

No. 621,558.

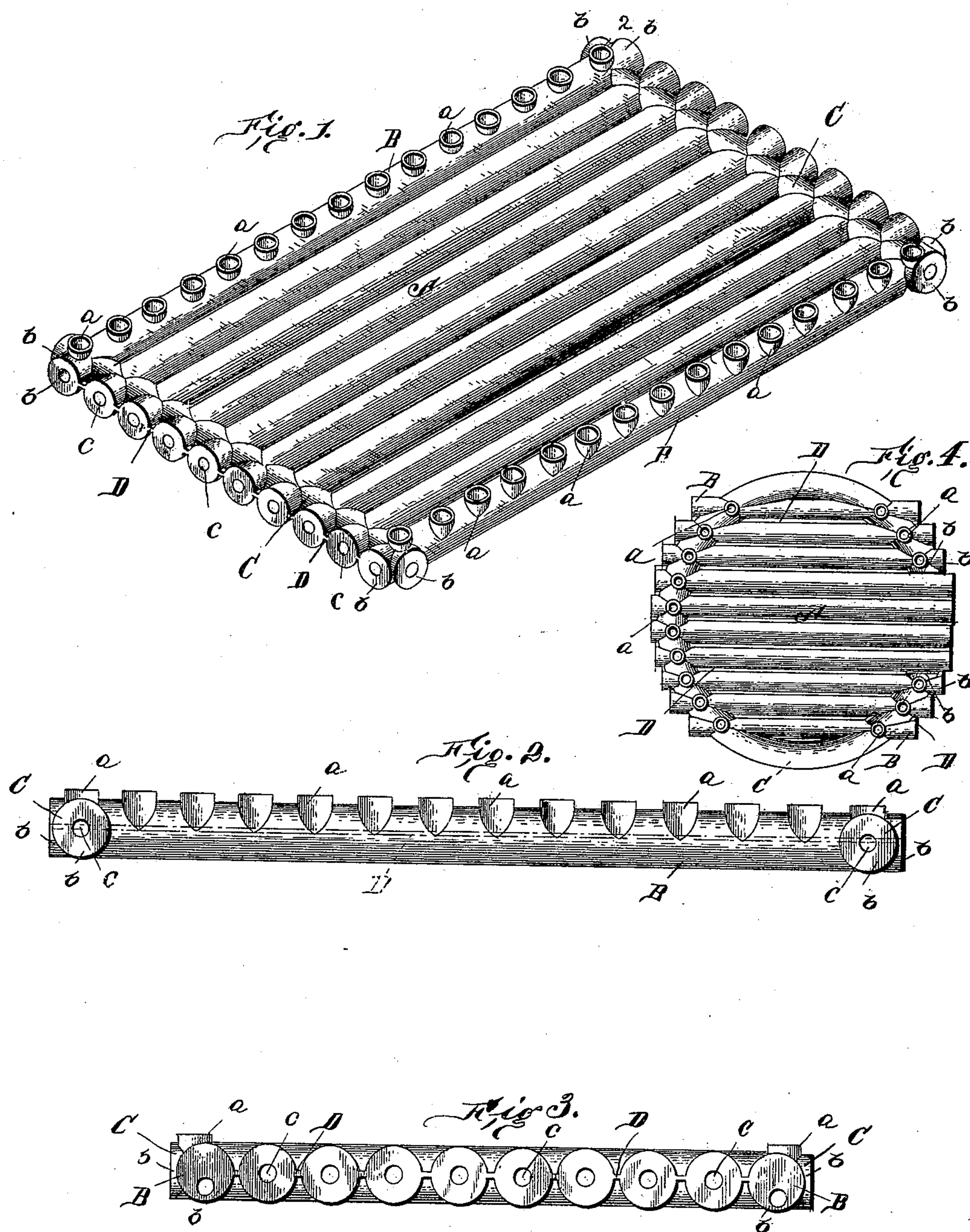
Patented Mar. 21, 1899.

O. T. EARLE & C. W. NEWTON.

WATER BOTTOM FOR STEAM BOILERS.

(Application filed June 20, 1898.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

OSCAR T. EARLE AND CHARLES W. NEWTON, OF BALTIMORE, MARYLAND.

