(No Model.)

G. J. GALBRAITH.

ELECTRIC HAND LIGHTING GAS BURNER.

No. 567,971. Patented Sept. 22, 1896.

Fig. 1.

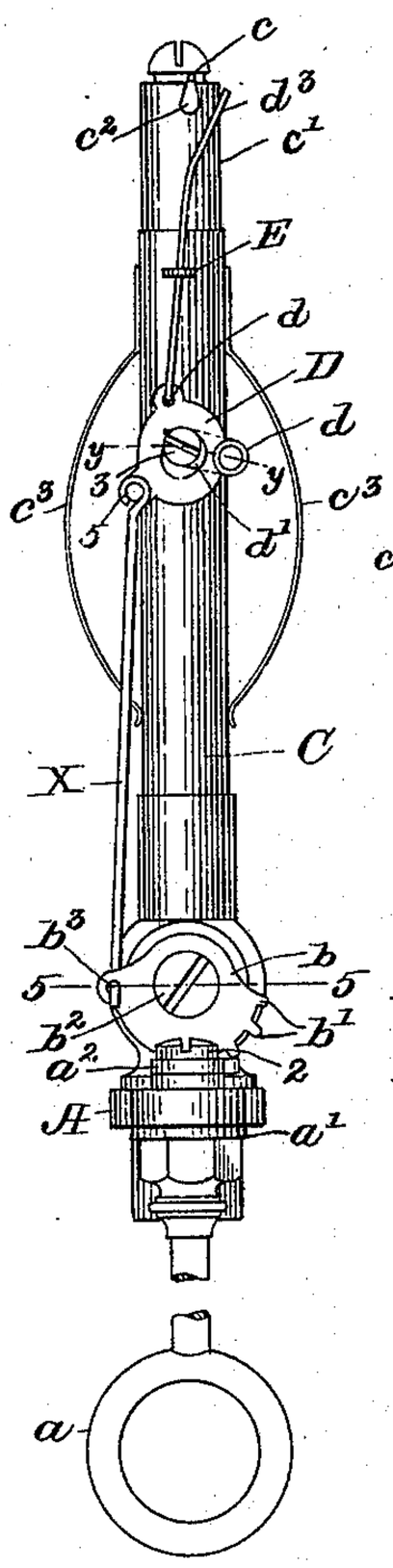


Fig. 2.

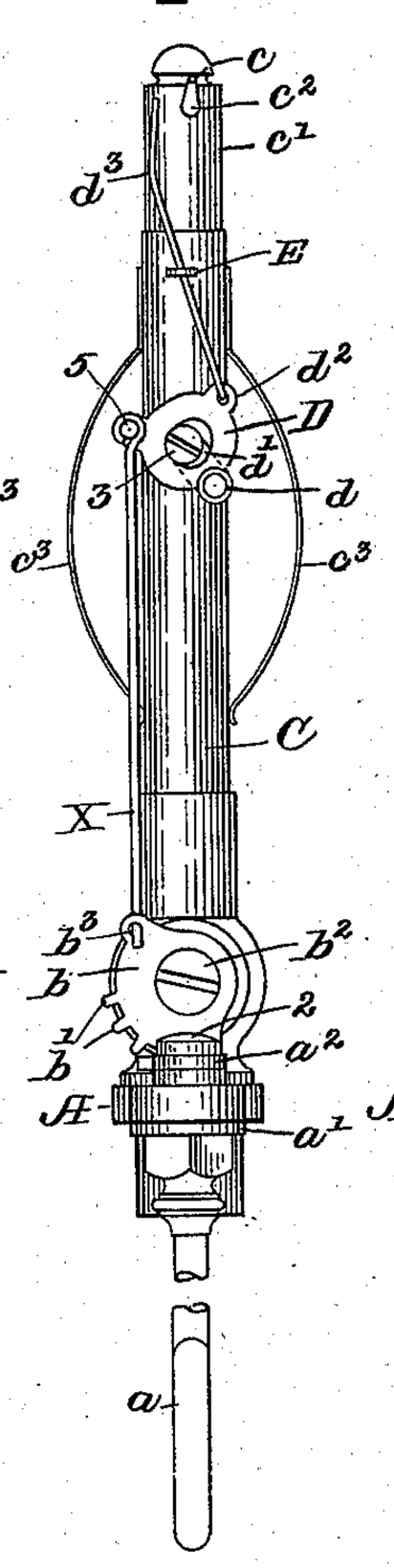


Fig. 3.

