

No. 681,907.

Patented Sept. 3, 1901.

J. H. & G. H. CLIFF & T. D. WARDLAW.

GAS BURNER.

(Application filed Oct. 7, 1899.)

(No Model.)

Fig. 1.

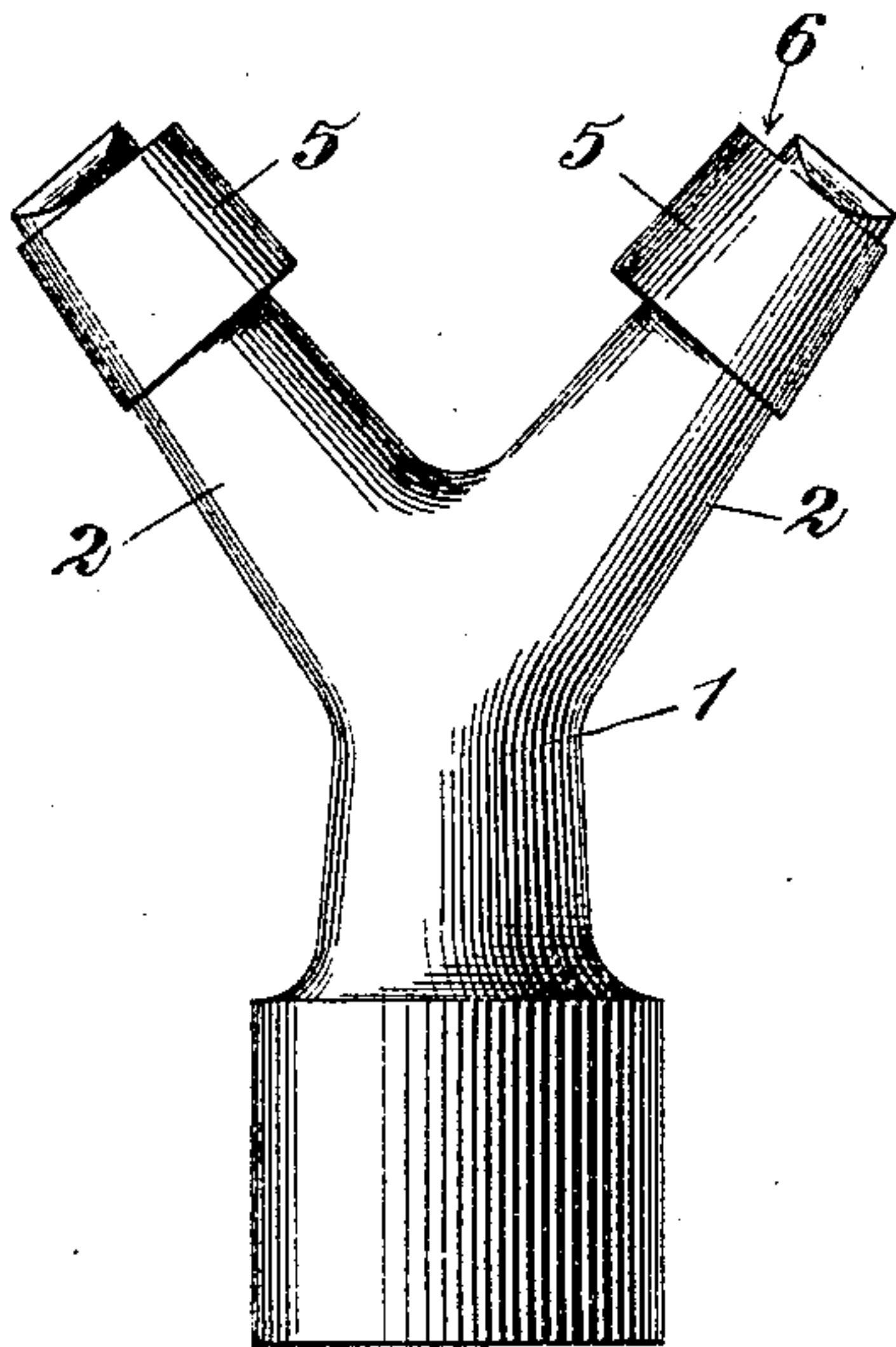


Fig. 2.

