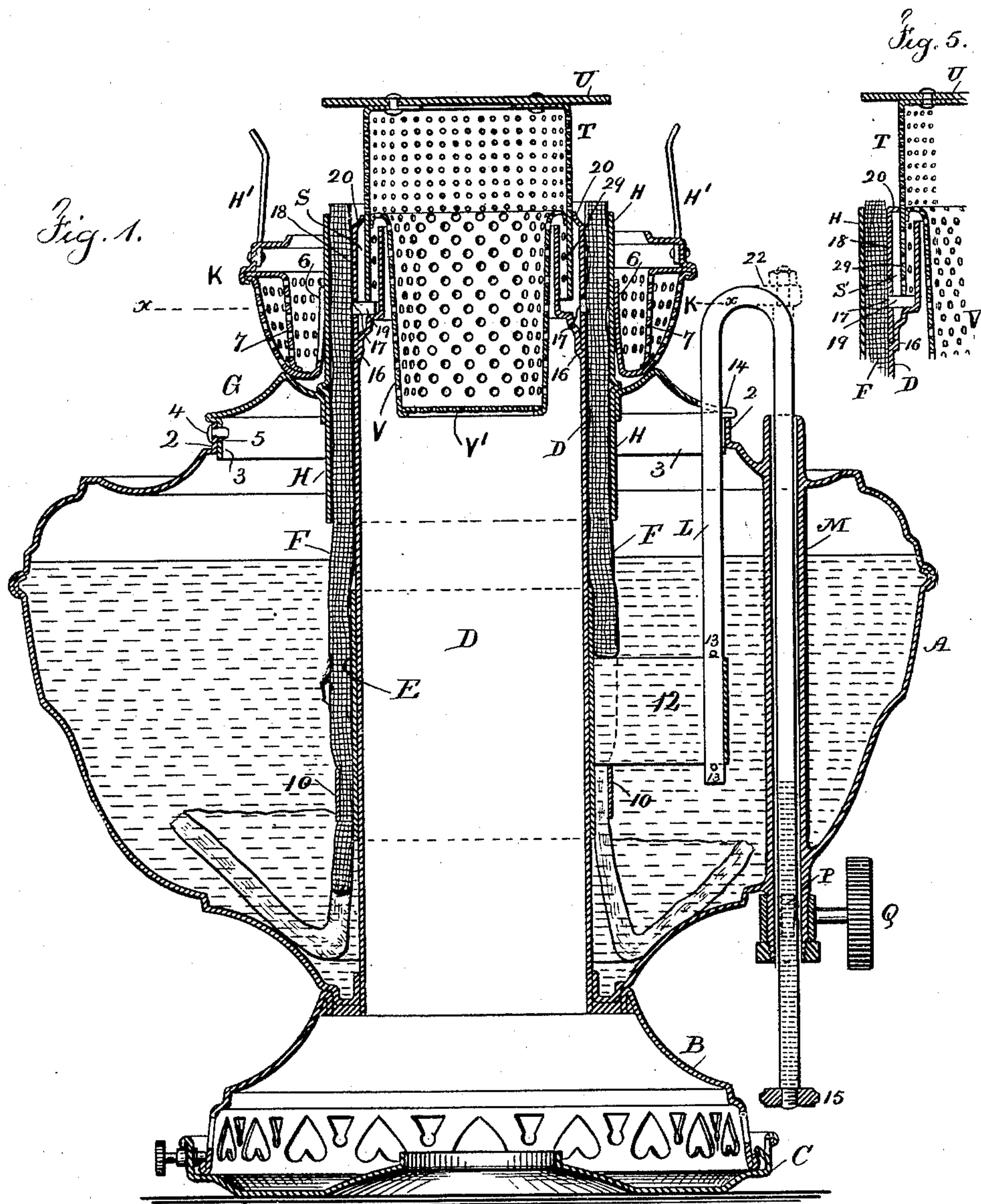


L. J. ATWOOD.
ARGAND BURNER.

No. 435,130.

Patented Aug. 26, 1890.



Witnesses

Chas H. Smith
J. Staib

Inventor

Lewis J. Atwood
per Lemuel W. Terrell
att'y.

