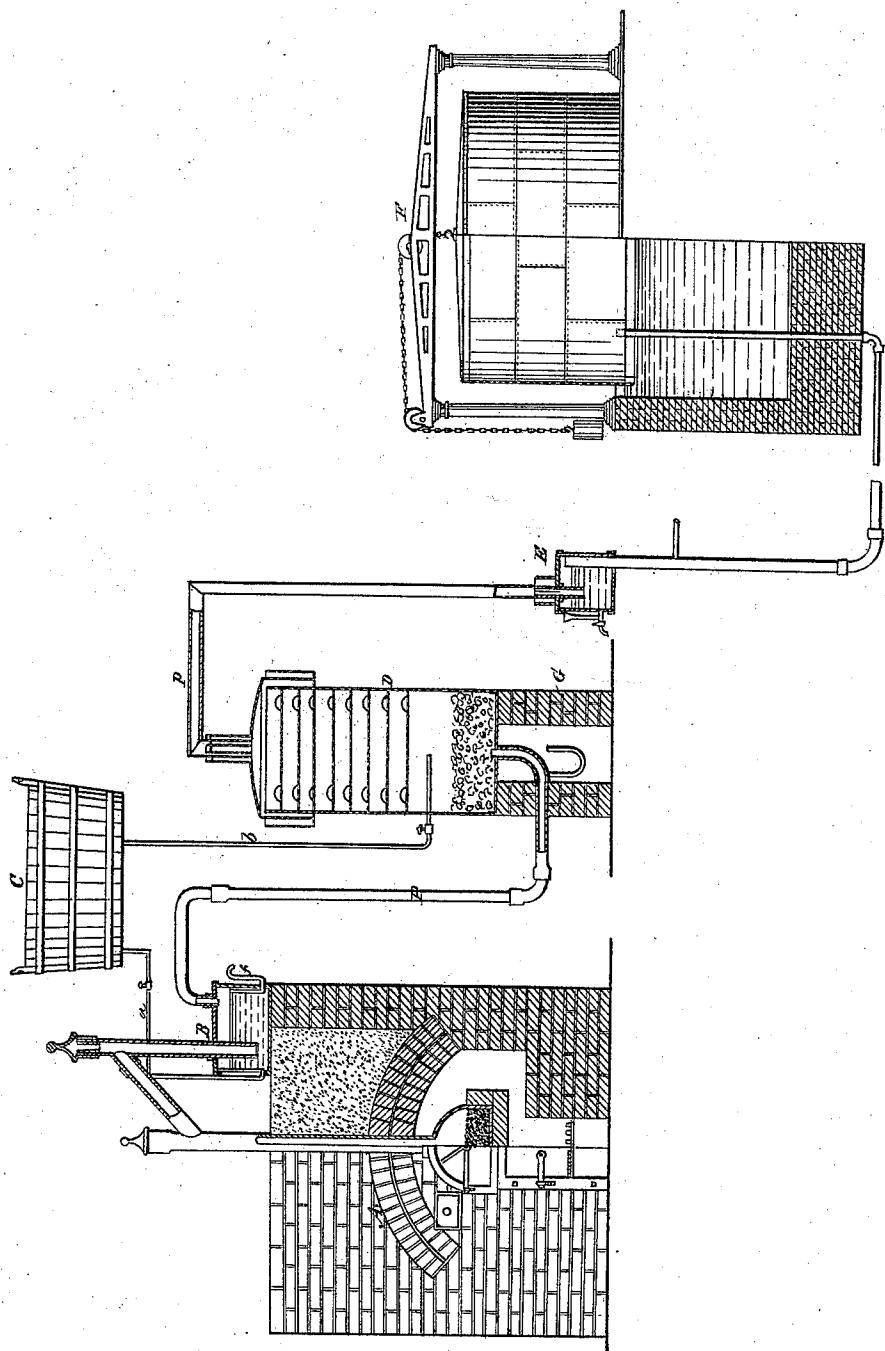


W. F. DANOWSKY.

Gas Purifier.

No. 21,121.

Patented Aug. 10, 1858.



# UNITED STATES PATENT OFFICE.

W. F. DANOWSKY, OF ALLENTOWN, PENNSYLVANIA.

## APPARATUS FOR PURIFYING GAS.

Specification of Letters Patent No. 21,121, dated August 10, 1858.

*To all whom it may concern:*

Be it known that I, W. F. DANOWSKY, of Allentown, Lehigh county, Pennsylvania, have invented a new and useful Improvement in the Art of Constructing a Gas Apparatus for Domestic Purposes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, 10 made part of this specification, and lettered to correspond therewith.

