

H. W. DOPP & M. J. STARK.

Hydro-Carbon Vapor Burner.

No. 124,425.

Patented March 12, 1872.

Fig. 1.

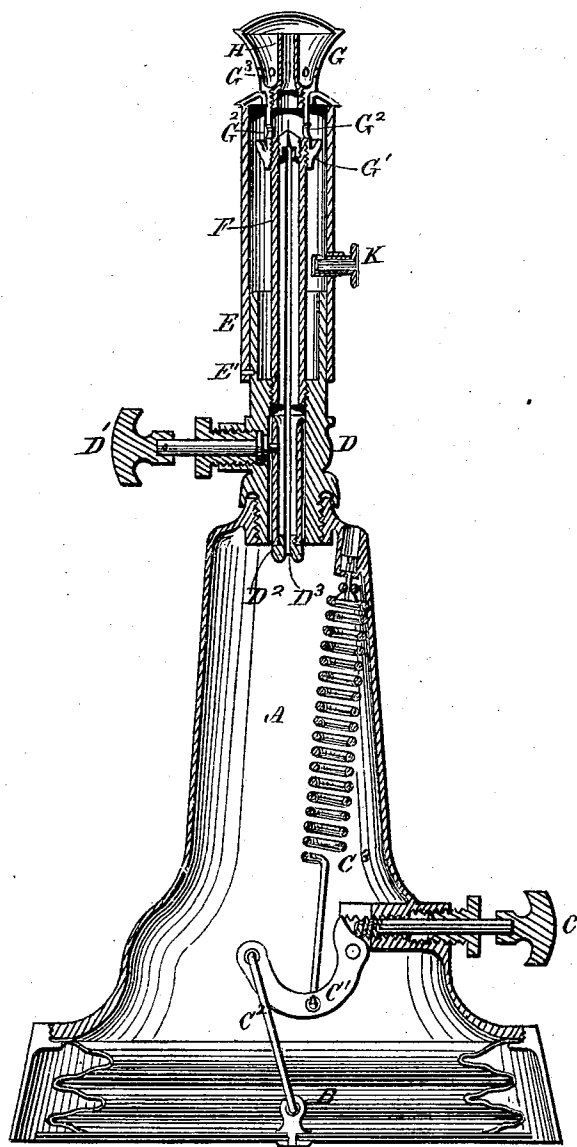
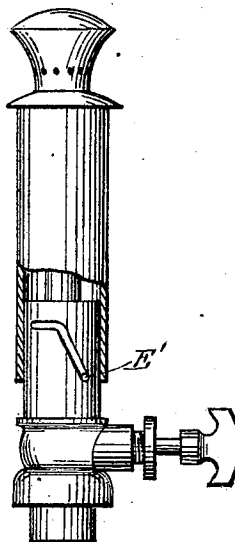


Fig. 2.



Witnesses
Harrison Sampman
Edw. A. Lee

Inventors.
H. William Dopp
Michael J. Stark.

UNITED STATES PATENT OFFICE.

H. WILLIAM DOPP AND MICHAEL J. STARK, OF BUFFALO, NEW YORK,
ASSIGNORS TO WILLIAM S. MEAD, OF NEW YORK CITY.

IMPROVEMENT IN HYDROCARBON-VAPOR BURNERS.

Specification forming part of Letters Patent No. 124,425, dated March 12, 1872.

Specification describing certain Improvements in Hydrocarbon-Vapor Lamps, invented by H. WILLIAM DOPP and MICHAEL J. STARK, both of Buffalo, county of Erie and State of New York.

The nature of our invention consists in constructing a hydrocarbon-vapor lamp so that the hydrocarbon liquid be contained in a metal bag or a diaphragm, being constructed of one or more corrugated disks or rings, from where it is to be forced, by means of uniform power, up into generating-tube; and in providing a simple mechanism for equalizing the power aforesaid; for producing pressure from a spring; also, in constructing the burner in such a manner that the supplying and controlling of the air may be easily effected, and steady and white jet flames be obtained.

The annexed drawing fully illustrates our invention. Figure 1 represents a vertical section of our hydrocarbon-vapor lamp; and Fig. 2 represents a perspective view of the burner, sliding tube, and faucet, with a portion of the tube broken away to show the cam-groove.

Letter A in the drawing represents a base or stand, of either metal or other suitable material. Within this stand A is placed a metallic bag, B, constructed of one or more sheet-metal corrugated disks or rings, joined in such a manner as to form a variable air-tight receptacle for the hydrocarbon liquid. It is expanded for the reception of the liquid by means of a stop-screw and handle, C, compound lever C¹, and connecting-rod C², and contracted for the discharge of the liquid by means of a coiled spring, C³, in combination with compound lever C¹. It will be observed that when the stop-screw is screwed in it will strike the elbow of compound lever C¹ and push it forward, thereby expanding metal bag B and also coiled spring C³. D is a faucet screwed upon stand A, and serves the purpose to facilitate adjusting the jet flames by means of a crank-shaft and handle, D¹, socket D², and needle-rod D³. E is a tube sliding up and down upon faucet D by means of a cam-groove, E', milled within the periphery of faucet D, and a pin fastened in tube E and sliding in cam E' of faucet D. F is a generating-tube screwed upon faucet D. It is provided on its upper extremity with the hydrocarbon-vapor

