

J. WEINTZ.

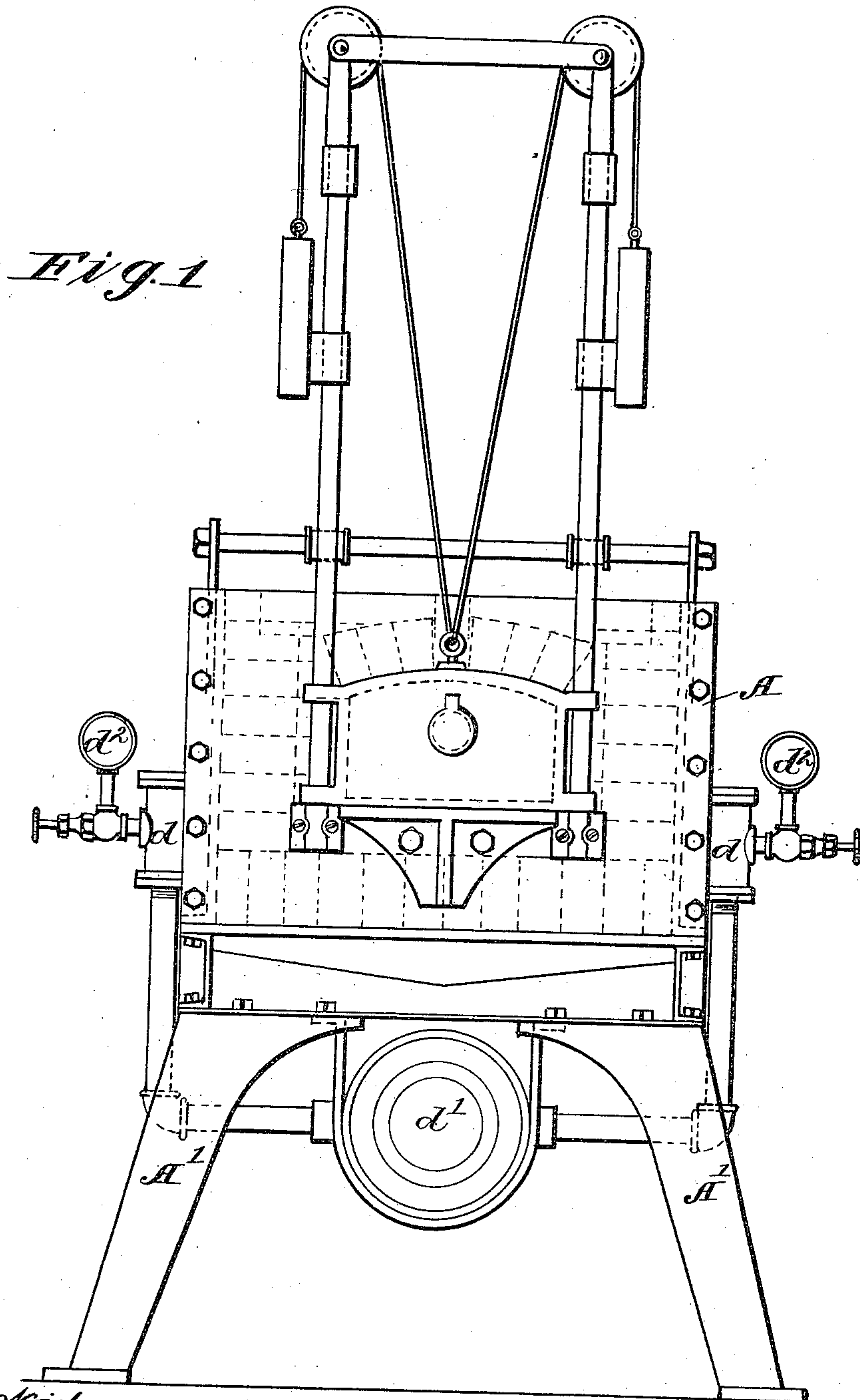
FURNACE.

APPLICATION FILED JUNE 28, 1909. RENEWED FEB. 21, 1910.

960,463.

Patented June 7, 1910.

