

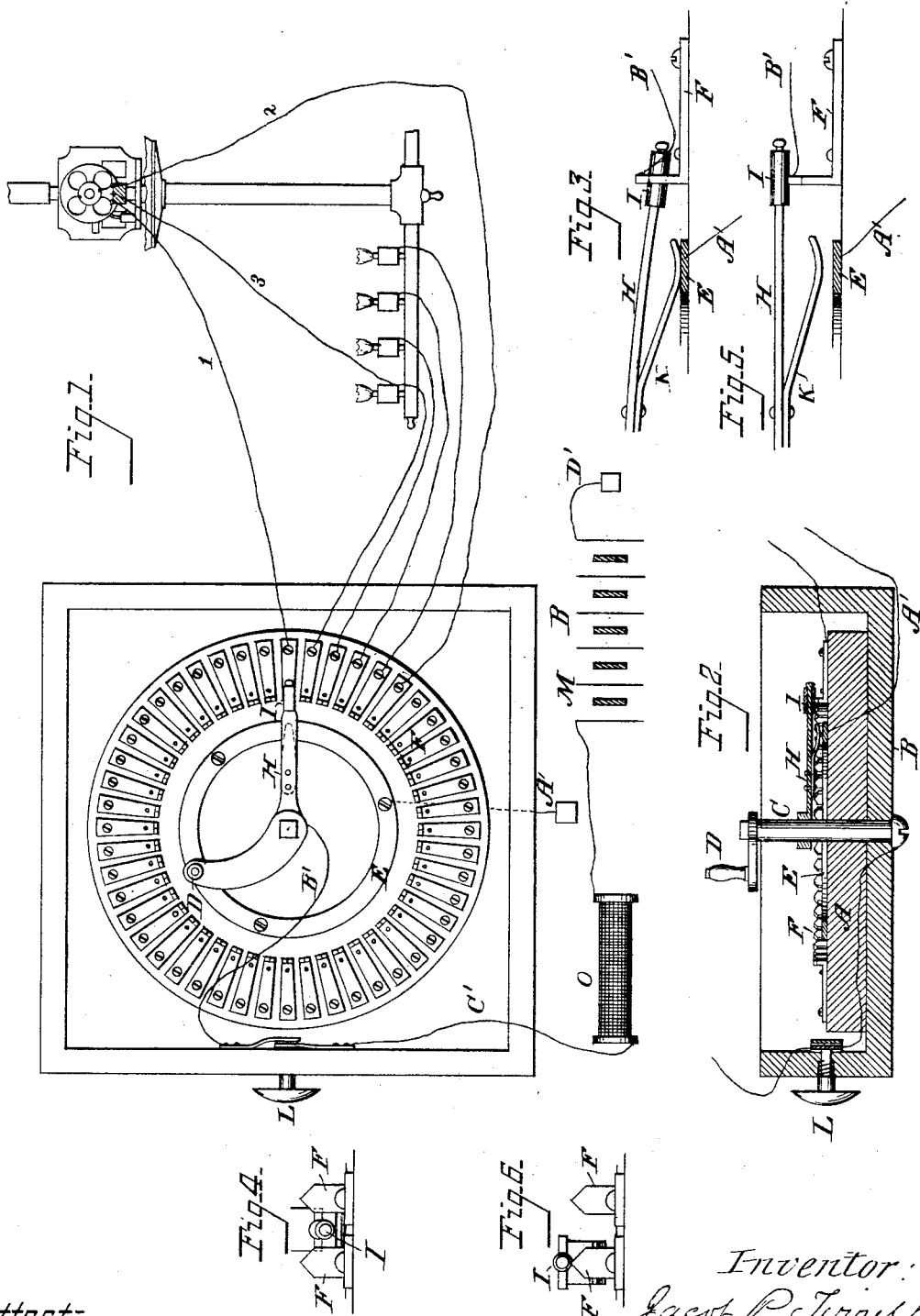
(No Model.)

J. P. TIRRELL.

APPARATUS FOR LIGHTING GAS BY ELECTRICITY.

No. 262,260

Patented Aug. 8, 1882.



Attest:  
Courtney & Cooper.  
C. R. Hannemann.

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By his attorney  
Charles E. Foster

# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR LIGHTING GAS BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 262,260, dated August 8, 1882.

Application filed May 16, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB P. TIRRELL, of Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Apparatus for Lighting Gas by Electricity, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to that system of lighting gas by electricity in which the gas is lighted by a contact-spark produced at the tip of the burner by an automatic vibrating circuit-breaker; and the invention consists, first, in increasing the size of the spark which ignites the gas by putting the battery to earth through a primary coil before connecting the battery to the electro-magnet of the burner; and, second, in a switch or circuit-closer for lighting a series of burners, in which switch or circuit-closer the battery is automatically put to earth through a primary coil immediately before connecting it with the electro-magnet on each burner, which operates the vibrating circuit-breaker on the latter.

