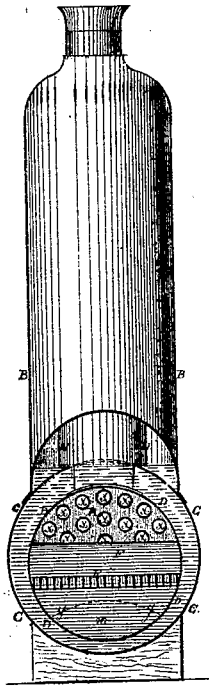
E. Neumann,

Steam Generator.

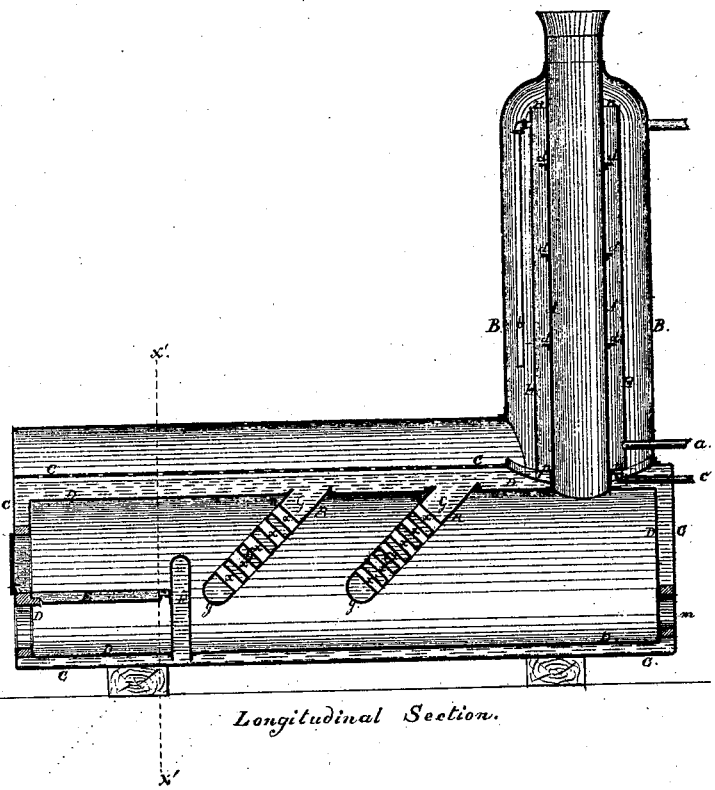
No. 109,652. Patented Nov. 29. 1870.

Fig 2.



Section through x' x'.

Fig 1.



Longitudinal Section.

Witnesses:

O. Poinder.

H. Klever

Inventor:

Eugen Neumann

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

United States Patent Office.

EUGEN NEUMANN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO CHARLES D. TYLER, OF NEWARK, NEW JERSEY.

Letters Patent No. 109,652, dated November 29, 1870.

IMPROVEMENT IN STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

I, the undersigned, EUGEN NEUMANN, of the city of New York, State of New York, have invented certain Improvements in Steam-Boilers, of which the following is a specification.

My invention relates to the combination of a series of slanting bridges or partitions, pierced with tubes of different diameters, placed in the interior of a steam-boiler, by which a greatly more efficient steam-generating surface is obtained than in any other form of steam-boilers.

Figure I represents a longitudinal section of my invention.

Figure II represents a section through x' x', Fig. I.

Similar letters of reference indicate corresponding parts.

This steam-boiler is constructed of two shells, C and D, one placed inside the other.

In the inner shell D is placed the fire-grate E and fire-bridge F.

Behind the fire-bridge is placed a series of bridges or partitions, communicating with the water between the two shells, and placed in a slanting position, as represented, or more or less.

These bridges or partitions G G are perforated with a series of tubes, x x, screwed into or expanded into the walls of the same; and the tubes being placed at right angles to the walls or tube-sheets R R, must naturally also come in a slanting position, by which means the flame is compelled to go through these tubes, and (tending upward) will strike the tubes at certain angles, thereby producing increased effect, while the sediment and ashes from the combustibles will drop down to the bottom of the inner boiler-shell D simply by the aid of the draught, and will not be deposited in the tubes, as in ordinary horizontal multitubular steam-boilers, which require often to be cleaned.

The bridges or partitions G G are (as shown) curved at the bottom y y, by which means any sediment is prevented from lodging at the bottom. The curved position is also the most favorable for the circulation of the water contained in the bridges or partitions.

This arrangement leaves also space between the bottom y y of the bridges or partitions and the bottom of the inner boiler D, by which means, and through a man-hole, m, in rear of the boiler, access can be had to every part of the interior exposed to the fire.

As represented, the first bridge or partition nearest to the fire-bridge contains tubes of larger diameter than the second partition, and so on through any number of partitions placed in the interior boiler-shell.

The diameter of the tubes should gradually diminish to the rear of the boiler. The object hereof is, that the larger tubes in front allow the maintenance of the flame, and the smaller tubes in rear present a larger aggregate heating-surface, thereby consequently extracting more fully the heat.

In the accompanying drawing two bridges are only represented, but any number can, of course, be employed to suit circumstances.

Claim.

What I claim as new, and desire to secure by Letters Patent, is—

The employment of slanting bridges or partitions, G G, in the interior shell of a steam-boiler, perforated and stayed with tubes of different diameters, through which the flame and heat pass, while the water surrounds them, substantially for the purpose shown and described.

EUGEN NEUMANN.

Witnesses:
O. PRINDER,
B. WEVER.