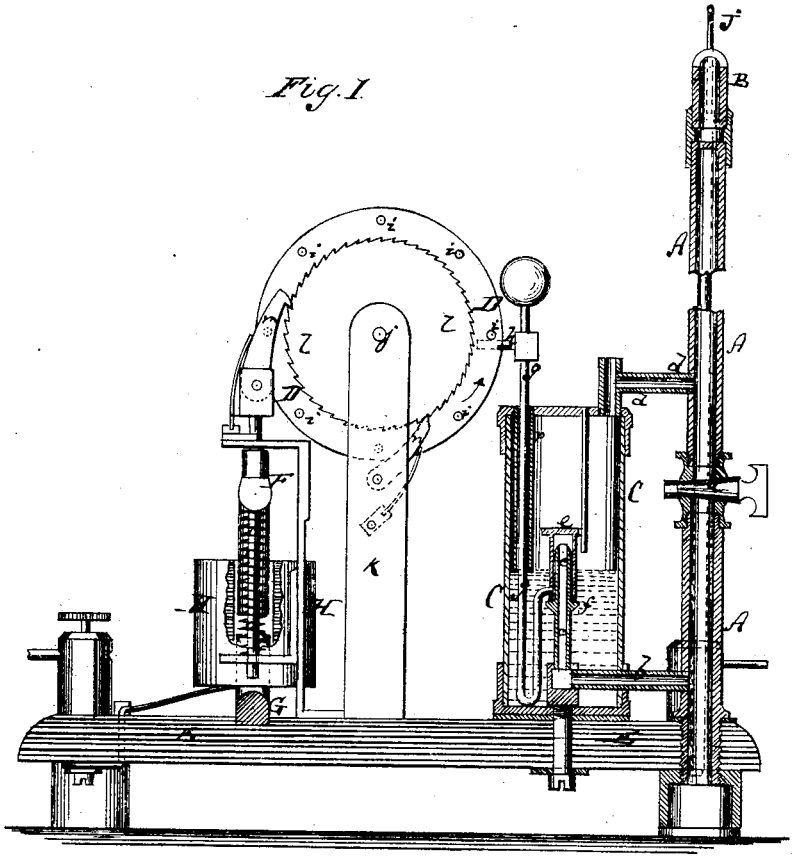
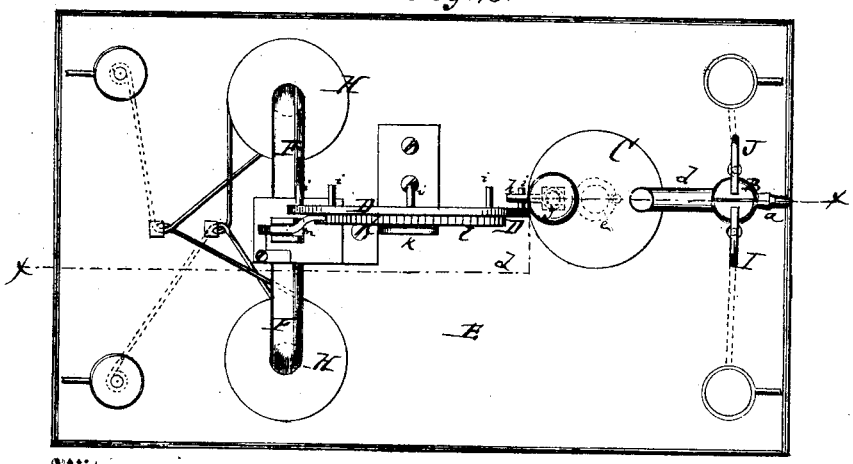


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN VANSANT, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN ELECTRIC GAS LIGHTING AND EXTINGUISHING APPARATUS.

Specification forming part of Letters Patent No. **113,370**, dated April 4, 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 Improved Electrical 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 drawings, forming part of this specification.

Figure 1 represents a vertical longitudinal section of my improved electrical gas lighting and extinguishing apparatus, *x x*, Fig. 2, being the section-line. Fig. 2 is a plan or top view of the same.

Similar letters of reference indicate corresponding parts.

This invention has for its object to produce an apparatus by means of which gas can be lighted and extinguished on a suitable number of burners in rapid succession, and without requiring the handing of or personal contact with each burner or its gas-pipe.

The invention consists in the application to each gas pipe or burner of an electric apparatus by means of which the valve for admitting the gas to the burner or withholding it from the same will be opened or closed whenever the currents are directed in the appropriate manner. When a number of instruments are thus applied to as many street-lanterns or other gas-lamps and duly connected with each other and with the battery, the several burners can be lighted or extinguished in rapid succession, as the electric action will be continued from one another.

The invention consists, also, in several separate improvements regarding the construction and arrangement of parts in my apparatus, hereinafter more fully set forth.