In the accompanying drawings, Figure 1 is a plan view of my improved switch or circuit-closer, showing its connection with the electro-magnetic apparatus used for opening and closing the gas-cock, and with the series of burners. Fig. 2 is a sectional view of this switch, and Figs. 3, 4, 5, and 6 are detail views of parts of the same.

In these several figures the same letters refer to the same parts.

In the drawings I have shown the switch or circuit-closer as connected to an electro-magnetic apparatus for opening and closing a gas-cock and to a series of burners each provided with an electro-magnet for operating a vibrating circuit-breaker, for each of which devices I have filed an application for a patent of the United States, and therefore these devices need not be particularly described in this specification.

Referring to the drawings, A is a block of wood or some other suitable insulating material, suitably supported on a case, B. In the center of this block is a metallic shaft, C, which is provided with a handle, D.

E is a ring of metal, screwed or otherwise

secured to the face of the block A, and F F F are plates of metal, separated from each other by an insulating-space and arranged radially in a series in a circle concentric to the ring E. One of these plates is connected to the wire 1, which leads to the apparatus which opens and closes the gas-cock, and which wire forms the circuit when the gas is to be turned on. The adjoining plate is connected by a wire with one of the burners which is to be lighted, and as many of the remaining plates as may be required, according to the number of burners to be lighted, are each connected respectively to one of these burners, while the plate adjoining the last of the plates connected to the burners is connected to a wire, 2, which leads to apparatus for opening and closing the gas-cock, and forms the circuit when the gas is to be turned off. The inner ends of these plates F are turned up, as shown in Figs. 3, 4, 5, and 6, and these turned-up ends are beveled off on each side.

Attached to the shaft C is an elastic metallic arm, H, the end of which bears upon the upper edges of the turned-up ends of the radial plates, and is kept in contact with them by its elasticity. This end of the arm H may have a metallic friction-roller, I, upon it in order to facilitate its passage over the ends of the turned-up radial plates. Upon the under side of this arm H is fastened another metallic arm, K, the end of which is just above the ring E, and when the end of the arm H drops between the ends of the radial plates by reason of its elasticity as it travels over the ends of these plates this arm makes contact with the said ring E. This ring E is connected by a wire, A', with the earth, and the arm H is connected by a wire, B', to one of the plates of a suitable push-button or other key, L. From the other plate of this push-button or key a wire, C', passes to one end of a coil, O, which incloses a bundle of soft-iron rods, and the other end of this coil is connected to one pole of the battery M B, which is grounded at its other pole, as shown at D'. The use of this coil is well known in connection with apparatus for lighting gas by electricity.

When the arm H is in contact with that one of the plates F which is connected to the elec-

tro-magnetic apparatus for opening and closing the gas-cock, and the circuit is closed at the push-button or key L, the current will pass from the battery to this apparatus, and then to ground by the gas-pipe, and the apparatus will operate and turn on the gas. When the arm is moved to the next plate, the end I first drops between the plates, and the arm K makes contact with the ring E, putting the battery to earth through the coil O, so that when the arm H makes contact with the plate to which the wire is connected which leads to the magnet operating the circuit-breaker on the burner, and the said magnet breaks the circuit, a powerful induction-spark will be produced, owing to the charge that the coil has received during the time that the arm K is in contact with the ring E, and which spark will light the gas, while the succession of smaller sparks, which would otherwise be produced by the vibration of the circuit-breaker, might not be sufficient to do so. On moving the arm H to the next plate in the series, which is connected to another burner in the series to be lighted, the end of the arm first drops between the ends of the plates, thus again connecting the arm K to the ring E, and causing the production of a strong induction-spark at the circuit-breaker on the burner when the end of the arm H makes contact with the plate which is connected to that burner.

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

1. The combination, in an apparatus for lighting gas by electricity, of the burner and appliances, substantially as described, whereby the battery is automatically put to earth through a coil just before a connection is made with the lighting devices at the burner, substantially as set forth.

2. In apparatus for lighting gas by electricity by the contact-spark, a switch or circuit-closer for operating a magnet or a series of magnets directing the current to a series of burners, provided with appliances whereby the battery is automatically put to earth through a coil just before it is connected to the electro-magnet on each burner, substantially as and for the purpose set forth.

3. The combination of the series of conducting-plates F F F, or their equivalents, insulated from each other, and each connected to an electro-magnet on a burner, the conducting-arm H, connected to a primary coil and one pole of a battery, and moving over and making contact with the plates F F F, the conducting-ring E, or its equivalent, connected to the earth, the conducting-arm K, connected to the arm H, and making contact with the ring E only when the arm H breaks contact with the conducting-plates F F F, the coil O, and the battery M B, substantially as and for the purpose set forth.

4. The combination of a series of conducting-plates separated and insulated from each other, arranged in a circle and with turned-up and pointed inner ends, and a revolving arm pivoted at the center of the circle and passing over and making contact with the edges of the ends of the turned-up plates, substantially as and for the purpose set forth.

In witness whereof I have hereunto signed my name, in the presence of the two subscribing witnesses, on this 21st day of November, 1879.

JACOB P. TIRRELL.

Witnesses:

ALEX. L. HAYES,  
GEO. F. PINKHAM.