No. 805,797.

PATENTED NOV. 28, 1905.

J. B. HOOVER.

FURNACE.

APPLICATION FILED DEC. 8, 1904.

2 SHEETS—SHEET 1.

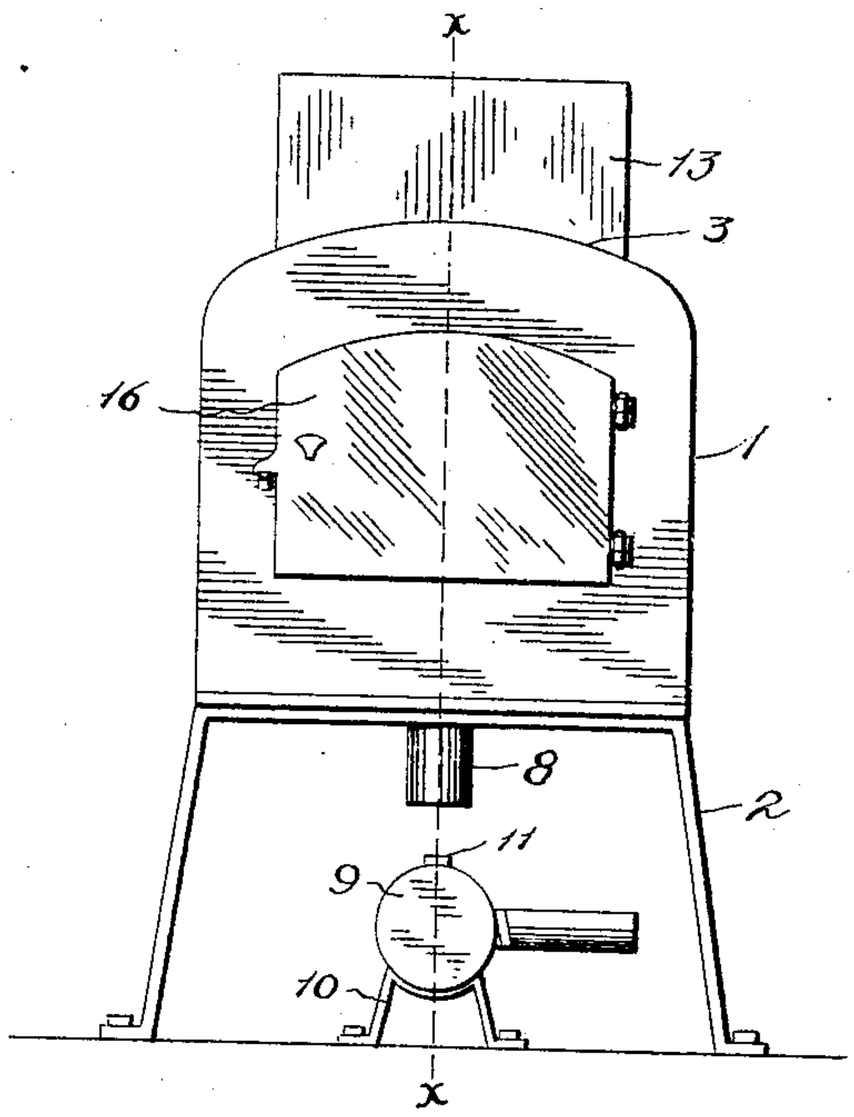

Fig. 1.

