W. ORD.

WATER TUBE AND CIRCULATING STEAM BOILERS.

No. 186,494. Patented Jan. 23, 1877.

Fig. 1.

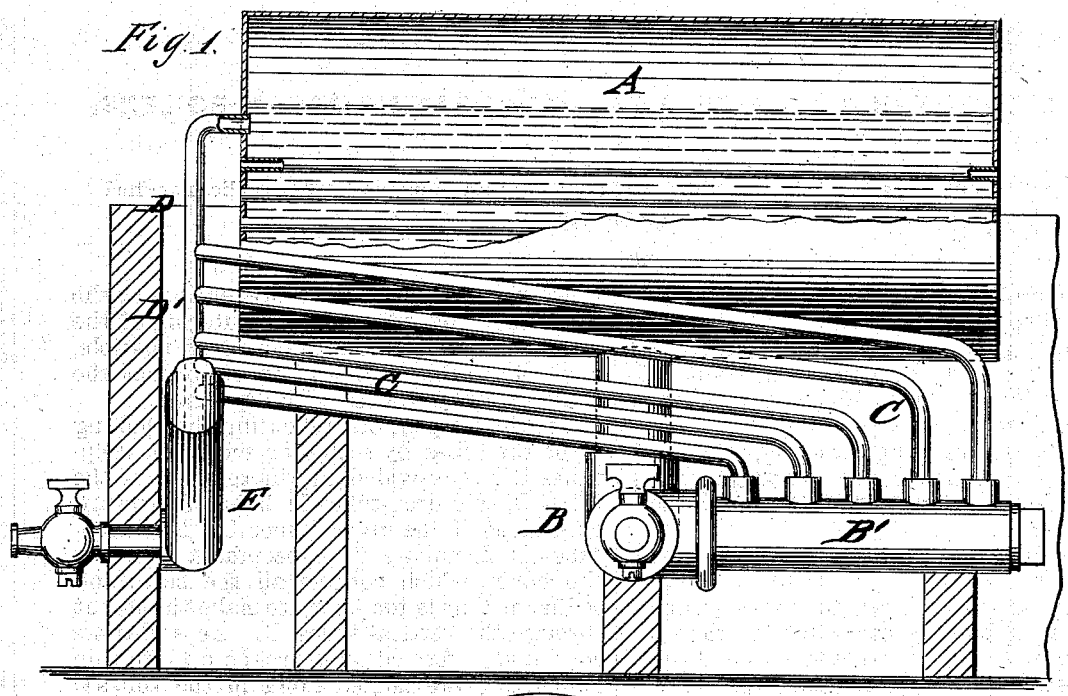
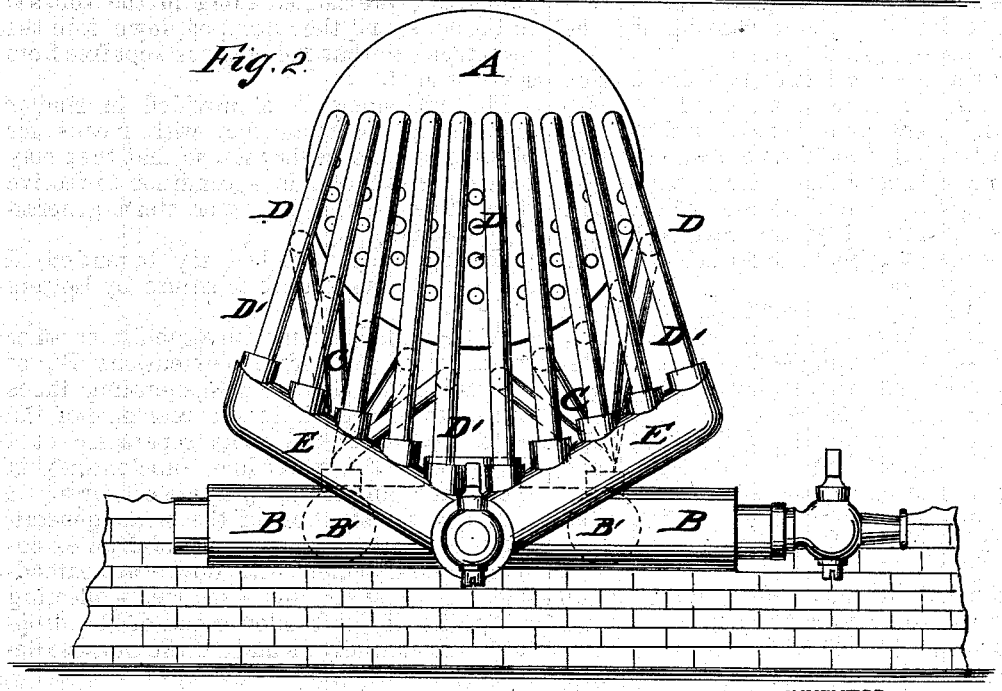


