H. B. MYER.

Machine for Charging Air with Hydrocarbon Vapors.

No. 52,876. Patented Feb. 27, 1866.

Fig. 1

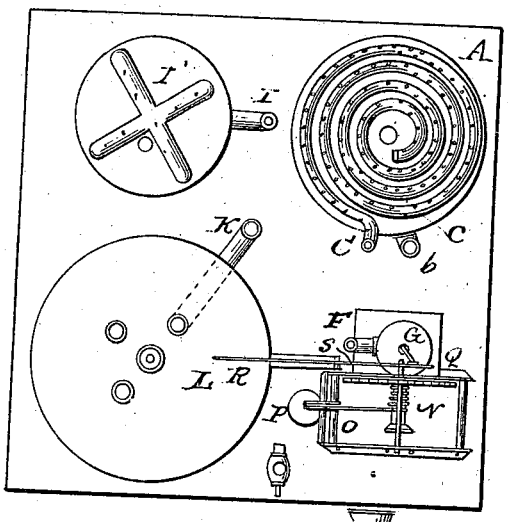


Fig. 2

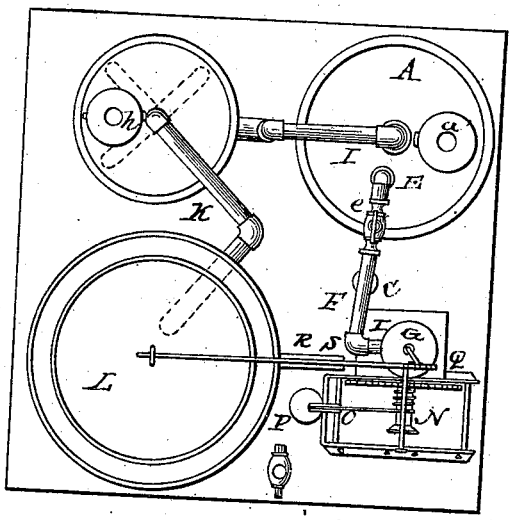


Fig. 3

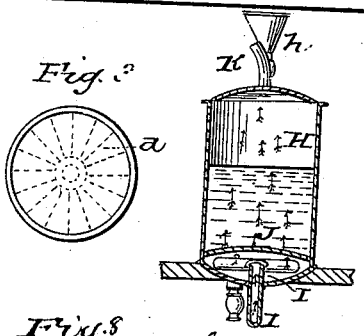


Fig. 5

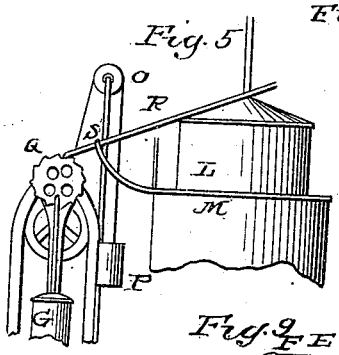


Fig. 6

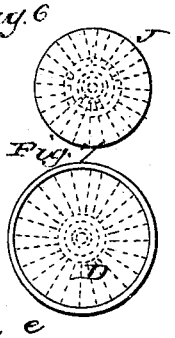


Fig. 8

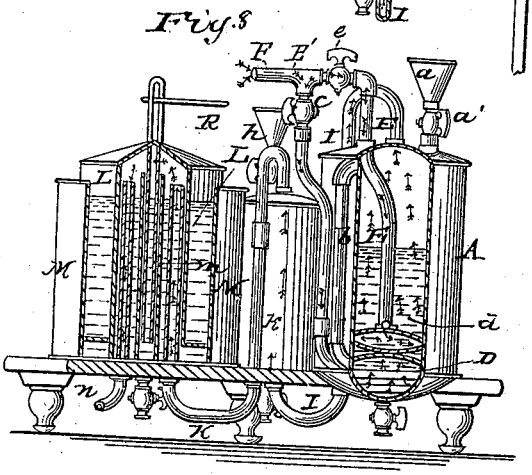
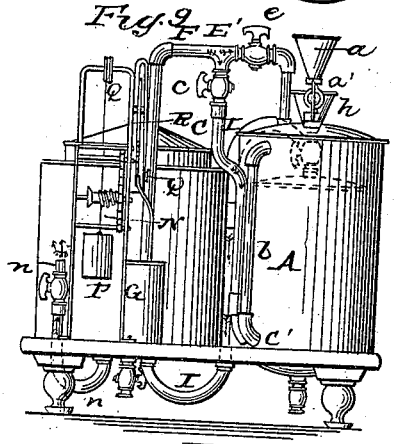


