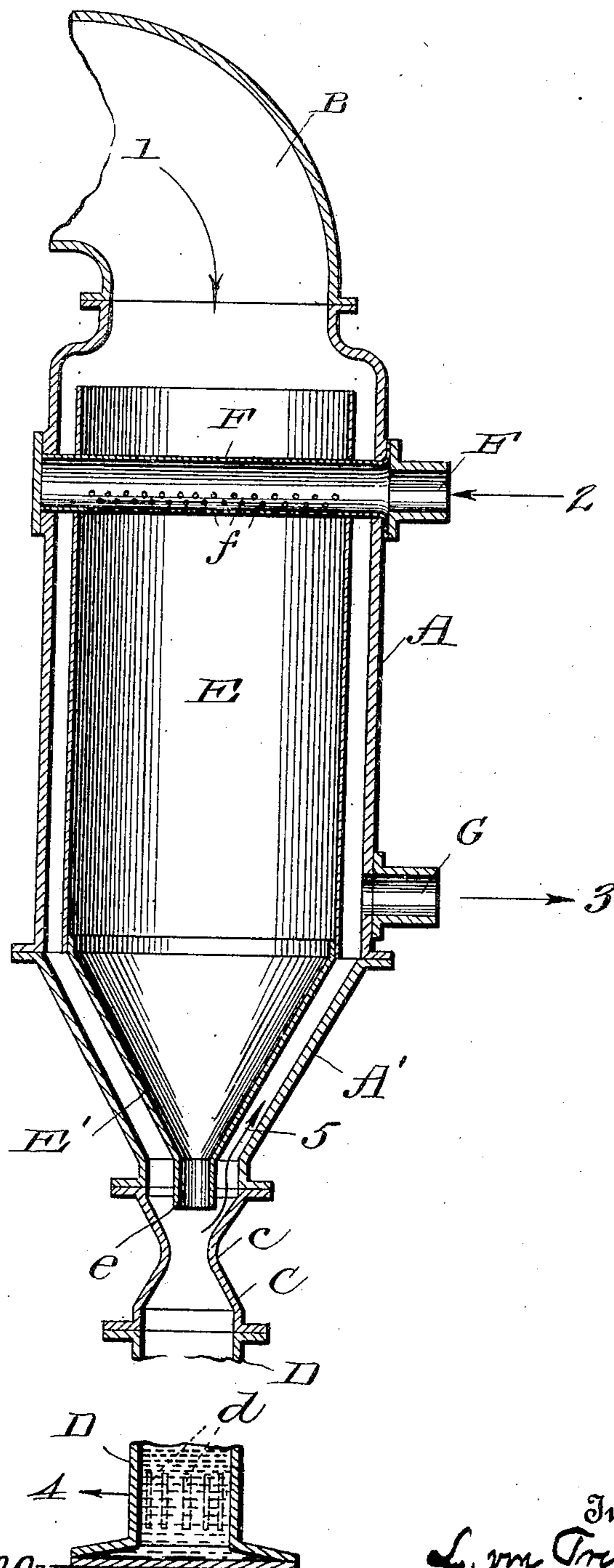


No. 820,325.

PATENTED MAY 8, 1906.

L. VON TRESCKOW.
JET CONDENSER.

APPLICATION FILED MAR. 5, 1906.



Witnesses

W. May Durrall.
Geo. A. Bepko

Inventor,
L. von Tresckow,
by William & Fisher,
Attorneys.

UNITED STATES PATENT OFFICE.

LEO VON TRESCKOW, OF NEW ORLEANS, LOUISIANA.

JET-CONDENSER.

No. 820,325.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed March 5, 1906. Serial No. 304,400.

To all whom it may concern:

Be it known that I, LEO VON TRESCKOW, a citizen of Germany, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Jet-Condensers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to improvements in jet-condensers; and it consists of an improved condenser in which the spray of water combines with the incoming vapor after the manner of an injector and in which no condensed water can secure access to the air-pump.

My invention will be understood by reference to the accompanying drawing, which shows a central vertical section through the condenser and in which the same parts are indicated by the same letters throughout the several views.

A represents the outer shell of the condenser, which terminates in a tapered bottom A', carried by the base C, which is preferably in the form of an hour-glass, indented as at c, and which rests upon the Torricellian water-leg D. This water-leg should be more than thirty-two feet high to enable the water to be drawn off through the slots d without any inrush of air.

