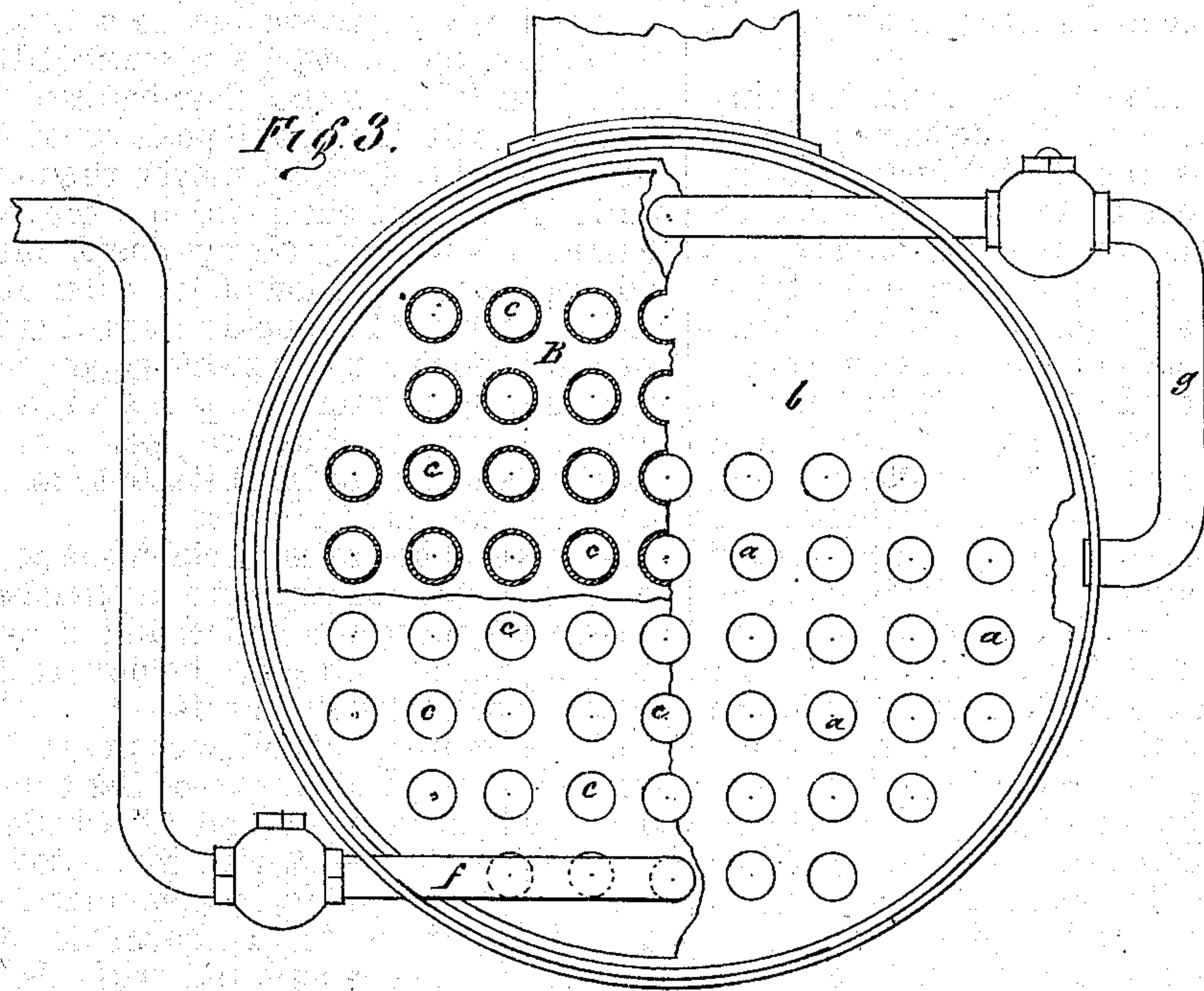
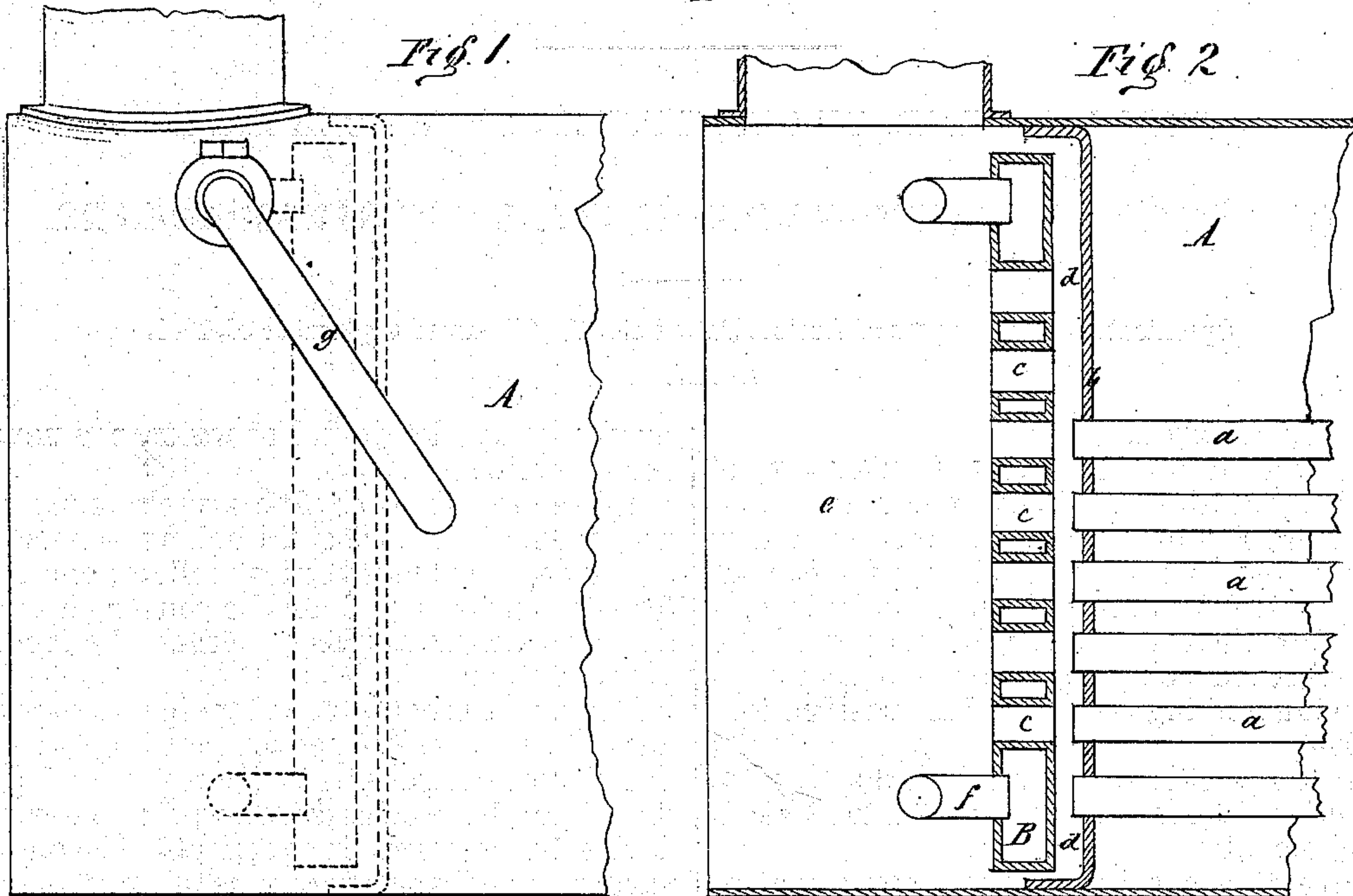


