2 Sheets—Sheet 1.

# H. WELLINGTON.

## Vapor Burner.

**No. 220,452.** **Patented Oct. 7, 1879.**

Fig. 1.

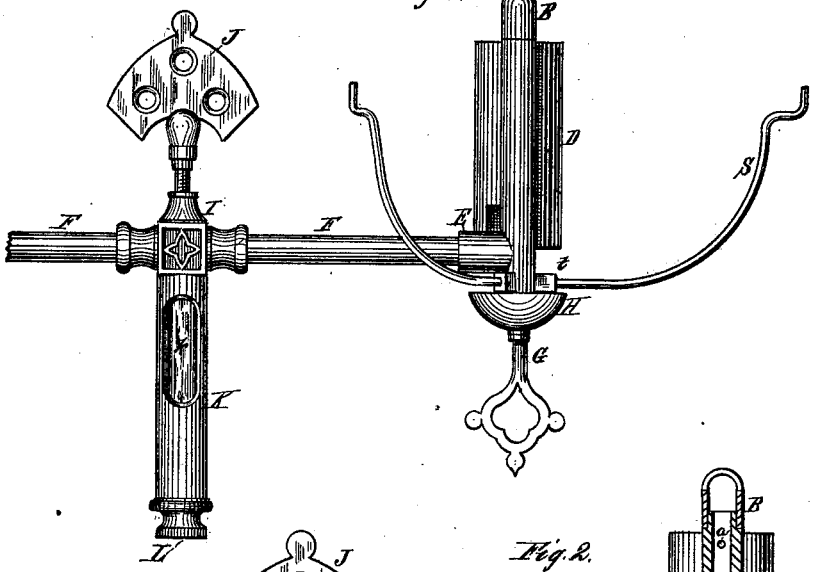



Fig. 2.

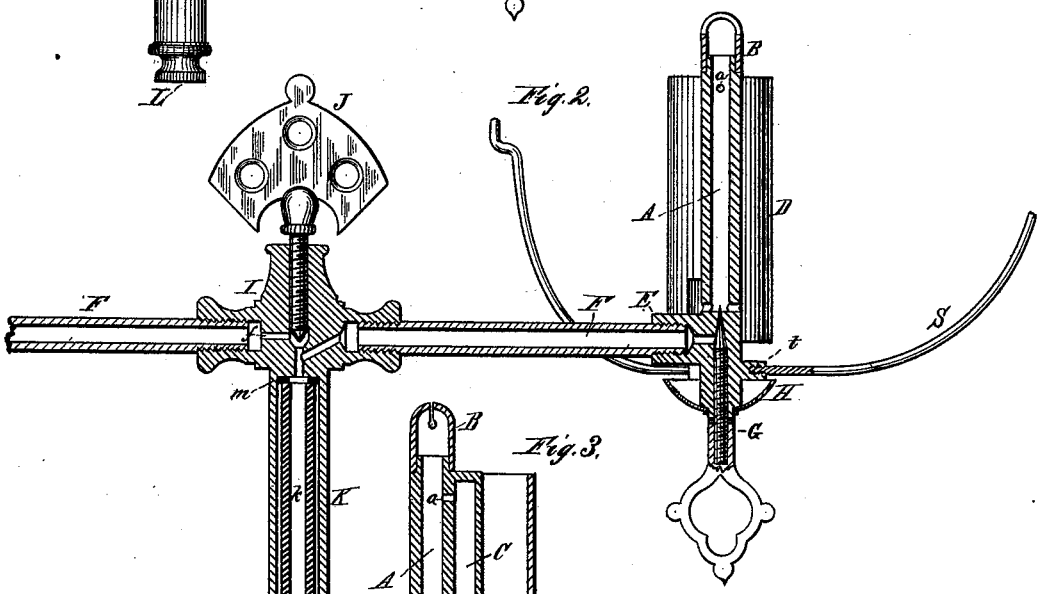
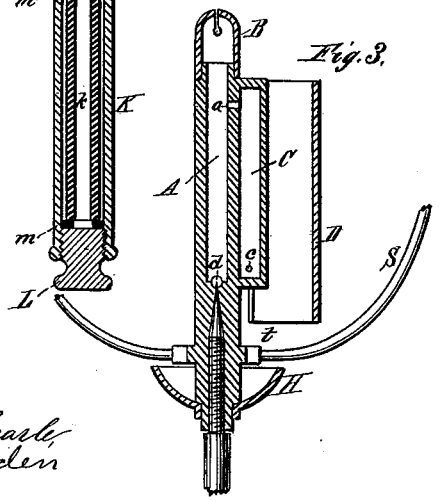



