J. W. BONTA.

Furnaces for Blanks.

No. 166,336. Patented Aug. 3, 1875.

Fig. 1.

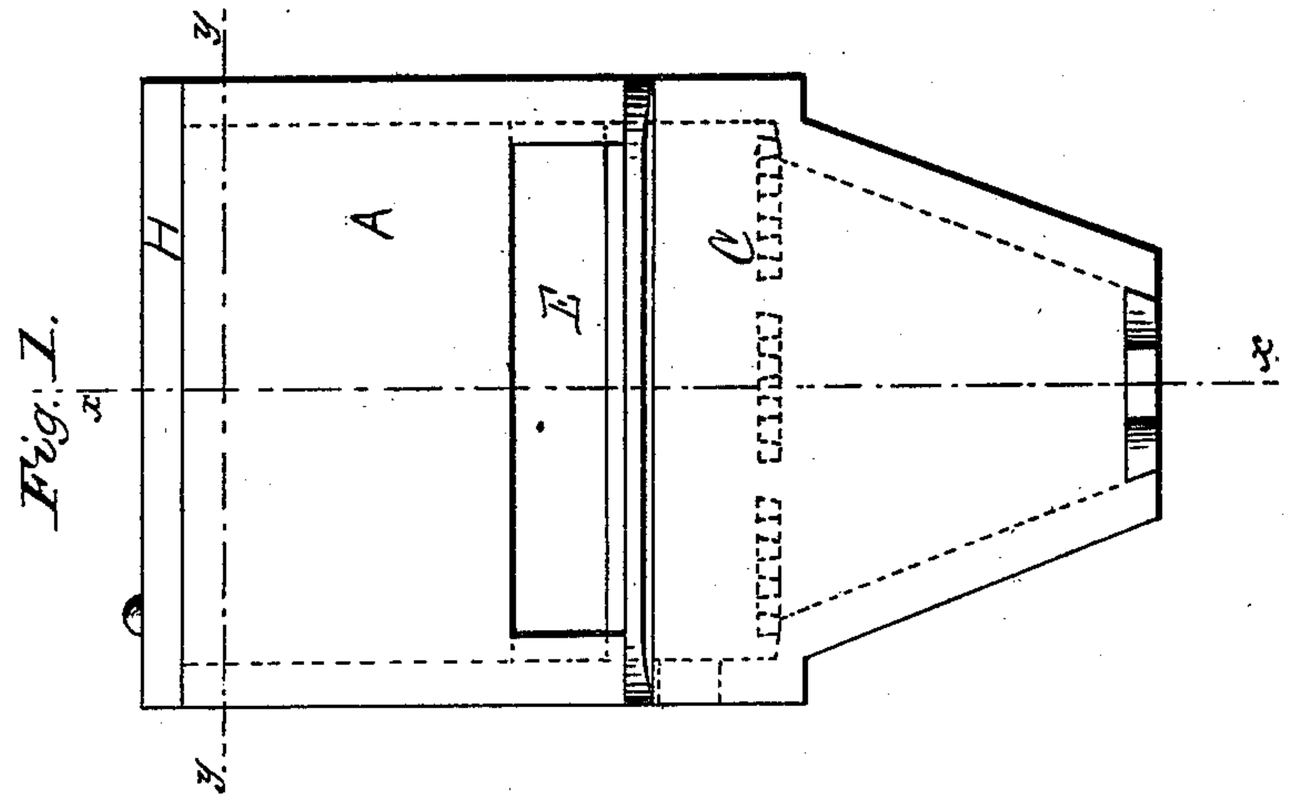


Fig. 2.

