

(No Model.)

G. J. HICKEY.
Gas Regulating Burner.

No. 229,409.

Patented June 29, 1880.

Fig. 1.

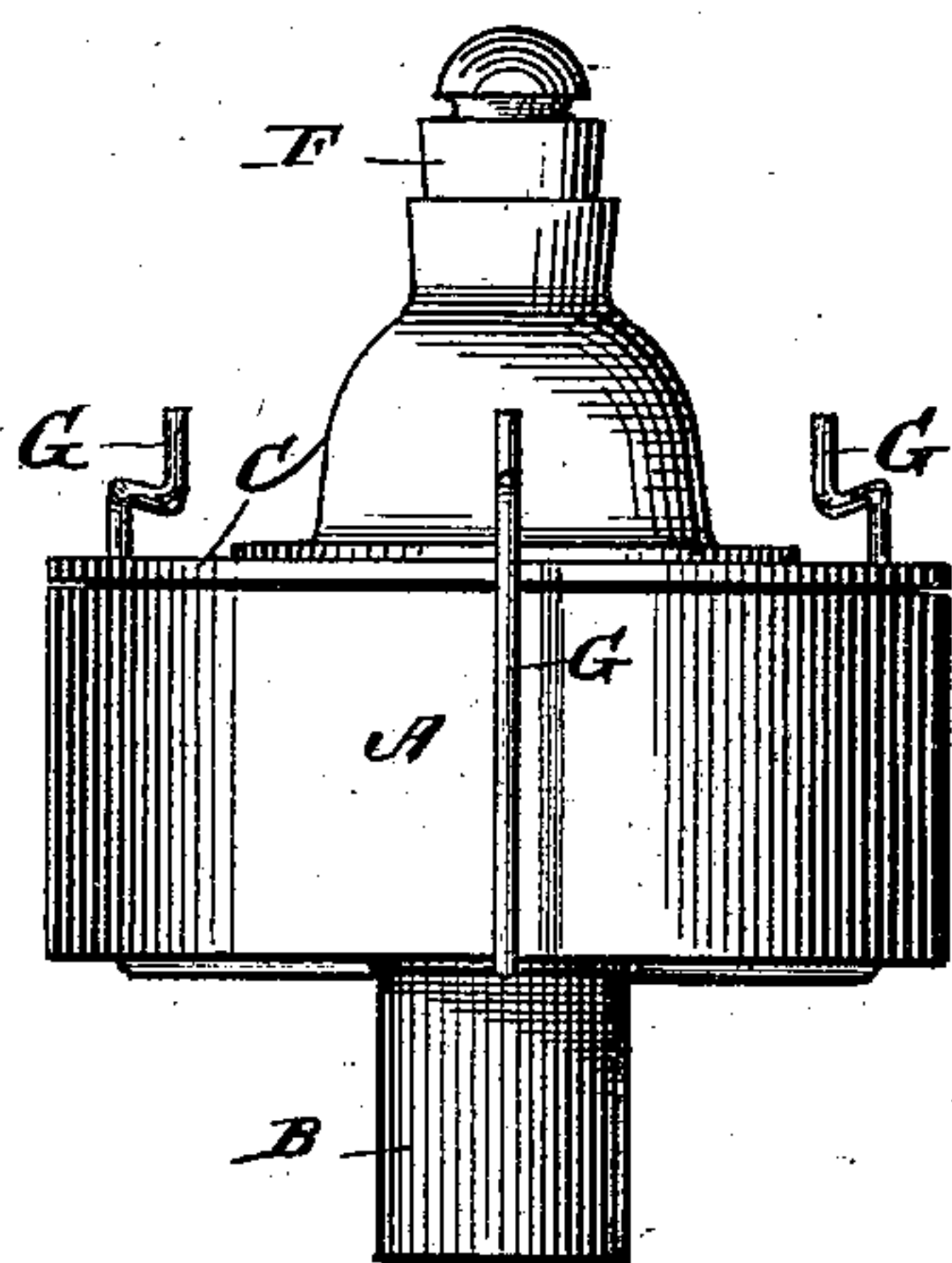


Fig. 3.

