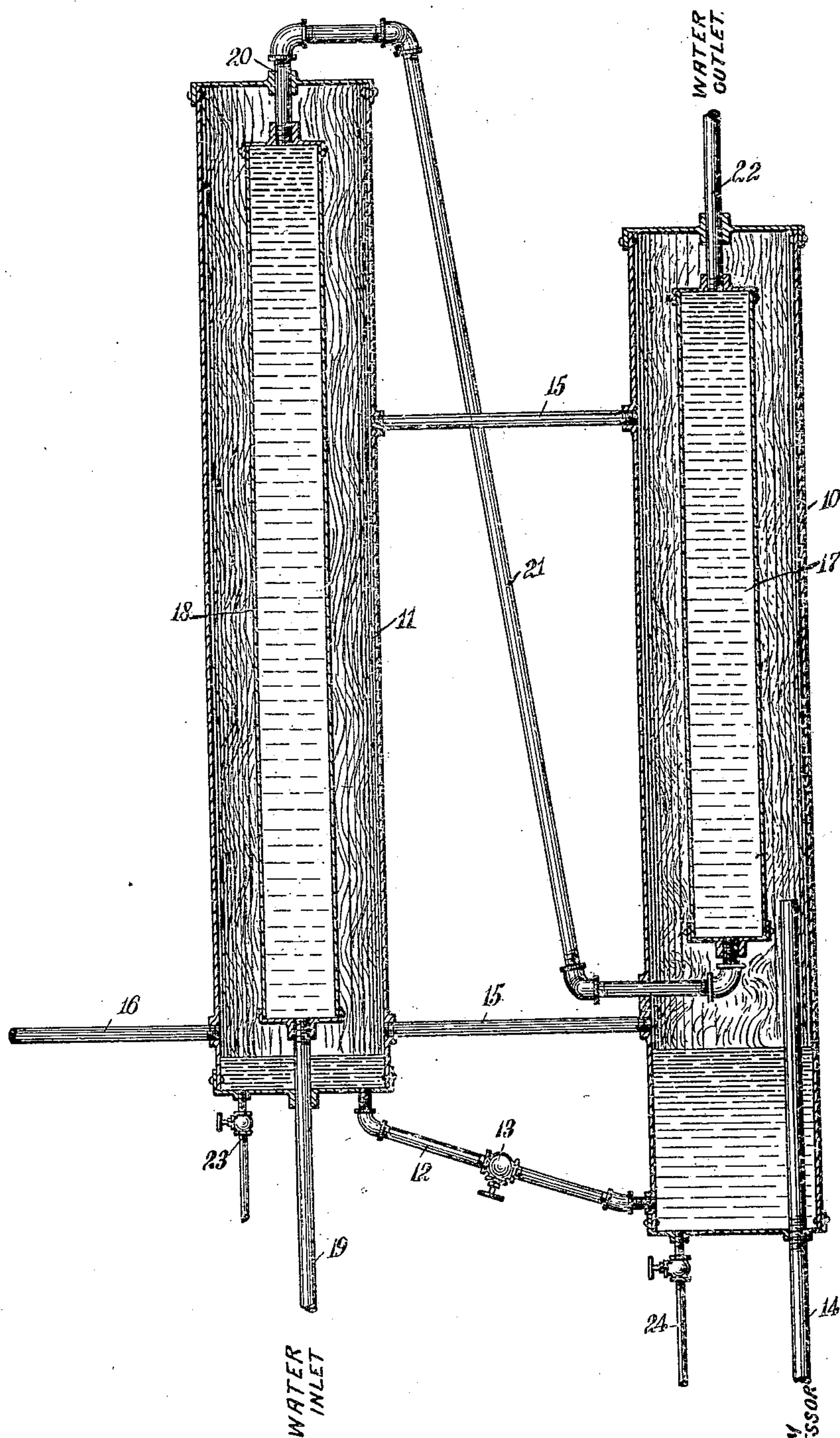


L. WAGNER.  
AMMONIA PURIFIER FOR REFRIGERATING PLANTS.  
APPLICATION FILED NOV. 22, 1909.

955,726.

Patented Apr. 19, 1910.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

LAWRENCE WAGNER, OF SEDALIA, MISSOURI.

AMMONIA-PURIFIER FOR REFRIGERATING PLANTS.

955,726.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed November 22, 1909. Serial No. 529,330.

*To all whom it may concern:*

Be it known that I, LAWRENCE WAGNER, a citizen of the United States, and a resident of Sedalia, in the county of Pettis and State of Missouri, have invented a new and Improved Ammonia-Purifier for Refrigerating Plants, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in apparatus for purifying ammonia, to render the same anhydrous in refrigerating plants.

