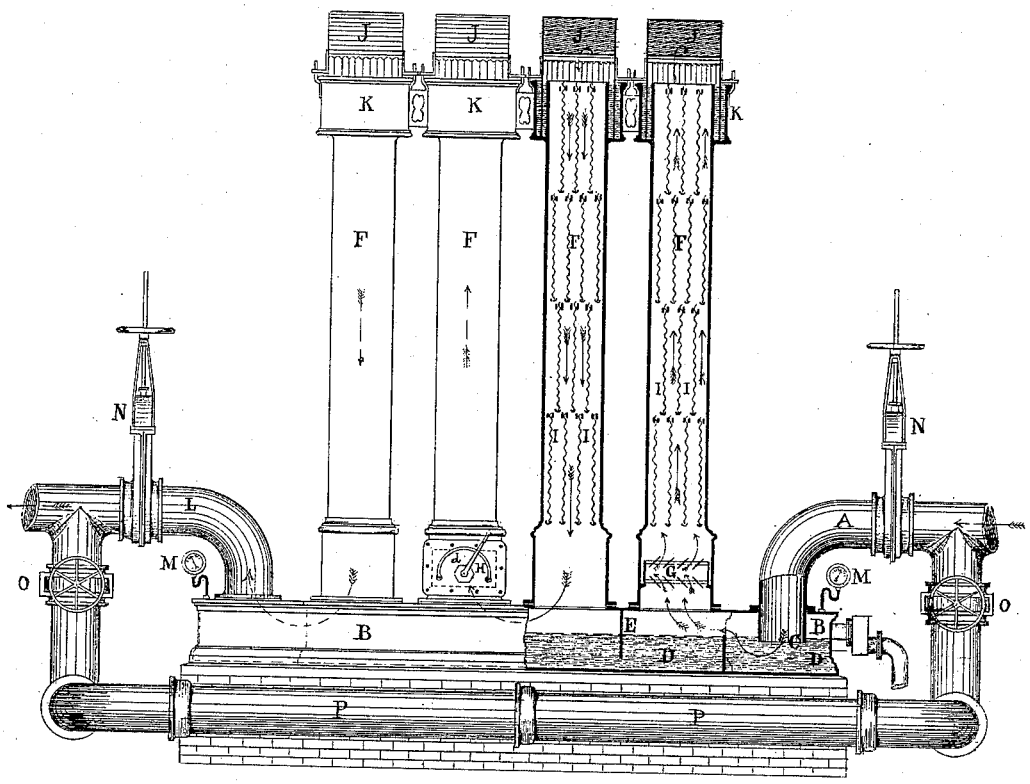
2 Sheets—Sheet 1.

W. H. ST. JOHN & S. O. ROCKWELL.

FRICTION CONDENSER FOR ILLUMINATING GAS.

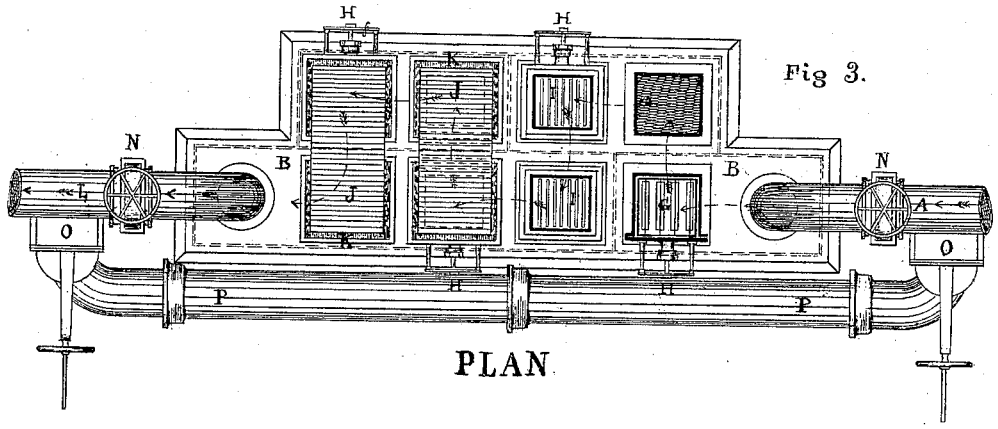
No. 113,463. Patented Apr. 4, 1871.

Fig 1.



FRONT ELEVATION.

Fig 3.



PLAN.

INVENTOR.

WITNESSES.

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George St. John

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2 Sheets—Sheet 2.

W. H. ST. JOHN & S. O. ROCKWELL.

FRICTION CONDENSER FOR ILLUMINATING GAS.

