

JONATHAN CONE.

Improvement in Feed Pipes of Steam Boilers.

No. 119,824.

Patented Oct. 10, 1871.

FIG. 1.

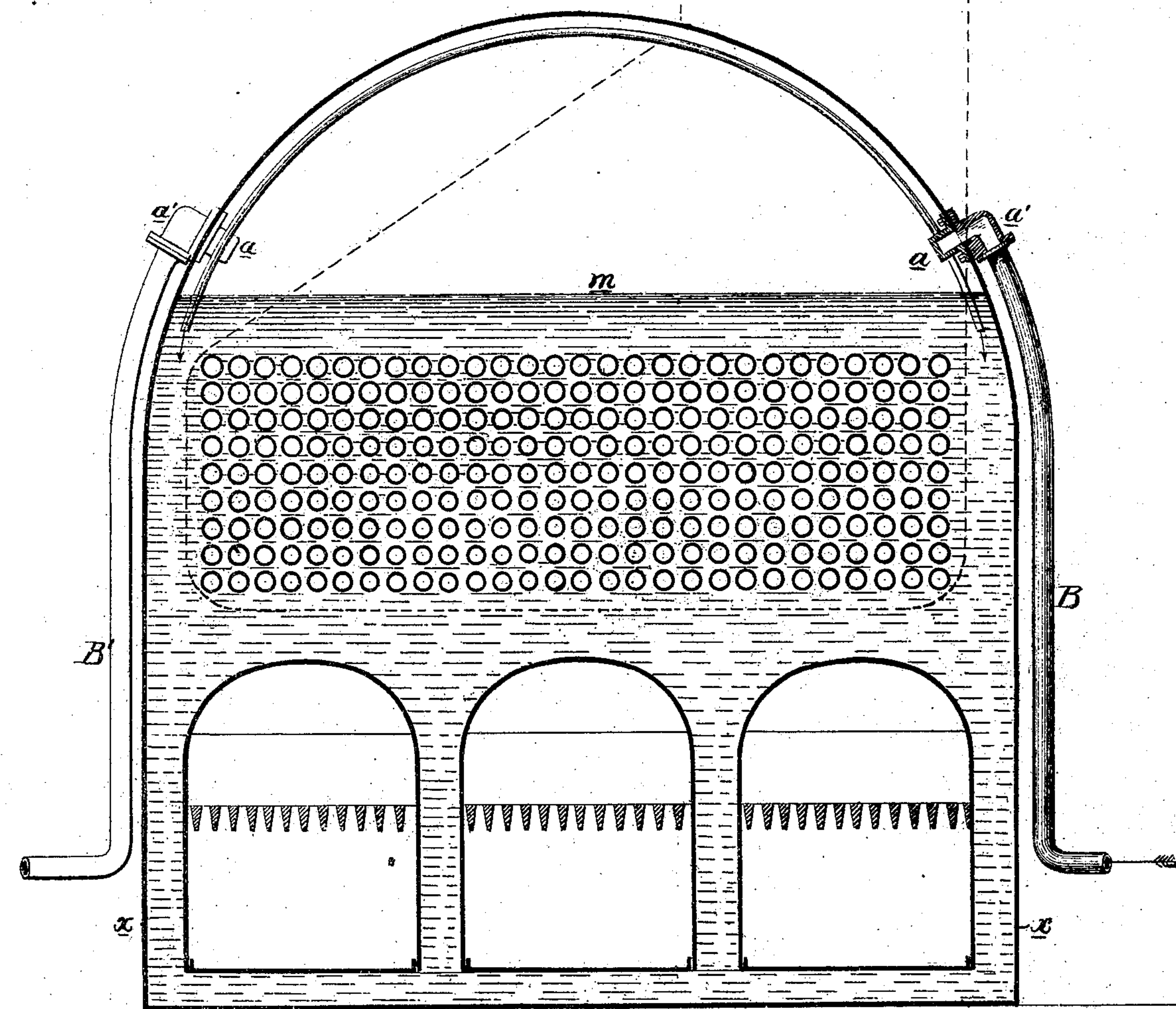
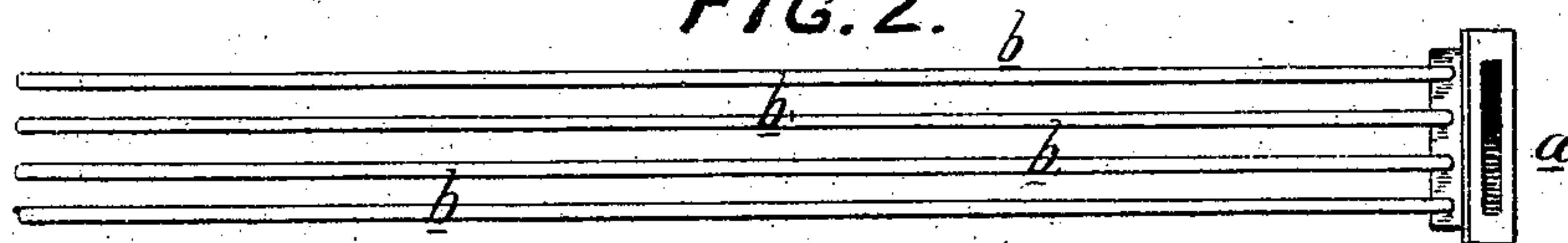


