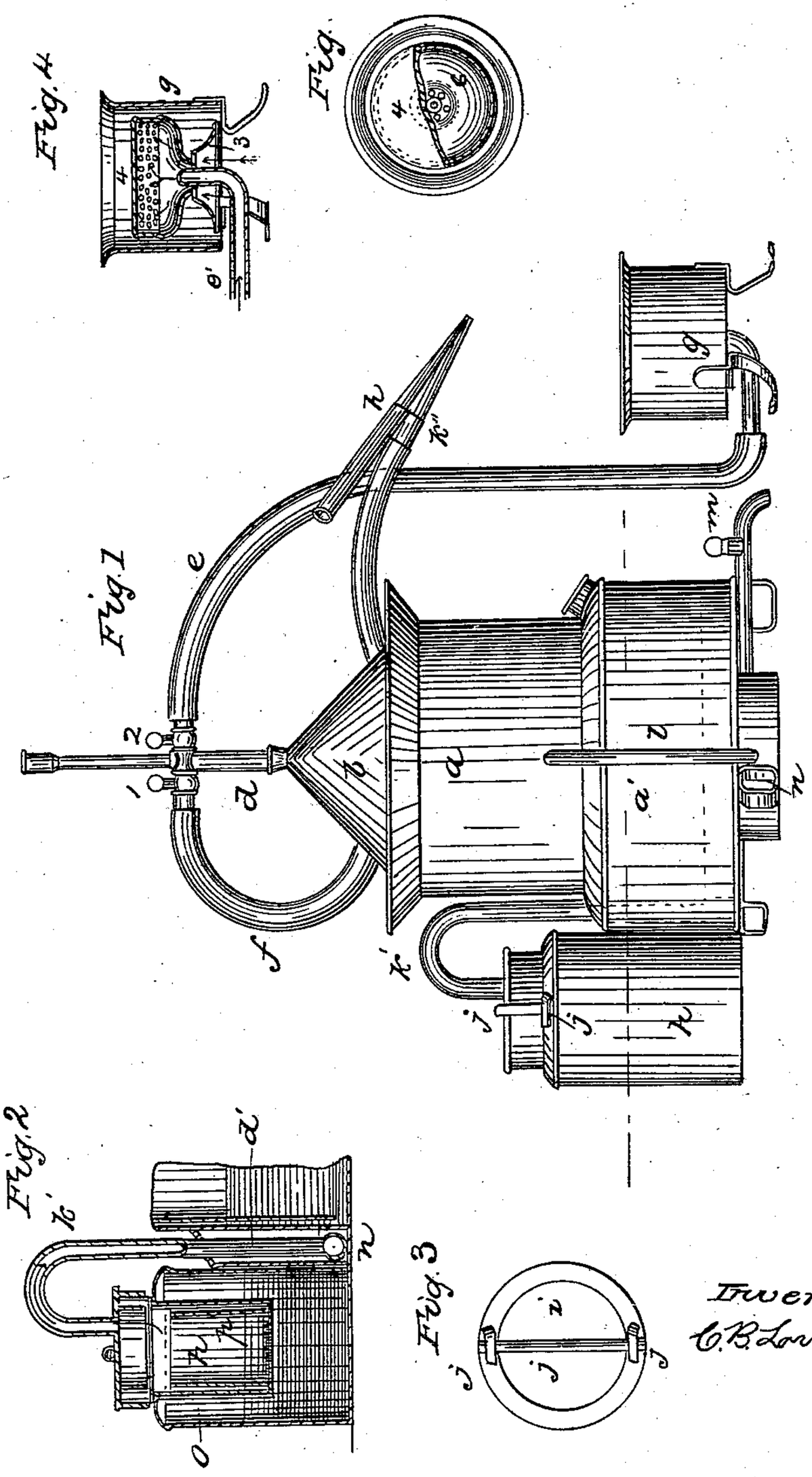
2 Sheets—Sheet 1.

C. B. LOVELESS.

Manufacture of Illuminating Gas.

No. 84,636. Patented Dec. 1, 1868.