Fig. 9



WITNESSES

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H. B. MYER, OF CLEVELAND, OHIO.

IMPROVED MACHINE FOR CHARGING AIR WITH HYDROCARBON VAPORS.

Specification forming part of Letters Patent No. **52,876**, dated February 27, 1866.

To all whom it may concern:

Be it known that I, H. B. MYER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Illuminating-Gas Generators; and I do hereby declare that the following is a full and complete description of the construction and operation of the apparatus concerned therein, and of the process and manipulations involved in the said invention, reference being had to the accompanying drawings, and to letters of reference marked thereon.

My invention relates to the charging of atmospheric air with the vapor of gasoline (commonly so called) or naphthaline, it being the most volatile portion of mineral oil, or that which first passes over in the process of the distillation of the crude mineral oil or other like products, and thereby producing an illuminating-gas without the aid of artificial heat.

In the accomplishment of this object I first prepare an air-tight tank. (Shown at A in the accompanying drawings.) This tank is provided with a funnel, *a*, and stop-cock *a'*, for the introduction of the gasoline or light oil. The capacity of this tank should be in proportion to the quantity of oil to be operated upon, or the quantity of gas generated. A glass pipe, *b*, connecting with the tank both at the bottom and top, furnishes the means to observe at all times the quantity of oil contained in the tank.

In the bottom of the tank I place a coiled tube, C, closed at the inner end and perforated throughout its entire coiled length with numerous small holes barely large enough to admit the passage of air. This coiled tube enters the tank at or near the bottom, as shown at C' in Figures 1, 8, and 9.

Immediately above the coiled tube C, I place a finely-perforated disk, D, (shown detached in Fig. 7,) which disk fills the whole diameter of the tank, and immediately above this I place another disk of smaller diameter, which is made of two concave plates, with the concave faces toward each other, the lower plate being perforated like the one below it. A pipe, E, enters the top of the tank and connects with the center of the upper plate of the disk. The pipes C and E unite at E', each branch being furnished with a stop-cock, *c e*. The main stem F of these pipes leads to and connects with the barrel of an air-pump, G, by the working of which air is forced through one or both the pipes C'' and E when the stop-cocks *c* or *e* are open, and thus through the coil C and perforated disk before mentioned, and seen at *d*. (Shown also detached in Fig. 3.) The air thus forced into the tank A passes upward through the oil with which the tank is supplied, and thereby becoming saturated with the volatile portion of such oil, by which means it becomes a good illuminating-gas.

H represents a tank for washing the gas. It is made air-tight, like the one previously described, and is provided with a funnel for the introduction of the washing-fluid, as shown at *h* in Fig. 8. A pipe, I, connects with the top of the gas-generating tank A, and enters the bottom of the tank H, as shown in Figs. 2, 8, and 9, and terminates in a perforated coil or cross-pipe, as shown at I' in Fig. 1.

Immediately above the coil or cross-pipe I', I place a perforated disk, J, (seen also detached in Fig. 6,) through which the gas passes after it escapes from the perforated pipe I'. The top of this washing-tank is provided with a pipe, K, through which the gas is conveyed to the gas-holder L. This gas-holder is constructed in the usual form, the outside wall of which is open at the top, and is seen at M, and is partly filled with water. The inner portion, L, is closed at the top, the lower end being open and resting in the water. A pipe, *m*, connects with the pipe K and conveys the gas to the top of the gas-holder, as seen in Fig. 8. Another similar pipe, *n*, conveys the gas from the gas-holder to the burner.