The vapor is brought to the condenser from the evaporator (not shown) through the pipe B, which is preferably of less diameter than and opens immediately above the open end of the hollow cylinder E. The injection-water is sprayed through holes f in the bottom and sides of the pipe F, which pipe stretches across the shell of the condenser and passes through the walls of the hollow cylinder E, which cylinder has a funnel-shaped bottom E', terminating in a nozzle e.

In the operation of the device the vapor enters in the direction of the arrow 1 and, passing down into the cylinder E, mingles with the spray of water coming through the pipe F' in the direction of the arrow 2. The water condensing the vapor causes a strong draft downward through the funnel E' and the nozzle e, and the water keeps on down into the water-leg D and is carried off through the slots d in the direction of the arrow 4. Any air or vapor that may be entrained is

sucked up in the direction of the arrow 5 through the annular passage outside of the funnel E' and is carried by the pipe G to the air-pump, (not shown,) following the direction of the arrow 3. Thus it will be seen that the condenser is converted into an effective injector which will not only condense the vapors of the boiling liquid effectively, but will do this rapidly and economically. Furthermore, a highly efficient separation of the water from the dry air or uncondensed vapor is secured, and this will throw less work upon the vacuum-pump than is the case with the condensers now most generally in use. Furthermore, by regulating the supply of injected water, as by any well-known form of valve or by regulating the speed of the vacuum-pump, the vacuum and temperature may be readily and conveniently regulated. Moreover, by using the injector principle herein described it is believed that the same results in condensation may be secured with a less quantity of injected water than has hitherto been the case.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A condenser comprising a cylindrical shell terminating in a funnel-shaped bottom with a water-leg mounted beneath said bottom, and a vapor-pipe connected to the top of said shell, a hollow cylinder mounted concentric with said shell, and provided with a funnel-shaped bottom, the said cylinder and its bottom being spaced away from the interior of the shell, means for spraying water into the upper portion of said cylinder, and an exhaust-pipe connected to the annular space between said cylinder and said shell, substantially as described.

2. A condenser comprising a cylindrical shell terminating in a funnel-shaped bottom with a water-leg mounted beneath said bottom, and a vapor-pipe connected to the top of said shell, a hollow cylinder mounted concentric with said shell, and provided with a funnel-shaped bottom, the said cylinder and its bottom being spaced away from the interior of the shell, a pipe for supplying water extending through said shell and said hollow cylinder, and provided with a plurality of perforations opening into said hollow cylinder, and an exhaust-pipe connected to the annular space between said cylinder and said shell, substantially as described.

3. A condenser comprising an outer shell,

an inner shell mounted in said outer shell but spaced apart from the inner walls of said outer shell, the said inner shell being open at the top and provided with a tapered bottom with an opening therethrough, means for carrying the vapors to the top of said inner shell, means for spraying water into said inner shell, and a suction-pipe opening into the interior of said outer shell exterior to said inner shell, substantially as described.

4. A condenser comprising an outer shell, an inner shell mounted in said outer shell but spaced apart from the inner walls of said outer shell, the said inner shell being open at the top and provided with a tapered bottom with an opening therethrough, means for carrying the vapors to the top of said inner shell, means for spraying water into said inner shell, means for carrying off the liquids from the base of the inner shell, and a suction-pipe opening into the interior of said outer shell exterior to said inner shell, substantially as described.

5. A condenser comprising a cylindrical shell terminating in a funnel-shaped bottom with means for carrying off the liquids from the bottom of said shell; a vapor-pipe connected to the top of said shell, a hollow cylinder mounted concentric with said shell, and provided with a funnel-shaped bottom, the said cylinder and its bottom being spaced away from the interior of the shell, means for spraying water into the upper portion of said cylinder, and an exhaust-pipe connected to the annular space between said cylinder and said shell, substantially as described.

6. A condenser comprising a cylindrical shell terminating in a funnel-shaped bottom, with means for carrying off the liquids from the bottom of said shell, and a vapor-pipe connected to the top of said shell; a hollow cylinder mounted concentric with said shell, and provided with a funnel-shaped bottom, the said cylinder and its bottom being spaced away from the interior of the shell; a pipe for supplying water extending through said shell and said hollow cylinder; and provided with a plurality of perforations opening into said hollow cylinder, and an exhaust-pipe connected to the annular space between said cylinder and said shell, substantially as described.

