

G. D. BANCROFT.
Thermo and Electric Gas Controlling and Lighting
Apparatus.

No. 205,032.

Patented June 18, 1878.

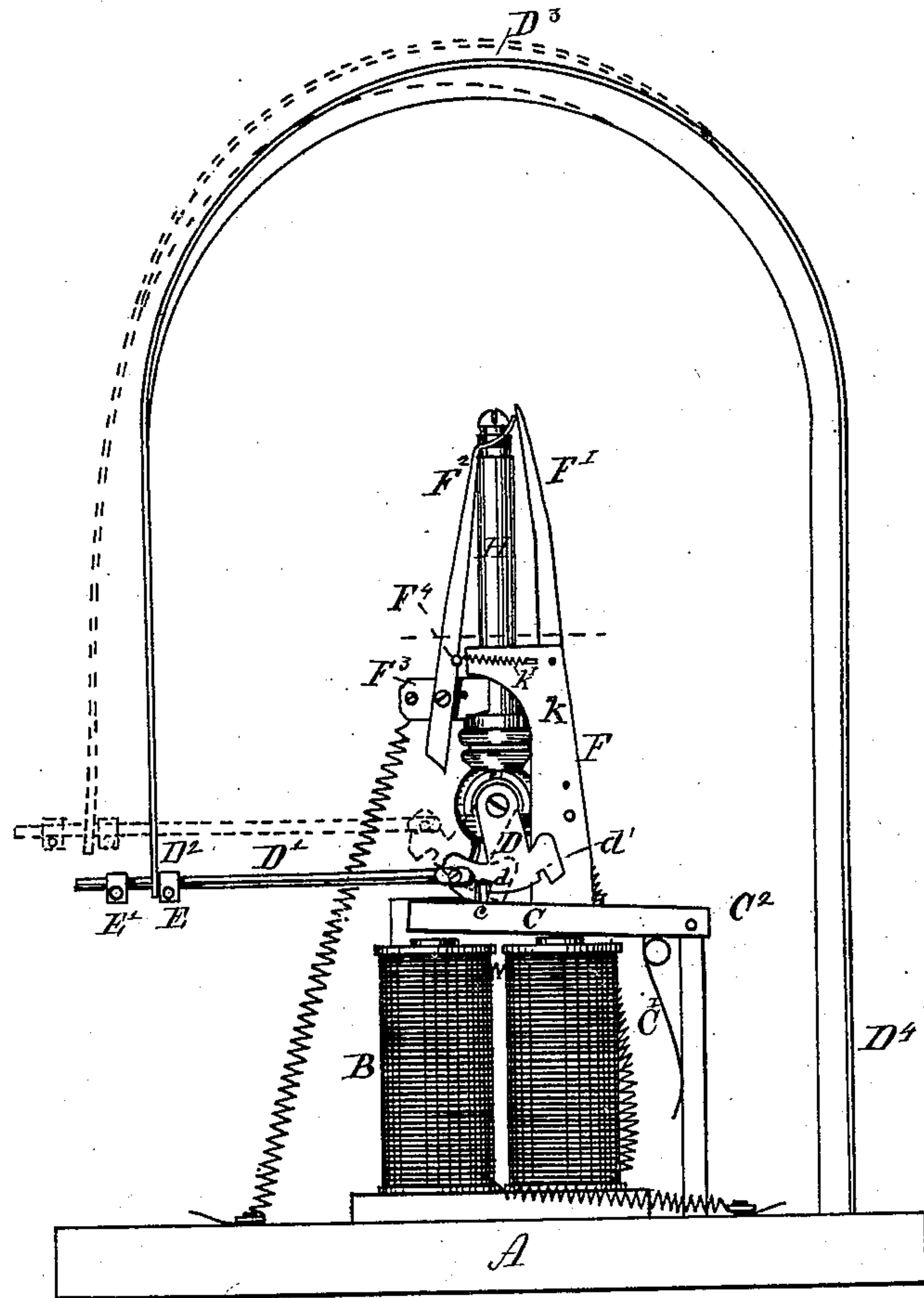


Fig. 1.

