

L. L. Hill,

UNITED STATES *Belows.*

N^o 26497.

Patented Dec. 20, 1859.

Fig: 1

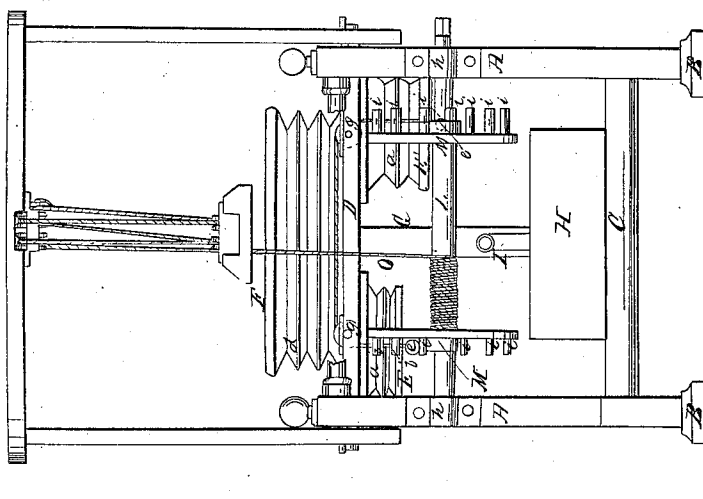
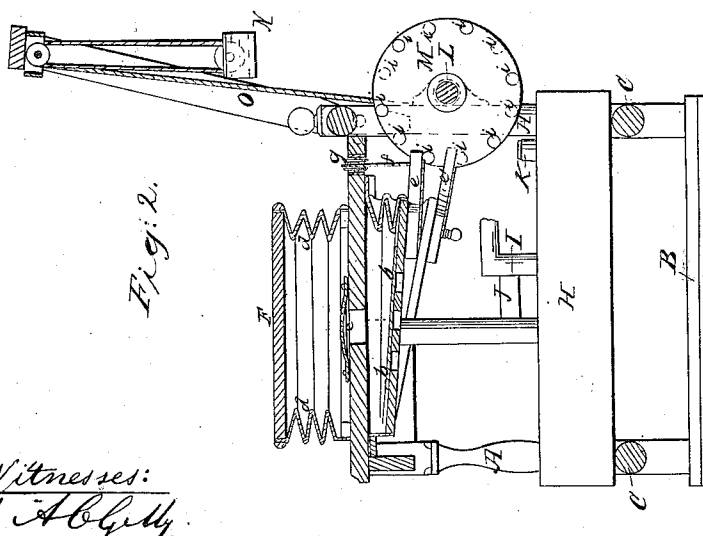


Fig: 2.



Witnesses:

A. A. Gilly
B. J. W. Hall

Inventor:

Levi L. Hill

UNITED STATES PATENT OFFICE.

L. L. HILL, OF GREENPORT, NEW YORK.

HYDROCARBON-VAPOR APPARATUS.

Specification forming part of Letters Patent No. 26,497, dated December 20, 1859; Reissued February 24, 1863, No. 1,417.

To all whom it may concern:

Be it known that I, LEVI L. HILL, of Greenport, in the county of Columbia and State of New York, have invented a new and Improved Apparatus for Charging Air with Hydrocarbon-Vapor and Supplying the So-Charged Air at a Suitable and Uniform Pressure for Combustion to Produce Light and Heat; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of the apparatus, and Fig. 2 is a vertical section of the same, taken at right angles to Fig. 1.

Similar letters of reference indicate like parts in both figures.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, B, C, D, is a square frame composed of four pillars A, erected upon feet B, stayed together by horizontal crosspieces C, and supporting a horizontal board D. To the underside of the board D, which is stationary, there are hinged one end of each of two boards E, E', the other edges of which are connected with the board D, by means of india-rubber cloth *a, a*, or other flexible material which is impervious to air, in such a manner that by the application of inlet valves *b, b*, in the said boards E, E', and outlet valves *c, c*, in the board D, above, two bellows are formed. Above the said board D, there is constructed an air receiver by attaching the sides of a board F, to the said board D, by india-rubber cloth or other flexible and impervious material *d, d*; the said air receiver covering the outlet valves *c, c*, of the two bellows, so that they discharge their air thereinto. Between the two bellows there is a hole bored in the board D, to which is connected a short pipe G, which forms the outlet from the air receiver to the box or vessel H, which contains the hydrocarbon liquid that is to be vaporized and in that condition mixed with the air. This box or vessel H, may have its interior divided up horizontally into different compartments for containing the liquid or otherwise so constructed in various ways to present the liquid in such form that the air in passing from the pipe G, to its outlet I, (which is to communicate with the burners) must pass over a very extensive surface

of the liquid. The said box is of such form and size as to permit its arrangement, in the manner shown in the drawings, below the bellows, where it is supported on the crosspieces C, of the frame. The box or vessel H, has its air inlet pipe G, and its outlet pipe I, connected by a pipe J, which should be furnished with a cock to admit a properly regulated quantity of air direct from the former to the latter pipe for the purpose of diluting with pure air the carbonized or vapor-charged air on its way from the box or vessel H, to the burners, and thus regulating the proper proportions of air and vapor to produce the most effective combustion or illumination. The said box or vessel H, is also furnished with a separate opening K, for the introduction of the liquid to be vaporized.

The two boards or flaps E, E', of the bellows have secured at their vibrating ends two arms *e, e'*, one to each, and said arms are connected together by a cord *f*, which runs over two pulleys *g, g*, attached to the frame, the length of said cord and the arrangement of the pulleys being such that one bellows is only permitted to be distended or opened to the fullest extent of which it is capable while the other is closed up or collapsed. The bellows should be operated alternately and alternate motion may be given to them by any suitable mechanism, such for example as a drum with pins projecting from its periphery. By this arrangement of the pins the two bellows are operated alternately; the length of the cord *f*, being so adjusted, by turning a screw R, which attaches it to one of the arms *e, e'*, and upon which it is wound two or three times, that a pin will commence to operate on its respective bellows just at the instant that another pin is escaping from the other bellows.

The rotary motion of the shaft L, which is employed to operate the bellows is derived from a weight N, suspended from a cord O, which is wound upon the said shaft L, or upon a barrel secured thereon, the said weight being applied to the cord in combination with any such system of pulleys as may be desirable to make the shaft rotate for a considerable time with a comparatively short descent of the weight. The pressure of air is regulated by the weight N, and by the weight on the top F of the air receiver, which must be properly loaded to balance the weight N.

By the combination of the two alternately operating bellows with an air receiver a perfectly uniform supply of air may be obtained and by the herein-described mode of
5 arranging, applying and combining the several parts of the blowing apparatus, it is operated in a very effective manner; and by the within-described arrangement of the vaporizing vessel H, in combination with said
10 apparatus a very complete and compact apparatus for supplying a suitable mixture of hydrocarbon vapor and air for illuminating or heating purposes is produced.

I will remark that though this apparatus
15 has been more especially intended for the supply of air charged with the vapor of the

volatile hydrocarbon for which I obtained Letters-Patent, dated June 15th, 1858, it may be used for the supply of air charged with the vapor of other volatile hydro-car- 20 bons.

What I claim as my invention and desire to secure by Letters Patent is,

The combination with a vaporizing vessel of the bellows, air receiver and eduction 25 pipe as shown, or in an equivalent manner, for the purposes set forth.

LEVI L. HILL.

Witnesses:

A. C. GETTY,
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