A in the drawings represents the gas-pipe which leads to the burner B of a street-lamp or other suitable illuminating apparatus. The lower end of the pipe A is in connection with a constant supply of gas in the ordinary manner. A cock, *a*, is arranged within the pipe to prevent the gas from passing directly to the burner. Below said cock projects from the pipe A a horizontal branch, *b*, which enters a vertical cylinder or vessel, C, and is within the same turned up to form a vertical arm, *c*. The upper end of the branch pipe *b c* is open, and is situated in about the middle of said cylinder. From the top of the cylinder C extends another branch pipe, *d*, into the main pipe A, above the cock of the same. The cylinder C is closed on all sides. The gas can thus, when the cock *a* is closed, reach the burner by means of the pipe *b*, cylinder C, and branch *d*. To prevent this a weighted valve, *e*, rests upon the open end of *c* and closes the same. The valve *e* is made in form of an inverted cup, and fits entirely over the upper part of the pipe *c*, its lower end resting on a shoulder, *f*, which projects from said pipe.

The vessel C contains mercury, into which the lower part of the cup *e* is dipped to produce an absolutely-tight cock to the pipe *c* and prevent all escape of gas therefrom into the vessel C. The shoulder *f* aids also in confining the gas within the pipe *c*, as it makes the displacement of the mercury by pressure more difficult.

The valve *e* is secured to a rod, *g*, which projects upwardly through the top of the cylinder, fitting its aperture so nicely, or being packed so close, preferably by means of a tube, *p*, which reaches from the top of C into the mercury, that gas cannot escape around it. An arm, *h*, which projects from the rod *g*, enters the circle, within which a series of pins, *i i*, project from a disk, D. This disk is mounted upon a horizontal arbor, *j*, which is hung in posts K K, that project from the same bed or plate E, upon which the cylinder C is also secured.

When the disk D is turned in the direction of the arrow shown in Fig. 1, its pins *i* will strike the arm *h* and elevate the same, and with it the valve *e*, holding it elevated until they pass from under said arm *h*, and drop it again to reclose the valve. One true object of the electric apparatus is therefore to impart intermittent rotary motion to the disk D in such manner and with such a degree of precision that thereby the arm *h* can be elevated and held up when desired, or dropped and held closed at pleasure. When the pin *h* is thus elevated, the valve *e* is raised out of the mercury and clear of the pipe *c*, to no longer constitute a hinderance to the gas which passes to the burner, and a free supply to the latter is thus provided. Whenever the pin *h* is not raised or held ele-

vated by a pin, *i*, the valve *e* will be closed, as aforesaid, to prevent gas from reaching the burner.

To one face of the disk D is affixed a ratchet-wheel, *l*, into the teeth of which engages a claw, *m*, and a pawl, *n*. The claw is pivoted to a reciprocating frame, F, which, when it is moved down, will cause the claw to move the tooth with which it engages down with it, thereby turning the ratchet-wheel and disk. The pawl *n* is pivoted to a post, K, and held by a spring against the edge of the ratchet-wheel to prevent the same from turning back. The teeth of the ratchet-wheel and the strokes of the frame F can be so graduated or adjusted that a certain number of such strokes will be required to raise another number to drop the valve. Thus two or three downward movements of the frame F may suffice to open one or two further movements of the same to close the valve *e*.

The frame F operates in conjunction with the electro-magnet G, that is securely affixed to the base or bed E. The frame F and magnet G are each U-shaped, and their ends are placed opposite each other and surrounded by coils H of insulated wire, as indicated in the drawings. The frame F, which thus forms a magnet, is held elevated by a weak spring, *o*, or other device. When, however, by means of an electric current, the irons F G become magnetic, the former will be drawn down toward G. One stroke of the claw is thus made. The current is next broken, and the frame F will be sent up by the spring, when another downward stroke can be reproduced by the re-establishment of the circuit. In this manner the exact number of strokes can be produced by a suitable switch on the wires which connect the coils H with a suitable battery. The exact number of strokes for closing or opening the valve *e* can thus be produced.

The gas is lighted by an electric spark, which passes from one platina-tipped wire, I, to another, J, right above the opening of the burner. The said wires I J are connected with a suitable induction-coil, to become charged at the proper time with an intense current.

The induction main may be connected with the apparatus which regulates the currents from the battery, so that the current through I J will be most intense when the current through the coil H is interrupted after the valve *e* has been opened.

The cock *a* is provided to permit the use of the burner in case the above-described apparatus should get out of order.

The burner I prefer to make of lava or other non-conducting material, so that it will not interfere with the passage of the igniting-current.

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

1. The pipes *b d*, extending from the gas-pipe A below and above a partition or stop within the same into a cylinder or vessel, C, within which an adjustable valve, *e*, is arranged for regulating the passage of the gas, as specified.

2. The cylinder C, containing the pipe *b c*, and the adjustable valve *e*, for opening or closing the same, and the mercury or liquid for receiving the lower end of the closed valve, as set forth.

3. The valve *e*, connected with the arm *h*, and combined with the disk D and pins *i*, so that rotary motion of said disk in the same direction will serve to alternately open and close the said valve, as specified.

4. The reciprocating electro-magnet F, connected with the claw *m*, and combined with the fixed magnet G and rotary disk D, to operate substantially as herein shown and described.

5. The coils H H, combined with the magnets F G, to operate in conjunction with the same, substantially as herein shown and described.

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Witnesses:

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