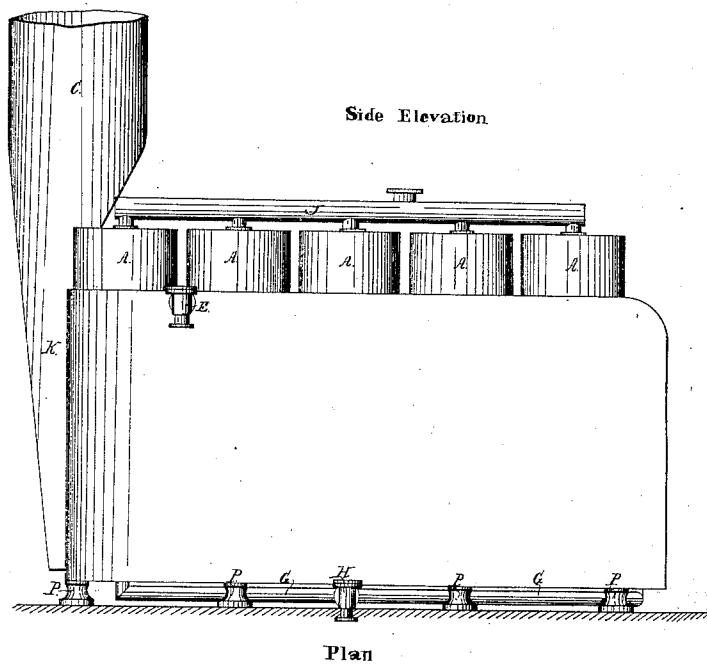


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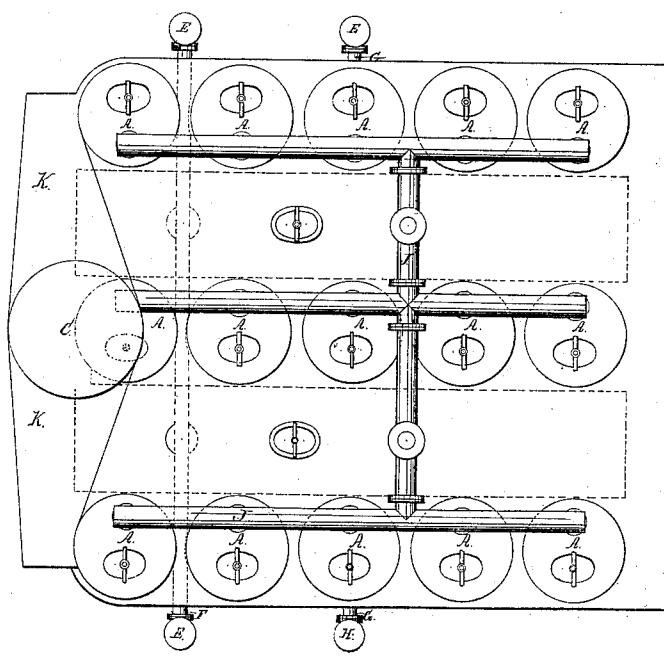
Sectional Steam Boiler.

No 16,262.

Patented Dec. 23, 1856.



Plan



Scale 1 to the foot:

