

(No Model.)

L. L. BORRADAILE.
ELECTRIC GAS LIGHTER.

No. 581,327.

Patented Apr. 27, 1897.

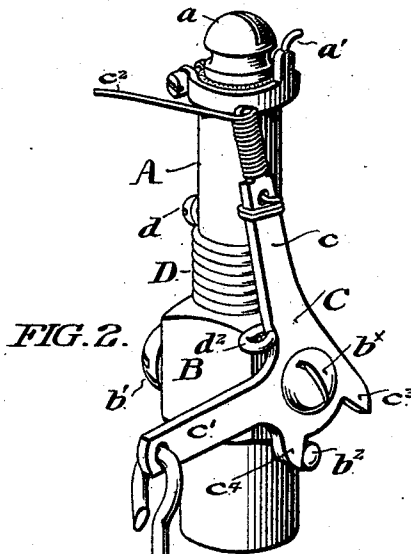
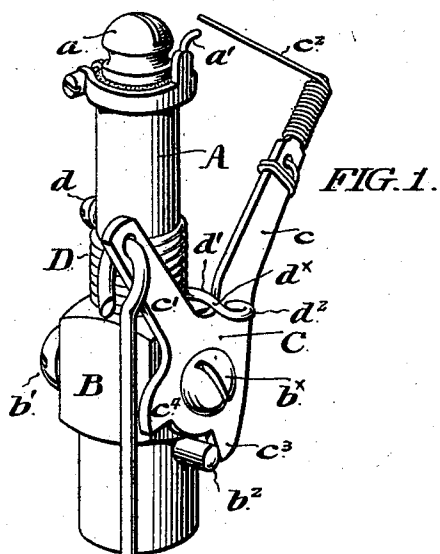


FIG. 3.

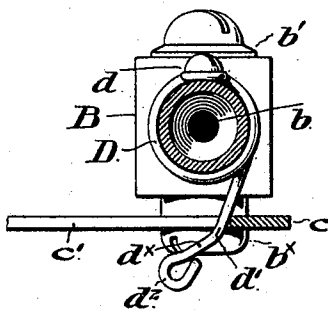
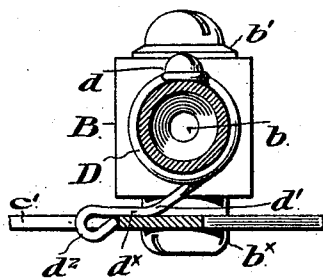


FIG. 4.



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LEWIS L. BORRADAILE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO JOSEPH LINDSEY DURNELL, OF SAME PLACE.

ELECTRIC GAS-LIGHTER.

SPECIFICATION forming part of Letters Patent No. 581,327, dated April 27, 1897.

Application filed December 23, 1896. Serial No. 616,723. (No model.)

To all whom it may concern:

Be it known that I, LEWIS L. BORRADAILE, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Electric Gas-Lighters, of which the following is a specification.

My invention has relation to the means for controlling the valve and electric igniting apparatus of a pendent gas burner, and its object is to simplify and cheapen the constructions heretofore in use, by providing inexpensive, simple, and certainly-operating devices for controlling the set of the valve-operating lever in both its "open" and "closed" positions.

A burner embodying a good form of my improvements is represented in the accompanying drawings, and hereinafter described, the particular subject-matter claimed as novel being hereinafter definitely specified.

In the drawings,

Figure 1 is a view in perspective of a burner embodying my improvements, the parts being represented in the positions which they occupy when the gas valve is closed.

Figure 2 is a similar view of the same burner, with the parts represented in the positions which they occupy when the gas valve is open and the gas assumed to be lighted.

Figure 3 is a top plan view of the burner represented in Figure 1, section being supposed through the pillar above the lever controlling spring.

Figure 4 is a similar view of the burner represented in Figure 2, similarly sectioned.

Similar letters of reference indicate corresponding parts.

In the drawings,

A is the pillar or body of the burner.

B is the valve casing or chamber, through which passes the usual cylindric valve *b*, the maintenance and adjustment of which are effected by a screw washer *b'*, in the usual manner.

C is the valve-operating lever, conveniently connected by a screw *b^x* with the valve, and formed in the usual manner with an approximately vertical arm, termed the wiping arm *c*, and with an approximately horizontal arm

which I term the manipulating arm, to the outer end of which a dependent lever handle *c^x* is connected.

The tip portion *a* of the burner A is shown provided with the usual fixed spark terminal *a'*, and the upper portion of the wiping arm *c* of the valve-operating lever is shown equipped with the usual spring spark terminal *c²*,—the said terminals being those of the usual battery circuit.

b² is a lug or stop on the burner for engaging one or the other of the stop shoulders *c³* *c⁴* of the valve-operating lever, to limit its movement in one or the other direction.