John F. Taylor.

Patented Sep. 26, 1871.

No. 119,428.

Feed Water Heater for Steam-Boilers.



Witnesses:

J. J. Tracy
Robt. E. Brewster

Inventor:

John F. Taylor

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Attorneys.

UNITED STATES PATENT OFFICE.

JOHN F. TAYLOR, OF CHARLESTON, SOUTH CAROLINA.

IMPROVEMENT IN FEED-WATER HEATERS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 119,428, dated September 26, 1871.

To all whom it may concern:

Be it known that I, JOHN F. TAYLOR, of Charleston, in the county of Charleston and State of South Carolina, have invented a new and Improved Feed-Water Heater for Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a side elevation, Fig. 2 a longitudinal sectional elevation, and Fig. 3 a transverse sectional elevation.

My invention consists in an improvement in the construction of feed-water heaters, as hereinafter fully described and subsequently pointed out in the claim.

Referring to the drawing, A is an ordinary boiler; *a*, the smoke-tubes of the same; and *b*, its tube-sheet. B is the hollow disk or cylindrical chamber or heater aforesaid, the same being of a diameter somewhat less than that of the boiler, and suitably supported within the latter in front of and at a short distance from the tube-sheet *b*. The front ends of the tubes *a* are open, and they consequently discharge the products of combustion against the rear side of the heater B. The latter is provided with a sufficient number of tubes, *c*, running transversely through it, which tubes conduct the products of combustion from the space *d* through to the smoke-box *e*. The chamber B absorbs heat from the tubes *c*, and also from its front and rear sides. The heater receives water from the feed-pump through the pipe *f*, which enters the heater at its bottom. Outside of the boiler the pipe *f* takes a turn upward, ascending as high as the top of the boiler. This construction insures the rising of the water within the heater to its top, so that as long as the feed-pump is in operation the heater is always full. The water discharges from the heater through the pipe *g*, which opens out of its top and empties into the boiler in rear of the tube-sheet. The water, during its passage upward through the heater, absorbs caloric from the sides of the latter, and also from the tubes *c*. The

heater, being always full of water, can never become overheated.

I do not wish to confine myself to the use of my invention in horizontal boilers alone, for it is equally applicable to vertical boilers; and I therefore desire that my claims be construed to cover the invention as applied to either a horizontal or vertical boiler.

I am aware that a chamber similar to mine in form, for superheating steam, has been patented, and also of the general allegation in said patent that it can be used as a feed-water heater. The device is, however, impracticable for any such purpose, and can never, in fact, have been employed as a feed-water heater. The reason that it is entirely impracticable as a heater is, that the feed-water inlet-pipe is arranged in the ordinary way below the chamber and below the boiler to suit the usual position of the water-reservoir; therefore, whenever the pump is not working, and the check-valve of the inlet-pipe is leaking, (as it nearly always does,) this chamber will soon lose a portion of its water and the upper part thereof be quickly burned out. Hence the allegation that this steam superheater can be used as a feed-water heater is a vague idea, embodied in no practical form, not a perfected invention, and no lawful obstacle to an independent invention and improver.

However, I desire to disclaim the peculiar construction and arrangement of a chamber in front of the tube-sheet of a boiler, and clearly to point out that which I esteem to be new, and desire to protect by Letters Patent, is—

The perforated and hollow chamber B, of nearly the same internal diameter of the boiler, placed in the smoke-chamber and at a little distance from the tube-sheet *b*, and connected by pipe *g* with the steam-boiler, in combination with the inlet-pipe *f* rising to or above the top of said chamber B, and connected with the ordinary feed-pump, as and for the purpose specified.

JOHN F. TAYLOR.

Witnesses:

W. H. PRIOLEAU,
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(72)