

No. 680,188.

Patented Aug. 6, 1901.

S. AMAN.

BOILER.

(Application filed May 14, 1901.)

(No Model.)

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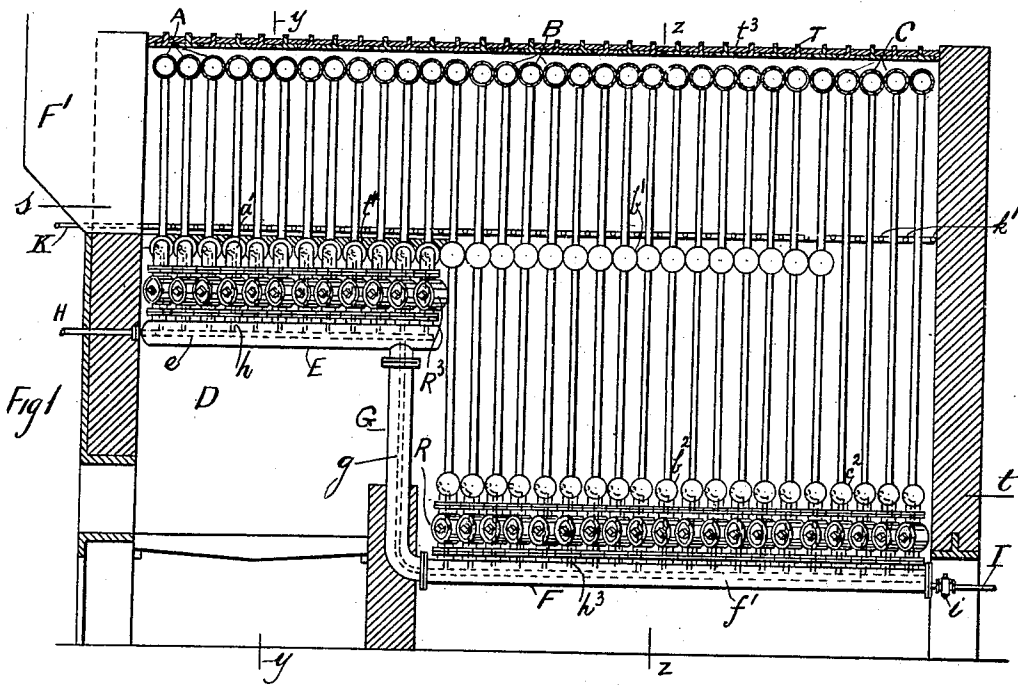
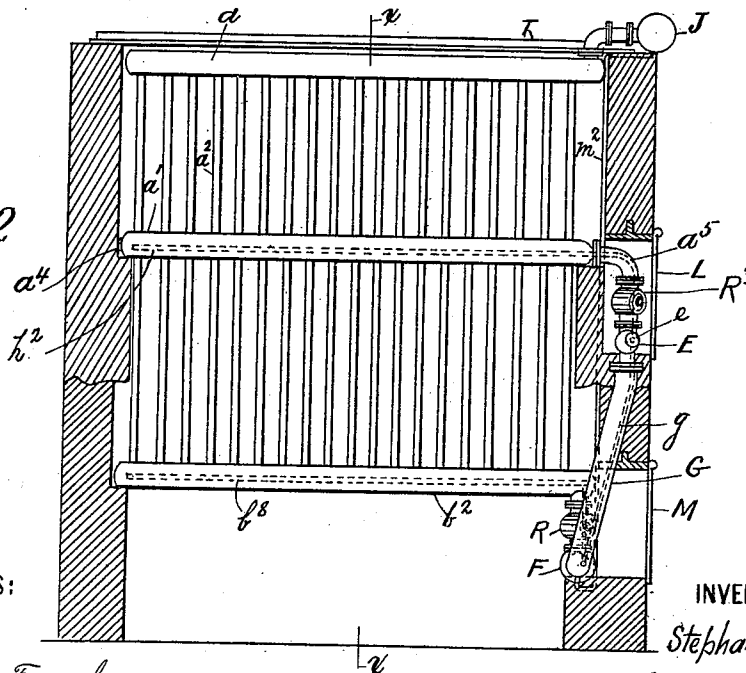


