SAMUEL GARDINER, Jr.

Improvement in Switch for Turning On and Off and Lighting Gas by Electricity.

No. 124,126. Patented Feb. 27, 1872.

Fig. 1.

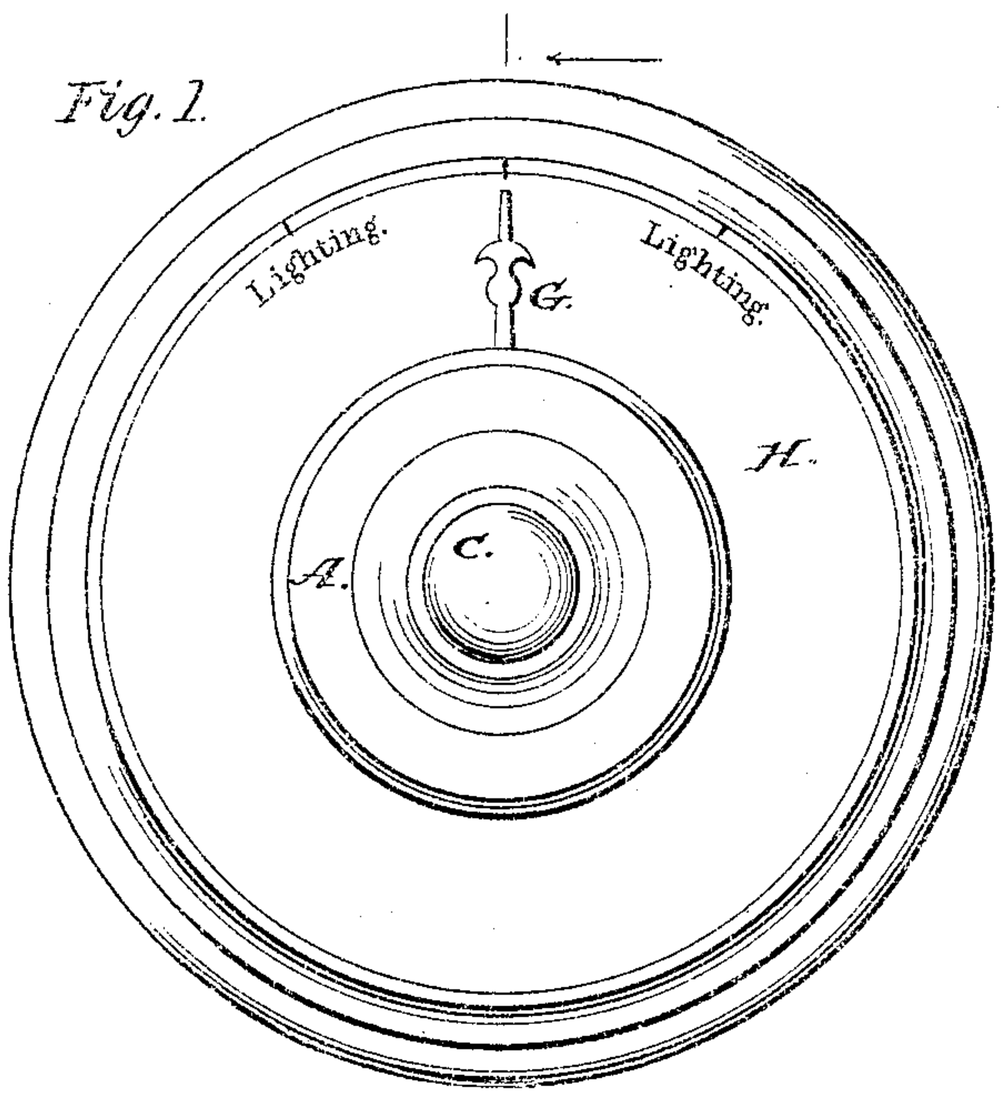
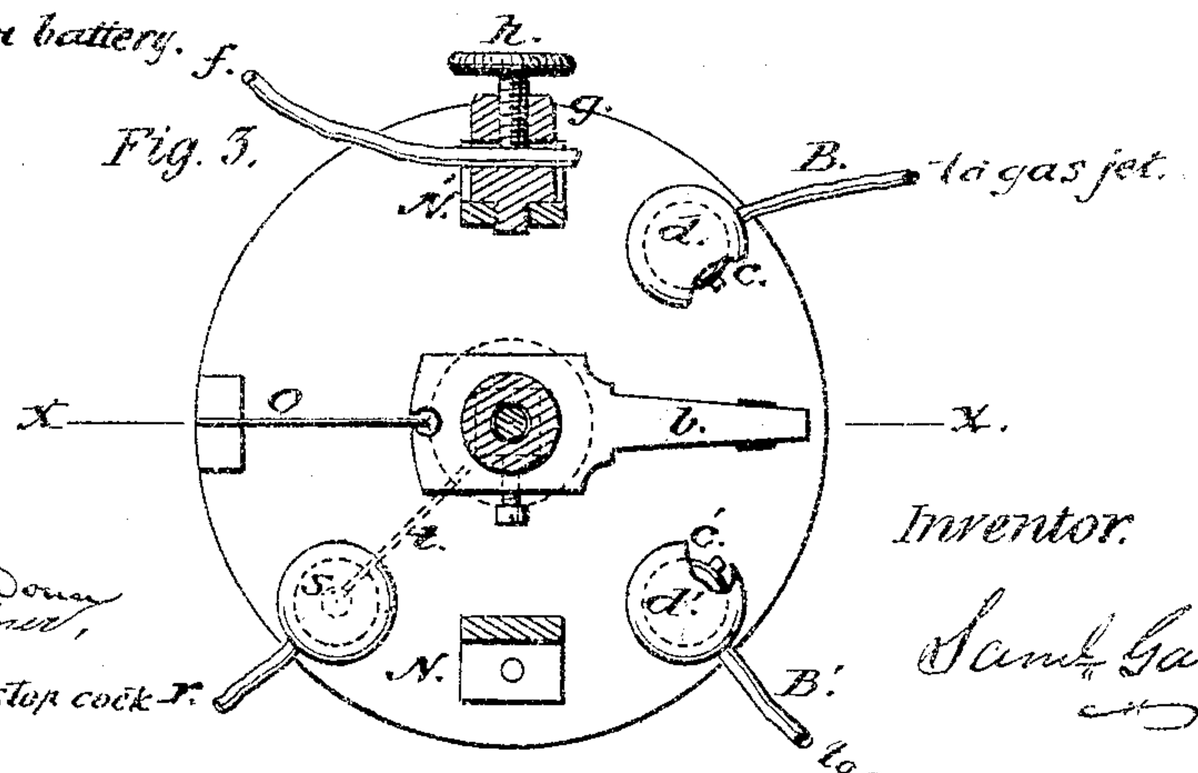


