J. W. BONTA.

Furnaces for Blanks.

No. 166,335. Patented Aug. 3, 1875.

Fig. 1.

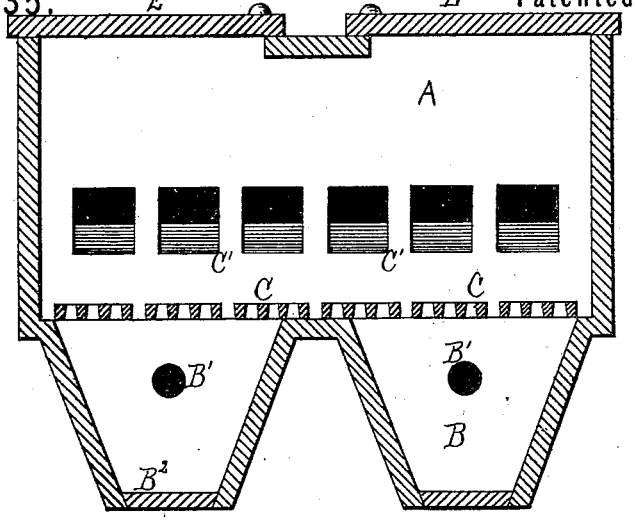


Fig. 2.

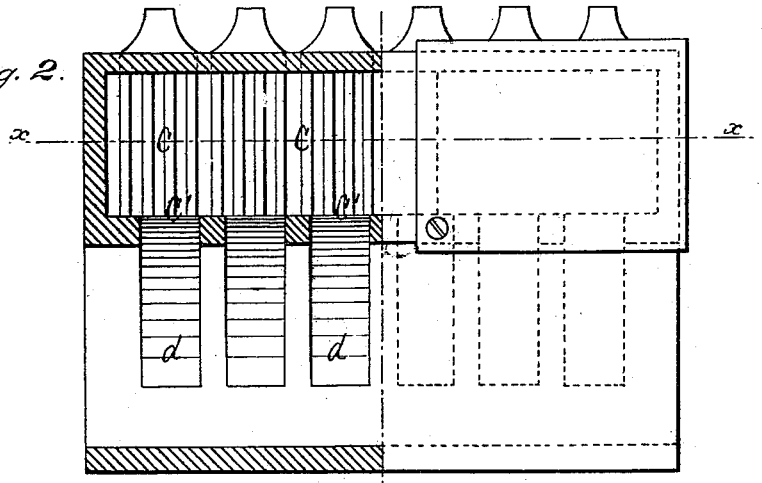
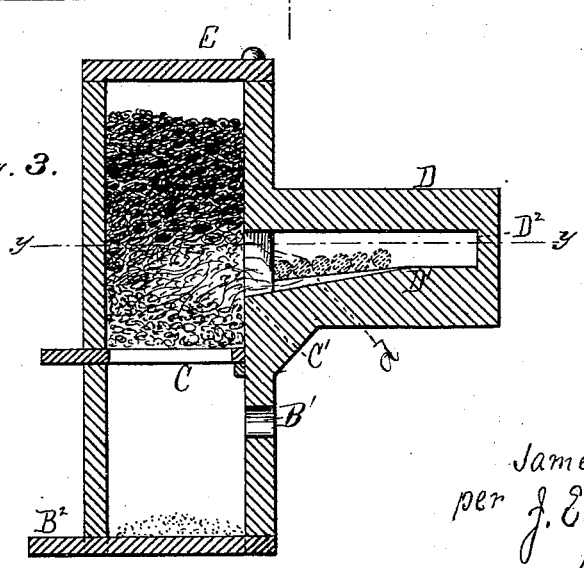


Fig. 3.



Witnesses:
Edwin James.
John R. Jones.

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UNITED STATES PATENT OFFICE.

JAMES W. BONTA, OF NEW BRIGHTON, PENNSYLVANIA.

IMPROVEMENT IN FURNACES FOR BLANKS.

Specification forming part of Letters Patent No. **166,335**, dated August 3, 1875; application filed April 9, 1875.

CASE A.

To all whom it may concern:

Be it known that I, JAMES W. BONTA, of New Brighton, in the county of Beaver and State of Pennsylvania, have invented certain Improvements in Furnaces for Blanks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, and the letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a longitudinal sectional view on the line *x x*, Fig. 2. Fig. 2 is a cross-section on the line *y y*, Fig. 3. Fig. 3 is a vertical sectional view.