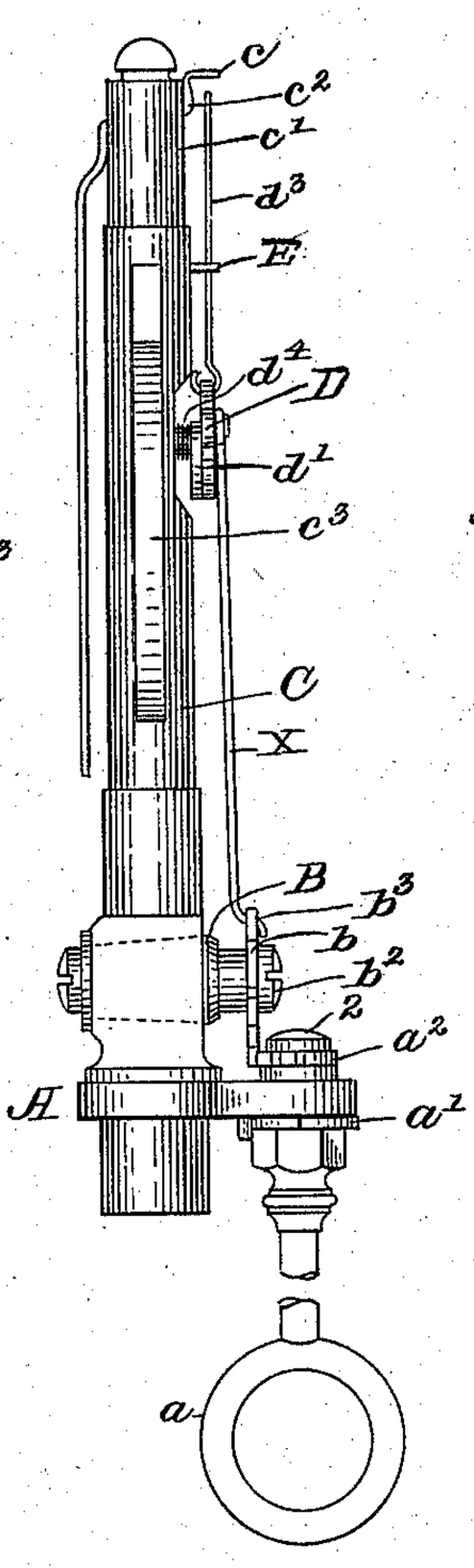


Fig. 4.

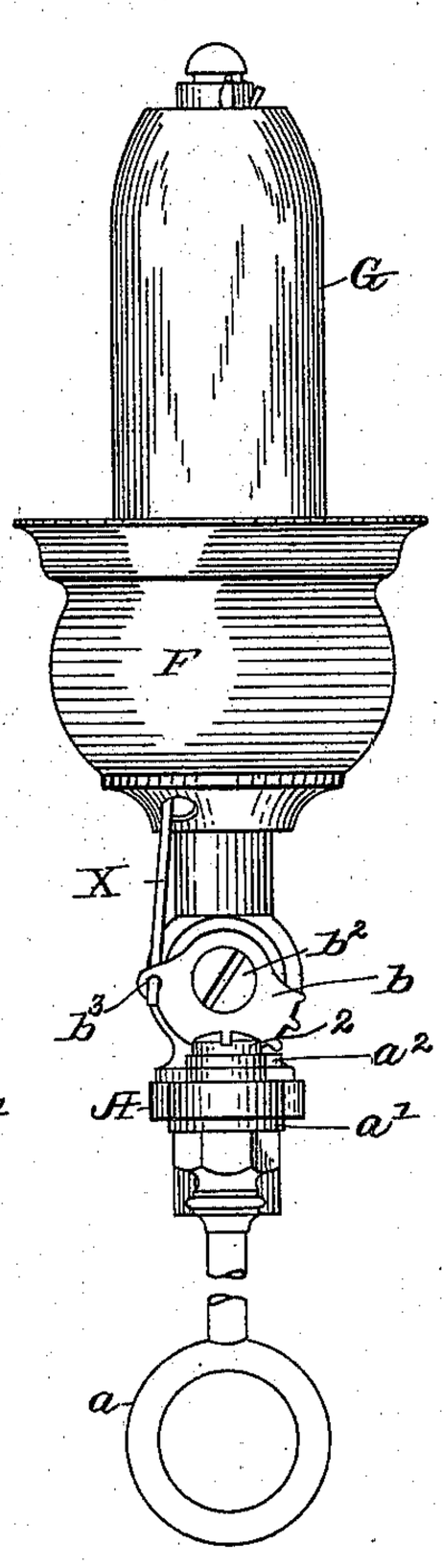


Fig. 5.

