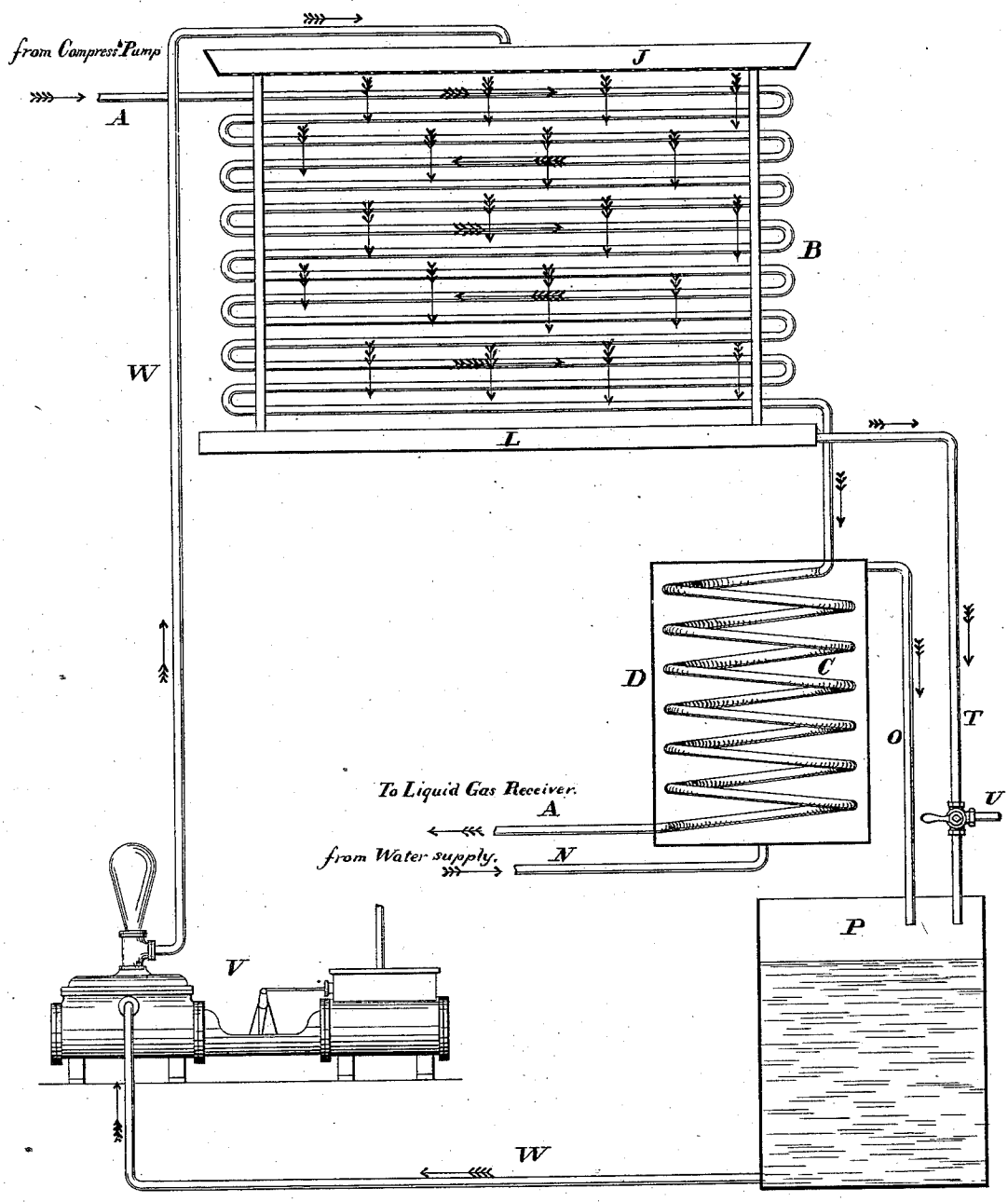
(No Model.)

C. G. MAYER.

GAS COOLING APPARATUS.

No. 314,039. Patented Mar. 17, 1885.



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UNITED STATES PATENT OFFICE.

CHARLES G. MAYER, OF NAUVOO, ILLINOIS.

GAS-COOLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 314,039, dated March 17, 1885.

Application filed November 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. MAYER, of Nauvoo, Hancock county, Illinois, have invented a certain new and useful Improvement in Gas-Cooling Apparatuses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and which is part in side elevation and part in vertical section of my improved apparatus.

My invention relates to an apparatus for cooling gas in refrigerating systems; and it consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawing, A represents the pipe from the compressor-pump. It has a vertical coil, B, from where it passes down, and has a horizontal coil, C, from where it passes to the receiver. The coil C is submerged in a water-tank, D, and above the coil B is a perforated pan, J, and beneath it is a pan, L.

N represents the water or other cooling-liquid supply pipe connecting with the lower part of the tank D, and O an overflow-pipe connected to the upper part of the tank D and discharging into a tank, P, and the overflow from the pan L may also be discharged into the tank P, if desired, through a pipe, T, or may be carried off through a pipe, U. By means of a pump, V, the water is conveyed through a pipe, W, from the tank P to the pan J.

The operation is as follows: As the gas passes through the coil B, it is cooled by the water dripping from the pan J, and as it passes through the coil C it is still further cooled by the cold water passing through the tank D. The water becomes heated as it passes through the tank D, so that it is warm when pumped into the pan J, and as it drips down over the coil B a great amount of it evaporates, which causes latent heat to pass out of the gas. This cools the gas considerably, (and of course it is also cooled by the water cooling the pipe,) and as it passes on down through the coil C it becomes reduced still further in temperature by the pipe being cooled by the cold water from the supply.

The object of combining the coil B with the coil C is to get the cooling effect in coil B, where the gas is the warmest, of the water by means of evaporation and difference of temperature between the gas in the coil and the water dripping over the outside of the coil, and in coil C, where the gas is cooler, the cooling effect of the water on the gas caused by the difference of temperature of the gas in the coil C and the water surrounding the coil.

By my arrangement the gas is cooled to the temperature of water by the least possible quantity of water.

I claim as my invention—

1. The combination of the gas-circulating pipe having the coils B and C, tank D, in which the coil C is located and through which water is circulated, and a pipe and pump for taking the water from the tank D and discharging it over the coil B, substantially as and for the purpose set forth.

2. The combination of the gas circulating pipe having coils B and C, pan J, tanks D and P, the coil C being located in the tank D, water-pipes N, O, and W, and pump V, arranged and operating substantially as and for the purpose set forth.

3. The combination of the gas-circulating pipe having coils B and C, pans J and L, tanks D and P, the coil C being located in the tank D, water-pipes N, O, T, U, and W, and pump V, all arranged and operating substantially as and for the purpose set forth.

4. The gas-circulating pipe having two coils, in one of which the gas is cooled by water from the supply, and in the other of which it is cooled by the second use of the water while in heated condition, substantially as shown and described.

5. The combination of the gas-circulating pipe having two coils, a tank inclosing one of the coils, and through which cooling-liquid is caused to circulate, and means for conveying the cooling-liquid from the tank to the other coil, over which it is caused to drip, substantially as and for the purpose set forth.

CHARLES G. MAYER.

In presence of—
GEO. H. KNIGHT,
SAML. KNIGHT.