

Apparatus for the Manufacture of Illuminating Gas.

Patented Aug. 18, 1868.

Fig: 3.

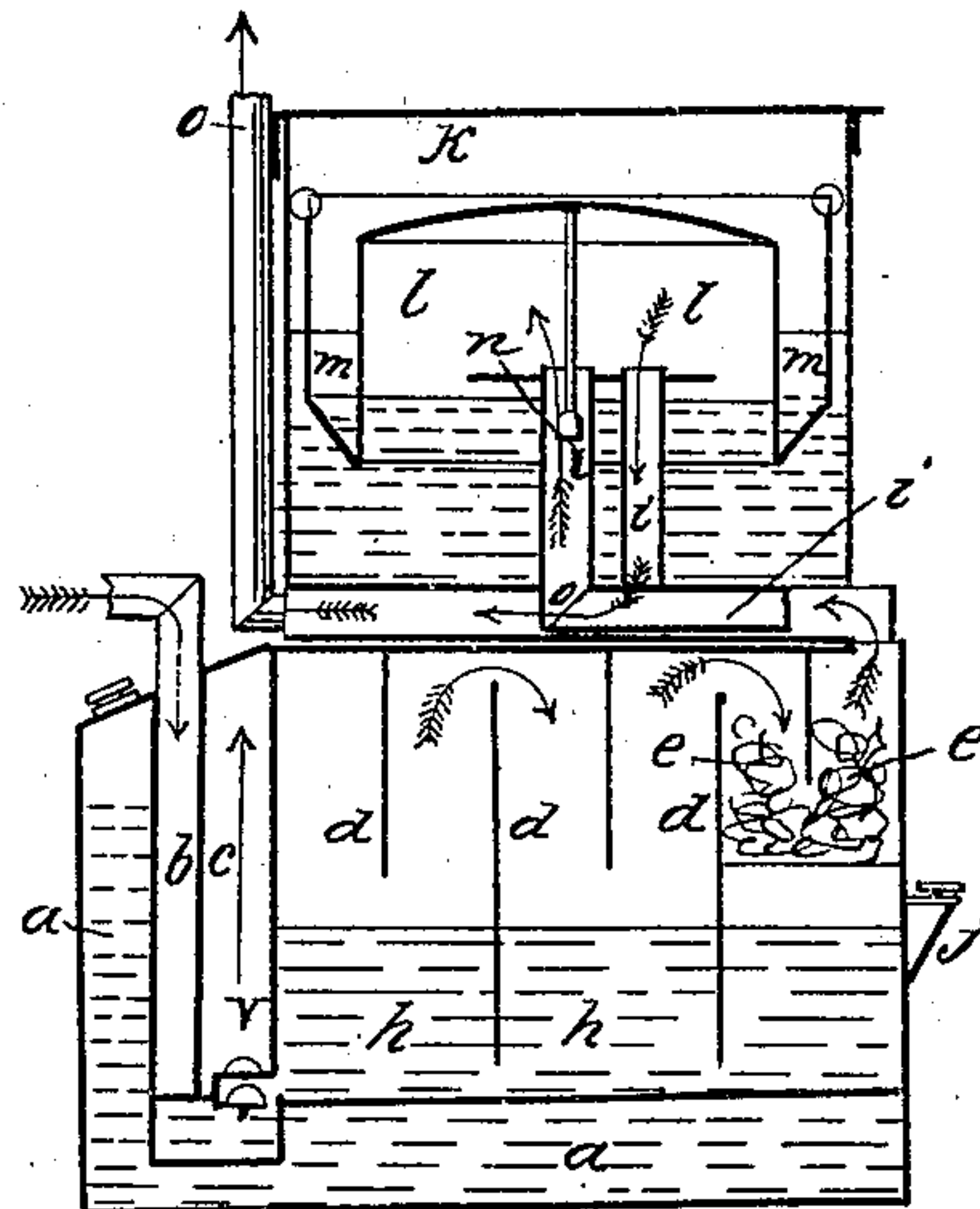
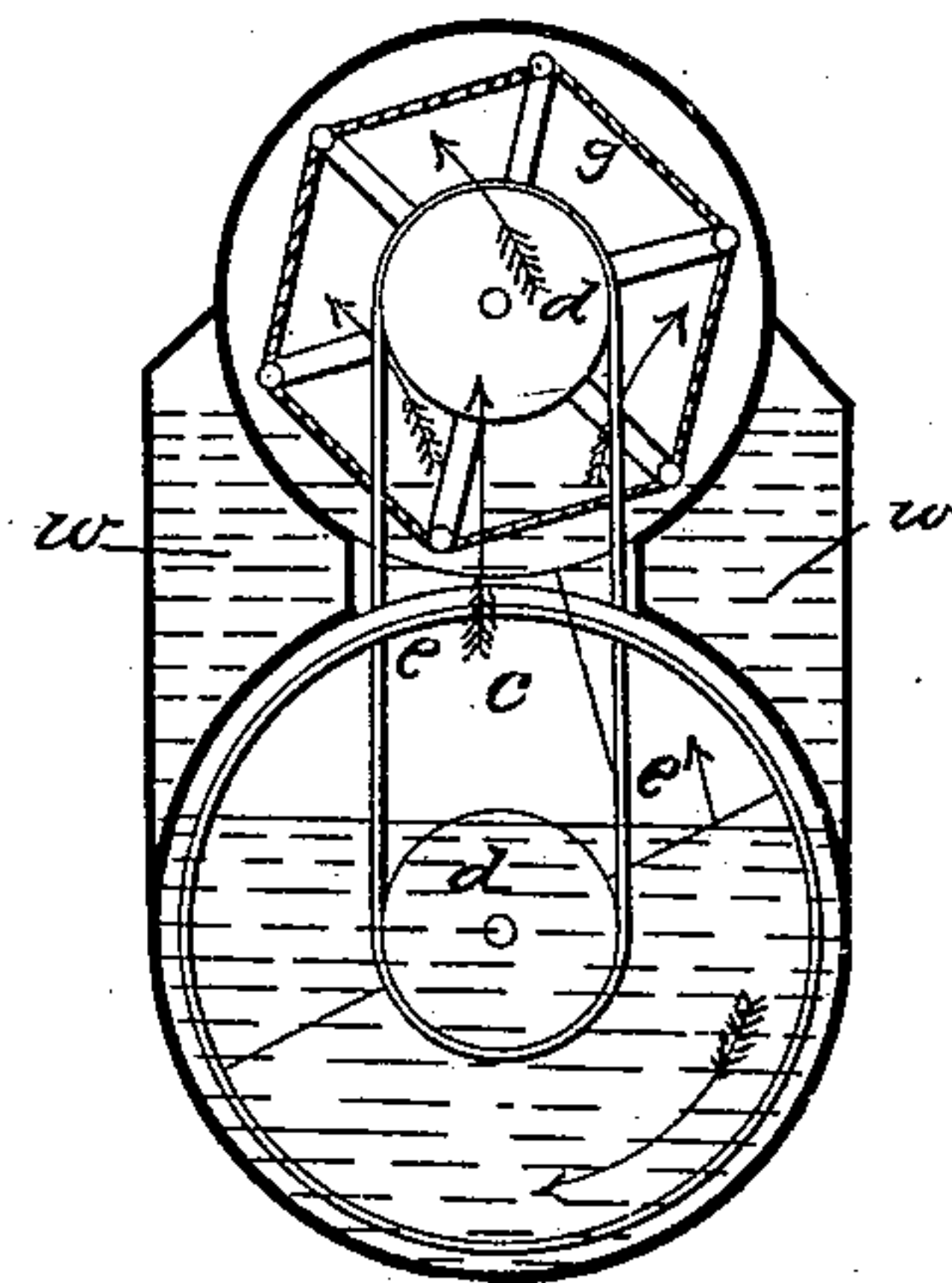


