P. QUINN.

Upright Steam-Boiler.

No. 226,880. **Patented April 27, 1880.**

Fig. 1.

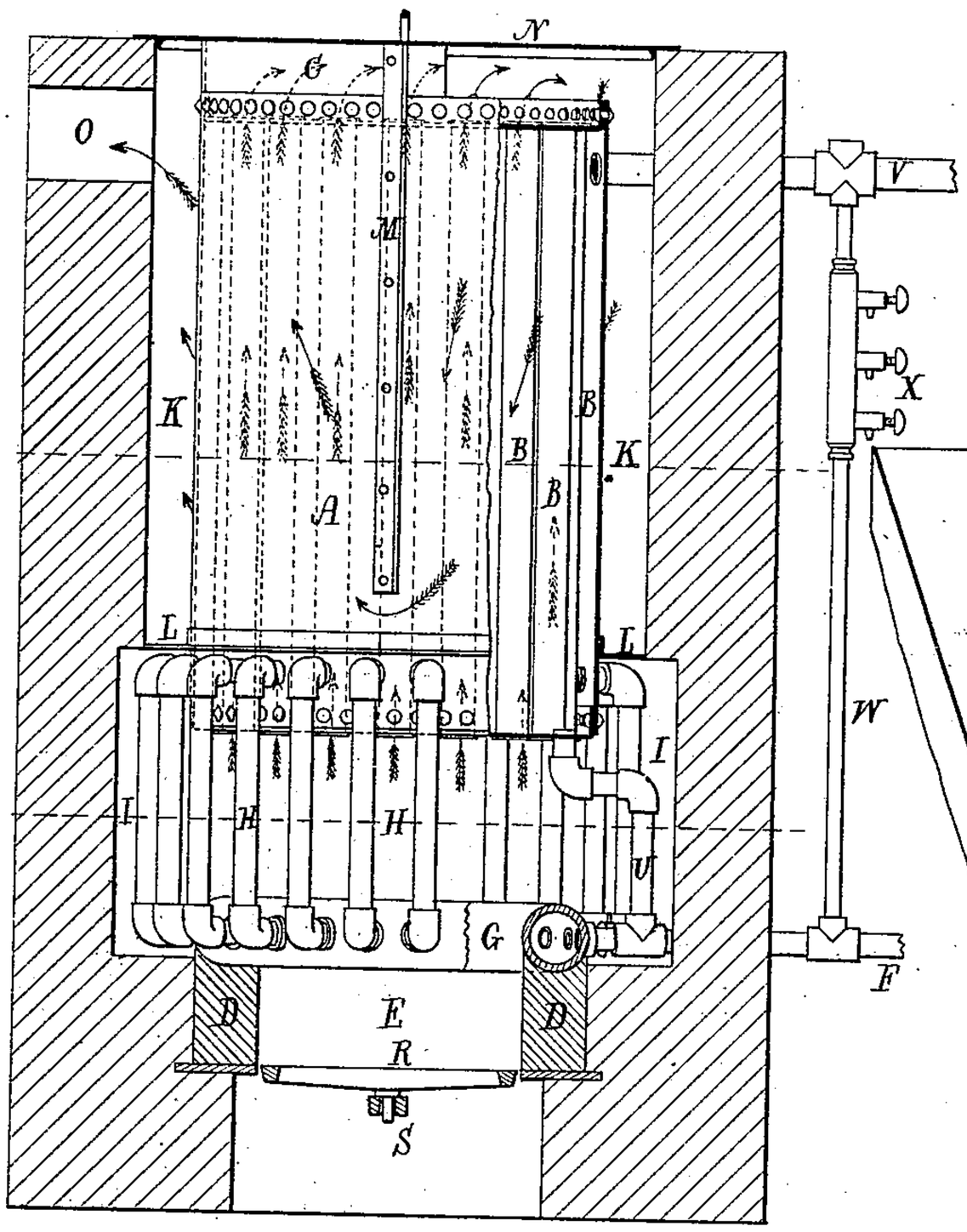


Fig. 4.

