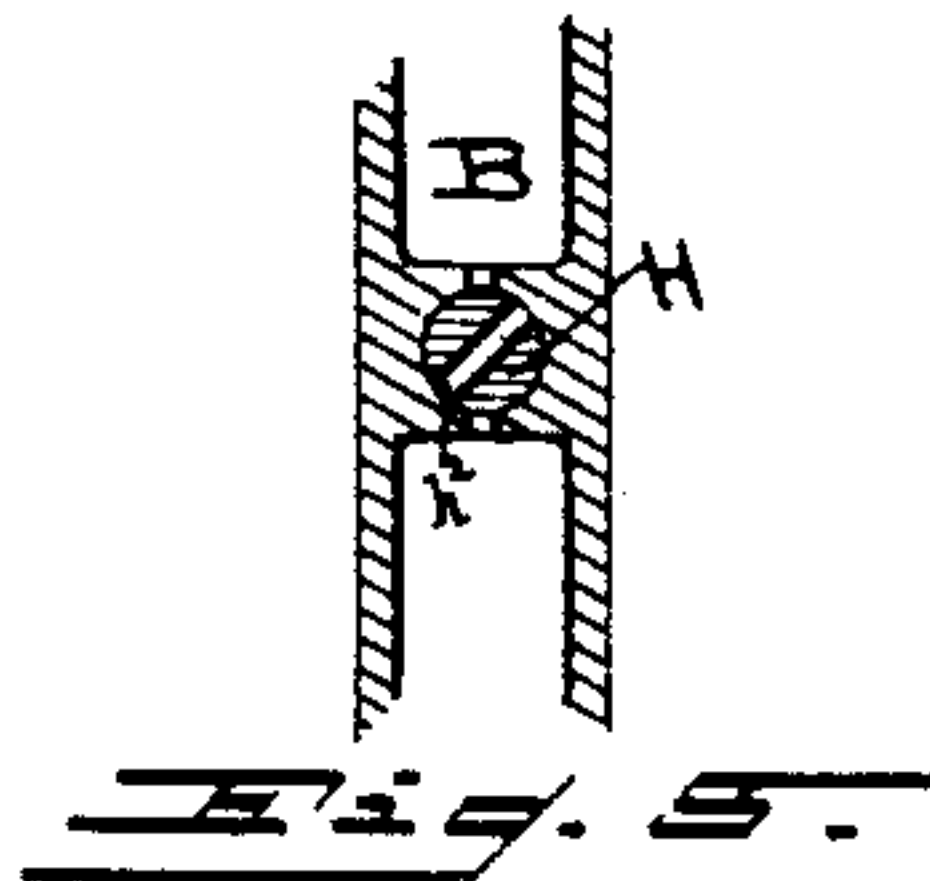
