

No. 887,777.

PATENTED MAY 19, 1908.

W. S. DEMPSEY.

METALLURGICAL FURNACE.

APPLICATION FILED NOV. 21, 1906. RENEWED FEB. 7, 1908.

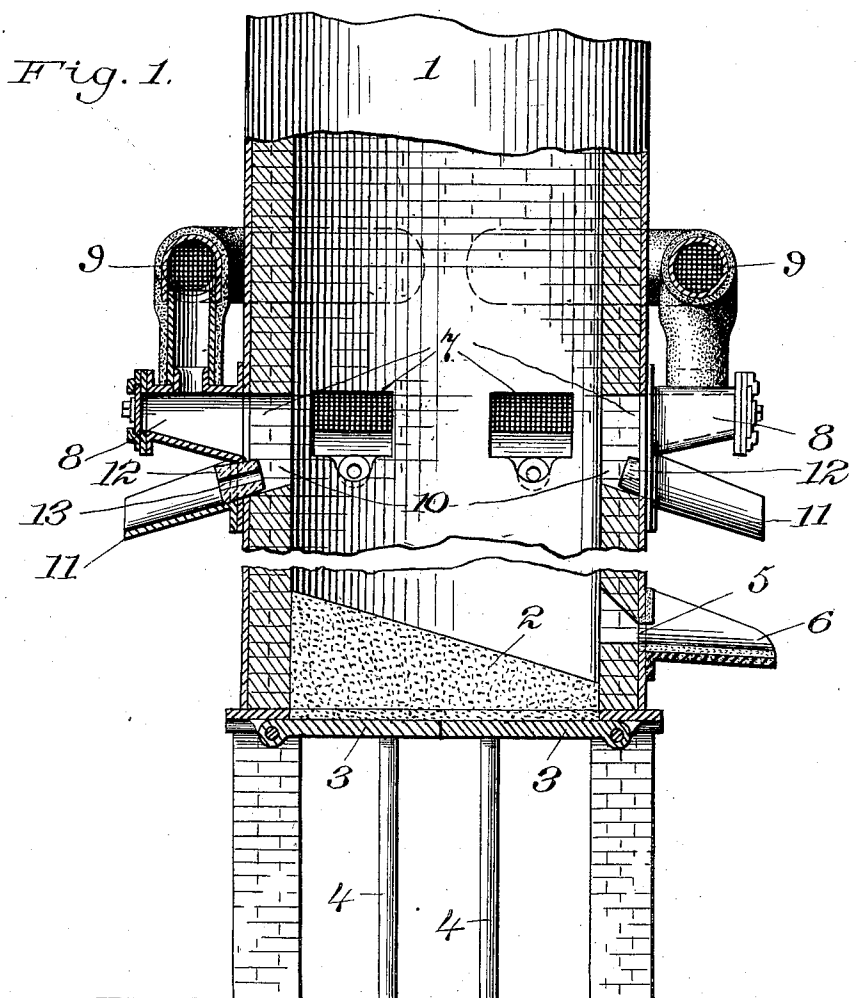


Fig. 2.

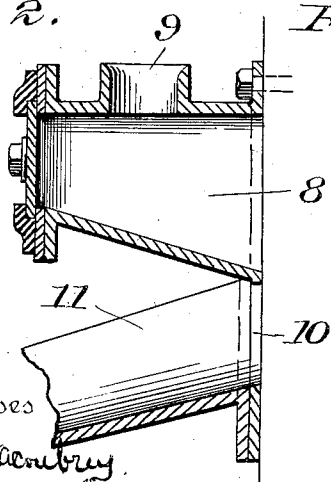
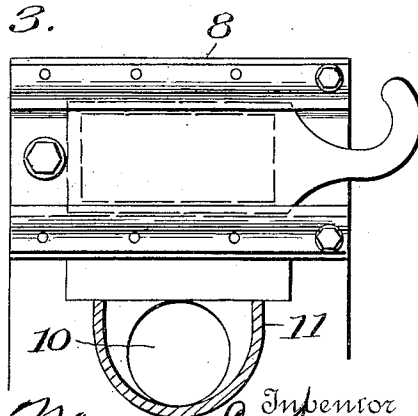


Fig. 3.