The object of my invention is to provide a self-feeding furnace, suitable for evenly heating metal bars or blanks of any desired length, and so constructed as to accomplish this result with the smallest amount of fuel, and comparatively no loss of heat, and without exposing the metal to any oxidizing influence by coming in contact with air while being heated. This is effected by almost entirely closing the ends of the heating-chambers with any ordinary doors, said chamber being connected by a series of openings with a continuous and covered fuel chamber or reservoir. These openings are considerably below the covers, and thus permit the holding within the furnace of a considerable amount of fuel to supply by its own weight the place of that which is being consumed, and as the openings referred to are at quite a distance above the grate-bars, the blast being obliged to pass through the intervening body of fuel, is quite deprived of its oxygen before reaching the metal to be heated. The fuel-chamber being tightly covered and the furnace closely built, the blast which is forced through the fuel by means of a fan or blower can find no other opening for escape than around the loosely-fitting doors at the ends of the heating-chamber. This arrangement provides a great saving of fuel, first, by insuring perfect combustion, and, second, by arresting the gases generated, and by compelling the same to come in immediate contact with the metal to be heated before escaping. Since the blast-pipes to the different air-chambers under the grates are each separately supplied with a valve, the operator is enabled to secure an even degree of heat through the entire length of the furnace, no matter what that length may be. Said chambers may be of any desired number, the design being to first use the bar lying nearest the fire as being the hottest. The inclined floor of the heating-chamber facilitates the downward movement of the other bars remaining in the furnace, the level and solid part of the floor being used as a bed on which to introduce the metal to be heated.

The construction and operation of my invention are as follows: A is the furnace, of the usual form, as also are the ash-pits B, excepting that said ash-pits in my present invention are constructed in two or more separate compartments, and are each utilized as air-chambers for supplying the necessary draft under the grate-bars to cause the rapid consumption of the fuel, and which draft is supplied through one or more blast-openings, B^1 B^1, leading into each of the ash pits or chambers B B. The lower sections of these chambers or pits B B are closed by sliding doors B^2 B^2, which, while they provide convenient means for the removal of ashes from the pits, also serve to so close the same when the furnace is in blast as to prevent any escape for the draft introduced through the openings B^1 B^1, except up and through the grate-bars C C. These grate-bars C C are of the usual form, and are so constructed as to slide freely in through suitable openings at the front of the furnace.

It will readily be seen that with this arrangement of independent air-chambers, each having its own independent blast, and acting in connection with the grate-bars, as described, a uniform heat can readily be maintained throughout the entire surface of the furnace, for so soon as the blanks exhibit, at any of the sections during the process of being heated, that the temperature of one portion of the furnace is higher than that of another, it can rapidly be cooled down by simply temporarily closing the blast-opening B^1 that supplies the draft to the respective chamber B that feeds or supplies this immediate section of the furnace.

D is the chamber which is designed to retain the blanks while being heated. It is usually of a rectangular form, and is connected with the interior surface of the fire-chamber through a series of openings, C′ C′. This chamber D is formed with a bed-plate, D′, which may be, at its rear section, for a short distance, flat and level, and then running into an angular or inclined surface, as clearly shown in Fig. 3, or the entire bed-plate may extend at an angle of inclination from its rear section toward the fire-surface or the series of openings C′ C′. On this inclined bed-piece is formed a series of grooves or scooped-out channels, *d d*, one extending from each of the openings C′ C′. The blanks to be heated, having been previously cut to the desired length, are introduced at the rear section of the bed-plate, and through openings D^2 D^2 at the lateral faces of the chamber D, which are provided with doors. The blanks are gradually fed down the inclined surface of the bed-piece D′, a distance equal to the diameter of a blank as each heated blank is removed, and thus they are subjected to a gradually-increasing heat until they are brought directly in connection with the blast as it pours in through the openings C′ C′, the same being supplied above the blanks, and also below the same, through the grooves or channels *d d*. E E are movable doors, hinged or pivoted at the upper section of the walls of the furnace A. These doors are opened when fuel is to be supplied, and then closed, and thus serve to arrest the gases which the consuming of the fuel generates, and insure that the only escape for the blast shall be through the openings C′ C′, and out into the chamber D, and thence through its side openings D^2 D^2, which not only insures that the entire blast of the furnace shall be utilized in heating the blanks, but prevents the possibility of any cold air coming in contact with the blanks being heated, which would not only retard the process, but would act most injuriously on the fibers of the metal.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The furnace A and heating-chamber D, having an inclined bed-piece, D′, connected through a series of openings, C′ C′, the whole being combined and arranged to operate substantially as described.

2. The chamber D, having a bed-piece, D′, formed with an inclined section, and grooves or channels *d d*, that connect with the openings C′ C′ leading from the furnace, substantially as described.

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

JAMES W. BONTA.

Witnesses:

EDWIN JAMES,

JOS. T. K. PLANT.