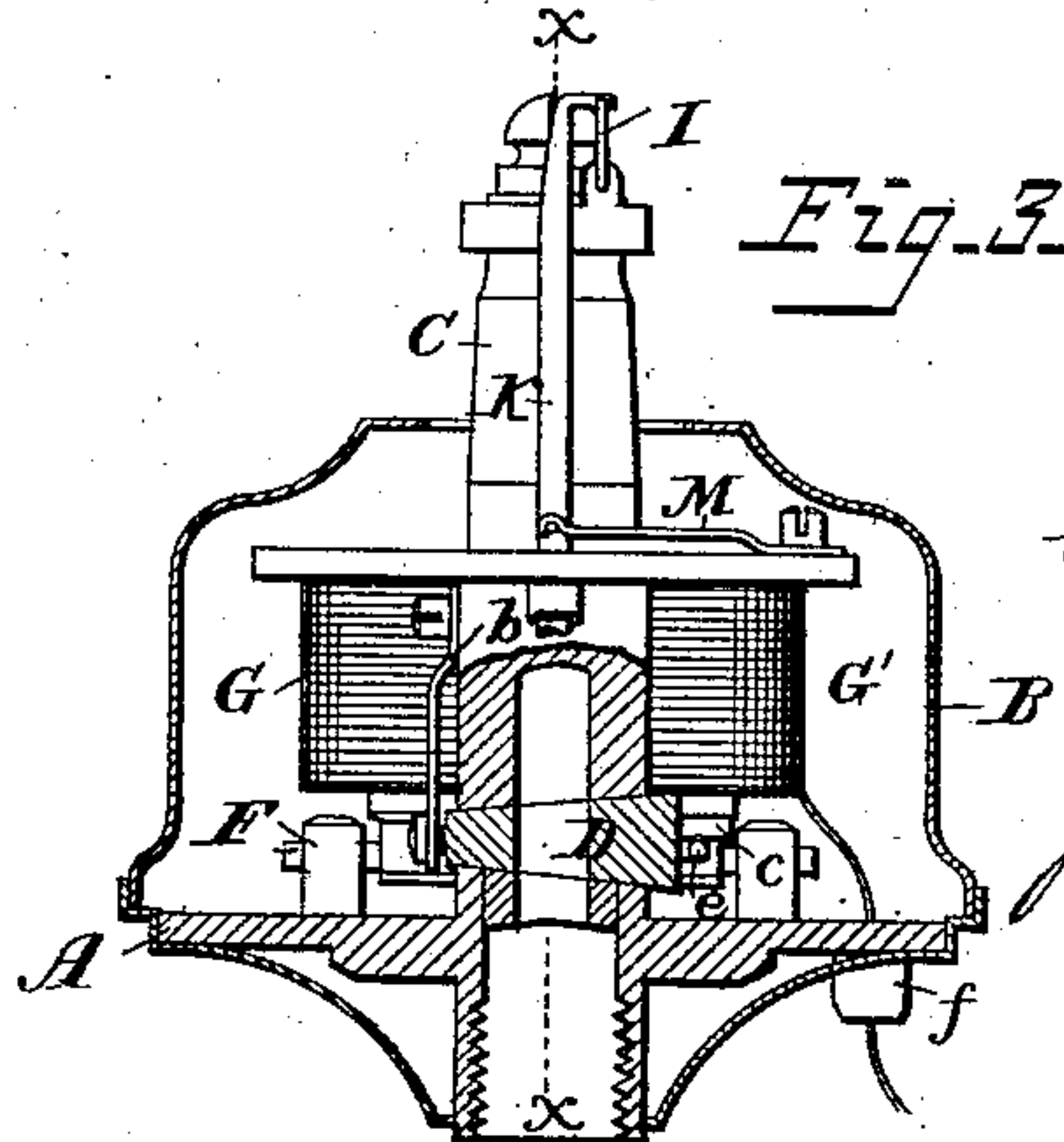