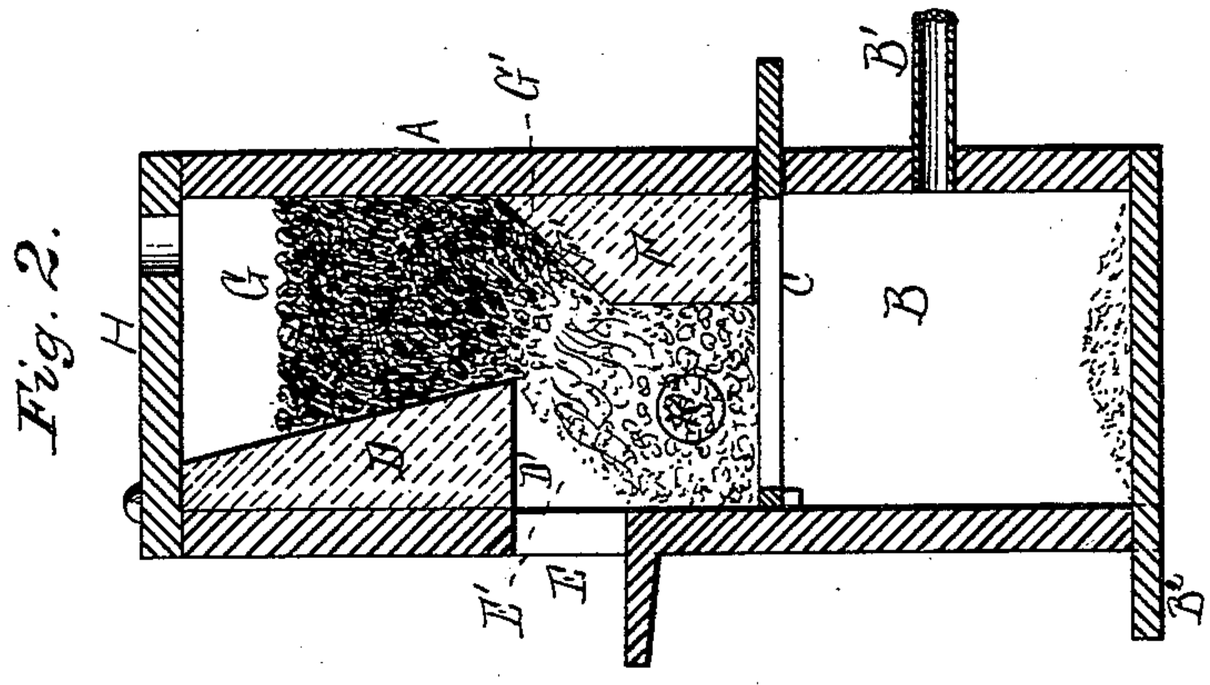
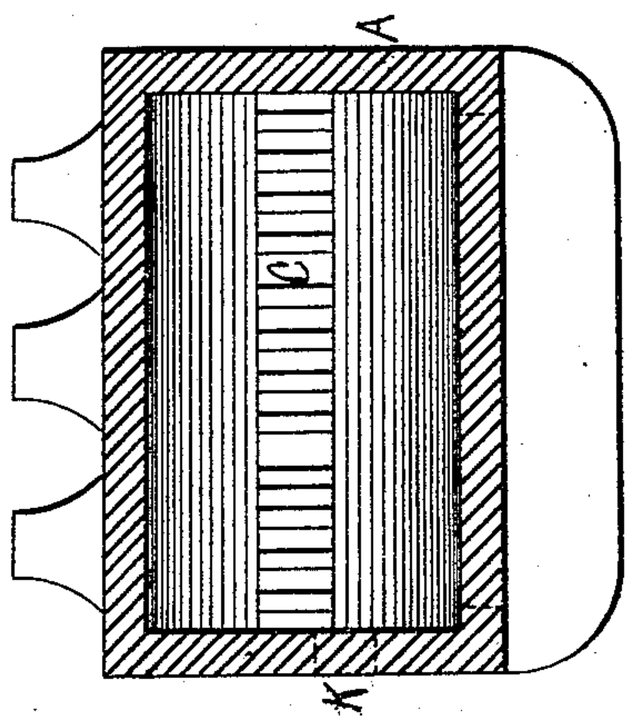


Fig. 3.



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UNITED STATES PATENT OFFICE.

REISSUED

JAMES W. BONTA, OF NEW BRIGHTON, PENNSYLVANIA.

IMPROVEMENT IN FURNACES FOR BLANKS.

Specification forming part of Letters Patent No. **166,336,** dated August 3, 1875; application filed April 9, 1875.

CASE B.

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

The design of this invention is to furnish a self-feeding furnace, and one which is so arranged as to insure of the fuel becoming incandescent before being brought in contact with the iron to be heated, and which thus facilitates the heating of the iron, while it at the same time prevents the pock-marking which results from bringing raw coal in contact with highly-heated iron, and provides an open heating-chamber, where the blanks being heated are at all times immediately under the eye of the operator, while by the peculiar construction of furnace and operation of the blast the iron itself is in a very great measure protected from the oxidation resulting from having its heated surface come in contact with air, while at the same time fuel is saved and heat economized by concentrating the blast immediately under the iron to be heated.

