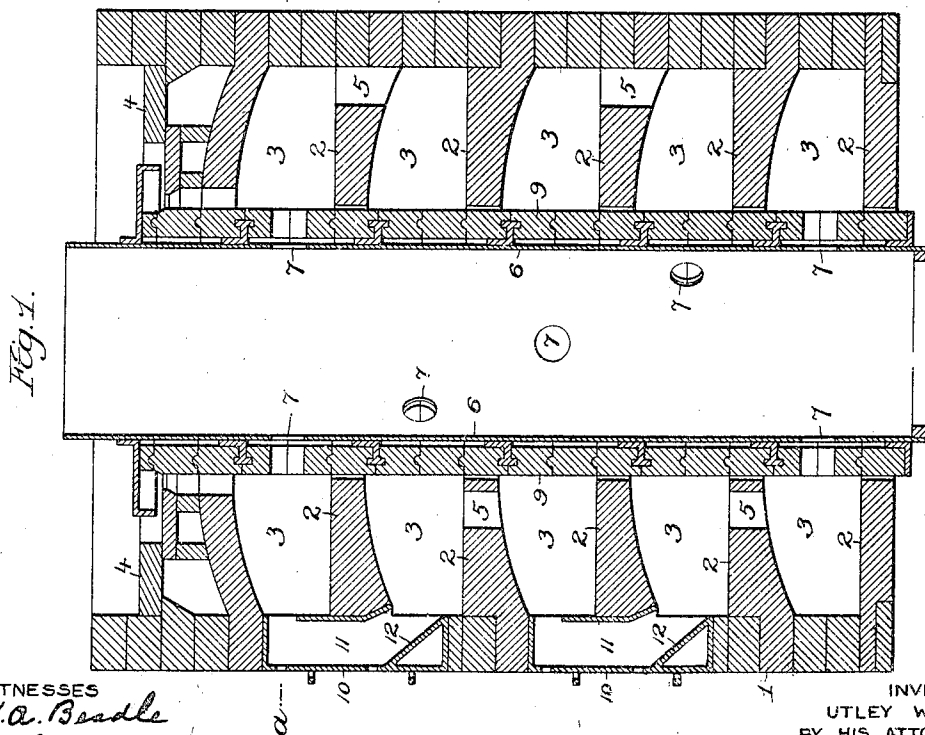
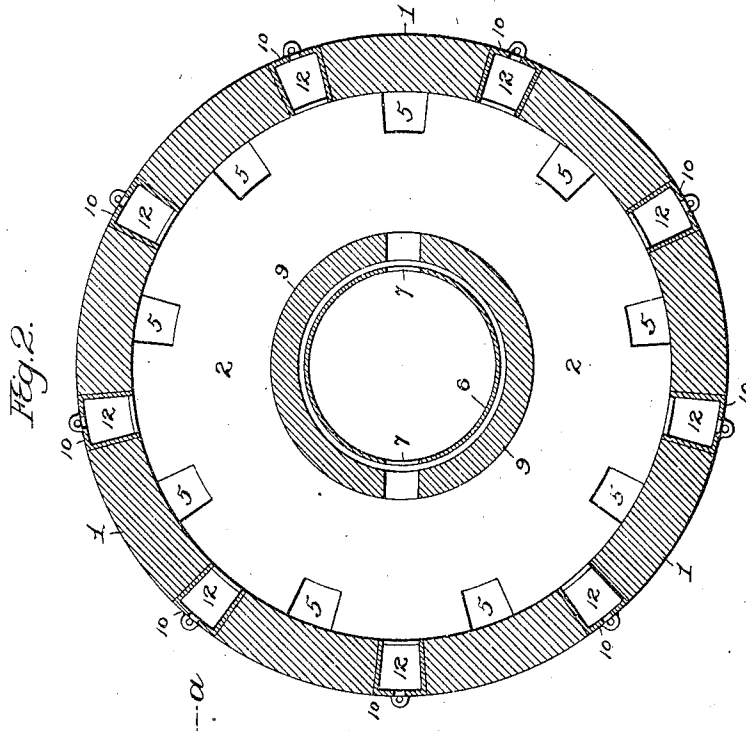


U. WEDGE.
METALLURGICAL FURNACE.
APPLICATION FILED FEB. 13, 1911.

1,060,389.

Patented Apr. 29, 1913.



WITNESSES
K. A. Biddle
E. Fullerton

INVENTOR
UTLEY WEDGE
BY HIS ATTORNEY
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.