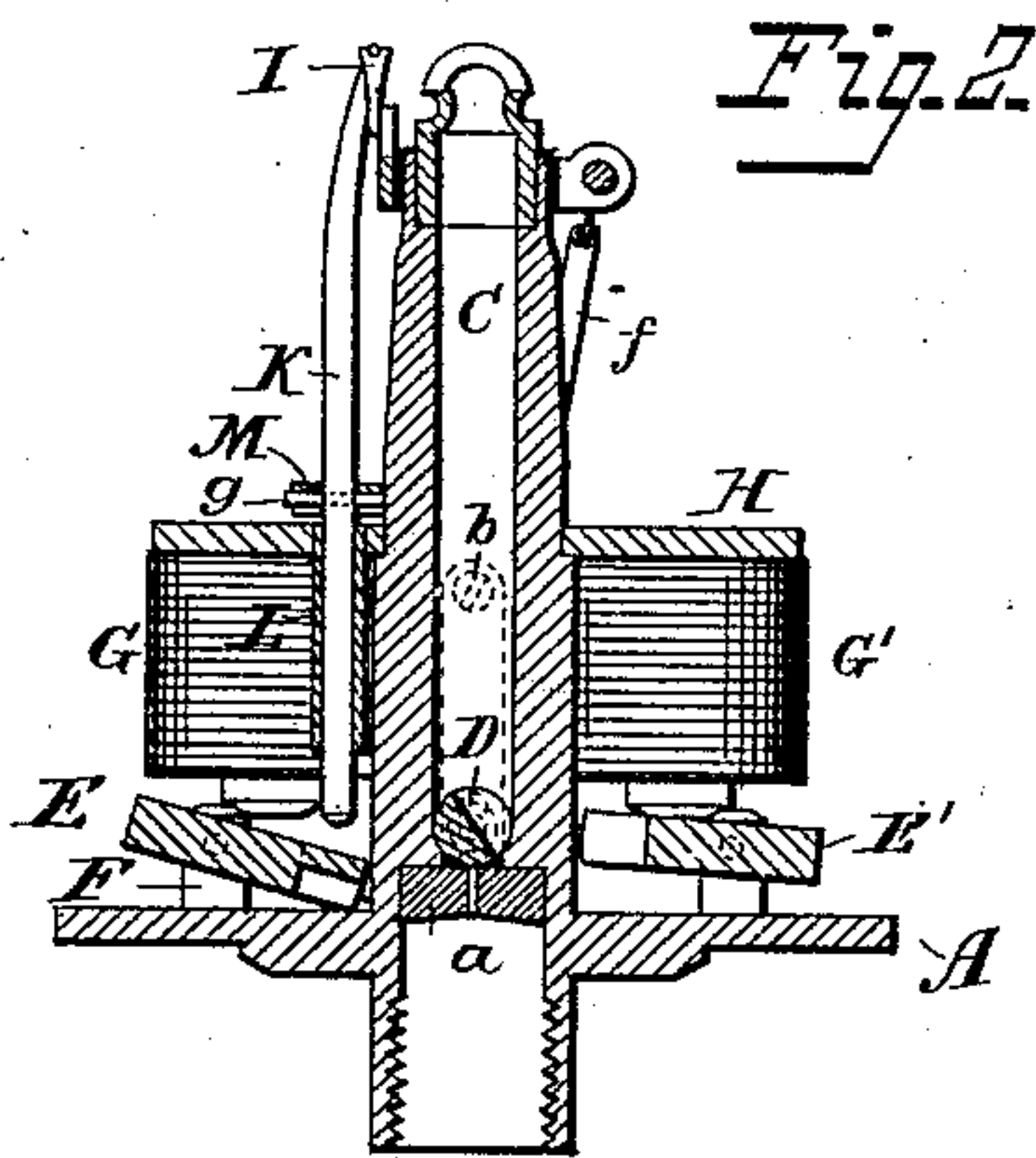
