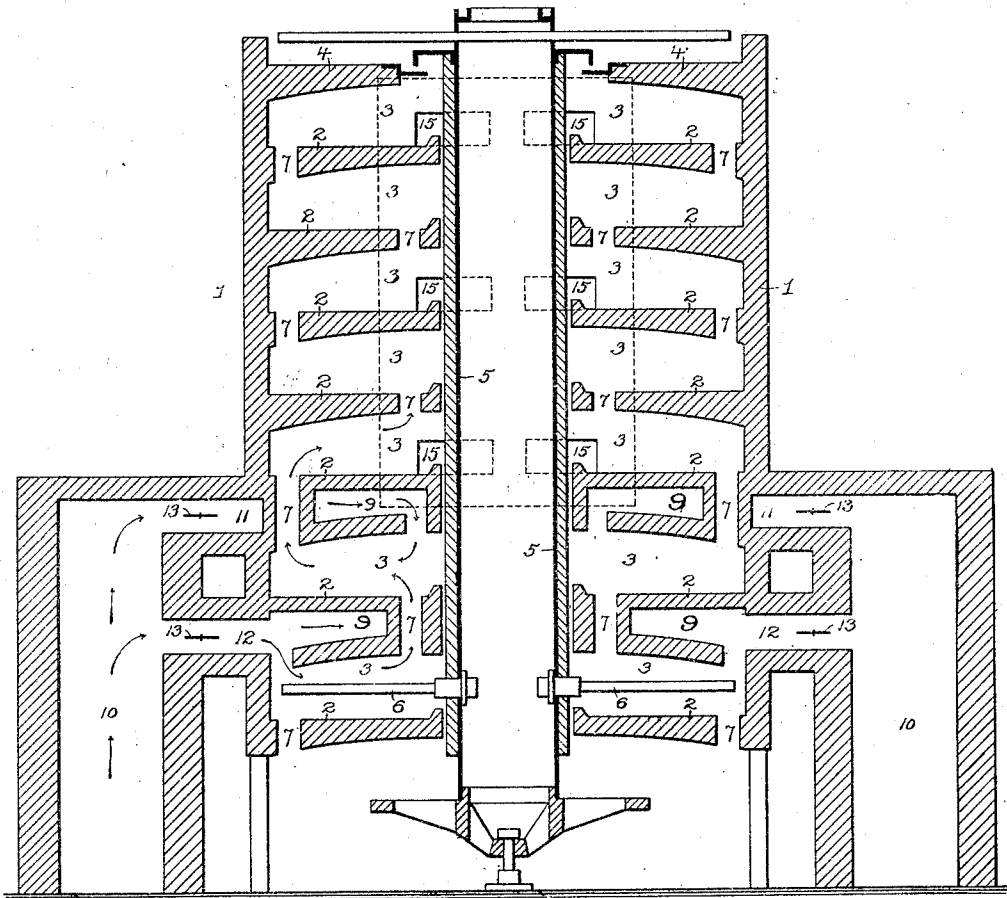


U. WEDGE.
METALLURGICAL FURNACE.
APPLICATION FILED FEB. 14, 1911.

1,040,071.

Patented Oct. 1, 1912.



WITNESSES

Kate A. Bessle
Samuel D. Turner

INVENTOR

UTLEY WEDGE

BY HIS ATTORNE

Harry Smith

UNITED STATES PATENT OFFICE.

UTLEY WEDGE, OF ARDMORE, PENNSYLVANIA, ASSIGNOR TO THE FURNACE PATENT COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

METALLURGICAL FURNACE.

1,040,071.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed February 14, 1911. Serial No. 608,628.

To all whom it may concern:

Be it known that I, UTLEY WEDGE, a citizen of the United States, residing in Ardmore, Montgomery county, Pennsylvania, have invented certain Improvements in Metallurgical Furnaces, of which the following is a specification.

