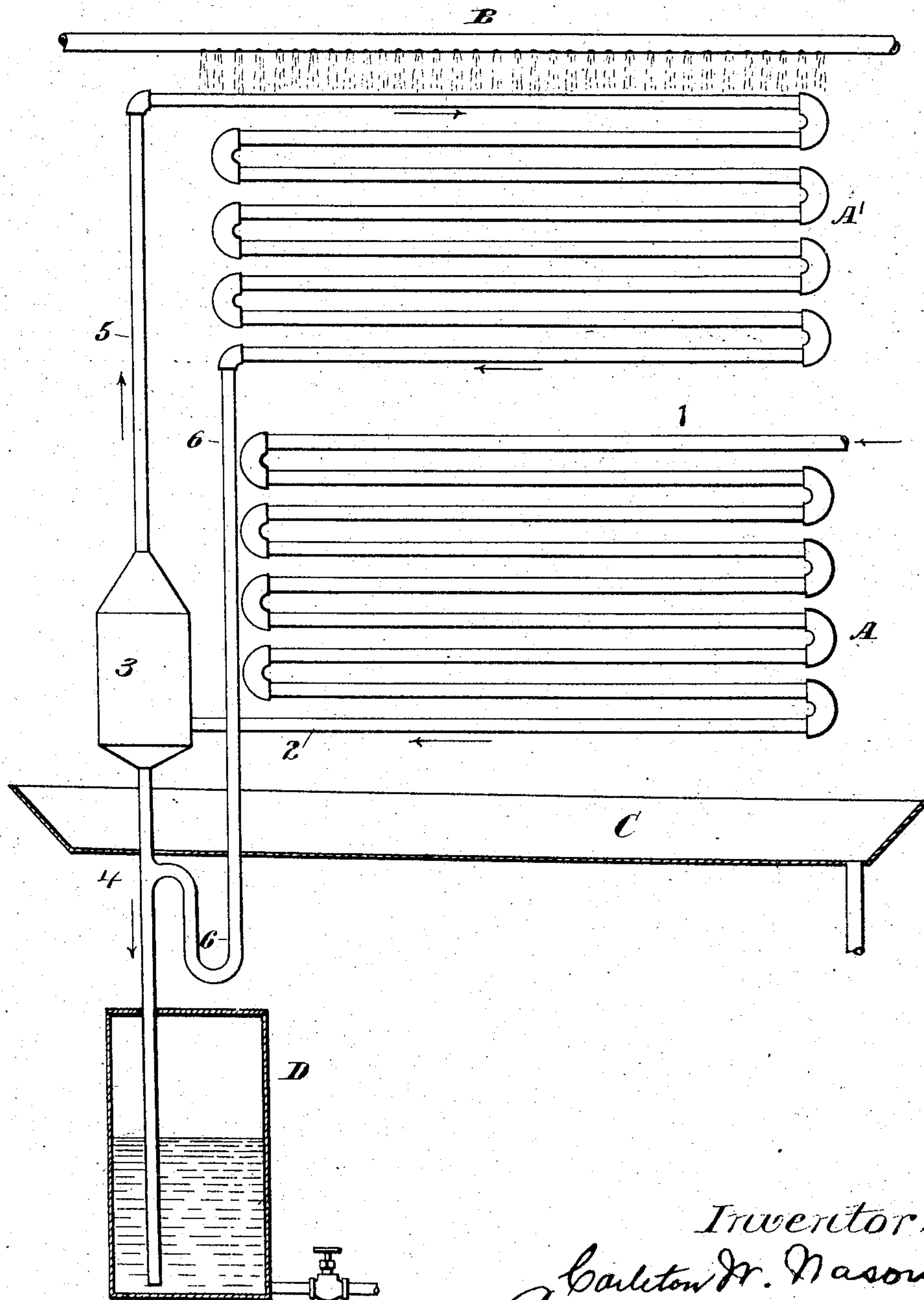


No. 772,428.

PATENTED OCT. 18, 1904.

C. W. NASON.
CONDENSING APPARATUS.
APPLICATION FILED FEB. 14, 1901;

NO MODEL.



Attest:
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UNITED STATES PATENT OFFICE.

CARLETON W. NASON, OF NEW YORK, N. Y.

CONDENSING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 772,428, dated October 18, 1904.