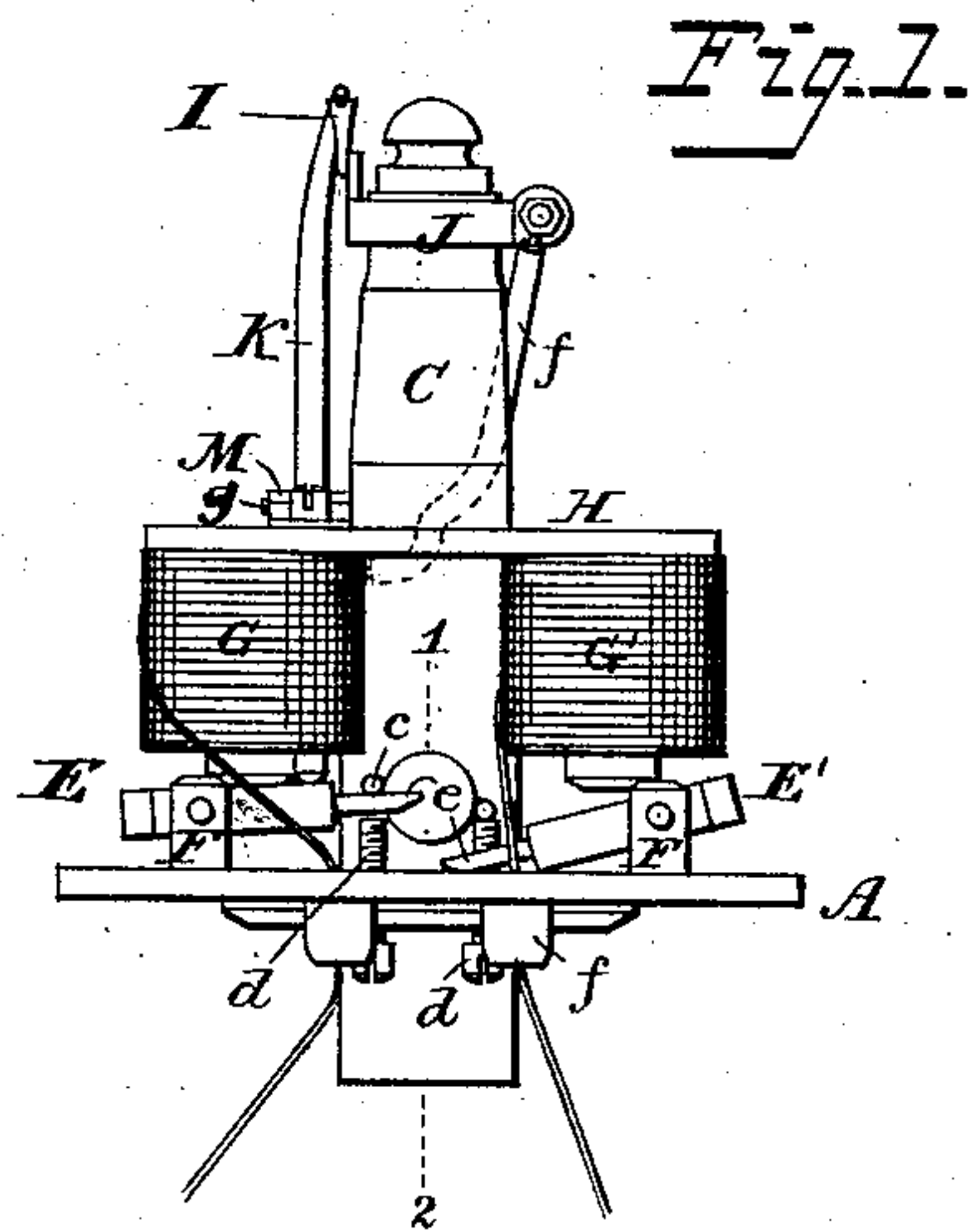


