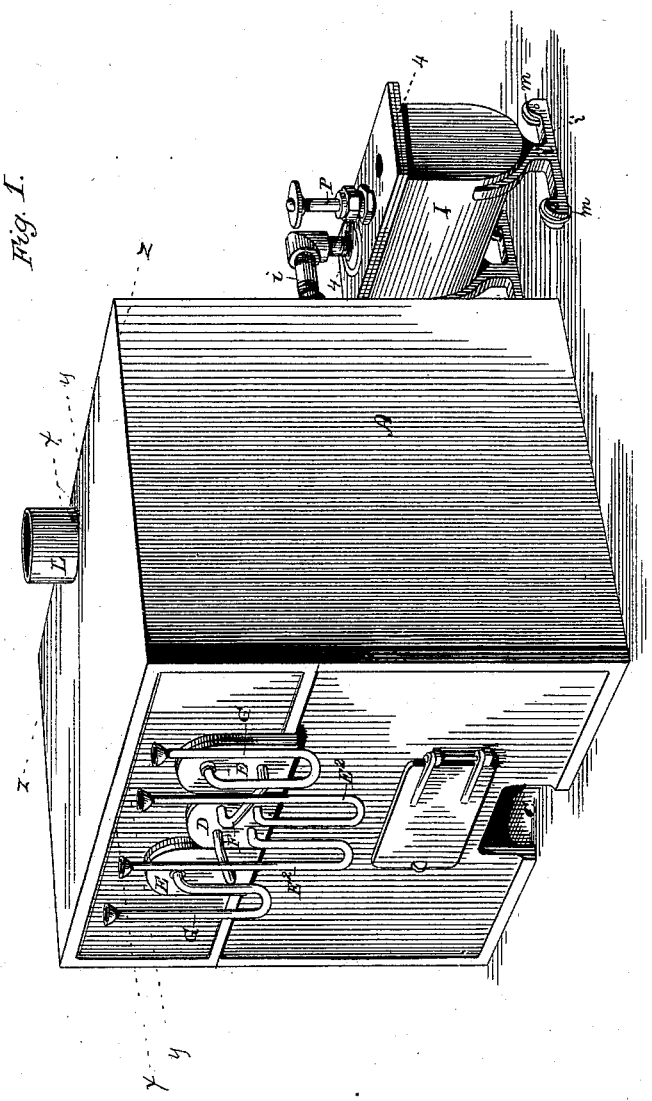
3 Sheets—Sheet 1.

# J. HANLON.

## Gas-Apparatus.

No. 203,925. Patented May 21, 1878.

Fig. 1.

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3 Sheets—Sheet 2

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## Gas-Apparatus.

No. 203,925. Patented May 21, 1878.

*Fig. 2.*

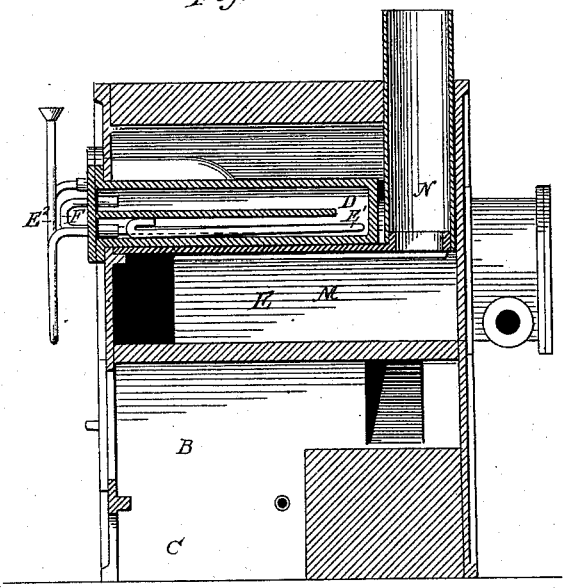
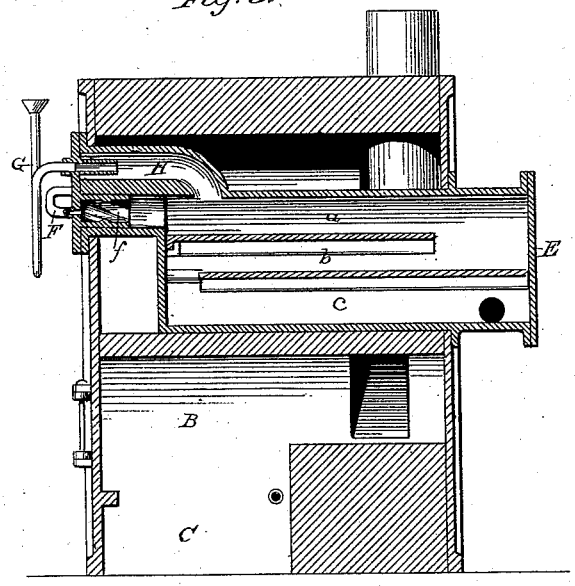



*Fig. 3.*

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3 Sheets—Sheet 3.

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## Gas-Apparatus.

No. 203,925. Patented May 21, 1878.