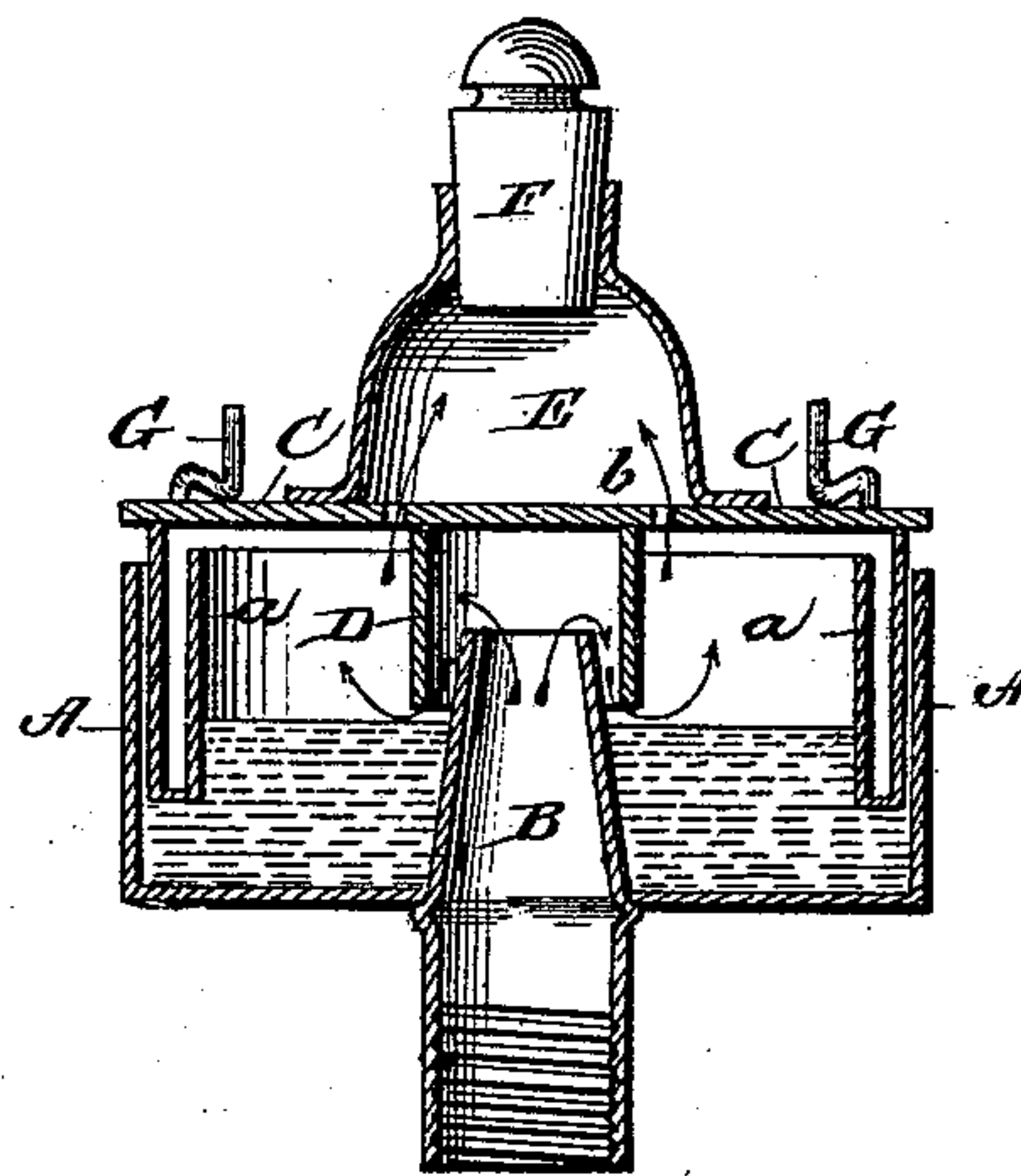


Fig. 2.