The object of the invention is to produce a high grade of anhydrous ammonia continuously while the compressor is in operation, and to accomplish this by condensing and separating out the oil and water vapor carried along with the ammonia from the compressor.

My improved apparatus is adapted for use in the ordinary refrigerating system in which there is employed an ammonia compressor and condenser, and it is designed to be connected in circuit, so as to receive the hot compressed ammonia from the compressor, and to remove a portion of the heat therefrom, so as to condense the oil and water vapor which may be present in the ammonia, so that the dry and partially cooled but uncondensed ammonia will be delivered to the condensing coil. In this manner I reduce the amount of cooling required in the condenser, prevent the passage of oil to the condenser and separately condense the ammonia, so that only pure anhydrous ammonia will be delivered to the expansion valve.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which the figure shows a vertical section of an apparatus constructed in accordance with my invention.

In the specific form of apparatus illustrated, I employ two gas holders in the form of cylindrical sheet metal drums or holders 10 and 11, mounted adjacent each other. The bottom of the drum 10 is preferably at a somewhat lower elevation than the bottom of the drum 11, and from the bottom of the drum 11 a downwardly-inclined pipe 12 extends to the lower portion of the drum 10. This pipe serves for the drainage of liquid from the drum 11 to the drum 10 whenever desired. Within this pipe is a suitable valve 13 for controlling the flow.

The hot compressed ammonia gas is delivered from the compressor through a pipe 14 to the holder 10 at a point above the bottom of the latter. The pipe may, if desired, extend up through the bottom of the holder, so that its passage through the wall of the tank will be sealed by the liquid accumulated in the bottom of the holder. The holder 10 is connected to the holder 11 by one or more pipes 15, so that the gas may freely pass from the holder 10 to the holder 11. An outlet conduit 16 leads from the holder 11 to the main condenser coil of the refrigerating plant.

For cooling the gas within the holders, I provide a water conduit extending through both of the holders and preferably having enlargements therein. As shown, there are two water chambers 17 and 18, one within each of the gas holders. The water chamber 18, which is within the gas holder 11, has a water inlet pipe 19 extending up through the bottom of the holder 11, and an outlet pipe 20 extending out through the top of the holder. The pipe 20 is connected by a pipe 21, which extends through the wall of the holder 10 to the lower end of the water chamber 17, and a water outlet pipe 22 extends from the upper end of the chamber 17 through the upper end of the gas holder 10. Thus, it will be seen that the water flows in the pipe 19 and through the two holders in the opposite direction to the direction of flow of the gas. The temperature and rate of flow are so controlled that there will be no condensation of anhydrous ammonia in the gas holders, but all of the oil and water vapor which may be carried along with the ammonia, will be condensed in these holders and accumulate in the lower portions of the holders. This oil and water vapor may be drawn off continuously or intermittently, as may be desired, from the two holders through separate valve-controlled pipes 23 and 24, or all of the liquid condensate in the holder 11 may be drained to the holder 10 through the pipe 12 and drawn off through the outlet pipe 24. The liquid which is drawn from the holders may be disposed of in any desired manner, but preferably in such a way that the ammonia within the liquid will be recovered and returned to the system.

In the drawings I have shown only two gas holders, and shown these in the form



of vertical, cylindrical tanks or drums, but it is, of course, evident that any desired number of the holders may be employed, and they may be of different shape or differently  
5 located. I have illustrated a particular form of cooling means, but it is, of course, evident that other cooling means might be employed, and that additional water might be sprayed upon the exterior of the holders, if desired.

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

1. An ammonia purifier for refrigerating plants, comprising a plurality of drums connected together in series, a water conduit extending through all of said drums and in the inverse direction to the direction of flow of the ammonia, means for delivering ammonia gas from the compressor to one of said  
15 drums, means for withdrawing ammonia gas from another of said drums, a liquid outlet from one of said drums, and means

for transferring liquid from another of said drums to said last-mentioned drum.

2. An ammonia purifier for refrigerating 25 plants, comprising two drums connected together, the bottom of one of said drums being at a lower elevation than the bottom of the other drum, means for delivering ammonia gas from the compressor to the lower 30 drum, means for withdrawing gas from the upper drum, means for cooling said drums, means for withdrawing liquid condensate from the upper drum to the lower drum, and an independent draw-off from the upper 35 drum.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LAWRENCE WAGNER.

Witnesses:

ARTHUR G. LINCOLN,  
OSCAR A. WAGNER.