7. A condenser comprising a shell, a hollow cylinder mounted in said shell but spaced apart from the inner walls of said shell, the said hollow cylinder being open at the top and provided with a funnel-shaped bottom, means for carrying the vapors to the top of said hollow cylinder, and for carrying off the liquids from the base of said shell, means for spraying water into said hollow cylinder, and a suction-pipe opening into the interior of said shell exterior to said hollow cylinder, substantially as described.

8. A condenser comprising a cylindrical

shell terminating in a funnel-shaped bottom with a water-leg mounted beneath said bottom, and a vapor-pipe connected to the top of said shell, a hollow cylinder open at the top mounted concentric with said shell, and provided with a funnel-shaped bottom, the said cylinder being mounted beneath said vapor-pipe, and having a diameter greater than that of said vapor-pipe, the said cylinder and its bottom being spaced away from the interior of the shell, means for spraying water into the upper portion of said cylinder, and an exhaust-pipe connected to the annular space between said cylinder and said shell, substantially as described.

9. A condenser comprising a cylindrical shell terminating in a funnel-shaped bottom with a water-leg mounted beneath said bottom, and a vapor-pipe connected to the top of said shell, a hollow cylinder open at the top mounted concentric with said shell, and provided with a funnel-shaped bottom, the said cylinder being mounted beneath said vapor-pipe, and having a diameter greater than that of said vapor-pipe, the said cylinder and its bottom being spaced away from the interior of the shell, a pipe for supplying water extending through said shell and said hollow cylinder, and provided with a plurality of perforations opening into said hollow cylinder, and an exhaust-pipe connected to the annular space between said cylinder and said shell, substantially as described.

10. A condenser comprising an outer shell, an inner shell mounted in said outer shell but spaced apart from the inner walls of said outer shell, the said inner shell being open at the top and provided with a tapered bottom with a downwardly-disposed nozzle, means for carrying the vapor to the top of said inner shell, means for spraying water into said inner shell, and a suction-pipe opening into the interior of said outer shell exterior to said inner shell, substantially as described.

11. A condenser comprising an outer shell, an inner shell mounted in said outer shell but spaced apart from the inner walls of said outer shell, the said inner shell being open at the top and provided with a tapered bottom with a downwardly-disposed nozzle, means for carrying the vapor to the top of said inner shell, means for spraying water into said inner shell, means for carrying off the liquids from the base of the outer shell, and a suction-pipe opening into the interior of said outer shell exterior to said inner shell, substantially as described.

12. A condenser comprising a cylindrical shell terminating in a funnel-shaped bottom with means for carrying off the liquids from the bottom of said shell; a vapor-pipe connected to the top of said shell, a hollow cylinder mounted concentric with said shell, and provided with a funnel-shaped bottom, and a nozzle opening downward from said bottom,

the said cylinder and its bottom being spaced away from the interior of the shell, means for spraying water into the upper portion of said cylinder, and an exhaust-pipe connected to the annular space between said cylinder and said shell, substantially as described.

13. A condenser comprising a cylindrical shell terminating in a funnel-shaped bottom, with means for carrying off the liquids from the bottom of said shell, and a vapor-pipe connected to the top of said shell, a hollow cylinder mounted concentric with said shell, and provided with a funnel-shaped bottom, and a downwardly-disposed nozzle, the said cylinder and its bottom being spaced away from the interior of the shell, a pipe for supplying water extending through said shell and said hollow cylinder, and provided with a plurality of perforations opening into said hollow cylinder, and an exhaust-pipe connected to the annular space between said cyl-

inder and said shell, substantially as described.

14. A condenser comprising a shell, a hollow cylinder mounted in said shell but spaced apart from the inner walls of said shell, the said hollow cylinder being open at the top and provided with a funnel-shaped bottom with a downwardly-disposed nozzle, means for carrying the vapors to the top of said hollow cylinder, and for carrying off the liquids from the base of said shell, means for spraying water into said hollow cylinder, and a suction-pipe opening into the interior of said shell exterior to said hollow cylinder, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LEO VON TRESCROW.

Witnesses:

C. G. SMALLHOUSE,
D. S. M. JOHNSON.