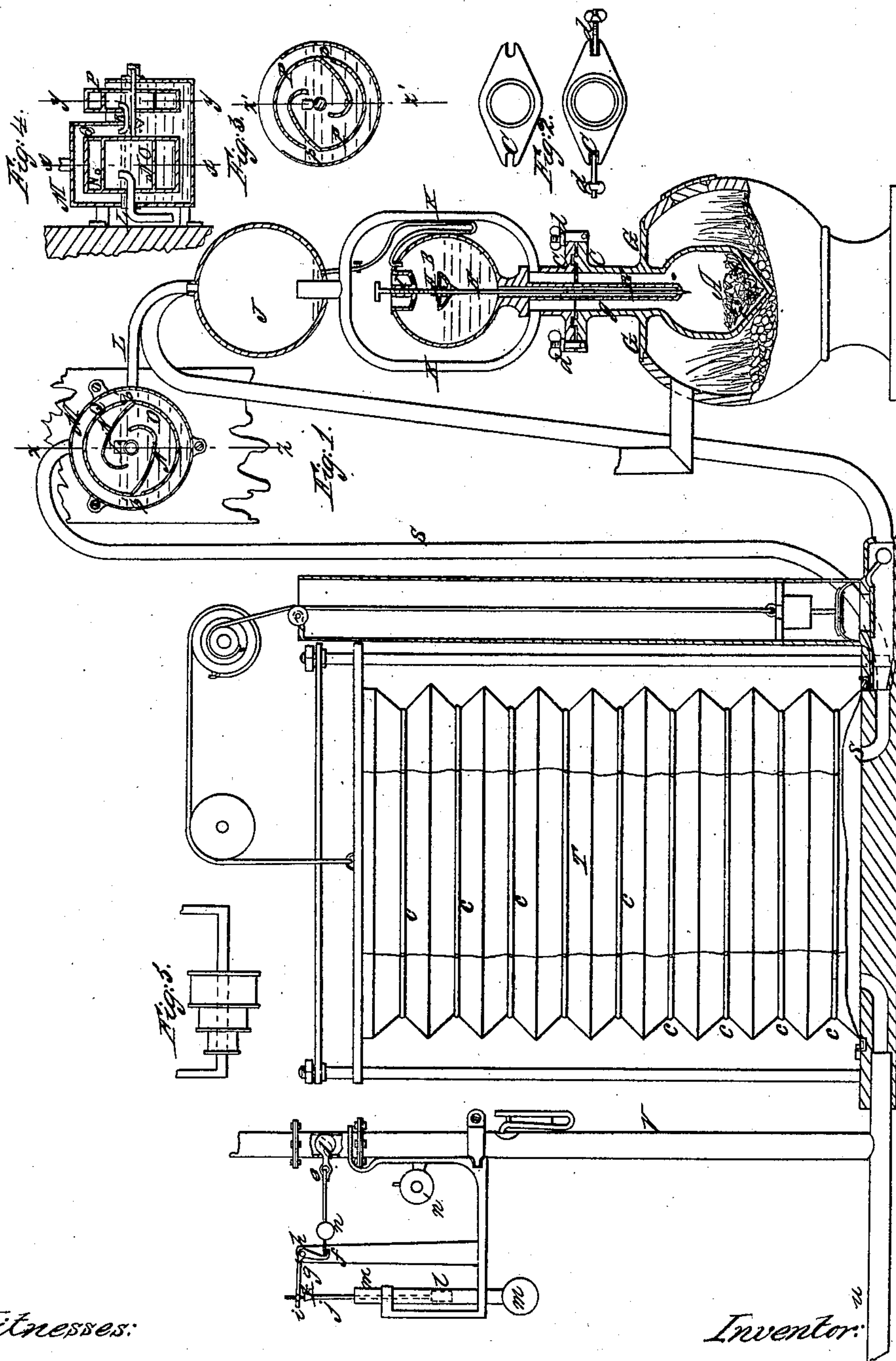


F. W. OFELDT & A. W. ALMQVIST.
 APPARATUS FOR THE MANUFACTURE OF ILLUMINATING GAS.
 No. 81,198. Patented Aug. 18, 1868.



Witnesses:

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F. W. OFELDT AND A. W. ALMQVIST, OF NEW YORK, N. Y., ASSIGNORS TO
THEMSELVES AND THOMAS FITZSIMMONS, OF SAME PLACE.

Letters Patent-No. 81,198, dated August 18, 1868.

IMPROVED APPARATUS FOR 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 we, F. W. OFELDT and A. W. ALMQVIST, of the city, county, and State of New York, have invented a new and useful Improvement in Apparatus for Manufacturing Illuminating-Gas; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to apparatus for manufacturing illuminating-gas from petroleum and the products thereof, and from all hydrocarbon-oils and oleaginous substances.

And it consists in the use of a retort, an oil-reservoir, a cooler, and oxygenating-chambers or drums, in combination with a gas-holder, and, in addition thereto, a safety-pipe, with valve and fire-alarm.

It also consists in so arranging the mechanism that it will be actuated to supply the necessary amount of air by the expansive force of the gas, thus making it more perfectly self-regulating than by other methods, as will be hereinafter described.

Figure 1 is a side view of the whole apparatus as when used for domestic purposes, the retort being represented as placed in a furnace or in an ordinary stove.

Figure 2 is a plan view of the flanges by which the oil-reservoir and the retort are connected together.