Fig 2



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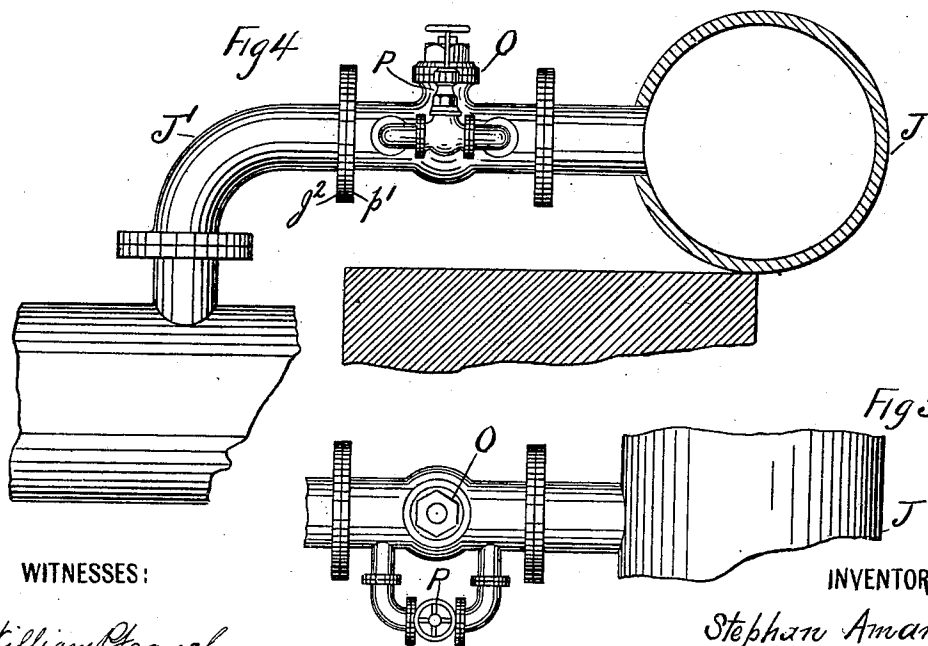
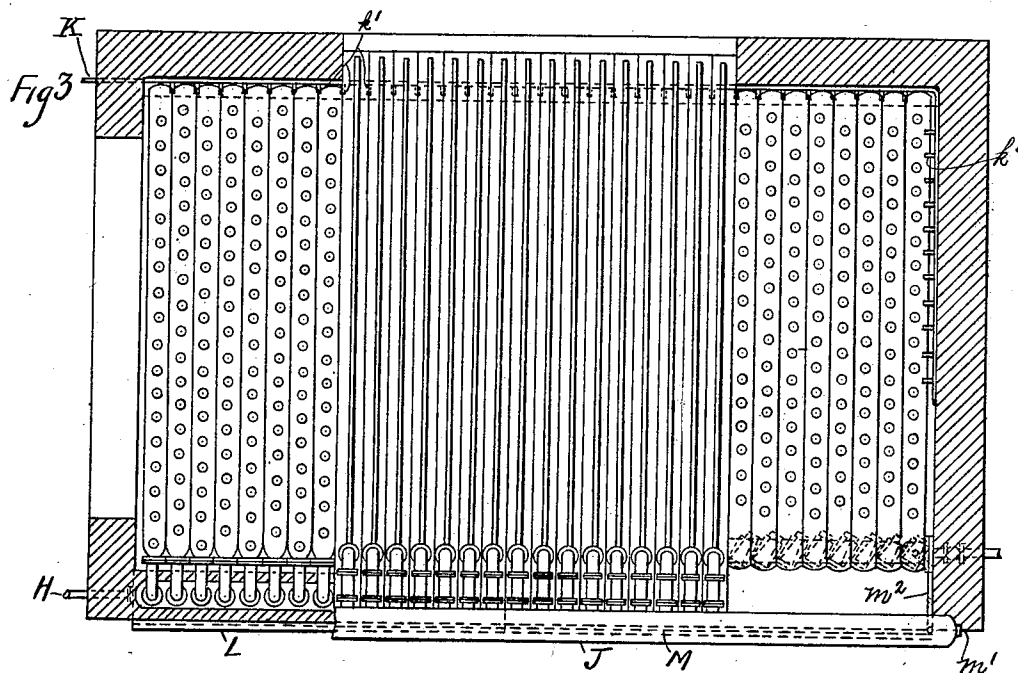
