No. 847,097. PATENTED MAR. 12, 1907.

B. D. McCORMICK.

CUPOLA FURNACE.

APPLICATION FILED AUG. 22, 1905.

Fig. 1.

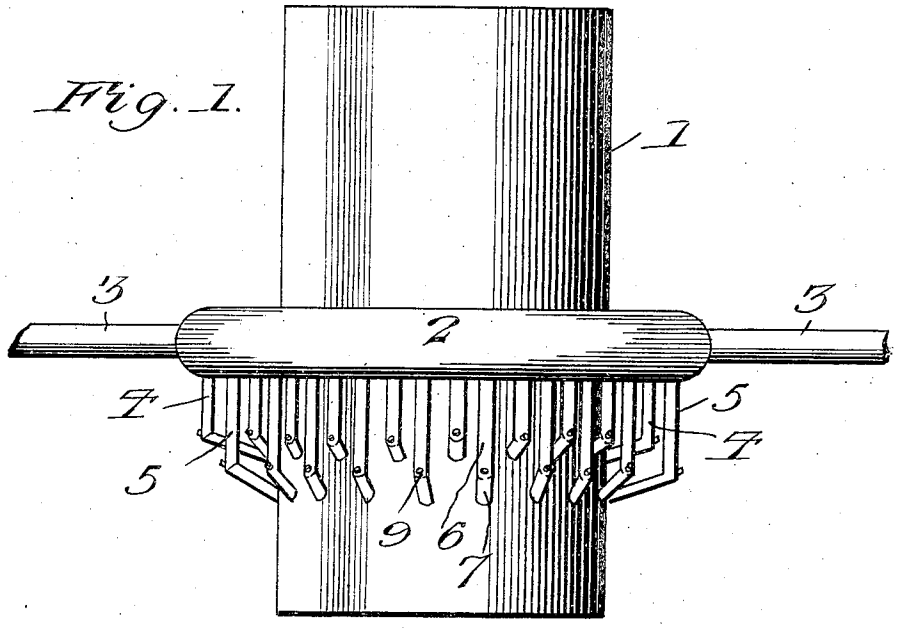
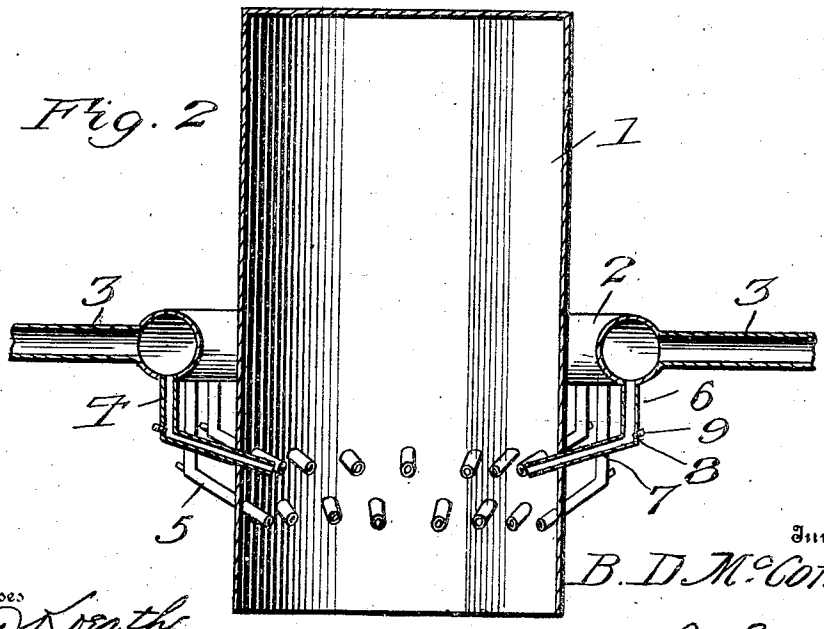


Fig. 2



Witnesses:
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CUPOLA-FURNACE.

No. 847,097. Specification of Letters Patent. Patented March 12, 1907.

Application filed August 22, 1905. Serial No. 275,282.

To all whom it may concern:

Be it known that I, BENJAMIN D. McCORMICK, a citizen of the United States of America, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Cupola-Furnaces, of which the following is a specification.

This invention relates to improvements in cupola-furnaces, and particularly to a blast apparatus therefor, the object of the invention being to provide a blast appliance wherein the air-chamber or wind-box is disposed exteriorly of the furnace and above the point of inlet of the blast-pipe thereto to effectually prevent choking of said air-chamber or wind-box by the entrance of slag thereto, and, further, to provide a construction and arrangement of the blast-pipes to secure the most effective impingement of the blast upon the combustible material within the furnace and to permit of the ready and convenient removal of slag or other accumulation from the pipes when occasion requires.

The preferred embodiment of the invention is illustrated in the accompanying drawing, in which—

Figure 1 is an elevational view of a conventionally-illustrated cupola-furnace having the invention applied thereto, and Fig. 2 is a central vertical section of the same.

Referring now more particularly to the drawing, the numeral 1 designates the furnace, upon the outer side of which is arranged an annular surrounding blast-chamber or wind-box 2, communicating with blast-supply pipes 3, said chamber or box being constructed of piping or any other preferred form or character of material.

Depending from the wind-box 2 are two sets of blast-pipes 4 and 5, arranged to discharge into the furnace at different elevations, the pipes 4 being disposed alternately in series with the pipes 5. Each pipe 4 or 5 is substantially of elbow form, having upper and lower branches 6 and 7, the former vertically disposed and communicating with the bottom of the wind-box 2 and the latter extending inwardly and downwardly at an oblique angle and projecting into the furnace through the wall thereof to project the air downward upon the combustible material therein to apply the blast in the most effective manner. By arranging the two sets of pipes in alternate relation and to discharge alternately at different elevations the blast is brought to bear at different elevations upon different portions of the charge, thereby facilitating the melting process. It will be observed that by this arrangement the wind-box is disposed above the level of the highest point at which the blast is delivered into the furnace, and that therefore the entrance of slag into the box and choking of the same therefrom will be effectually prevented.

At the angle of intersection of its arms 6 and 7 and in line with the passage in the latter each pipe 4 or 5 is formed with an opening 8, closed by a removable closure 9. Upon removing this closure a rod or other implement may be introduced into the branch 7 to remove any slag which may accumulate therein, thus enabling the pipes to be readily and conveniently kept clear of any substance which will prevent free inlet of the blast.

Having thus described the invention, what is claimed as new is—

In combination with a blast-furnace, a tubular duct surrounding the same and constituting a blast-chamber, two sets or series of twyers connected with said duct and having downwardly and inwardly inclined injector portions extended through the wall of the furnace and projecting beyond the inner face of the latter for delivering the injected blast directly into the furnace charge, the injector portions of one set of twyers being disposed in a plane above and arranged at a different inclination relative to the corresponding portions with the other set of twyers and the two sets of injector portions being alternated in arrangement around the furnace, and means for supplying a blast fluid under pressure to the blast-chamber.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN D. McCORMICK.

Witnesses:

L. D. SEWARD,

MARTHA SEWARD.