

(No Model.)

G. GALLAND & E. GROUX.

GAS BURNER.

No. 344,900.

Patented July 6, 1886.

Fig. 1.

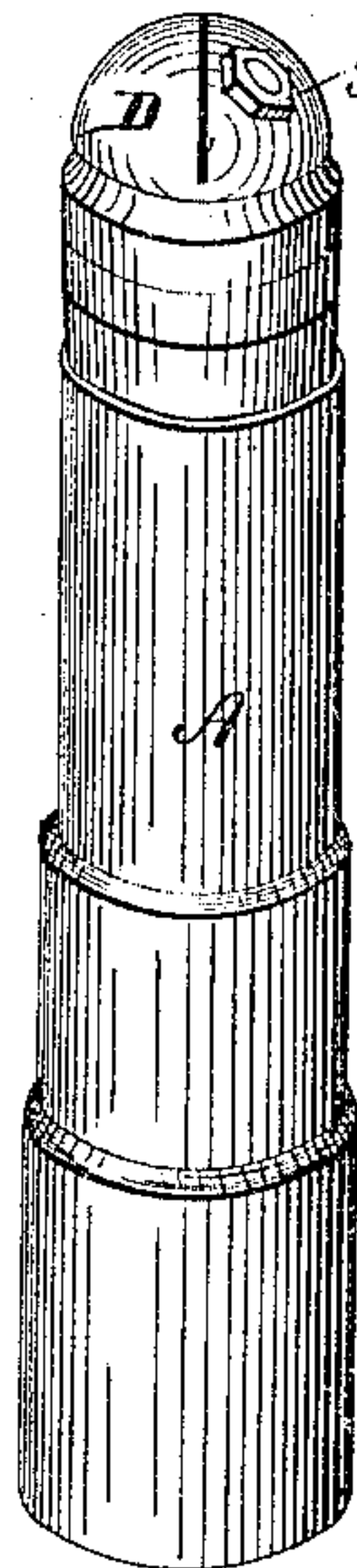


Fig. 2.