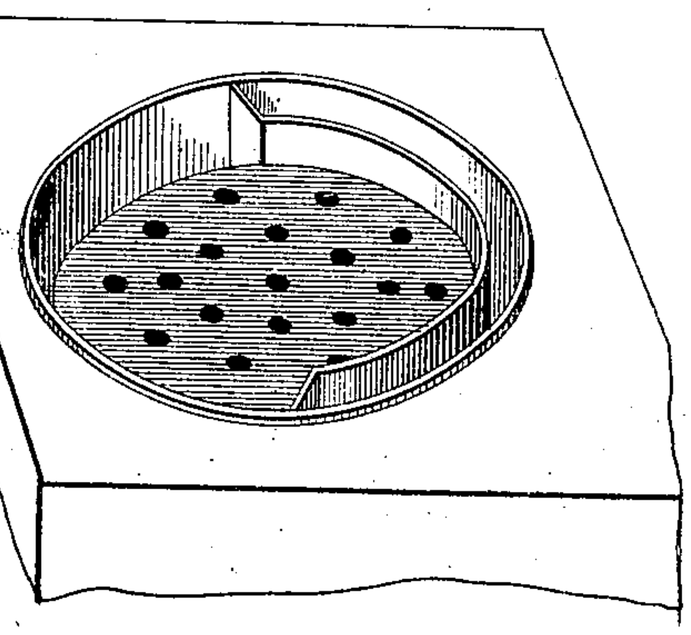


Fig. 2.