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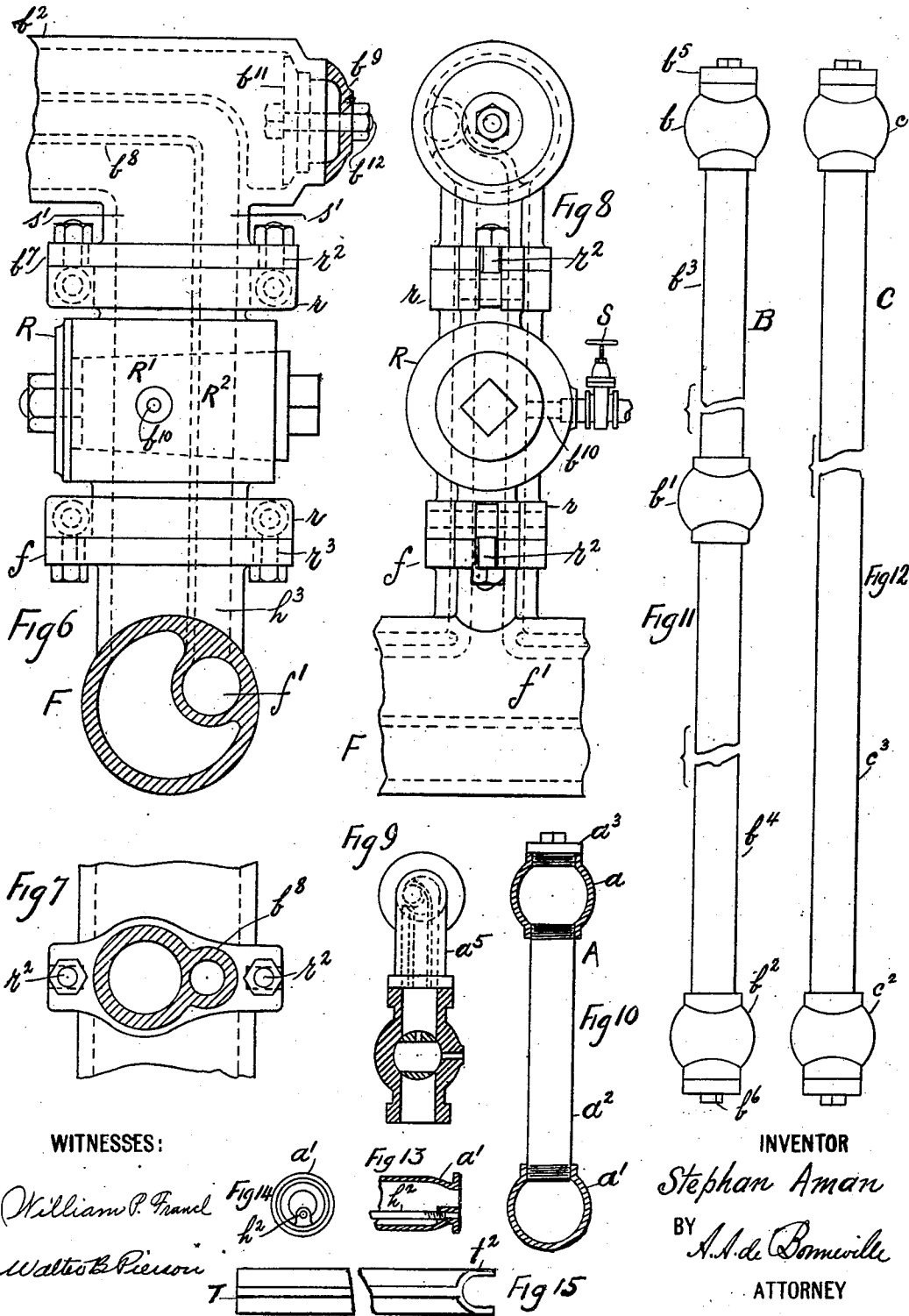
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(No Model.)