(No Model.)

2 Sheets—Sheet 2.

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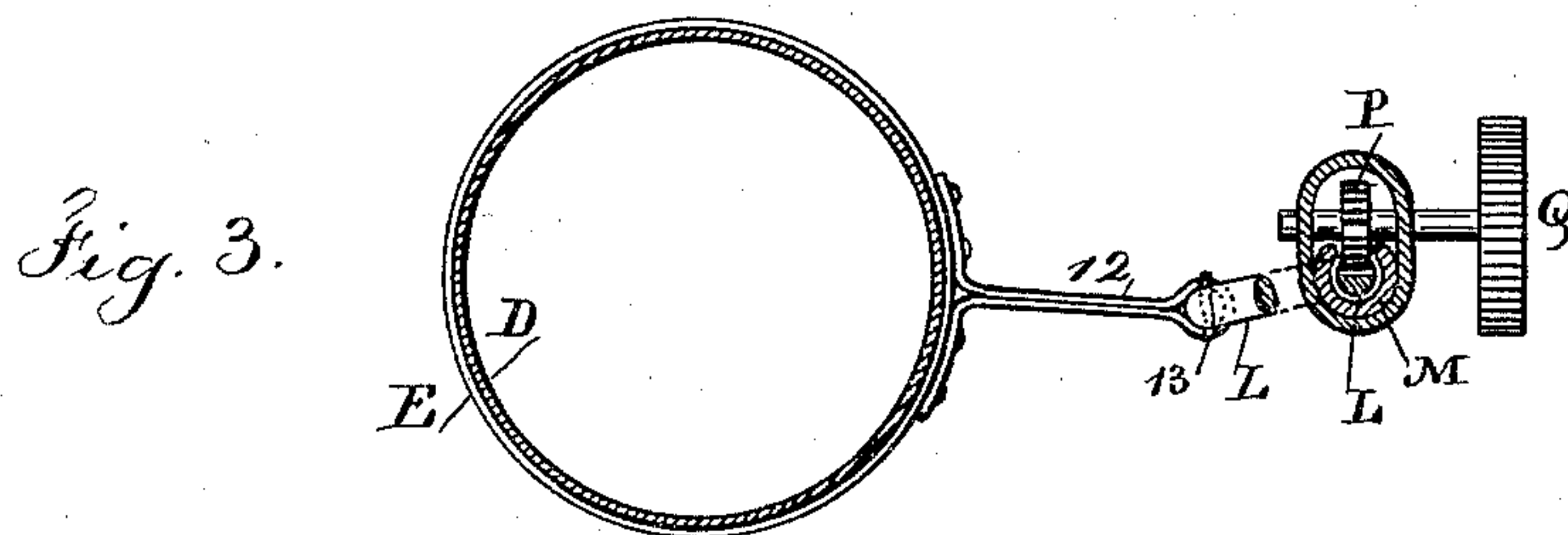
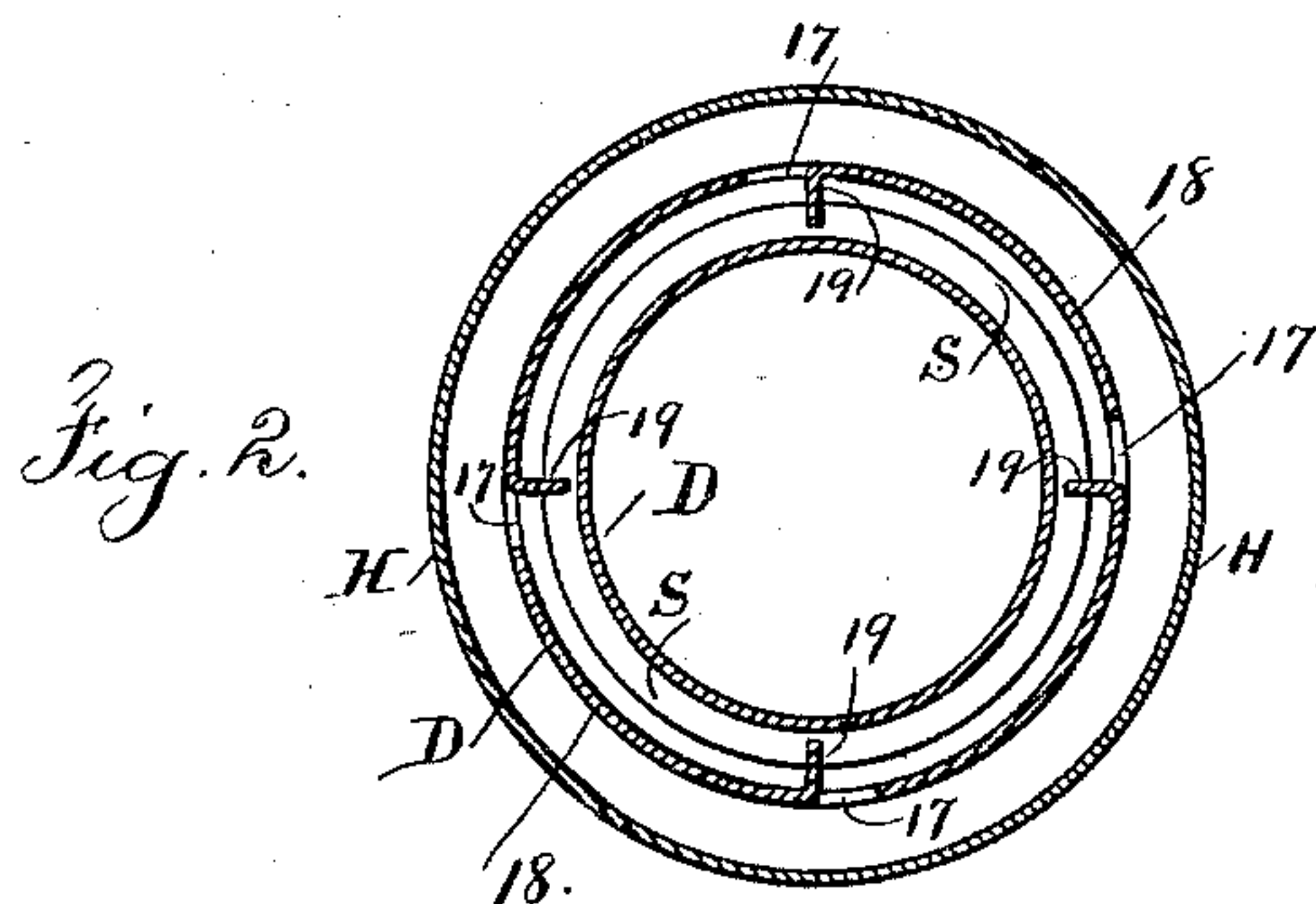
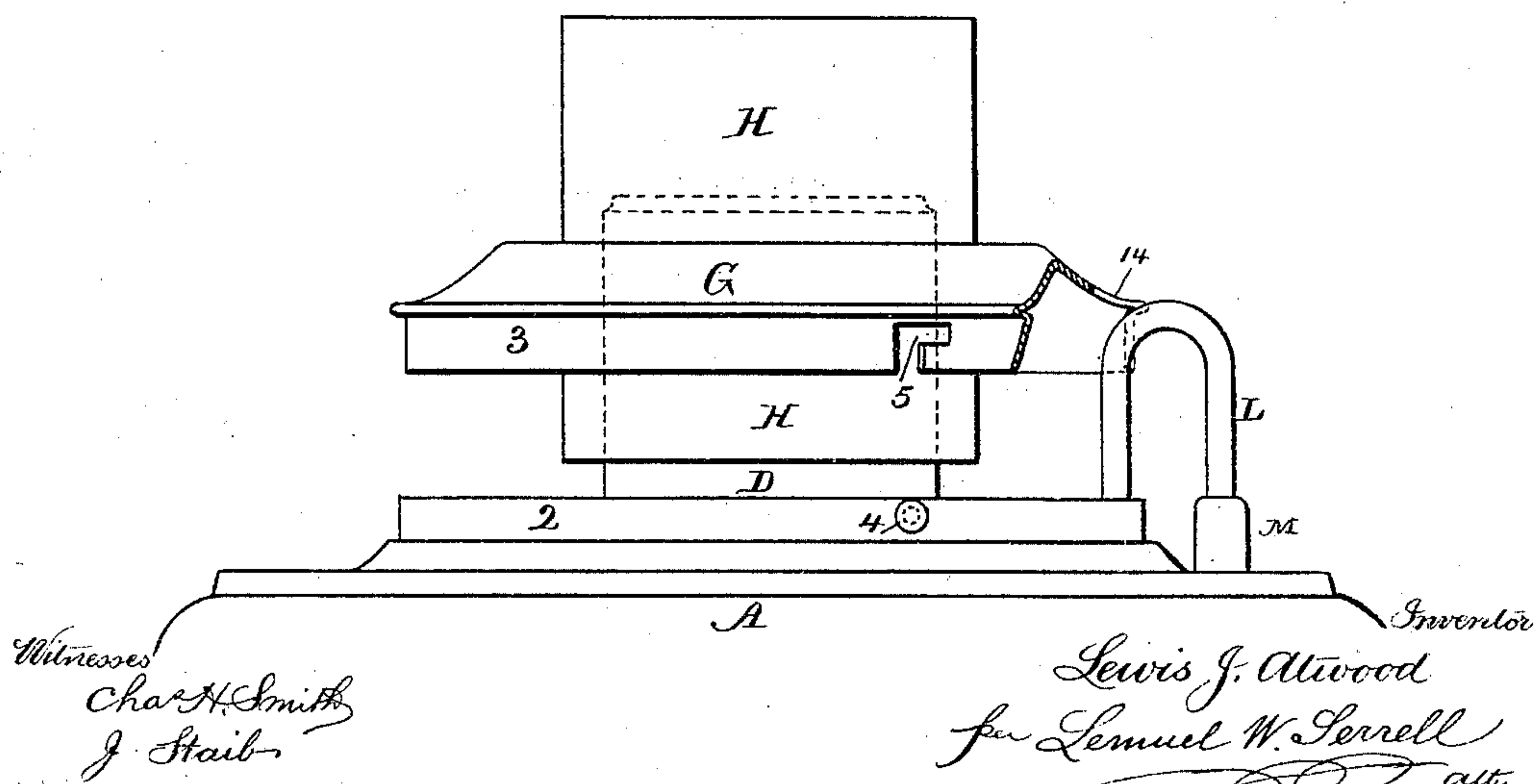


