

Rice & Scott,

Steam Condenser.

No. 106,206.

Patented Aug. 9, 1870.

Fig. 1.

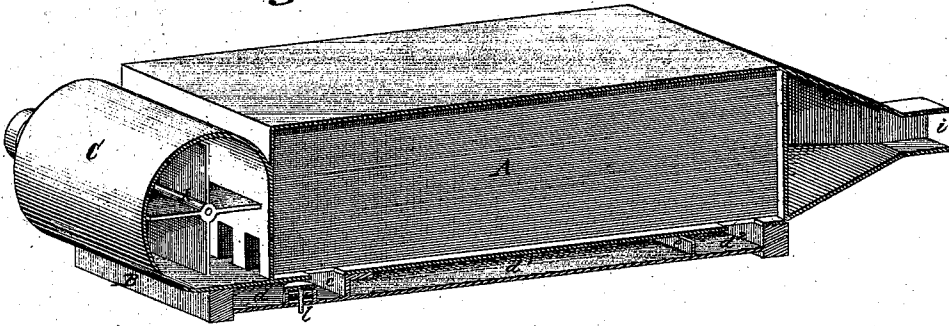


Fig. 2.

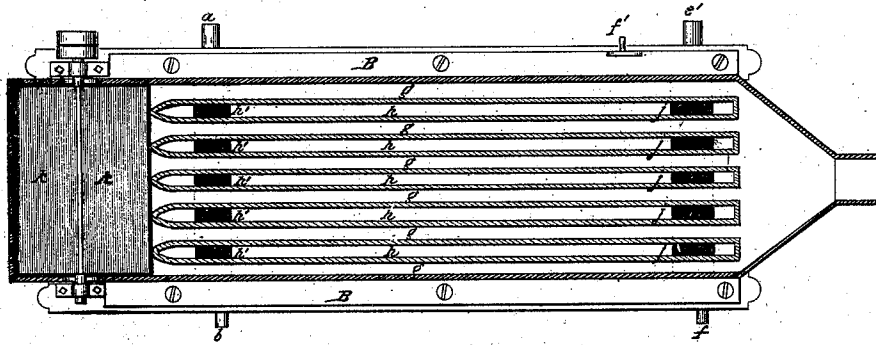
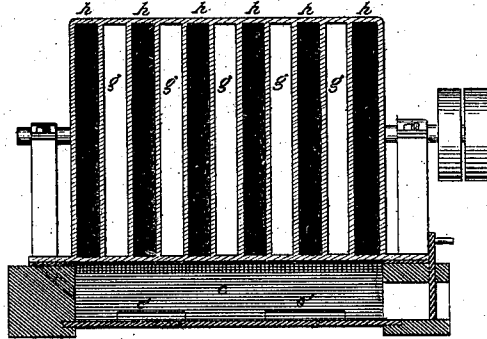


Fig. 3.



Attest.
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Att'y in fact.

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PETER J. RICE, OF ASHTABULA, AND DAVID A. SCOTT, OF CINCINNATI, OHIO.

Letters Patent No. 106,206, dated August 9, 1870.

IMPROVEMENT IN AIR-HEATING STEAM-CONDENSERS.

The Schedule referred to in these Letters Patent and making part of the same.

We, PETER J. RICE, of Ashtabula, in the county of Ashtabula and State of Ohio, and DAVID A. SCOTT, of Cincinnati, in the county of Hamilton and State aforesaid, have invented certain Improvements in Air-Heaters, Steam-Condensers, and Precipitators, of which the following is a specification.

Nature and Object of the Invention.

The nature of this invention relates to air-heaters and condensers, and precipitators, constructed and arranged with each other, so as to be used for either, any, or all of these purposes, as desired.

This invention consists of a heater and condenser, composed of steam-passages, surrounded by air-passages, through which a current of air is forced, to absorb the heat from escape steam, and apartments in the condenser to introduce water, to aid in the condensation of steam, and for heating the water thus introduced.