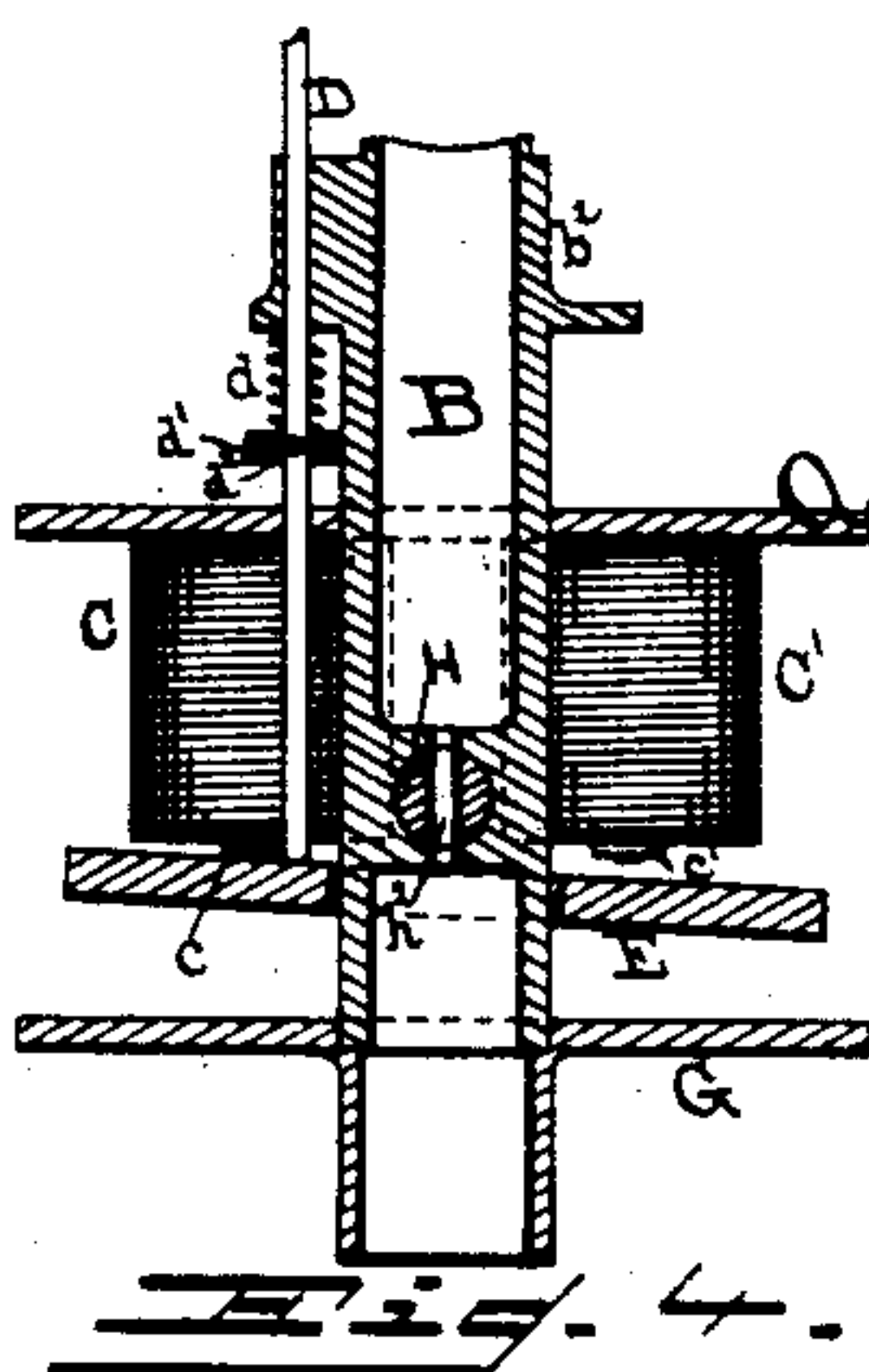
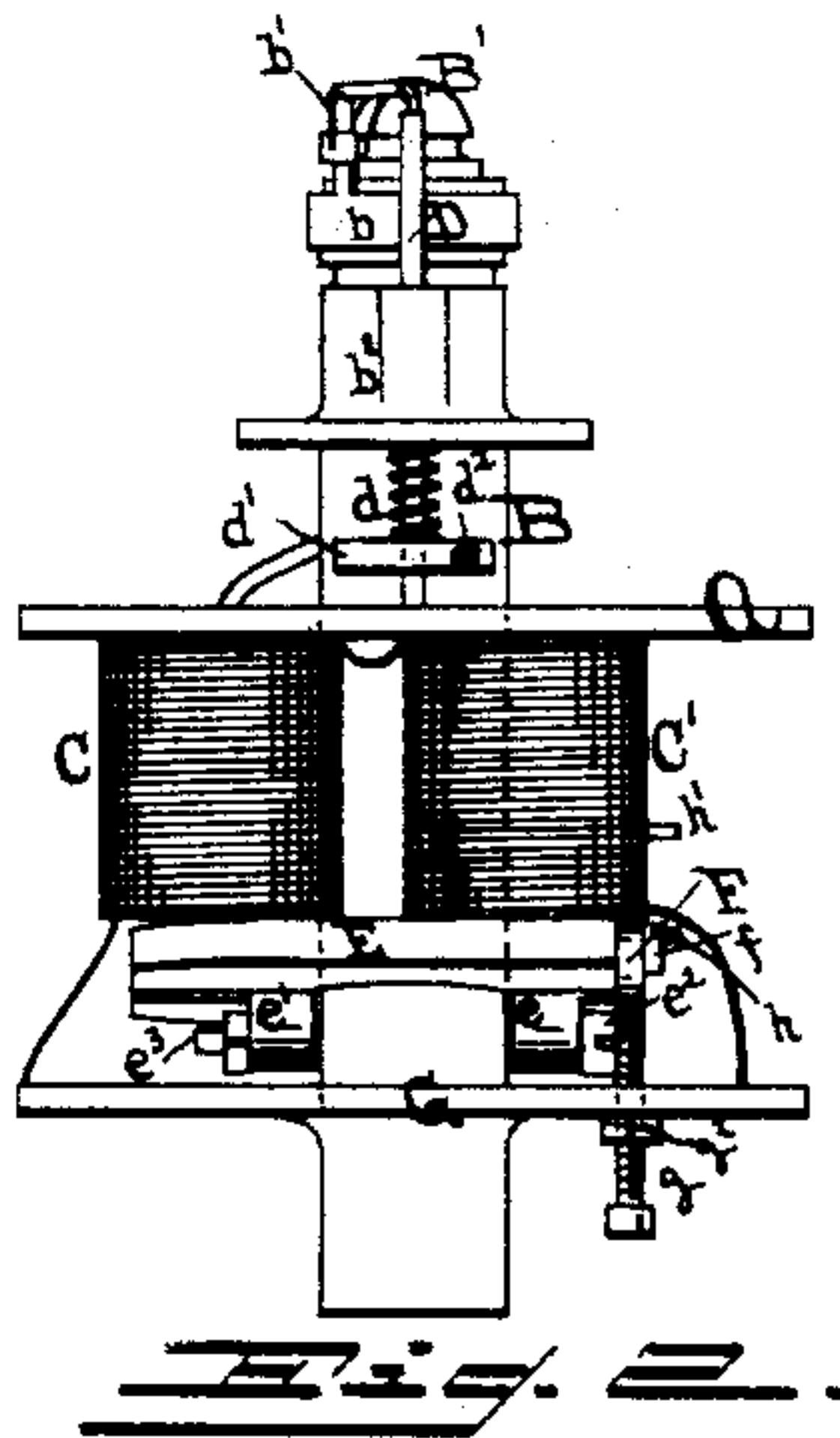