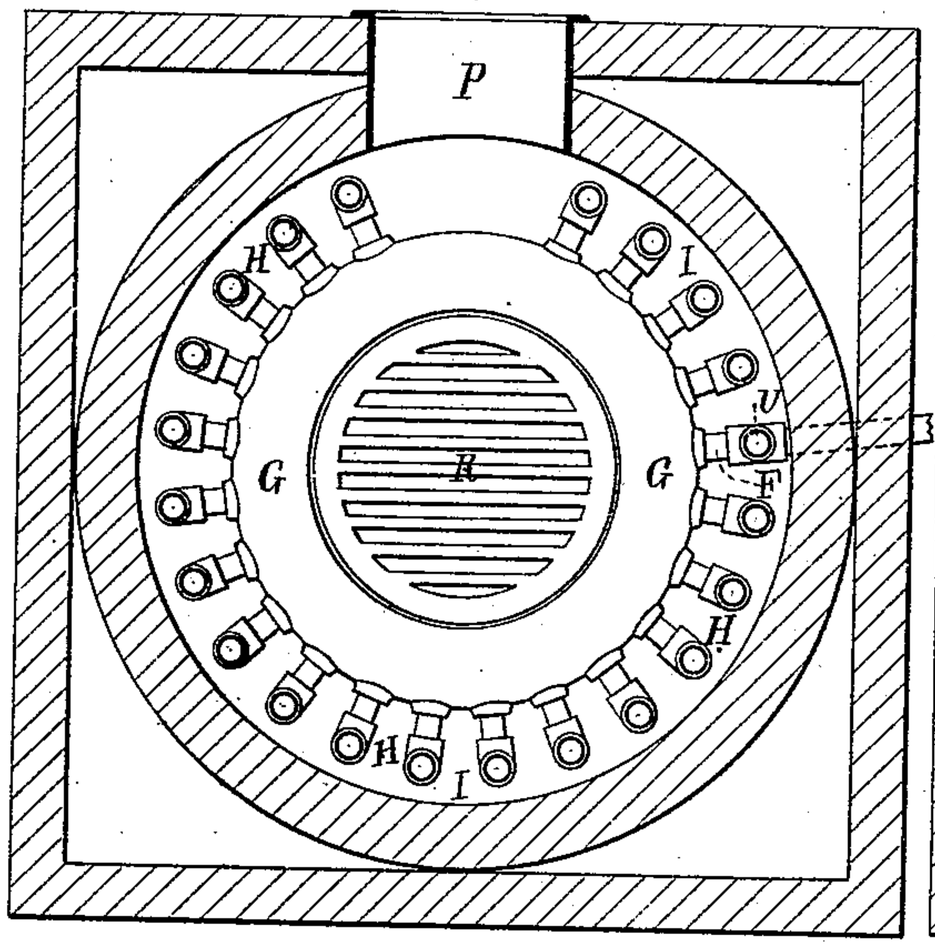
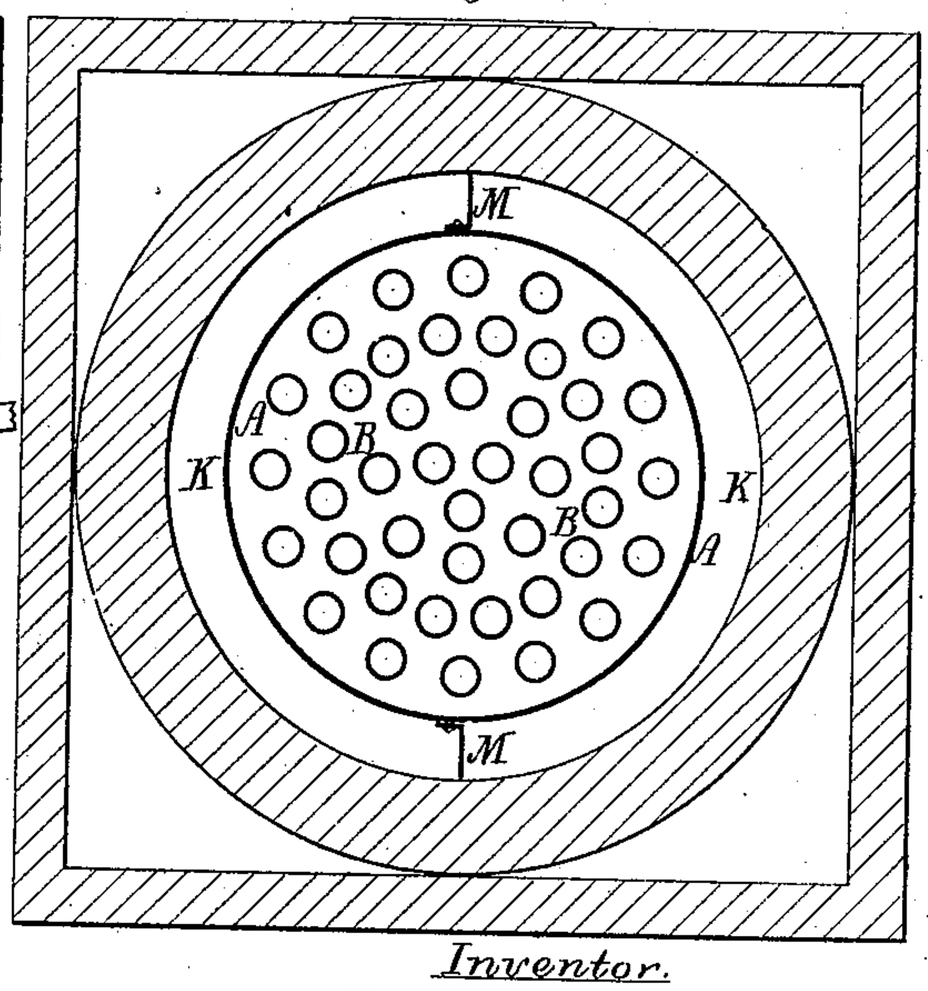


Fig. 3.



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UNITED STATES PATENT OFFICE.

PATRICK QUINN, OF SOUTH NEW MARKET, NEW HAMPSHIRE.

UPRIGHT STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 226,880, dated April 27, 1880.

Application filed January 29, 1880.

To all whom it may concern:

Be it known that I, PATRICK QUINN, of South New Market, in the county of Rockingham and State of New Hampshire, have invented a new and useful Improvement in Upright 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 sectional elevation of one of my improved boilers, its fire-place and smoke-chamber, to be hereinafter described. Fig. 2 is a horizontal section taken through the lower smoke-chamber, while Fig. 3 is a similar section taken through the upper one. Fig. 4 is a top view of the boiler, showing its segmental hood or partition.

The nature of my invention is fully set forth in the claim or claims hereinafter made.

In carrying out the said invention I take first a common upright or cylindrical boiler, A, provided with a stack of tubes, B, extending vertically through it from one head to the other of it, each tube opening at its opposite ends through the heads of the said boiler. I construct such boiler with a semicircular or segmental hood, C, extending upward from its upper head and having a radius corresponding with that of the boiler, the said hood or partition being open on or at its chord.

