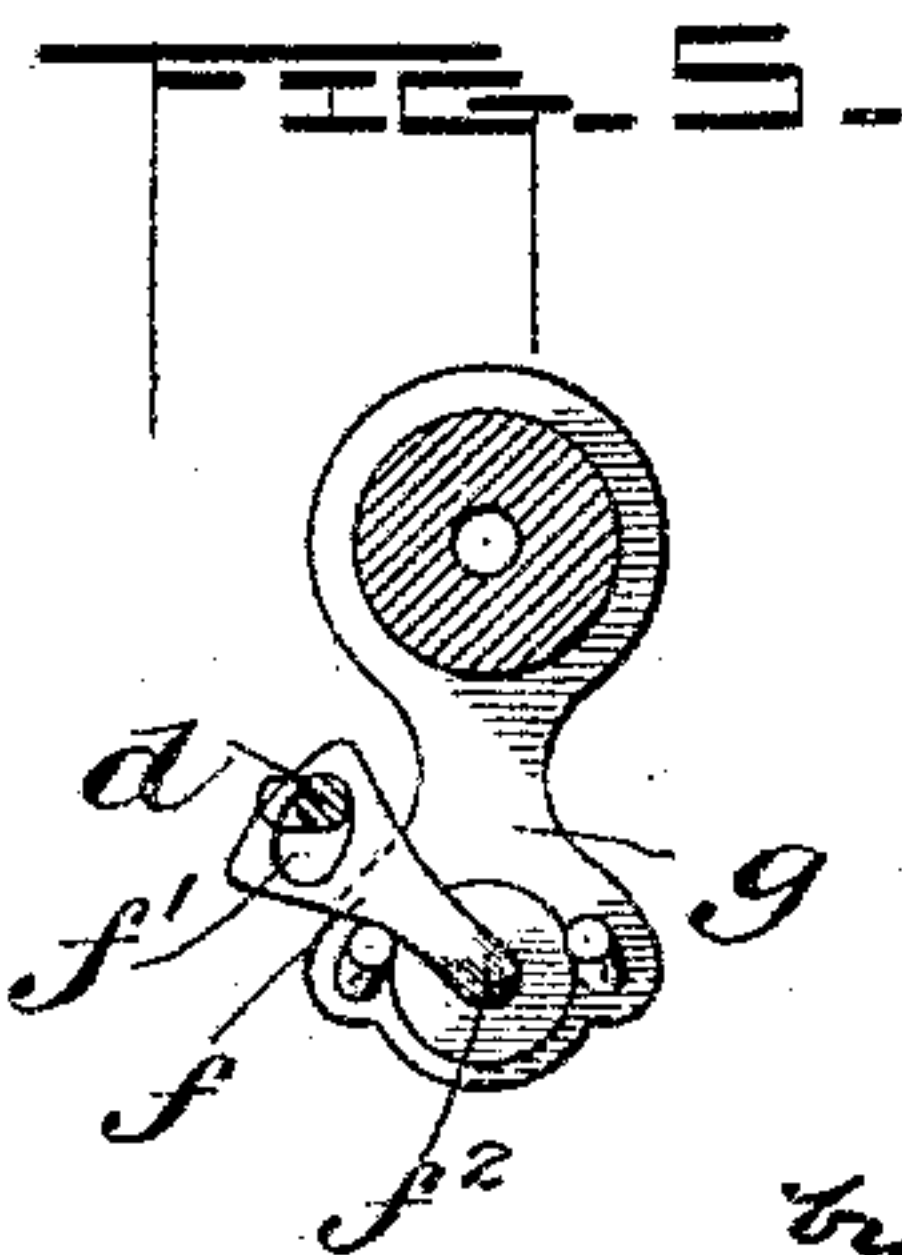
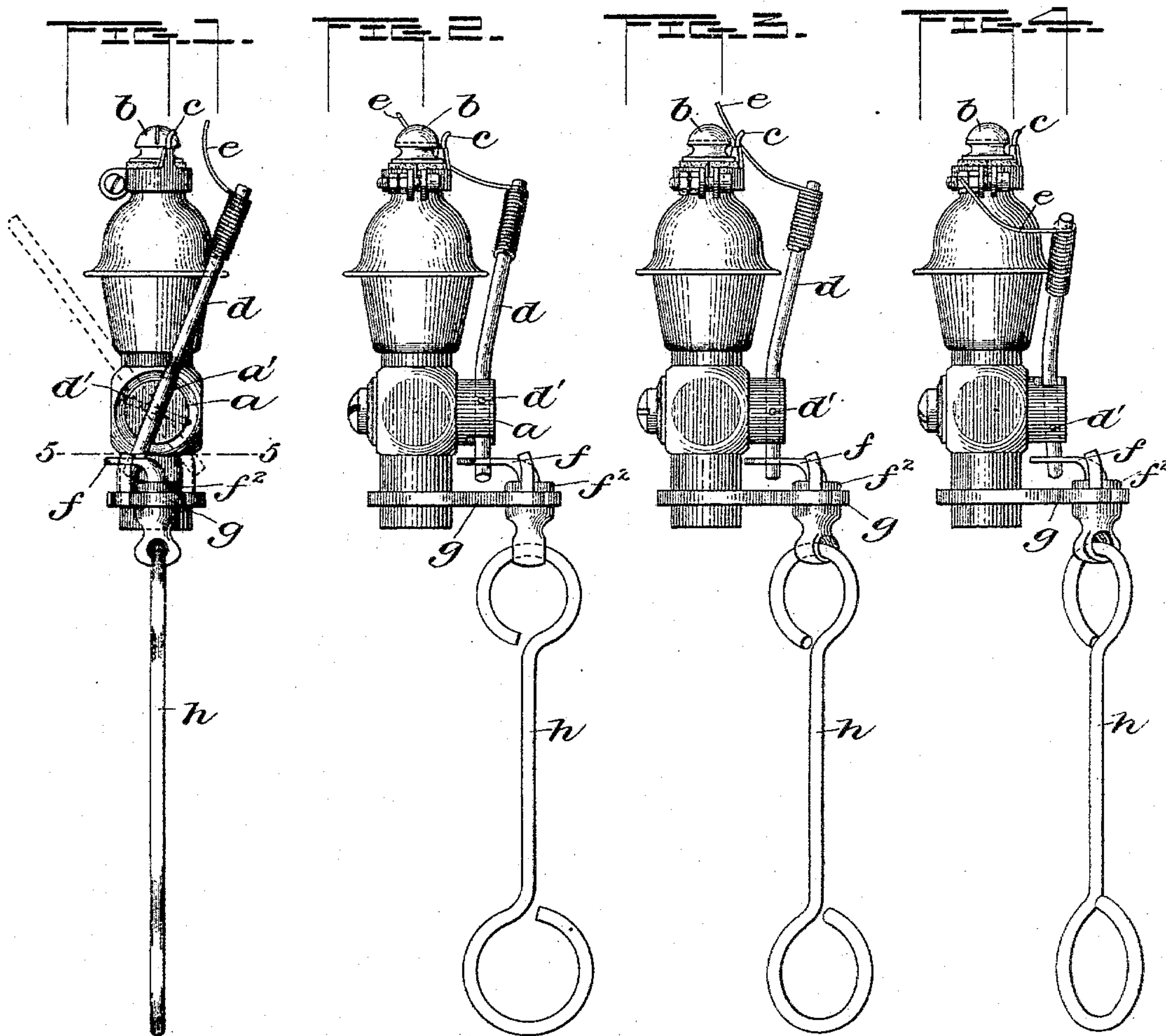