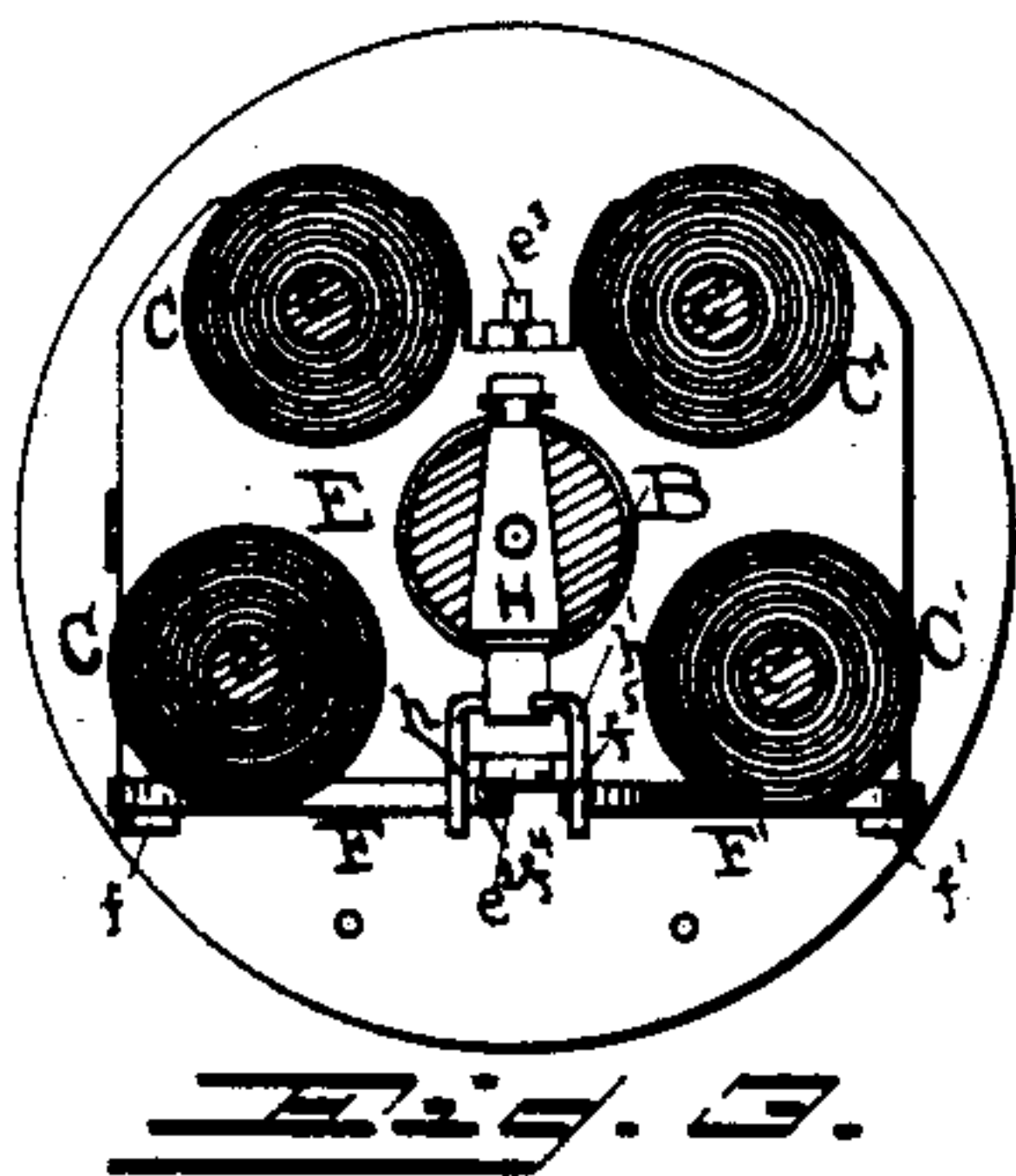