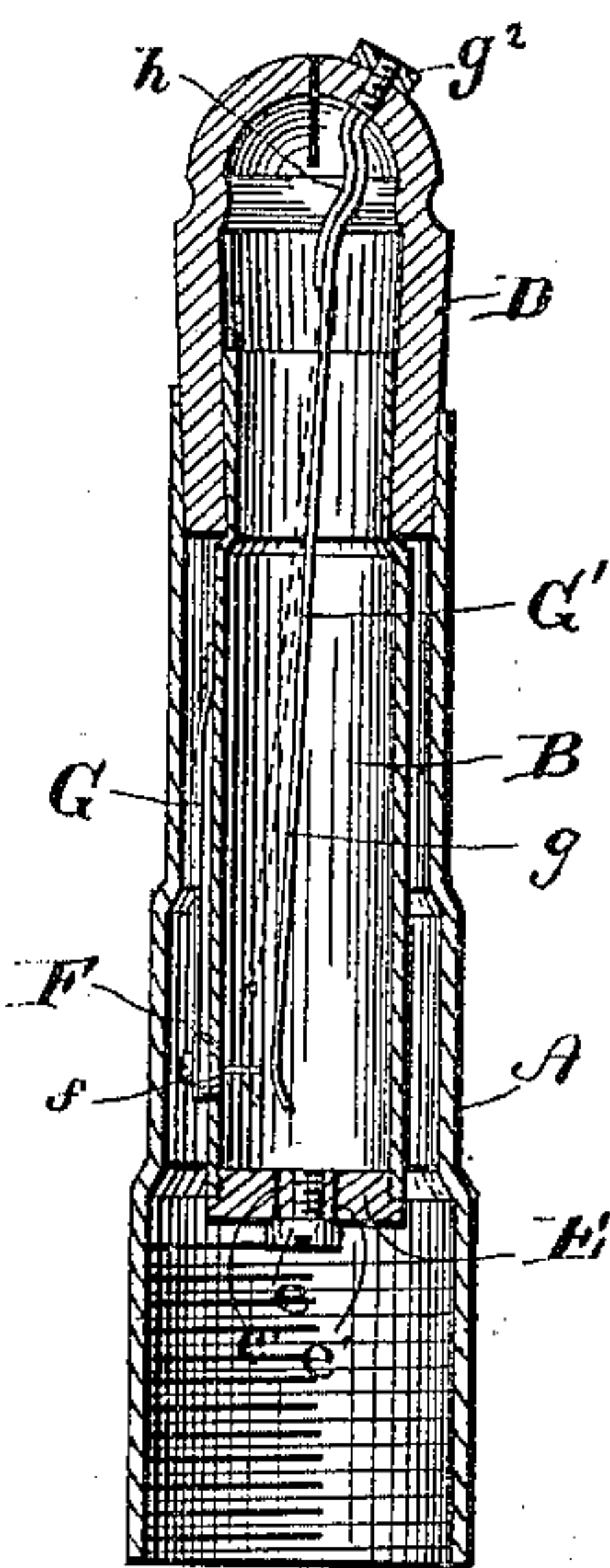


Fig. 3.

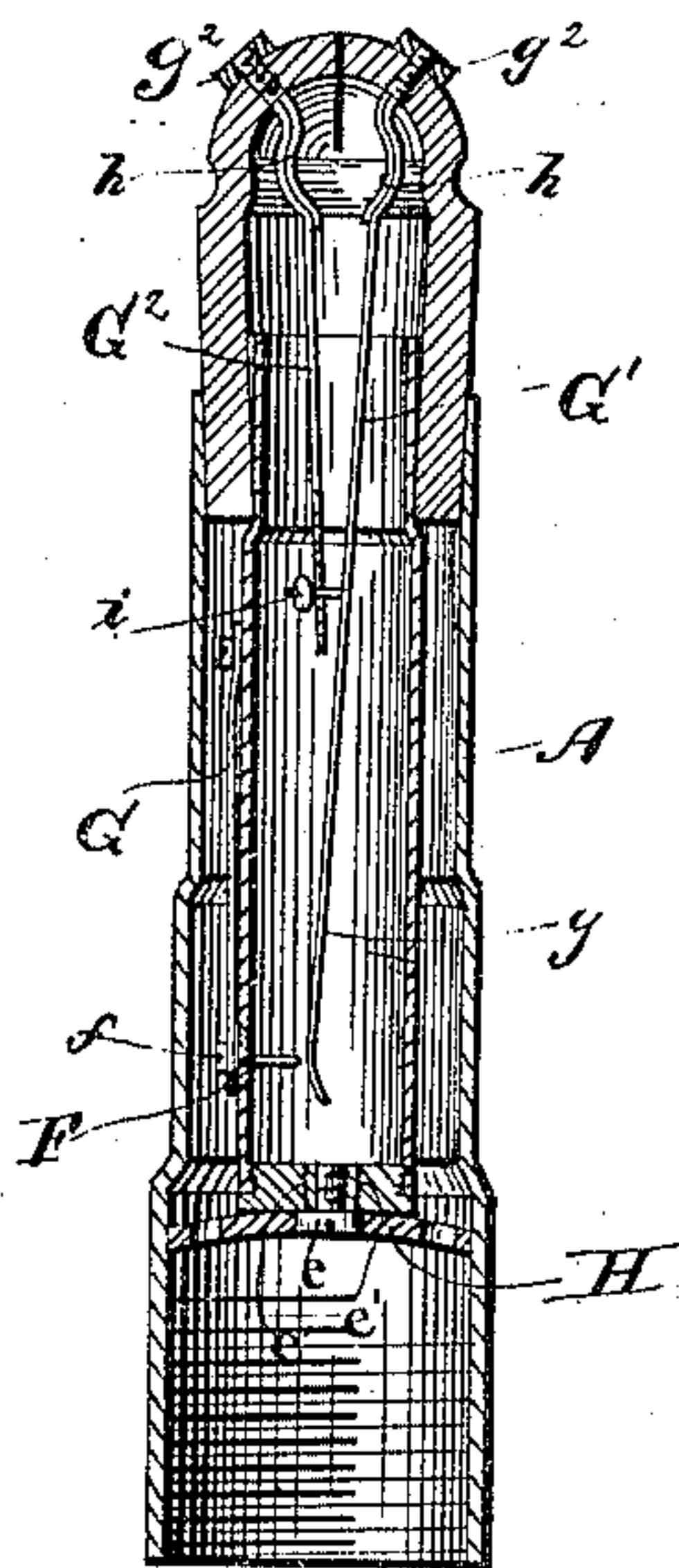


Fig. 4.

