

R. CHAMBERLIN.
 Electric Gas-Lighting Apparatus.

No. 168,614.

Patented Oct. 11, 1875.

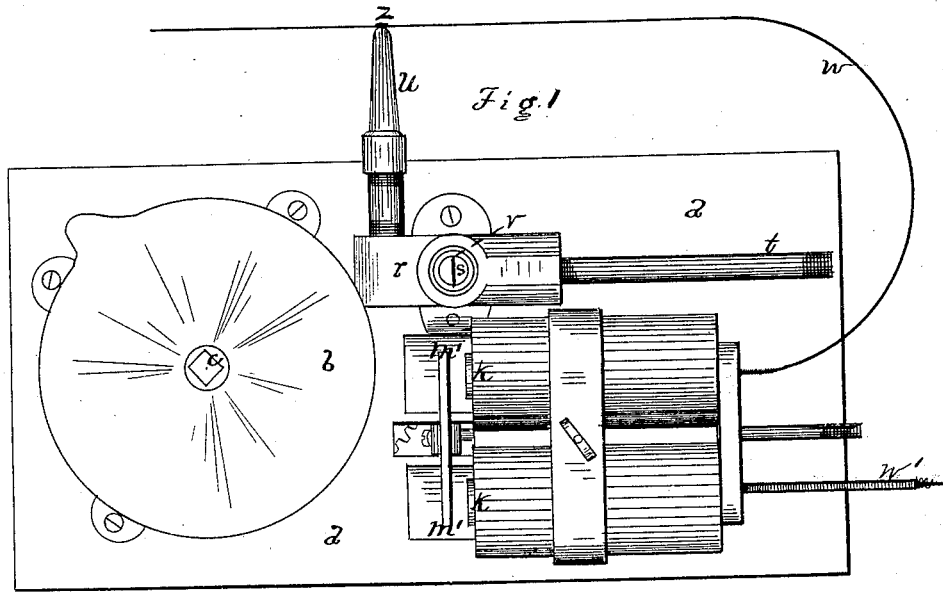


Fig. 2

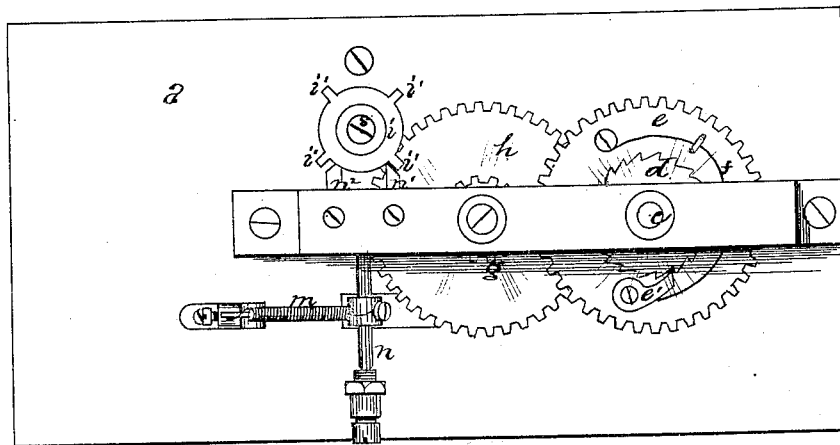
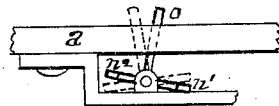


Fig. 3



WITNESSES
 John Pollitt
 Edward Bill

INVENTOR
 Reuben Chamberlin
 By W. E. Simonds Atty.

UNITED STATES PATENT OFFICE

REUBEN CHAMBERLIN, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN ELECTRIC GAS-LIGHTING APPARATUS.

Specification forming part of Letters Patent No. **168,614**, dated October 11, 1875; application filed May 25, 1875.

To all whom it may concern:

Be it known that I, REUBEN CHAMBERLIN, of Hartford, in the county of Hartford and State of Connecticut, have invented an Improved Electric Gas-Lighting Apparatus, of which the following is a specification, reference being had to the accompanying drawings, where—

Figure 1 is a view of my apparatus, which I will term a front view. Fig. 2 is a rear view. Fig. 3 is a detail top view of the escapement-fork.

The invention is designed to be set in an electric circuit; and its construction and operation are such that by a momentary closing of the circuit the gas can be let on and lighted, or turned off and extinguished.