The air-pump G can be worked by hand or any other convenient power. I prefer a weight, cord, and drum, as shown in Fig. 5, and so arranged that it can be wound up by hand like a clock. In Fig. 2 a top view of the same device is shown. In Fig. 9 is also shown an elevation of the several parts.

N represents the windlass or drum around which the cord is wound. O represents the pulley over which the cord passes. P represents the propelling-weight. Q represents a crown or ratchet wheel. R represents a lever having its fulcrum at S. The lever extends over the top of the gas-holder and is secured between guides. As the gas-holder becomes charged with gas by the action of the air-

pump, which is worked by the descending weight, the central section, L, rises, carrying with it the long arm of the lever R, and this brings the short arm in contact with the teeth of the wheel Q, and thus the further action of the air-pump is prevented until the flow of gas from the holder shall cause the central portion, L, to descend, thus releasing the wheel Q, when the pump will again commence to work and a new supply of gas will be produced, and thus the process can be continued to any desired extent simply by winding up the weight G.

The process of manufacturing gas for purposes of illumination becomes very simple with this apparatus. The benzine, naphtha, naphthaline, gasoline, (different names for light mineral oil) is put into tank A. The air-pump G is set to work, and the air forced through the oil becomes saturated with olefiant gas. This, by the pressure of the air-pump, is forced over into the washing-tank H, which should be one-half or two-thirds full of proof spirits and lime-water, though either alone will answer the purpose, or even water may be used; but I consider the first-named mixture to be the best, the main object being to free the gas from any carbonic acid or vapor of water it may contain. From this tank the gas passes over by pressure into the gas-holder, and by its increase or diminution therein regulates the working of the pump, as hereinbefore explained.

This apparatus is not expensive. It is so simple in its operations that a housemaid may manage it. There is no danger from an explosion. The apparatus can be used in any house, shop, manufacturing establishment, or mine, and even in railroad-cars, with the greatest safety. At the present rate at which the oil is sold in market the cost of gas per thousand feet is very much reduced below the present cost, while a better gas is obtained, and wholly free from unpleasant odor.

The gas can be manufactured without the aid of artificial heat at any temperature above freezing water, and even below this, where proof spirits or lime-water, or a solution of both or either of them, are used for washing the gas. Two separate tanks may be used for this purpose, if desired, the spirits being contained in one and the lime-water in the other, or water alone may be used.

This mode of manufacturing gas for the purpose of illumination is peculiarly adapted for use in coal-mines, for the reason that the apparatus is portable and can be used in any situation where lights are needed. The burner can be completely inclosed in a wire-gauze and offer a perfect protection against explosions. The light from the burning gas is much better than can be obtained from candles or common lamps.

I do not wish it to be understood that I confine myself strictly to the form of apparatus herein described for preparing this gas, for it may be varied to a considerable extent without departing from the spirit of the invention.

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

1. Charging and saturating atmospheric air with the vapor of the light hydrocarbon oils, substantially as and for the purpose herein set forth.

2. For the accomplishment of this object, the perforated coiled tube C in the bottom of the tank A, as and for the purpose specified.

3. In combination with the perforated tube C, the perforated disk D, for the purpose of more perfectly diffusing the air through the oil, as set forth.

4. In combination with the coiled tube C and perforated disk D, the double-convex disks *d* and air-pipe E, as and for the purpose specified.

5. The tank H, when provided with the perforated pipe I′ and perforated disk J, as and for the purpose specified.

6. Washing the gas through a bath of water, spirits, or lime-water, either separate or combined, as and for the purpose herein set forth.

7. Regulating the working of the air-pump G by the movement of the gas-holder L, the lever R, and wheel Q, or their substantial equivalents, as specified.

H. B. MYER.

Witnesses:
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J. HOLMES.