

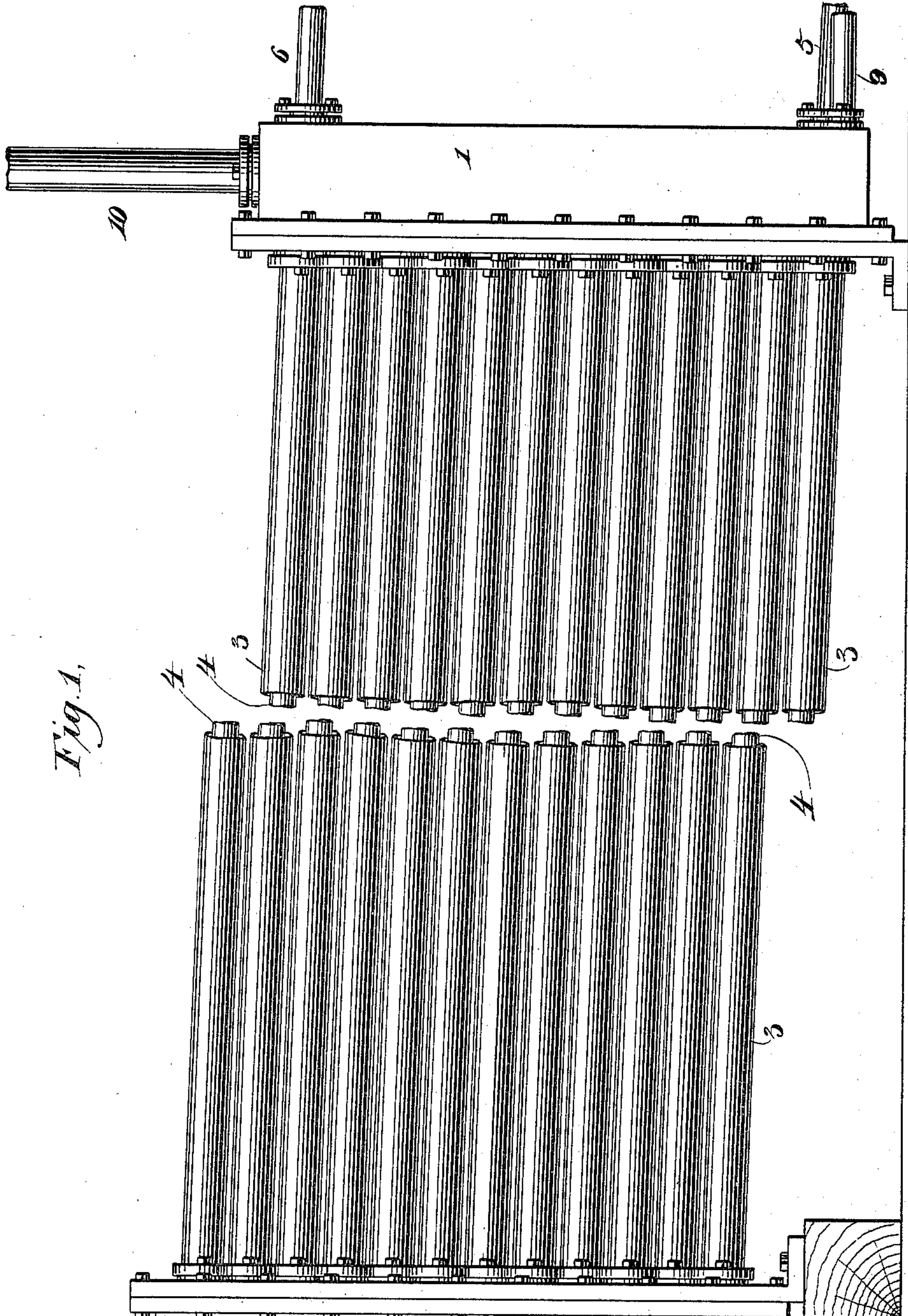
(No Model.)

2 Sheets—Sheet 1.

J. D. SMITH.
CONDENSER.

No. 572,834.