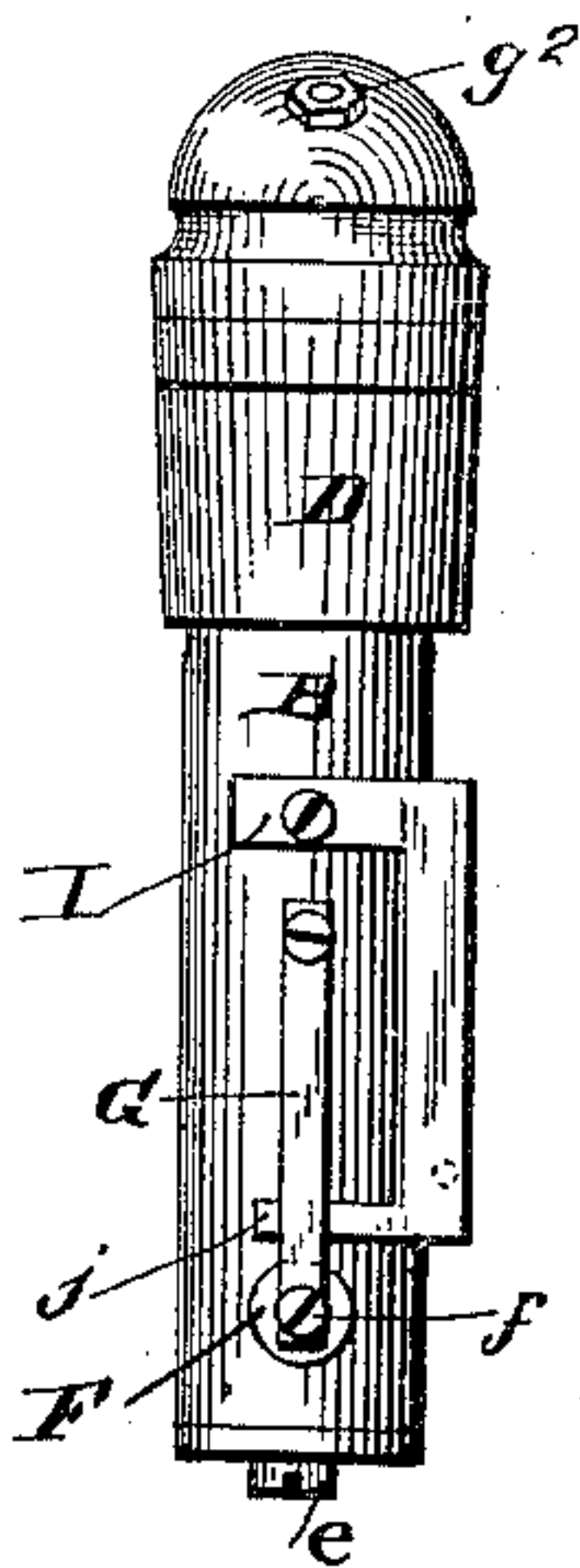


Fig. 5.