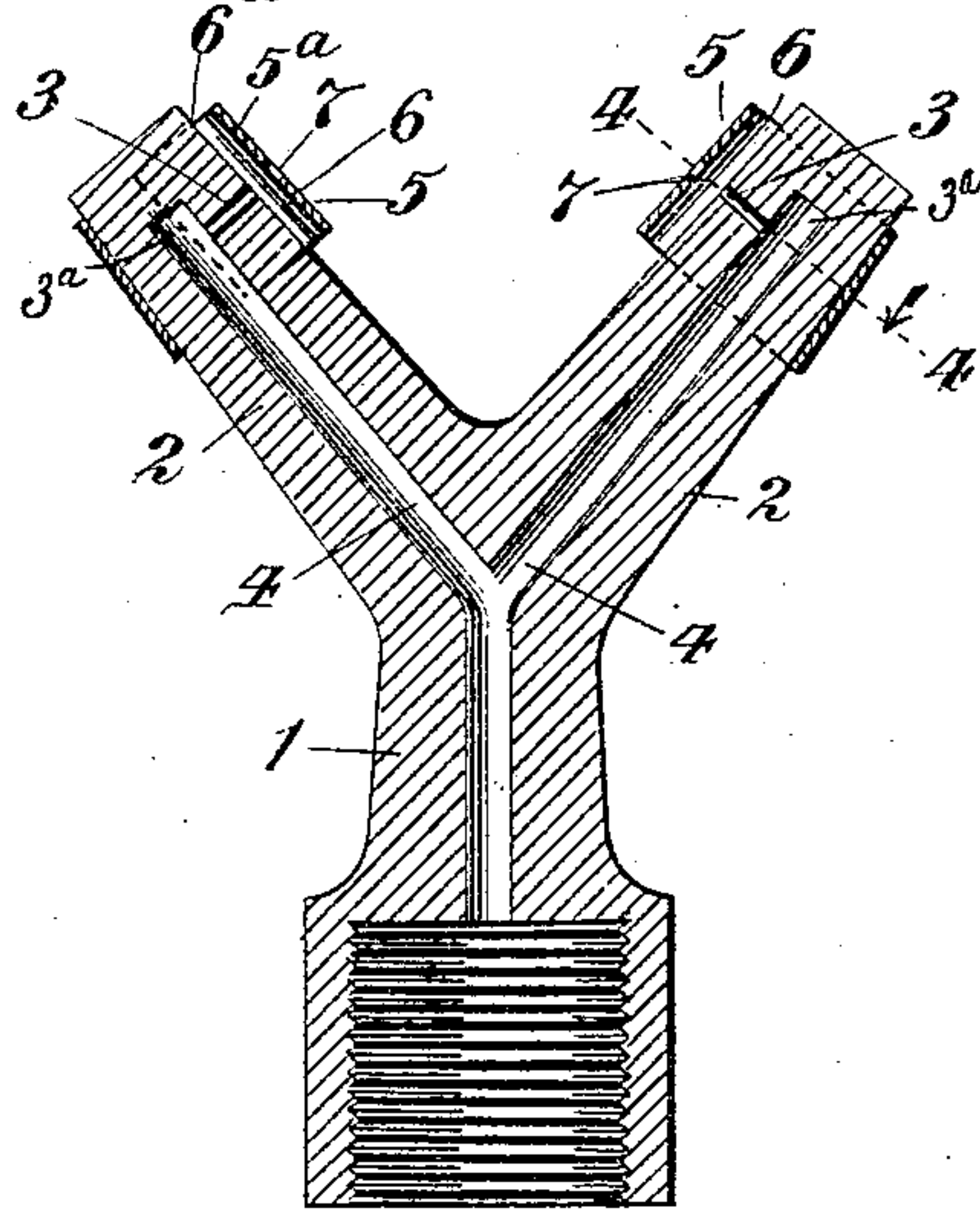


Fig. 5.