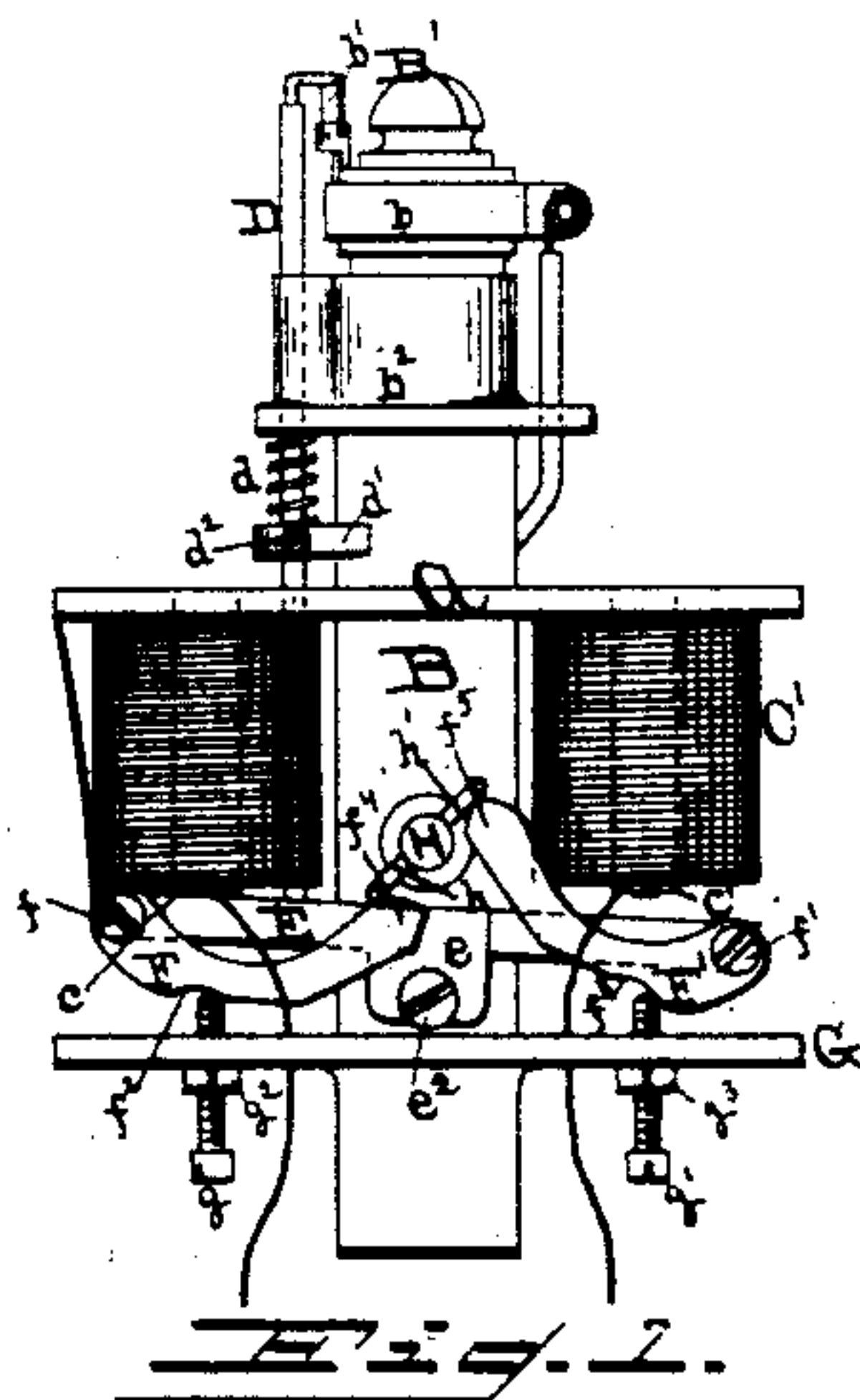