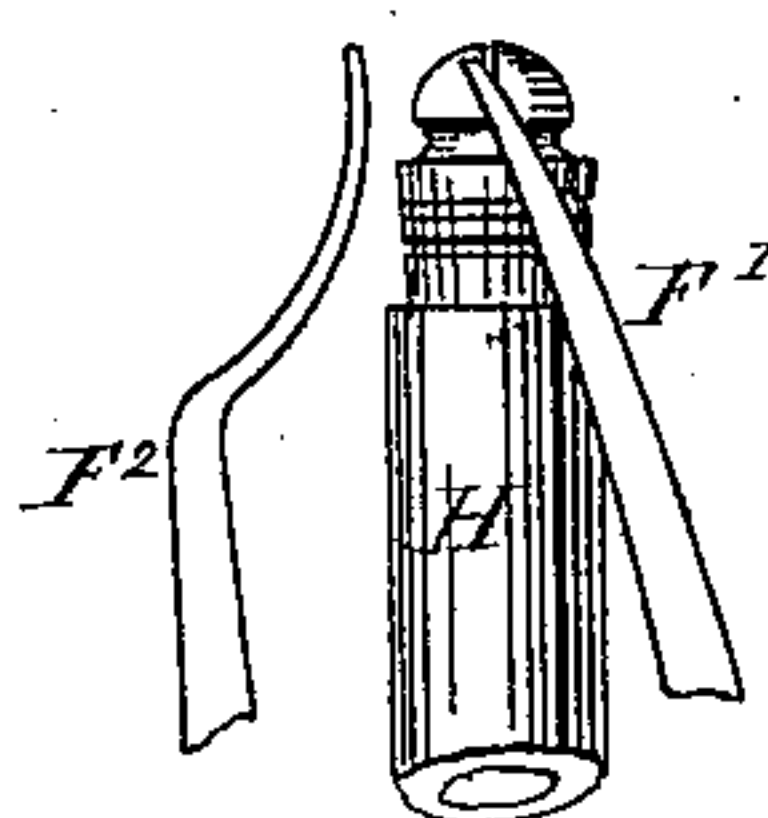


Fig. 2.

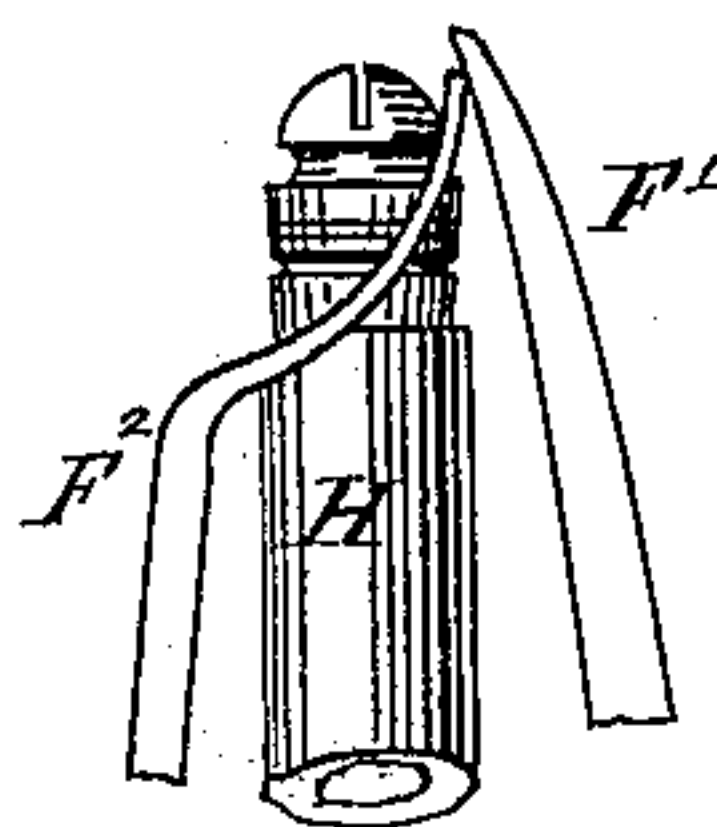


Fig. 3.

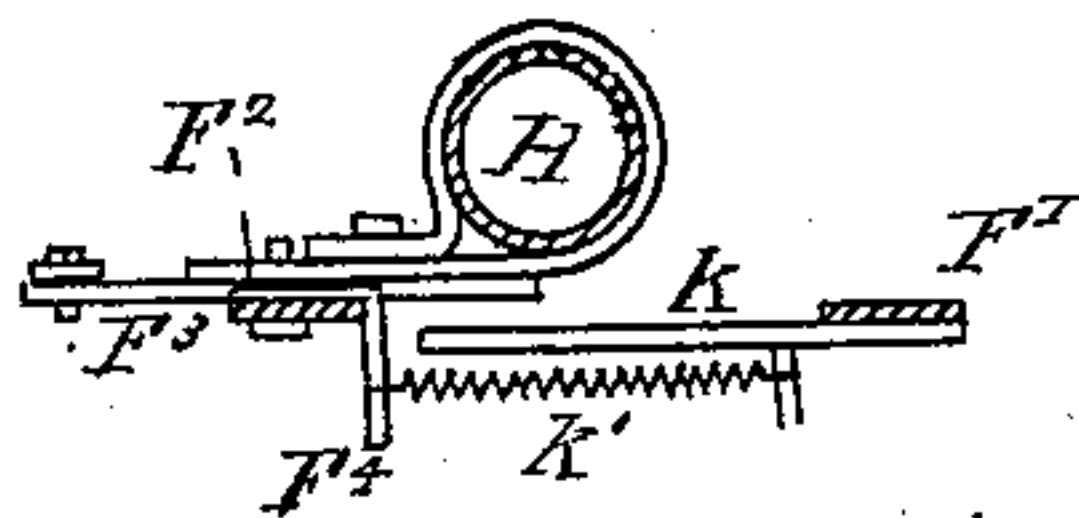


Fig. 4.