Fig. 2.

Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

SAMUEL GARDINER, JR., OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN SWITCHES FOR TURNING ON AND OFF AND LIGHTING GAS BY ELECTRICITY.

Specification forming part of Letters Patent No. 124,126, dated February 27, 1872.

SPECIFICATION.

I, SAMUEL GARDINER, Jr., of Washington, District of Columbia, have invented a Switch for Turning On and Off and Lighting Gas by Electricity, of which the following is a specification:

Nature and Objects of the Invention.

My invention relates to the manner of turning on and off gas and lighting the same by an electrical current, the device for the purpose being in the form of a knob, having arranged within and about it a mechanism to be operated by the hand, and having for its direct object, in the first place, the turning on of the gas by a movement of the gas-cock through the agency of the current formed by the wire attached to an electro-magnet. Second, the lighting of the same by a similar current, as hereinafter described, after the gas is turned on.

Description.

In a plate composed of hard rubber or other non-conducting material, I sink a small disk of metal, which is connected by a wire which passes along the surface of a rubber plate, and down or through the same to a small metal cylinder. In this cylinder is a hole to receive the wire which connects with the magnetic stop-cock at a reasonable distance from this device. In the small cylinder just mentioned is a thumb-screw to clamp the wire when in position. In the center of the rubber plate a hole is cut to receive the end of a spindle which is attached to a large knob. This knob having the spindle attached is formed hollow, with two offsets within; the first is intended to allow play for the knob to operate the part which turns the cock; the second is to form a bearing for one end of a spiral spring. This spiral spring encircles a rod and finds itself limited to the bearing just mentioned, and the inner surface of the small knob. A small screw which passes through one side of the hollow spindle rests against the shoulder of a slot formed in the rod to prevent it from being thrown out of its place by the force of the spring when the pressure is removed from the small knob. On the end of the rod nearest the metal disk is a platinum point or tip to form an active electrical connection when the small knob is pressed down to unite the electro-magnetic stop-cock with the main battery. The large knob is so formed and fitted to a dial-plate and rubber base as that it may move freely about its axis, and is only limited in its movements by the finger attached to the knob-spindle, which, coming in contact with the clamp-cylinders, connect, through the wires, the gas-jets with the main battery. The finger has on either side at the point of contact with the clamp-cylinders, a small bit of platinum which corresponds with a platinum-point on each of the clamp-cylinders just mentioned, to facilitate the movement of the electrical current. To the hard-rubber plate is firmly attached a stiff flat spring, placed concentric with the axis of the knob-spindle. This spring is held loosely in a slot in the back part of the finger just referred to. The object of this spring is to return the finger to its place, which is equidistant between the two clamp-cylinders, which hold the wires communicating with the gas-jets. The importance of this arrangement is obvious when attention is called to the fact that is impossible for a person unacquainted with the working of a battery to keep the current connected longer than the hand is held on the large knob, for as soon as the hand is removed the spring will invariably return the finger to its normal position. This arrangement, which is self-acting, is highly valuable, inasmuch as it may be operated by a person totally unskilled in the use of electrical apparatus. It is often the case that where the apparatus for turning on and off gas by electricity is applied to private residences, the ordinary servants are required to light up, and their ignorance might be the cause of much trouble with the old switch, whereas with this device all danger would be avoided.