(No Model.)

J. GEARY.
ELECTRIC GAS LIGHTING BURNER.

No. 401,153.

Patented Apr. 9, 1889.



WITNESSES,

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UNITED STATES PATENT OFFICE.

JOHN GEARY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO J. ELLIOTT SHAW, OF SAME PLACE.

ELECTRIC GAS-LIGHTING BURNER.

SPECIFICATION forming part of Letters Patent No. 401,153, dated April 9, 1889.

Application filed February 5, 1889. Serial No. 298,721. (No model.)

To all whom it may concern:

Be it known that I, JOHN GEARY, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Electric Gas-Lighting Burners; and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings.

My invention has relation to automatic electric gas-lighting burners, and has for its object to improve the construction and increase the efficiency of such burners.

Heretofore in burners of the above-mentioned character it has been customary, in some instances, to provide separate armatures for the two pairs of electro-magnets, said armatures imparting a rotary motion to the gas cock or key, in order to turn on and shut off the gas, one of these armatures communicating motion to the movable electrode. In other cases it has been the custom to provide a single armature for both pairs of magnets for accomplishing the turning on and off of the gas and the production of the necessary spark; but in all these cases the perfect shutting off of the gas and absolute freedom from leakage are impossibilities, for the reason that the gas cocks or keys are given a very slight movement—say an eighth of a full turn—and the openings for the passage of gas in said cocks, which register with corresponding openings in a plug or the like in the gas-tube, when the gas is to be admitted to the burner, barely clear each other when the flow of gas is desired to be shut off. Therefore leakage is the result.