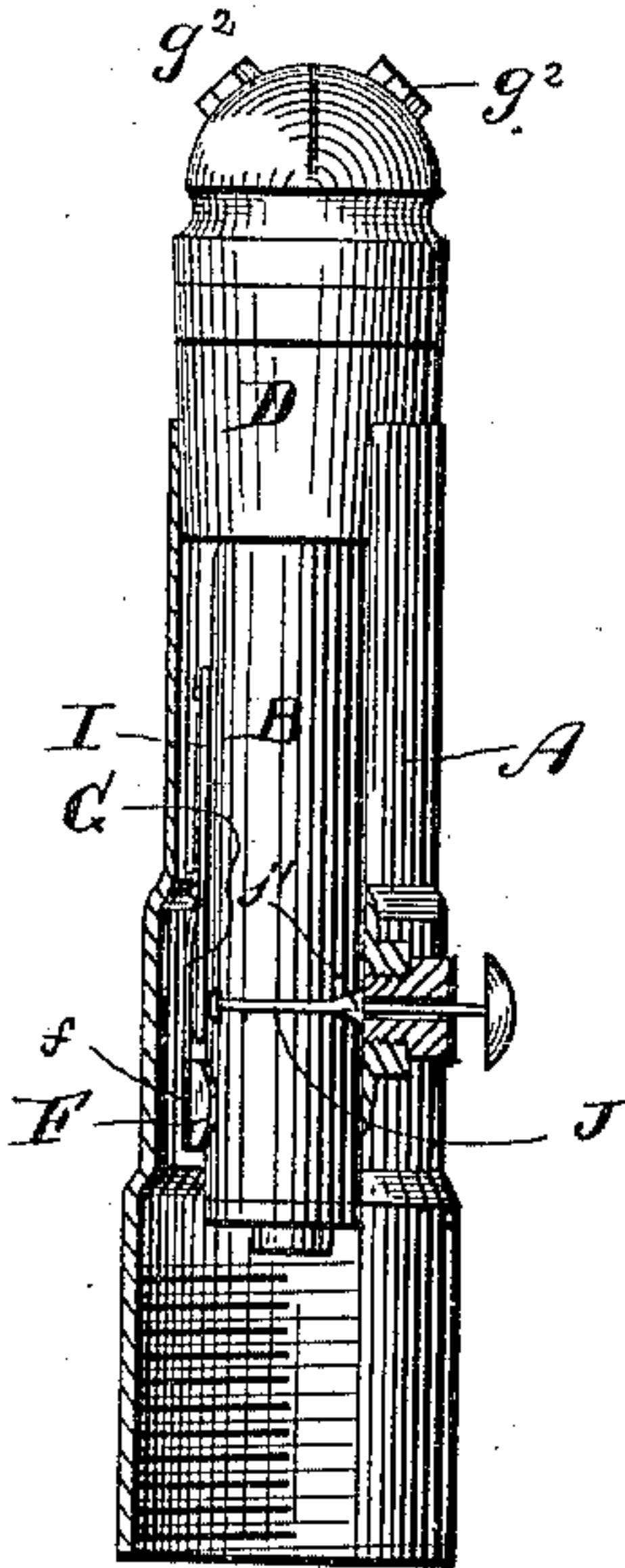
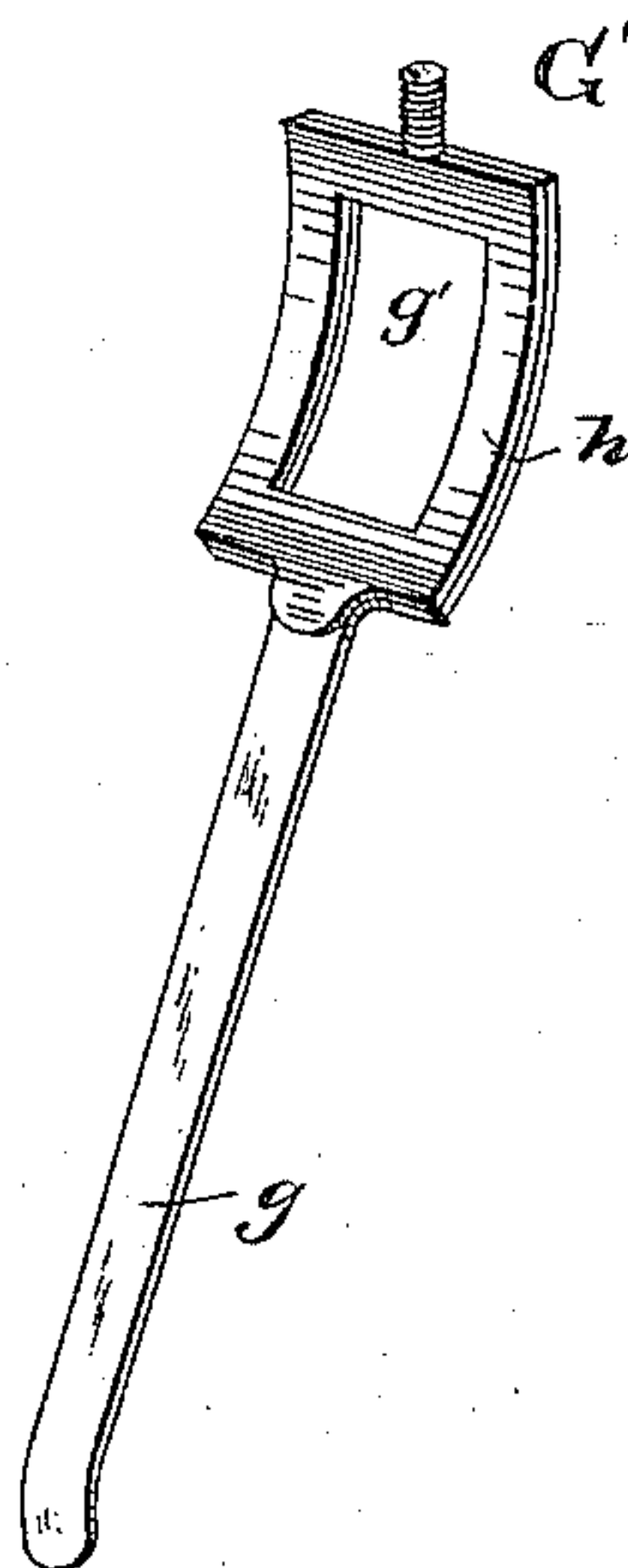