My invention relates to that class of gas-works, which use the dry lime process for purifying the gas, and consists in the use of 15 a simple and economical apparatus for purifying the gas, which obviates the necessity of keeping attendants of more than ordinary intelligence, as laborers, and enables the operator to use, not only bituminous coal, 20 but any and all of the well known materials, out of which gas is commonly made. As gas-works have been generally constructed, there are no less than five or six essential 25 parts in the apparatus; and the construction is usually so complicated that experienced and well instructed men, alone, are competent to the management of the same.

The object of my invention, therefore, has been to so simplify and cheapen the apparatus as to render its use more economical and practicable in any and all houses, and at the same time, to adapt it to the use of different kinds of materials, out of which gas can be made. The gas apparatus which has 35 been generally used for domestic purposes, have been adapted to but one kind of material; such as an oil gas apparatus, a coal gas apparatus, and a wood gas apparatus; but, in my apparatus, I can use any and all of 40 these materials, as well as any and all refuse materials from the kitchen and the larder, out of which gas is sometimes made, thus enabling me to make a profitable use of all such, on the premises. Hence the name of 45 "Economical Gas Works", which I have adopted for my apparatus.

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

50 I construct my retort bench in one of the known forms, as shown by Figure (A) in the drawing; from which the gas pipes (*p*) conduct the unpurified gas into the receiver (B); this is a simple cylindrical vessel standing on the brick work surrounding the retorts, and is kept rather more than half-

filled with water, into which the tube from the retort is plunged. It is provided with an overflow pipe (*f*) for the tar and ammoniacal liquor to pass off from the top of 60 the water.

(C) is a common tub, or reservoir of cold water, with small pipes (*a*) and (*b*) leading from it, one into the receiver (B), and the other into the purifier (D); each of 65 these pipes has a stop-cock, for shutting off, and letting on the cold water, at pleasure.

(D) is the purifier, which is a cylindrical iron vessel, with an orifice at the bottom into which the gas pipe (*p*) enters and 70 which is fitted with a series of perforated shelves or trays, resting on ledges within the cylinder one above the other, and supplied with handles, with which they may be lifted out of the top of the purifier, when 75 the cover is removed for that purpose. Around the upper portion of this large cylinder is secured a zone or belt of a still larger cylinder, with a bottom piece extending all around, as represented, in section, at 80 (*d*); and forming, with the upper portion of the cylinder of the body of the purifier (D), a water chamber, into which the cylindrical cover of the purifier is plunged; thus forming a water joint around the top of the 85 purifier. On the top of the cover is arranged a double cylinder also, forming a water chamber, into which the elbow of the gas pipe (*p*) is plunged; which arrangement secures the top of the purifier from any 90 escape of gas, and at the same time enables the operator to remove the cover promptly whenever he may desire to remove the shelves or trays, from the purifier; these perforated shelves are each covered, with 95 from two to six inches of dry and pulverized lime.

(E) is a water valve or gas-trap, kept about three fourths filled with water, which is poured in through a funnel attached to a 100 discharge cock, as shown in the drawing and drawn off, at pleasure, in the usual way. In the top of this gas-trap is a water joint, through which the gas pipe passes and plunges under the water in the trap. From the space above the water, in the trap, the gas pipe (*p*) extends, after making two elbows, into the gasometer (F), which is constructed in the usual way, and as shown 105 in the drawings.

110 The operation of my apparatus is as follows; the unpurified gas passes from the re-

tort through tubes (*p*) down under the water in the receiver (B), here the tar and ammoniacal liquors, being condensed and rising to the surface, pass off through the 5 discharging tube (*f*); the gas, thus relieved, passes again from (B) through the pipe (*p*) into the bottom of the purifier (D); when in passing up through the lime on the perforated shelves, it parts with much of the 10 sulfureted hydrogen and carbonic acid gases, which are decomposed by the lime, and thus purified, it passes out through the pipe on the top of the purifier (D) and down under the water in the gas-trap (E); 15 here it again parts with some sulfurous acid gas which is absorbed by the water and passes off through the discharge cock with the water from the trap. The purified gas then rising above the water in the trap, 20 passes off through the pipe (*p*) into the gasometer, or gas-holder (F), and is dis-

tributed therefrom in the usual way, by means of pipes.

It will be seen that the arrangement of the gas-trap (E), between the ordinary 25 purifier and the gasometer, not only aids in purifying the gas, but prevents the gas from passing back from the gasometer into the purifier; (which is sometimes the case, in ordinary gas apparatus) if kept well supplied with water.

Having thus described my invention, I claim—

The use of the purifier (D) when arranged and combined with a gas-trap E, in 35 the manner, and for the purpose, above described.

W. F. DANOWSKY. [L.S.]

Witnesses:

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EDW. F. BROWN.