Beneath the lower head of the boiler, and on the top of the cylindrical fire-brick lining D D of the fire-place E, I arrange, in manner as shown, a tubular annulus, G, of metal, and connect it with the lower part of the boiler, arranged directly over it in manner as represented, by a series of pipes, H, opening out of it and leading into the boiler at a short distance above its bottom or lower head, these pipes being arranged in the lower of the two smoke-chambers I K. The lower of these smoke-chambers is directly over the fire-place, and is separated from the upper one by a metallic plate annulus or partition, L, that encompasses the boiler and projects therefrom in manner as represented, such boiler above the partition being within the smoke-chamber K.

Two vertical partitions, M M, project from the boiler at opposite parts of its outer surface to the walls of the smoke-chamber K, and extend from the crown or cap plate N nearly down to the partition L, such crown or cap-plate N being a cover to the upper smoke-chamber. An educt, O, leads from the said smoke-chamber in its upper part and midway between the partitions M, such educt being for the discharge of the smoke from the chamber K, whose wall is concentric with the boiler.

The opening or fuel-supply throat leading to the fire-place is shown in Fig. 2 at P, it being formed in the side of the lower smoke-chamber. Between said opening and the fire-place E there are none of the tubes H, such being in order that the fire-place may be readily supplied with fuel through the opening or throat without interruption from such pipes.

The grate of the fire-place is shown at R, and the ash-pit at S, in Fig. 1.

A feed-water pipe, F, leads out of the annulus G, and has a branch pipe, U, leading down into it (the said feed-pipe) from the lower head or bottom of the boiler. This branch pipe I arrange within the smoke-chamber I, whereby the branch pipe becomes heated and serves to heat the water in its passage from the feed-pipe into the boiler. It also serves as a means of effecting discharge of mud or deposits from the lower part of the boiler. A pipe, V, for the withdrawal of steam from the boiler, leads out of the upper part of said boiler, and has extending down from it (the said pipe) to the feed-pipe F a vertical pipe, W, provided with a series of try-cocks, X, arranged to indicate the extreme and mean levels to which the water should stand in the boiler.

From the above it will be seen that the tubular annulus G and the series of pipes H and bottom of the boiler will be heated by the smoke and volatile products of combustion that may arise from the fire-place and circulate within the lower smoke-chamber, and that the smoke and such products from such chamber will pass through the boiler-stack into the space inclosed by the partition C, and from thence down the annular flue-space K, around one-half of the boiler, thence underneath the partitions M, thence up through said annular space and against the other half of the boiler, and thence out of the educt O.

By having the annulus G placed directly

upon the lining D of the furnace, so as to answer as a cap thereto, such annulus serves as a protection to the lining to prevent it from being broken away by the fuel or injured by the heat thereof, as the annulus, by being always filled with water, keeps the lining at a low temperature, or abstracts its heat and conveys it to the water. The arrangement of the fire-place and the annulus G is thus productive of advantages.

What I claim as my invention is as follows, viz:

1. The combination of the divisional flat annulus L with the tubular boiler A and annulus G and their series of connecting-pipes H, arranged substantially as shown and described.

2. The tubular boiler provided with the segmental partition or hood C and the central partitions, M, and annular partition L, arranged as represented.

3. The tubular boiler A, provided with the segmental partition or hood C, central partitions, M, annular partition L, tubular annulus G, and the series of connecting-pipes H, arranged as set forth.

4. The tubular boiler A and annulus G and their series of connecting-pipes H, arranged as set forth, with the fire-place and its lining and throat and the two smoke-chambers, as explained.

5. The tubular boiler and annulus and their series of connecting-pipes, arranged as represented, in combination with the feed-water pipe F and the branch pipe U, extending therefrom, arranged with the boiler and annulus and the lower smoke-chamber, substantially as set forth.

6. The combination of the tubular boiler A and annulus G and their series of connecting-pipes H, the segmental partition or hood C, lateral partitions M, and horizontal partition L, such being for use with a fire-place, E, and two smoke-chambers, I K, arranged therewith, as set forth, the upper of said chambers being provided with an educt, O, and a cap-plate, N, as shown.

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Witnesses:

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