(No Model.)

W. E. CRAM.
ELECTRIC GAS LIGHTING BURNER.

No. 569,785.

Patented Oct. 20, 1896.



Witnesses
O. W. Smith
J. P. Davis

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UNITED STATES PATENT OFFICE.

WILLIAM E. CRAM, OF BOSTON, MASSACHUSETTS.

ELECTRIC GAS-LIGHTING BURNER.

SPECIFICATION forming part of Letters Patent No. 569,785, dated October 20, 1896.

Application filed January 29, 1896. Serial No. 577,225. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. CRAM, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Electric Gas-Lighting Burners, of which the following is a specification.

This invention relates to a gas-lighting burner which is equipped with a movable electrode connected with the gas-cock and arranged to coöperate with a fixed electrode adjacent to the tip of the burner to produce a spark while the cock is being moved to turn on the gas, the spark being produced in the stream of gas, so that it ignites the latter.

The invention has for its object to provide a simple and efficient construction whereby the movable electrode will be caused to coöperate with the fixed electrode in making a spark while the cock is being moved to turn on the gas, but will avoid contact with the fixed electrode while the cock is being turned to shut off the gas, to the end that there may be no unnecessary closing of the circuit and no possibility of the electrodes remaining permanently in contact after the cock has been turned to shut off the gas.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figures 1 and 2 represent side elevations of a gas-burner provided with my improvement. Figs. 3 and 4 represent side elevations showing the movable electrode at the same point relatively to the extremes of its movement, Fig. 3 showing the position of the said electrode during the turning-on movement of the cock, while Fig. 4 shows its position during the shutting-off movement. Fig. 5 represents a section on line 5 5 of Fig. 1.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents the projecting portion of the cock of a gas-burner, the latter being of any suitable construction and provided with a tip *b* and with a fixed electrode *c*, located in the usual relation to the tip, so that a spark caused by the coöperation, with the fixed electrode, of the movable electrode hereinafter described will be in

the current of gas issuing from the tip and will ignite the same.