Fig. 2.



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WILLIAM ORD, OF BROOKLYN, OHIO.

IMPROVEMENT IN WATER-TUBE AND CIRCULATING STEAM-BOILERS.

Specification forming part of Letters Patent No. **186,494**, dated January 23, 1877; application filed July 31, 1876.

To all whom it may concern:

Be it known that I, WILLIAM ORD, of Brooklyn, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Steam-Boiler, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a sectional side elevation of my improved steam-boiler, and Fig. 2 is an end view of the same.

Similar letters of reference indicate corresponding parts.

The invention relates to such improvements in tubular or other boilers that the steaming capacity is increased and fuel economized by keeping up a regular circulation of water and steam without choking up the tubes by scales or sediment.

The invention consists of the combination of a tubular or other boiler and its mud-drum, having side extensions toward the fire-front, with tubes that extend from the side extensions backward and enter boiler at the rear end, just below the water-line. The tubes are connected at the rear end with drop-tubes and a receptacle for collecting the scale or sediment.

In the drawing, A horizontal, tubular, or other boiler of any approved construction; B the mud-drum, arranged below the same, and B′ its side extensions that pass forward to the fire-front. A series of tubes, C, connect the side extensions B′ of the mud-drum and run backward at the side of the boiler to the rear part or end of the same, connecting with upward-extending tubes D, which enter the boiler separately just below the water-line.

The tubes C are intended to increase the capacity of the boiler to generate steam while utilizing the heat of the fire-place without increasing the consumption of fuel. The tubes C are supplied continually with water from the mud-drum, and form steam by the direct contact with the fire. The steam passes upward and enters the boiler near the surface of the water, keeping up thereby a continual circulation and preventing, at the same time, by the separate entering of the tubes into the boiler, as much as possible, any commotion or disturbance, so that the engine may be worked with dry steam.

For the purpose of preventing the choking up of the tubes by scales or sediment, drop-tubes D′ are provided at the rear end of the tubes C, said drop-tubes D′ being downward extensions of the upper tubes D. The drop-tubes D′ terminate in a receptacle, E, below the boiler, which collects all the scale and sediment that is too heavy to make the ascent through the vertical tubes D. As scales are continually formed and broken up into thin flakes, they are carried along in the tubes C to the ends, and then dropped down into the receptacle, so that the boiler is kept free from scale or mud.

The receptacle E is provided in similar manner as the mud-drum with means for blowing out the sediments, so that they may be kept clean and in a condition to receive the sediments from the outer steam-generating tubes C.

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

1. The combination, with a tubular or other steam-boiler, A, and side extensions B′, of the mud-drum E, of steam-generating tubes C that extend back to the rear part of the boiler and enter the same separately at a point below the water-line, substantially in the manner and for the purpose set forth.

2. The combination of the steam-generating tubes C D, that connect mud-drun extensions B′ and boiler, with downward-extending drop-tubes D′, and a sediment-collecting receptacle, E, at the lower end of the drop-tube, substantially as and for the purpose described.

WILLIAM ORD.

Witnesses:
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