(No Model.)

A. BURLINGAME.

STEAM SEPARATOR.

No. 550,586. Patented Dec. 3, 1895.

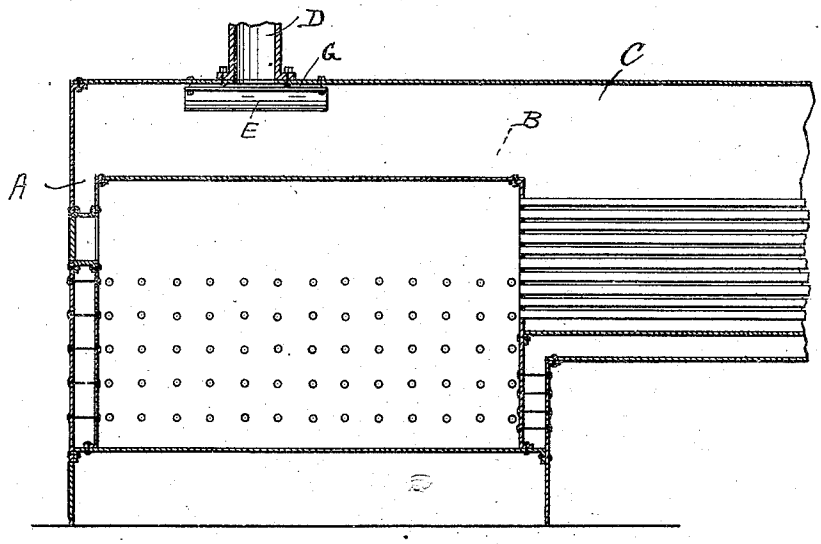

Fig. 1.

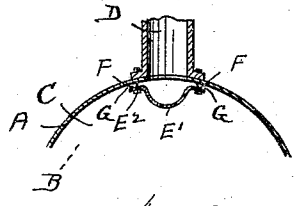

Fig. 2.

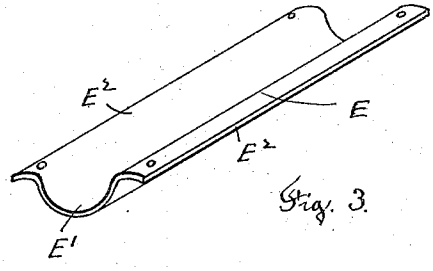

Fig. 3.

Witnesses
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ABRAHAM BURLINGAME, OF WORCESTER, MASSACHUSETTS.

STEAM-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 550,586, dated December 3, 1895.

Application filed December 13, 1894. Serial No. 531,743. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM BURLINGAME, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Steam-Separators for Steam-Boilers, of which the following is a specification, reference being had to the accompanying drawings, representing my improved steam-separator as applied to a boiler, and in which—

Figure 1 is a central sectional view of the boiler having one of my improved steam-separators attached thereto. Fig. 2 represents a transverse sectional view of a portion of the boiler-casing on line 2 2, Fig. 1; and Fig. 3 is a perspective view of the steam-separator detached from the boiler.

Similar letters refer to similar parts in the different figures.

The object of my present invention is to provide a steam-boiler with a device which shall allow dry steam to be taken therefrom at a point above and near the water-line in the boiler.

In the accompanying drawings, A denotes the boiler, (shown in central sectional view,) and B represents the high-water line in the boiler, and C the steam-space above the water, from which the steam is taken by a pipe D. When steam is taken from the steam-space of a boiler at a point near the water-line, it is liable to be impregnated with water in the form of a spray raised from the water-surface by the current of steam, forming wet steam. To obviate this it is necessary to construct a dome upon the top of the boiler inclosing a steam-chamber, from the top of which steam is taken at sufficient distance from the water-line in the boiler to prevent the moistening of the steam. I accomplish this result by suspending a plate E directly beneath the steam-pipe B, so that the current of steam passing upward through the pipe D will be received at the edges of the plate E, thereby obviating the tendency of the steam-current to raise a spray from the water in the space below the pipe D.

The plate E, which I term the "separator," consists of a rectangular piece of metal whose length is considerable in excess of its width and which is placed lengthwise the boiler, with the center of the plate beneath the opening of the pipe D.

The plate E is curved or bent downward centrally throughout its length, as at E′, so as to form a channel lengthwise the plate for the currents of steam, which are taken from the steam-space C at opposite ends of the plate and passing toward the center of the plate unite in a single current at the pipe D.

The plate E is suspended from the inner side of the boiler by means of the bolts F, which connect the separator-plate E at its four corners with the shell of the boiler. Washers F′ are inserted between the shell of the boiler and the separator-plate, so as to form an open space between the shell of the boiler and the two parallel edges E^2 of the separator-plate, in order to allow steam to be admitted between the boiler-shell and the edges of the plate.

By means of the separator-plate E the steam which is carried from the boiler through the pipe D is taken from the steam-space C in a thin sheet through the open spaces G G, formed between the shell of the boiler and the parallel edges E^2 of the separator-plate, and also in two currents flowing from either end of the separator-plate along the trough-shaped depression formed by bending the plate at E′, thereby distributing the movement of the steam in the steam-space C over a larger area and protecting the surface of the water in the boiler from the influence of a strong upward current, such as would be generated by the movement of the steam directly from the steam-space C into the pipe D, and preventing the impregnating of the steam with a water-spray generated by the movement of the steam over and in contact with the surface of the boiler.

I am aware that separator-plates curved in trough shape and suspended beneath a steam-pipe leading from the boiler have been heretofore known, and I do not claim such broadly; but such trough-shaped separator-plates have had their ends closed, so as to receive steam only at their edges, whereas in the form of separator-plate described above the greater portion of the steam taken from the boiler is taken at the ends of the plate E, so as to conduct the current of steam horizontally half the length of the separator-plate, and any water which

may be carried by the steam into the ends of the plate is taken out by the frictional resistance of the surface of the plate.

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

In a steam boiler having a steam pipe leading therefrom, a steam separator plate E curved downward throughout its central section, as at E′, and suspended from said boiler beneath the opening of said pipe, said plate E being in trough shape, said trough having open ends, whereby the steam taken through said pipe is received at the open ends of said plate and conducted along said trough shaped plate in a horizontal current, from the ends of said plate to said pipe, substantially as described.

Dated this 5th day of December, 1894.

ABRAHAM BURLINGAME.

Witnesses:

RUFUS B. FOWLER,

EMMA KESTER.