Application filed February 14, 1901. Serial No. 47,213. (No model.)

To all whom it may concern:

Be it known that I, CARLETON W. NASON, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Condensing Apparatus, fully described and represented in the following specification and the accompanying drawing, forming a part of the same.

My invention relates to an apparatus for cooling or condensing gas, and is intended especially for use in that class of condensers for ice-making machines for cooling or liquefying the hot or compressed gas coming from the compressing-pump, the object of the invention being to provide an improved apparatus by which high efficiency shall be secured with economy of water, while at the same time a lower pressure of liquefaction is attained, thereby assuring greater cooling capacity to machines using the device with less power required to accomplish the work and to avoid the strain upon the condenser pipes and joints which results from large differences of temperature between the water and gas.

My improved apparatus in its preferred form consists of a plurality of condensing-coils arranged one above the other and in which the gas passes downward through each coil and through the coils successively from the lowest coil upward through the series, the coils being cooled by sprinkling cooling-water or other liquid upon the top coil, from which the cooling liquid passes down over the lower coils. The gas thus passes through each coil in the same direction as the condensed liquid, which is important in securing a high efficiency, and the same water is applied successively to the different coils, first upon the coldest coil and then successively upon the hotter coil or coils, so that the gas is cooled gradually by applying colder water, which secures a very efficient condensing action without wide differences of temperature between the gas and cooling liquid, while the amount of cooling-water required is reduced to a minimum. In accordance with my invention, therefore, the liquefied atoms of the gas assembled by the act of condensation

travel as they form to their point of exit in the coils in the same direction as the gas containing them, while at the same time the condensing-water is so distributed over the coils that the cooler water meets the cooler gas and the warmer water the hotter gas.

In the accompanying drawing I have illustrated a gas cooling or condensing apparatus embodying my invention in one of its preferred forms as applied in connection with two coils, and this construction will now be described and the features forming the invention then specifically pointed out in the claims.

In the drawing, A A' are the two coils, through which the gas passes successively, these coils preferably being similar single coils, as shown, arranged one above the other and exposed to the atmosphere; B, the liquid-spray pipe above the coil A'; C, a drip-trough below the coils, and D a receiver for the liquid condensed from the gas. As indicated by the arrows, the gas enters the lower coil A through pipe 1, passes downward through the coil A to the bottom convolution, and then through pipe 2 to chamber or separator 3, from which any liquid condensed in the lower coil passes to the receiver D through pipe 4, while the uncondensed gas passes upward through pipe 5 to the top convolution of the upper coil A', then downward through the coil A' and through pipes 4 6 to the receiver D, the pipes 2 6 thus forming liquid-collecting pipes connected to the bottom of the coils.

It will be understood that while I have shown only two coils this number may be increased as desired, other coils then being added above the coil A', the gas then passing successively to the top of the upper coils, and the spray-pipe B being located above the top coil of the series, each of the coils except the top coil being preferably provided with a chamber or separator 3, as shown in the case of the coil A, although this is not indispensable, and a simple pipe connection from the bottom of each coil to the receiver may be used instead. It will be understood, also, that the invention is not limited to the specific form of coils or other parts of the apparatus shown, but that these may be varied widely without

departing from the invention, and the cooling liquid may be applied otherwise than by sprinkling on the top of the upper coil.

What I claim is—

5 1. In a condenser, the combination, with a series of coils arranged one above another and a single supply for condensing-water arranged above all the coils of the series so that the water drips from coil to coil successively; of
10 an inlet-pipe for ammonia-gas connected to the top convolution of the bottom coil, connections between the bottom convolutions of the said coils and the top convolutions of the coils next above them in the series one after an-
15 other, and liquid-collecting pipes connected to the bottom convolutions of said coils.

2. In a condenser, the combination, with a series of similar single coils arranged one above another and exposed to the atmosphere,

and a single supply for condensing-water ar- 20
ranged above all the coils of the series so that the water drips from coil to coil successively; of an inlet-pipe for ammonia-gas connected to the top convolution of the bottom single coil, connections between the bottom convolutions 25
of the said single coils and the top convolutions of the single coils next above them in the series one after another, and liquid-collecting pipes connected to the bottom convolutions of said coils. 30

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CARLETON W. NASON.

Witnesses:

C. J. SAWYER,
A. A. V. BOURKE.