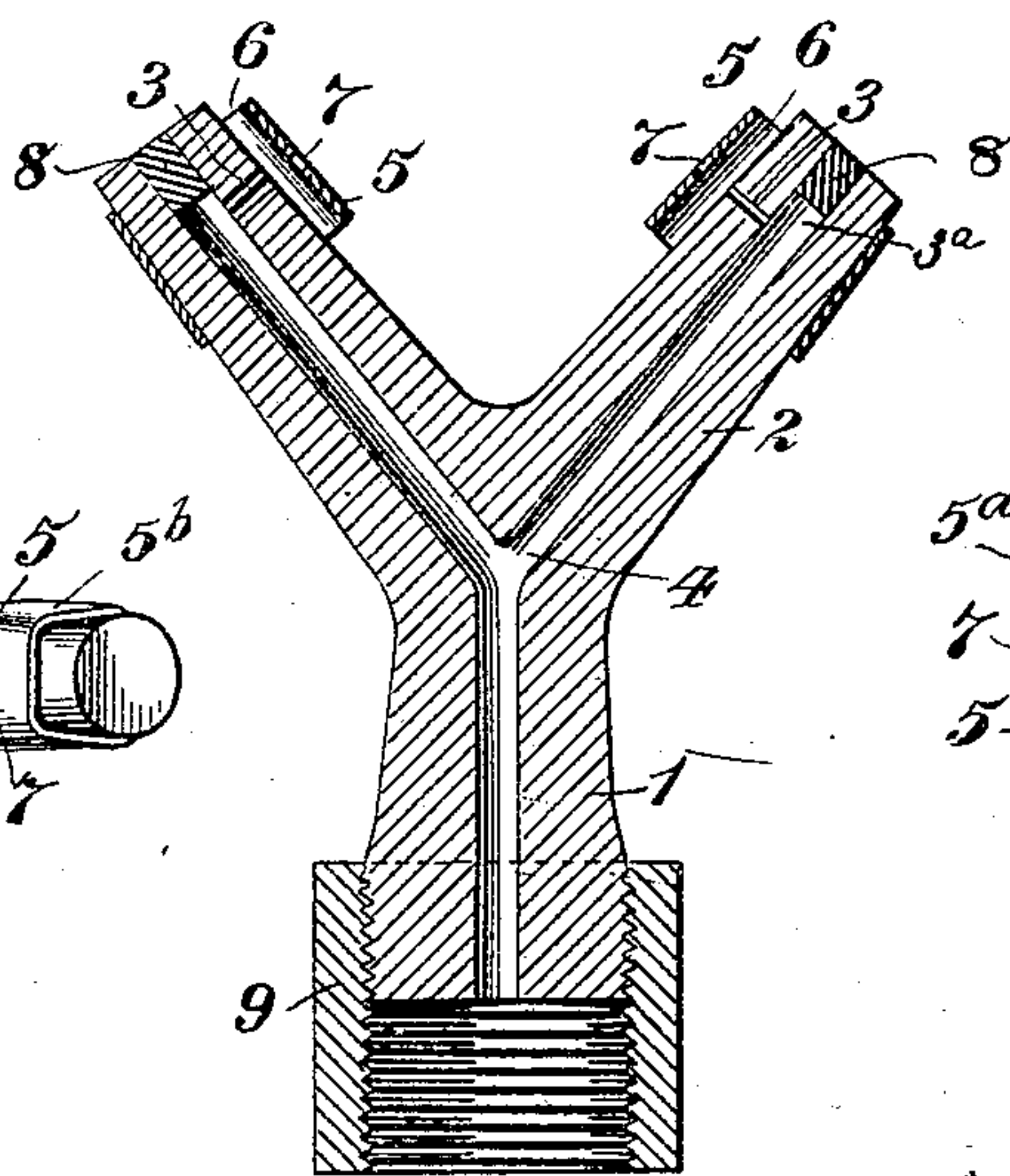


Fig. 3.