Fig. 3.




Witnesses:
Chas. H. Searle,
N. B. Budden

Henry Wellington,
Inventor:
By Worth Osgood
Attorney.

2 Sheets—Sheet 2.

# H. WELLINGTON.

## Vapor Burner.

No. 220,452. Patented Oct. 7, 1879.

Fig. 4.

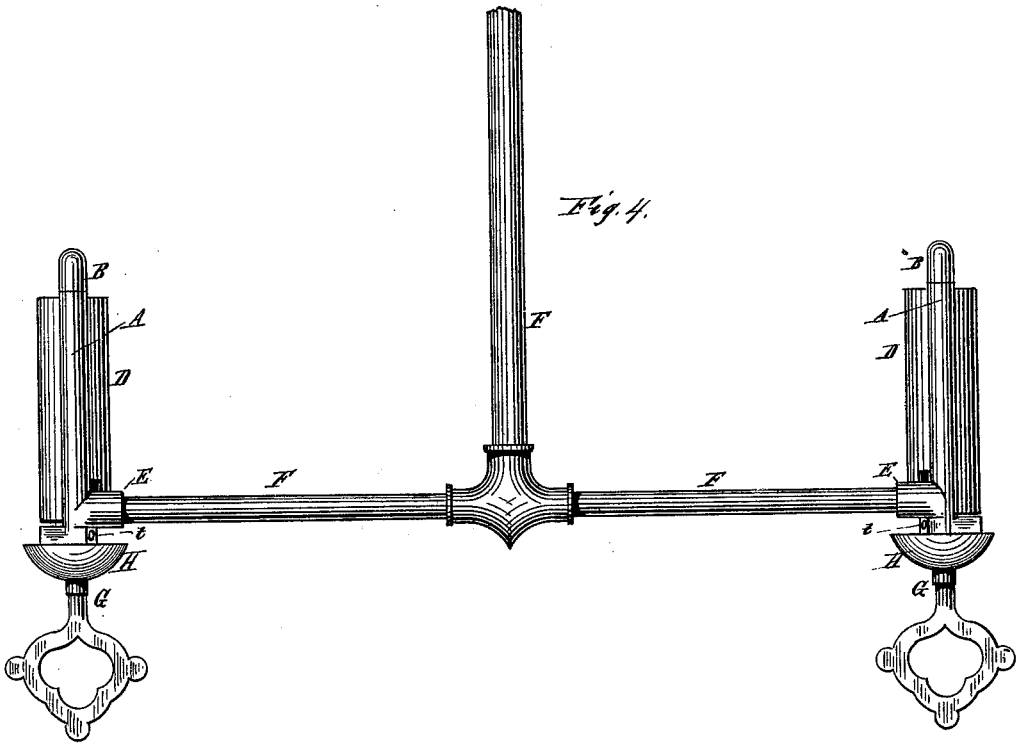



Fig. 5.