2 SHEETS—SHEET 1.



*Witnesses:*

*Anna L. Hill  
Jno. F. Oberlin*

*Inventor:*

*Jacob Weintz  
by J. B. Fay  
Attorney.*

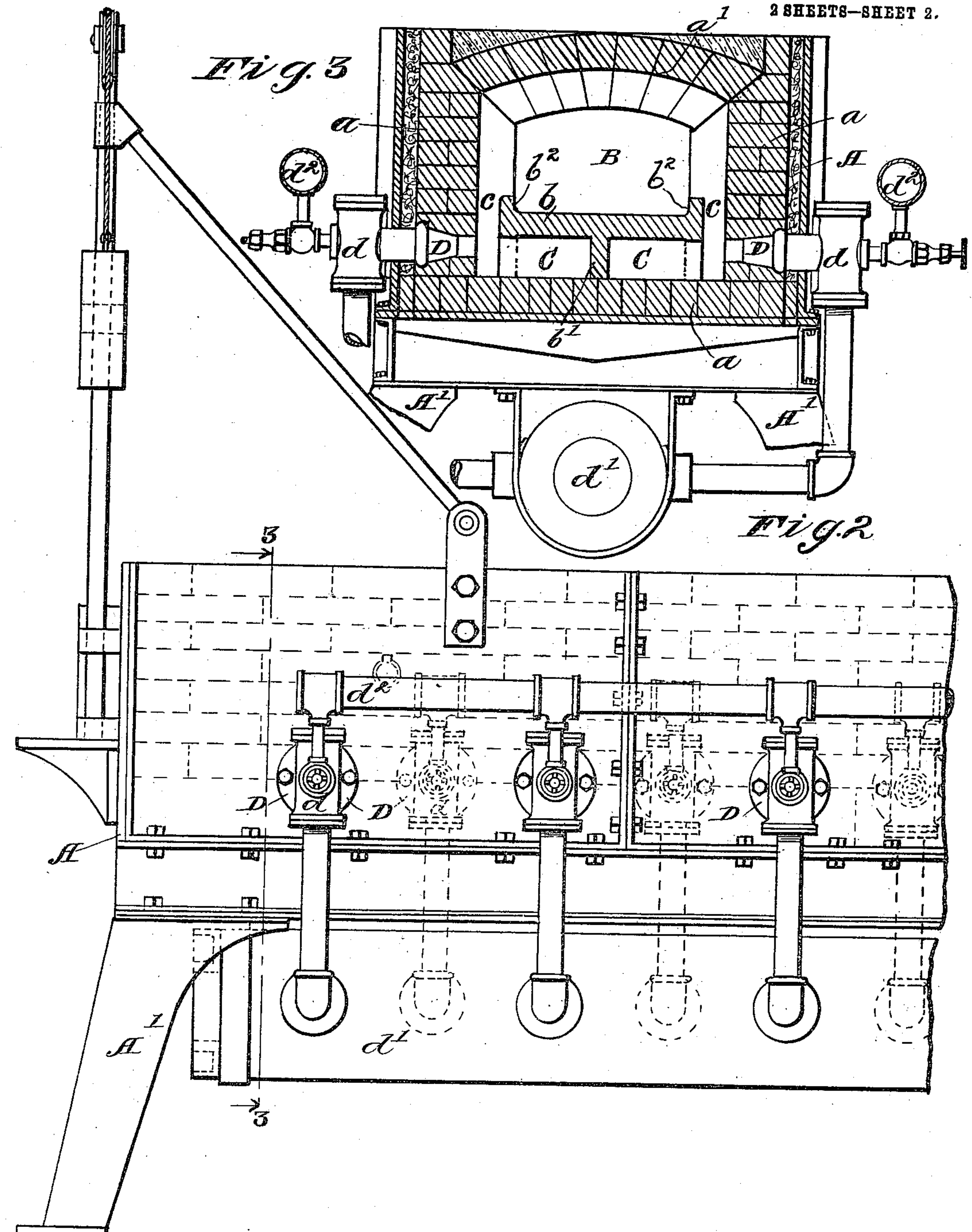
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Geo. F. Oberlin

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# UNITED STATES PATENT OFFICE.

JACOB WEINTZ, OF CLEVELAND, OHIO, ASSIGNOR TO THE STRONG, CARLISLE & HAMMOND CO., OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## FURNACE.

960,463.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed June 28, 1909, Serial No. 504,656. Renewed February 21, 1910. Serial No. 545,239.

*To all whom it may concern:*

Be it known that I, JACOB WEINTZ, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Furnaces, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

My invention relates to furnaces and particularly to the type of furnace using a hydro-carbon fuel under an air blast. In such furnaces it is usual to surround the oven, in which is placed the material to be heated, with a flue or heating space and to have the blast directed into this heating space. This type of furnace is largely used for such processes as annealing and case hardening, and consequently a very high heat distributed evenly to all parts of the oven is necessary.

