

D. W. HENDRICKSON.

Improvement in Cupola and Blast Furnaces.

No. 130,370.

Patented Aug. 13, 1872.

Fig. 1.

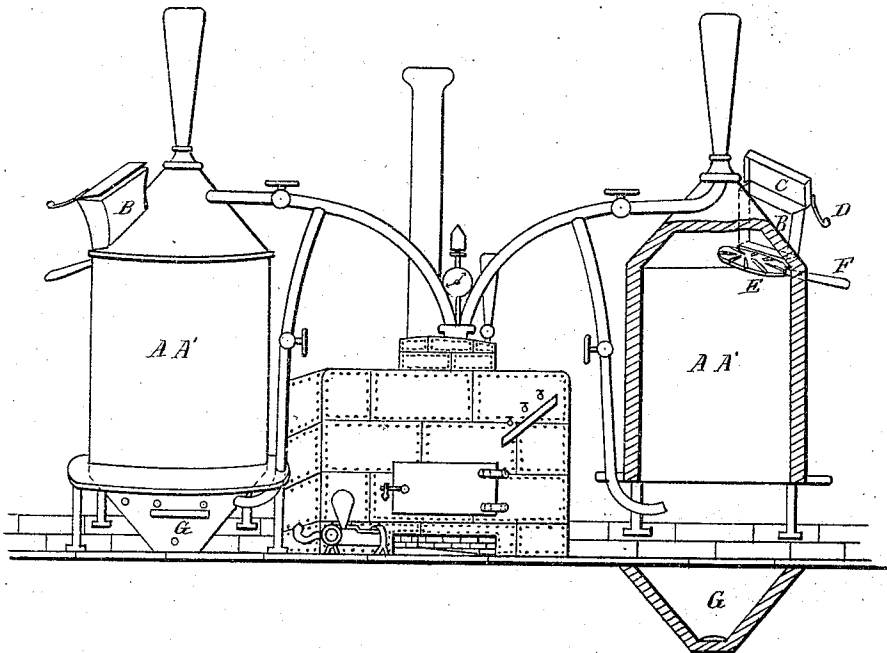
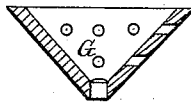


Fig. 2.



Witnesses:

Wm. C. L. Limestone Jr.
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Inventor:

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UNITED STATES PATENT OFFICE.

DAVID W. HENDRICKSON, OF RED BANK, NEW JERSEY.

IMPROVEMENT IN CUPOLA AND BLAST FURNACES.

Specification forming part of Letters Patent No. 130,370, dated August 13, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, DAVID W. HENDRICKSON, of Red Bank, in the county of Monmouth and State of New Jersey, have invented a new and useful Improvement in Blast and Cupola Furnaces and their Operation; and I do hereby declare that the following is a full and exact description of the same.

The nature of my invention consists in operating one or more furnaces by the same—single—or a detached boiler, used for keeping or making steam for the purpose of creating a draft or blast in the top and bottom of a furnace, similar to my invention and improvements in blast-furnaces, allowed November 3, 1868, and as more particularly described in the accompanying drawing, which forms a part of this specification, showing the mode of feeding the furnace through a closed hopper instead of an open door, as in the usual way or old style; arranged also with an adjustable crucible or back, so as to be replaced at convenience without disturbing the lining of the furnace or requiring a relining of the whole furnace, as shown in the accompanying drawing, and which forms a part of this specification.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction, operation, and benefits, viz.:

Figure 1 is a steam-boiler, made of any desirable size or capacity.

Letters A A' are cupola or blast furnaces. B represents a hopper, with a door, C, with flange, so constructed as to shut down over the upper opening of hopper B, operated by lever or crank D. Letter E represents a cast-iron damper, forming the bottom of hopper B, constructed of cast-iron, with grooves constructed or cast on the same, operated by lever F.

This hopper, so constructed and arranged, has superior advantages over the old style of feeding or charging arrangements, as the old style of door at the side, or open at the top, is useless and valueless with the mode of smelting or blasting by the steam process. The door at the side necessitates the shutting off of the steam whenever the door is opened for a charge,

while the closed hopper is always tight. When the door C is open the damper E is closed, and vice versa. Besides, the damper E, so constructed with grooves, distributes the charge equally around the furnace—better and more equally than can be done with a shovel. The advantage of keeping one or the other—either door C or damper E—closed, prevents a current of air from passing from the charge-door to the upper part of the furnace; consequently a more natural, permanent, and perfect combustion and draft is kept up in the furnace, saving time, fuel, and labor, and producing a better result from the material to be smelted; the whole to be made of wrought or cast iron, as shown in the accompanying drawing.

The adjustable crucible G is made of fire-brick, silex, or any substance suitable for the same, arranged with tuyere-holes, dam-plate, vent, and tap-holes, in the usual way and form.

The advantages claimed for the adjustable crucible are that, in smelting carbonates or sulphurets of lead, silver, gold, iron, or antimony in the old way, the lining burns out in a few days and necessitates the relining of the whole furnace, at considerable expense, labor, and time; while the adjustable crucible can be replaced at pleasure, with trifling expense, with great ease, in a short time, without disturbing the other parts of the furnace; arranged and operated as shown in the accompanying drawing, which forms a part of this specification.

I claim as my invention—

1. The combination, as shown in the accompanying drawing, of hopper B with flanged door C and damper E, substantially as and for the purposes hereinbefore set forth.

2. The adjustable crucible G, substantially as and for the purposes hereinbefore set forth.

3. The combination of crucible G, hopper B, and furnaces A A', substantially as and for the purposes hereinbefore set forth, and as shown and operated in the accompanying drawing, for the purpose of smelting or melting purposes.

D. W. HENDRICKSON.

Witnesses:

WM. H. ELPHINSTONE, Jr.,
HORACE P. GEARY.