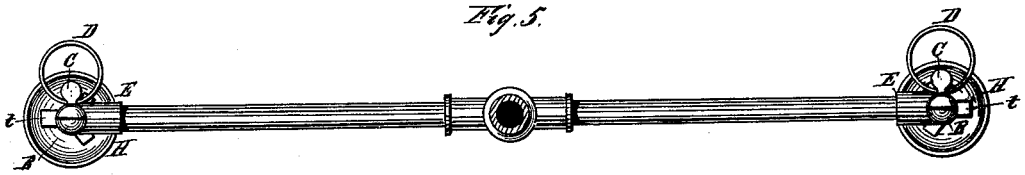
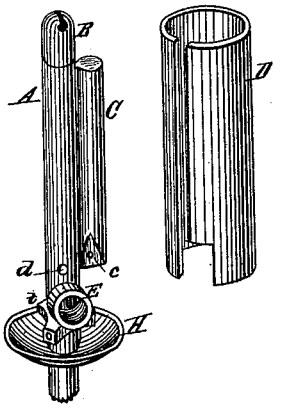



Fig. 6.




Attest:
Chas. R. Searle,
W. B. Prudden

Henry Wellington,
Inventor;
By Wood & Osgood,
Attorney.

# UNITED STATES PATENT OFFICE.

HENRY WELLINGTON, OF GREEN POINT, NEW YORK.

## IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. **220,452**, dated October 7, 1879; application filed March 3, 1879.

*To all whom it may concern:*

Be it known that I, HENRY WELLINGTON, of Green Point, county of Kings, and State of New York, have invented certain new and useful Improvements in Vapor-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is an elevation, showing one of my improved burners complete and mounted in connection with my improved water-trap. Fig. 2 is a sectional view of the device arranged as in Fig. 1, the section being taken upon a plane passing through the axis of the supply-pipe. Fig. 3 is a sectional view of the burner alone upon a plane at right angles to that of Fig. 2. Fig. 4 is an elevation of a chandelier having two burners attached in accordance with my improvements, the auxiliary flame-protectors being located upon the same side of the feed-pipe; and Fig. 5 is a plan view of the arrangement shown in Fig. 4. Fig. 6 is a perspective view, showing the burner proper and the auxiliary flame-protector as detached therefrom.

Like letters in all the figures indicate corresponding parts.

My invention has relation to that class of illuminating devices wherein the oil or other fluid is converted into an illuminating-gas at or near the point of combustion, which class of devices are now ordinarily denominated "vapor-burners," the principal objects of the invention being to simplify and improve the general construction of the burner, rendering it easier and cheaper to construct; to better adapt it for conducting the heat necessary for producing the gas; to provide a simple and efficient means of indicating the presence of water or sediment in the oil, which means shall at the same time permit the ready and easy discharge of the water, &c.; to better adapt burners of this class for use in connection with chandeliers by making them in pairs or sets, having oppositely-arranged sockets for coupling with the supply-pipe, so as to bring both protectors upon one side of such pipe, and providing a strong, durable, and cheap means of attaching a globe or shade.

To accomplish these objects, the invention consists in certain new and useful combinations or arrangements of parts; all of which will be hereinafter first fully described, and then pointed out in the claims.

A is the mixing-chamber, through which the combined air and gas is conducted to the burner-tip B, there to afford the required illuminating-flame; and C is the tube or channel intended to conduct a quantity of combined air and gas from the mixing-chamber down to the auxiliary jet-aperture *c*. E is the screw-socket, which receives the supply-pipe F, and H is the drip-cup, and G the regulating-valve.

The two tubes A and C are cast together, and with the socket E and seat for the valve G, as shown in Fig. 6; and by thus making all the heating parts of the burner solid, or in one piece, its heat-conducting properties are considerably augmented and the cost of construction greatly reduced.

Aside from these two important advantages the burners can be made more accurately than when the mixing-chamber and conducting-tube are brazed together, (as in old forms of construction,) and the auxiliary flame-orifice *c* can be reached more easily, in order to clean it, by simply elevating the protector D, which, in previous forms of burners, has been brazed upon the main parts, because the separate tube was not sufficiently rigid to otherwise retain it or permit its adjustment.

The tip B is a separate piece, and may be easily removed from the mixing-chamber.