The condenser and heater, combined with the precipitator, are so arranged that the escape steam may be deprived of all or any portion of its heat, which may be utilized in the artificial current of air driven through the air-passages, and entirely used for heating or drying apartments, or a portion of it may be retained in the steam condensed, and utilized in the feed-water, or the steam may be condensed and the heat utilized in distilling feed-water only, the combined device being adapted for use, either as an air-heater, condenser, or precipitator, any two or all of these, as may be desired.

Description of the Accompanying Drawing.

Figure I is a perspective sectional view of the machine, embodying our invention.

Figure II is a horizontal section of fig. I, divided on the axial line of the fan, showing the air and steam-passages.

Figure III is a vertical cross-section of fig. I through c.

General Description.

A is the air-heater and condenser, the case of which should be made of wood, so as to resist the escape of air.

B is the precipitator, the frame of which should be substantially constructed of wood, and the bottom of galvanized iron, or some other suitable material.

C is the fan-case, which may be made of wood or metal, in one piece, with the case of the air-heater and condenser A, or may be made separate, and attached by proper appliances.

a is a steam-pipe connecting with the engine, through which steam is received into the precipitator.

b is a water-pipe, for the reception of cold water, as desired.

c is a division in the precipitator B, which is made tight by packing or otherwise at the top, where it comes in contact with the bottom of the air-heater and condenser A, and has two openings, e e, at the bottom, to allow of the escape of the water into division d.

d is an apartment of the precipitator B, into which the steam, and, when necessary or desired, cold water are received, and in which the water is heated by its contact with the steam.

d¹ is another apartment of the precipitator B, into which the water is received from d, after having been acted upon by the steam, and the bottom of this apartment has a downward inclination from e to e, so as to carry all sediment toward the opening f.

e is another division of the precipitator B, made water-tight at the bottom, with an opening across the top, between it and the bottom of the air-heater and condenser A, to allow the water entering d¹ from d to flow over into d², and should be high enough to admit of a deposit of the sediment from the water to settle in d¹.

d² is a receiver of the precipitator B, for the reception of the distilled water from d¹ and the condensed steam from the condenser A, as well as any steam which may not have become condensed, while passing through the condenser. This receiver may be made shallow, with effluxion-pipes, to carry off the water and steam, as received, or may be any depth and size desired.

e is an effluxion-pipe, for the discharge of the distilled water and condensed steam.

f is an escape-pipe, for the discharge of any steam that may have passed through the condenser, and should be near the upper edge of the precipitator-frame, but need not be located as shown in drawing.

f¹ is an opening, to be used in removing the sediment from d¹, so arranged as to be close fitting, when not required to be open.

gg are air-passages, surrounding the steam-passages h h, through which an artificial current of air is forced at any desired speed toward and through the outlet i, and, having been heated in its passage, may be utilized in the warming or drying of apartments.

h h are steam-flues, surrounded by the air-passages g g, into which steam is received from d, through the openings k k, which connect these steam-flues with the apartment d of the precipitator B.

The steam is carried through these flues until it becomes condensed, when it discharges itself in water through the openings j j into the receiver d².

These alternate steam and air-passages may be made of galvanized iron, or any other suitable conductor of heat. They should be perfectly air and steam-tight, and extend the entire height and length of the air-heater and condenser.

k is a fan, for forcing air through the air-passages

g, and it receives the air to be so forced through proper openings surrounding its axle.

j j are openings in the steam-flues, for the escape of the condensed steam, or any steam which may remain uncondensed, into the receiver *d'*.

k k are openings, through which the steam enters the steam-flues *h h* from *d*.

l is a safety-valve, for the introduction of air, when the steam is shut off. The case of the air-heater and condenser A and the case of the precipitator B may be made in one, or they may be separate and fastened together by any proper appliances, so as to prevent the escape of water or steam.

Claims.

We claim as our invention—

1. The precipitator B, with the compartments *d d'*, combined with the condenser and radiator A, composed of flues *h h* and apertures *k* and *j*, air-passages *g g*, and fan K, substantially as herein set forth.

2. The condenser A, with the flues *h h*, apertures *k* and *j*, and air-passages *g*, combined with the precipitator B, divided into the compartments *d d'*, all constructed and arranged substantially as herein set forth.

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Witnesses:

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