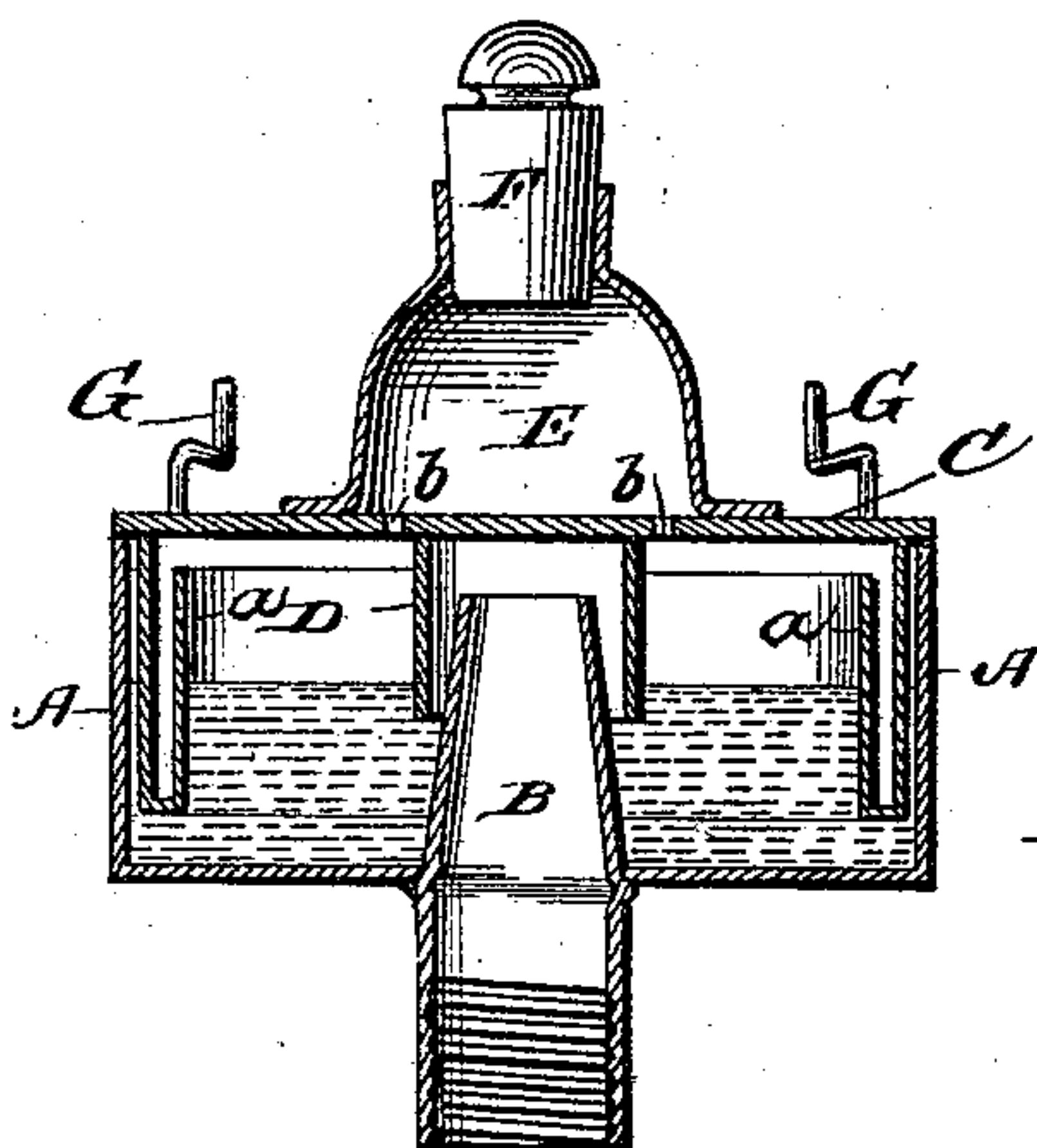


Fig. 4.