3 Sheets—Sheet 3.



UNITED STATES PATENT OFFICE.

STEPHAN AMAN, OF PORT RICHMOND, NEW YORK.

BOILER.

SPECIFICATION forming part of Letters Patent No. 680,188, dated August 6, 1901.

Application filed May 14, 1901. Serial No. 60,149. (No model.)

To all whom it may concern:

Be it known that I, STEPHAN AMAN, a citizen of the United States, and a resident of Port Richmond, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Boilers, of which the following is a specification.

This invention relates to sectional water-tube boilers, and has for its object the production of boilers comprising sections which can be easily removed while the boilers are under steam-pressure and a novel construction for conducting the feed-water into the boilers and for cleaning both the inside and outside of the different parts.

Figure 1 represents a fragmentary vertical section of my boiler on the line xx of Fig. 2. Fig. 2 shows fragmentary sections of Fig. 1 on the lines yy and zz . Fig. 3 is a fragmentary top view and sections on lines s and t of Fig. 1. Fig. 4 shows a vertical cross-section of the steam-dome with its connections. Fig. 5 is a partial top view of Fig. 4. Fig. 6 is a vertical cross-section through the lower mud-drum and one of its connections with the bottom manifold. Fig. 7 shows a section of Fig. 6 on the line $s's'$. Fig. 8 represents an end view of Fig. 6. Fig. 9 is an end view of one of the elbows connected to a manifold over the fire-box, with a vertical section of the valve attached thereto through its vertical axis. Fig. 10 represents one of the tubes over the fire-box with sections through its manifolds on a plane passing through the axis of the tube. Figs. 11 and 12 show end elevations of two sections beyond the fire-box with their manifolds. Fig. 13 represents a partial longitudinal horizontal section of one of the manifolds of the fire-box through its axis. Fig. 14 is an end view of Fig. 13. Fig. 15 shows a plan view of one of the top cross-braces of the boiler.

Referring to Figs. 1 to 3, the boiler is represented to consist of sections A over the fire-box and sections B and C, the said sections being connected by the mud-drums E and F, and the latter are joined by the pipe G. The sections are covered by cross-braces T, which are partially embedded in fire-clay t^3 . The manifolds a' over the fire-box are also covered with fire-clay t^4 , and the mani-

folds a and a' of the sections A and manifolds b and b' of the sections B, as well as manifolds c of sections C, are disposed to touch each other; but the manifolds b^2 of sections B and c^2 of sections C are placed short distances apart to allow passages for dust.

The feed-pipe H is connected with the conduit e in the mud-drum E, from which extend the risers h , leading the feed-water into the manifolds a' of the section A by way of the pipes h^2 , secured in the said manifolds. The pipe G connects the mud-drums E and F, and the conduit g in the pipe G connects with the conduit f' in the lower mud-drum F, from which conduits h^3 rise to convey the feed-water into the manifolds by way of their internal conduits. It will be noticed that the course of the feed-water is such as always to keep a good circulation in the mud-drums and to keep them clean. A blow-off pipe I with valve i leads from the drum F. A steam-dome J is connected with the top manifolds of the sections. A steam-spray pipe K runs at the sides and back of the boiler, (it only being shown on one-half of the boiler in Fig. 3 to avoid confusion,) with outlet-pipes k' , which provide means to clean the outside of the sections.

Doors L and M swing over openings in the side of the boiler for the purpose of operating the valves R^3 and R, connected with the sections.

Referring to Figs. 2 to 5 and 15, the steam-dome J is connected to the top manifolds of the various sections, the elbows J' leading from the said manifolds and connecting with check-valves O, which in turn are connected with the steam-dome J. A by-pass with valve P connects the opposite sides of each check-valve, and the flanges j^2 and p' , connecting the elbows J' and valves P, are placed so that the sections can be easily removed when their joints are broken. A pipe m^2 connects the bottom of the steam-dome J with the mud-drum F for drawing water from the said dome. The object of the check-valves O and by-pass with valve P are in case a new section is introduced for repairs and the feed-water is forced therein it might rise up into the steam-dome to the check-valve; but by opening the by-pass valve the rising water encounters the

steam-pressure and does not rise above the common water-level.

Each of the braces T at one end terminate in U-shaped openings, as t^2 , to allow the passage of the connections between the manifolds and the steam-dome.