(No Model.)

C. H. CROCKETT.  
ELECTRIC GAS LIGHTER.

No. 281,345.

Patented July 17, 1883.



*Attest:*  
*Court A. Cooper.*  
*H. E. Hansmann.*

*Charles H. Crockett*

*Inventor:*  
*By Charles E. Foster.*  
*att'y.*

# UNITED STATES PATENT OFFICE,

CHARLES H. CROCKETT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE  
BOSTON ELECTRIC COMPANY, OF SAME PLACE.

## ELECTRIC GAS-LIGHTER.

SPECIFICATION forming part of Letters Patent No. 281,345, dated July 17, 1883.

Application filed April 11, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. CROCKETT, of Boston, Suffolk county, Massachusetts, have invented certain Improvements in Electric Gas-Lighters, of which the following is a specification.

My invention relates to automatic electrical gas-lighting burners, and has for its object simplifying the construction so that the parts will operate efficiently and be cheap of production; and it consists in the construction and combination of parts hereinafter particularly described, and then sought to be specifically defined by the claims.

In the drawings, Figure 1 is a side elevation of the burner with cap removed, and Fig. 2 a cross-section on the line *xx* of Fig. 3; Fig. 3, a part cross-section on the line 1 2, Fig. 1, the cap in place.

In the accompanying drawings, the letter A indicates the base of a cap, B, which envelops the several parts of the device, excepting the burner and the spark-electrodes. A burner, C, passes through the base-plate, and has within it, just above the threads which secure the burner to the gas-pipe, a removable slitted transverse plate, *a*, above which is a conical valve, D, seated transversely in the burner, and held to its seat by the forked end of a spring, *b*, secured to the tube and straddling the circularly-grooved end of the valve, as shown. The removable transverse plate *a* forms part of the seat of the valve, and has a narrow slit for the passage of the gas. The plate may be removed and reground or refitted, when required, to insure a perfect bearing for the valve. The opposite end or base of the conical valve is provided with two pins, *c*, which form shoulders on opposite sides of the valve and project beyond the end thereof. These pins are designed to strike alternately against stop-pins *d*, screwed into base A, so as to check the movement of the valve in turning on and shutting off the flow of gas. The stop-pins are threaded, so as to be adjustable, for the purpose of regulating the throw of the valve. The valve is operated by two armatures, E E', which are entirely independent of each other, and provided each at one end with

a pin, *e*, so that when one armature is tilted its pin will strike one of the pins on the valve and turn the valve, so as to open it, and when the other armature is tilted it will strike the other pin on the valve and shut off the flow of gas. These armatures are made independent of each other, so that by no possibility can one discharge the function of the other, for were such the operation the device would not be positive and reliable in its action. The armatures are nearly centrally pivoted to posts F, so that their inner ends will drop, and yet the excess of weight of the heavier ends will require but little, if any, appreciable power to balance the armatures on their pivots. By so pivoting the armatures that their inner ends are lifted by the electro-magnets to a slight extent before contact with the pins *c*, the pins *e* will be given momentum enough to strike the valve-pins a blow, and thereby move the valve with more ease than by steady pressure on the parts. The lower end of the movable electrode is preferably normally out of contact with the armature, so that the armature will attain an amount of momentum before reaching the electrode, and then give it a sharp blow, causing the electrode to be moved away from the fixed electrode quickly and forcibly, insuring a spark. The armatures are operated by independent electro-magnets G G', the cores of which are secured to the under side of the soft-iron yoke H, and the ends of the coils of wires are passed through insulators *f*.

A fixed electrode, I, is clamped by a collar, J, to the burner near the top, and the insulated wire of the magnet G is connected with the pin of the collar J, as shown. A vertically-movable electrode, K, with a platinum point, slides in a tube, L, pendent from the under face of the soft-iron yoke. The movable electrode is normally kept in contact with the fixed electrode by a flat spring, M, connected at one end to the top face of the iron yoke, and at the other to a pin, *g*, passed transversely through the movable electrode. When the current is on, the magnet G lifts the inner end of armature E and presses it or causes it to strike against the lower end of the movable electrode, projecting the electrode upward from the fixed



electrode, and thereby opening the circuit and producing a spark, the breaking of the contact between the electrodes being rapidly repeated as long as the current is in the line, so as to maintain the spark. At the same time that the armature strikes the movable electrode the pin on the armature strikes the pin on the valve, thereby turning the latter, so as to let on the gas. When the flame is to be extinguished, the current is put on the other line, so that the magnet G' will lift armature E' and throw its pin against the pin on the valve, so as to turn the latter and shut off the flow of gas.

I prefer to have the electro-magnets suspended from the lower face of the iron yoke, but they may be placed on top. In such case the several parts will of course be reversed, and the outer instead of the inner ends of the armatures will be heaviest, and the spring which holds the movable electrode in contact with the fixed electrode may be made to hold up the movable electrode to keep it in contact with the fixed electrode. In that case the movable electrode will of course be moved downward instead of upward to break contact with the other electrode.