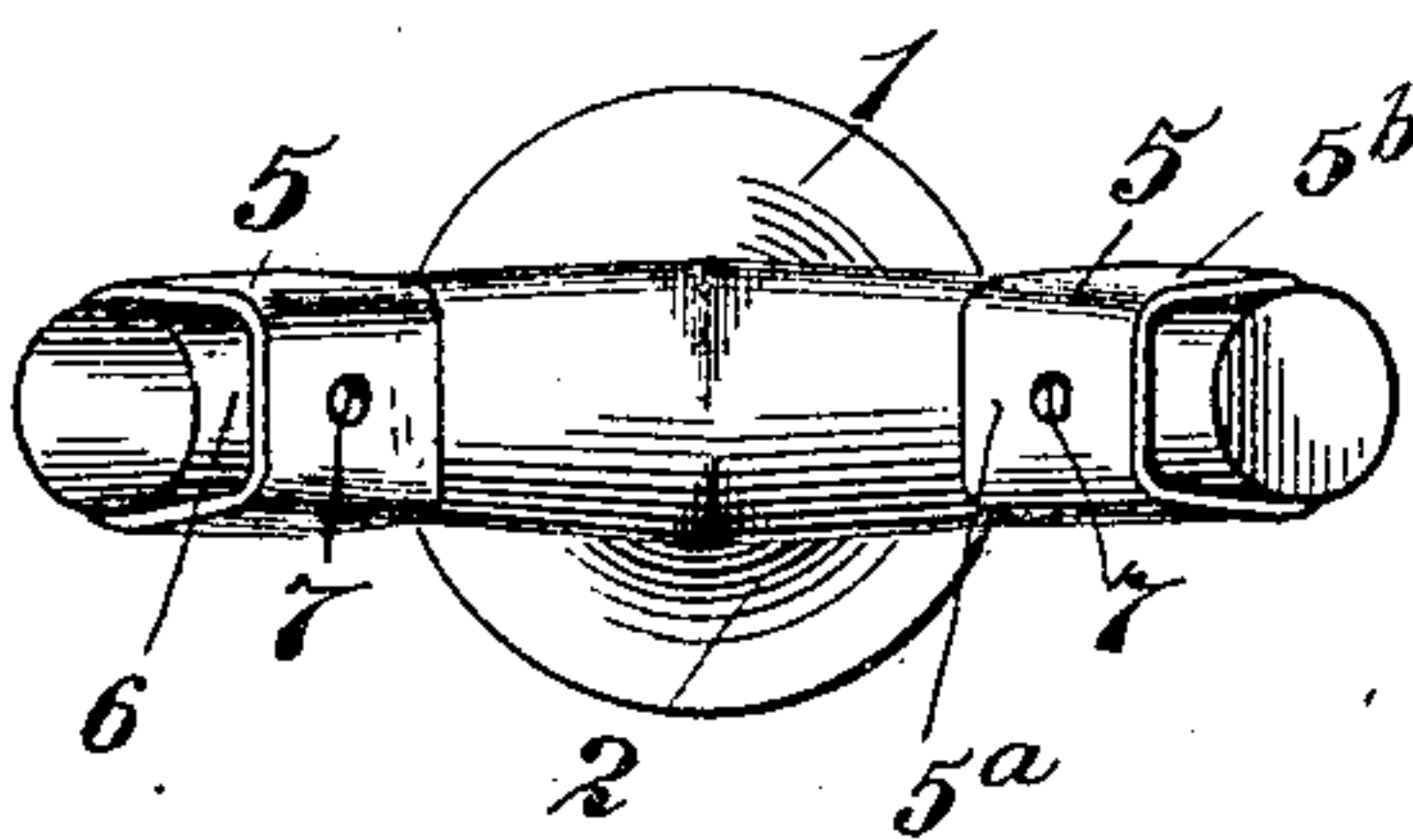
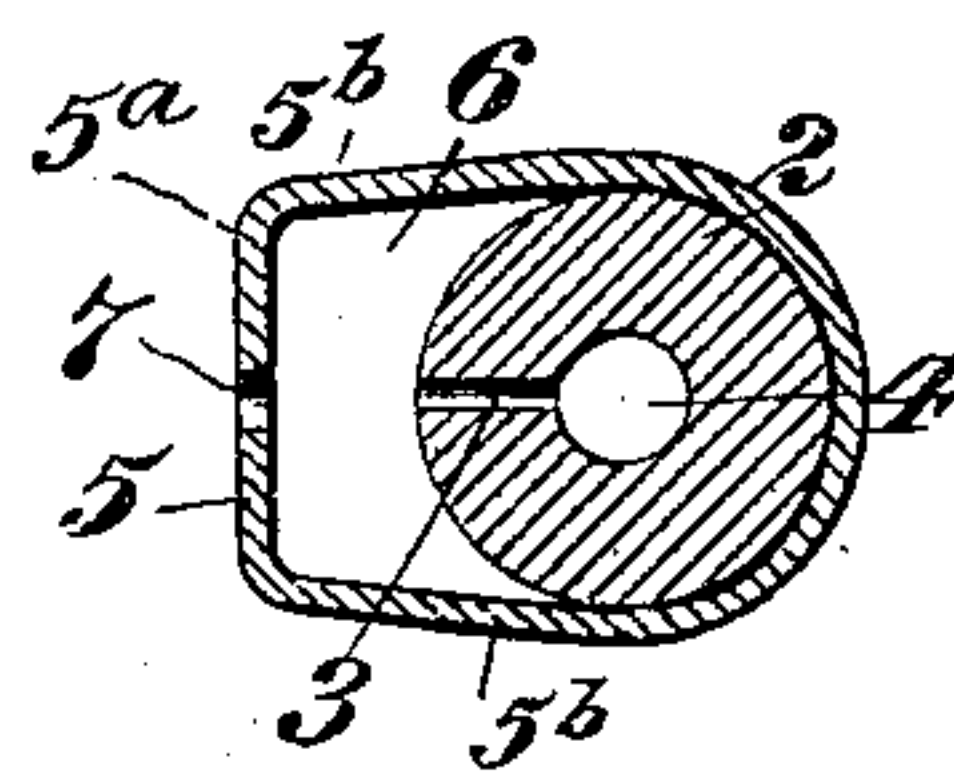


