

No. 762,801.

PATENTED JUNE 14, 1904.

J. F. A. BRUUN.
INJECTOR CONDENSER.

APPLICATION FILED JULY 30, 1903.

NO MODEL.

Fig. 1.

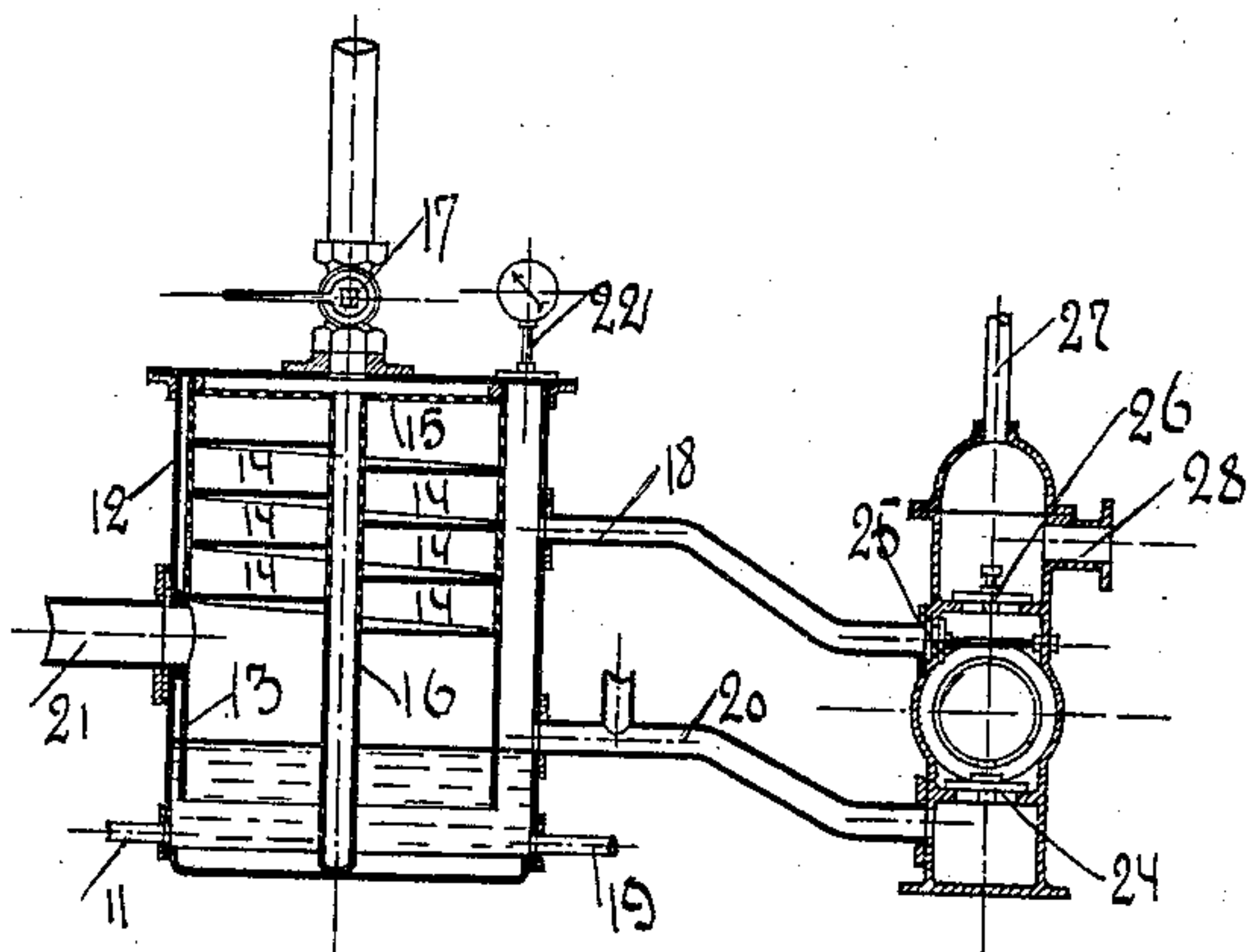
