(No Model.)

S. C. HIGGINS.

STEAM BOILER.

No. 342,747. Patented May 25, 1886.

Fig. 1.

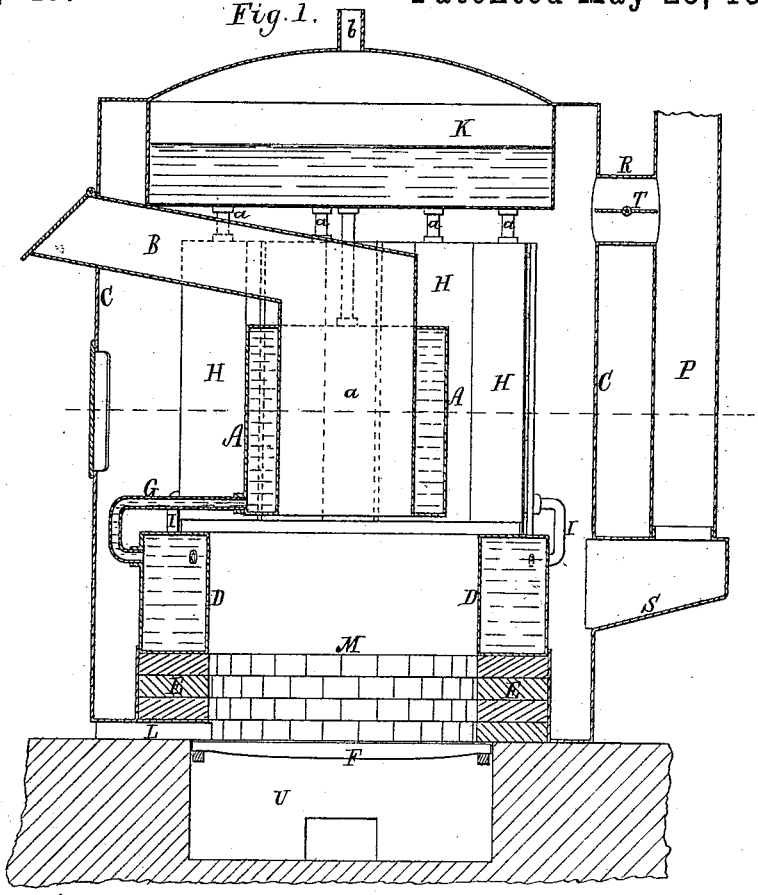
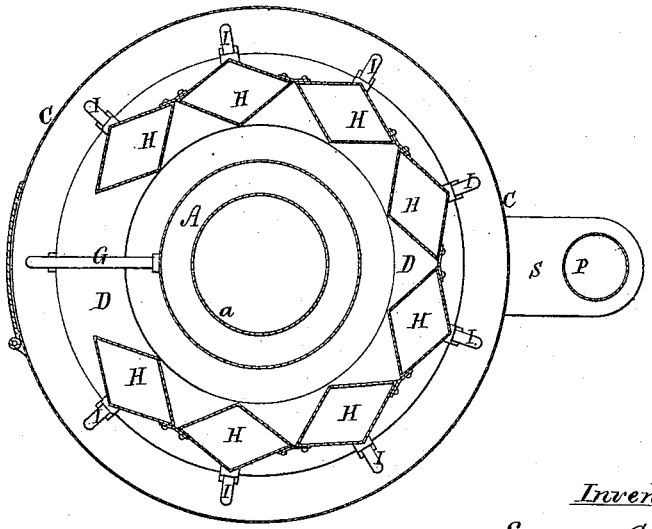


Fig. 2.



Witnesses.
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SUMNER CUMMINGS HIGGINS, OF CAMBRIDGEPORT, MASSACHUSETTS.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 342,747, dated May 25, 1886.

Application filed March 24, 1886. Serial No. 196,326. (No model.)

To all whom it may concern:

Be it known that I, SUMNER CUMMINGS HIGGINS, of Cambridgeport, in the county of Middlesex, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Steam-Boilers; and I do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a vertical and transverse section, and Fig. 2 a horizontal section, of a boiler provided with my invention, the nature of which is defined in the claims hereinafter presented.

In such drawings, A represents a cylindrical vessel, having a tube, *a*, extending through it concentrically from top to bottom and opening through both top and bottom, and at top into a throat, B, leading laterally to and opening through the external case, C. At a short distance below such vessel A there is a hollow annulus, D, cylindrical in form, and resting on a ring, E, of fire-brick, that has extending across it at its bottom a grate, F, under which there should in practice be an ash-pit, U. The vessel A communicates with the interior of the annulus D by a pipe, G, leading out of the lower part of the vessel A and into the upper part of the hollow annulus.

Surrounding the vessel A at a suitable distance from it, and arranged directly over the annulus D, is a series of prismatic hollow vessels, H, each, as shown, being lozenge-shaped in horizontal section. Each of these vessels H at its bottom communicates with the interior of the annulus D by means of a pipe, I, and such vessels H at their tops communicate with a steam-drum or hollow cylinder, K, by a pipe, *a*, such drum being arranged above the throat B. At the center of the upper part of the drum is an educt, *b*, for the passage of steam from the drum. The case C surrounds the steam-drum, the annulus D, and the series of prismatic vessels H, there being at the lower part of such case an auxiliary throat, L, on a level with the top of the grate F, such throat being to enable a person to insert through it a rod or poker for stirring fuel when on the grate.

The fire-place is shown at M, it being the cylindrical space or chamber above the grate, and formed by the brick-work E and the annulus D resting thereon. Such fire-place is fed with fuel through the throat B.

Leading out of the case C and into a smoke-discharge pipe, P, are two educts, R and S, (see Fig. 1,) there being in the upper one a damper, T.

In the operation of the said boiler the flame and heated volatile products of combustion of the fuel circulate in contact with the vessel A, the ring D, the series of vessels H, and the steam-drum, thereby heating them to great advantage, and converting water, when in the vessel A, ring D, and vessels H, into steam, which from them will pass into the drum. After having thus coursed in contact with the aforesaid parts the smoke and heated gases can be made to escape into the discharge-pipe P through either of the educts R S.

I claim—

1. The combination of the annular vessel A, provided with the charging-throat B, the hollow annulus D, the steam-drum K, and the series of prismatic or lozenge shape vessels H, arranged and connected by pipes, substantially as described.

2. The combination of the annular vessel A, provided with the charging-throat B, the hollow annulus D, the supporting brick-work E of such annulus, the case C, the steam-drum K, and the series of upright prismatic or lozenge shape vessels H, such vessels, drum, and annulus being connected by pipes and arranged with each other and in the said case, substantially as set forth.

3. The combination of the case C, provided with the auxiliary throat L, with the grate F, the brick-work E, and the hollow annulus D, annular vessel A, steam-drum K, and the series of upright prismatic or lozenge shape vessels H, connected and arranged substantially as described, such vessel A having leading from its upper part to and opening through the case a fuel-charging throat, B, as represented.

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Witnesses:

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