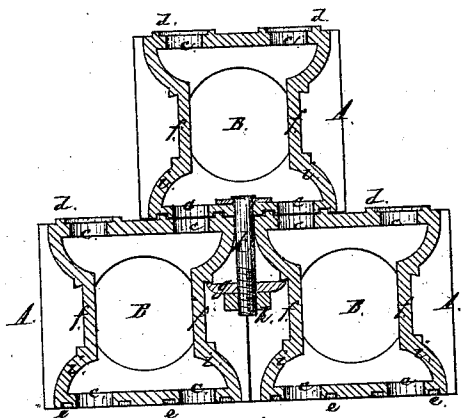


J. M. Clark,

Sectional Boiler.

No. 106,662.

Patented Aug. 23. 1870.



Witnesses.

Sydney E. Smith,

M. Morris Smith

Inventor.

Jonathan M. Clark

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United States Patent Office.

JONATHAN M. CLARK, OF NEW YORK, N. Y.

Letters Patent No. 106,662, dated August 23, 1870.

IMPROVEMENT IN STEAM-GENERATORS.

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

To all whom it may concern:

Be it known that I, JONATHAN M. CLARK, of the city, county, and State of New York, have invented certain new and useful Improvements in the "Construction of Steam-Generators;" and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, and which represents a central section of hollow couplings embracing my invention.

My invention has reference to that class of steam-generators composed of a series of tubes containing the water to be converted into steam, on which class several patents have heretofore been granted to me.

The object of this improvement is to simplify the construction, and thereby reduce the cost of such generators; and

It consists in a novel construction, arrangement, and mode of combining the hollow heads which constitute the connections of the water-tubes, and afford circulating passages in every desirable direction.

Referring to the drawing—

A represents the hollow heads used to connect the tubes at each end of the steam-generator.

B, the orifice into which the said tubes are inserted and secured either by screw-thread, or by expansion or other suitable means.

Each of these heads A has two openings, *c*, on its upper side, and two on its lower side, and has on the one side, around said openings *c*, an annular projection, *d*, and on the opposite side an annular recess, *e*, thus making them to fit together, the upper side of one head with the lower side of the adjacent one, as male and female. These heads, furthermore are contracted toward their center, on each of their vertical sides, as at *f*, for two purposes; first, to afford space between each two for the bolt-clamp *g*; and for turning the nut *h* thereon; and, secondly,

to deflect the current of water by means of the curves *i* in a direction diagonally across the hollow head.

These heads thus constructed, and having their respective tubes connected with them, are built up or arranged in layers side by side, and in tiers upward, so that each tube in the range above shall be intermediate of two tubes in the range below; thus the apertures, by their annular projections and recesses in the one side (upper and lower) of each head in each range lock with two heads in the adjacent range, and thus secure a diagonal as well as vertical circulation of the water. The heads and their tubes thus arranged are then secured together by means of bolts *k* passing through or rigidly connected with the bottom of each head, and the clamp *g* and nut *h*, whereby they are rendered water-tight around the apertures *c*, either with or without elastic packing in the annular spaces around them.

Having thus described my invention,

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

1. The hollow heads A, provided with annular projections *d* around the circulating passages at their one side, and corresponding recesses *e* around said passages at their opposite side, for forming the joints, each with two adjacent heads, above or below, or both, and secured together by means of the clamps *g* and bolts *k*, applied and arranged substantially as shown and described.

2. The contraction of the hollow head A, as at *f*, substantially as and for the purposes set forth.

In testimony whereof I hereunto subscribe my name in presence of witnesses this day of April, 1870.

JONATHAN M. CLARK.

Witnesses:

W. BENJAMIN,
SYDNEY E. SMITH.