(No Model.)

T. H. RHODES.

Lighting Gas by Electricity.

No. 242,222. **Patented May 31, 1881.**

Fig. 1.

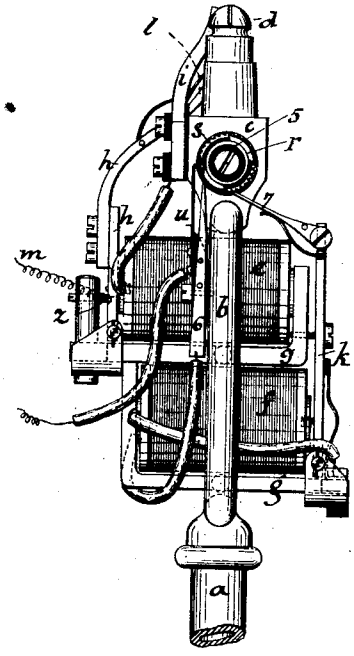


Fig. 2.

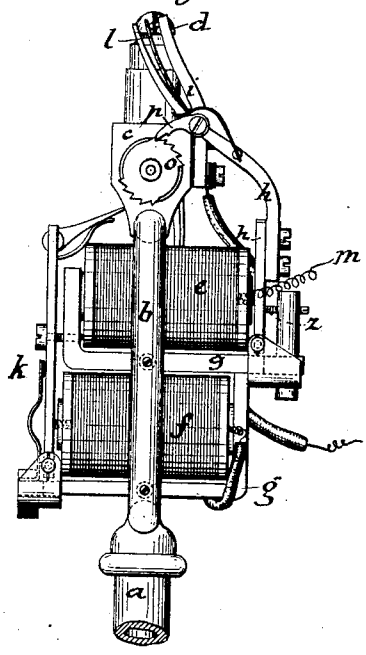


Fig. 4.

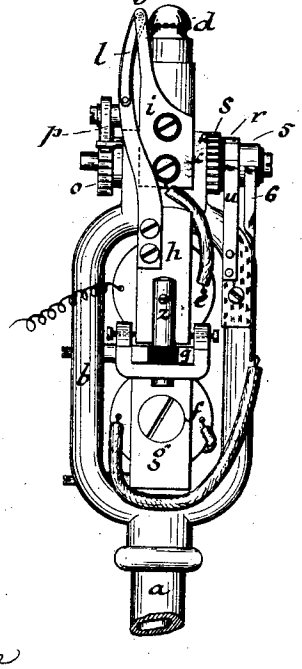
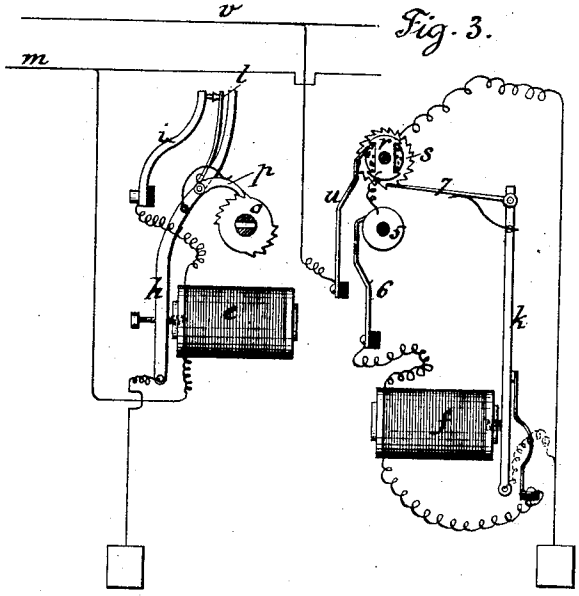


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS H. RHODES, OF BROOKLYN, NEW YORK.

LIGHTING GAS BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 242,222, dated May 31, 1881.

Application filed April 20, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. RHODES, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Lighting Gas by Electricity, of which the following is a specification.

In apparatus for lighting gas by electricity two magnets and two line-wires have been employed, and the cock has been opened and closed by a ratchet-wheel and pawl, acted upon by the magnet-armature.

My invention relates to the combination, with two electro-magnets and the circuit devices, of a cock and ratchet-wheels and circuit-springs, arranged in such a manner that one circuit and magnet turn the cock around until it is open, and the spark is produced at the same time. The ratchet-wheel has blank spaces, so that after the gas is fully on the cock cannot be turned any farther, no matter how many times the spark-producing lever is operated. The second line-wire and magnet are employed for turning off the gas, and in so doing the other ratchet-wheel is brought to the position where the first pawl can act upon it, when the same is moved by the first magnet in turning on the gas and lighting it. When the gas has been turned off, the circuit to the second magnet is broken, so that the further rotation of the cock is arrested.