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE GALLAND AND EMILE GROUX, OF WILKES-BARRÉ, PENNSYLVANIA.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 344,900, dated July 6, 1886.

Application filed January 2, 1886. Serial No. 187,448. (No model.)

To all whom it may concern:

Be it known that we, GEORGE GALLAND and EMILE GROUX, of Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have
5 invented certain new and useful Improvements in Gas-Burners; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this
10 specification, and to the figures and letters of reference marked thereon.

Our invention relates to that class of gas-burners in which the gas is automatically cut off when the flame is extinguished, so that there
15 will be no escape of gas into the room when the gas is blown out by accident or design; and it consists in a certain thermostatic device located within the burner and adapted to operate a valve, all as will be hereinafter described, and the points of novelty pointed out particularly in the claims at the end of the specification.

In the drawings, Figure 1 is a perspective view of a gas-burner constructed in accordance
25 with our invention. Fig. 2 is a vertical sectional view thereof. Fig. 3 is a similar view of a modified form of burner. Fig. 4 is a side view of the central tube, within which the valve-operating devices are mounted. Fig. 5 is a
30 sectional view showing a device for operating the valve from the outside. Fig. 6 is a perspective view of one of the thermostatic rods or strips for operating the valve.

Similar letters of reference in the several
35 figures denote the same parts.

Heretofore burners of the class to which our invention belongs have been constructed with thermostatic expansive bars held above the burner and in direct contact with the flame of
40 the gas, and when the flame was extinguished the bar, by its contraction, automatically shut off the gas below the burner. Such constructions as these, it will readily be seen, are unsightly and require a great deal of nice fitting, packing, &c., in order to have them operate properly; but all these defects and others are remedied by our invention, which consists, essentially, of an outside casing and an inside chamber, containing the operating mechanism,
50 and having at its upper end the lava tip or burner proper, and a valve in said inner casing

adapted to be opened by a thermostatic rod or bar and closed by a spring, as will now be explained.

A represents the outer casing, adapted to be
55 screwed onto the gas-bracket, and having the appearance of an ordinary burner; B, the inner casing, consisting of a tube having at its upper end the ordinary lava tip or burner proper, D, to which it is secured, and which
60 connects it to the casing A. At the lower end of this tube is a cap, E, secured thereto by means of screw-threads, or otherwise, and at or near the center of this plate or cap is preferably provided a screw, *e*, having a broad
65 head adapted to cover, when screwed in, two small pin-holes, *e' e'*, extending through this plate on either side of the screw-stem, as shown, for a purpose to be presently explained.

F is a small valve placed in the side of the
70 central tube, fastened by means of a screw, *f*, to a small spring, G, which is in turn secured to the tube B. The screw *f* extends through this valve and projects a short distance toward the center of the tube, where it is adapted to
75 be operated by the thermostatic rod or bar at certain times.

The rod or bar G' is constructed as shown in Fig. 6, and consists, preferably, of a long piece of brass, *g*, broadened near one end and
80 having the elongated opening or slot *g'* therein, the extreme end, however, being made quite small and screw-threaded, as shown, for the reception of a small nut, *g*². This brass rod is preferably bent slightly near the slot, so
85 as not to obstruct the passage to the burner-tip, and to it is soldered or brazed a small piece of spring-steel, *h*, surrounding the opening and extending a short distance on either side thereof; or, if desired, any two metals
90 of different degrees of expansibility may be employed instead of the brass and steel. This rod G' is secured at its upper end to the lava tip of the burner by having its reduced and screw-threaded portion inserted through a
95 small perforation at one side of the slot in the tip, and the nut *g*² applied thereto and tightened so as to fasten it securely, the steel portion of the rod being on the side toward the valve, so that when the rod is heated the
100 brass portion expanding the most will curve the bar to the position shown in dotted lines

in Fig. 2, and its end coming into contact with the extended end of the screw in the valve will push the valve open and allow the gas to escape at the tip and be ignited.