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Fig 2.

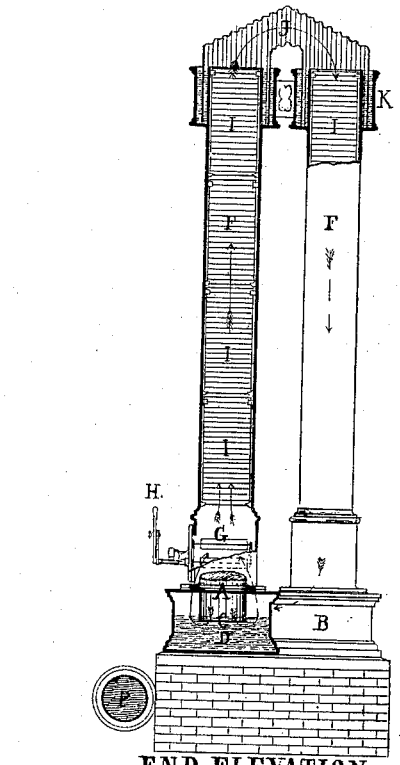
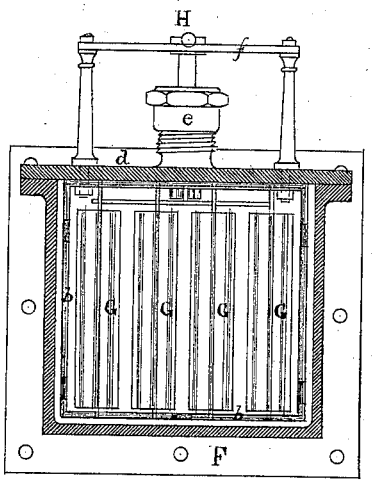


Fig 4.



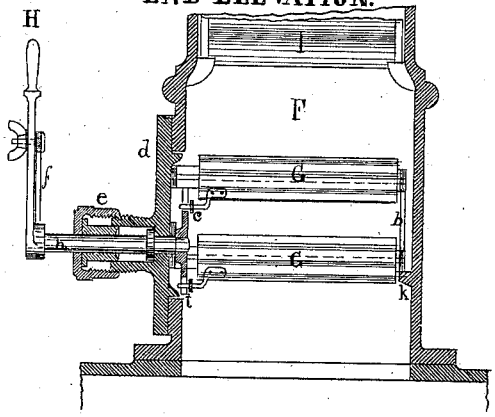


Fig 5.

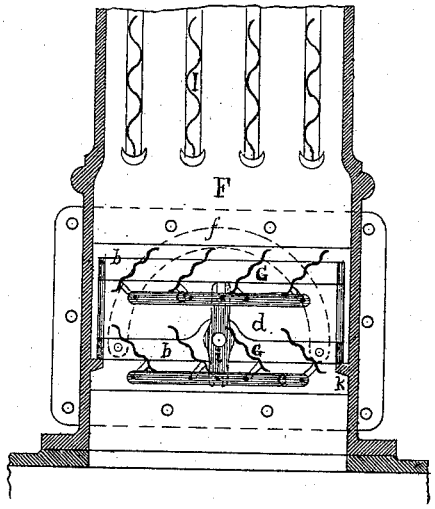


Fig 6.

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United States Patent Office.

WILLIAM H. ST. JOHN, OF BROOKLYN, NEW YORK, AND SAMUEL O. ROCKWELL, OF JERSEY CITY, NEW JERSEY.

Letters Patent No. 113,463, dated April 4, 1871.

IMPROVEMENT IN FRICTION-CONDENSERS FOR ILLUMINATING-GAS.

The Schedule referred to in these Letters Patent and making part of the same.

We, WILLIAM H. ST. JOHN, of the city of Brooklyn, county of Kings and State of New York, and SAMUEL O. ROCKWELL, of Jersey City, county of Hudson, State of New Jersey, have discovered and invented a new and improved Mode of Rendering Gas made from Bituminous Coals, &c., to its proper condition by Friction, thereby securing greater economy in the purification; also, to have it retain all the illuminating ingredients without the use of water in washing, which ever has had a tendency to extract from the gas the volatile and light hydrocarbons, thereby injuring its illuminating power.

Nature and Objects of the Invention.

The nature of our discovery or invention consists in the introduction of mechanical appliances into a series of pipes, as set forth, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

To enable others skilled in the art to make and use our discovery and invention, we will proceed to describe its construction and operation.

Description of the Accompanying Drawing.