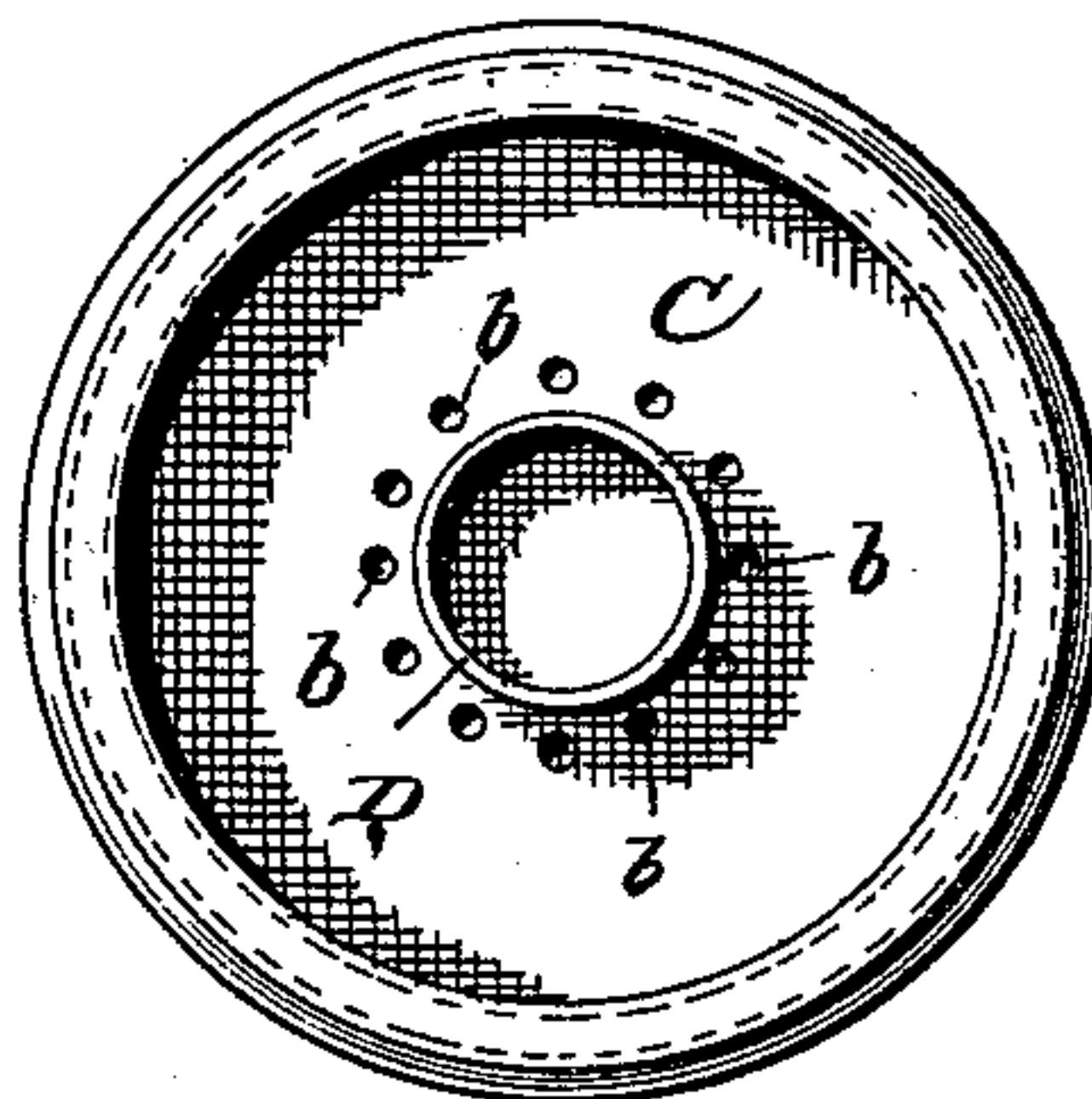
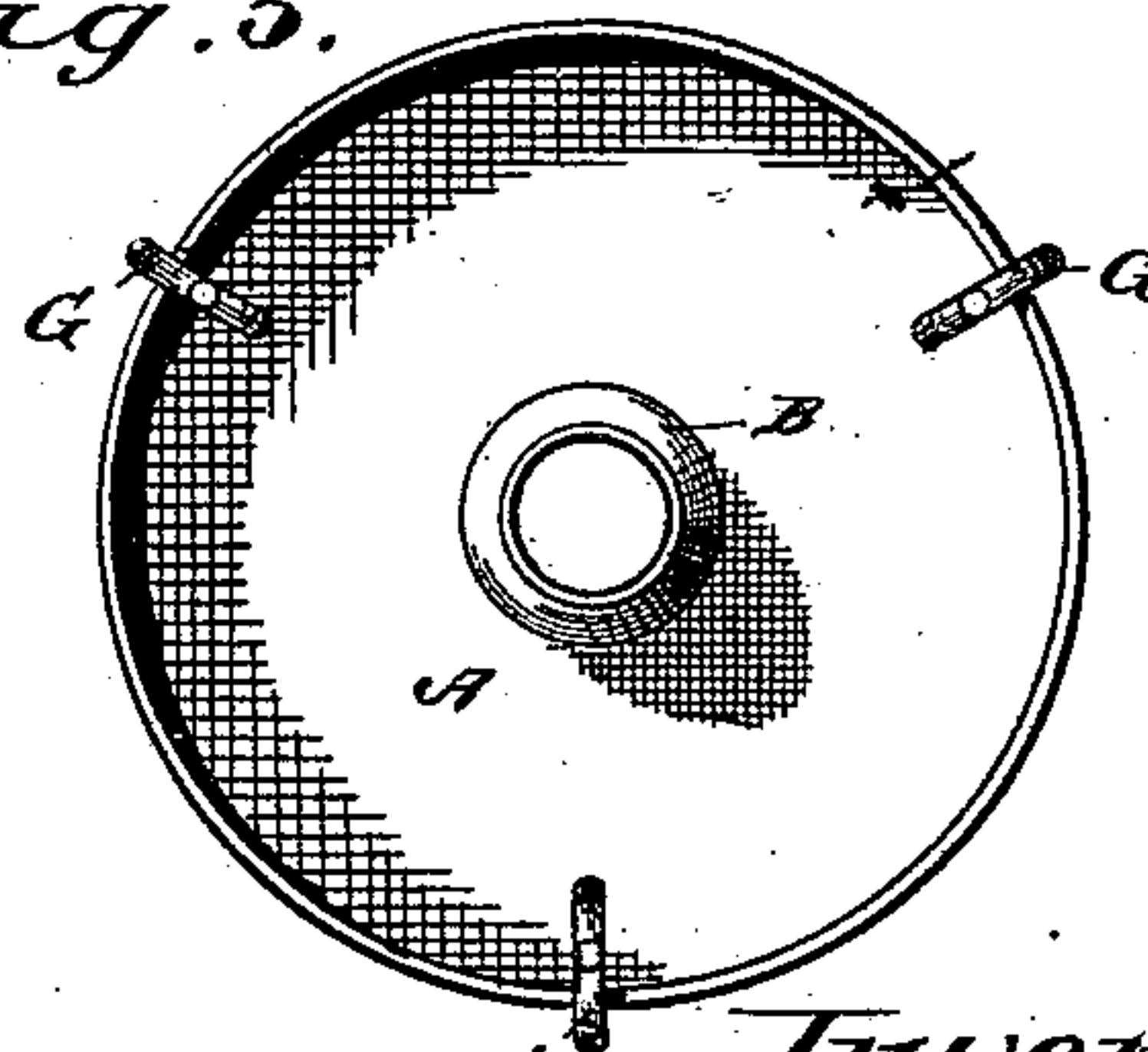