I have used in my model a flat spring to return the finger to its place, although spiral springs, acting either by tension or compression to the same effect, might be substituted.

The wires which in my drawing I have shown as though they were to be attached to burners in different directions—and this I claim to do, although the two may be united to form one, if necessary—may be so arranged as that when the finger is moved to the left it will light one-half the burners of a large

chandelier, and a movement to the right the balance, in case the battery-power is weak and insufficient to light all at once.

Description of Drawing.

Figure 1 is a top view of knobs and dial-plate. Fig. 2 is a section on line *x x*, Fig. 3. Fig. 3 is a horizontal section on *y y*, Fig. 2.

Description by Reference.

A is the large knob attached to the hollow spindle *a*, which moves the finger *b* either to the right or left to make a connection with the wires leading to the gas-jets, the same being attached to the cylinders *c c'*, and held in their places by the set-screws *d d'*. B B' are the wires leading to the gas-burners, and through which the electricity passes to light the gas. C is the small knob attached to the rod *e*. This rod passes through the hollow spindle, and rests, when not operated, with its platinum-tipped end within a short distance of the metal disk *m*. *e'* is the spiral spring encircling the rod *e*, which returns the knob C to its place when the finger is removed after pressing down to turn on the gas. *i* is the small screw which passes through the side of the knob-spindle, and enters the slot *l* in the rod, and prevents the rod from being thrown out of its place by the spring *e'*. *r* is the wire held in the cylinder by the clamp-screw *s*, which leads to the magnetic stop-cock at a distance from the switch. A small wire, *t*, shown in dotted lines, is embedded in the rubber plate E, and connects the wire *r* with the metal disk *m*. D is the space in the large knob which allows free play to the knob C as it is moved to operate the stop-cock. O is the flat spring secured to the rubber plate, which serves to return the finger *b* to its proper place when the hand is taken from the large knob A. A bridge which is secured to the rubber plate at the points N N', clasps the spindle *a* and holds it in place. The collar *u* which encircles the spindle *a* is held onto it by the small screw *n*. This collar is used with the bridge to keep the whole device together, or as a convenience in separating the parts. The clamp-screw *h* holds the wire in its place in the cylinder *g*. This wire connects the switch with the main battery. A hand or pointer, G, is attached to the large knob A and moves with it and the finger *b* over the dial-plate H. The limit of movement of this finger *b* is thereby indicated by marks on the dial to which the hand points, as it is moved to the right or left. By reversing the order of the parts of my invention I claim to turn on the gas by the large knob, and light with the small one.

Having thus described my invention I proceed to describe its operation. The wire *f* being in its place and connected with the main battery, and the negative wire being attached to the gas-pipe at some convenient point, the wire *r* being in its place, and the lighting-wires being adjusted and connected with the burners, I proceed to turn on the gas. I press with my finger on the small rubber knob C a given number of times; each time the platinum-point on the end of the rod *e* will touch the disk *m*, whereupon the current which comes from the main battery passes through the metal bridge, thence through the spindle *a* and rod *e*, and forms a complete circuit by way of the wires *t* and *r* that lead to the magnetic stop-cock, which being operated turns on the flow of gas. To light the gas I turn the large knob A to the right; the finger *b* moves with it, and, as before, the current coming from the main battery passes through the spindle *a* and finger *b*, and as the platinum-point comes in contact with the corresponding point on the cylinder *c* the current passes into the wire B and thence to the burners to be lighted. The hand being removed from the knob the finger *b* is returned to its place by the spring O.

Claims.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The rod *e*, having the slot *l* combined with the knob C, spring *e*, metal disk *m*, and wires *t* and *r*, arranged as described, for the purpose set forth.

2. The knob A, having the spindle *a* attached, combined with the finger *b* and wires B B', and flat spring O, as and for the purpose set forth.

3. The knob A, with its associate parts combined with the knob C, with its associate parts, operating together to turn on and off and light one or more gas-burners through the agency of electricity.

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Witnesses:
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M. GARDINER.