1,060,389.

Specification of Letters Patent.

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Application filed February 13, 1911. Serial No. 608,338.

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 to that type of metallurgical furnaces which have superposed hearths and working chambers, the hearths having therein openings through which the material under treatment drops from each hearth to the hearth beneath, suitable stirring and feeding devices in each working chamber causing the material to pass over the hearths from one set of openings to the other. Usually in this type of furnace the gases pass upwardly from each treating chamber to that above it through the same openings which serve for the passage of the material under treatment from each hearth to that below it, with the result that fine particles of material are carried off in the form of dust by the gases, thereby not only causing waste of material but also clogging with dust the flues or passages provided for the escape of the gases, or permitting said gases to carry the dust with them into the apparatus in which they may be subsequently treated, where such dust is objectionable.

The object of my present invention is to so construct a furnace of the type referred to as to provide for the passage of the gases from chamber to chamber of the furnace through channels or ducts independent of those through which the material is fed downwardly from chamber to chamber, the respective passages for the upward flow of gas and downward flow of material being relatively remote in order to remove, as far as possible from the influence of the rising currents of gas, the dust created by the falling of the powdered material from one hearth to another.

In the accompanying drawings—Figure 1 represents, in vertical section, sufficient of a furnace of the type to which my invention relates to illustrate my present invention, and Fig. 2 is a horizontal sectional view on the line *a—*a**, Fig. 1.

In the drawings, 1 represents the outer wall of the furnace, 2 the successive hearths of the same, 3 the successive working chambers, and 4 the roof which may be provided

with any of the customary means for reading the ore or other material to be treated onto the upper hearth of the furnace. In each hearth are formed openings 5 for the downward passage of material from said hearth onto the hearth below it, these openings being arranged alternately at the outer and inner portions of the hearths, and the furnace having a central shaft 6 which carries arms having rabbles or equivalent stirring and feeding devices whereby the material is fed either inwardly or outwardly over each hearth from the point at which it is deposited thereon to the point at which it is discharged therefrom.

In the drawings, 7 represent the openings in the shaft 6 for the reception of the rabble-carrying arms, similar openings being formed in the refractory covering 9 with which the shaft is usually provided in order to protect it from the heat of the furnace.

Built into the outer wall 1 of the furnace are a plurality of boxes or casings 10, each of which contains a channel or duct 11 providing communication between one of the working chambers 3 of the furnace and the working chamber above it, hence the number of horizontal sets or rows of these casings will be dependent upon the number of superposed working chambers in the furnace, there being in the present instance but two horizontal rows or sets of such casings. The number of casings in each horizontal row or set may be varied according to circumstances, but it is preferable to have as many casings in each set as there are delivery openings 5 in the hearth of the furnace, the casings being disposed midway of the delivery openings, as shown in Fig. 2, so as to occupy a position as remote as possible therefrom, whereby the current of the gases ascending through each duct or channel 11 will exert a minimum effect upon the dust rising from the stream of material falling through the adjacent delivery openings 5. Each of the casings 10 has, in its lower portion, an inclined partition or false bottom 12 which presents an angle greater than the angle of repose of a body of powdered or granular material, so that any dust which may fall from the current of gases rising through the duct or channel 11 will be deflected by said false bottom 12 onto the hearth below and will be removed by the stirring and feeding devices coöperating

with said hearth. The casings 10 are preferably built into the wall of the furnace and extend through the same so that they are accessible from the outside of the furnace
5 and can be readily removed and replaced with new ones when they become burned out or otherwise defective.

I claim:

1. A furnace having side walls and super-
10 posed hearths providing superposed working chambers, said hearths having openings therethrough for the downward passage of the material which is being operated upon, and said side walls having inserted flue cas-
15 ings containing draft channels and so located as to divert the draft from the passages for the downward flow of the material, said casings extending through the wall so as to be accessible from the outside
20 of the same.

2. A furnace having side walls and superposed hearths providing superposed work-

ing chambers, said hearths having openings therethrough for the downward passage of the material which is being operated upon, 25 and said side walls having inserted flue casings containing draft channels and so located as to divert the draft from the passages for the downward flow of the material, said flue casings having bottoms in- 30 clined at an angle greater than the angle of repose for deflecting into a lower working chamber the material deposited upon them, and said casings also extending through the walls so as to be accessible from 35 the outside of the same.

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

UTLEY WEDGE.

Witnesses:

C. A. WILSON,
HARRY L. SMITH.