In the drawings, Figure 1 is an elevation at one side of the burner. Fig. 2 is an elevation at the other side of the burner. Fig. 3 is a diagram of the circuits, and Fig. 4 is an elevation sidewise of the cock.

The gas-pipe *a* receives upon it the hollow yoke *b*, at the upper part of which is the barrel *c* of a cock and the burner *d*. These are of any usual or convenient construction.

The magnets *e* and *f* are held by the frame *g*, and *h* is the armature to the magnet *e*, and *k* is the armature to the magnet *f*.

An insulated arm, *i*, projecting at the side of the barrel *c* of the cock, carries a platina point or electrode, and upon the armature *h* is a spring-electrode, *l*.

When the current is thrown upon the line *m*, it passes through the magnet *e* to the arm *i*, and by the spring-contact *l*, to the armature *h*, and thence to ground through the pivots of the armature *h* and the frame *g* to the gas-pipe. The back-stop *z* of the armature *h* should be insulated. The parts are adjusted so that just before the entire movement is given to the armature *h* the spring-contact *l* will separate from the arm *i* and draw the spark. This spark being adjacent to the burner where the gas issues ignites the gas. It is preferable to pulsate the current in the line *m*, so that the spark will be sufficiently intense for igniting the gas.

The cock is provided with a wheel, *o*, upon its stem, and this wheel is a sectional ratchet, there being two quarter-sections of teeth and intermediate quarter-sections plain, and upon the armature-lever *h* there is a spring-pawl, *p*, that engages the teeth of *o*; hence the cock will be moved a quarter-revolution by the electric pulsations to open the cock, and it will so remain, as the pawl will then be moved back and forth on the plain portion of the wheel *o*. This gives opportunity for the current on the line *m* to be pulsated a sufficient number of times to insure the opening of all the cocks in the circuit and the ignition of all the gas-jets without turning the cock too far.

When the gas is burning the ratchet-wheel *s* and insulated sectional circuit-closer *r* upon the stem of the cock stand in such position to the wheel *o* that the circuit to the second line-wire *v* is closed by the spring *u*, insulated circuit-closer *r*, and its hub 5, spring 6, magnet *f*, armature *k*, and by its pivots or pawl, or both, to the ground by the gas-pipe *a*.

When a current is charged on the line *v* and pulsated, the magnet *f* acts through the armature *k* and pawl 7 upon the wheel *s*, and moves the same about a quarter-revolution by a step-by-step motion, and extinguishes the light by turning off the gas. When this has been accomplished the circuit-closer *r* has moved until it has separated from contact with the spring *u* and the electric circuit to *f* is broken and the parts cannot be moved any farther, no matter how many pulsations may be continued in the line *v* for turning off the other lamps in the circuit.

The circuit-closer *r* is made in quarter-sections, either with metal and rubber alternated or of metal with quarter-sections removed, so as to break contact with the end of the spring *u*.

When the cock is rotated a quarter-turn to shut off the gas, the wheel *o* is also turned suf-

ficiently to bring its next quarter-section of teeth into the path of the pawl *p*, so that when the current is pulsated on the line *m*, the cock will be again turned to admit gas to the burner-tip, and the spark produced to light the same, as aforesaid.

I claim as my invention—

1. The combination, in a gas-lighting apparatus, of two electro-magnets, two line-wires, an armature-lever operated by one magnet, electrodes that are separated to draw the spark, a pawl, a sectional ratchet-wheel and cock to turn on the gas and close an electric circuit with the second electro-magnet and line-wire, substantially as set forth.

2. In an electric gas-lighting apparatus, the combination, with the cock, of the ratchet-wheel *s*, pawl 7, armature *k*, electro-magnet *f*, circuit-springs *u* and 6, sectional circuit-closer *r*, to turn off the gas, and the sectional ratchet *o*, that is brought into position to be acted upon by the pawl *p* in lighting the gas, substantially as set forth.

3. In an electric gas lighting and extinguishing mechanism, the combination, with the gas-burner and cock, of two electro-magnets, two line-wires, armature-levers, electrodes, pawls, ratchet-wheel *s*, sectional ratchet-wheel *o*, sectional circuit-closer *r*, and springs and circuit-closers, substantially as and for the purposes set forth.

Signed by me this 12th day of April, A. D. 1881.

THOS. H. RHODES.

Witnesses:
GEO. T. PINCKNEY,
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