generator G screwed upon its outside and a plug, F', within its bore. Plug F' is bored out in such a manner as to leave an opening of such a diminished size as to be scarcely perceptible. Through this opening of plug F', and closing it up entirely, extends the point of the needle of needle-rod D³. G is the hydrocarbon-vapor generator. It is provided with the igniting-cup G¹ on its lower end, and also with two openings, G² G², for the admittance of air into the generator G, to be commingled there with the vapor arising through the orifice of plug F'. H is a center tube within generator G, and is for the purpose to diminish the sound of the current of vapor in commingling with the air, and to check the commingled gases before they reach the jet-holes G³ within the periphery of generator G. K is a regulator, consisting of an outer shell and a plug, said plug being open on one side, and having an outlet through its side and the outer shell. This outlet may be diminished by turning the plug. This regulator has the object to regulate the supply of air to be commingled with the vapor.

To operate this lamp the metallic bag B is expanded by means of stop-screw and handle C, the faucet D taken off, and hydrocarbon liquid poured within stand A and bag B till filled; then faucet D is replaced, and tube E lowered to expose the igniting-cup; also is stop-screw C turned back to allow spring C³ to act upon bag B, and give pressure to the liquid contained therein. If, now, handle D¹ is turned it will draw down socket D² with the needle-rod D³ attached to it, and open the orifice of plug F' sufficient to allow hydrocarbon liquid to flow out and run into igniting-cup G¹. This moving of socket D² by means of handle and shaft D¹ is accomplished by the shaft being provided on its extremity with a pin placed so far out of the center of the shaft as to form a crank of sufficient throw to move the socket, in which the crank-pin turns in a corresponding bearing, as far down as necessary to withdraw the needle-point of needle-rod D³ from plug F' enough to allow the liquid to pass through orifice of plug F' and run into the igniting-cup G¹. If this liquid be ignited the flame will heat the generator G sufficiently to vaporize the hydrocarbon liquid, which vapor

will rise and, becoming commingled with the air entering openings G^2 G^2 , will pass through center tube H and jet-openings G^3 to burn in steady white blazes as soon as tube E is raised and the supply of air regulated by means of regulator K. In order to retain the flow of hydrocarbon liquid to the generator the needle-rod D^3 is surrounded with wicking, which, when used up, may be easily removed and replaced by a new one, as the needle-rod D^3 can be easily screwed out of socket D^2 (needle-bar D^3 having two ears similar to those of thumb-screws) and put back again. To turn off the light, may be done either by turning handle D^2 , which will force the needle-rod D^3 into plug F' and stop the flow of vapor, or by turning stop-screw and handle C, which will expand bag B and relieve the liquid from pressure of spring C^3 . Be it observed that the hydrocarbon liquid is forced to the generator G by means of coiled spring C^3 attached to lever C^1 and connecting-rod C^2 ; but, as this spring is of gradually-diminishing power, and as it is required to have an equal pressure acting upon the hydrocarbon liquid, the lever C^1 is, in regard to this point, so constructed that the two points where spring C^3 and connecting-rod C^2 are connected to it bear such relation to each other that when spring C^3 is gradually losing its power its point where attached to lever C^1 will always travel further from the fulcrum of lever C^1 , thus increasing its leverage, while the point where connecting-rod C^2 is attached to lever C^1 will always travel nearer the fulcrum of lever C^1 , thus diminishing its leverage, and the result of this compound action will be the equalizing of the power of spring C^3 when acting upon the hydrocarbon liquid. Be it further observed that the peculiar construction of bag B and its device for producing pressure within the lamp does away with the use of atmospheric pressure and such like contrivances of a very

inconvenient character for producing pressure upon the liquid within the lamp, and that, although being very simple in its construction, it is by far superior to anything heretofore used in hydrocarbon-vapor lamps.

Claims.

Having thus fully described our invention, what we desire to secure by Letters Patent is—

1. We claim, in a hydrocarbon-vapor burner, the combination, with crank D^1 and needle-rod D^3 , of the socket D^2 , as and for the purposes described.

2. We claim, in the construction of artificial pressure lamps, for the purpose of equalizing the power of the coiled spring C^3 , acting in conjunction with the metallic bag B, to force up the liquid, the combination of the coiled spring C^3 , compound lever C^1 , and bag B, constructed substantially as described.

3. We claim, in combination with coiled spring C^3 , lever C^1 , and metal bag B, the stop-screw C, for the purpose set forth.

4. We claim, for the purpose of dispensing with the use of atmosphere confined in a bag and acting upon the surface of the liquid to be forced to the burner, &c., in combination with a hydrocarbon aero-vapor burner, a metal bag constructed of one or more corrugated disks or rings to receive the liquid, substantially as set forth.

5. The faucet D, provided with cam-groove E, in combination with the tube F, regulator K, and burner G, all constructed as described, and for the purposes set forth.

H. WILLIAM DOPP.
MICHAEL J. STARK.

Witnesses:

WARREN LAMPMAN,
EDWARD LEE.