Witnesses
C. L. Macomber
M. G. Crawford

Inventor
William S. Dempsey
By his Attorney
W. H. Humphrey

UNITED STATES PATENT OFFICE.

WILLIAM STEPHEN DEMPSEY, OF NEW YORK, N. Y.

METALLURGICAL FURNACE.

No. 887,777.

Specification of Letters Patent.

Patented May 19, 1908.

Original application filed September 7, 1906, Serial No. 333,719. Divided and this application filed November 21, 1906, Serial No. 344,450. Renewed February 7, 1908. Serial No. 414,781.

To all whom it may concern:

Be it known that I, WILLIAM STEPHEN DEMPSEY, a citizen of the United States of America, residing at 548 West Fifty-fifth street, borough of Manhattan, city, county, and State of New York, have invented new and useful Improvements in Metallurgical Furnaces, of which the following is a specification.

My invention relates generally to metallurgical furnaces and as herein embodied, is particularly adapted for use in cupola furnaces of the type described in an application filed by me September 7, 1906 and serially numbered 333,719, of which this application is a division.

The object of the present invention is to automatically regulate and control the rise of the molten metal in a furnace, in order to prevent the same from entering and choking the twyers or twyer boxes and further, to permit the ready removal of slag from time to time, as required and thereby make the operation practically continuous.

A furnace constructed in accordance with my invention is illustrated in the accompanying drawings. I wish it understood, however, that I do not limit myself to the exact construction and arrangement of parts shown, as various changes may be made therein without departing from the spirit and scope of my invention.

In the drawings: Figure 1 is a central vertical sectional view of a cupola furnace showing my invention applied. Fig. 2 is an enlarged detail sectional view showing one of the twyer boxes and the overflow opening or tapping hole adjacent to the same, and Fig. 3 is a front view thereof.

Referring now to the drawings, 1 represents a cupola of a form well known in the art. Ordinarily, it is constructed of double riveted boiler plate, lined with shaped fire brick and is provided below an inclined hearth 2, of sand or other suitable material, with hinged drop doors 3, which may be supported in any suitable manner, as for example by the removable uprights 4, as shown. The tapping hole is represented at 5, and extending outward from the same there is the usual spout 6.

At a suitable distance above the hearth, a

series of twyer openings 7 are formed, which are preferably equi-spaced throughout the circumference of the shell, as shown. Forming a continuation of each opening 7, there is a twyer box 8, to which air is supplied under pressure through connections 9, from a source of supply (not shown).

Immediately below each twyer box, a tapping hole 10 is formed and extending outward therefrom, there is a short trough or spout 11. Plugs 12, of wood or fusible material, are driven in the holes 10 and are provided with openings 13 for the escape of the slag or molten metal or both. Such an overflow serves to call attention of the workmen in charge to the rise of metal, and by pulling out one or more of the plugs or permitting them to burn out or fuse, the entire removal of the slag is readily effected and the rise of metal checked and prevented from entering the twyer boxes.

The many important advantages of the invention will be apparent. The twyer boxes are protected, and in providing for the ready removal of the slag from time to time as required, a "long run" or the continuous operation of the furnace is made both possible and profitable, owing to the saving in time and labor, fuel, etc., ordinarily required in repeatedly shutting down and starting up again.

Having, therefore, described my invention, I claim:

1. In a furnace, the combination of a melting chamber, a series of twyers leading into the chamber, openings formed below the twyers, and a plug destructible by heat partly closing each opening.

2. In a furnace, the combination of a melting chamber having a series of openings formed in the walls thereof, a twyer box at each opening, each of said twyer boxes being provided with an air valve and a slagging spout, and a removable plug partly closing the outlet through the slagging spout.

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

WILLIAM STEPHEN DEMPSEY.

Witnesses:

W. H. PUMPHREY,
M. G. CRAWFORD.