The sections B (see Figs. 1, 2, and 11) consist each of the manifolds b b' b^2 , connected by the tubes b^3 and b^4 , the top and bottom manifolds being provided with plugs b^5 and b^6 , which serve as hand-holes to enable the cleaning of the said sections. The bottom manifolds b^2 (see Figs. 6 to 8) are connected to the mud-drum F by means of the valves R, in the flanges r r' of which are journaled the swing-bolts r^2 r^3 , which secure, respectively, the flanges b^7 of the manifolds b^2 and the flanges f of the mud-drum F. The valves R contain ports R' R^2 , the first connecting the main portion of the mud-drum F with the main portion of the manifolds b^2 and the port R^2 connecting the feed-water conduits f' with similar conduits b^8 in b^2 . Openings b^{10} are drilled through each valve, to which are connected secondary valves S, by means of which water can be drained from the sections when the valves R are closed just previous to the removal of the sections for repairs.

Hand-holes are contained in the manifolds b^2 , which are covered with the plates b^9 , secured by means of the crow-feet b^{11} and bolts b^{12} . The hand-holes a' at the ends of the manifolds a' over the fire-box and the hand-holes m' at the end of the steam-dome J are similar to the hand-holes at the ends of the manifolds b^2 .

The connections between the manifolds a' over the fire-box and the mud-drum E (see Figs. 2, 9, 13, and 14) are similar to the connections between the lower manifolds b^2 and the mud-drum F, with the exception that elbows a^5 are interposed between the manifolds a' and valves R^3 leading to the drum E, and the manifolds a' contain pipes h^2 instead of a conduit cast therein.

The sections C (see Figs. 1, 3, and 12) consist of the manifolds c and c^2 , connected by the pipes c^3 .

Having described my invention, I desire to secure by United States Letters Patent and claim—

1. In a boiler, removable sections, comprising manifolds, tubes connecting the said manifolds, independent conduits contained in the lower manifolds of the sections, mud-drums under the lower manifolds, and valves interposed between the said lower manifolds and mud-drums.

2. In a boiler, removable sections, comprising manifolds, tubes connecting the manifolds, pipes in the lower manifolds, mud-drums under the lower manifolds, valves interposed between the lower manifolds and mud-drums, a conduit in each mud-drum, a water-feed pipe connecting with said conduits, risers extending from said conduits,

and leading to the pipes in the lower manifolds.

3. In a boiler, removable sections, comprising manifolds, tubes connecting the manifolds, an independent conduit contained in each lower manifold, mud-drums under the lower manifolds, valves interposed between the lower manifolds and mud-drums, two ports in said valves, one port connected with the conduits in the manifolds and mud-drums, and the other ports connecting the main portions of the mud-drums and manifolds.

4. In a boiler, removable sections, comprising manifolds, tubes connecting the said manifolds, independent conduits in the lower manifolds, mud-drums under the lower manifolds, valves interposed between the said lower manifolds and mud-drums, a steam-dome connected to the top manifolds, a check-valve and by-pass with valve interposed between each top manifold and the steam-dome.

5. A boiler, sections of different lengths in the boiler, the said sections comprising manifolds, tubes connecting the manifolds, mud-drums under the lower manifolds, doubleported valves connecting the mud-drums and lower manifolds, a pipe connecting the mud-drum under the shorter sections, with the mud-drum under the longer sections, a feed-pipe entering a conduit under the shorter sections, said conduit extending to and into the mud-drum under the longer sections, risers extending from said conduits and leading to the valves, and into pipes and conduits in the lower manifolds extending from the said valves, a furnace under the shorter sections, a flue connection in front of the shorter connections, a steam-dome connected with the top manifolds.

6. A boiler, sections of different lengths in the boiler, the said sections comprising manifolds, tubes connecting the manifolds, mud-drums under the lower manifolds, valves connecting the mud-drums and lower manifolds, a pipe connecting the mud-drums, a feed-pipe connecting with a conduit in the mud-drums and in the connecting-pipe of said drums, risers extending from said conduits and leading through valves into pipes and conduits in the lower manifolds, a furnace under the shorter sections, a flue connection in front of the said shorter sections, a steam-dome connected with the top manifolds, check-valves and a by-pass between each top manifold and the steam-dome, a pipe leading from steam-dome to a lower mud-drum, independent spray-piping with outlets extending around the sections of the boiler.

Signed at New York, in the county of New York and State of New York, this 8th day of May, A. D. 1901.

STEPHAN AMAN.

Witnesses:

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WILLIAM P. FRANCE.