*Fig. 4.*

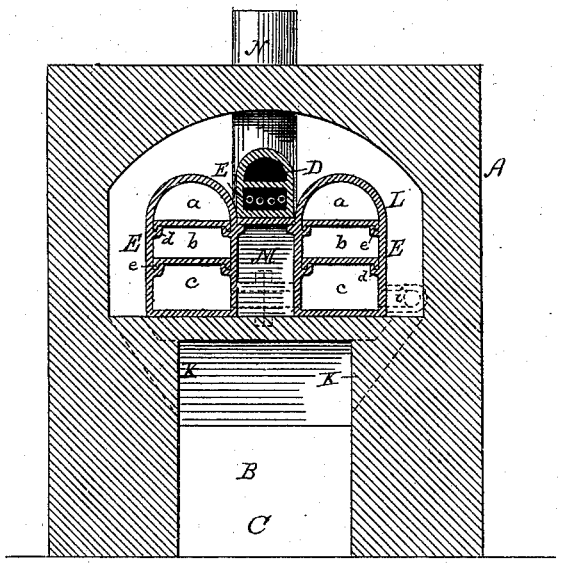
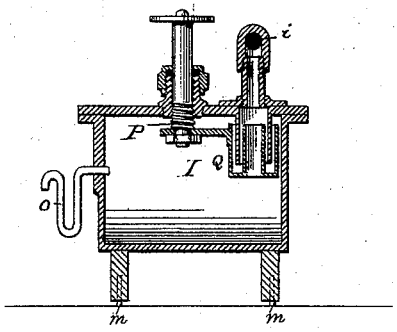



*Fig. 5*

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# UNITED STATES PATENT OFFICE.

JOHN HANLON, OF NEW YORK, N. Y.

## IMPROVEMENT IN GAS APPARATUS.

Specification forming part of Letters Patent No. **203,925**, dated May 21, 1878; application filed March 8, 1878.

*To all whom it may concern:*

Be it known that I, JOHN HANLON, of the city of New York, have invented certain new and useful Improvements in Gas Apparatus, of which the following is a clear, full, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of a gas apparatus with my improvements attached. Fig. 2 is a longitudinal vertical section through *x x*. Fig. 3 is a longitudinal vertical section through *y y*. Fig. 4 is a cross-section through *z z*. Fig. 5 is a section through 4 4.

My invention relates to that class of apparatus designed for the manufacture of illuminating-gas from petroleum; and it consists in the several combinations of devices hereinafter explained and claimed.

To enable others skilled in the art to make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the drawings, A represents the outer shell or covering of the retort-bench; B, the fire-box; C, the ash-pit; D, the boiler and superheater, and E the retorts.

The boiler D is divided into an upper and lower longitudinal chamber, communicating with each other at the rear. In the lower of these chambers is placed a series of boiler-tubes, E′, bent, as shown in Fig. 2, and connected with the water-supply pipes F. The steam having been generated in the lower chamber passes through the upper or superheating chamber to the front, and is discharged into the retorts E through the connecting-pipes F. These pipes F lead directly into a chamber, *f*, having elongated spiral ribs, which give the steam, in its passage through this chamber, a twisting, whirling, or spiral motion, for a purpose hereinafter explained.

The retorts are constructed with longitudinal chambers *a b c*, the chamber *a* connecting with the chamber *b* in the rear, and *b* connecting with the chamber *c* at the front end of the retort. To sustain the floors between these chambers, I cast grooved ledges *d* upon the inner side and connecting ends of the retorts, and cast the floors with a flange, *e*, fitting into the grooves, securing the parts together with any suitable soft metal or fusible alloy.

The oil-supply pipe G leads into the short inlet-chamber H, constructed on the front of the retort, and from this chamber the oil passes down into the chamber *a* near the mouth of the rifled chamber *f*, where it is caught up by the whirling column of steam and scattered through the chamber. The spiral motion given to the steam in its passage through the chamber *f* tends to overcome the cohesion among the particles of the oil, and drive it, atomized, through the retort. From the chamber *a* the gaseous products pass down to the chamber *b*, through which it returns to the front, and passes again downward into the chamber *c*, from which it escapes at the rear down into the washer I through discharge-pipe *i*.

It is evident from this description that the material being treated is constantly descending, and therefore the tendency of all impurities is to follow the course of gas and pass off into the washer, thus avoiding, in a great measure, by my apparatus, the liability of the retort to become foul from use.

The flame from the furnace is not allowed by me to come in direct contact with the retorts, but is passed from the combustion-chamber through the openings K K into the hot-air chamber L, the products of combustion passing off through the horizontal flue M beneath the boiler and through the chimney N. The washer I is supported on a frame provided with friction-rollers *m*, to allow the washer to move and accommodate itself to the expansion and contraction caused by the heat, and thus avoid the possibility of loosening the connection between it and the retort. The siphon *o* serves to indicate the water-line in the washer; and to prevent the back-pressure of the gas into the washer, I provide the worm-screw P, attached at its lower end to an arm on "dip," Q, thus affording a ready means for raising or lowering the dip, as circumstances require, and avoid back-pressure through the washer.

Having thus explained my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a gas apparatus, the boiler and superheater D, provided with an upper and lower longitudinal chamber, communicating at their rear, in combination with a series of boiler-tubes, E′, and water-supply pipes F, substantially as and for the purpose set forth.

2. The boiler and superheater D, constructed as described, in combination with the retorts E, provided with the longitudinal chambers *a b c*, with chamber H and pipes G and F, substantially as set forth.

3. The retort E, provided with the chamber *f*, having elongated spiral ribs, in combination with the boiler and superheater D and connecting-pipe F, substantially as and for the purposes set forth.

4. The retort E, provided with the discharge-pipe *i*, in combination with the washer I and supporting-frame *i′*, provided with the friction-rollers *m*, substantially as and for the purpose set forth.

5. The adjustable dip-cup, in combination with the operating worm-screw P, and the washer I and its supporting-frame, mounted on friction-rollers *m*, substantially as and for the purpose set forth.

JOHN HANLON.

Witnesses:
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