Fig. 4.



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UNITED STATES PATENT OFFICE.

LEWIS J. ATWOOD, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE
PLUME & ATWOOD MANUFACTURING COMPANY, OF SAME PLACE.

ARGAND BURNER.

SPECIFICATION forming part of Letters Patent No. 435,130, dated August 26, 1890.

Application filed December 2, 1889. Serial No. 332,207. (No model.)

To all whom it may concern:

Be it known that I, LEWIS J. ATWOOD, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented an Improvement in Argand Burners, of which the following is a specification.

This lamp is especially adapted to Argand wicks of a large size, wherein the central air-supply requires to be regulated with care to prevent the flame flickering, and in which the wick itself requires to be easy of access, so that it may be properly placed and raised and lowered to regulate the flame; and my improvements relate to the construction of the part and the combinations of devices herein-after set forth.

In the drawings, Figure 1 is a vertical section of my improved lamp. Fig. 2 is a horizontal section of the wick and air-tubes at the line $x x$. Fig. 3 is a detached sectional plan of the air-tube and wick-raising mechanism. Fig. 4 is an elevation of the collar or cap to the reservoir and the exterior wick-tube and a portion of the reservoir, and Fig. 5 is a detached view of a modification in the shape of the inward offset around the wick.

The reservoir or fountain A is of any desired size or shape, and the base B is preferably perforated and rests upon a detachable saucer C, and the central air-tube D is permanently fastened at its lower end to the bottom of the reservoir A, and it is of a size adapted to receive around it the wick-thimble E and wick F.