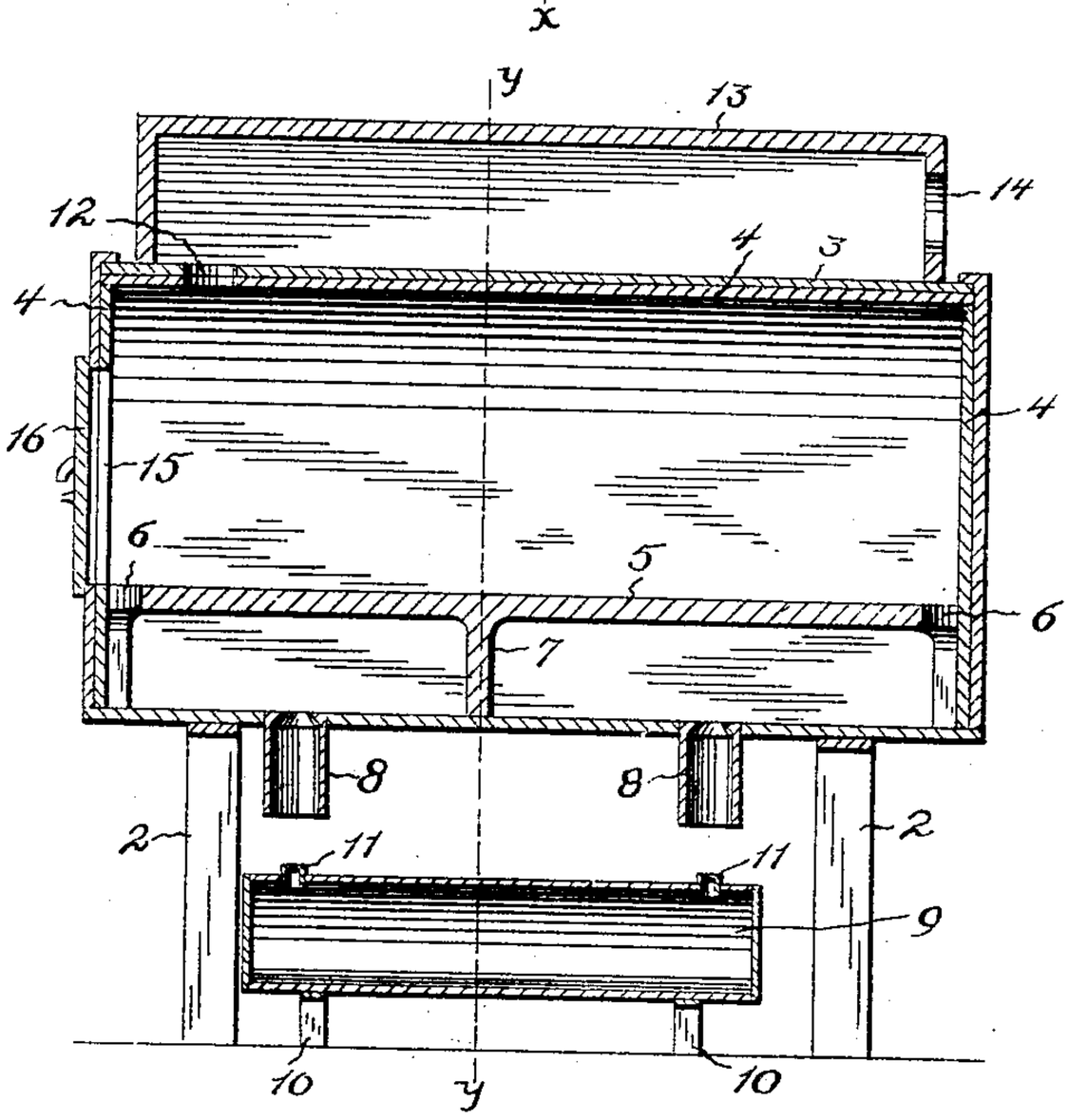

Fig. 2.

WITNESSES:
Carl Stoughton
W. B. Ackley.

INVENTOR
Jacob B. Hoover
BY
Shepherd & Parker
ATTORNEYS

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2 SHEETS—SHEET 2.

