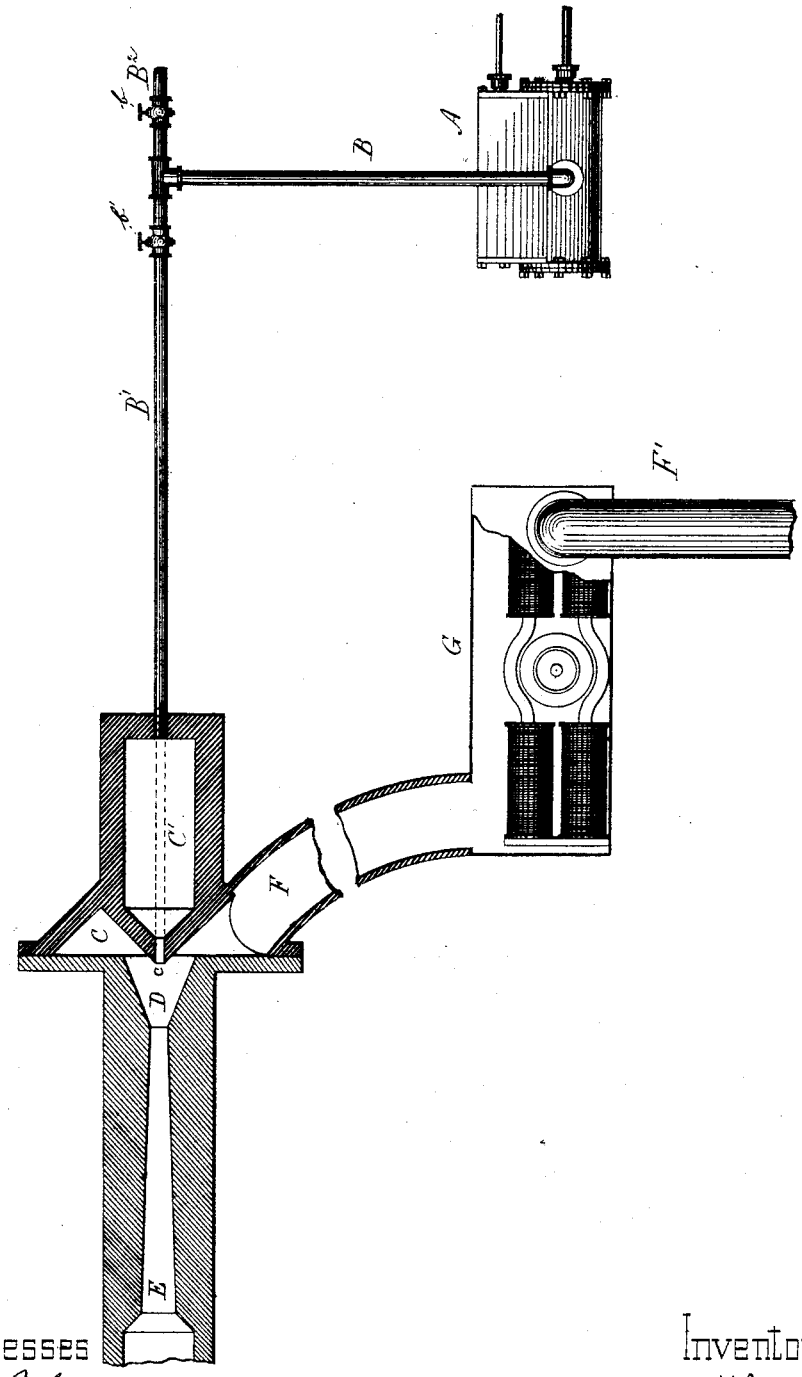
(No Model.)

J. H. IRWIN.

COOLING DEVICE FOR ELECTRICAL GENERATORS.

No. 262,422. Patented Aug. 8, 1882.



Witnesses
Charles R. Searle
Wm. A. Lowe

Inventor
John H. Irwin.
By A. M. Pierce,
Atty.

UNITED STATES PATENT OFFICE.

JOHN H. IRWIN, OF MORTON, PENNSYLVANIA.