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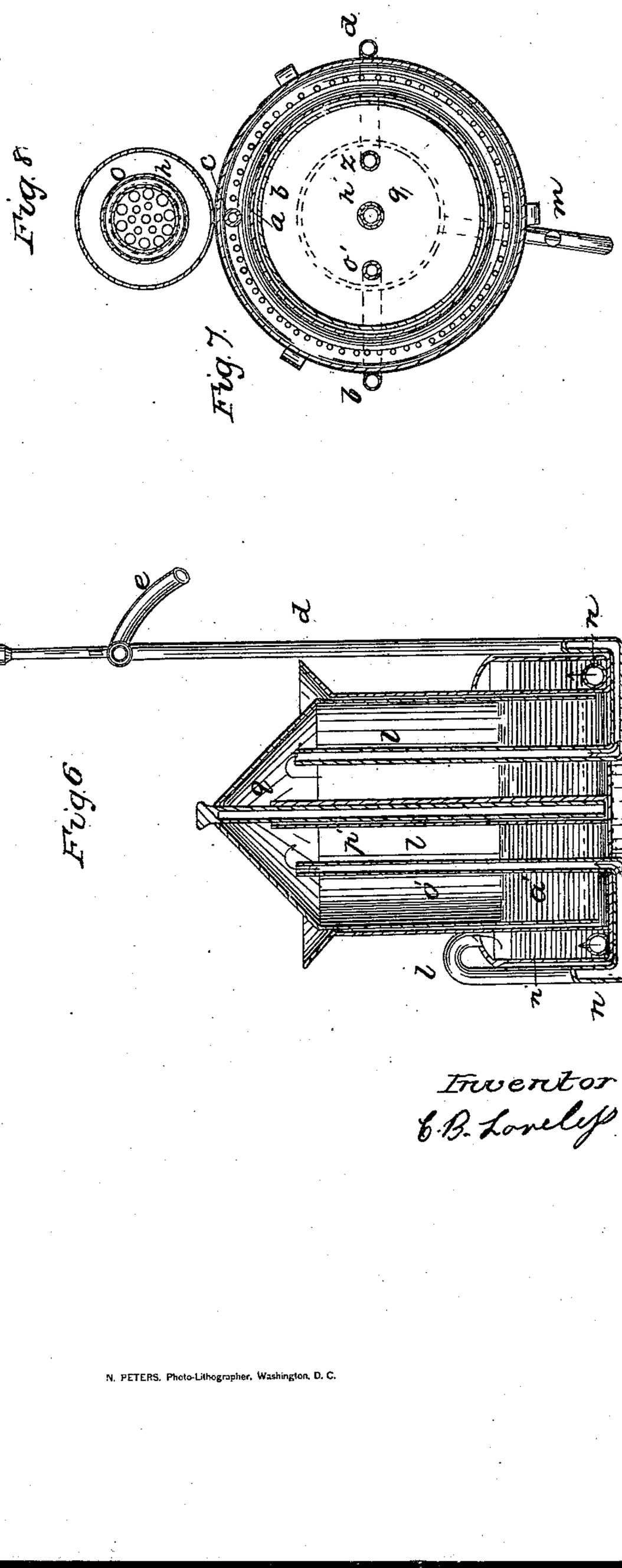

Witnesses
Jos R Shillem
Wm Stewart

Inventor
C. B. Loveless

United States Patent Office.

CHARLES B. LOVELESS, OF SYRACUSE, NEW YORK.

Letters Patent No. 84,636, *dated December* 1, 1868.

IMPROVEMENT IN THE MANUFACTURE OF ILLUMINATING-GAS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES B. LOVELESS, of Syracuse, in the county of Onondaga, and in the State of New York, have invented a new and useful Improvement in Hydrogen and Carbon-Gas Generators, which I verily believe is new and useful; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 is a side elevation of the entire machine.

Figure 2 is a vertical section through the generator of the hydrogen gas.

Figure 3 is a plan view of the same, attached to the cover and gas-pipe.

Figure 4 is a vertical section through the heater used for heating-purposes.

Figure 5 is a sectional plan view of the said heater.

Figure 6, Sheet II, is a vertical section of fig. 1, in Sheet I.

Figure 7 is a plan view of the bottom of the machine, showing the lead pipe with its perforations and pipes.

Figure 8 is a plan view of the generator, the top being off, showing the holes through the bottom of the copper cylinder and zinc cylinder.

The nature of my invention consists in carburetting hydrogen gas with the light oils of petroleum, for illuminating-purposes; also, the use of hydrogen gas with oxygen gas, for manufacturing-purposes, by the use of the oxyhydrogen blow-pipe, as hereinafter described.

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

In its construction, in Sheet I and fig. 1, *a*, the gasometer; *a'*, the oil-chamber, which surrounds the lower end of the gasometer; *b*, movable float of the gasometer; *c*, the screw-cap for the admission of oil into the oil-chamber; *d*, the gas-pipe, at the top of which the gas is consumed; 1 and 2 are ways and cocks to convey the gas to the heater *g* and blow-pipe *k*; *e* and *f* are flexible tubes to convey the gas to heater *g* and blow-pipe *k*; *h*, the battery; *i*, the top of battery, attached to pipe *k'*, to which it is suspended by bar *j* and clamps *j'* and slide *j''*; *l*, gas-pipe from oil-chamber to gasometer, after the hydrogen has been carburetted; *m*, the outlet-pipe, with an ordinary stop-cock; *n*, the perforated lead pipe.