Patented Dec. 8, 1896.



WITNESSES:

Edward Thorpe
C. R. Ferguson

BY

INVENTOR
J. D. Smith
ATTORNEYS.

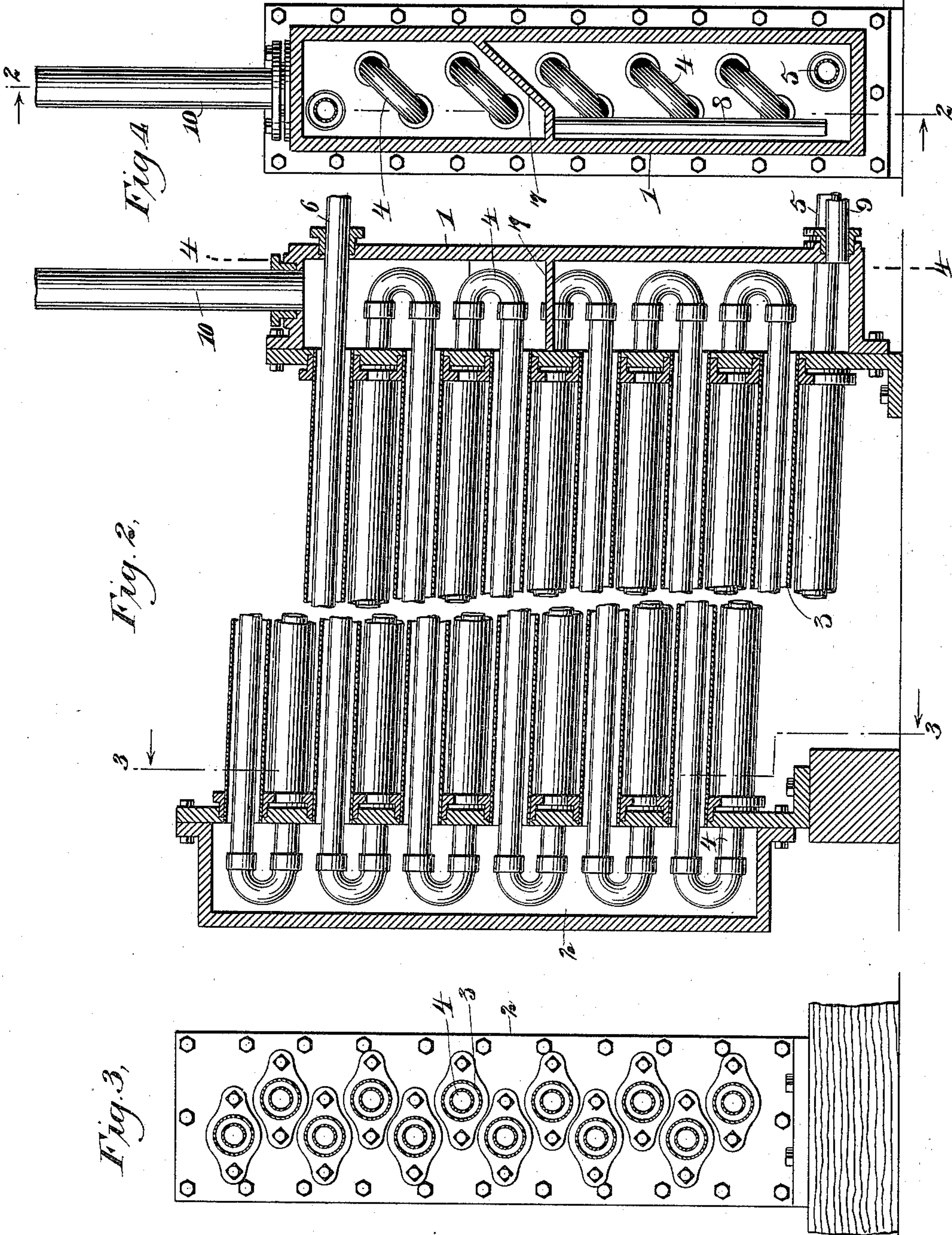
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UNITED STATES PATENT OFFICE.