5 Now, in order to have the rod heated and the valve opened when the lighted match is held at the end of the burner, the end of the rod is extended through the tip and projects in close proximity to the slit in the burner,
10 and the rod being thus heated the unequal expansion of the metals will curve it and open the valve, as indicated, against the tension of the spring and allow the gas to escape and be lighted, and after ignition the flame will
15 heat the bar sufficiently to keep it expanded and the valve open, but just as soon as the light is extinguished the rod, cooling, contracts and allows the spring operating the valve to close the latter to its seat and shut off the supply of gas and prevent its escape into the
20 room.

If desired, the thermostatic rod may be connected rigidly to the valve-stem so as to operate it in both directions, instead of allowing
25 the spring to close it alone, as described.

In Fig. 3 we have shown a form of burner slightly different from that shown in Figs. 1 and 2, and consisting of two thermostatic rods, G' G^2 —one on either side of the slit in the burner-tip. The lower end of the longer of the
30 rods G' is adapted to come into contact with the pin and operate the valve, as in the former construction, and it is provided about midway of its length with a short screw or pin, i , adapted to project through a perforation in
35 the end of the rod G^2 , and having a head or nut upon its outer end, as shown. This rod G^2 is similar to the rod G' , except that it is about half as long, and will consequently move
40 quicker under the influence of heat, and its lower end is provided with a perforation, through which the pin i upon the rod G' projects. The side of the rods on which the steel plate is secured being next the valve side of
45 the tube B, it follows that when the rods are heated they will both expand in the same direction, and if the shorter rod reaches the maximum amount of expansion first it will, by reason of the head on the pin i , pull the
50 rod G' over and cause its lower end to operate to open the valve, while if the rod G' only is heated it will move of itself and open the valve without affecting the rod G^2 , thus always insuring the opening of the valve when the
55 match is applied to the burner-tip.

The lower end of the central tube, B, may, if desired, be held in central position and out of contact with the sides of the casing A by means of a perforated plate, H, secured to it
60 in any suitable manner.

Oftentimes it is undesirable to wait until sufficient heat has been applied to the thermostatic rods through their small ends at the end of the burner to open the valve, and we
65 therefore provide the two small pin-holes before referred to in the end of tube B, so that

a very small quantity of gas can escape—just sufficient to give a small flame at the tip that will heat the rods and open the valve, turning on the gas full. By means of the screw e
70 the amount of gas passing through the pin-holes can be regulated or shut off entirely.

When it is not desired to have any gas escape when the stop-cock in the bracket is opened, and yet it is not desirable to wait
75 until the heat from a match has opened the valve, we provide a device for the opening of the valve by the operator from the outside of the burner, and holding it open until the rods are sufficiently heated by the gas-flame itself
80 to act upon it. This device consists of a plate, I, secured to the tube B above the valve and projecting out slightly to one side thereof, and having at its lower end an arm or projection, j , projecting under the valve-spring, as shown.
85

J represents a pin or rod passing through the casing A and its inner end resting against the spring-plate I at the side of the tube B, as shown, tending to press the pin outward, and having a head on its outer end, by means of
90 which it is operated to press the plate I inward, raise the valve from its seat, and permit the gas to escape and be ignited at the tip, as will be readily understood.

In order to prevent the escape of gas through
95 the perforations in the side of the casing A through which the pin J passes, we preferably provide a collar, j' , upon the pin, which normally is pressed against the inside of the casing, making a tight joint therewith.
100

From the above description the operation of the device will be apparent.

When the valve-operating pin J is used, the operator presses upon it, and, holding the match at the tip, ignites the gas, then holds
105 the pin pressed in a few seconds until the rod or rods are heated from the gas-flame, when the valve will be automatically held open until the gas is extinguished, and then the rod or rods, contracting, will allow the valve-spring
110 to operate and shut off the supply of gas.