D is a spring, which I term the lever spring, the same being a spring of the spiral variety, made of wire coiled round the burner, and having one extremity secured to said burner by the fastening screw *d*.

The free end *d^x* of this spring is extended outwardly or tangentially away from the convolutions of the body proper, is conveniently formed with a terminal loop *d²*, and intermediate of its length is preferably bent inwardly to form an externally-protecting angle, or hump, *d'*, so to speak.

In the mounting of the parts, the spring is preferably applied to the burner just above the valve casing, and the free end projects between the arms of the lever, and, in the normal position of the parts,—that is to say, in the position represented in Figures 1 and 3 in which the burner is closed,—bears outwardly against the inner edge of the wiping arm and serves to maintain the lever in the position represented in said figures, that is to say, with the stop shoulder *c³* in encounter with the stop *b²*.

It will be readily understood that in this position the stress or resilience of the free end of the spring in its tendency to unwind,—for it is to be understood that in the mounting of the parts the spring is coiled so closely, or otherwise in such manner, as to possess a constant tendency to expand or uncoil,—will act at almost a right angle to the wiping arm of the lever, upon its inner edge, and in a direction opposite to that of its then only possible movement, namely, a movement toward said free end in the downward pull of the lever handle.

Such being the normal relationship of the parts, it will be further obvious, that when, in the downward pull of the lever handle, the valve-operating lever is deflected from the position represented in Figures 1 and 3 to that represented in Figures 2 and 4,—the action of the wiping arm against the free end of the spring will be to force said free end, first, in the direction of its own (the arm's) movement, and, second, inwardly toward the burner,—with the result that when the valve lever has been deflected into this second position, or that in which the gas valve is open, the free end of the spring will lie against the inner side face instead of the inner edge of the wiping arm of said lever, and will tend to prevent the reverse, or any, movement of said lever, by the stress which it exerts outwardly against the side of said lever arm in a direction right angular to the path of possible movement of said arm.

It will be further obvious that in the lift of the handle and the consequent reverse deflection of the lever, the action will be, first, to cause the upward and backward sliding of the inner side face of the wiping arm against the end of the spring, before said spring commences or can commence to move outwardly from the burner, and, second, the general outward uncoiling movement of said free end of said spring away from the burner and into contact with the inner edge of the wiping arm.

The bending of the free end of the spring intermediate of its length, is not essential, but it is convenient, as it insures the best results in operation, the bent end portion of the spring included between the terminal loop d^2 and the hump d' lying in parallelism with and consequently flat against the inner side face of the wiping arm when the parts are in the second position or that represented in Figures 2 and 4.

While I prefer to apply the spring to the body of the burner in the manner and location represented, yet it will be obvious that so long as its free end operates with respect to the wiping arm of the lever in the manner described, the location of the spring with respect to, and its mode of application to, the burner, are inconsequential.

It is not, moreover, necessary that the spring should be a complete spiral, as good results, although not the best results, can be secured from the use of a flat or other spring not wound in a complete spiral.

It is, however, important, in the embodiment of the invention represented, that the free end of the spring should act upon the edge of the arm of the valve-operating lever,

in one position of said lever, against the direction of its then only possible movement,—and also act upon said arm, in the other possible position of said lever, at an angle, preferably a right angle, to the plane of its then only possible movement, to the end of securing the maintenance of the lever in its then position by the frictional contact between the inside face of said lever and the end of said spring.

Having thus described my invention, I claim:

1. In a pendent gas burner the following elements in combination:—a gas burner;—a gas valve for the same;—a valve operating lever;—and a spring one end of which is fixed relatively to the burner and the other end of which is free and acts upon said valve-operating lever in one of its positions in the plane of and against the direction of its then possible movement, and in the other of its positions at an angle to the plane of its then possible movement;—substantially as set forth.

2. In a pendent gas burner, the following elements in combination:—a gas burner;—a gas valve for the same;—a valve-operating lever embodying both a wiping and a manipulating arm;—and a spring one end of which is fixed relatively to the burner, and the other end of which is free and acts upon the edge of the wiping arm when the valve-operating lever is in its normal or "open" position, and upon the side of said wiping arm when the lever is moved into its second, or "closed," position and the spring flexed by said movement;—substantially as set forth.

3. In a pendent gas burner, the following elements in combination:—a gas burner;—a gas valve for the same;—a valve-operating lever embodying both a wiping and a manipulating arm;—and a spring one end of which is fixed relatively to the burner, and the other end of which is free, extends tangentially from beyond the convolutions of the body between the arms of the valve-operating lever, and acts upon the edge of the wiping arm when the valve-operating lever is in its normal or "open" position, and upon the side of said wiping arm when the lever is moved into its second, or "closed," position and the spring flexed by said movement;—substantially as set forth.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 17th day of December, A. D. 1896.

LEWIS L. BORRADAILE.

In presence of—

J. BONSALE TAYLOR,
THOS. K. LANCASTER.