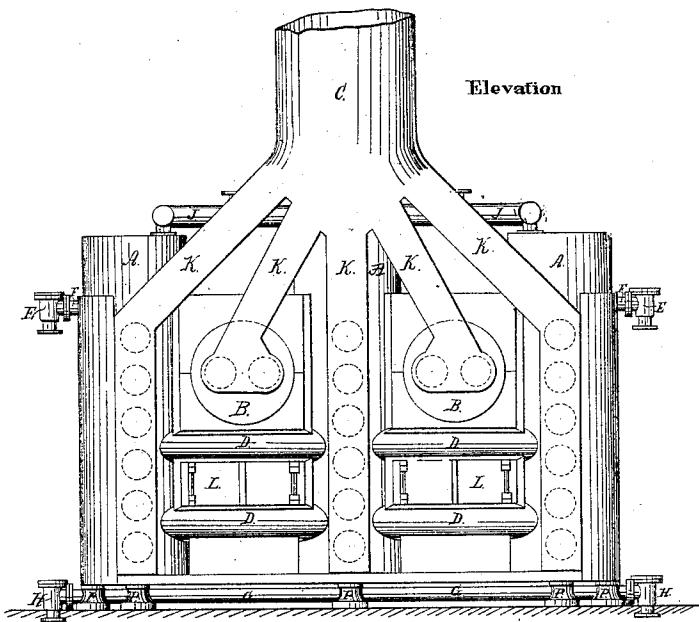
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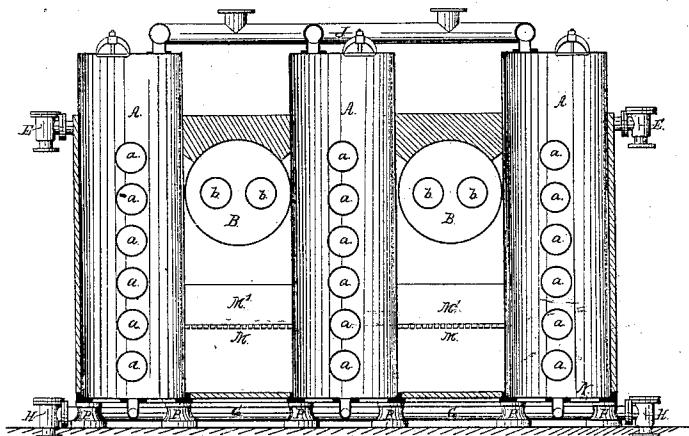
J. Armstrong,  
Sectional Steam Boiler.

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Cross Section

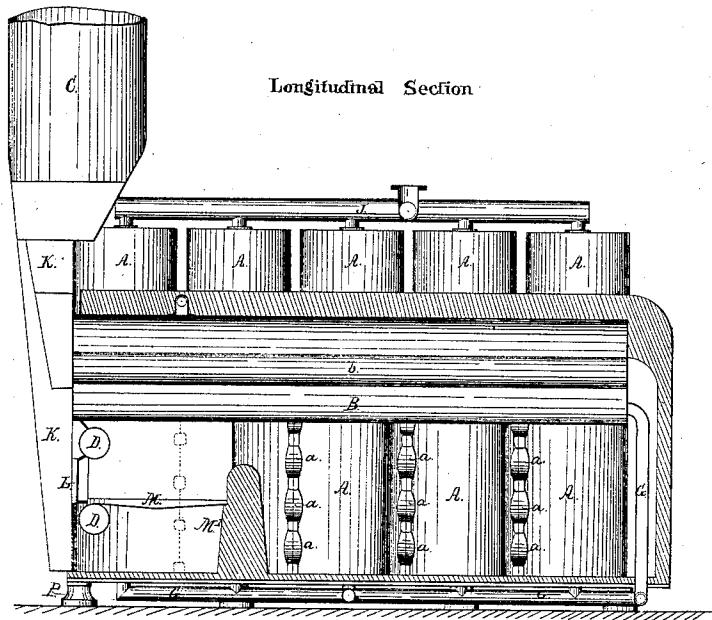


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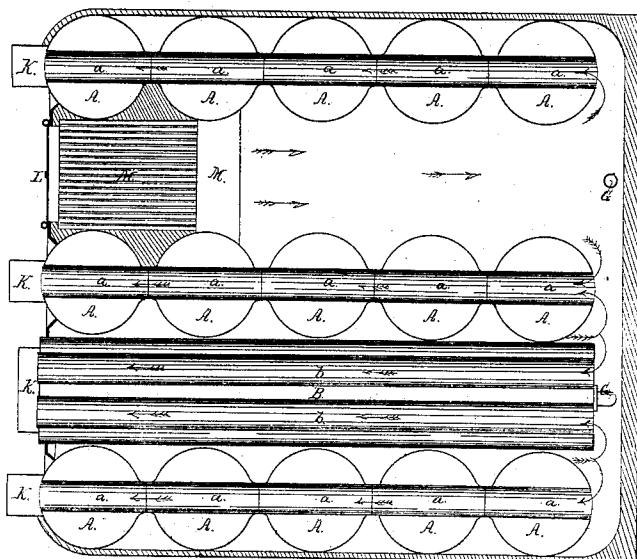
*J. Armstrong,*  
*Sectional Steam Boiler.*

No 10,262.