d represents a lever which passes through a slot *a'* in the cock *a*, and is connected to the cock by a pivot-pin *d'*, which permits the lever to oscillate toward and from the tip *b* in a plane parallel with the axis of the cock. To the upper end of the lever *d* is secured an electrode *e*, having an elastic terminal portion adapted to wipe over the fixed electrode *c* when the cock is being moved to turn on the gas, the separation of the two electrodes causing a spark in the usual way. The lower portion of the lever *d* projects below the cock *a* and enters a cam-shaped slot *f'*, formed in a crank-arm *f*, which is affixed to a stud *f²*, journaled in a bearing formed in an ear or bracket *g*, affixed to the burner. To the lower portion of the stud *f²* is connected an operating rod or handle *h*.

When the stud *f²* is turned in one direction, its engagement with the lever *d* causes it to move the latter and the cock in the direction required to turn on the gas, this movement causing the upper portion of the lever *d* to carry the electrode *e* across the fixed electrode *c* and to separate it therefrom, thus causing a spark in the stream of gas. When the stud *f²* is turned in the opposite direction, the crank *f'* moves the lever *d* and the cock in the direction required to shut off the gas, the electrode *e* being carried back to its starting position. The longer sides of the slot *f'* in the crank-arm *f* are eccentric to the axis of rotation of the stud *f²*, and are arranged so that when the crank-arm is in the position it occupies when the gas is shut off the lower end of the lever *d* is moved outwardly from the burner and the upper end is moved correspondingly inward toward the burner, as shown in Fig. 5.

When the crank-arm *f* is moved to turn on the gas, the relative positions of the ends of the lever *d* remain as just described, the upper end of the lever passing in such proximity to the fixed electrode that the movable electrode makes contact with it, as shown in Fig. 3, and then separates from it. When the crank-arm is turned in the opposite direction to shut off the gas, the eccentric sides of the slot *f'* swing the lower end of the lever *d* inwardly toward the burner and the upper

end outwardly from the burner, the path of the movable electrode being thus changed during its return movement, so that it avoids the fixed electrode, as shown in Fig. 4. Hence
5 no contact is made when the gas is being shut off.

It will be seen that the stud f^2 , crank-arm f , and pivoted lever d constitute a simple, reliable, and positive means for turning the
10 gas-cock and operating the movable electrode, the cam-shaped slot f' enabling the said arm and lever to change the position of the said electrode at the commencement of each movement, so that its return movement is in a different path from its forward or lighting move-
15 ment.

I do not limit myself to the crank with its eccentric slot as the means for oscillating the pivoted lever d and changing its position after
20 each operative movement, and may employ any other suitable means for accomplishing this result.

The lever d is arranged so that when the gas is turned fully on it stands in the position shown in dotted lines in Fig. 1 and at a
25 considerable distance from the flame, so that there is room between the electrode e and the flame for a considerable backward movement of the said electrode without bringing it in
30 contact with the flame. Hence the gas can be turned as low as may be desired and left burning without injury to the electrode, the arrangement being preferably such that when the electrode in its backward movement
35 reaches the tip c the gas is shut off. This feature of my invention, namely, the lever projecting upwardly from the outer end of the cock (which end may be termed a "stem" or "extension") and carrying an electrode
40 which is arranged to permit a partial closing of the cock without coming in contact with the flame, may be used in connection with

any suitable means for turning the cock and swinging the lever.

I claim—

1. An electric gas-lighting burner having a fixed electrode, a cock, a cock-operating lever adapted to oscillate therewith and pivoted to the cock so that it can oscillate independently in a plane parallel with the axis of the cock, 50 a movable electrode secured to the lever, and a lever-operating device having provisions not only for oscillating the lever to turn the cock and carry the movable electrode across the fixed electrode, but also for swinging the lever on its pivot to change the path of the movable electrode after each movement of the cock, whereby said electrode is caused to make contact with the fixed electrode during one movement of the cock and to avoid the fixed electrode during the opposite movement of the cock. 60

2. An electric gas-lighting burner having a fixed electrode, a cock, a cock-operating lever adapted to oscillate therewith and pivoted to the cock so that it can oscillate independently in a plane parallel with the axis of the cock, a movable electrode secured to the lever, a vertical stud journaled in a fixed bearing, a crank-arm affixed to said stud and having a cam-shaped slot engaged with the lever, and means for turning said stud, the said arm and lever being arranged to permit a partial closing movement of the cock without subjecting the movable electrode to contact with the flame. 75

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 21st day of January, A. D. 1896.

WILLIAM E. CRAM.

Witnesses:

A. D. HARRISON,
A. D. ADAMS.