T. N. KIRKHAM, D. HULETT, S. CHANDLER, Jr. & J. CHANDLER.

Gas Purifying Apparatus.

No. 199,450. Patented Jan. 22, 1878.

Fig. 1.

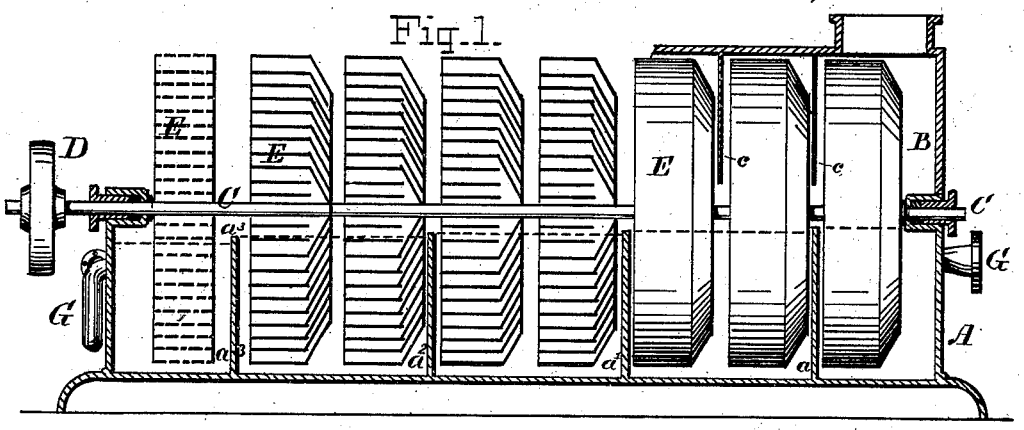


Fig. 2.

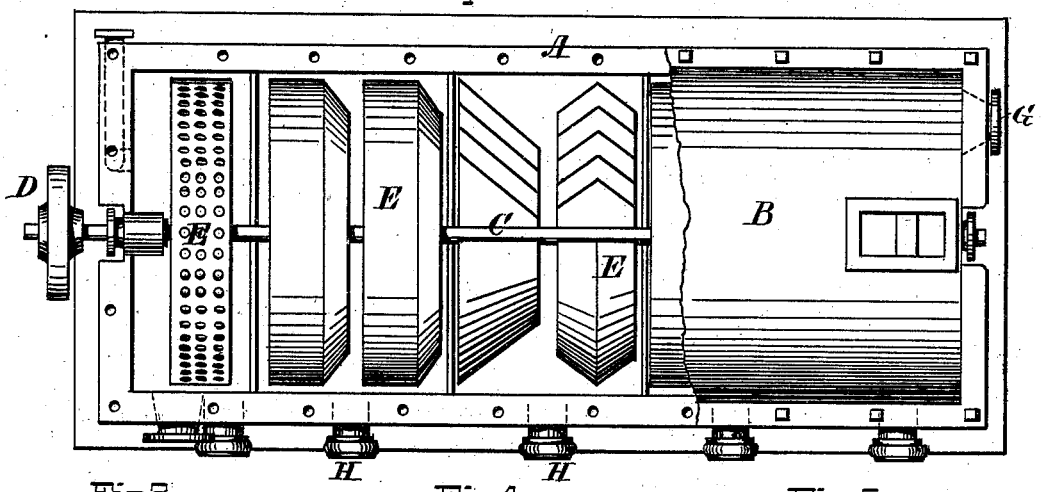


Fig. 3.

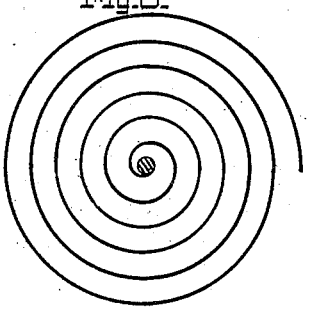


Fig. 4.

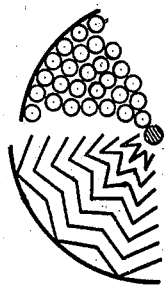
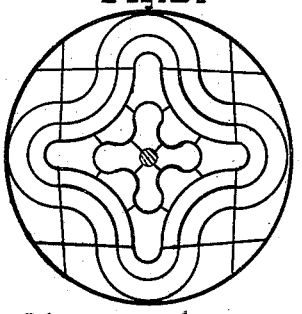


Fig. 5.



ATTEST=

Arthur C. Fraser.

William D. Landray

Thomas Nesham Kirkham
David Hulett
Samuel Chandler Jr.
Josiah Chandler

INVENTORS=

per Burke & Fraser
Attys.

UNITED STATES PATENT OFFICE.

