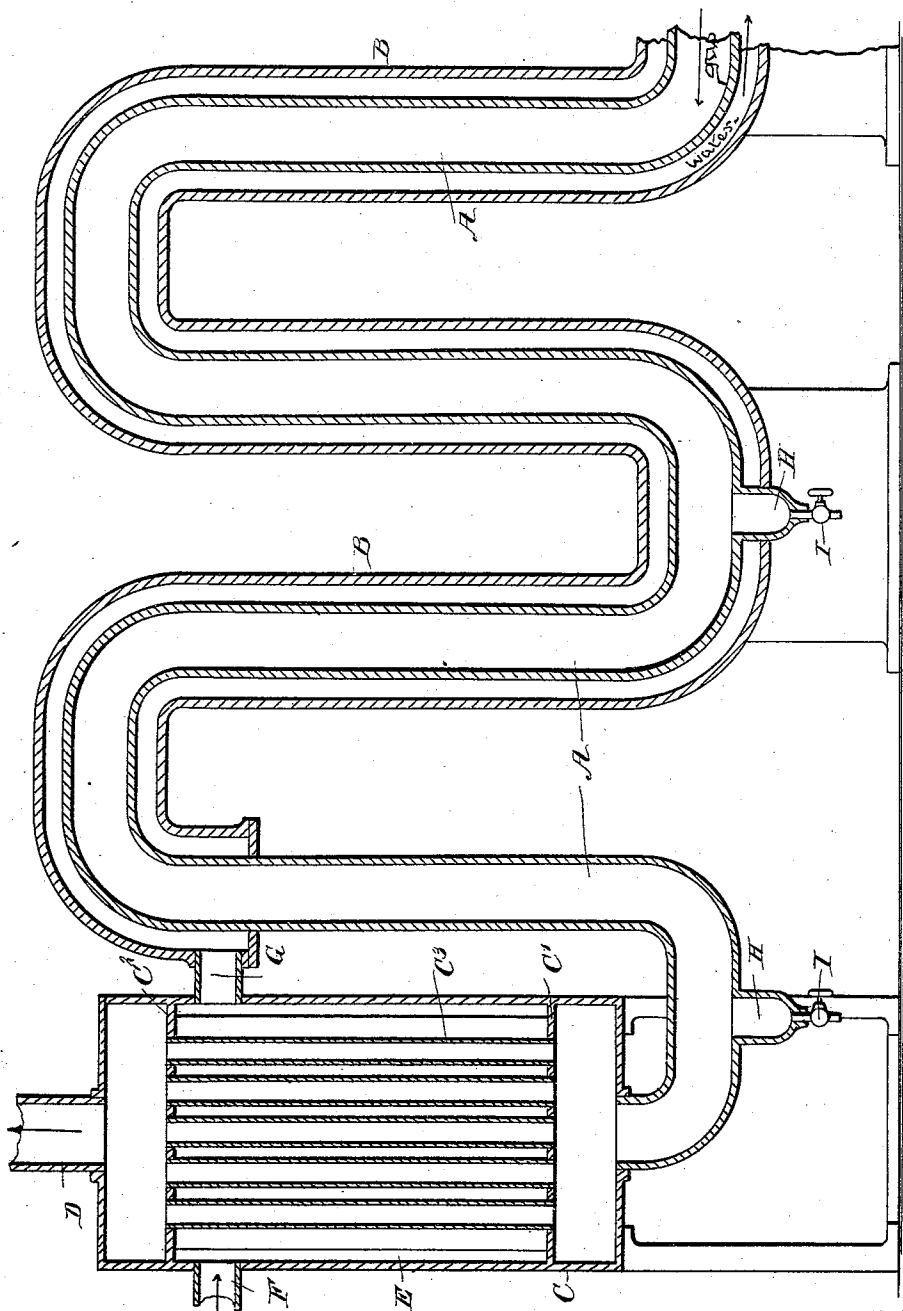


(No Model.)

A. H. SQUIER.
CONDENSER.

No. 551,910.

Patented Dec. 24, 1895.



WITNESSES:

H. Walker

Thos. G. Hoar

INVENTOR

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

ARTHUR H. SQUIER, OF SCRANTON, PENNSYLVANIA.

CONDENSER.

SPECIFICATION forming part of Letters Patent No. 551,910, dated December 24, 1895.

Application filed March 14, 1895. Serial No. 541,685. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR H. SQUIER, of Scranton, in the county of Lackawanna and State of Pennsylvania, have invented a new and Improved Apparatus for Removing Moisture from Natural or Artificial Gas, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved apparatus for removing the moisture contained in natural or artificial gas, to improve the quality of the gas.

The apparatus consists principally of two pipes located one within the other, the inner pipe being connected with a gas-supply and the other pipe with a vessel for supplying it with a cooling medium.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter fully described and then pointed out in the claim.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which the figure is a sectional side elevation of the apparatus.

The apparatus, as illustrated in the drawing, consists principally of two pipes A and B of any desired length, the pipe A being arranged within the pipe B in such a manner as to leave sufficient space between the pipes B and A for the passage of a cooling medium. One end of the pipe A is connected with a gas-supply, and the other end of the said pipe leads into the lower end of a vessel C connected at its top by a pipe D with the service-pipe for leading the gas to the burners, to be burned in any suitable manner after the moisture has been removed.

In the vessel C are arranged two heads C' and C² connected with each other by pipes C³, through which the gas has to pass in order to reach the outlet-pipe D. The heads C' and C² form within the vessel C a compartment E connected with a supply-pipe F, also connected by a short pipe G with the closed end of the outer pipe B, as plainly shown in the drawing. Now a cooling medium is introduced into the compartment E through the pipe F, so that the said medium circulates around the pipes C³ and cools the gas pass-

ing through the same, the said medium also passing from the compartment E into the outer pipe B, thus surrounding the inner pipe A. By this means the moisture contained in the natural or artificial gas passing through the inner pipe A is condensed, the said moisture either freezing to the pipe A or accumulating in the lowermost points of the pipe A in cups H, extending through the outer pipe B and provided at their outer ends with suitable valves I, which when opened drain the said cups H of their accumulated moisture.

It is understood that the medium passing through the outer pipe B condenses the moisture carried by the gas, the said moisture in its condensed form either freezing to the walls of the pipe or gathering in the cups H to be removed therefrom from time to time. If desired, the temperature of the gas may be raised previous to subjecting it to the action of the cooling medium, as above described, so as to facilitate the condensation of the moisture when the gas is subjected to the cooling medium in the pipe B or vessel C.

The series of independent small pipes C³ separate the body of gas flowing from the pipe A into several currents, so that at the last stage the gas in smaller bulk is presented to the influence of the cooling medium.

In case the ice accumulating on the inner wall of the pipe A prevents the flow of gas through the pipe A, then the gas is sent through a similar apparatus, while the ice is thawed out by any suitable means.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

An apparatus for removing moisture from gas, comprising two sinuous pipes, one within the other, a vessel having a chamber in each of its ends, a series of independent tubes connecting said chambers, one of said sinuous pipes communicating with one of said chambers and the other of said pipes communicating with the interior of the vessel between the end chambers, substantially as specified.

ARTHUR H. SQUIER.

Witnesses:

A. D. DEAN,

K. M. ATHERTON.