My improvements consist in a single armature for both pairs of magnets, which is supported below the plane of its lower edge on trunnions, and having pivoted to one of its edges a pair of cam arms or levers, said cam-levers resting on adjustable shoulders near their pivotal points, and at their other ends being held in operative relation with the forks or arms of the gas cock or key in the burner-tube, so that a very slight depression of either side of the armature

will impart a greatly-increased movement of the gas-cock—say one-quarter of a full turn. For this reason I am enabled to employ a large circular opening in the gas-cock and a similar opening in the burner-tube, and said openings will more than clear each other, the effect being as good as where a gas cock or key is manually operated in the usual manner. Thus the shutting off of the gas is perfectly accomplished without the slightest possibility of there being any leakage.

My improvements further consist in the peculiar construction and combination of parts, as hereinafter fully described and claimed.

In the drawings, Figure 1 is a side elevation of my improvements applied to an armature and in position for operation. Fig. 2 is an edge view of the same. Fig. 3 is a plan view of armature and cam-levers and gas-cock, with the burner-tube in section. Fig. 4 is a vertical transverse section, partly broken away, showing opening in the gas-cock, &c.

Referring to said drawings, A represents the iron disk secured on the burner-tube B, and sustaining the magnets C C', which magnets have the cores c c', and the burner-tube supports the tip B' and the insulated collar b, supporting the fixed electrode b', all of which are of usual construction and need not be particularly described. Near the upper end of tube B there is formed an enlargement or flange, b², which forms a guide for the movable electrode-rod D, and the lower surface of said flange affords a shoulder for the spiral spring d, which is also shouldered against the slide d', said slide being adjustably secured to the rod D by screw d², so that the tension in said spring can be changed when desired. The inner surface of slide d' is curved concentrically with the burner-tube B, said tube forming a slideway for the slide d', in order that the rod D may have freedom of movement in response to the movement of the armature E when the gas is to be turned on and the spark made. This slide also prevents the turning of said electrode-rod in the guide. Armature E is provided with trunnions e e' below the plane of its under surface, which

trunnions are pivoted on screw e^2 and bolt e^3 , passing partly into the burner-tube.

The purpose of pivoting the armature, as above explained, is to get an extended movement of the ends of the armature without the same getting very far away from the magnet-poles, so as to get as great a movement in the cam-levers $F F'$ as is possible, the movement of the armature in this case being more in the nature of a radial curve, or at an angle with the surface of the poles, than in an axial direction, or directly away from said poles. Said armature also encircles the burner-tube, as usual.

Armature E has pivoted to one of its edges on screws $f f'$ the cam-levers $F F'$, formed with curved notches $f^2 f^3$ in their under edges, in which rest, when said levers are depressed, the adjusting-screws $g g'$, having jam-nuts $g^2 g^3$ thereon, and are threaded in the base-plate G. These levers $F F'$ are also formed with rounded ends $f^4 f^5$, which bear against and impart movement, when the armature is actuated, to the forks or arms $h h'$ of the gas-cock H. This gas-cock is of usual form, but has an enlarged circular opening, h^2 , registering with similar openings in the burner-tube, instead of narrow slits. When gas-cock H is in the position shown in Fig. 4, the gas has free access to the burner-tip, while when in the position shown in Fig. 5 said openings are perfectly and for quite a distance clear of each other, so that leakage of gas through said openings is absolutely impossible, because of the increased rotation of the gas-cock H through the medium of the cam-levers.