COOLING DEVICE FOR ELECTRICAL GENERATORS.

SPECIFICATION forming part of Letters Patent No. 262,422, dated August 8, 1882.

Application filed April 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. IRWIN, of Morton, county of Delaware, and State of Pennsylvania, have invented certain new and useful Improvements in Cooling Devices for Electrical Generators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention relates especially to devices employed for cooling purposes, particularly adapted for cooling electric generators, and has for its object the production of an apparatus whereby the exhaust-steam from an engine may be utilized for this purpose; and it consists essentially in connecting the exhaust-pipe leading from the engine with an ejector, said ejector being constructed in accordance with the principles set forth in Letters Patent No. 217,109, granted to me for an improvement in "ejectors," dated July 1, 1879, said ejector being adapted and arranged to draw a current of cool air, water, or other fluid through a box, receptacle, or chamber, keeping the same constantly flowing therethrough; and my invention involves certain novel and useful combinations or arrangements of parts and peculiarities of construction and operation, all of which will be hereinafter first fully described, and then pointed out in the claims.

The accompanying drawing shows a vertical longitudinal section of my device.

A represents the steam chest and cylinder of a steam-engine, and B the exhaust-pipe leading to a T, having connection with pipes B′ and B², wherein are located valves *b* and *b′*. Pipe B² may lead to the open atmosphere, in order to provide an outlet for the exhaust-steam from the engine when the cooling apparatus is not in use.

C is the steam-cone of the ejector, and *c* is the steam-jet orifice.

C′ is a chamber back of steam-cone C. Pipe B′ may extend through the chamber to the steam-jet orifice, as indicated by the dotted lines, or terminate at the extremity of said chamber opposite to the steam-cone.

D is the condensing-chamber and discharge-tube, having communication with the external atmosphere by means of passage E.

F is a pipe leading from the condensing-chamber, through which air or other fluid is drawn by the action of the steam.

G is a box, receptacle, or chamber, with which pipe F communicates, said receptacle being substantially closed, with the exception of pipe F′, leading therefrom to the open atmosphere or to a chamber wherein the cooling-fluid may be artificially reduced in temperature before entering the receptacle. In this chamber or receptacle G, I place the electric generator to be cooled; or, what is the same thing, I place a jacket or covering around it, making provision for the electrical conductors and driving gear or mechanism to pass through its walls by means of suitable openings in the same. In this device as thus constructed an economy is effected by making use of the exhaust-steam to reduce the temperature of the generator by creating a circulation of cool air over and through its parts, without the use of expensive machinery, necessitating expense in keeping the same in motion. Fans, steam-pumps, &c., actuated by the engine, must of necessity absorb some force, and therefore increase the cost of generating the electric current.

The inlet-pipe connected with the circulating-chamber may terminate in a reservoir of cold air or water. Where water is employed care must be taken to thoroughly insulate the generator by means of an interior casing, or by other means which will effectually prevent direct contact of the generator with the water. Care should also be exercised in constructing the circulating-chamber of small dimensions, so that the velocity of the circulating-fluid will be rapid therethrough, and the inlet and outlet thereof should be large in proportion to the chamber, thus insuring perfect circulation, one of the main objects being to circulate the fluid quickly through the chamber, absorbing and carrying out in its passage the units of heat produced by the action of the generator.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A cooling device wherein the exhaust-steam from an engine passes through the steam-pipe of an ejector of the character described, whose branch pipe is connected with a chamber or receptacle containing an electric generator, which chamber has free communication

with the open air, whereby a constant current of air is drawn through the chamber and through the electric generator, as set forth.

2. The combination, in a cooling device, of an ejector of the character described, a chamber or receptacle open at one end to the air, to which chamber the branch pipe of the ejector is attached, and an electric generator placed in said chamber or receptacle, substantially as and for the purposes set forth.

3. In combination with an electric generator, a chamber or receptacle in which the generator is placed, said chamber being connected with an air or fluid supply, and an ejector of the character described, operated by exhaust-steam, all arranged as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

JOHN H. IRWIN.

Witnesses:
F. W. HANAFORD,
A. M. PIERCE.