The chamber A is drilled downwardly from the top and chamber C may be likewise drilled, the ends of the drill-hole being carefully plugged.

The orifice *a*, at the top of the mixing-chamber, leading to the conductor C, is formed by drilling through the outer wall of C, and then plugging up the outer perforation. The auxiliary jet-orifice *c* and the air-inlet orifice *d* are drilled in directions perpendicular to *a*, and the remaining parts of the burner proper are fitted up in a manner easily understood.

The protector D is a short piece of pipe slitted from top to bottom, as plainly shown in Fig. 6, and cut away at bottom, so as to accommodate the projecting socket E. This protector is placed about the tube C, and is held in proper place by reason of the friction upon

the web which joins the two tubes A and C, induced or produced by the spring of the pipe itself.

The pipe D is open at top and bottom, and it serves to prevent gusts of wind from extinguishing the flame at *c*, as well as to confine the heat from this flame upon the cast-metal parts of the burner. It may be easily raised or lowered, if it be desirable to gain access to the jet-orifice for any purpose. In case the socket E be differently located than shown in Fig. 6, there will, of course, be no occasion for cutting away a portion of the lower end of protector D.

In this class of burners, especially such of them as are used for outdoor purposes—as in street lighting and the like—much difficulty is experienced in producing a steady and uniformly-brilliant light on account of the presence of water or other substances in the oil, and it becomes a matter of importance to provide a suitable water-cup or sediment-chamber, from which the water, &c., may be easily removed without disturbing the oil in the reservoir or fount; and the construction of this cup should be such as to permit a view of its contents, so as to avoid unnecessary clearing.

At some convenient point of the supply-pipe F, I locate the coupling I, having the adjustable valve J, which controls the port *f*. At the lower part of the coupling is the depending tube K, having a portion of its walls cut away, as shown in Fig. 1; and within this tube is a glass cylinder, *k*, having packing-disks, of cork or suitable material, *m m*, at top and bottom. The cylinder *k* is held in place and tightly packed by the use of a thumb-screw or plug, L. All the oil that passes to the burner must pass over the open upper mouth of the tube K, and the water and impurities therein will settle down into such tube. Whenever the tube is observed to require cleaning, it is only necessary to close valve J down upon its seat, thus shutting off the supply of oil from the fount, and then to remove the plug L. All the matter within tube K may thus be easily removed. The plug L being properly replaced and the valve J again opened, the tube will first fill, and then the oil will flow to the burner, which is ready for use.

The valve J is also used to shut off the supply to the burner whenever desired, and it forms the usual stop-cock which is ordinarily employed in connection with the needle-valve G, thus avoiding the necessity of providing a separate valve for the use of the sediment-chamber alone. This sediment-chamber or water-cup is very simple in construction, is easily manipulated, and forms a valuable adjunct for the burner.

For use in the ordinary two-burner chandeliers it is desirable that the auxiliary-flame protector D should be located upon one side of the pipe F, so that the flame may spread out in the direction of the length of such pipe, and so that its shadow will fall where least objectionable. It will be readily understood that the protector D should not be so located as that it would direct a current of air from the auxiliary flame upon the projecting part of the main flame, for this current would utterly destroy all steadiness of illumination. And it is also desirable that the two protectors should fall upon the same side of the supply-pipe, not only for the better direction of the shadows, but so as to preserve the desired symmetrical appearance of the hanging burners. To provide for this I form the burners in pairs or sets, in each of which one burner has the socket E upon one side of the protector D, and the other burner is constructed so that its socket shall fall upon the opposite side of its protector. This, of course, requires a double set of patterns to be used; but the increased expense only extends so far as the making of the extra pattern, and it is sufficiently offset by the increased advantages in the arrangement. This location of the auxiliary-flame guard upon one side of the main supply-tube is not possible in any form of vapor-burner as previously constructed, for the reason that the socket for joining the burner with the supply-tube is cast or otherwise formed so as to be opposite, or very nearly opposite, the conduit which supplies the gas for the auxiliary flame. Nor would the difficulty be obviated were the previous styles of burners made so that the mixing-chamber and auxiliary conduit could be revolved in the burner-base, because in those previous forms the auxiliary-flame guard extends below the coupling-socket, and would therefore abut against the supply-tube before the desired adjustment could be made.