Fig. 4.



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GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 681,907, dated September 3, 1901.

Application filed October 7, 1899. Serial No. 732,845. (No model.)

To all whom it may concern:

Be it known that we, JOHN HERBERT CLIFF, GEORGE HENRY CLIFF, and THOMAS DAVIDSON WARDLAW, subjects of the Queen of Great Britain, residing at Dundas, county of Wentworth, Province of Ontario, Canada, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

Our invention relates to improvements in gas-burners, and has particular relation to burners for use in connection with acetylene gas.

The object of our invention is to provide a burner which is non-carbonizing and not liable to be broken or injured, which is simple and efficient in operation, and capable of producing a high candle-power light.

The invention consists in the novel details of improvement that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a side elevation of a gas-burner embodying our invention. Fig. 2 is a vertical section thereof, showing the interior construction. Fig. 3 is a plan view thereof. Fig. 4 is a cross-section on the line 4 4 in Fig. 2; and Fig. 5 is a sectional view similar to Fig. 2, showing a modified form of the burner.

In the accompanying drawings similar numerals of reference indicate corresponding parts in the several views.

In the burning of acetylene gas the best form of burner of which we are aware is provided with two opposed outlets for the gas, the combustion taking place at the point where the two gas-jets meet. In this form of burner, however, as well as in others, there is a tendency to form a layer or deposit of carbon contiguous to the outlets, which layer must be removed at short intervals to obtain the best results from the gas. This forming of carbon deposits is especially prevalent when the light is turned low, during which period the deposit quickly forms and tends to prevent the passage of the gas. The forming of carbon deposits is less prevalent where a lava or other earthen tip is used; but by reason of the heat generated such tips are

specially liable to become broken owing to their fragile nature. To obviate this and other disadvantages, we provide a burner, formed preferably of metal, in which the light burns with greater brilliancy, in which deposition of carbon, as above explained, is substantially eliminated, which will burn with equal effect with respect to deposition of carbon, whether burning brightly or dimly, which is neat and attractive in appearance, durable in construction, and which can be made at a low cost.

In forming our burner we provide a body portion 1, adapted to be connected to a gas-supply pipe, from which body 1 extend two arms 2 at an angle to each other, which parts 1 and 2 have a bore 4, which at or near the outer ends of the arms 2 communicates with outlets or orifices 3, which converge toward a meeting-point, whereby we utilize the principle of having two jets of gas meet at a point midway of the outlets or orifices. (See Fig. 2.) It will be observed that the outlets or orifices 3 are made directly in the arms 2, as by boring suitable minute holes into the metal of said arms to cause them to open into the passages or conduits therein. As shown, the bores 4 in the arms 2 pass beyond the outlets or orifices 3, whereby a space 3^a is formed in which a cushion of gas is maintained during use, by which means a steadier flame is produced than if gas were drawn direct from the end of the bore 4. It will be understood that the gas as it issues from the outlets or orifices 3 could be burned; but according to our improvements we place a hood, wall, or the like 5 over and in line with the outlets or orifices 3, thereby forming a chamber 6 between the surface of the arm 2 and said hood, and in said hood is an opening 7, alined with the corresponding outlet or orifice 3, through which the gas issuing from the latter may pass; but in such passage it traverses the chamber 6 and becomes mixed with air that enters the latter. The commingled gas and air issuing from the opening 7 is burned, producing a bright flame at the point where the two jets meet. The hood 5 may be attached to the arms 2 in any suitable or convenient manner, and it is preferably formed by a tube or strip of metal that has a wall 5^a, located at a