WITNESSES

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GEORGE D. BANCROFT, OF LYNN, ASSIGNOR TO GEORGE FRED. WILLIAMS,
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IMPROVEMENT IN THERMO AND ELECTRIC GAS CONTROLLING AND LIGHTING APPARATUS.

Specification forming part of Letters Patent No. **205,032**, dated June 18, 1878; application filed
October 15, 1877.

To all whom it may concern:

Be it known that I, GEORGE D. BANCROFT, of Lynn, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Thermo and Electric Gas Controlling and Lighting Apparatus, of which the following is a specification:

The nature of my invention consists, first, in combining with a gas-burner a metallic curve or coil, one end of which is permanently fixed, while the other end, which is free to move by the action due to the differences of temperature, is connected to the gas-cock, so that the contraction of the coil tends to open, while the expansion of the same tends to close, the stop-cock; second, in the construction and arrangement of a spark-producer and circuit-breaker, the two elements of the breaker moving together into the field of the gas-flow, and there separating and producing the spark, causing ignition of the gas, after which both elements move out of the flame, and at the same time into renewed contact with each other, thus closing the circuit.

Figure 1 is an elevation of my device. Fig. 2 represents the burner with the spark-producing points out of contact—that is, the circuit is broken. Fig. 3 represents the same, except the spark-producing points are in contact—that is, the circuit is closed. Fig. 4 is a horizontal section on line *xy* of Fig. 1.

A represents the base or frame to which the apparatus is connected. H is a gas-burner, and D a segment-arm attached directly to the gas-cock, and connected by the link D¹ and sliding adjustable nuts E E' to the free end D² of the thermo-metallic arch D² D³ D⁴, these several parts being so adjusted that when the thermo-arch is cold its tendency is to open the stop-cock and allow the gas to flow; but when the coil is heated, as it will be by the flame of the gas, its tendency is to close the stop-cock, thus shutting off the gas.

The electric let-off and stop-motion operate as follows: C is an armature, pivoted at C², thrown up by C¹, and operated by the electro-magnet B. Upon the top of this armature I affix a flat stud, *c*. This is intended

to engage, respectively, with the notches *d* and *d'* of the segment-arm D.

Now, when the apparatus is cold, the gas not burning, the segment-arm D is in the position represented by dotted lines in Fig. 1, being held in this position by the stud *c* and the notch *d'* in the segment-arm D, the part D² of the thermo-arch steadily pressing against the nut E, and thus exerting a pressure through the link D' on the arm D, which it would throw over and open the gas-cock if it were not held by the stud *c*.

With the apparatus in the above-described condition, all I have to do in order to open the gas-cock is to close the circuit, which action draws down the armature C and leaves the segment-arm D free to be swung over by the pressure of the thermo-arch D² D³ D⁴ to the position shown by the full lines in Fig. 1.

By an automatic circuit-breaker a spark is produced which lights the gas, the burning of which heats and expands the thermo-arch, and thus causes it to pull and exert a pressure on the segment-arm D toward the gas-closing position, it being restrained in its action by the stud *c*, which is now in the notch *d* in the segment-arm D, the armature C having been thrown up by the spring C' when the circuit was allowed to break.

I will now proceed to describe the circuit-breaker and spark-producer.

F is an upright attached to the armature C. This upright has riveted to it a point, F¹, which extends upward to the top of the burner. This point F¹, being attached to the armature, vibrates with it.

The point F² forms the other element of the breaker. This is pivoted to the arm F³, so as to swing freely, and is held by a spring, *k'*, in contact with the other point F¹, except when forced away by the arm *k*, which comes in contact with the pin F⁴. This action takes place at the last part of the throw of the armature, the parts being so adjusted that this separation of the points F¹ F² takes place at the moment the two points are swinging through the gas-flow. This separation of the points produces the spark and ignites the gas.

Having now described the construction and

operation of my invention, what I desire to secure by Letters Patent is as follows—

1. Combining, with an electrically-controlled mechanism for opening and closing gas stop-cocks, a thermo-arch, $D^2 D^3 D^4$, operating substantially as described, and for the purpose set forth.

2. The combination of the armature C and

the moving circuit-breaker F^1 with the moving circuit-breaker F^2 and the gas-burner H, operating together substantially as described, and for the purpose set forth.

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Witnesses:

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