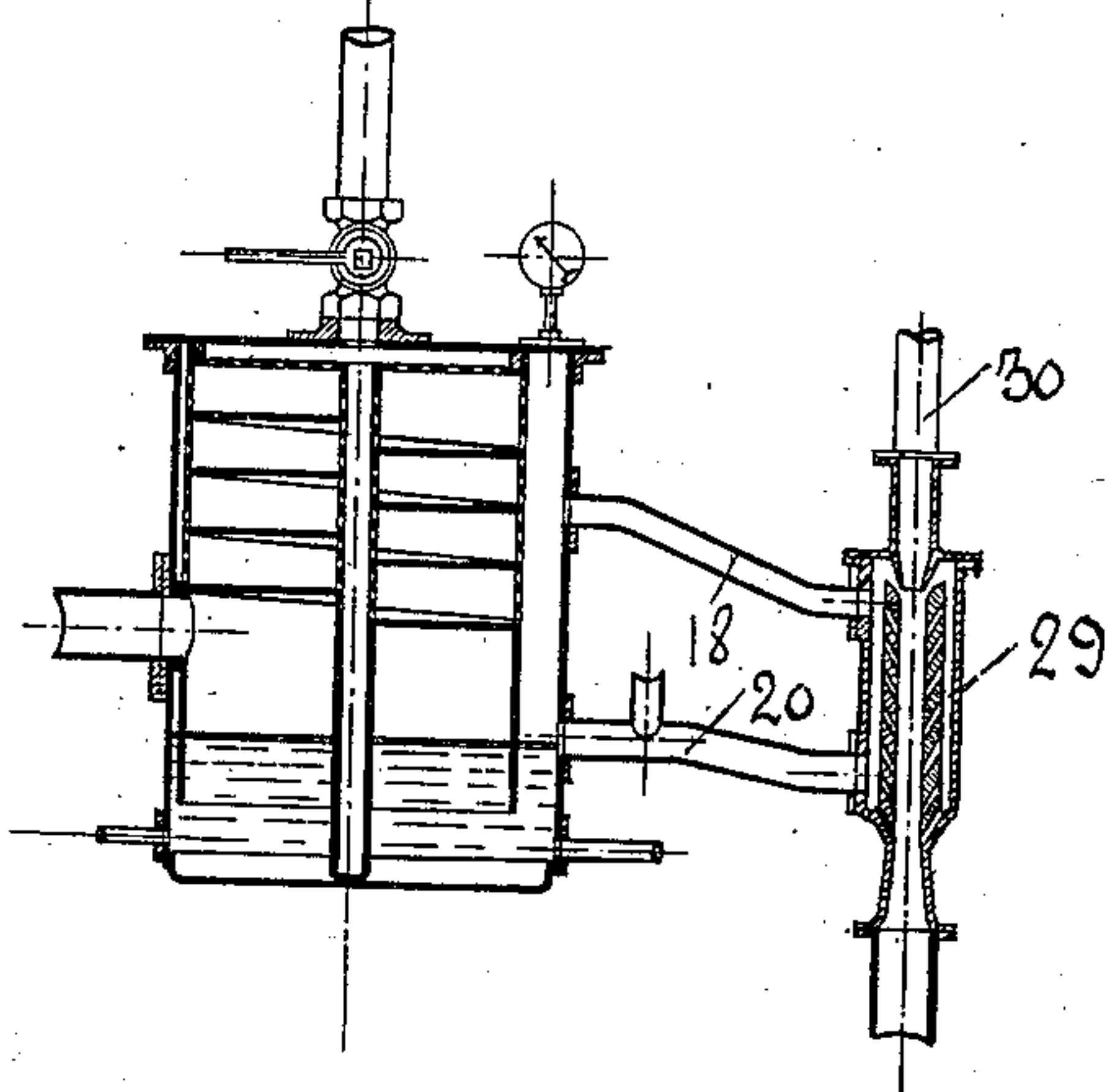


Fig. 2.



Witnesses:

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by
Maurice Cameron Lewis, Atty.

UNITED STATES PATENT OFFICE.

