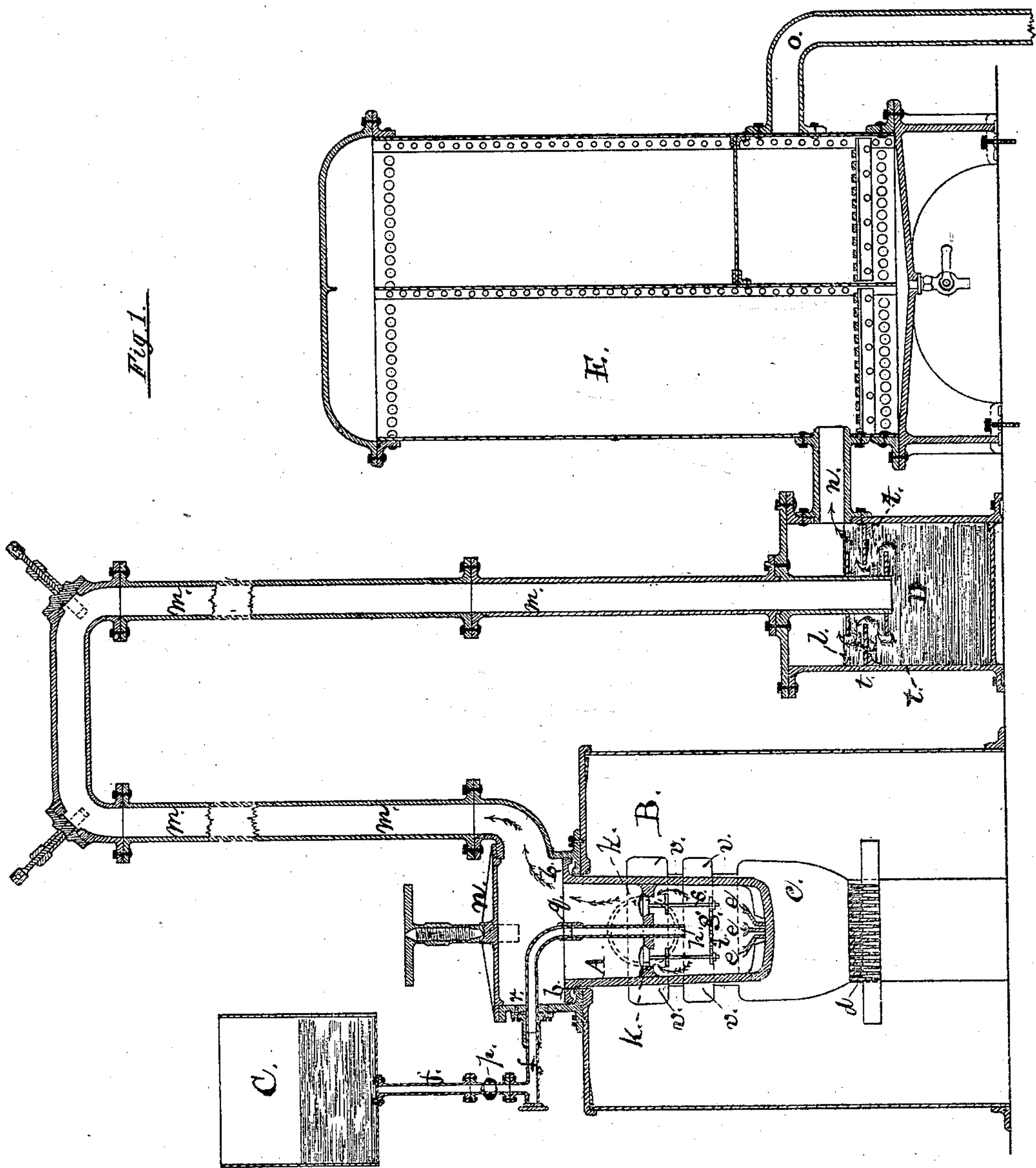


L. MARING & E. MERTZ.
Hydrocarbon Gas Apparatus.

No. 135,568.

Patented Feb. 4, 1873.