The letter *a* denotes a plate, commonly of cast-iron, to which the other parts are affixed. The case *b* contains a common clock-spring, wound up by a key fitting on the end of the arbor *c*, on which is the ratch *d*. On the same shaft is the loose gear *e*, bearing on its side the pawl *e'* pressed upon the ratch by the spring *f*, whereby rotary motion is given to gear *e* by the uncoiling of the clock-spring. Gear *e* gives rotation to pinion *g*, gear *h*, and escapement-wheel *i*; gear *h* meshing into a pinion on same shaft with wheel *i*, which has spurs *i'*. Underneath the wheel *i* is set the escapement-fork, consisting of the shaft *n*, bifurcated at the top into two forks, *n*¹ *n*². This shaft has a short rotary reciprocation as an escapement motion for wheel *i*. The length of this play is shown in Fig. 3. The full lines indicate the normal position of rest, and the dotted lines the opposite position. In the position of rest a spur, *i'*, rests on the outer side of fork *n*¹, throws the forks to position shown in dotted lines, and that spur passes on and rests against the inner side of spur *n*². Let the fork return to position of rest, as shown in full lines, and the spur which was just now resting against the inner side of fork *n*² passes on, and another spur comes along and rests on the outer side of fork *n*¹; thus one forward-and-back movement of the escapement-fork allows the escapement-wheel and its shaft to make a quarter rotation. The movement of the escapement-fork toward position of rest is given by the spring *m*; its movement from

position of rest is given by the arm *o*, which starts from shaft *n*, and at its free end bears the armature *m'*, which is drawn to almost touch the ends of the electro-magnet *K* by the closing of the electric circuit; and the circuit being opened the spring *m* draws back the armature.

I have shown how the closing and opening of the electric circuit causes the wheel *i* and its shaft *s* to make a quarter rotation. This shaft *s* is the plug of the gas-cock *r*, into which gas enters through pipe *t*, and goes thence to the burner *u*. This plug *s* has a hole through it transversely, as is common. When this hole is brought to a horizontal it lets the gas pass through to the burner, and when this hole stands vertically (corresponding to the line *v*, Fig. 1) the flow of gas is shut off from the burner, and every quarter rotation of the escapement-wheel *i* turns the gas off or on. If the gas is on a single closing and opening of the circuit shuts it off, and if the gas is off a similar movement turns it on. One of the conducting-wires *w* is carried across the tip of the burner, and may then have a piece of platinum, *z*, inserted, which will be heated to redness by the passage of the current, and thereby light the gas when it is turned on; or the wire may be cut at this point, and the electric spark leaping across the chasm will light the gas. A galvanic battery is, of course, to be employed to generate the proper amount of electricity, and properly connected to the wires *w w'*.

One main purpose of my invention is the lighting of street-lamps in cities from a central office, in which case each street-lamp is to be supplied with one of these devices, and all being included in the same circuit can all be instantly lighted at the same time from a central office by once closing and opening the electric circuit, and by the same movement the gas can be shut off from all the lamps.

I am aware that escapements of various kinds have heretofore been used in watches and clocks and in electric gas-lighting apparatus, among them that shown in patent to Bean and Mumler, dated June 4, 1867, in which a hook is lifted off the ratchet-tooth and allowed to fall so as to catch upon the next tooth; and that shown in common clocks,

consisting of a hook double-tongued, and hung on a shaft parallel to the shaft of the ratchet-wheel, which double-tongued hook vibrating allows tooth after tooth to escape, first one tongue of the hook and then the other; and also that shown in patent to Edward Coe, dated September 29, 1874, which, like a common clock escapement, has a double-tongued hook vibrating on an axis or shaft parallel to the shaft of the ratchet-wheel, and which, vibrating, allows tooth after tooth to escape, first from one tongue of the hook and then the other; and none of these do I claim as my invention, it being essential to the complete working of my invention that the bifurcated fork made use of shall vibrate on a shaft which is at right angles to the shaft of the ratchet-wheel, so that the tongues, or teeth, or tines of the fork shall swing off and on laterally to engage and disengage the teeth of the ratchet-wheel, such arrangement and construction allowing the device to be operated by the slightest possible power, which is an important con-

sideration in those delicate mechanisms, and also permitting the engaging parts to be correspondingly beveled, so as to still further lighten the power necessary to operate the device; and

I claim as my invention—

1. The combination of the escapement-wheel *i*, provided with the spurs *i'*, with the vibratory escapement-fork *n n' n''* hung on an axis at right angles to the shaft or axis of the escapement-wheel, all operating substantially as shown and described.

2. The combination of the escapement-wheel *i*, vibratory fork *n n' n''* hung on an axis at right angles to the shaft or axis of the escapement-wheel, plug-shaft *s*, gas-cock *r*, burner *u*, armature-lever *o*, electro-magnet *k*, and conductors *w w'*, all operating substantially as shown and described.

REUBEN CHAMBERLIN.

Witnesses:

W. E. SIMONDS,
E. S. BILL.