Patented Dec. 23, 1856.



Sectional Plan



# UNITED STATES PATENT OFFICE.

JOHN ARMSTRONG, OF NEW ORLEANS, LOUISIANA.

## IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. 16,262, dated December 23, 1856.

*To all whom it may concern:*

Be it known that I, JOHN ARMSTRONG, of the city of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Improvement in the Construction of Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, which form a part of this specification, and are lettered to correspond therewith.

The object of my invention is to construct a boiler possessing all the advantages of flued boilers in the proportions of heating-surface to cubic contents of water, and all the advantages of plain cylindrical boilers in facility for cleaning and accessibility to all parts for repairing, and to possess the desirable quality of not having any portion of its heating-surface exposed on its water side to receive the sedimental deposits of the water, the bottom of the boiler on which the deposits fall being at a point below the fire and not exposed to it.

To accomplish the objects of my invention, as above stated, I arrange three rows of vertical cylinders, A, in size and number corresponding to the size of boiler required, each cylinder A having a series of horizontal flues, a, lying in the vertical plane cutting the centers of all the vertical cylinders in each row, and the flues in all the cylinders lying in one series of horizontal planes, so that with the cylinders of one row standing contiguous, as in contact with each other, a series of flues will be formed, a a a a a a, lying in a vertical plane through the length of the row of vertical cylinders A A A A A. The space between each row of cylinders I make sufficient to form at one end the furnace M. The top of the space between the rows of vertical cylinders I close by a common double-flued boiler, B, the top of which is in the same horizontal plane as the top of the flues a in the vertical cylinders. The vertical cylinders are all connected together in their water-spaces by the pipe G on the bottom, and in their steam-space by the pipe J on the top end. E is the check-valve through which the feed-water is admitted, and H is the blow-off valve

through which the salt or muddy water is discharged. Each cylinder stands on two pedestals, P P, and has the usual man-hole in the top head. The three front cylinders of the three rows are connected by two large pipes, D D, which form a part of the fire front of the furnaces and the bearer for one end of the grate-bars. The fire as heated gases pass along between the rows of vertical cylinders and return through the flues of the cylinders and those of the horizontal boiler and discharge into the breechings K K K K K, which all unite in one chimney, C. By thus arranging the heating-surface in vertical cylinders with the heat applied to all sides of them I utilize a much larger proportion of the boiler-surface than is usually done in any other form of boiler, there being no portion of the surface of my boiler unexposed to the heat except that which forms the steam-room and the bottom heads of the cylinders, where the mud deposits, while every part, both inside and outside, is accessible for cleaning and repairing.

The lower end of each cylinder being its own mud-receiver and the top end its own steam-drum, the usual mud-receiver and steam-drum, as used on steamboats of the Western rivers, are dispensed with.

Having stated the nature and scope of my invention, being an improvement in steam-boilers, what I claim as my invention, and desire to secure by Letters Patent of the United States, is—

The series of cylinders A A, placed vertically in rows, with a series of horizontal flues passing through each row and lying in the vertical plane cutting the center of each cylinder, the space between each row of vertical cylinders being closed at the top by a horizontal flued boiler, all the vertical cylinders being connected together at the top and the bottom, and the furnace being located in one end of the space between the rows of vertical cylinders, the whole being arranged substantially as and for the purpose described.

JOHN ARMSTRONG.

Witnesses:

FRANKLIN H. CLARK,  
SAMUEL H. GILMAN.