Witnesses

W. R. O'Brien.
Jarvis B. Moulden

Inventors

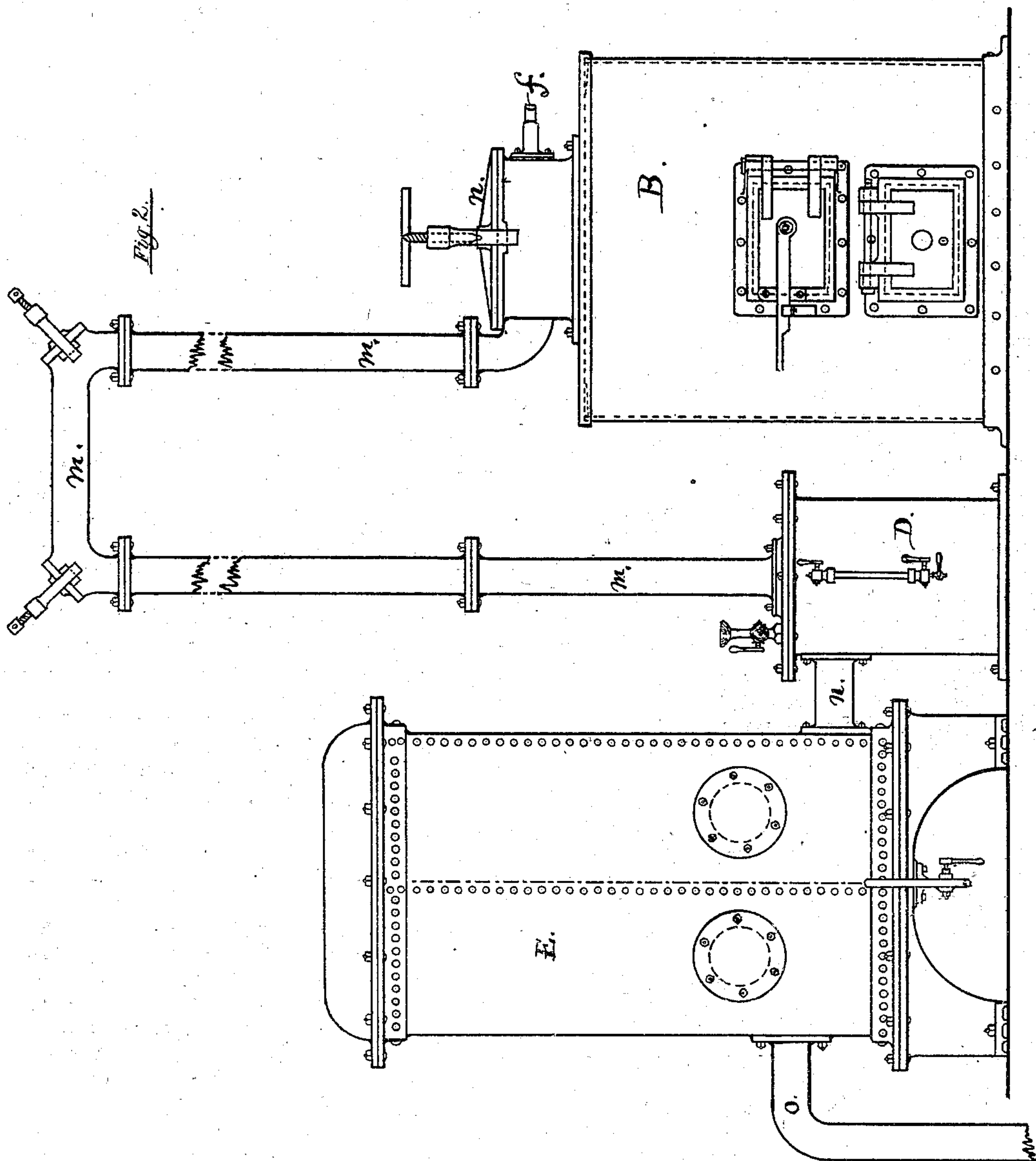
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UNITED STATES PATENT OFFICE.

LOUIS MARING AND EMILE MERTZ, OF BASLE, SWITZERLAND.

IMPROVEMENT IN HYDROCARBON-GAS APPARATUS.

Specification forming part of Letters Patent No. 135,568, dated February 4, 1873.

To all whom it may concern:

Be it known that we, LOUIS MARING, of Basle, in Switzerland, and EMILE MERTZ, of the same place, have invented certain Improvements in Apparatus for the Manufacture of Illuminating-Gas; and we do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

The object of our invention is to furnish a cheap, simple, and efficient apparatus for the manufacture of gas for illuminating purposes, from all kinds of residuum of petroleum, oil, and grease, whether of mineral, animal, or vegetable origin.

The apparatus which we have devised for this purpose we will now proceed to describe.

For the development of our new gas we use all kinds of residue of oil and grease. It is little important whether the same be of mineral, vegetable, or animal origin. We use them equally successfully isolated (pure) or mixed.