The top of the reservoir A is open and terminates with an upward flange 2, and there is a cap or collar G, having a flange 3, that passes within the flange 2 of the reservoir. The wick-tube H is fastened to the collar G, surrounds the wick F, and has its upper edge on a line, or nearly so, with the top of the air-tube D. I prefer to make use of pins 4, passing through the flange 2 and permanently secured thereto, and bayonet-slots 5 in the flange 3 of the cap G, in order that the cap G may be securely locked to the reservoir A. This is especially advantageous in consequence of the chimney-holder K being removable from around the wick-tube H, there

being springs 6 upon the chimney-holder that surround the wick-tube H and apply the necessary friction for holding the parts in position. The base of this removable chimney-holder K is finely perforated to form an air-distributor, and it has a second air-distributor 7, also perforated within the chimney-holder base, so as to prevent the flame being disturbed by inequalities of air-supply. The chimney may rest upon the top of the holder K; but it is preferable to employ the springs H' for grasping the base of the chimney. I prefer to make the wick F considerably longer than the air-tube D, and to slit the lower end of such wick at two or more places, so that it may be diverted from the air-tube or folded upon itself in the lower part of the fount or reservoir, and hence such wick will serve to supply the oil to the flame after a considerable portion of the upper part of the wick has been consumed. The wick is held to the wick-thimble E by a metal band 10, clamped around the wick, or by winding a thread or string around such wick.

In order to raise or lower the wick, I provide the wick-thimble E with an arm 12, preferably of a folded strip of sheet metal formed as a cylinder at its outer end, into which is received the lower end of one leg of the lifter-rod L. This rod is doubled back upon itself, or made of two parts connected together, as shown by dotted lines at 22, so that one portion or limb of the rod passes down to the arm 12, and the other limb goes through the stationary tube M, that passes through the reservoir A. Pins 13 are passed through the lifter-rod L above and below the arm 12, so that such arm 12 and the wick-thimble and wick can be raised or lowered by the lifter-rod L. The lifter-rod L can turn in the cylindrical end of the arm 12, as the cap G is partially turned in one direction or the other, to connect or disconnect the bayonet-lock 4 5. The lifter L preferably passes within the flange 3 at the top of the reservoir, so that access is freely given to such reservoir and to the wick and wick-raiser when the cap G is removed. This cap G is notched at 14 for the passage of the lifter-rod L.

In order to raise or lower the lifter-rod L, any suitable means may be made use of; but I prefer to notch such lifter-rod in that limb which is within the tube M, to form a rack to be operated upon by the pinion P, which is provided with a suitable thumb-wheel Q and supported by its arbor in a projection at one side of the lower end of the tube M. (See Figs. 1 and 3.) The nut 15 at the lower end of the lifter-rod L limits the upward movement of such rod; but by removing this nut the lifter-rod and the wick-thimble and wick can be separated from the reservoir and air-tube.

In order to prevent the oil from the wick flowing down the air-tube B, I provide an annular chamber S at the upper end of the air-tube D, such annular chamber being preferably formed by reducing the upper end of the air-tube to a smaller cylinder, and providing a shoulder at 16 for the reception of a short tube-section 18, corresponding in diameter, or nearly so, to the larger portion of such air-tube, and rising as high as the upper end of such air-tube, or nearly so, and terminating as an inward offset or cup 20, and provided with one or more openings at 17, through the short tubular section 18, for the oil to return from the annular chamber S to the wick. In making the holes 17 the metal is preferably cut and bent inwardly to form the rest 19 for the lower edges of the central air-distributor. The inward offset 20 may be conical, as in Fig. 1, or flat, or nearly so, as in Fig. 5.