Fig. 5.



Attest:
H. Q. Perrine,
Clerk.

Inventor.
George J. Hickey.
By *H. J. Abbott*
Atty.

UNITED STATES PATENT OFFICE.

GEORGE J. HICKEY, OF WATERLOO, IOWA, ASSIGNOR OF ONE-HALF OF
HIS RIGHT TO B. G. BUTTON, OF SAME PLACE.

GAS-REGULATING BURNER.

SPECIFICATION forming part of Letters Patent No. 229,409, dated June 29, 1880.

Application filed April 17, 1880. (No model.)

To all whom it may concern :

Be it known that I, GEORGE J. HICKEY, a citizen of the United States, residing at Waterloo, in the county of Black Hawk and State of Iowa, have invented certain new and useful Improvements in Gas-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, said drawings forming part of this specification, and in which—

Figure 1 is a side elevation of the attachment; Fig. 2, a cross-section, showing the same closed; Fig. 3, a like section, showing the same open; Fig. 4, a bottom view of the upper cup, and Fig. 5 a top view of the lower cup.

My invention relates to gas-burners for street-lamps and other uses, in which the flame is completely extinguished when the pressure in the gas-main is reduced, and the gas is not allowed to issue from the tip until the controlling-valve is moved by other means than the flow of the gas; and it consists in the construction and combination of parts hereinafter particularly described, and then specifically pointed out in the claim.

In the accompanying drawings, the letter A indicates a cup provided with a tube, B, which extends some distance up into the cup, and is connected at the lower end to the gas-supply pipe.

