

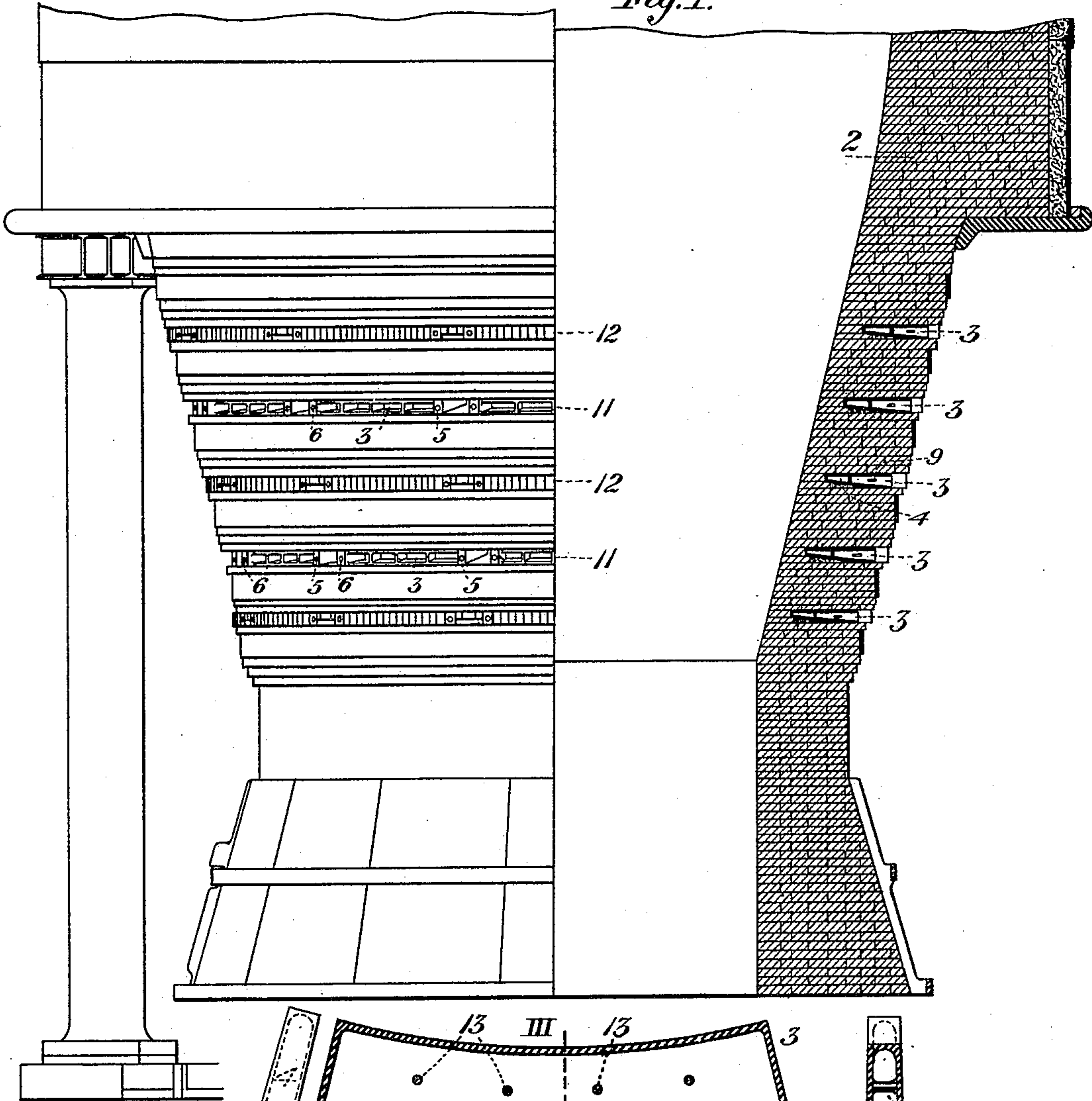
(No Model.)