JOHAN FREDERIK ADOLPH BRUUN, OF COPENHAGEN, DENMARK.

INJECTOR-CONDENSER.

SPECIFICATION forming part of Letters Patent No. 762,801, dated June 14, 1904.

Application filed July 30, 1903. Serial No. 167,612. (No model.)

To all whom it may concern:

Be it known that I, JOHAN FREDERIK ADOLPH BRUUN, of Copenhagen, Denmark, have invented a new and useful Improvement in Injector-Condensers, which invention is fully set forth in the following specification.

The present invention relates to a condenser for condensing the exhaust-steam of steam-engines, by which invention a particularly complete effect of the cooling-water is obtained.

In the accompanying drawings, illustrating one embodiment of the inventive idea, Figure 1 shows in vertical section the condenser connected with an air-pump, and Fig. 2 shows in vertical section the condenser connected with an ejector.

Referring to said drawings, 12 is a closed cylinder, into which another cylinder 13, perforated in its upper half, is eccentrically inserted, of which cylinder 13 the upper edge is connected with the first cylinder 12 and carries a perforated cover 15. Through the cylinder 13 and the cover 15 passes a tube 16, perforated in its upper part, which by a winding way 14 is connected with the perforated part of the cylinder 13. A cooling-water conduit with a cock 17 passes into the chamber beyond the cover 15. Through this conduit the cold water enters in order to be squirted through the holes in the cover 15 and in the cylinder 16 into the winding way 14, through which the steam ascends. During the condensation the air, owing to the centrifugal force, is forced out through the holes in the cylinder 13 into the surrounding chamber, from which a tube 18 leads to the air-pump, (or to an ejector.) The tube 20, placed at the level of the water in the condenser, leads to the air-pump, carrying off the superfluous water from the feeding-pump. Into this conduit condensing-water coming from elsewhere may also be led.

22 shows a vacuum-meter.

Fig. 1 shows the condenser connected with an air-pump provided, first, at its lower part with the vacuum-valve 24 for water, which valve is connected with the water-chamber of

the condenser through the tube 20; second, at its upper part with the vacuum-valve 25 for air, which valve is connected with the air-chamber of the condenser through the tube 27, and, third, with the pressure-valve 26. The air is forced out through the tube 27, the water through the tube 28.

Fig. 2 shows the condenser connected with an ejector 29. This ejector is connected, respectively, with the air and the water chamber of the condenser through the tubes 18 and 20. The stream of cold water enters through the tube 30 above and goes out below, carrying off air and water. This condenser only wants very little feeding with cold water and so little work of the air-pump that a relatively very small pump or even but an ejector is wanted to produce a good vacuum.

What I claim is—

1. In a condenser, a chamber, a spiral conduit or passage having a surrounding wall or walls and located in said chamber, a steam-inlet at one end of said conduit, and a condensing-liquid inlet at the other end thereof, causing the water and steam to travel in opposite directions in said conduit.

2. In a condenser, a chamber, a spiral conduit or passage located in said chamber and having a surrounding wall or walls, the outer or peripheral wall of the conduit being perforated, a steam-inlet, and a condensing-liquid inlet to said conduit.

3. In a condenser, a chamber, a spiral conduit or passage located in said chamber and having a surrounding wall or walls, a perforated cylinder in the chamber forming the outer or peripheral wall of said conduit, a perforated cap or cover on said cylinder through which condensing liquid is introduced into the spiral conduit, and a steam-inlet to said conduit.

4. In a condenser, a chamber, a perforated cylinder in said chamber, a spiral way in said cylinder in which steam and condensing liquid are adapted to travel in opposite directions, and suction means for withdrawing air from said chamber.

5. In a condenser, a chamber, a spiral conduit in said chamber through which steam and a condensing liquid are adapted to pass in opposite directions, said conduit having a perforated outer or peripheral wall, and suction means for withdrawing air from said chamber.
In testimony whereof I have signed this

specification in the presence of two subscribing witnesses.

JOHAN FREDERIK ADOLPH BRUUN.

Witnesses:

JULIUS OLUF SÖRENSEN,
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