Fig. 4.



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IMPROVED APPARATUS FOR THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **81,232**, dated August 18, 1868.

To all whom it may concern:

Be it known that I, P. H. VANDER WEYDE, M. D., of the city of New York, State of New York, have invented an Improved Air-Hydrocarbonizer; and I do hereby declare that the following is a correct description thereof, reference being had to the accompanying drawing.

The chief part of my invention consists in a series of revolving disks, made of tin or other equivalent metal, fixed to one axis, and covered with flannel or similar material. The lower part of these disks dips in the hydrocarbon liquid, and the flannel is thus kept saturated all over, presenting a very large evaporating-surface to the air passing between them, this air being compelled to pass from center to circumference, and vice versa, by means of stationary disks having air-holes at the centers alone, so that the air or gas passing through the apparatus strikes along the surface of all the flannel coverings, and becomes fully saturated with the hydrocarbon vapors.

In this arrangement we have the advantage of requiring but a small quantity of the hydrocarbon liquids in the apparatus, and very slight power to drive the arrangement, as the use of pumps and dippers for lifting up the liquid is dispensed with. Notwithstanding this, the liquid is always agitated, will all evaporate, and leave no thick sticky remnant behind, as is the case in carbonizers where the liquid is always kept at rest.

Figure 1 represents the machine arranged with carbonizer on top, the motion being communicated with a chain and pulleys, *a* being the driving-shaft; *b*, the air-inlet tube; *c*, the air-drum; *d d*, the pulleys, communicating the motion from the driving-shaft to carbonizer *g g g* by means of the chain *e e*. *k* is the regulator, of which the inside is shown at Fig. 3, containing the floating gasometer *l l*, all the gas passing from the carbonizer to the burners through the inlet-tube *n*, and outward through the outlet-tube *i*, causing the gasometer, when properly weighted to suit the circumstances, to rise or fall, according to the consumption being smaller or larger than the supply. This floating chamber, from its peculiar construction, can be weighted with fluid or fluids, or powdered or solid material; but, by prefer-

ence, I weight it with fluids. The said weighting is always at the lowest part of its circumference, *m m*. It has, therefore, its center of gravity low down, which causes its movements to be more free, regular, and instantaneous, as it does away with the necessity of guiding-pieces at its outside. It has, interiorly to its center, a rod attached, possessing at its lower extremity a valve, in form of a flat parabola, this form, owing to its instantaneous action on the pressure, rendering the lights less liable to oscillation. This valve fits into the similar opening at the top of the inlet-tube *i*, and shuts it off as soon as the supply becomes so great as to fill the floating chamber entirely, and increase of pressure will result.

Fig. 2 represents another arrangement of the machine, but simplified. *c* is the air-drum; *g g g*, the carbonizer attached to the shaft *a*, inlet air-tube *b*, and outlet gas-tube *o*. *h h* is a reservoir, through which the carbonized air passes and deposits any excess of carbon. *d d* is a wheel inclosed between air-drum and carbonizer, to the periphery of which are attached one or more cups, for the purpose of dipping up any liquid which may have leaked through the packing of axle of air-drum compartment, and return it through the tube *c* to the said compartment. The air in both carbonizers, Figs. 1 and 2, enters at the center of the disks through one large or several smaller perforations, and is compelled to move around the circumference of the disks, which are covered with flannel or any other porous material, and, dipping with their lower edges in the liquid by their revolution, keep moistened over their whole surface. By this arrangement air can be carbonized very economically and with very great advantage, as it can be worked with a very small quantity of liquid, and the liquid is always kept in a state of constant agitation, is entirely evaporated, leaving no heavy residue, and giving thus much more satisfactory results than when remaining quiet. In Fig. 2, *h h* is used as a supply-tank to feed carbonizer *g g g*.

Fig. 4 shows another arrangement of the carbonizer, which may be attached as in Figs. 1 and 2. It is simply a drum, made of a cylinder of flannel or any other porous material,

stretched over rods parallel to the axis. This shows, also, a jacket with water, *ww*, for the purpose of being heated, and so heating the volatile fluid and air, counteracting the evolving produced by evaporation of the carbonizing fluid, keep them at an equal temperature, and prevent condensation by cooling of the whole apparatus.

Fig. 3 shows another form of carbonizer. It is absolutely necessary for the full and proper carbonizing of air, under the many circumstances which are constantly arising, to have both an attached and detachable carbonizer. The present arrangement fills up that want. The air from drum or pump or gasometer enters at *b*; thence it is forced through a portion of the liquid at the lower extremities of the compartments *b* and *c*, where, by a float-valve, *v*, the liquid is always kept at the proper height from the reservoir *h h*. It then passes, through the compartments *d d* and the porous material *e e*, to the inlet-tube *n* of regulator *l l*, or otherwise directly to the burners.

The above arrangement of valve *v* and reservoir *h h* necessitates the using of the heavier portions of the oil always in advance. The carbonizer is also surrounded by a water-jacket, *a a*, for equalizing the temperature.

It must be understood that the regulator *k*, Figs. 1 and 3, can be used in the machines, Figs. 2 and 4; also, that the carbonizing-wheel *g*, Fig. 4, can be used on Figs. 1 and 2, and the carbonizer *h h*, *d d d*, Fig. 3, can be attached to machines Figs. 1, 2, and 4, if desired, and also to supply-pipe of common

street-gas in any dwelling, for carbonizing said gas, when poor in luminous ingredients, as is often the case, in this application of carbonizer it requiring no machinery for operating it.

As the hydrocarbon evaporates reluctantly in winter, I heat the whole apparatus by means of the flame of a small lamp, and keep it at about 70° or 80°, as indicated by the thermometer. I also cover the whole of it with felt or wool, like a steam-boiler, in order to retain as much as possible an equal temperature. When the gas is to pass through tubes in cold localities, I leave the exit-tube uncovered, and run it upward, either straight or oblique, to the required distance, to give occasion to condensable vapors to collect in this tube, and from it to run back in the reservoir.

What I claim is—

1. The rotating carbonizer, consisting in a revolving disk or disks, operating in connection with shaft or pulleys and chain, as herein described, and for the purposes specified.

2. The detachable carbonizer *h h* and *d d d*, with its compartments *a*, *b*, *c*, and *e e*, and valve *v*, as herein shown and described, and for the purposes specified.

3. The gas-regulator *k*, with its buoyant chambers *m m* and interior valve, as shown and described, and for the purposes specified.

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Witnesses:

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