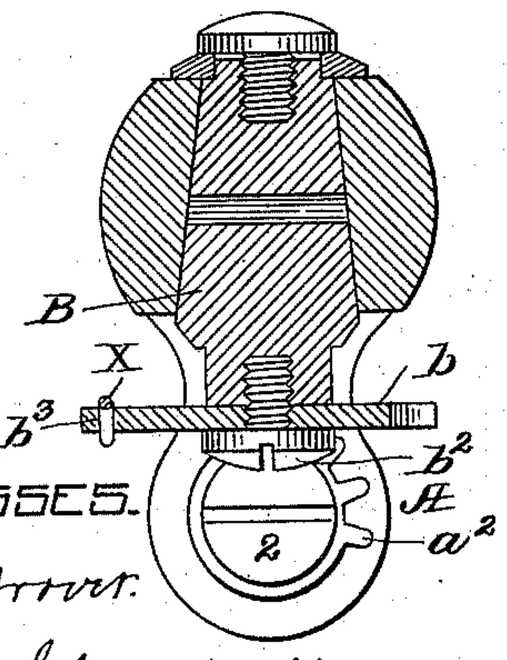


Fig. 6.

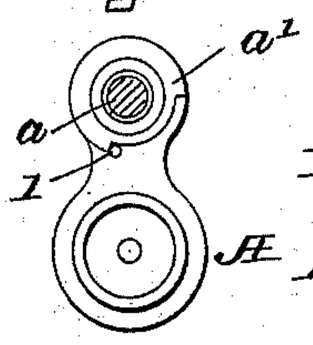
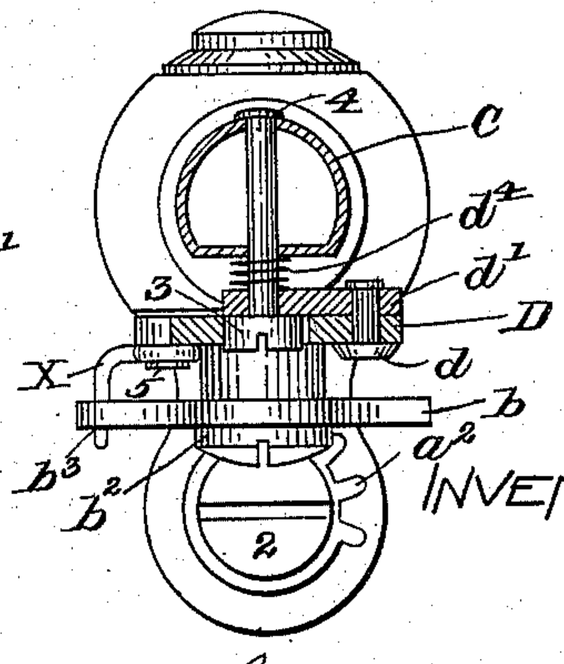


Fig. 7.



WITNESSES.

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Fred C. Chamberlin

INVENTOR.

George J. Galbraith

UNITED STATES PATENT OFFICE.

GEORGE J. GALBRAITH, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE ELECTRIC GAS LIGHTING COMPANY, OF SAME PLACE.

ELECTRIC HAND-LIGHTING GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 567,971, dated September 22, 1896.

Application filed June 25, 1896. Serial No. 596,868. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. GALBRAITH, of Boston, Massachusetts, have invented a new and useful Improvement in Electric Hand-Lighting Gas-Burners, and particularly in that variety thereof known as "candle-burners," of which the following is a specification.

My invention relates to that class of electric hand-lighting gas-burners in which the movement of the thumb-piece serves to oscillate the gas-valve and also to vibrate an electrode at the top of an elongated gas-pillar, such as is necessary in the case of what are called "candle-burners," such burners requiring a very much more extended burner-pillar, in order to carry the burner-tip up to the top of a porcelain or similar tube representing a candle. The construction of these burners, of course, requires a different kind of apparatus from that required in the ordinary form in which the burner-tube is of only ordinary and much less height.

My invention consists in new devices in this variety of candle-burners and a new combination of devices, all so adapted as to avoid making a spark when turning off the gas.

My invention will be easily understood by reference to the accompanying drawings, in which—

Figure 1 is a front view of the entire combination, omitting the porcelain candle-shade and its support, with the gas turned off. Fig. 2 is a similar view with the gas turned on. Fig. 3 is a side view with the gas turned on. Fig. 4 is a view of the entire combination when the support for the porcelain candle and the porcelain itself are in place. Fig. 5 is a section through the line 5 5, Fig. 1. Fig. 6 is a detail. Fig. 7 is a top view in horizontal section through y y.

