

J. BARBOUR.

OIL-FEEDING APPARATUS FOR GAS-RETORTS.

No. 178,584.

Patented June 13, 1876.

Fig:1.

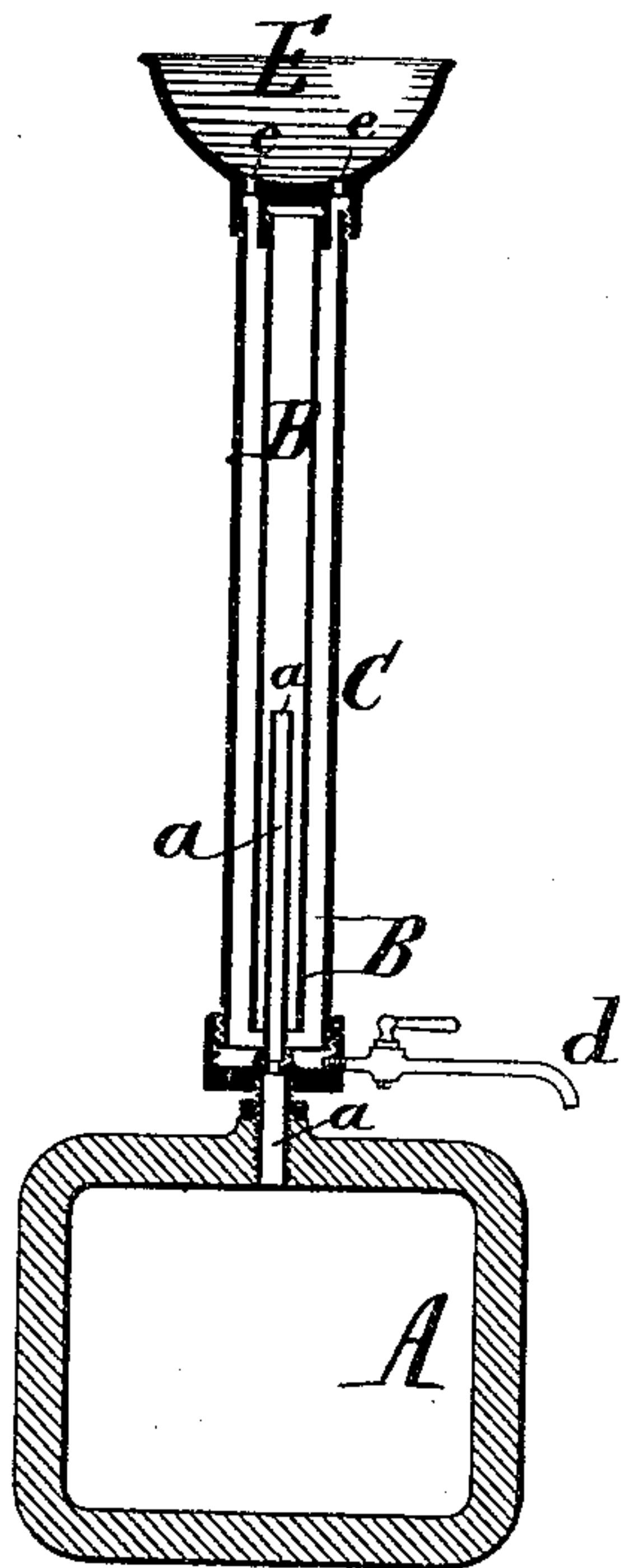
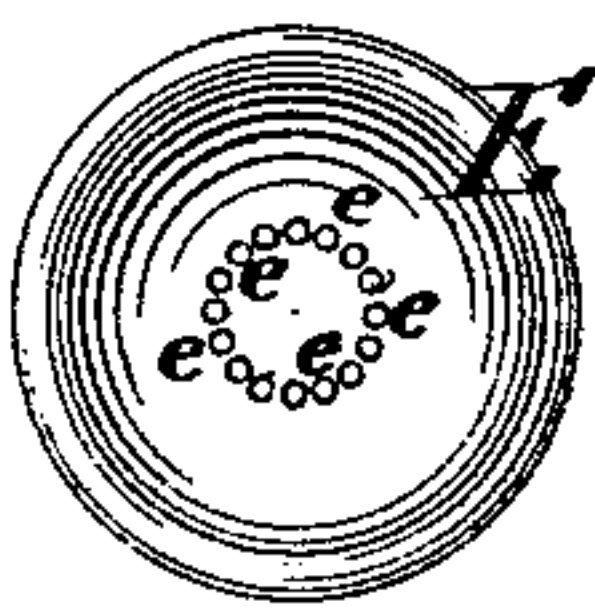


Fig:2.



Witnesses:

A. Henry Gentner

C. C. Stetson.

Inventor:

James Barbour

by his attorney

Thomas D. Stetson

UNITED STATES PATENT OFFICE.