If desired, the valve-operating rod or pin may be dispensed with, and the screw in the end of the tube B screwed out, allowing a little gas to pass out, as before explained, through
115 the pin-holes; or both these forms may be dispensed with, and the heating of the rods from the match be relied upon, the latter being the simplest construction.

The thermostatic rod constructed, as shown,
120 with the broad portion where the steel piece is secured, and the provision of the slot therein, greatly increases the sensitiveness of the rod by reason of the comparatively large amount of metal exposed, and causes the valve
125 to close quite suddenly when the gas is extinguished.

The top D may be made of metal, if desired, in order to conduct the heat more rapidly to the rod G.
130

The whole device above described can be manufactured very cheaply, as compared with

other burners of this class heretofore produced, and, as will be observed, is very simple and certain in operation.

We claim as our invention—

5 1. The combination, with a gas-burner, of a valve arranged in the gas-passage thereof, and a thermostatic rod or bar for actuating said valve, located within the burner, having one end extending outside the burner and arranged
10 in proximity to the burning-orifice, said bar being arranged in relation to the valve substantially as described, whereby it will operate to open the valve in the gas-passage when expanded under the influence of heat, substan-
15 tially as described.

2. The combination, with a gas-burner, of a valve located in the gas-passage thereof, and a thermostatic rod or bar secured to the burner-tip and located within the casing, said bar
20 being arranged in relation to the valve substantially as described, whereby it will operate to open the valve in the gas-passage when expanded under the influence of heat, substantially as described.

25 3. In a gas-burner, the combination, with the outer casing, of the inner chamber having the valve therein and the tip at its upper end, the thermostatic rod or bar secured to the tip and located within said inner chamber, having
30 one end extended through the tip and in proximity to the burning-orifice, and its other end in one position in contact with the valve, so as to operate it, substantially as described.

4. In a gas-burner, the combination, with
35 the outer casing, of the inner casing having the tip at its upper end, the valve and the spring for closing it, and a thermostatic rod or bar located within the burner, having one end close to the burning-orifice, and the other
40 arranged in proximity to the valve, to open it when the rod is heated, substantially as described.

5. The combination, with the gas-burner and the valve located in the gas-passage thereof,
45 of the two thermostatic rods or bars, each having one end in close proximity to the burning-orifice, one of said rods in one position being in contact with the valve, and the other connected to the first-mentioned rod by means
50 substantially as described, so as to cause it to operate upon the valve when said rods are expanded under the influence of heat, as set forth.

6. The combination, with the gas-burner, of the valve located in the gas-passage thereof
55 and the spring for closing it, the two thermostatic rods or bars located within the burner,

each having one end in proximity to the burning-orifice, one of said rods having the headed pin thereon and in one position in contact with the valve, and the other rod having the perforation through which said pin projects, substantially as described. 60

7. The combination, with a gas-burner, of the inner chamber communicating with the burning-orifice, and having the valve therein, 65 the thermostatic rod or bar connected with the valve, substantially as described, and a small supplemental opening or openings in the inner chamber, and a regulating-valve for said opening, substantially as described. 70

8. As a new article of manufacture, an automatic gas extinguishing tip for application to the open end of a tube or burner body, substantially as described, consisting, essentially, of a chamber and a burner or tip applied there- 75 to, an orifice communicating with the interior of said chamber, a valve for closing said orifice, and an automatic thermostatic device actuating said valve for opening the latter to admit gas to the chamber and tip when heat is 80 applied to the latter, as in lighting and closing said valve when the light is extinguished, substantially as described.

9. The combination, with the burner-tip, of the chamber B, having the valve therein, and 85 the thermostatic rod for opening said valve, having the reduced end screw-threaded, as shown, passing through the burner-tip, and the nut applied to its outer end to hold it in position, substantially as described. 90

10. In a gas-burner, the combination, with the outer casing, the inner casing, the valve therein mounted upon the spring, and a thermostatic device located within the inner chamber for opening the valve, of the supplemental 95 spring I and the pin J, projecting through the outer casing and in contact with the spring I, whereby the valve may be operated from the outside independent of the thermostatic device, substantially as described. 100

11. The combination, with the outer casing, of the inner casing and valve therein mounted upon the spring, the supplemental spring I, and pin J in contact with the supplemental spring, having the collar thereon, substantially 105 as described.

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