Into the cup A there is placed an inverted cup, C. This cup C is preferably made with an upturned flange, *a*, which leaves an air-space between the side of the cup and the flange; and it is further provided, at or near its center, with a downwardly-projecting tube, D, which is closed at the top and adapted to fit loosely over the tube B of cup A. The cup C is further provided on its top with a chamber, E, in the top of which is fitted the burner-tip F. This chamber E communicates with the interior of cup C through small apertures *b*, formed in the top of the cup near the tube D. Springs G are soldered or otherwise secured to cup A, and extend some distance above its top, and admit of being sprung to

one side, so that cup C may be easily inserted in or withdrawn from cup A, while at other times they keep cup C within cup A, and yet extend far enough above the cup to allow the inverted cup to have a vertical play sufficient for the purpose hereinafter set forth.

The cup C is fitted in cup A so as to move therein with little or no friction and so as to completely cover the mercury contained in cup A, thereby effectually excluding dust and water and other matters that have a tendency to interfere with the satisfactory working of the parts; and within cup A there is placed mercury, glycerine, or other non-freezing and non-combustible fluid, and the function thereof is to effect a seat between the two cups, so as to prevent the gas from escaping between the two cups at their junction, and also between tubes B and D, until tube D is raised above the surface of the fluid.

The quantity of the liquid in the cup A is such as to allow the open mouth of tube D to be above the same when the cup C is raised sufficiently for that purpose, the springs being arranged so as to allow cup C to be raised some distance without the springs exerting a pressure thereon as at all times to close the communication between tube B and the outside of tube D.

The burner constructed as described is applied to the end of the gas-supply pipe in a street-lamp or other lighter, and operates, as I shall now describe, to automatically shut off the flow of gas, and thereby completely extinguish the flame.

It is well known that the pressure of gas in the mains is much less in the day-time than at night, the pressure being reduced at the gas-works.

Now, when it is desired to turn on the gas at the burner, so that it may be lighted, the lamp-lighter raises the cup C until the tube D is lifted above the surface of the fluid in cup A, which is determined by the gas issuing from the burner-tip. As soon as that is done the gas flows first into tube D, and from thence into the space between the two cups A and C, and thence out, through the perforations in the top of cup C, to the burner-tip. The gas filling the space between the two cups A and C exerts a pressure on a surface large

enough to hold up the cup C, so as to leave a
 space between the end of tube D and the sur-
 face of the liquid in cup A for the passage
 of gas from the supply to the burner-tip, and
 5 so continues to do until the pressure in the
 main is reduced sufficiently at the gas-works
 as to cause the pressure between the two cups
 to be so much less than the weight of cup C
 that the latter will fall until the end of tube D
 10 will enter the liquid in cup A, thereby cutting
 off all flow of gas from the supply to the burn-
 er-tip, and completely extinguishing the flame.
 If the pressure of the gas be now increased it
 can only exert itself on the small surface em-
 15 braced within the tube D, and the pressure on
 that surface is not sufficient to overcome the
 weight of cup C; consequently the gas remains
 cut off from the burner until the lamp-lighter
 comes along and raises cup C, so as to allow
 20 the gas to fill the space between the two cups
 and thereby exert its pressure on an increased
 area sufficient to overcome the weight of cup
 C, and thereby hold up the same and allow
 25 the gas to flow to the burner-tip until the
 pressure in the main is reduced.

It will thus be seen that the burner is self-
 extinguishing and operates automatically; that
 it dispenses with the services of a man to go
 around and extinguish the gas-lights, as is
 now the case, and that it effectually prevents 30
 any gas being consumed or escaping except
 when it is actually necessary to be used, in all
 of which there is effected a great saving to
 municipal corporations.

The device is exceedingly simple in con- 35
 struction, cheap of manufacture, not liable to
 get out of repair, neat in appearance, and can
 be applied to any of the gas-fixtures in use
 without expensive alterations in the same for
 that purpose. 40

Having described my invention, what I
 claim is—

The cup A, provided with tube B and springs
 G, in combination with inverted cup C, pro-
 vided with burner-tip and tube D, the parts 45
 arranged to operate as set forth.

GEORGE J. HICKEY.

Witnesses:

HARVEY L. SHUTTS,
 E. BOWER.