The object of the present invention is to accomplish this result by such a disposition of the heating chamber and burners with relation to each other, as will insure thorough combustion of the fuel so as to produce a maximum heat in a minimum time and cause an even distribution of this heat about the material being operated upon.

To the accomplishment of this and related ends, said invention, then, consists of the means hereinafter fully described and fully pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings: Figure 1 represents a front elevation of a furnace embodying my invention; Fig. 2, a side elevation; and Fig. 3, a vertical cross-section on the line 3—3 in Fig. 2.

The furnace comprises in general a rectangular box A of cast iron or other suitable material lined with fire brick *a*, the whole being mounted upon a suitable support A'. Within this box is located the oven or general heating chamber B which is provided with a supplementary floor *b* either built up of fire brick or else made as an integral article of fire clay, said floor *b* ex-

tending from the front to the rear of the furnace, the walls *a* and top *a'* of the chamber being formed by a brick-wall lining. The supplementary floor *b* has on its under side a projection or baffle *b'* which extends from end to end of the floor, whereby the chamber intermediate between such floor and the real floor of the general chamber within the furnace is longitudinally divided to form two combustion chambers C. Where the supplementary floor is made in one piece, this projection is preferably made integral therewith, as shown. Extending upwardly from the combustion chamber on either side of the floor *b* are the flues *c*, which lead into the heating chamber B, proper, such flues being formed between the lateral walls *a* and the corresponding edges of the supplementary floor *b*, such edges preferably having upturned side portions *b<sup>2</sup>* to assist in retaining the work on the floor. The top *a'* of chamber B is arched on its under side so that the heated gases, as they ascend through these flues from the respective combustion chambers C, are directed inwardly and in part downwardly upon the top of the supplementary floor. Entering the combustion chamber on the opposite sides of the baffle wall *b'* are the burners D, which are fed from the mixers *d*, the latter being suitably connected with an air supply *d'* and pipes *d<sup>2</sup>* for supplying the gas or other fuel. The burners D are horizontally disposed so that their blast will be forced directly against the longitudinal division wall *b'*.

In the operation of the furnace, the chambers C function, as indicated by the descriptive word applied to them, as combustion chambers wherein the ignited mixture of gases discharged from the series of burners is still more thoroughly intermingled than in the mixer of said burners and complete combustion insured. At the same time the wall *b'* between combustion chambers serves as a baffle that sufficiently checks the blast to permit its heat to rise upwardly against the floor *b* of the heating chamber. The same heated gases are afterward caused to beat down upon such floor from above by reason of the arrangement of flues *c* and the over-arching top *a'*. It will thus be seen that heat is applied to the upper face of said floor from substantially all directions the fierceness of the initially entering igneous blast being moderated by transmission through



said floor, while the heat from baffled flame escaping from the combustion chamber through the lateral flues is caused to contact directly with the article, or articles, being heated, such articles being suitably disposed upon floor *b*. An equable heating of such article is thus obtained irrespective of the degree of temperature to which the furnace is raised, a result that is quite important particularly in annealing and case hardening operations.

It will be understood, of course, that the features of construction thus characterizing my furnace are not, of necessity, limited to use in reheating furnaces alone but may be employed with equally advantageous results in crucible and other furnaces.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a furnace, the combination of a heating chamber; a combustion chamber below the floor of said heating chamber; a baffle below the floor of said heating chamber; a flue leading from the side of the combustion chamber and into the heating chamber, said flue extending substantially the full dimension of the heating chamber parallel

to said baffle; and a horizontal burner entering the combustion chamber on a side opposite to such baffle.

2. In a furnace, the combination of a heating chamber; a combustion chamber below the floor of said heating chamber; a baffle dividing said combustion chamber; a flue leading from either side of the combustion chamber and into the heating chamber, said flue extending substantially the full dimension of the heating chamber parallel to said baffle; and transversely disposed horizontal burners entering the combustion chamber on opposite sides of said baffle.

3. In a furnace, the combination of a heating chamber; a combustion chamber extending beneath the floor of the heating chamber, said combustion chamber being longitudinally divided by a wall projecting downwardly from the floor of the heating chamber; a flue extending the length of the heating chamber and leading from the combustion chamber on either side of the longitudinal division wall into the heating chamber; and transversely disposed horizontal burners entering the combustion chamber on opposite sides of the longitudinal division wall.

Signed by me this 26th day of June, 1909.

JACOB WEINTZ.

Attested by—

HARRY H. SMITH,  
JNO. F. OBERLIN.