J. GAYLEY.  
BOSH PLATE FOR FURNACES.

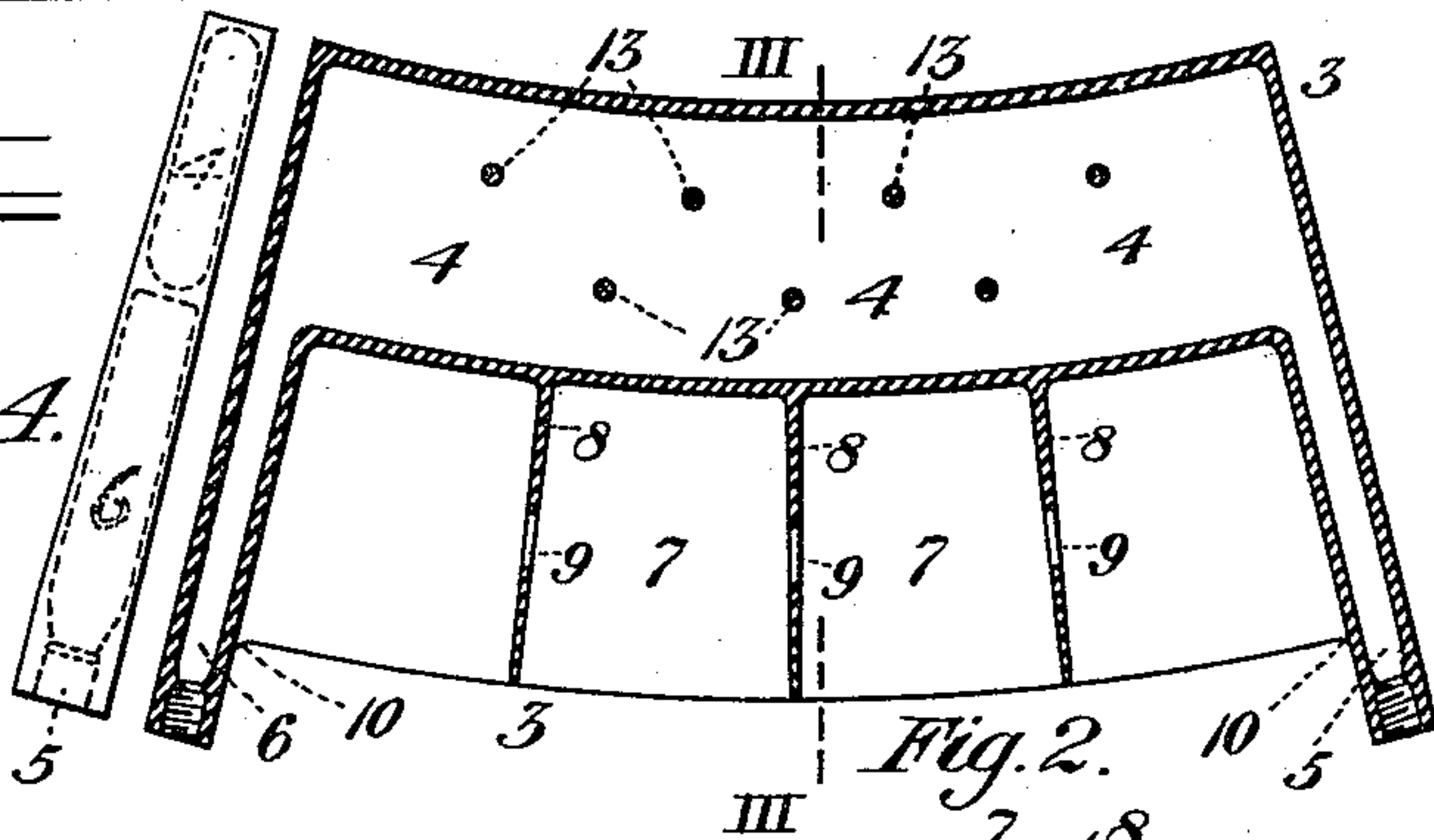
No. 463,663.

