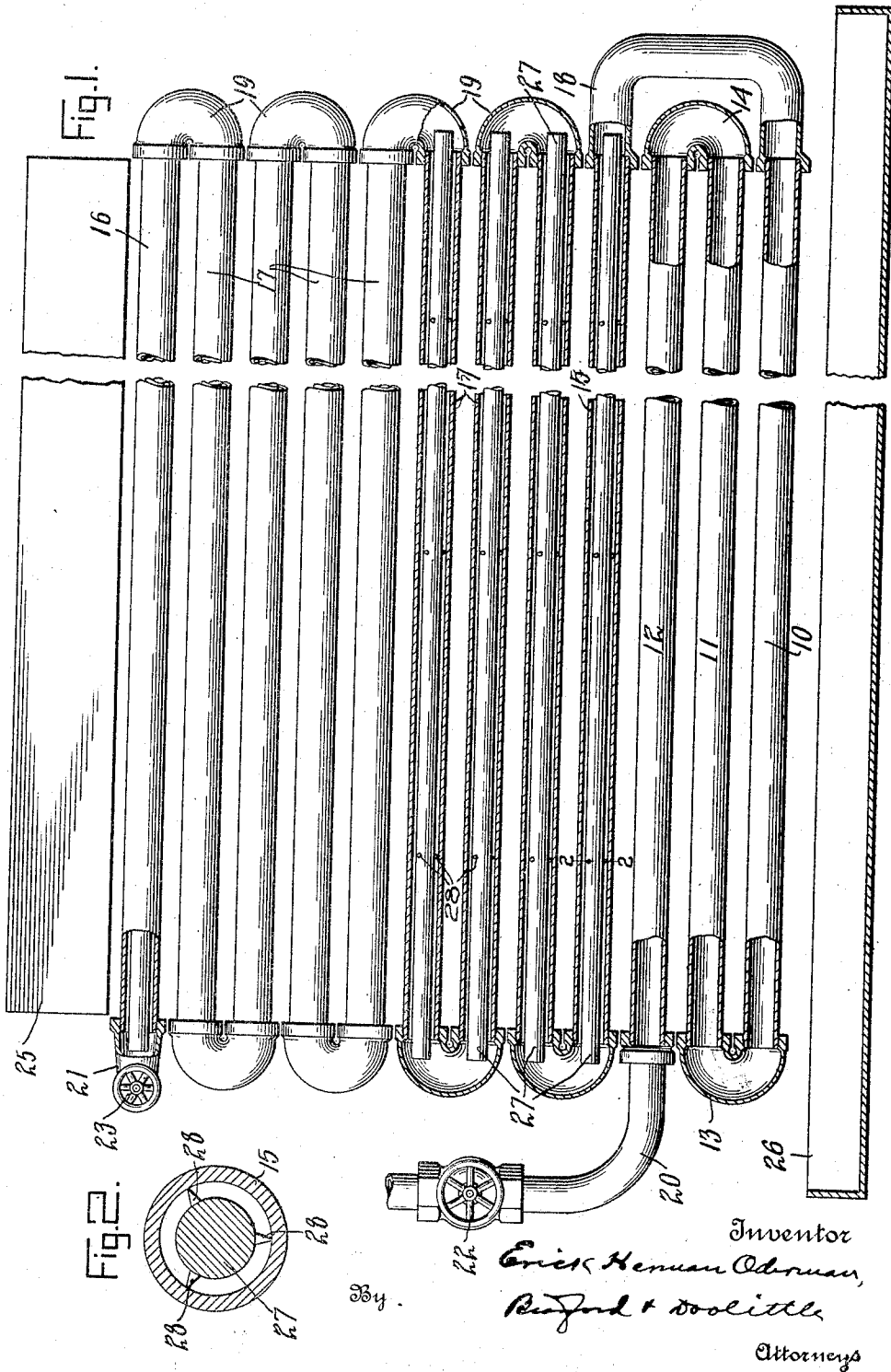


E. H. ODERMAN.
AMMONIA CONDENSER FOR ICE MACHINES.
APPLICATION FILED MAR. 29, 1917.

1,303,107.

Patented May 6, 1919.



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UNITED STATES PATENT OFFICE.

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AMMONIA-CONDENSER FOR ICE-MACHINES.

1,303,107,

Specification of Letters Patent.

Patented May 6, 1919.

Application filed March 29, 1917. Serial No. 158,229.

To all whom it may concern.