A is a bracket supporting the burner-tube, and also the handle a, which has the cam-plate a' cut away so as to operate against the stop 1, and having also the toothed plate a^2 above the bracket held in place by the screw 2.

B is the oscillating gas-valve, having rigidly fixed upon its stem the toothed plate b, having the teeth b', and held in place by the screw b^2, and perforated at b^3 to admit the connecting-rod X.

C is the elongated gas-pillar, having the fixed electrode c, preferably set in a metal collar c', insulated from the burner-pillar C and connecting with one of the circuit-wires c^2, and upon opposite sides of which body C are two flexible springs c^3 for holding in position the porcelain candle.

D (best shown twice enlarged in Fig. 7) is a vibrating plate whose center is cut away eccentrically, and which is pivoted at d upon an arm d', which is loosely pivoted to the burner-pillar C by means of the screw-pivot 3, which, for the sake of strength, preferably passes through the burner-pillar C and is turned over or soldered at 4. About the head of the pivot 3 rotates the plate D, said plate having also a pin 5, to which is attached the other end of the connecting-rod X, and connected with said plate at d^2 is a bit of platinum wire d^3, serving as the movable electrode. The arm d' is retained from the pillar and against the head of the screw 3 by the friction-spring d^4. The purpose in this friction or retaining spring is to exert sufficient pressure upon the arm d' to hold it stationary during the elevating of the rod X until the plate D bears against the lower part of the pin 3 instead of the upper part, from which time on, until the electrode assumes the position shown in Fig. 2, it is necessary that the arm d' should revolve with the plate D.

E is a guide through which passes the movable electrode d^3.

Having described the construction of my improvement, its operation will now be evident. The support F for the porcelain candle G and the candle being understood to be in place, as in Fig. 4, when the apparatus is in the position shown in Fig. 1, with the gas turned off, a quarter-rotation of the thumb-key will, by means of the toothed plates a^2 and b, cause the gas-valve to partially rotate until it is open. The extent of rotation is determined by the cam on the plate a' and the stop 1. At the same time the connecting-rod X will be elevated to the position shown in Fig. 2. In the course of assuming that position the connecting-rod will cause the

plate D to partially rotate, together with the arm d', which is pivoted upon it at d, and thereby the movable electrode d^3, passing through the guide E, will be slightly elevated, oscillated into and out of contact with the fixed electrode, and then slightly depressed, lighting the gas. In turning the gas off the rod X, pulling down upon the pin 5, will, by reason of the cut-away portion of the plate D, slightly depress the same, and thereby so depress the movable electrode d^3 that, as it passes back to the position shown in Fig. 1, it will not make contact with the fixed electrode C. It will be seen, therefore, that battery power is saved by avoiding any spark, except to light the gas, which result will be seen to be brought about by the plate D and its accessories, as described. It will be understood that, considering the length of the burner-tube which is necessary in candle-burners, the gas-valve must be slightly opened long enough to enable some issuing gas to reach the burner-tip before the two electrodes are brought into and out of contact.

Having described my invention, what I claim is—

1. In an electric hand-lighting gas-burner, in combination with the burner-pillar having a fixed electrode, a plate D, its center cut away as described, having the projections d, d^2, and 5, an arm d', both said plate and said arm being loosely pivoted to the burner-pillar and to each other, a friction-spring d^4, a movable electrode hung in the projection d^2, a guide E, and mechanism to properly oscillate said plate and arm so as to cause said movable electrode to make and break contact with the fixed electrode, at the ignition but not at the extinguishment of the gas, substantially as described.

2. In an electric hand-lighting gas-burner, as a device for operating the movable electrode, the plate D and the arm d', both loosely pivoted to each other and to the burner-tip by the pin 3, the spring d^4, a guide E to hold the movable electrode, a movable electrode d^3, the connecting-rod X, and mechanism for lifting and lowering the same so as to oscillate the plate D and thereby vibrate said movable electrode, substantially as and for the purpose described.

3. In an electric hand-lighting gas-burner, in combination with a burner-pillar and a supporting-standard therefor, and a fixed electrode thereon, the thumb-cock A, having the toothed plate a, and cam-plate a', the gas-valve B, having the toothed plate b, the connecting-rod X, the plate D, arm d, headed screw 3, and the movable electrode d^3, all substantially as described and shown.

In witness whereof I have hereunto subscribed my name this 24th day of June, A. D. 1896.

GEORGE J. GALBRAITH.

In presence of—
FRED C. CHAMBERLIN,
W. H. LEONARD.