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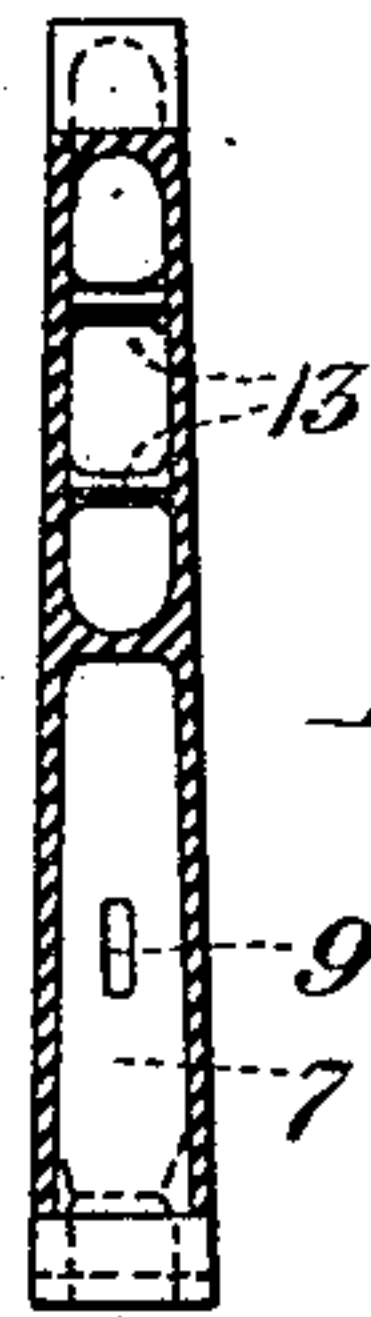
*Fig. 1.*



*Fig. 4.*



*Fig. 3.*



*Fig. 2.*



*Fig. 5.*

WITNESSES

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# UNITED STATES PATENT OFFICE.

JAMES GAYLEY, OF BRADDOCK, PENNSYLVANIA.

## BOSH-PLATE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 463,663, dated November 24, 1891.

Application filed May 4, 1891. Serial No. 391,552. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES GAYLEY, of Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Bosh-Plates for Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in vertical section, showing a blast-furnace provided with my improved bosh-plates. Fig. 2 is a horizontal sectional view of a single bosh-plate on the line II II of Fig. 5. Fig. 3 is a section on the line III III of Fig. 2. Fig. 4 is an end view, and Fig. 5 a front view, respectively, of the bosh-plate of Fig. 2.

In the bosh-plate now commonly in use two small separate water-courses are employed, and when the inner course is injured it is customary to close the water communication and allow it to burn off, using only the outer course. This involves a great loss of metal, and consequently as these plates are made of bronze a considerable expense.

In my improved construction these difficulties are obviated and a bosh-plate is employed which contains a single water-course of large capacity and of such shape that the walls may be easily repaired. Moreover, no special bricks are required in building the plates into the furnace-walls, and the shape and continuity of the walls may remain unaltered.

In the drawings, 2 represents the wall of the furnace, and 33 the bosh-plates arranged, preferably, in several horizontal series around the furnace-bosh. Each bosh-plate is made tapering in width and thickness, as shown in Figs. 2 and 3, producing a wedge-shaped plate, and is provided at its inner side with a water-chamber 4, having the inlet-pipe 5 and exit-pipe 6. Between these pipes is an air-chamber 7, open at its outer side and having supporting-ribs 8, which form chambers communicating with each other by apertures 9. If desired, studs may be used in place of the partitions; but I prefer the construction shown. This chamber does not extend to the outer

ends of the pipes 5 and 6; but an offset 10 is provided, in which loose bricks may be inserted to preserve the continuity of the walls, leaving only the pipes 5 and 6 protruding therefrom. In Fig. 1 the series 11 is shown without the filling-bricks, while series 12 illustrates the bricks in place.

It will be seen from Figs. 2 and 3 that no baffle-plates or partitions are employed in the chamber 4, the top plate being supported by a series of small studs or posts 13. This constitutes an important item of my invention, since deposits constantly form on the baffles commonly used, clogging up the passages and preventing the flow of the cooling-fluid. In building the plates into the furnace-wall the top surface is preferably made horizontal, the entire taper coming on the bottom of the plate, on account of ease in construction, the use of special forms of bricks being thus avoided.

A practical test of these plates has shown that they possess remarkable cooling power and stability in resisting pressure, while the condition of each plate is easily ascertained by inspection of the air-chamber 7 and any leak easily located and repaired.

What I claim is—

1. A cooling-plate having a plane-surfaced inclined top and bottom and openings for a cooling medium, substantially as described.

2. A cooling-plate containing a single closed and unobstructed water-chamber, pipes of smaller diameter leading thereto, and vertical studs in the water-chamber, substantially as and for the purposes described.

3. A bosh-plate having an inner water-chamber, a pipe extending from each end of said chamber, and an air-chamber between and shorter than said pipes, producing an offset between the pipes, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 2d day of May, A. D. 1891.

JAMES GAYLEY.

Witnesses:

W. B. CORWIN,  
H. M. CORWIN.