For ordinary single-burner wall-lamps, street-lamps, and the like, either one of the above-described pair of burners may be used; or the socket E may be located at any desired point of the base of the burner.

In many styles of vapor-burners a good strong shade-holder is very desirable, one which can be readily detached for shipment or packing, and as readily attached for use, and one which will maintain the shade in a firm manner without danger of displacement or disarrangement, being most desirable.

To provide this attachment I cast the lugs *t t t* (three in number) upon the base of the burner, and these I tap suitably to receive the screw-threaded lower ends of the wire arms S S S, upon which the shade may be supported. This construction fulfills all the required purposes. It may, of course, be modified by casting a circular continuous enlargement instead of the three lugs; or the lugs, as well as the number of arms S, may be varied at pleasure, the chief object of the construction being to provide a solid screw-threaded seat in some convenient portion of the burner proper which will operate to hold the arms steadily and firmly, and be at the same time comparatively inexpensive to make.

The burner and its several auxiliaries being constructed, combined, and arranged substan-

tially in accordance with the foregoing explanations, is found to operate satisfactorily in every respect, to afford a steady and brilliant flame, and specially to accomplish all the specifically-mentioned objects of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a vapor-burner of the character herein specified, the combination of the mixing-chamber and the conducting-tube, communicating with each other at top, and provided, respectively, with an air-orifice and an auxiliary jet-orifice, and the connecting socket for the feed-pipe, the three parts being of cast metal, in one piece, drilled, tapped, and plugged, and rigidly connected, substantially in the manner and for the purposes set forth.

2. In a vapor-burner of the character herein specified, the combination of the mixing-chamber and the conducting-tube, communicating with each other at top, and provided, respectively, with an air-orifice and an auxiliary jet-orifice, and the connecting socket for the feed-pipe, these three parts being of cast metal, in one piece, drilled, tapped, and plugged, and rigidly joined, the whole being provided with a spring-metal protector for the auxiliary flame, the same being adjustably mounted upon the web joining the mixing-chamber and conducting-tube, substantially as set forth.

3. In combination with a vapor-burner, a trap depending from the feed-pipe, said trap being composed of a glass tube packed at top and bottom within an open-work frame, the same being provided with a plug at bottom and with an oil-controlling valve at top, substantially as shown and described.

4. In combination with a vapor-burner, the coupling I, perforated, as shown, and provided with a valve, J, adapted to arrest the flow of oil to the trap or burner, the open-work tube K, depending from the coupling and supporting the glass tube *k*, with its packing-rings *m m*, and the removable screw-plug L, substantially as shown and described.

5. The herein-described pair or set of burners having their sockets for the reception of the oil-supply tube located upon opposite sides, with respect to the auxiliary-flame protectors, substantially as shown, so that said protectors may be located upon one and the same side of the feed or supply tube, whereby the main flame is permitted to extend in the direction of the length of said tube, as and for the purposes explained.

6. The combination, with a horizontal supply-pipe, of the vapor-burners located thereon, said burners being provided with auxiliary-flame protectors, which are located upon one side of the main-flame apertures, both protectors being arranged upon the same side of the supply-tube, and the main flame thereby permitted to extend in the direction of the length of such tube, substantially as and for the purposes set forth.

7. In combination with a vapor-burner, the screw-threaded sockets *t t t*, or their described equivalents, rigidly cast upon or as a part of the body of the burner, and adapted to receive and hold the shade-holder arms S, in the manner and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

HENRY WELLINGTON. [L. S.]

Witnesses:

WORTH OSGOOD,

S. WRIGHT HOLCOMB.