With the pivoting of the cam-levers at their ends, and the cam portions $f^2 f^3$ near said pivotal points resting on the screws $g g'$, a single slight movement of armature E imparts three times the extent of said movement to the ends $f^4 f^5$ of the cam-levers, which ends, being rounded, contact with the forks of the gas-cock, and by reason of said forks riding on said rounded ends an increased rotation is the result, as above suggested.

By reference to Fig. 1 of the drawings, it will be observed that when one side of armature E is depressed the convex part of the cam portion f^3 in lever F' rests on the rounded end of screw g' , which screw limits the upward movement of said lever, while the concave portion of notch f^2 in lever F rests on the rounded end of screw g , which screw limits the downward movement of said lever. Thus, it will be understood, these screws not only limit the movements of the cam-levers, but also serve as shoulders for said levers to ride on in order to produce such movements.

It is obvious that other forms of shoulders for the cam-levers to ride on can be employed to advantage—for instance, a pair of rollers supported in yokes, which yokes may be adjustably secured to the bed-plate or otherwise.

It will also be observed that the magnets

are irregularly disposed around the burner-tube; this is done merely to allow the cam-levers free access to the forks of the gas-cock; also, that while I have shown the use of the above-mentioned forks, a solid key-handle, similar to the ordinary thumb-key, but smaller, can be used for the purpose of the forks.

What I claim as my invention is as follows:

1. In an electric gas-lighting burner, the combination, with the magnets thereof, of an armature having pivoted thereon two cam-levers riding on shoulders and operating to impart rotary motion to the gas-cock, as and for the purpose set forth.

2. In an electric gas-lighting burner, the combination, with the magnets thereof, of an armature pivoted at its center, and having pivoted on one of its edges two cam-levers riding on the ends of adjusting-screws in the bed-plate and imparting rotary motion to the gas-cock, as and for the purpose set forth.

3. In an electric gas-lighting burner, the combination, with the magnets, the movable electrode, and the gas-cock thereof, of an armature pivoted below the plane of its lower surface, in order to secure a movement of the same in the direction of a radial curve, as and for the purpose set forth.

4. In an electric gas-lighting burner, the combination, with the movable electrode-rod D, sliding in the flange b^2 on the burner-tube B, of the adjustable slide d' , sliding on said tube and secured to said rod by screw d^2 , preventing the same from turning, and serving to admit of changing the tension of the spiral spring d , encircling rod D, and sustained between said flange and slide, as and for the purpose set forth.

5. In an electric gas-lighting burner, the combination, with the magnets thereof, of an armature, E, provided with trunnions $e e'$ below the plane of its lower surface, said trunnions being secured on the screw e^2 , and bolt e^3 , passing into the burner-tube, as and for the purpose set forth.

6. In an electric gas-lighting burner, the combination, with the magnets thereof, of an armature, E, having pivoted on the edge thereof on screws $f f'$ the cam-levers $F F'$, provided with the cam portions $f^2 f^3$ in their under edges, and the rounded ends $f^4 f^5$, engaging with the gas-cock, said levers at their cam portions resting and riding on the ends of the adjusting-screws $g g'$ in the bed-plate G when the armature is actuated and communicating rotary motion to said gas-cock, as and for the purpose set forth.

7. In an electric gas-lighting burner, the combination, with the magnets thereof, of the armature E, having the trunnions $e e'$, pivoted on the screw and bolt $e^2 e^3$ below the plane of the lower edge of said armature, the latter having pivoted on its edge on screws $f f'$ the cam-levers $F F'$, provided with the cam portions or notches $f^2 f^3$, for engagement

with the ends of the adjusting-screws $g\ g'$ in
the bed-plate G, the outer ends, $f^4\ f^5$, of said
levers engaging with the gas-cock H in the
burner-tube and transmitting rotary motion
5 to said gas-cock, as and for the purpose set
forth.

In testimony that I claim the foregoing I

have hereunto set my hand this 30th day of
January, A. D. 1889.

JOHN GEARY.

Witnesses:

J. ALBERT DAVIS,
R. DALE SPARHAWK.