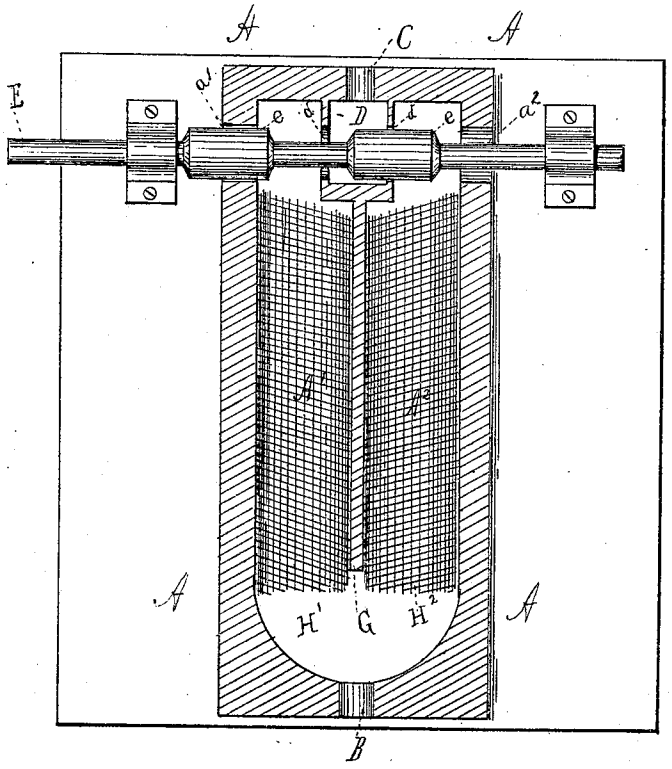
J. S. BALDWIN.

Condensing Apparatus for Steam-Engines.

No. 146,859. Patented Jan. 27, 1874.



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JAMES S. BALDWIN, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN CONDENSING APPARATUS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **146,859**, dated January 27, 1874; application filed August 26, 1873.

To all whom it may concern:

Be it known that I, JAMES S. BALDWIN, of Newark, county of Essex and State of New Jersey, have invented certain new and useful Improvements in Condensing Apparatus for Steam-Engines, of which the following is a specification:

This invention relates to a condensing apparatus designed more particularly for application to traction-engines, street-railroad cars, and similar vehicles: and it consists in a casing or chest divided by a longitudinal partition into two compartments, in each of which is placed a condenser consisting of a roll of perforated sheet metal or wire-gauze or net-work, the casing having at one end an opening for the admission of a current of air, and at the opposite end an opening for the admission of steam, and at the same end a chamber with a piston-valve working therein, whose longitudinal movement in opposite directions changes the direction of the currents of steam and air. The apparatus is so placed with relation to the engine that the exhaust steam passes through it, and is condensed without noise. Instead of the piston-valve, any suitable form of valve may be used.

The accompanying drawing represents a horizontal sectional view of my improved condensing apparatus.

The chest or casing A is made of plate metal, and may be of any suitable form, preferably shallow and oblong. At one end is an opening, B, for the admission of a current of air, to be supplied by a suitable blower, if necessary. At the opposite end is an opening, C, which is connected, by means of pipes, with the exhaust-ports of the engine. Surrounding the opening C, and extending a short distance into the casing, is a chamber, D, having on each side a circular opening, *d*, communicating with the inside of the casing. In the sides of the casing are two circular openings, a^1 a^2, directly in line with the openings *d d*, and of the same dimensions. In these four circular openings a^1 a^2 *d d* a piston-valve, E, is arranged to slide transversely of the casing. The piston-valve E consists of a rod or shaft, with two cylindrical elongated pistons, *e e*, attached thereto or formed thereon, corresponding in size with the circular openings a^1 a^2 *d d*. The length of each piston is about equal to one-third of the width of the casing, and their location on the rod or shaft is such that a space is left between them somewhat greater than the width of the chamber D. The piston-valve is provided with means for sliding it in opposite directions, and it may be made to move automatically or otherwise, as desired. A longitudinal partition, G, extends from the inner end wall of the chamber D to a short distance from the air-passage B, dividing the casing A into two compartments, A^1 A^2, communicating with each other at the end opposite the chamber D. In these two compartments are placed the condensers H^1 H^2, consisting of rolls of perforated sheet metal or wire-gauze or net-work.

The operation is as follows: The current of air enters continuously through the air-passage B, and the steam from the exhaust-pipes enters the chamber D through the steam-passage C. When the piston-valve is in the position shown in full lines, the steam passes from the chamber D into the compartment A^1, and is condensed by coming in contact with the condenser H^1; while, at the same time, the current of air passes through the compartment A^2, cooling the condenser H^2, and escaping through the open port a^2. When the condenser H^1 has become too hot to condense the steam, the position of the piston-valve is reversed, automatically or otherwise, and the steam passes into the compartment A^2, and the air passes through the compartment A^1 and escapes through the port a^1. The water resulting from condensation is carried off by any suitable means.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of condensers H^1 H^2, consisting of rolls of perforated sheet metal, wire-gauze, or metallic net-work, with the casing A, arranged as and for the purpose specified.

2. The casing A divided into two compartments, and provided with the air-passage B, steam-passage C, piston E, and chamber D, substantially as shown and described.

3. The piston-valve E, in combination with the casing A and chamber D, substantially as shown and described.

In testimony that I claim the foregoing as my invention, I hereunto affix my signature this 23d day of August, 1873.

JAMES S. BALDWIN.

Witnesses:

ALPHEUS STRUBLE,

BENJ. S. MOREHOUSE.