(No Model.)

G. KINGSLEY.

STEAM BOILER.

No. 282,330. Patented July 31, 1883.

Fig 1

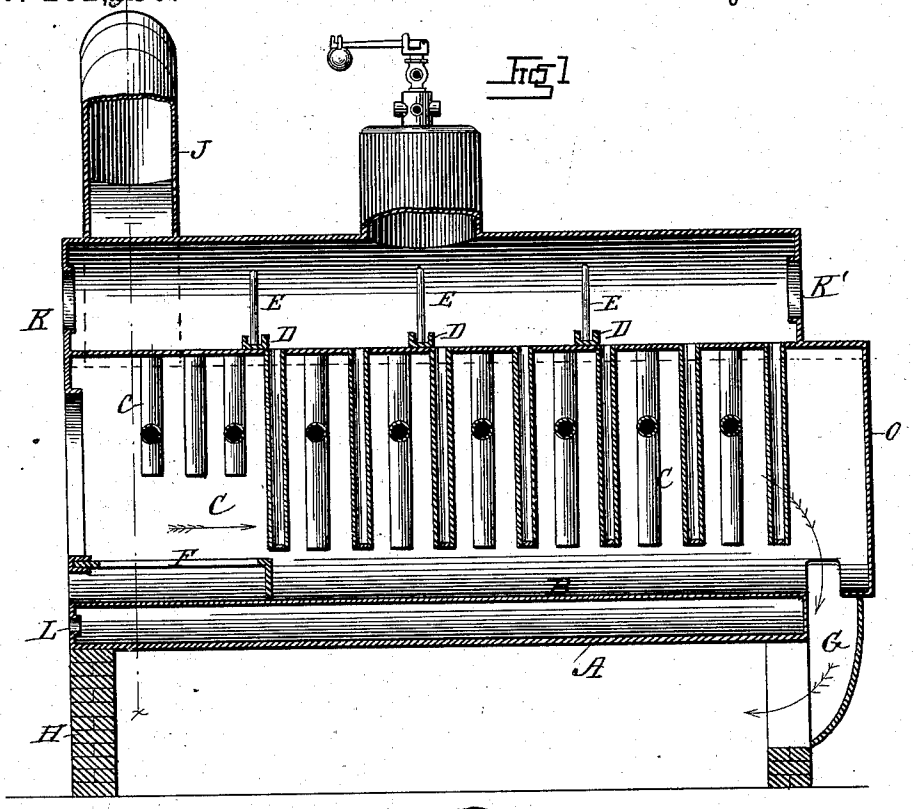
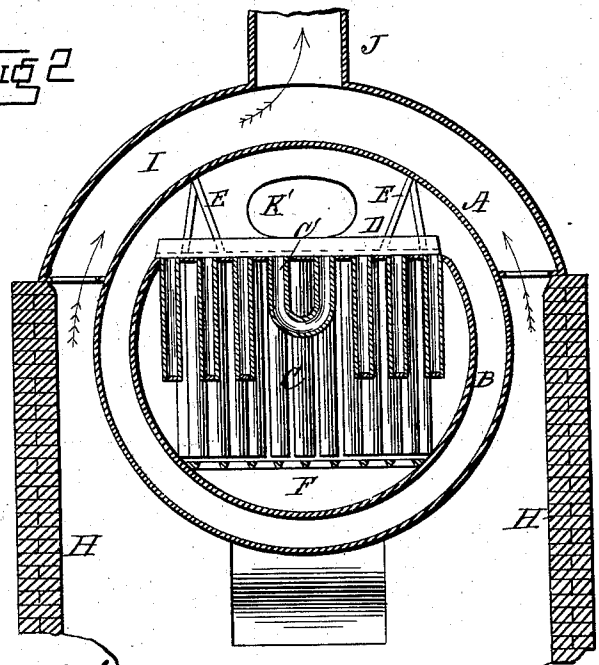


Fig 2



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UNITED STATES PATENT OFFICE.

GEORGE KINGSLEY, OF LEAVENWORTH, KANSAS.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 282,330, dated July 31, 1883.

Application filed April 10, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KINGSLEY, of Leavenworth, in the county of Leavenworth and State of Kansas, have invented a new and useful Improvement in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section. Fig. 2 is a vertical transverse section through the line *x x* of Fig. 1.

My invention is an improvement in horizontal steam-boilers, designed to make the most economical use of fuel, and to secure great strength and heating-surface, as will be hereinafter more fully described.

In the drawings, A represents the outer, and B the inner, shell of the boiler, the latter of which is arranged concentrically with the former, but is made flattened at its upper side, so that an annular steam and water space is left between the two shells, which space is enlarged at the top by the flattening of the inner shell.

The top of the inner shell, forming the crown-sheet, is provided with a multitude of dropped tubes, C, which open above into the water-space, and depend into the fire-chamber within the inner shell to give a great heating-surface. The crown-sheet is also strengthened by transverse ribs D, and is stayed to the outer shell by braces E. Some or all of the tubes C may be made double, or in the form of U-tubes, as shown at C′, which gives greater strength to the tubes at their connections.

In the front part of the inner shell is the furnace-grate and bridge-wall F, and the smoke and products of combustion pass therefrom between the dropped tubes to the rear end, and thence dive down the pipe G, which carries the same to the underneath side of the outer shell, between the same and the brick-work or casing H, upon which the boiler is mounted. This smoke and the products of combustion travel then to the front, and pass up on each side of the boiler through the arched pipe I to the smoke-stack J.

To facilitate the cleaning out of scale, &c., from the boiler, man-holes K K′ are arranged at the ends of the boiler, and open into the space between the two shells at the top, while a hand-hole, L, opens at the bottom, between the shells, for removing deposits at this point. At the rear end of the fire-chamber is a hinged door, O.

In addition to the advantages presented as to economy of fuel and quick steaming, my boiler is a very safe one, for as the tubes are the weakest points of the boiler any rupture must take place here first, and can do no more harm than to put out the fire.

Having thus described my invention, what I claim as new is—

The combination of the two shells arranged one within the other, and the inner one having a fire-space within it, and a flattened crown-sheet with dropped tubes, the smoke-flue G, connecting the inner fire-space with the space under the main shell, the wall H, and the smoke-stack J, and arch-pipes I, arranged at the front end of the boiler, substantially as shown and described.

GEORGE KINGSLEY.

Witnesses:

WM. S. PLUMMER,

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