Figure 1 is a front elevation.
Figure 2, end elevation.
Figure 3, plan.
Figure 4, enlarged sectional plan of pipes above lattice-work.
Figure 5, side view of lattice-work.
Figure 6, rear view of lattice-work.

General Description.

First, the gas, after leaving the hydraulic main, is conducted by an ordinary pipe, A, fig. 1, front elevation, to the condenser, where it enters compartment B, at the end of the tar-well D, and is conducted down to the hydraulic seal C, of one-half to three-quarters of an inch, which gives to it the first friction on entering the condenser.

It is claimed that the seal C, in connection with the lattice-work G, and corrugated plates I, and corrugated covers J, precipitates all the tar existing in the volume of gas after leaving the hydraulic main.

Second, the gas being forced through the seal C by the exhauster into compartments B, and after leaving this compartment it enters the first series of the condenser; its course is then changed by coming in contact with the iron plate E, which is sealed in the tar-well D, as shown in fig. 1, and, rising in the vertical pipe F, is passed between the corrugated surfaces of lattice-work G, which, being adjustable, is opened and closed at pleasure by the lever H, to secure the necessary amount of friction desired.

Third, the upright pipes F are of a rectangular form, and divided into several compartments by the introduction in section of corrugated plates I. These plates are held in their places by small projections or brackets cast on the inside of the pipes F; also in three or four lengths, so as to be easily taken out for any repairs that may be necessary.

Fourth, the covers J are made of corrugated iron, and are fitted into a cup, K, filled with water of a given depth, to correspond with the seals, siphons, and cups of the purifiers, &c., and are held in their positions by a strap-hinge, fastened with a pin, and are adjustable, so they can be removed to clear any obstructions that may in time occur.

Fifth, the gas, after passing between the lattice-work G, is divided into separate volumes by the corrugated plates I, and, rising in the pipe F to the top, is carried across to the opposite pipe F by the covers J, and enters it, and descends to the tar-well D. It then moves forward on this same side until it comes in contact with a corresponding iron plate, E, which causes it to enter the pipe F, and passes between a similar lattice-work, G, and corrugated plates I, ascends to the next cover J, by which it is brought across to the opposite pipe F, and again descends to the tar-well D, and so on, alternately, until it passes through the whole of the condenser into the main L, and is conducted to the purifier.

Sixth, the lattice-work G is secured in a frame-work, *b*, which is bolted to the bonnet *d*, and slides into the pipes F upon projections or grooves cast on the inside of the pipes F, and is further supported by a horizontal reversing-bar, *h*, which projects through the stuffing-box *e*, so as to receive the handle H, by which it is moved to the desired position to secure the amount of friction necessary upon any volume of gas that may be passing, which is determined by the graduated arc *f* upon the bonnet *d*, and the pressure-gauges M attached to the inlet and outlet of the condenser.

Seventh, the inner end of the horizontal bar *h* is provided with a double arm, *i*, which engages with the upper and lower tiers of slats G by means of parallel bars *c*, secured to the pins which rotate the slats G.

The lattice-work G is secured to the frame-work *b* that is bolted to the bonnet *d*, which is fastened by tap-bolts to the vertical pipes F, and is easily removed for any repairs or cleaning that may be needed by opening the valves O and shutting off the gas from the condenser by the valves N, and passing it through the by-pass P, as shown in the plan, fig. 3. It is also located at the base of the pipes F, in which the gas ascends, which is alternately on each side of the condenser.

The corrugated lattice-work G, or slats, have upon their ends a journal or pin, which works in a loose socket, and are moved by the action of the parallel bars *c* above described.

The bases of the pipes F are enlarged in proportion to the room occupied by the lattice-work G, so that their area is maintained.

The sections of corrugated plates I in the pipes F are placed alternately over the intermediate space of the section below, in order to divide the volume of gas into separate columns, thus distributing and securing greater amount of friction, and are supported in their position by small brackets cast on the inside of the pipes F, which form grooves to receive a corresponding projection upon their ends.

Eighth, it is claimed that the friction introduced is so arranged that the same condenser is applicable to any volume of gas, from fifty thousand to five million cubic feet, more or less, per day, and will arrest all of the tar existing in the volume of gas without the use of water, and at the same time send forward the gas in a better condition, with all its volatile and light hydrocarbons, thereby increasing its quantity and also improving its illuminating power.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The application of the hydraulic seal to the whole volume of gas at the entrance of the condenser.

2. The adjustable lattice-work and appliances.

3. The corrugated plates dividing the vertical pipes in compartments; also, the corrugated covers as herein described, and substantially set forth in the specification.

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S. O. ROCKWELL.

Witnesses:
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GEORGE ST. JOHN.