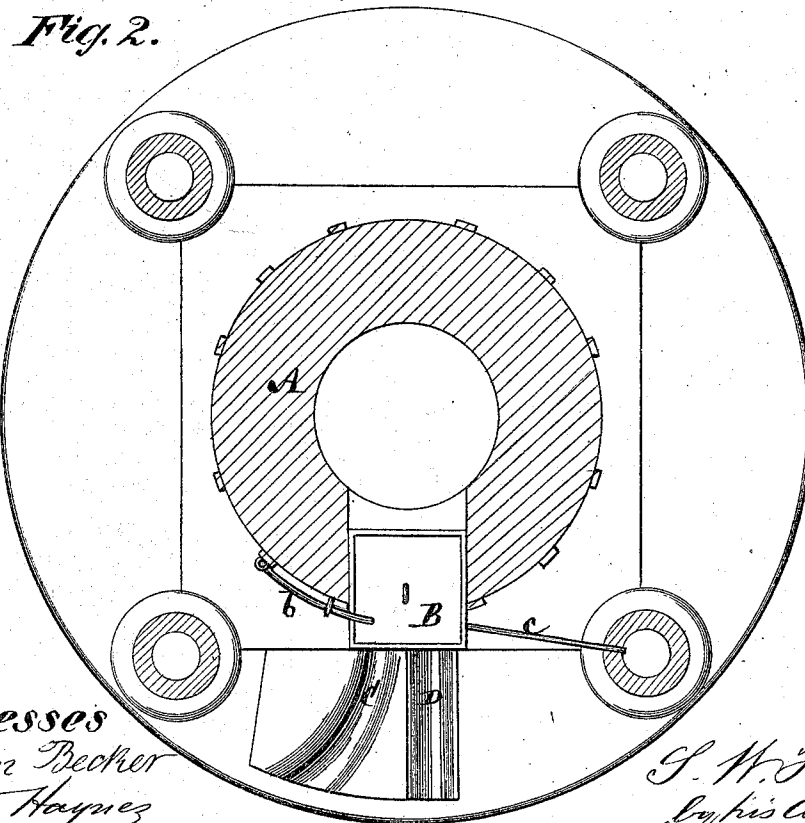
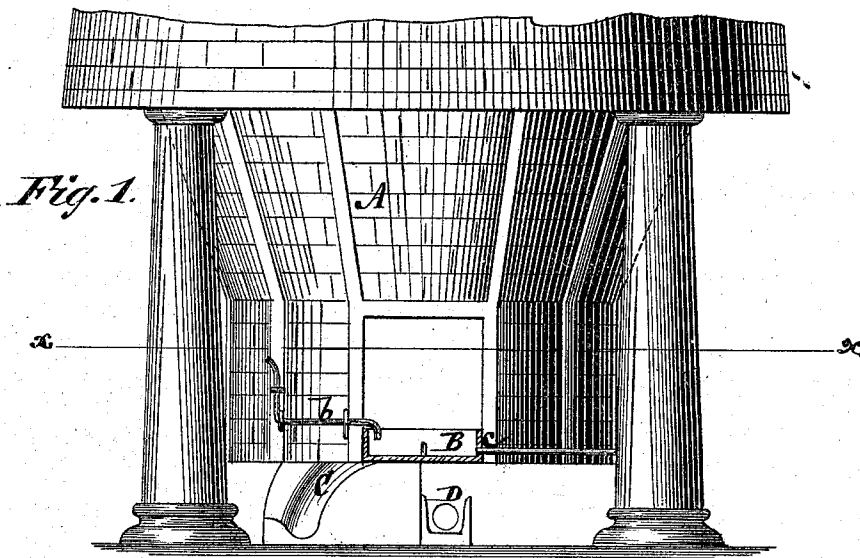


S. W. HARRIS.

Cinder-Plates for Blast-Furnaces.

No. 142,463.

Patented September 2, 1873.



Witnesses

John Becker
Fred Haynes

S. W. Harris
by his Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE.

SAMUEL W. HARRIS, OF ALBANY, NEW YORK, ASSIGNOR TO THEODORE F. MINER, OF SAME PLACE.

IMPROVEMENT IN CINDER-PLATES FOR BLAST-FURNACES.

Specification forming part of Letters Patent No. **142,463**, dated September 2, 1873; application filed July 24, 1873.

To all whom it may concern:

Be it known that I, SAMUEL WASHINGTON HARRIS, of the city and county of Albany and State of New York, have invented an Improvement in Cinder-Plates for Blast-Furnaces, of which the following is a specification:

The object of this invention is to obviate the difficulty heretofore experienced in keeping the plate which covers the cinder-notch in furnaces for the smelting of iron and other ores from burning away by contact of the same with the cinder or slag during the process of tapping cinder. To this end, the cinder-plate is made dish-shape, or with flanges of any desired depth, and is kept supplied with water in quantities sufficient to last any required length of time, thus forming a water cinder-plate.

In the accompanying drawing, Figure 1 represents a front elevation of the lower portion of a furnace having my improvement applied, and Fig. 2 a horizontal section on the line *xx*.

Similar letters of reference indicate corresponding parts.

A is the body of the furnace, and B the cinder-plate, which is made with flanges of any desired depth, and is supplied with water, by a pipe, *b*, from the ordinary water-pipes used in connection with the furnace, or waste-pipe leading to the main waste-pipe being attached, whereby a constant flow of water through the cinder-plate is insured. The quantity of water admitted to the plate may be regulated by a valve in the supply-pipe. C is the furrow for the cinder, and P the vent for the molten metal.

It is desirable that that portion of the cinder-

plate which projects over the dam-plate should be tamped at each side with refuse fire-brick and clay, leaving a space of several inches between the cinder-notch and the front of the plate, which greatly facilitates the stopping up of the notch after tapping, and renders the whole process of tapping cinder less laborious. Such provision also acts as a guide for the flow of cinder and tends to confine it to the furrow and prevent it from spattering onto the front of the furnace and into the casting-room.

The increased durability of the water cinder-plates, as compared with the ordinary plates, effects a great saving in the cost of material and labor, as regards the production of the cinder-plates, and in the time, labor, clay, loam, &c., used in setting the plates.

The ordinary cinder-plate is frequently destroyed by two days' use, while this, my improved plate, will last for months. It, however, like the old style of plate, is an independent piece, and detachable by simply lifting it out when necessary for repairs or other purposes.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The flanged or hollow water cinder-plate B, substantially as and for the purpose herein set forth.

2. The combination of the water-supply pipe *b* and waste-pipe *c* with the flanged or hollow water cinder-plate B, essentially as shown and described.

SAM. W. HARRIS.

Witnesses:

JNO. TEMPLETON,
D. S. MANN.