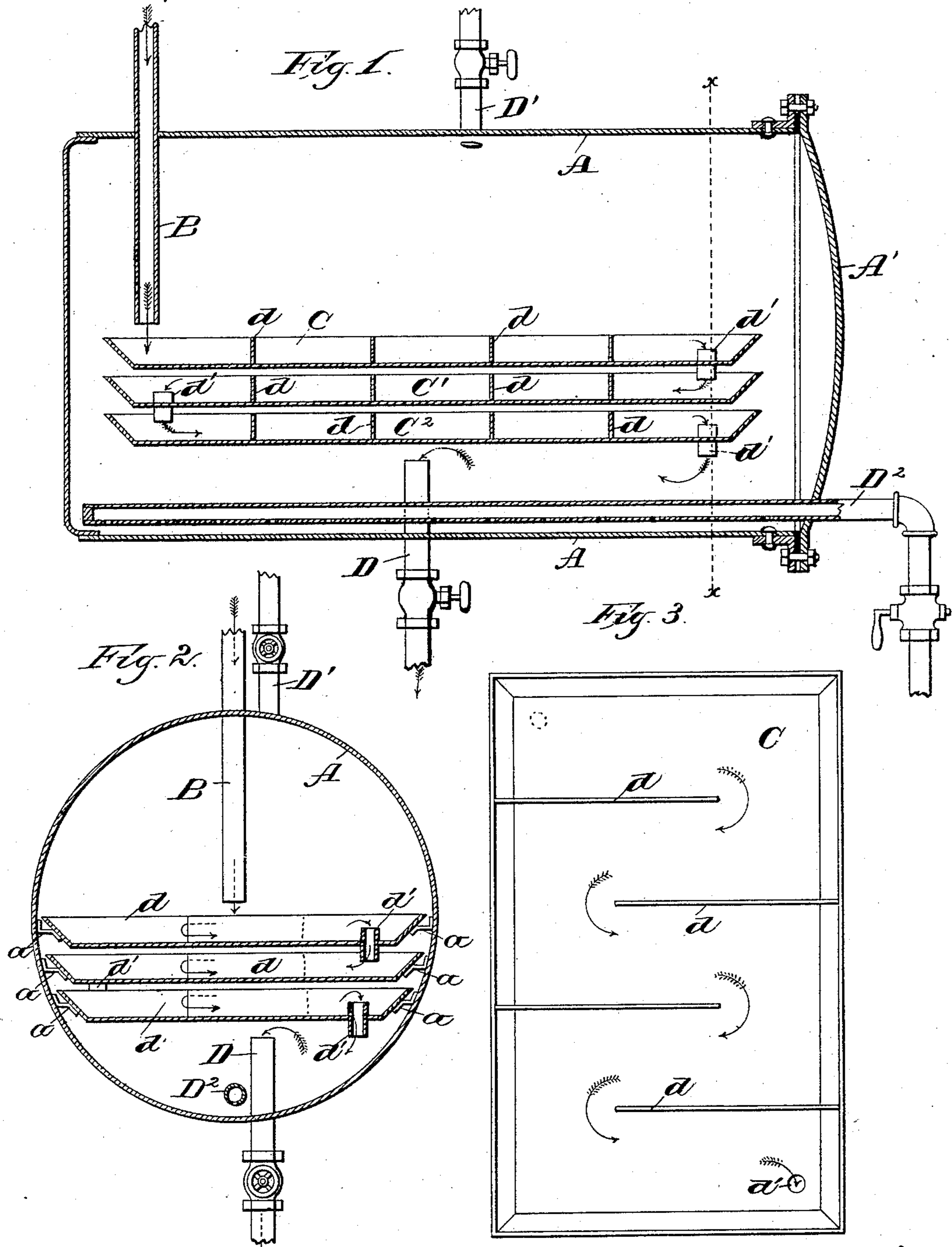


(No Model.)

J. J. RICHARDS.
WATER PURIFIER FOR BOILERS.

No. 328,254.

Patented Oct. 13, 1885.



Witnesses.
E. G. Somers
R. Platz

Inventor:
John J. Richards
By Thos. H. Underwood
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN J. RICHARDS, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF
TO LOUIS W. MARBES, OF SAME PLACE.

WATER-PURIFIER FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 328,254, dated October 13, 1885.

Application filed June 11, 1885. Serial No. 168,323. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. RICHARDS, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Water-Purifiers for Boilers, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to purifiers for steam-boilers, and will be fully described hereinafter.

In the drawings, Figure 1 is the section through the longitudinal center of my improved purifier. Fig. 2 is the central transverse section on line *xx* of Fig. 1. Fig. 3 is a plan view.

A is the shell of my purifier. B is the tube leading from the water-supply down through the top of the shell, and C, C', and C'' are trays that are suspended in the shell, each of which is provided with partitions *d*, that extend from both sides of the tray for about two-thirds of its width and break-joints with each other, as shown in Fig. 3. Each tray is provided with a tube, *d'*, that passes through it and permits the outflow of the water.

D is a pipe, which extends through the bottom of the shell, for carrying the water to the boiler.

D' is an exhaust-pipe, and D² is a blow-off pipe.

The operation of my device is as follows: The water is led into the shell through pipe B, from which it falls onto one end of the upper tray, C, then circulates around the partitions until it reaches the tube *d'* at the other end. Then it must rise to the top of that tube, from which it will overflow into the next tray, C', and from thence it will flow through that tray to its tube *d'*, and thence into the next tray, C'', and thence to the bottom of the shell, from which it will overflow into the pipe D. In this way the shale and carbonates will be intercepted, so that when the water reaches the boiler it will be comparatively pure.

The mud and other precipitates which are liable to accumulate in the bottom of the shell

may be blown off through pipe D² at proper intervals.

The head A' of the shell may be removed when occasion requires, and the trays taken out, as they rest loosely on supports *a*.

I may use any number of trays, and may vary my device in the details of its construction without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a feed-water purifier, the combination, with a shell having inlet and outlet ports, of a series of horizontal trays, each tray having an overflow-pipe extending through its bottom some distance above and below the same, and the overflow-pipe in one tray being at the opposite end to that in the tray above or below it, and solid imperforate partitions extending alternately from one side toward the opposite side and breaking joints with each other, substantially as set forth.

2. In a feed-water purifier, the combination, with a shell having inlet and outlet ports, of a series of horizontal trays, each tray having an overflow-outlet, that in one tray being at the opposite end to the outlet in the tray above or below it, and partitions extending alternately from one side toward the opposite side and breaking joints with each other, substantially as set forth.

3. In a feed-water purifier, the combination of the shell A, having inlet-tube B, outlet-tube D, exhaust-pipe D', and blow-off pipe D², with the series of trays C C', &c., having partitions *d d*, breaking joints with each other, and overflow-pipes *d'*, extending through the bottom of each tray some distance above and below the same, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

JOHN J. RICHARDS.

Witnesses:

S. S. STOUT,

G. A. PLATZ.