Figure 3 is a section of the air-drums, through the line *y y* of fig. 4.

Figure 4 is a section of the air-drum, through the line *z z* and *z' z'* of figs. 1 and 3.

Similar letters of reference indicate corresponding parts.

The red lines are intended to represent a modification of the oxygenating arrangement, and a method of operating the same by the movement of the gasometer.

A represents the retort, which stands upright, and the lower end of which is conical or spherical in form.

B is the oil-reservoir.

The two are connected together by the flanges C C and jointed-wing screws *d d*. These latter turn on to one of the flanges, (without removing the thumb-nuts,) to afford facilities for separating the two, for cleaning or other purposes.

E is a tube through which the oil is discharged from the reservoir into the retort.

F is a valve-rod, which is adjustable. Its lower end is pointed or tapering, so that by raising or lowering, the quantity of oil which is discharged into the retort is regulated.

G is a flange on the end of the retort, which is made to fit over the hole in the furnace or stove.

H is a floating valve, which slides on the rod F, up and down. Should the oil become exhausted from the reservoir B, by neglect or from any other cause, this valve will descend and close the bottom, and thereby prevent the upward flow of the gas from the retort.

The reservoir has a perforated top-piece, I, by which communication is opened with the atmosphere, and through which the oil may be introduced.

The gas from the retort, as it is generated from the oil which drops through the tube E, rises through the annular space *g*, and passes into the cooler J through the pipes K K.

L is a pipe for returning to the reservoir any oil which may be carried up into the cooler by the current of gas.

From the cooler, the gas passes into the large stationary drum M, which is provided with a smaller revolving drum, with buckets N N, placed as seen in the drawing, so that the force of the current of gas acting against the buckets will revolve the inner drum, O, as also the smaller drum, P. The drum P is exposed in part to the atmosphere, and its buckets are placed in a reversed position from those of the drum O, so that a current of air is drawn in by the drum P, and discharged into the outer drum, M. These drums are filled with water a little above the centre.

The smaller drum, P, is proportioned to O, so that the proper quantity of air will be supplied to the gas.

The drums O and P are attached to the same shaft, and consequently they revolve together.

The gas enters through the pipe L at the centre of the drum M, in the space between the surface of the water and the bucket, and revolving the bucket or drum, it finally escapes through the space P' into the space Q, between the two drums. The air, at the same time, is drawn in through apertures p, on the circumference of the small drum, and forced through the pipe R into the space Q, where it meets the gas, and these become thoroughly mixed. From the space Q they pass through the pipe S to the gasometer T.

The expansive force of the gas being thus used as the motive-power for supplying the air, and the drums revolving together, an amount of air in constant proportion to the capacity of the drums will always become mixed with the gas as it passes through the drum O on its way to the gas-holder.

The gas and air are thus mingled in small portions previous to entering the gasometer, thereby securing a more thorough mixing than they would by other methods.

The gasometer is made of flexible material, and fastened to top and bottom in annular grooves, by rings, as seen in the drawing, or in any other suitable manner, and is protected against the expansive force of the gas by means of the hoops or rings e, suspended at intervals to the cords attached to the top and bottom of the gasometer.

The pipe U conducts the gas to the burners.

V is another larger pipe, for the escape of the gas.

For the purpose of providing automatically against explosion or danger from fire, the pipe V is closed, by means of a rubber bag, d', inserted through a hole in the pipe, and filled with air by inflation, so as to act as a valve in the pipe when so inflated, and prevent the escape of gas under ordinary circumstances.

The air is confined in the bag by means of a weighted lever-cock, e.

The end of the lever rests on the toe f of the bell-crank lever g', which is pivoted at h.

In the other end, i, of the lever g', is a hole or slot, through which fits loosely the upper end of a piston-rod, j, which has a shoulder at k, the lower end of which rod is attached to a piston, l, which floats upon a column of mercury in the open tube m.

Should a fire occur in the house, the air becomes heated, the mercury expands, the piston will rise, thereby lifting the end of the lever g', and releasing the toe f from the end of the lever of the cock e. The weight n will fall and turn the cock e, which will allow the air to escape from the bag d', which will open the pipe V and allow the gas in the gasometer to escape into the open air.

n' is an alarm-bell, which will be rung as the weight n falls.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent—

1. The upright conical or spherical retort A, the reservoir B, and the cooler J, arranged substantially as described, for the purposes set forth.

2. The tube E, the valve-rod F, and the float-valve H, in combination with the retort and reservoir, arranged and operating substantially as and for the purposes specified.

3. The method, herein shown and described, of uniting and securing together the retort and reservoir by the flanges C C and swing-bolts d d, as set forth.

4. The method of oxygenating the gas, or the drums O and P revolving in the large drum or case M, constructed and operating substantially as shown and described.

5. The method of securing the gasometer to the head and bottom, by grooves and rings, substantially as described.

6. The method of securing the gasometer against the force of the gas, by means of hoops C suspended by cords, as shown and described.

7. The safety-pipe V, with its valve d, constructed and operating substantially as and for the purposes described, in combination with the gasometer T.

8. An arrangement of means for supplying air for oxygenating gas, by the expansive action of the gas, substantially as and for the purpose described.

The above specification of our invention signed by us, this twenty-eighth day of April, 1868.

F. W. OFELDT,
A. W. ALMQVIST.

Witnesses:

FREDERIC A. SAYER,
FRANK BLOCKLEY.