

UNITED STATES PATENT OFFICE.

MARVINE GORHAM, OF DETROIT, MICHIGAN.

BLANK-FURNACE.

SPECIFICATION forming part of Letters Patent No. 712,296, dated October 28, 1902.

Application filed April 14, 1902. Serial No. 102,874. (No model.)

To all whom it may concern.

Be it known that I, MARVINE GORHAM, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Forge-Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention relates generally to furnaces, and particularly to a portable forge-furnace for heating metal blanks; and it consists in the novel construction of the furnace and in the peculiar arrangement and combination of
15 its various parts, as will be more fully hereinafter described and illustrated.

Figure 1 is a view in elevation of a furnace embodying my invention. Fig. 2 is a vertical central section therethrough. Fig. 3
20 is a section taken on line *xx*, Fig. 2; and Fig. 4 is a top plan view of the furnace-head.

In the drawings thus briefly referred to the reference-letter A designates a supporting-framework carrying at its top a circular track
25 B and provided centrally with a blast-nozzle C.

D is a fuel-burner of any approved type arranged beneath the nozzle.

30 D' represents a rotary table supported upon balls E, which are adapted to travel in an annular groove *a* in the track.

F is the furnace-head, the peculiar construction of which will be hereinafter described, detachably arranged upon the table
35 and provided with handles G, by means of which it may be rotated. In construction the head comprises a framework lined with fire-brick, the frame consisting of uprights H, cross-bars I, and a bottom plate J, bolted
40 to the uprights and forming a support for the lining. Upon the plate J is arranged the bottom section K of the lining, and, as shown, this section is centrally apertured, as at L, and of a conical shape, the surface being inclined downwardly from the central portion to
45 the sides of the furnace-head, which is preferably rectangular in form. The aperture L registers with and is adapted to receive a portion of the blast-nozzle C, and in proximity
50 to the base-section radial discharge-openings M, preferably four in number, are formed in the walls of the furnace.

By constructing the head in the manner set forth the slag formed by imperfectly-vaporized oil striking against the furnace sides
55 will be conveyed to and collected within the radial discharge-openings, and thus prevented from clogging the burner. The openings referred to are provided with closures O, which may be withdrawn when desired to allow of
60 the removal of the slag.

The lining or furnace-wall extends upwardly within the frame described to near the top P, and the latter is supported upon the corner portions P' only of the fire-brick,
65 which project upwardly from the wall proper a short distance. As thus constructed elongated transverse openings P² are formed, one in each side of the furnace-head, and each of these openings is filled with a series of aper-
70 tured sections Q, of either fire-brick or metal, which receive the blanks.

The top or cap P referred to is composed of fire-brick arranged within a rectangular metallic frame R, Fig. 4, and clamped within
75 said frame by means of a clamping-plate S and set-screws T, extending through one side of the frame, as indicated. The frame in turn is secured to the uprights H by suitable
80 bolts *c*. By supporting the top upon the corners of the furnace-wall it will be obvious that the apertured sections through which the blanks extend are free from its weight and may consequently be withdrawn from the
85 lining, of which they form a part, when desired for the purpose of repair or replacement as may be necessary.

Within the interior of the furnace-head is a transverse partition U, extending, preferably, across from one side to the opposite side
90 of the head and spaced from the other two sides, as shown in Fig. 2. This partition divides the interior of the furnace into a lower combustion-chamber V and an upper heating-chamber W, the wall surrounding the latter
95 being composed chiefly of the removable sections before described.

X designates a vent-opening which is arranged, preferably, in the central portion of the cap P, and Y represents lifting-eyes se-
100 cured to the central portions of the cross members I of the head-frame.

In operation the blast from the burner passes upwardly through the blast-nozzle C

into the combustion-chamber, and the heat is deflected by the partition U to the sides of the furnace, where it comes in contact with the metal blanks inserted in the usual manner within the apertured segments. The products of combustion find an exit through the centrally-located vent-opening X.

By the use of the partition described the blast is prevented from directly coming in contact with the blanks and the heat distributed so that it is uniform in the heating-chamber. Also by deflecting the blast in the manner set forth the formation of scale upon the blanks is prevented.

It is to be noticed from the construction of the heating-chamber, which is entirely open and unobstructed from side to side, that, if desired, long bars may be inserted within the furnace and the middle portions thereof heated, if desired. The bars are inserted through the series of openings at one side of the head and are projected through the apertured segments in the opposite side, the blank-openings in the two sides registering. Attention is further drawn to the fact that the furnace-head construction is of such a character as will allow the head to be easily removed from the table upon which it is supported and replaced by others either larger or smaller, according to the character of the work that is to be performed. The removal of the head is effected through the agency of the lifting-eyes described and suitable appliances which may be connected to the eyes.

What I claim as my invention is—

1. In a forge-furnace, the combination with a support, of a table rotatively mounted thereon, the furnace proper arranged wholly above the table and detachably mounted thereon, and a fuel-burner below the furnace in operative relation thereto.

2. In a forge-furnace, the combination with the furnace-head having an apertured and inclined bottom section and one or more radial discharge-openings in proximity to said section, of a support upon which the furnace-head is mounted, and a fuel-burner below and in operative relation to the head.

3. In a forge-furnace, the combination with a furnace-head having formed therein a combustion and a heating chamber, of a support upon which the head is mounted, a hydrocar-

bon-burner below said head, and one or more apertured sections forming a part of and independently removable from the wall about the heating-chamber.

4. In a forge-furnace, the combination with a support, of a furnace-head thereon comprising a vertical inclosing wall and a cap or cover supported thereon, and one or more apertured sections forming a part of the upper portion of said wall and removable therefrom independently of the cover.

5. In a forge-furnace, the combination with a furnace-head having formed in its interior a heating-chamber and a combustion-chamber occupying respectively the entire upper and lower portions of the head, a hydrocarbon-burner below the furnace communicating with the combustion-chamber, and a plurality of apertured sections forming a portion of and removable independently from the furnace-wall about the heating-chamber.

6. A forge-furnace, having a portion of its wall removable laterally independent of the wall proper and apertured to receive the blank or blanks to be heated, and a fuel-burner therefor.

7. In a forge-furnace, the combination with a support, of a rolling bearing thereon, a table mounted upon said bearing, the furnace proper arranged entirely above and detachably mounted upon said table, and a hydrocarbon-burner located below the table and furnace in operative relation to the latter.

8. In a forge-furnace, the combination with a furnace-head having a plurality of radial discharge-openings in proximity to and leading from the bottom thereof, of closures for said openings, a support upon which the head is revolvably mounted, and a fuel-burner in operative relation to said head.

9. In a forge-furnace, the combination with the furnace-head provided with a heating-chamber, of a fuel-burner therefor, and one or more apertured sections forming a part of and laterally removable from the wall about the heating-chamber.

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

MARVINE GORHAM.

Witnesses:

H. C. SMITH,

M. B. O'DOHERTY.