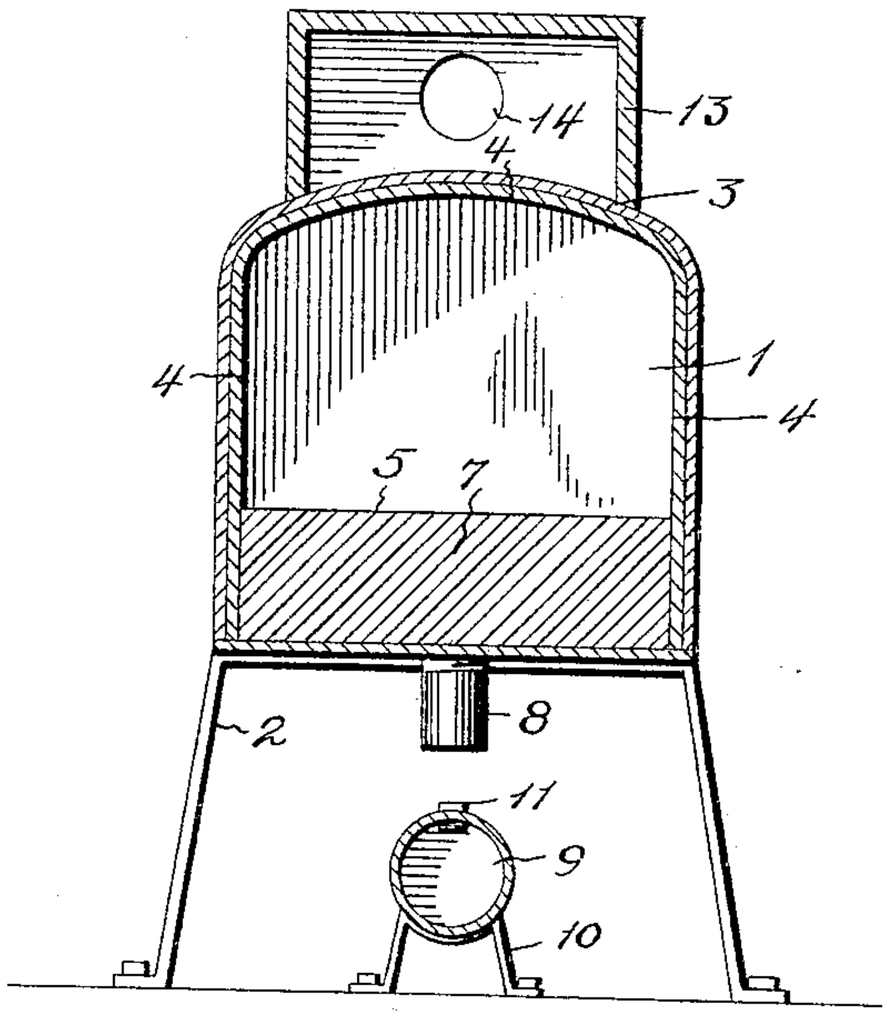

Fig. 3.