The nature of my invention consists in arranging a front cheek or bosh, of a wedge-shaped form, on the front wall of the furnace, which bosh terminates in a broad square head immediately above the mouth of the furnace. The rear cheek or bosh has part of its front face so inclined as to form a passage or chute between itself and the inner surface of the front bosh, while, owing to the formation of the front cheek, the fuel is fed to the grates immediately under the lower face of the same. This arrangement confines and concentrates the blast immediately under the front bosh, under which it will readily be seen that a chamber or hollow shell equal to the depth of the mouth may easily be maintained in which to keep the links or other blanks to be heated. By using the cover of the furnace as a damper the escape of the blast through the top of the furnace may be so regulated that it shall be just-sufficient to ignite the descending fuel before it comes in direct contact with the iron, thus facilitating its heating, while by its partial closing the mouth of the furnace furnishes egress for the remainder of the blast, which is forced in under the grates. One effect of this is that it tends directly to protect the heating metal from the injurious action of the air, while at the same time it is in full sight of the operator, allowing him to see when the proper degree of heat is attained.

The construction and operation of my invention are as follows: A is the furnace, and B the ash-pit or air-chamber, into which leads the blast-opening or tube B^1. The lower section of the ash-pit or air-chamber B is closed by a sliding door, B^2, which insures that all the air introduced through the opening or tube B^1 shall be caused to pass up through the grate-bars C. This door B^2 can readily be opened to empty the ash-pit when occasion requires. D is the front cheek or bosh, which is of a wedge-shaped form, and terminates in a broad square base, D′, which extends laterally within the throat of the furnace, and with its base flush with the upper surface of its mouth E. F is the rear bosh or cheek, of the form shown in Fig. 2, its upper surface extending up on a line with the base D′ of the cheek D, and terminating in an inclined head, F′. This arrangement of the cheeks D F gives to the interior surface of the chamber G of the throat a wedge or funnel shaped formation, which terminates in an angular passage or chute, G′, and secures these advantages: It retains the fuel in such position as to insure of its being thoroughly ignited before being fed to the grate-bars, which precludes the possibility of any raw or green fuel coming into contact with the iron being brought to a welding-heat, and which guards against all danger of its being burned or pock-marked in consequence thereof; and, again, owing to the form and arrangement of the passage or chute G′, the fuel, through its own gravity, is fed to the grate-bars C C as rapidly

as the consumption of the fuel on said bars demands, and while it is fed down under the base D′ of the cheek D, yet it is so discharged on the grate-bars as to leave an unoccupied space or chamber, E′, immediately under said cheek D and the front of the mouth E, into which chamber the metal to be heated is introduced. The arrangement of the rear cheek F on the grate-bars so contracts the area of the fire-chamber as to cause the blast to act with all its concentrated force and tensity within a small area, and consequently in the most direct manner, on the metal being heated. H is a door or cover, which is hinged or pivoted to the upper surface of the wall of the furnace, and is designed to be used as a damper, and through its use the escape of the draft out through the chamber G can be regulated at pleasure, and so reduced as simply to be sufficient to secure the proper ignition of the fuel before it falls to a position which will bring said fuel in contact with the iron being heated. By thus nearly entirely closing the door, the chief egress for the draft or blast is through the mouth E of the furnace, and which excludes or prevents the admission of cold air, and which would not only retard the process of heating the metal, but would also injure the fibers of the same, while at the same time the metal is in full sight of the operator, thus permitting him instantly to know when it has attained the proper degree of heat. K is a stoke-hole in the side wall of the furnace, which provides a convenient means of relieving and cleaning the furnace of all slag and clinkers which from time to time gather or collect.

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

1. In combination with the walls of the furnace, the cheeks or boshes D F, arranged with relation to the grate and feed-opening, substantially as herein shown and described.

2. A furnace for heating blanks, consisting of the cheeks or boshes D F, of the form and arrangement shown, movable door H, blast-tube B′, and mouth E, the whole being constructed and arranged to operate substantially as described, as and for the purpose specified.

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.