C. T. CLARK.

Cupola Tuyere and Blast Deflector,

No. 208,465. Patented Oct. 1, 1878.

Fig.1.

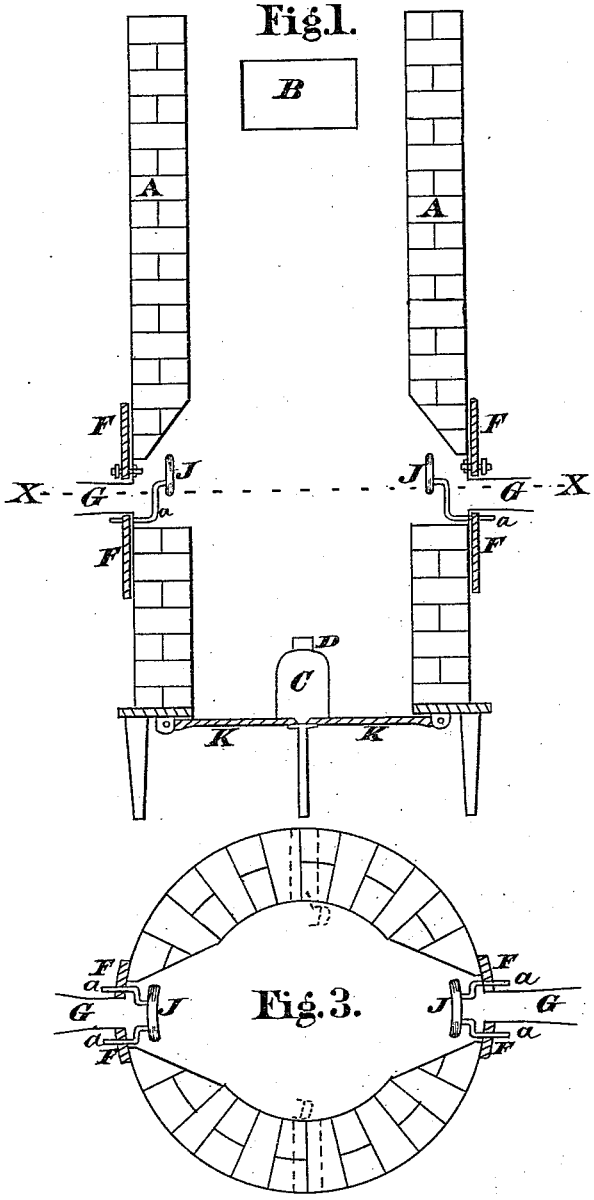

Fig.2.

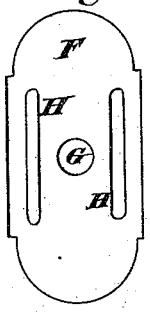

Fig.3.

WITNESSES.

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CHARLES T. CLARK, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN CUPOLA TUYERE AND BLAST-DEFLECTOR.

Specification forming part of Letters Patent No. **208,465**, dated October 1, 1878; application filed April 27, 1878.

To all whom it may concern:

Be it known that I, CHARLES T. CLARK, of the city of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in a Cupola for Melting Metal; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming part of this specification, and to the letters of reference marked thereon.

Figure 1 is a sectional view of my cupola-furnace, showing the device for dividing and distributing the blast and general arrangement of the plate for adjusting the height of the tuyere-openings. Fig. 2 is a face view of the adjustable plate, showing the pipe openings and slots by which it is adjusted. Fig. 3 is a sectional view taken as indicated by *x x*, showing the beveled sides of the pipe-openings and form of the blast-distributer.

This my invention relates to certain new and useful improvements in cupola-furnaces for melting metal; and the invention consists in a peculiarly-constructed device, arranged in front of the blast-pipes, for dividing and directing the blast, in order to distribute it more equally in every direction within the furnace; also, in the adjustable plates, by which the tuyere-openings may be raised or lowered to suit the amount of metal to be melted.

The invention finally consists in small openings arranged between the tuyeres for the purpose of lighting up the furnace.

In the drawings referred to, A A represent the cupola-furnace, which may be made in any suitable form and lined with brick or other suitable material. B is the opening in the back by which the furnace is charged. C is the discharge opening or mouth, and D D are the openings between the tuyeres for lighting up the furnace preparatory to melting.

F is the adjustable tuyere-plate, which is made in form as shown, and secured to the furnace by means of bolts extending through slots H in said plate in such a manner as to permit of the ready raising or lowering of the tuyere, so as to adjust the openings. G is the tuyere-opening. J is the device placed in front of the tuyere for dividing and directing the blast, in order to distribute it more equally throughout the furnace. This device consists in a metal head-piece or plate, provided with legs or supports *a a*, bent in form as shown in the drawings, riveted at one end into the plate, while the other ends may pass out through the plate F, and these ends may answer as handles by which to adjust the interior device and hold it in its place.

K K are the trap-doors through which the furnace is discharged or emptied when the process of melting is completed.

Cupolas are charged ordinarily by first putting in shavings and light wood sufficient to ignite the superposed coke without the aid of a blast. The coke is filled in to a point above the tuyere-openings, and then the alternate layers of metal and coke.

Preparatory to blowing, the first charge of shavings or wood and coke must be lighted; but there being no openings for access to such charge, except the tap-hole in the bottom, recourse must be had to it. This is objectionable, for the reason that, the lighting being at the bottom and a strong draft coming from the tuyere-holes, the coke is consumed, and the metal comes down in front of the blast-pipes without sufficient coke to melt it when blowing begins.

In using several lighting-up holes, as I do, which are located high up in the furnace above the tap-hole, the fire can be started with the tuyere-openings closed and at more points than one. This obviates the necessity of lighting up so soon, and prevents the consumption of the coke before the tuyere-openings before time.

Having thus fully described the nature and object of this my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The slotted tuyere-plate F, in combination with bolts in the furnace shell or wall, so as to be adjustable over the tuyere-openings of the furnace, substantially as described, and for the purpose set forth.

2. The deflecting-plate J in front of the blast-pipe for directing and dividing the blast, in combination with legs *a a* and the adjustable plate F, substantially as described.

CHARLES T. CLARK.

Witnesses:

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