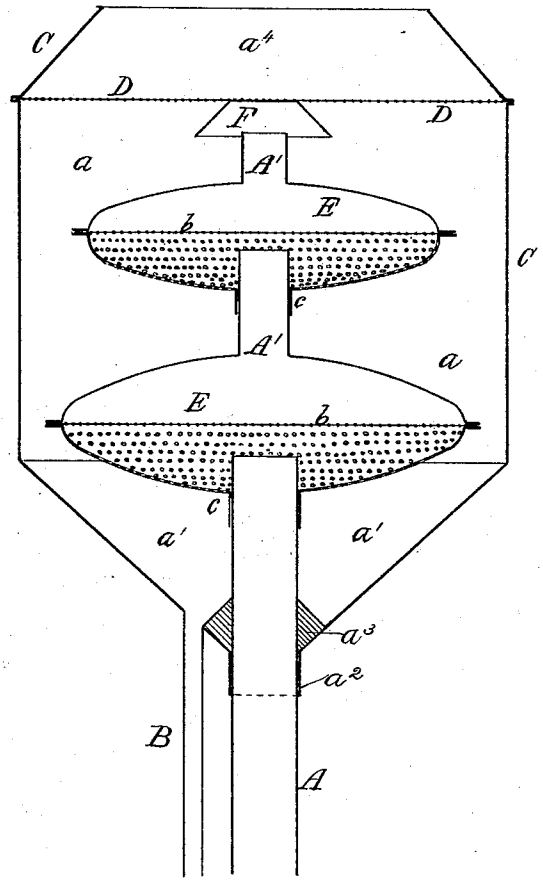
(No Model.)

T. BURKHARD.

TRAP FOR EXHAUST STEAM PIPES.

No. 393,614. Patented Nov. 27, 1888.



Witnesses.
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UNITED STATES PATENT OFFICE.

THOMAS BURKHARD, OF BROOKLYN, NEW YORK.

TRAP FOR EXHAUST-STEAM PIPES.

SPECIFICATION forming part of Letters Patent No. 393,614, dated November 27, 1888.

Application filed May 23, 1888. Serial No. 274,859. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BURKHARD, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Traps for Exhaust-Steam Pipes, of which the following is a specification.

My invention relates to devices for condensing the steam at the end of the exhaust-pipe, and for collecting and discharging the water of condensation.

My invention consists of certain details of construction, which I shall now proceed to describe, and I will then point out in the claims the novel features of the invention.

The accompanying drawing is a vertical longitudinal section of a trap embodying my invention.

A is the exhaust-pipe.

B is the discharge-pipe for the water of condensation.

C is the shell or casing formed of metallic plates, preferably of sheet-iron. The casing C consists of a cylindrical body part, *a*, terminating below in a conical or funnel-shaped bottom, *a'*, having a downwardly-projecting ring or tube, a^2, and a brace-ring, a^3. The casing C terminates above in a dome, a^4, of the form of a truncated hollow cone or inverted funnel open at the top.

The exhaust-pipe passes upward through the ring or tube a^2 and brace-ring a^3 and fits snugly in both, the joint being made tight to prevent leaking. The brace-ring a^3 is triangular in section and forms with the sides of the funnel-shaped bottom *a'* a gutter for conducting the water to the discharge-pipe B.

Extending across the upper end of the cylindrical part *a* of the casing C is a perforated diaphragm which may be formed of a metallic sheet or plate or of woven wire-cloth or of conveniently-arranged wires or rods. I prefer to employ for the purpose the wire-cloth or wire-gauze of commerce.

The length and diameter of the cylindrical part *a* of the casing will correspond to the size and number of the heads E employed. E E are the heads. Each head E consists of a circular chamber formed of sheet metal and divided into two compartments by a perforated metallic diaphragm, *b*, similar to the diaphragm D, hereinbefore described. The walls or shells of the heads E are perforated below the diaphragm *b*, and have a central opening and a downwardly-projecting tube, *c*, to receive from below the extremity of the exhaust-pipe, which pipe terminates below the diaphragm *b*. The upper part of the shell of the heads E has a central opening from which projects an upward extension, A', of the exhaust-pipe. The heads virtually constitute enlargements of the exhaust-pipe, the sectional area of the exhaust-pipe being reduced as compared with the original area after each of such enlargements. The upper or final extremity of the exhaust-pipe discharges its steam into an inverted-basin-shaped deflector, F.

In the example of my invention represented in the drawing two heads E are employed, which are elliptical in vertical section and circular in horizontal section, the upper and lower halves of each being flanged and basin-shaped, holding the diaphragm *b* between the flanges.

The steam escaping from the exhaust-pipe below the diaphragms *b* is partly deflected downward and forced through the perforated bottoms of the heads and partly escapes upward through the perforations of the diaphragms *b*. That which escapes through the perforated bottoms comes in contact with the cool sides of the casing C, and that which passes through the diaphragms *b* is partly condensed by contact with the inner surface of the upper part of the head and partly escapes through the upper portions of the exhaust-pipe. After passing out at the upper end of the exhaust-pipe it is finally deflected downward and outward by the deflector F and passes up through the perforated diaphragm D and out through the open top of the dome a^4 into the open air. The water of condensation produced during the passage of the steam through the apparatus finds its way downward to the discharge-pipe B.

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

1. The combination, with a casing, of an exhaust-pipe, a head, E, into the lower part of which said exhaust-pipe extends, a horizontally-arranged perforated diaphragm situated above the opening of said exhaust-pipe and dividing said head into compartments, the lower portion of said head being perforated, substantially as specified.

2. The combination, with a casing, of an exhaust-pipe, a head, E, into the lower part of which said exhaust-pipe extends, a horizontally-arranged perforated diaphragm situated above the opening of said exhaust-pipe and dividing said head into compartments, the lower portion of said head being perforated and the upper portion being imperforate, substantially as specified.

3. The combination, with a casing, of two heads situated one above the other, horizontally-extending perforated diaphragms in each of said heads dividing the same into compartments, the lower portion of each of said heads being perforated, an exhaust-pipe opening into the lower of said heads below said diaphragm and having an extension from the lower of said heads opening into the upper of said heads below the diaphragm in the latter, substantially as specified.

4. In a trap for exhaust-steam pipes, the combination, with the exhaust-pipe having a head, E, containing a perforated diaphragm, *b*, and having a perforated bottom and an upward extension of the exhaust-pipe, of a deflector, F, surrounding and above said extension, substantially as set forth.

5. In a trap for exhaust-steam pipes, the combination, with the exhaust-pipe A, having a head, E, with an upward pipe extension, A′, and containing a perforated diaphragm, *b*, and a deflector, F, above and concentric with said extension A′, of a casing, C, provided with a perforated diaphragm, D, and a discharge-pipe, B, substantially as set forth.

THOMAS BURKHARD.

Witnesses:
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