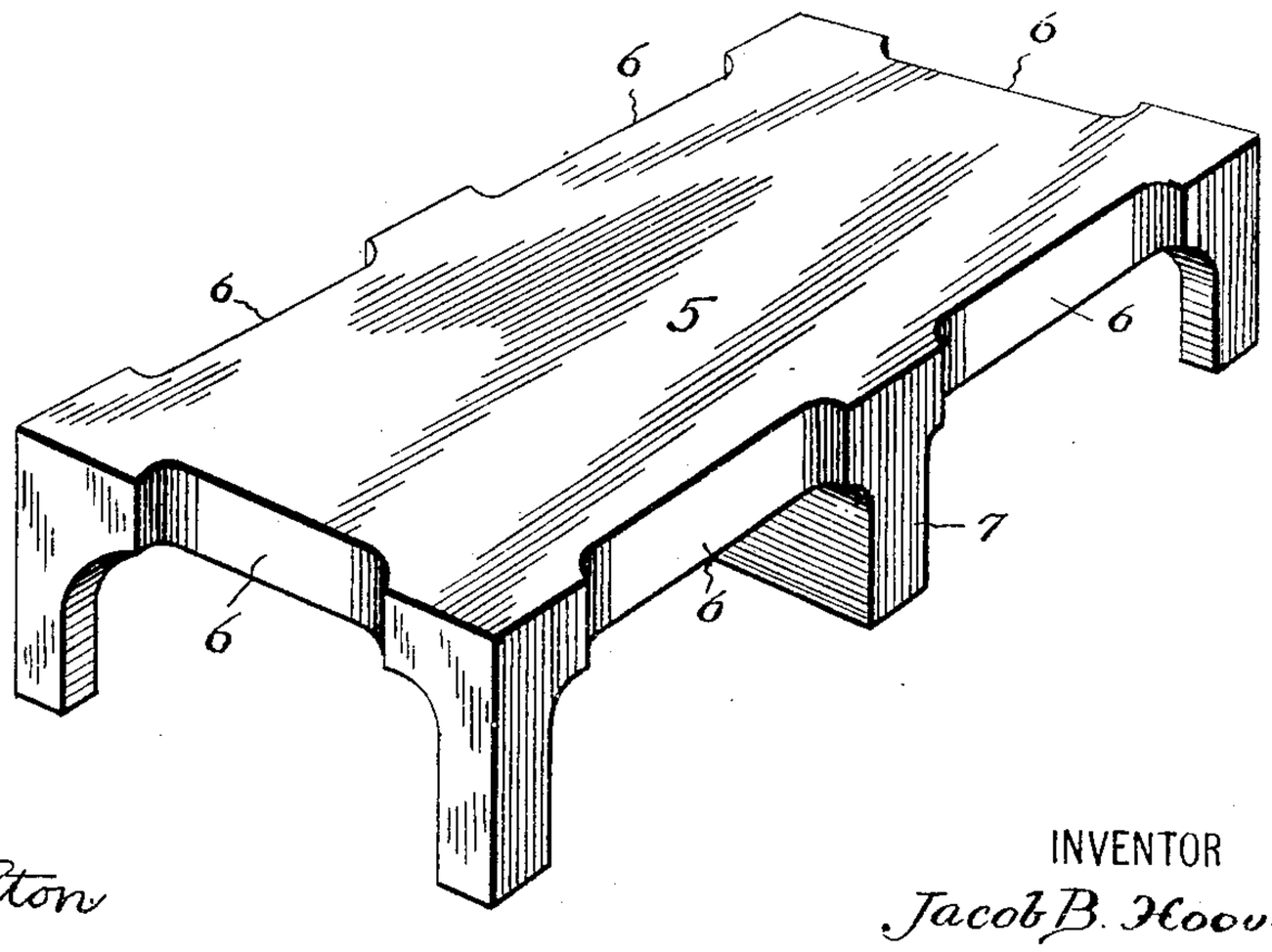

Fig. 4.

WITNESSES:
Carl Stoughton
M. C. Ashley.

INVENTOR
Jacob B. Hoover.
BY
Shepherd & Parker
ATTORNEYS

UNITED STATES PATENT OFFICE.

JACOB B. HOOVER, OF COLUMBUS, OHIO.

FURNACE.

No. 805,797. Specification of Letters Patent. Patented Nov. 28, 1905.

Application filed December 8, 1904. Serial No. 236,006.

To all whom it may concern:

Be it known that I, JACOB B. HOOVER, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Furnaces, of which the following is a specification.

This invention relates to a new and useful improvement in metallurgical furnaces.

The object of the invention is to produce a combined furnace and hot-plate of simple and superior construction.

Another feature resides in the peculiar construction whereby the waste products from the annealing oven or chamber are utilized to heat the hot-plate, thereby reducing the amount of fuel consumed and providing a compact and efficacious structure.

Finally, the object of the invention is to provide a device of the character described that will be strong, durable, efficient, and simple and comparatively inexpensive to make and one in which the several parts will not be liable to get out of working order.

With the above and other objects in view the invention consists of the novel details of construction and operation, a preferable embodiment of which is described in the specification and illustrated in the accompanying drawings, wherein—

Figure 1 is a front elevation. Fig. 2 is a longitudinal vertical sectional view taken on the line *x x* of Fig. 1. Fig. 3 is a transverse vertical sectional view taken on the line *y y* of Fig. 2, and Fig. 4 is a perspective view of the heating-table.