suitable distance from the arm 2 and extending across and at substantially right angles to the orifice 3 and provided with the opening 7, and from the wall 5^a project two opposed webs or walls 5^b, which extend to the arm 2, to which they are secured by brazing, solder, or in other suitable manner. In other words, the hood 5 is substantially in the form of a duct whose projecting webs or walls are secured to the arm 2. It will be seen that the ends of this hood are open, forming inlets to the chamber 6, and that these inlets are alined, and the opposed webs or walls 5^b are preferably imperforate, whereby sudden drafts of air from the sides are prevented from attacking the gas issuing from orifice 3. The passage-way through the chamber is shown extending parallel to the arm 2, one inlet into the chamber being below and the other above the outlet-opening 7, whereby the air passes into the chamber 6 from opposite ends of the hood and along the arm 2, and therefore a free circulation of air around the arm and around the material of the hood is provided. It is evident, however, that the inlet into chamber 6 can be otherwise arranged, if desired. The opening 7, if desired, may be of a greater area than that of the opening or orifice 3, whereby there is no tendency of the gas-jet being deflected by the hood, so that the gas passing from the opening 3 will issue unobstructedly through the opening 7. The arms 2 and hood 5 are preferably made of metal, which insures durability of the device and the preventing of injury to the same by heat from the burning gas. In use we have found that by the formation of the hood and the arrangement of the air-space 6 the formation of deposits at the orifices 3 is eliminated, and thus the gas-outlets are kept clear, this being caused to a great extent by the better admixture of air with the gas prior to its passage through the opening 7, and by the fact that the flame does not burn contiguous to the orifice 3, but outside of hood 5, thus insuring a brilliant light.

In Fig. 5 we have shown a modified form of the burner portion. In this figure the gas passages or conduits 4 of the arms 2 are continued to the outer ends of the same, enabling the formation of the passages in the arms 2 by drilling or boring into the same, the passages so formed being closed by suitable plugs 8, secured therein by brazing or otherwise,

and the space 3^a for the gas-cushion is formed by not having the inner end of plug 8 too near the orifice 3. The portion 1 of the burner may be secured by suitable means within a separate base or sleeve 9, the latter in turn being provided with the usual screw-threads for attaching to the gas-fixture.

We do not limit our invention to the details of construction shown and described, as they may be varied without departing from the spirit thereof.

Having now described our invention, what we claim is—

1. A gas-burner having an arm provided with a gas-orifice, a front wall alined with said arm, and two side walls extending from the front wall toward and attached to said burner-arm, the first-mentioned wall having a gas-passage, said walls and arm forming a chamber, the opposite ends of said chamber being open forming air-inlets, substantially as described.

2. A gas-burner having a passage-way and an orifice leading thereto at an angle, and a hood composed of a bent strip having a wall extending transversely of the burner and provided with an opening, and having opposed walls extending from the sides of the first-mentioned wall toward and attached to said burner to form an air space or chamber on the exterior of the burner, the opposed ends of said chamber being open, the sides of the chamber being closed by the second-mentioned walls, substantially as described.

3. A gas-burner having a body portion provided with a pair of diverging arms having gas-passages, and an orifice leading from each passage, and tubes secured to said arms and each having a transverse portion located at a distance from the face of the burner and provided with an opening alined with an orifice to form air spaces or chambers whose ends above and below the orifices are open, substantially as described.

Signed at Dundas, in the county of Wentworth and Province of Ontario, this 18th day of August, A. D. 1899.

JOHN HERBERT CLIFF.

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Witnesses:

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