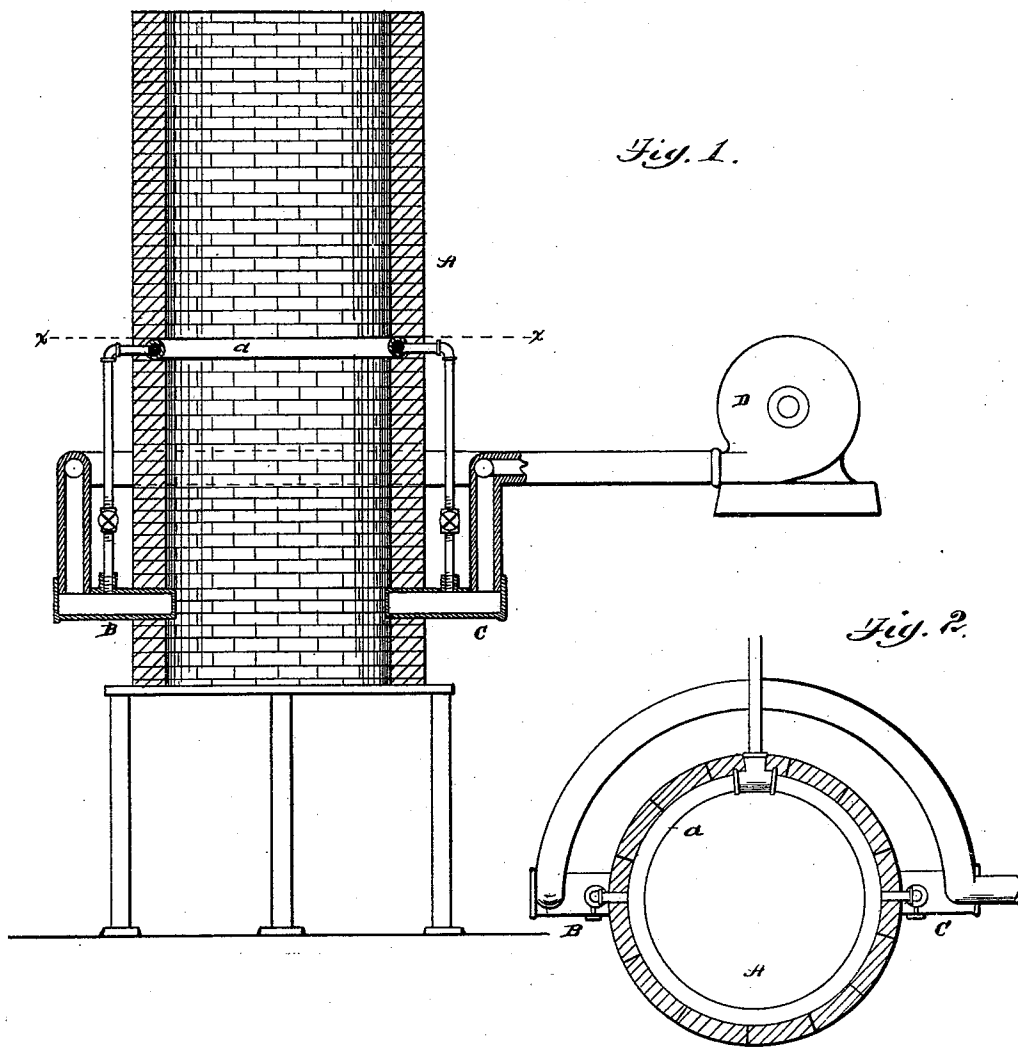


(No Model.)

T. DOHERTY.
METAL FOUNDING.

No. 565,262.

Patented Aug. 4, 1896.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS DOHERTY, OF SARNIA, CANADA.

METAL-FOUNDING.

SPECIFICATION forming part of Letters Patent No. 565,262, dated August 4, 1896.

Application filed June 7, 1895. Serial No. 551,955. (No model.)

To all whom it may concern:

Be it known that I, THOMAS DOHERTY, a citizen of Canada, residing at Sarnia, in the county of Lambton, Province of Ontario, Canada, have invented a certain new and useful Improvement in Metal-Founding; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to metal-founding, and has for its object improvements to be used in connection with the cupola or melting-furnace in which iron is melted, by which a large portion of the impurities usually found in iron can be burned out and expelled and the remaining iron is rendered softer, malleable, and workable.

To produce these results, I force into the molten iron while in the cupola a stream of mingled superheated steam and air, and I utilize the heat of the cupola itself for the purpose of superheating the steam.

In the drawings, Figure 1 is a vertical section of the cupola. Fig. 2 is a horizontal cross-section on line X X of Fig. 1.

A indicates a cupola provided with twyers B C for the introduction of an air-blast, which is forced in from a fan D.

Within the cupola and above the place of the molten iron is an annular pipe *a*, having an outside connection for the introduction thereinto of steam and having outside connections leading into the twyers B C,

through which steam is conducted into the twyers and mingled with the air-blast.

I have found that the superheated steam and air thus thrown into the molten metal converts it into a form of iron greatly superior to ordinary cast-iron, and closely analogous to some forms of steel or wrought-iron.

I am aware of what is known as the "Bessemer" and kindred processes, but in refining iron by these processes, so far as I am aware, the iron must be taken from the cupola and placed in a converter, which is heavy work, requiring time and attended with some danger, whereas with my process the iron is cleaned of impurities and converted directly in the cupola. Furthermore, in the Bessemer process only atmospheric air is used and not steam, and the ores to be employed must be carefully selected. With my process no selection of iron, ores, or of special pig-iron need be selected.

What I claim is—

In combination with a cupola, an annular pipe located within the cupola and about midway between the top and bottom thereof, having an outside source of steam supply, and outside connections with the twyers, an air-blast, and means for mingling the air and steam and forcing the combined blast into the molten iron, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

THOMAS DOHERTY.

Witnesses:

J. O. WEST,
JAS. MOFFAT.