In the drawings the numeral 1 designates the annealing oven or casing, which is suitably supported at its front and rear by legs 2. The oven 1 is preferably of a general rectangular shape and is provided with a rounded top 3. The top, sides, and ends of the oven are provided with a lining 4, of fire-clay or any other suitable heat-resisting material. Within the oven is disposed a heating-table 5, composed of fire-clay or other suitable material, which table is formed with cut-away portions 6 along its sides and ends, as clearly shown in Figs. 2 and 4. The table otherwise fits snugly against the lining 4 at the ends and sides of the oven, thus causing the products of combustion to pass upward through the cut-away portions 6. A transverse partition 7 extends from the table to the bottom of the oven, preferably near the forward end of the said table and contacting with the bottom and side linings of the oven, so as to divide the space beneath the table into two chambers. The bottom of the oven upon each side of the partition 7 is provided with a downwardly-projecting burner-tube 8, which terminates flush with the upper surface of the bottom, at which point the fuel, which is preferably gas, combusts, thus providing a flame upon each side of the partition 7. A fuel-tank 9, suitably supported in chairs 10, is arranged below the tubes 8 and is provided with tips 11, disposed directly beneath each tube. It will be observed by referring to the drawings that the tank 9 and the tips 11 are disposed some distance below the tubes, which arrangement allows the upwardly-flowing fuel to draw in a considerable quantity of air as it passes into the tubes 8, thus accelerating the draft, and thereby intensifying the flames and the heat derived therefrom.

As before described, the products combusting at the upper ends of the tubes 8 will impinge upon the under side of the table 5 upon each side of the partition 7 and pass up through the openings formed by the cut-away portions 6 and over the table. In the top of the oven and near the front end thereof is provided an opening 12, through which the products pass. It is obvious that the products from the rear portion of the table 5 are compelled to pass over a greater portion of the length of the same before escaping through the opening 12 and that the products from the forward end after passing under the table like the products at the rear end and up through the openings formed by the cut-away portion 6 will mix with the products from the rear end and pass out through the opening 12. It is apparent that from this point the products would be wasted and their heat allowed to escape. It has been found expedient, however, to arrange upon the top of the furnace what is known to the art of metallurgy as a "hot-plate" 13, which is used for drawing the color of the metal. It has generally been the custom heretofore to heat a block of metal and draw the steel across the same, thus requiring an extra operation and some loss of time. The hot-plate 13 is preferably formed of fire-clay or any

other suitable material and has a general rectangular shape, with its lower edges shaped to fit snugly upon the top 3 of the oven. At its rear end the plate is formed with an outlet 14, thus causing the products which pass up through the opening 12 to travel the length of the plate before escaping, and thereby thoroughly heating the same. The hot-plate 13 merely rests upon the top 3 of the oven and may be readily removed for the purposes of cleaning and when it is not desired to use the same.

It may be here stated that owing to the peculiar construction and arrangement of the heating apparatus and the furnace the top plate coöperates therewith and that by the accelerated draft both the table 5 and the ho-plate 13 are maintained at a high degree of heat.

In the forward end of the oven is provided an opening 15, having its lower edge on a level with the table 5 and normally closed by a door 16. The articles to be treated are introduced through the opening 15 and placed upon the table 5, where they will be thoroughly heated in the manner above described.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a furnace of the character described, the combination with an oven having an escape-opening near one end and a heating apparatus, of an independent deflecting-table arranged in the oven above the heating apparatus and constructed to cause the heat to pass up its sides and ends and over its surface before passing out through the escape-opening.

2. In a furnace of the character described, the combination with an oven having an escape-opening near one end and a heating apparatus, of an independent deflecting-table arranged in the oven above the heating apparatus and constructed to cause the heat to pass up its sides and ends and over its surface before passing out through the escape-opening, and a hot-plate arranged on the oven over the escape-opening thereof.

JACOB B. HOOVER.

In presence of—
M. B. SCHLEY,
A. L. PHELPS.