JAMES BARBOUR, OF PROVIDENCE, R. I., ASSIGNOR TO THE PROVIDENCE STEAM AND GAS PIPE COMPANY, OF SAME PLACE.

IMPROVEMENT IN OIL-FEEDING APPARATUS FOR GAS-RETORTS.

Specification forming part of Letters Patent No. 178,584, dated June 13, 1876; application filed March 18, 1876.

To all whom it may concern:

Be it known that I, JAMES BARBOUR, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Gas-Manufacturing Apparatus, of which the following is a specification:

The invention is intended to apply, mainly or entirely, in the manufacture of gas by decomposing petroleum or analogous hydrocarbon fluids in heated retorts. The petroleum is necessarily fed in through trapped pipes or passages—sometimes termed siphons.

In the working of the apparatus the pressure in the retorts is liable to accumulate beyond the pressure which the small head of fluid in the siphon can resist. In such case the gas blows out through the trap. As ordinarily conducted much mischief results from such blowing through, in consequence of the highly-inflammable oil being thrown out and ignited.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a vertical section, and Fig. 2 a plan view, of the upper portion.

Similar letters of reference indicate like parts in both the figures.

A is a retort, which may stand alone, or be one of a bench, and, in any case, suitably supported and presented to a heating fire, as will be understood. The oil is received into the retort either at intervals, or in a small continuous stream, according as it is supplied into the funnel E. A small pipe, *a*, of sufficient capacity to conduct downward all the petroleum required, extends upward from the retort, and is open at both ends. A larger pipe, B, closed at the top, extends downward from the bottom of the funnel E, and loosely incloses the pipe *a* nearly to the bottom. A considerably larger pipe, C, incloses the whole, and, being tightly closed at the bottom, except for the drain-cock *d*, which is capable of emptying it, when required, extends upward to the funnel E, receiving the petroleum therefrom through the orifices *e*. The annular space between the exterior pipe B and the in-

terior of the inclosing-pipe C is much greater than the cross-sectional area of the pipe *a*.

Under ordinary circumstances the petroleum supplied to the funnel E trickles down, and stands in the pipe C at a level which is nearly uniform. So soon as more fluid is received the fluid rises within the pipe B, and flows over into the pipe *a*, and thus obtains access to the interior of the retort. Usually the pressure in the retort A is a little above that of the external atmosphere, and, consequently, the level of the petroleum in the annular space between the pipes B and C (which I for brevity call "in the pipe C") is a few inches above the top of the pipe *a*, and, consequently, a nearly corresponding amount above the level in the interior of the pipe B. The fluid moves slowly down in the pipe C; then up in the pipe B; then finally down through the smallest and central pipe *a* into the retort.

When the pressure in the retort suddenly increases, and the gas in the retort blows out through the pipe *a*, blowing out the small quantity of petroleum which trickled down therein toward the level in the pipe B, causing the oil therein to move outward through the bottom of the latter, and, adding to the quantity in the pipe C, causes the level in the latter to rise; but, inasmuch as the area of the pipe C, and of the space therein exterior to the pipe B, is large, the rise of level in the pipe C from this cause is slight. As soon as the gas emerges from the pipe B it bubbles up through the denser fluid in the annular space between B and C, and, emerging at the surface in bubbles, it is disengaged therefrom, and escapes freely through the apertures *e*, and blows away. There cannot, even under most extraordinary conditions of pressure, be any more gas thus bubble up than can traverse upward through the small pipe *a*, and again downward through the contracted annular passage between *a* and the interior of B. These passages have much less area than the liberal space in the interior of C. The gas cannot, therefore, force upward and blow out the fluid contained in C, but can only bubble idly upward therein. The conditions under which gas thus blows out through a trap are usually of brief continuance, but in the rare case that

such should continue for a considerable period, and the petroleum continue to be delivered into the funnel E until the fluid-level in C rises to and above the orifices *e*, there is still ample space for the gas to continue to rise in small bubbles, succeeding each other in greater or less rapidity, according to the pressure with which the gas is forced through the contracted passages below. The cock *d* may discharge the surplus of fluid, or the whole of the fluid within the pipe C, whenever desired.

The details may be modified within wide limits. Thus, I can employ a still larger pipe, C, and dispense with the enlargement or funnel E at the top.

I am aware that some of the elements of my construction are well known. An outer tube, open at the top, an inner one leading to a retort, and an intermediate one, open at the bot-

tom, all arranged so that the gas conducted from the retort will pass through a liquid, and bubble up to escape, are old, and such broadly, I do not claim; but

What I do claim is—

In combination with a petroleum-retort, a feed pipe or passage formed with a trap having the receiving part of larger cross-area than the delivery part, and provided with the drain-cock *d*, as and for the purposes herein specified.

In testimony whereof I have hereunto set my hand this 16th day of March, 1876, in the presence of two subscribing witnesses.

JAMES BARBOUR.

Witnesses:

F. H. MAYNARD,

R. W. GRINNELL.