A is a vertical retort, freely suspended by its edge or flange *b* in the brick-work B. This retort is our generator, which we bring to a red heat by combustibles thrown in the grate *d* of furnace *c*. The heat has not only access to the bottom of the retort, but also to the side by means of the "canal" or channels V V, worked in the wall of B, these channels communicating with each other and with the furnace *c*. In this manner the loss of heat is reduced to its minimum, and its power and effect upon the retort greatly intensified. The bottom of this retort is provided with one or more series of sharp edges, *e e e*, projecting upward therefrom, the use of which will be explained in another place. The residue of petroleum, oil, or grease, or any mixture of the same, is put into the open reservoir C, and enters the retort by the way of the inlet-tubes *f f*, and falls from the same at the lower or exit end *h*, upon a plate, *g*, which is provided with a great number of small holes *i i i*. Oil, grease, &c., passing through these holes *i i i*, come in contact with the red-hot bottom of the retort. An instantaneous decomposition takes place, facilitated by the extended heating-surface offered by the several edges *e e e* of the bottom. The gas is produced, and accumulates in the lower half

of the retort—that is, below that part in which are formed the valve-seats. Its immediate disengagement is always checked by the drop-valves *k k*, which only lift themselves up to let the developed gas escape when its pressure exceeds that of the water *l l* in the basin D, into which the gas passes by the way of tube or pipe *m*.

As the drawing shows, the valves *k k* are connected by the rods or stems *s s* with the perforated bottom *g*, and form with the same a connected frame or system. These valves, therefore, in ascending, lift with them the plate *g*, on which, always, a certain amount of oily substance rests. When the escape of gas has thus taken place through the valve-openings, the whole valve-frame falls back, not to rise again and deliver a new quantity of gas until the compression in the retort by reason of the amount of gas therein generated be again sufficient. Every time the plate and valves fall back, the resulting shock or jarring of the same caused by such fall forces a new quantity of matter to pass through the holes *i i i*, to go to the bottom of the retort.

It is to be observed that the retort A, because of its being freely suspended by its flange or rim *b b*, can be easily removed from the furnace after having taken off the cover *n*, and unscrewed the inlet-tubes *f* at *q* and *r*, without having further need of taking the apparatus to pieces to replace or change the retort.

In the basin D are circular plates *t t t*, the attachment of which to the tube *m* and to the basin is such as to prevent the gas from flowing too easily into the purifier E at its escape from the pipe *m*, and compelling it to pass in a zigzag course from plate to plate as it ascends through the water. Thus retained a little longer in the water, the gas gets cleaned aheady from a great part of heterogeneous matter. Passing from the basin through the pipe *n* into the purifier E, the final process of cleaning takes place before it passes through the conductor *o*, leading into the gas-reservoir.

The admission of oil, &c., from the reservoir C, is regulated by means of the cock *p*.

The advantages obtained by this new manner of gas manufacture are very marked, viz.: Every kind of residue of oil and grease can be used, and even remains of any kind in fac-

tories, considered useless for greasing or lighting purposes. The decomposition and transformation of oil and grease into gas in our apparatus is complete, and obtained without the least danger of explosion; for, admitting even the impossible, that the valves *k k*, for some reason or other, should fail to perform their functions, then the developed gas would force the liquid into the inlet or admission tube *f*, and escape through the open reservoir *C*. As is evident, the liquid serves at the same time as a safety-valve. Another guarantee for its safety lies in the small amount of fire necessary to put the apparatus into successful operation, which is no greater than in any heating apparatus for a chamber.

This apparatus is very easily transported, and can likewise be recommended for its small dimensions, which permit it to be placed anywhere, even under circumstances when the installation or production of coal-gas would be very difficult or even impossible.

We claim as new and as our invention—

1. The valve-frame *k s* provided with the finely-perforated bottom plate *g*, the whole

hung within the retort and operating substantially as and for the purpose described.

2. In combination with the perforated plate *g*, the edges *e e* projecting upward from the bottom of the retort, substantially as and for the purpose described.

3. In combination with the retort and its valves *k k*, the inlet-pipe opening into the retort below the valves, and connecting with the open reservoir *C*, substantially as and for the purpose described.

4. The combination of the retort suspended by its rim *b*, with the box in which it is suspended, and the removable cover *n*, substantially as and for the purpose described.

5. The combination of the open reservoir and its inlet-pipe, furnace, retort, and valve-frame, outlet-pipe, and water-basin, substantially as and for the purpose described.

LOUIS MARING.
EMILE MERTZ.

Witnesses:

H. SALATTIE,
ARNOLD HOPPELER.