To regulate the action of the internal air-supply, I make use of the cylindrical distributor T of sheet metal, perforated above the air-tube and extending down into the annular chamber S. Attached to the top of the cylindrical distributor T is a deflector-disk U, which serves to spread the currents of air and cause them to impinge against the interior surface of the flame. There is also a perforated basket V, with a finely-perforated bottom V', suspended from the cylindrical distributor T, and passing down into the air-tube D, so that the ascending column of air in the air-tube is arrested and its momentum sufficiently checked by the perforated basket to cause the atmosphere to pass in regular and uniform currents through the fine perforations of the cylindrical distributor T, and thereby the uniformity and brilliancy of the flame are regulated in a reliable manner. The inward offset or cup 20, surrounding the cylindrical distributor T, performs the three duties of holding the air-distributor concentric with the wick, of aiding in catching any oil that is drawn up by the wick, and of preventing gases from the wick or reservoir passing directly up from the chamber S to the flame. The rests 19 support the distributor T, so that any gases passing through the openings 17 can ascend within such distributor and commingle with the central air-supply before passing to the flame; hence the flame is not

rendered unsteady or caused to flicker by said gases. It will be apparent that in consequence of the air-distributor T setting closely within the annular cup or inward offset 20 gases from the wick and from any oil in the annular chamber S cannot pass between the offset and the air-distributor, and where the lower portion of the air-distributor within the annular chamber S is perforated, as indicated in Fig. 1, the gases can pass through such perforations and will rise into the ascending column of air within such air-distributor and commingle with the same before passing to the flame, regardless of the manner in which such air-distributor is supported within the said chamber S.

The tubular section 18 may be of any desired length and secured to the exterior surface of the air-tube in any suitable manner. I have found the length represented and the mode of fastening before described advantageous to be made use of in this class of burners.

The wick-raiser rod L and arm 12 are available with a wick-thimble of any suitable character, either around the air-tube or around the wick.

In the application of Atwood and Tobey, No. 316,661, the upper end of the air-tube is contracted to a smaller-sized cylinder, and the cylindrical tube forming an extension of the air-tube terminates at nearly the same level as the exterior wick-tube, and is straight and adapted to receive the lower end of the perforated equalizer. I therefore herein disclaim such features.

I claim as my invention—

1. The reservoir A and central air-tube D, in combination with the tube H, surrounding the wick and the collar G connected therewith, and having a flange and bayonet-lock for connecting the collar to the reservoir, the wick-thimble E, sliding upon the air-tube and having an arm 12 extending from said thimble and terminating in a vertical cylinder, a vertical tube M, passing through the reservoir, the double lifter-rod L, having two parallel portions, one passing through the tube M, the other through an opening in the collar G and descending through the vertical cylinder upon the wick-thimble, there being projections above and below such cylinder for allowing the lifter-rod to turn in such cylinder as the lifter-rod is swung by the partial rotation of the collar G in disconnecting the bayonet-lock, substantially as set forth.

2. The central air-tube in an Argand burner extending up to nearly the same level as the external wick-tube, and the upper end portion contracted to a smaller diameter, in combination with the cylindrical section surrounding said upper part of the air-tube and united to the same, and having an annular and inwardly-projecting cup at its upper end, substantially as set forth.

3. The combination, with the reservoir and central air-tube contracted in diameter at its

upper end, of a section 18, forming an annular chamber S, a cylindrical distributor, the lower end of which passes into the annular chamber, a deflector at the upper end of the cylindrical distributor, and a perforated basket connected with such cylindrical distributor and passing down into the air-tube, substantially as set forth.

4. The combination, with the reservoir and the central air-tube having a contracted upper end, of a cylindrical section around the air-tube having an inward offset at its upper end, and an air-distributor setting closely within the offset and rising above the same, so that air and gases are compelled to pass through the distributor before reaching the flame, substantially as specified.

5. The combination, with the reservoir and the central air-tube having a cylindrical contraction at its upper end, of a cylindrical section surrounding such air-tube and united thereto at its lower end and having an inward offset at its upper end, perforations for

the passage of gases from the wick-tube into the annular space between the section and the upper end of the air-tube, and a cylindrical air-distributor setting closely within the offset and rising above the same for directing the air and gases to the flame, substantially as set forth.

6. The combination, with the reservoir and air-tube having a contracted upper end, of a tubular section surrounding the air-tube and united thereto and having an inward offset at the upper end, perforations through such section and inwardly-projecting tongues forming supports, and an air-distributor rising above the air-tube and supported by the tongues, substantially as set forth.

Signed by me this 26th day of November, 1889.

L. J. ATWOOD.

Witnesses:

W. S. ATWOOD,
R. T. LATTIN.