The pins on the armatures for moving the regulating-valve, instead of being made separate from the armatures and connected thereto, so as to be adjustable, may be made in one piece therewith.

I reserve for other applications for Letters Patent any patentable features not specifically claimed.

Having described my invention and set forth its merits, what I claim is—

1. In combination with the rocking valve of a gas-burner, two independently-acting armatures pivoted to strike projections on the end of the valve, one to open the valve and the other to close it, and electro-magnets to actuate the armatures, substantially as and for the purpose set forth.

2. In a gas-burner, the combination of a valve, armatures for moving the valve in opposite directions, electro-magnets for actuating the armatures, and an adjustable stop-pin independent of the armatures for limiting the movement of the valve to less than that of the armature, substantially as and for the purpose set forth.

3. In a gas-burner, the combination of a valve, a stop-pin for limiting the movement of the valve, two independently-acting armatures for moving the valve in opposite directions pivoted so that they can be thrown against the valve, and electro-magnets for actuating the armatures, substantially as and for the purpose set forth.

4. In a gas-burner, the combination of the regulating-valve provided with projecting pins, the independently-acting armatures pivoted, and provided with pins arranged to be thrown against the pins on the valve, the electro-magnets for actuating the armatures, and

the stop-pins for limiting the movement of the valve, substantially as and for the purpose set forth.

5. In a gas-burner, the combination of a valve, two independent armatures for moving the valve in opposite directions, electro-magnets for actuating the armatures, a fixed electrode, and a vertically-movable electrode operated by one of the armatures, substantially as and for the purpose set forth.

6. In a gas-burner, the combination with a fixed electrode having a V-shaped depression, a vertically-moving electrode normally resting in the depression of the fixed electrode, an armature for moving the sliding electrode, and an electro-magnet for actuating the armature, substantially as described.

7. In a gas-burner, the combination, with a fixed electrode, of a vertically-moving electrode, an armature for moving said electrode, and an electro-magnet for actuating the armature, the arrangement being such that the armature gains momentum before coming in contact with the movable electrode, as and for the purpose described.

8. In a gas-burner, the combination, with a fixed electrode, of a moving electrode normally in contact with the fixed electrode, a spring for retaining the electrodes in contact, an armature or armature-lever, and a magnet for operating said armature or armature-lever, the arrangement being such that as the armature or armature-lever gains momentum it comes in contact with the movable electrode and forces it away from the fixed electrode, as set forth.

9. In an electric gas-lighter, the combination of two electrodes, one fixed and the other movable, an electro-magnet, and an armature or armature-lever operated by the magnet and supported so as to gain momentum before striking the movable electrode, substantially as described.

10. The burner provided with the removable slitted transverse plate, in combination with the conical regulating-valve held to its seat by a spring, substantially as and for the purpose set forth.

11. In a gas-burner, the combination of a regulating-valve, two electro-magnets for actuating the armatures, and two independently-acting armatures supported beneath the electro-magnets so as to be raised by the magnets and recede by gravity, substantially as and for the purpose set forth.

12. In an electrical gas-lighting burner, the combination of a valve and an armature for moving the same, supported so as to gain momentum before striking the valve, substantially as and for the purpose set forth.

13. In a gas-burner, the combination of a fixed electrode, a vertically movable electrode, K, provided with a cross-pin, g, a spring, M, connected at one end to yoke H and at the other end to pin g, an armature for moving the sliding electrode, and an electro-magnet



for actuating the armature, substantially as and for the purpose set forth.

14. In a gas-burner, the combination of a fixed electrode, a vertically-movable electrode, 5 K, provided with a cross-pin, *g*, a tube, L, for the electrode K to slide in, a spring, M, connected at one end to yoke H and at the other end to pin *g*, an armature for moving the sliding electrode, and an electro-magnet for actuating the armature, substantially as and for 10 the purpose set forth.

15. In a gas-burner, the combination of the independently-pivoted armatures E E', the

valve D, the electro-magnets G' G', the yoke H, for connecting the electro-magnets, the fixed 15 electrode I, and the vertically-movable electrode K, the several parts being arranged to operate substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two sub- 20 scribing witnesses.

CHARLES H. CROCKETT.

Witnesses:

F. BRYANT,  
CHARLES E. LOWD.