WATER-BOTTOM FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 621,558, dated March 21, 1899.

Application filed June 20, 1898. Serial No. 683,996. (No model.)

To all whom it may concern:

Be it known that we, OSCAR T. EARLE and CHARLES W. NEWTON, of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Water-Bottoms for Steam-Boilers; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention has relation to steam-generators and other like purposes.

Heretofore great difficulty has been experienced in setting boilers, both aboard a ship and for land boilers, having open-bottom furnaces in such manner as to securely prevent conflagrations and danger from fire caused by falling coals, sparks, cinders, and the like through the grate-bars, and also to form a solid bed-plate and ash-pan for the boiler and economize the heat radiated from the fallen burning coals and fire-grate. To avoid these difficulties and to form a safe and solid water-bottom and bed-plate and to utilize generally the radiated heat heretofore wasted are objects of our invention; and to this end our invention consists in forming a water-bottom of a series of tubes cast integral to each other having a web between them and of any suitable length, breadth and depth, and diameter of tube.

A further object of the invention is to provide the outer side and end tubes with bosses hollowed out for the reception of vertical water-circulating and steam-generating tubes and their end connections for downflow and other purposes. For cylindrical boilers the manifold will be circular, and the connection-bosses will be on top, and on inside and outer periphery the web will be cast just the same as for the rectangulars. For oil-burning this bottom will be an immense advantage. The transverse end tubes have bosses on their ends which are also designed for connections which may be made by elbows or T-shaped connections. The object of forming these end tubes with bosses on their ends is that if two or more sections of the water-bottom are required for an enlarged bed-plate they may be placed end

to end, thus producing a smoother continuous surface without obstruction to the raking off of the ash and cinders that drop from the grate, and a further object of placing the end boss connections is that they are accessible for connections outside of the walls of the fire-box, and by removing the plugs the tubes may be cleaned. It will be seen that these side and end tubes of the water-bottom form manifolds and may be used generally and substituted for the well-known mud-drum and regular tubular manifolds.

These water-bottoms may also be used for feed-water heaters and mud-drums, which may readily be blown off by steam or water pressure, or may be cleaned out with hose, or brush-scrapers may be introduced from the front ends, which are preferably plugged up for that purpose.

Referring to the drawings hereto annexed, Figure 1 is a perspective view of our improved water-bottom and bed-plate complete. Fig. 2 is a side view of the water-bottom. Fig. 3 an end view of one of the ends. Fig. 4 shows our invention as applied to a cylindrical boiler.

The same letters will indicate like parts throughout all the figures, in which—

A is the central body portion.

B B are the sides, provided with upwardly-projecting connection-bosses *a* and side and end connections *b b*.

C C are the ends of the water-bottom, provided with end bosses or openings for connections with either vertical or horizontal tubes. When a second section is added to the ends, connections may be made by nipples or thimbles (not shown) in the usual manner.

D are the webs, cast solid with the tubular portion, so that no leakage or ash can fall through. The water-bed is perfectly tight and makes a safe and a shield for protection against fire and a solid bed-plate.

The contour of the water-bottom may be made to conform to any-shaped boiler.

It is obvious that should sections be added to the side the boss connection would be the same as the end tubes, as at *c*, *C*, and *D*, although such construction would be very rarely required.

It is evident that slight changes may be made in the form and in construction without departing from the spirit and scope of our in-

vention, and therefore we do not wish to be confined to the exact form shown.

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

1. A water-bottom and bed-plate for steam-generators consisting of a series of tubes cast integral with a connecting-web, and with side and end manifolds substantially as described.
2. A hollow water-bottom and bed-plate cast integrally with a connecting-web, the sides forming manifolds with their connecting-bosses opening upward and the end bosses opening horizontally for either lateral or vertical connections, substantially as set forth.
3. A hollow water-bottom comprising the

central tubular portion, the side and end manifold portions as described, having vertical and horizontal openings for vertical and horizontal connections, the corners of said bottom having suitable openings for transverse longitudinal and vertical connections respectively as set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

OSCAR T. EARLE.
CHARLES W. NEWTON.

Witnesses:

HERBERT C. EMERY,
O. E. DUFFY.