

No. 608,079.

Patented July 26, 1898.

W. ROTTHOFF.
COOLING PLATE.

(Application filed Feb. 3, 1896.)

(No Model.)

Fig. 2.

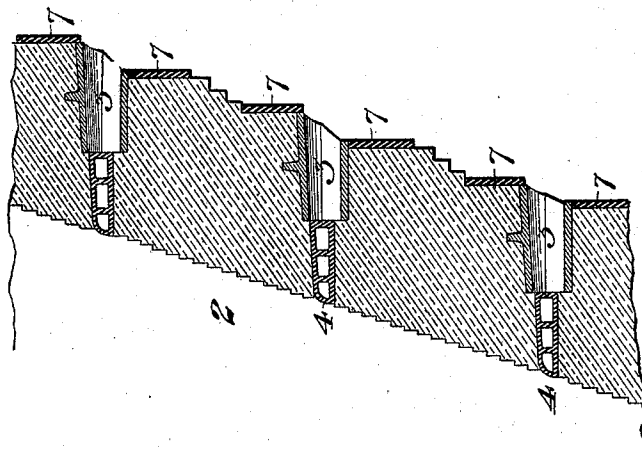
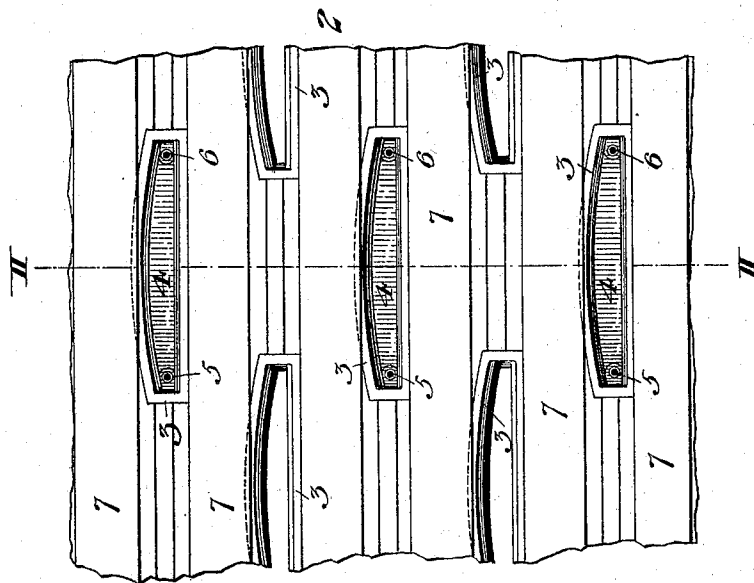


Fig. 1.



WITNESSES

J. A. Connor
E. C. MacKown

INVENTOR

William Rotthoff
by Baker & Baker
his attys.

UNITED STATES PATENT OFFICE.

WILLIAM ROTTHOFF, OF DUQUESNE, PENNSYLVANIA.

COOLING-PLATE.

SPECIFICATION forming part of Letters Patent No. 608,079, dated July 26, 1898.

Application filed February 3, 1896. Serial No. 577,824. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ROTTHOFF, of Duquesne, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Cooling-Plates, 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 broken front elevation showing a portion of a blast-furnace bosh provided with my improved cooling-plates, and Fig. 2 is a vertical section on the line II II of Fig. 1.

My invention relates to the cooling-plates employed in the walls of blast-furnaces, and is designed to afford an improved construction therefor which shall greatly reduce the weight and cost of these plates and also allow their easy insertion and removal.

To that end it consists in an outer hollow open-ended plate which is arranged to be built permanently into the furnace-wall and a water-cooling plate which is smaller than the outer plate and is arranged to be moved radially through the outer plate in its insertion and removal.

In the drawings, 2 represents the bosh of a blast-furnace, this bosh having permanently built into it during its construction a series of outer hollow plates 3. These plates are open at both ends, and between their inner ends and the inner face of the wall are inserted corresponding series of water-cooled plates 4, these plates being smaller than the outer plates and being set in place in line with the open inner ends of the outer plates. The inlet and outlet pipes 5 and 6 for the inner water-cooled plates pass through the outer hollow or box plate. To more securely hold the outer plates in their place in the furnace-wall, I preferably arrange them in such a manner that their outer upper edges are lapped over by the strengthening-bands 7, which encircle the furnace.

The advantages of my invention will be apparent to those skilled in the art, since when the inner water-cooled plates are broken or injured they may be easily and quickly pulled out through the outer plates and others inserted without injuring the brickwork, the outer plates always remaining in place and retaining the masonry in place.

The plates may be made with flat tops instead of the arch tops shown and may be of any suitable internal construction.

Other changes may be made without departing from my invention, since

What I claim is—

1. The combination with a blast-furnace having in its wall an unobstructed open cavity of a hollow metal plate lining the same, and an inner water-cooled plate of smaller cross-section than the outer plate located back of said lining-plate in line therewith and arranged to be moved radially therethrough; substantially as described.

2. The combination with an outer open-ended box-plate, having an unobstructed passage therethrough and arranged to be built permanently into the outer portion of the furnace-wall, of a water-cooling plate of smaller size and arranged to be moved radially in and out through said outer plate; substantially as described.

3. The combination with a blast-furnace of outer hollow open-ended plates built into its outer portions, strengthening-bands covering a portion of the rims of said plates, and inner water-cooled plates in line with the inner open ends of the outer plates; substantially as described.

4. A blast-furnace having built in its wall a series of separated open-ended box-plates with brick partitions between them, and inner water-cooled plates of smaller size located back of said plates and arranged to be moved radially in and out through them; substantially as described.

5. A bosh-cooling plate consisting of a body with an unobstructed interior space or chamber, and a separate nose, the nose and body being so formed or constructed that the nose will pass freely through the body, whereby it may be withdrawn radially from, or inserted in, its position in the bosh-wall without disturbing the body; substantially as described.

In testimony whereof I have hereunto set my hand.

WILLIAM ROTTHOFF.

Witnesses:

F. E. GAITHER,
H. M. COEWIN.