In fig. 2, *o*, the copper, and *p*, the zinc, forming the battery for forming the hydrogen gas; *a'* and *k'* showing the same parts as in fig. 1.

In fig. 3, *j*, the bar, and *i*, the top of the battery; *j'*, the clamps for holding the bar.

In fig. 4, *e'*, the pipe to admit the gas to the heater; 3, the perforated bottom; 4, the perforated heater; *g*, the heater-case.

In fig. 5, the holes through the bottom are seen at 6. Part of the top, seen at 4 in fig. 4, is removed to show the interior of the burner.

In Sheet II, fig. 6, the same letters designate like parts as on Sheet I. Additional letters show parts not seen in fig. 1, Sheet I. *o*, continuation of pipe *k*, through which the gas ascends; *r*, the gas-pipe, through which the gas descends to pipe *d*, through which it ascends to the burner on top of said pipe; *p* is a hollow tube, in which rod *q* slides up and down for steadying the float *b*, in gasometer, in rising and falling.

In fig. 7, same sheet, like letters designate like parts as already described.

Fig. 8 is a plan view of the battery, with the battery detached from the machine, showing the zinc and copper cylinders, with the holes in the bottom of the copper cylinder.

In the operation of my invention, having described its construction, the battery *h* is filled at least half full of a solution of sulphuric acid, one part of the acid to four or five parts water, into which copper and zinc cylinders are set, and the battery is then set on slide *s*, which is drawn out partly from under the bottom of the machine, fitting up into the top *i* with double lips, which have between them India-rubber packing, as an insulator, and the bar *k'* is put over the top, *i*, and secured under clamps *j*, holding the battery securely in position. The gas from hydrogen is then formed, and passes up pipe *k* and down to perforated lead pipe *n*, which is at the bottom of the oil-chamber *a'*, which chamber has been filled with oil. Through the hole at cap-screw *c*, fig. 1, (I contemplate the lighter oils of petroleum to be used,) it is forced through said lead pipe around the machine, forcing its way through said holes in said lead pipe, up through the oil, into gas-pipe *t*, fig. 6, Sheet I, down said pipe to pipe *o*, then up said pipe to the gasometer, and then down pipe *r* to pipe *d*, where it is consumed at a burner of any kind I may use.

If the gas is used for heating-purposes, the ordinary stop-cock, above the gas-cocks 1 and 2, is turned so as to stop off the flow of gas, and cock 2 is opened, and lets the gas into pipe *e*, which conveys it to the heater *g*, where it is burnt as required.

This heater is composed of two chambers. The bottom of the lower one is a perforated plate, through which the gas-pipe passes. Through the bottom of the upper chamber are holes, as seen in fig. 5, Sheet I. Also, the side of said chamber is made of perforated metal, with a solid top fastened on it by pressing it down with a rim. These holes are for the admission of air for the free use of oxygen.

When the blow-pipe is used, the hydrogen is used without being carburetted, as it may be brought directly from the battery *h*, without passing through the oil. Passing up gas-pipe *d*, stop-cock 1 is opened, and it is conveyed through tube *f* to point *k''*. An ordinary blow-pipe is attached to point *k'*, thus forming the common oxyhydrogen blow-pipe, which may be used for dentists' and many other purposes.

The outlet-cock *m* is for letting off any condensation

of hydrogen gas that may gather in the pipes *o* and *r*, which have each an opening into said pipe *m* in the bottom of the machine.

Having thus fully described the construction and operation of my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the battery *h* as constructed with the oil-reservoir *a'* containing perforated lead pipe *n*, and gasometer *a*, and float *b*, for generating hydrocarbon gas, as herein set forth.

2. The combination of the pipe *k'*, lead pipe *n*, with perforations, pipes *l*, and *t*, and *o*, with gasometer, and descending gas-pipe *r* with gasometer, and pipe *d* with gas-burner, also the rod *q q'* with pipe *g*, for guiding the float in the gasometer.

3. The perforated lead pipe *n*, with oil-reservoir *a'*, as described and for the purposes set forth.

4. The heater *g*, constructed substantially as described, and operating as and for the purposes set forth.

5. The combination of the pipes *k* and *k''*, as described, and for the purposes of an oxyhydrogen blowpipe, as set forth.

In testimony that I claim the above-described improvement in hydrogen and carbon-gas generators, which I believe to be new and useful, I have hereunto signed my name, this 13th day of October, 1868.

CHARLES B. LOVELESS.

Witnesses:

HORACE WHEATON,

TALMA G. DREW.