FIG. 2.



WITNESSES

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JONATHAN CONE, OF BRISTOL, PENNSYLVANIA.

IMPROVEMENT IN FEED-PIPES OF STEAM-BOILERS.

Specification forming part of Letters Patent No. 119,824, dated October 10, 1871.

To all whom it may concern:

Be it known that I, JONATHAN CONE, of Bristol, county of Bucks, State of Pennsylvania, have invented an Improvement in Feed-Pipes of Steam-Boilers, of which the following is a specification:

My invention consists in the combination, substantially as described hereafter, of the external feed-pipe of a steam-boiler with a number of smaller internal pipes passing through the steam space of the said boiler and terminating below the water level in the same, the object of my invention being to thoroughly heat the feed-water before it is introduced into that in the boiler, and thereby prevent the bad effects resulting from the injection of large volumes of cold water into the lower portions of the boiler—the plan heretofore generally adopted in feeding boilers.

Figure 1 is a vertical section of a marine boiler with my improvement, and Fig. 2 a plan view of an internal system of feed-pipes.

In marine boilers, of which that shown in the drawing affords an example, it is the practice to introduce the water at the points near the bottom of the boiler; two feed-pipes, for instance, usually communicate with the boiler of the class shown, at the points *x x*. Two volumes of cold water introduced into the boiler near the fire-boxes must necessarily detract from the steam-generating power of the boiler and demand an increased consumption of fuel. In order to remedy this evil I carry the feed-pipes *B B'* upward to a point above the water level *m* and there connect them to the boiler. A number of small pipes inside the boiler communicate with each feed-pipe at the point where the latter is attached to the boiler, and these small pipes are carried through the steam space and terminate below the water level. In the present instance two boxes or chests, *a* and *a'*, communicating with each other, are arranged, the former inside and the latter outside the boiler, both being secured to the shell, and the external feed-pipe *B* is secured to and communicates with the chest *a'*, while to the chest *a* are connected a number of smaller pipes, *b b b b*, shown in Fig. 2, and these pipes are carried outward, following the arched roof of the boiler, and terminate below the water line, as shown in the drawing. The feed-pipe *B'* at the opposite side of the boiler communicates with a

similar system of internal smaller pipes. The aggregate areas of each set of small pipes should be equal to, or nearly equal to, the area of the main feed-pipe with which they communicate. The volume of cold water, as it passes from the main feed-pipe, is subdivided by and distributed through the smaller pipes, which are exposed to the direct action of the steam; and the water, before it enters the boiler, must, owing to its subdivision, be exposed to a much more extended heating surface than if it is passed through a single pipe in one volume; and consequently the feed-water must be in a highly-heated condition when it unites with the water in the boiler. The object of bending the pipes so as to follow the roof of the boiler is that they may pass through as much steam space as possible, the course of the small pipes within the boiler, however, will depend to a great extent on the character of the latter; the steam-space in some boilers, for instance, is so contracted that it may be advisable to coil the pipes or arrange them in zigzag form; and it should be here understood that although I have selected a marine boiler as a medium for illustrating my invention, the latter can be applied with the most advantageous results to any steam-generator.

I do not desire to confine myself to any specific means of effecting a communication between the internal small pipes and the external main pipe; nor do I restrict myself to any determined number of small pipes, as that must in a measure depend upon the area of the main pipe; but

I claim—

The combination, substantially as described, of the external feed-pipe of a steam-boiler with a series of two or more smaller internal pipes the aggregate areas of which are equal to, or nearly equal to, the area of the main pipe, the said pipes passing through the steam-space of the boiler and terminating below the water level of the same.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JONATHAN CONE.

Witnesses:

WM. A. STEEL,
HARRY SMITH.

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