My invention relates mainly to that type of metallurgical furnaces which have superposed treating chambers and hearths, and in which the products of combustion from a fireplace or fireplaces are applied directly to the material under treatment in one or more of the treating chambers of the furnace, the objects of my invention being to maintain an equable heat in said chamber or chambers and to regulate the heat in the different chambers of the furnace. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, which represents a longitudinal vertical section of a furnace constructed in accordance with my invention.

In the drawing, 1 represents the outer wall of the furnace, 2 the superposed hearths, 3 the superposed working chambers and 4 the roof of the furnace, which may be utilized for the storage and drying of the ore or other material to be treated, and which may be furnished with any of the ordinary means for feeding the ore onto the uppermost hearth.

The furnace has a central rotating shaft 5 which is intended to be provided in each of the working chambers of the furnace with projecting arms 6, shown in the present instance in the lowermost chamber only, these arms being intended to be provided with the usual rabblers for feeding the material over the successive hearths and causing it to pass by gravity from hearth to hearth through suitably disposed openings 7 formed in said hearths in the usual manner. In furnaces of this type, it is sometimes desirable to apply directly to the material in one or more of the treating chambers of the series, products of combustion derived from one or more fireplaces located adjacent to the furnace, but where these products of combustion enter the treating chambers directly from such fireplace or fireplaces, the heat is not always as equable as is desirable, especially when wood is employed as fuel, as the temperatures of said products of combustion will frequently vary within wide

limits at different times. In order to correct this defect, I provide heating chambers 9 between successive treating chambers, and admit the products of combustion to these heating chambers as well as to the treating chambers of the furnace.

As shown in the drawing, there are two fireplaces 10, one at each side of the furnace, these fireplaces communicating with the heating chambers 9 through upper and lower flues 11 and 12, a portion of the products of combustion from the lower flue 12 being deflected into the lowermost treating chamber and passing thence in succession through the treating chambers above it, and the products of combustion from the upper flue 11 passing first through the upper heating chamber 9 and thence into the treating chamber above the lowermost, from which they pass in succession through the treating chambers above. The heating chambers 9 thus serve to store the heat and aid in maintaining an equable temperature in the treating chambers and compensate for variations in the temperature of the products of combustion at different times. The products of combustion in passing from the flues 11 into the chamber 9 pass around the flues 7, the latter being only of restricted diameter and hence offering no material obstacle to the passage of the gases. Suitable dampers 13 in the flues 11 and 12 serve to regulate the flow therethrough or cut off such flow entirely, as may be desired. In order to regulate the heat in the upper treating chambers of the furnaces, I provide communication between the gas outlet flue and a number of said chambers, for instance, in the furnace shown in the drawing, gas outlets 15 are provided from the first, third and fifth chambers, each of these outlets being intended to be provided with a suitable damper so that it may be opened and closed as desired. If, therefore, the temperature is too high in the upper chambers of the furnace, a portion of the gases may be drawn off from the fifth chamber, and if the temperature in the uppermost chambers is still in excess of that desired, still more of the gases may be drawn off from the third chamber, or when the maximum of heat is necessary all the gases may be permitted to rise into the uppermost chamber and may escape therefrom into the outlet flue.

My invention is, of course, equally appli-

cable to furnaces in which the draft is downward instead of upward, the final escape of gas being from the lowermost chamber.

I claim:

- 5 1. A furnace having a treating chamber with heating chamber above the same, a fireplace, and means for conveying the products of combustion therefrom into the heating chamber, the latter communicating with
10 the treating chamber below it and said treating chamber having a gas outlet whereby the products of combustion which enter the heating chamber can pass downwardly from the latter into and through the treating
15 chamber.

2. A furnace having a series of superposed treating chambers, each treating

chamber having a heating chamber above the same, a fireplace, and means for conveying the products of combustion therefrom into each of the heating chambers, each of the latter being in communication with the treating chamber below it and such treating chamber having a gas outlet whereby the products of combustion from each
25 heating chamber can pass downwardly into and through the treating chamber below it.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

UTLEY WEDGE.

Witnesses:

KATE A. BEADLE,
HAMILTON D. TURNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."