JOHN D. SMITH, OF NEW YORK, N. Y.

CONDENSER.

SPECIFICATION forming part of Letters Patent No. 572,834, dated December 8, 1896.

Application filed June 5, 1896. Serial No. 594,405. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. SMITH, of New York city, in the county and State of New York, have invented new and useful Improvements in Condensers, of which the following is a full, clear, and exact description.

This invention relates particularly to devices for condensing ammonia-gas, and the object is to provide a condenser of simple construction that may be supplied at a cost much less than that for which condensers now in use are provided, and in which the operation of condensing may be more rapidly carried out; and a further object is to so construct the condenser that it may be used as a brine-cooler.

I will describe a condenser embodying my invention, and then point out the novel features in the appended claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a condenser embodying my invention. Fig. 2 is a vertical section thereof on the line 2 2 of Fig. 4. Fig. 3 is a section on the line 3 3 of Fig. 2, and Fig. 4 is a section on the line 4 4 of Fig. 2.

The condenser comprises a front header 1 and a rear header 2. These headers 1 and 2 are connected by condensing-pipes 3. These several pipes 3 are staggered one relatively to another, as plainly indicated in the drawings, and they are all inclined downward from the rear header to the front header. A water-pipe 4 has an inlet 5 leading through the lower portion of the front header 1, and this water-pipe extends back and forth through the whole series of condensing-pipes and has an outlet 6 at the upper end of the front header. The water-pipe 4 is of considerably less diameter than the pipes 3, and the bends of this water-pipe are located, of course, in the front and rear headers.

The front header has a transverse partition 7 between its upper and lower ends, and this transverse partition is shown as inclined downward, and a pipe 8 leads through this partition and is designed to carry the condensation which takes place above the partition to a point near the lower end of the front header, where it will discharge into a

suitable receptacle through the outlet 9 at the bottom of said front header.

It will be seen that there are two pairs of condensing-pipes arranged above the partition 7, and of course the condensation in these upper pipes will flow into the front header above said partition, and said partition will prevent the passage of gas to the portion of the header below said partition.

In operation the gas will enter the front header 1 through the pipe 10, and will circulate or pass into the condensing-pipes which are arranged above the partition. The water flowing through the pipe 4, aided somewhat by the outer atmosphere acting on the outer surface of the condensing-pipes, will very rapidly condense the gas under a very low pressure. A large portion of the gas will be condensed in the pipes which are arranged above the partition, and the condensation will flow out into the front header, thereby preventing all clogging of the pipes, which often happens when the gas and condensation are made to travel through an endless coil of condensing-pipes. The small amount of gas that may pass entirely through the upper series of condensing-pipes will pass into the rear header and then downward, and find an escape through the several lower pipes and out into the front header, where the condensation dropping to the bottom may be carried out by the outlet 9.

In using the device as a brine-cooler the outlet 9 is to be dispensed with. The apparatus is to be placed in a tank of brine suitable for storage supply, and the ammonia being expanded in the bottom of the front header evaporation readily takes place. As the evaporation of the ammonia in the outer pipes is rapid, the outer surface of said pipes being in communication with the brine in the tank, and as the said evaporation acts directly on the surface of the inner pipes through which the brine is passing, it will be seen that the capacity for the absorption of latent heat is completely utilized.

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

A condenser, comprising a series of staggered condensing-pipes, a rear header, a front header, the said pipes being inclined down-

ward from the rear to the front header, and
the said rear header being open throughout
its length and common to all the pipes, a cir-
culating-pipe extended through the several
5 condensing-pipes, an inclined transverse par-
tition in the front header, a pipe leading
through said partition and extended nearly
to the bottom of the front header, an outlet

at the lower end of the front header, and a
feed-pipe leading into the front header, above 10
its partition, substantially as specified.

JOHN D. SMITH.

Witnesses:

STEPHEN E. POWELL,
JOS. B. CORWIN.