Be it known that I, ERICK HERMAN ODERMAN, a citizen of the United States, residing at Waynesboro, Franklin county, and State of Pennsylvania, have invented and discovered certain new and useful Improvements in Ammonia-Condensers for Ice-Machines, of which the following is a specification.

My said invention relates to improvements in gas condensers, or coolers, designed particularly for ammonia gas condensers for ice making machines, whereby the efficiency of the condenser is increased and the ammonia gas condensed or cooled very rapidly, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawing, which is made a part hereof, and on which similar reference characters indicate similar parts,

Figure 1 is a view partly in side elevation and partly in section, showing a coil of an ammonia gas condenser embodying my said invention, the central portion of the coil being broken away in order to enable the construction to be illustrated on a larger scale, and

Fig. 2 a cross section as on the dotted line 2-2 in Fig. 1.

Said coil is divided into two sections, the lower section comprising the horizontal pipes 10, 11 and 12 connected by the return fittings 13 and 14, and the upper section consists of a lower horizontal pipe 15, a top horizontal pipe 16 and as many intermediate horizontal pipes 17 as may be required. The lower horizontal pipe 15 is connected to the lower pipe 10 of the lower section by a return fitting 18 and the other pipes are connected by return fittings 19. The ammonia gas inlet pipe 20 is connected with the top pipe 12 of the lower section of the coil and the liquid ammonia gas discharge pipe 21 is connected to the top pipe 16 of the upper coil. A valve 22 is provided between pipe 20 and the supply header for the ammonia gas, and a valve 23 is provided between the discharge pipe 21 and the liquid ammonia header. A cold water tank 25 is mounted above the coil from which the cooling medium (as cold water) is discharged through perforations through its bottom and trickles down over the coil in the usual manner. A trough 26 is mounted beneath the coil to receive the water from which it may

be pumped back to the tank 25 or used in any other manner desired.

The coil as thus far described is not essentially different from coils in common use, my invention consisting chiefly in an improvement now about to be described.

A core or fill-piece 27 cylindrical in form and of uniform diameter from end to end is mounted within each pipe of the upper section of the coil, beginning with pipe 15 and ending with pipe 16 at the top and all the intermediate pipes comprising said coil. These cores may be composed of any suitable material, wood being one material that is appropriate, and are provided with spacing projections 28 at intervals around their peripheries, three rows of such projections, spaced equidistant apart as indicated in Fig. 2, being a desirable arrangement. These cores or fill-pieces are of a diameter somewhat smaller than the interior diameter of the pipes comprising the coil, thus providing an annular space within each pipe of the upper section of the coil. These fill-pieces or cores being held in a central position within the pipes serve to establish a contracted area for the flow of the ammonia gas, or a contracted passage for the gas from the lower section of the coil to the top pipe of the upper section of the coil, and also to distribute said gases in a comparatively thin annular film contiguous to, and in contact with, the pipes.

As will be readily seen, the cooling medium flowing down over the outside surface of the pipes will more readily absorb the heat from the gases because it is maintained in a thin film, and will thus effect a very rapid cooling of the same.

In operation the ammonia gas comes into the top pipe 12 of the lower section of the coil from pipe 20 and passes to the lower pipe 10 of said section and during its passage from this section of the coil is partially cooled and condensed. It then passes through the return fitting 18 into the lower pipe 15 of the upper section of the coil where it meets the restricted passage established by the core or fill-piece 27, and is compelled to pass in the form of a thin annular film in contact with all parts of said pipe, and in a like manner through the succeeding super-imposed pipes of the section until it reaches the top pipe 16 and is from thence discharged, as is usual.

In practice this construction of condenser will be found very efficient, and its operation as a cooler and condenser very active and rapid.

5 Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:—

10 1. An ammonia condenser comprising a cooling section through which the gas passes from the top to the bottom pipe thereof, another cooling section comprising a series of coils above said first named section, a connection from the lower pipe of said first section to the lower pipe of the second section, a discharge from the top pipe of the
15 second section, and cores mounted in said pipes of said second section extending from end to end thereof and with a diameter

slightly less than the diameter of said pipes, substantially as set forth. 20

2. An ammonia condenser comprising coils, cores in the horizontal pipes of said coils of a diameter less than the interior diameter of the pipes, means for supporting said cores in said pipes, a cooling section beneath said coils and a connection from said cooling section to the lower pipe of said coils, substantially as set forth. 25

In witness whereof, I have hereunto set my hand and seal at Waynesboro, this 22nd day of March, A. D. nineteen hundred and seventeen. 30

ERICK HERMAN ODERMAN. [L. s.]

Witnesses:

SAMUEL C. BARNES,
R. M. SHIVELY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."