THOMAS N. KIRKHAM, OF WESTMINSTER, DAVID HULETT, OF HIGH HOLBORN, AND SAMUEL CHANDLER, JR., AND JOSIAH CHANDLER, OF 104 NEWINGTON CAUSEWAY, ENGLAND.

IMPROVEMENT IN GAS-PURIFYING APPARATUS.

Specification forming part of Letters Patent No. **199,450**, dated January 22, 1878; application filed August 6, 1877; patented in England, February 1, 1877, for fourteen years.

To all whom it may concern:

Be it known that we, THOMAS NESHAM KIRKHAM, C. E., of 21 Abingdon street, Westminster, DAVID HULETT, of 55 and 56 High Holborn, gas engineer, and SAMUEL CHANDLER, Jr., and JOSIAH CHANDLER, both of 104 Newington Causeway, in the county of Surrey, gas engineers, all in England, and subjects of the Queen of Great Britain, have invented certain Improvements in Gas-Purifiers, of which the following is a specification:

This invention relates to an apparatus for washing or "scrubbing" the gas, air, or vapor passed through it; and consists in arranging the rotary washers, which of themselves are not entirely novel, to rotate with or on a horizontal shaft, and between partitions depending from the roof of the inclosing-vessel, the body of the said vessel being divided up into bays by means of other partitions of different heights arranged in regular order, as will be hereinafter set forth.

In the drawings, Figure 1 is a vertical mid-section of a purifying apparatus embodying our improvements. Fig. 2 is a plan of the same, showing a part of the cover removed. Figs. 3, 4, and 5 show different modifications or equivalent constructions of the washers.

In the particular construction and arrangement of parts herein shown, A is a vessel containing water or other detergent liquid, and provided with partitions a, a^1, a^2, and a^3, the partition a being a little higher than a^1, and that, in turn, a little higher than a^2, as shown in Fig. 1, wherein the horizontal dotted lines indicate the level of the washing-liquid in each compartment. As many compartments may be formed as the length of the vessel or the necessities of the case seem to justify. B is the cover of the vessel, which should be fitted on gas-tight. C is a shaft set axially in the vessel A, and arranged to revolve in packed bearings. It is arranged to be rotated through the pulley D. On the shaft C, at suitable intervals, are mounted or fixed drum-like washers or scrubbers E E, which we form or construct of sheet metal or other sheet material. This material is formed into spirally or concentrically arranged washers provided with louvers, as shown in the various figures. The material may be plain or perforated, the object being to provide a large amount of surface. These washers revolve between partitions c c pendent from the roof or cover B, which serve to retard the flow of gas, and cause it to be acted upon more effectually by the scrubbers.

The gas is caused to enter the purifier at the left-hand end, either through the cover or in any other way, and the washers, constantly revolving, present a wetted surface to the passing gas, absorbing or dissolving out the ammonia, &c. It eventually escapes at the other end, as indicated.

By dividing up the water-space it will be seen that the detergent liquid in the compartment at the left hand, where the impure gas enters, will be most strongly impregnated with the soluble impurities, while that at the end where the purified gas passes off will be nearly pure. This is very desirable, as otherwise, if the detergent liquid were in one compartment and equally impure, the gas passing off would be contaminated by it rather than purified, and no pure gas could come from the apparatus.

The two most important features of our apparatus are bringing the gas laden with impurities into contact with a large area of wetted surface, whereby the said impurities are dissolved out, and dividing the vessel containing the detergent fluid into compartments, as and for the purposes clearly set forth.

G G are or may be openings to admit the detergent fluid. They may be trapped, if desired. H H are outlets for draining the compartments.

Having thus described our invention, we do not claim, broadly, the rotating agitators arranged to rotate between partitions in an inclosing-vessel; nor do we claim in this application making the agitators of perforated material, as these are not new; but

We claim—

1. In a gas-purifier, the rotary washers E E, arranged to rotate between partitions a, a^1,

&c., and *c c*, in combination with the said partitions and the vessel A, substantially as herein set forth.

2. In a gas-purifier, a horizontal vessel, A, provided with partitions a, a^1, a^2, &c., each being slightly higher than the one next adjoining, and partitions *c c* depending from the roof or cover of the vessel, substantially as set forth.

3. The horizontally-arranged vessel A, divided into compartments by means of partitions a, a^1, a^2, &c., each partition being slightly higher than that next adjoining, as fully set forth, in combination with suitable washers, substantially as and for the purpose specified.

T. N. KIRKHAM.
D. HULETT.
S. CHANDLER, JR.
J. CHANDLER.

Witnesses:
C. BARLOW,
23 *Southampton Buildings, London.*
GEO. WOODS,
55 *High Holborn.*