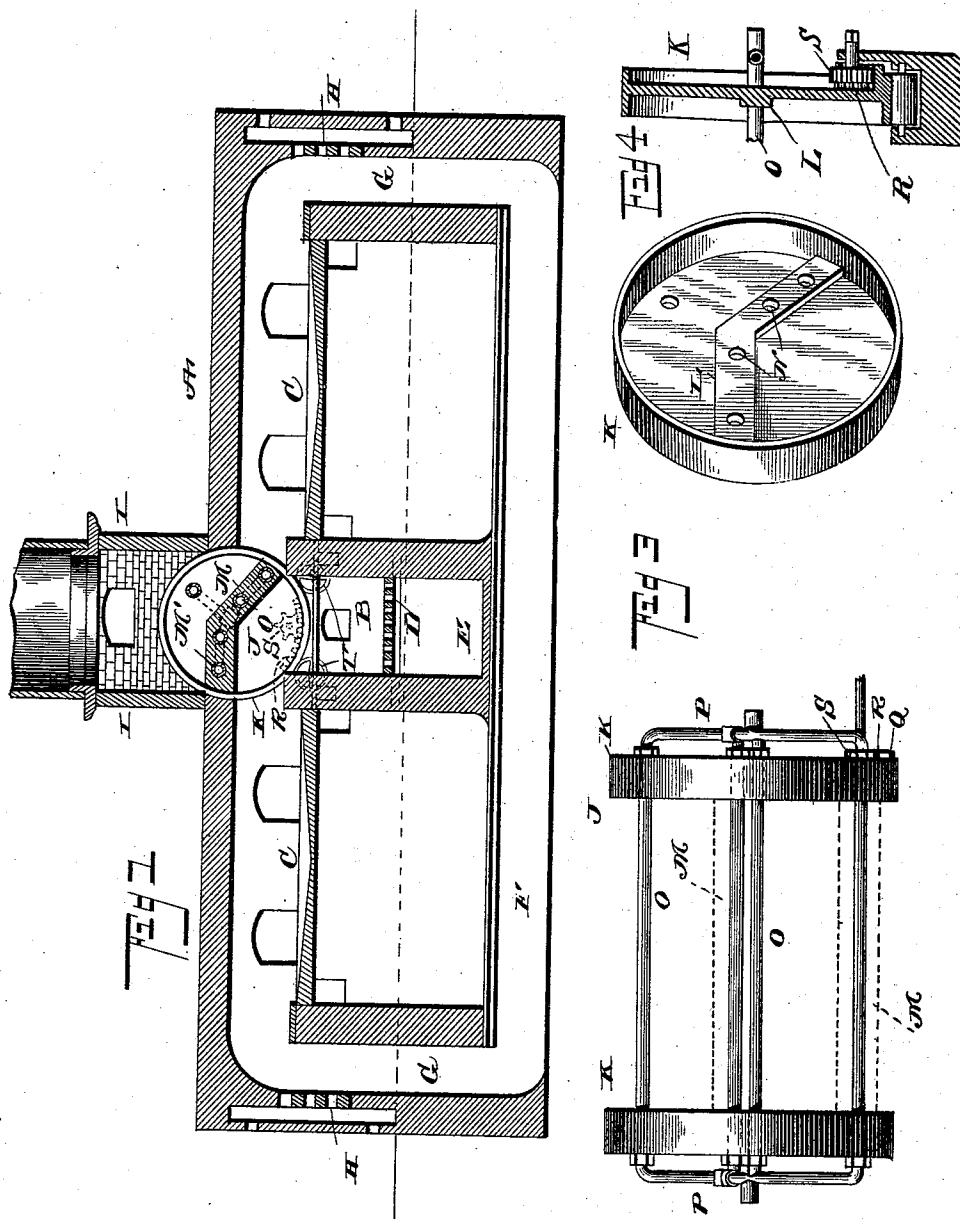


(No Model.)

S. BUNN.
FURNACE.

No. 472,697.

Patented Apr. 12, 1892.



Witnesses

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SIMEON BUNN, OF BELLEVILLE, ILLINOIS.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 472,697, dated April 12, 1892.

Application filed November 14, 1891. Serial No. 411,917. (No model.)

To all whom it may concern:

Be it known that I, SIMEON BUNN, a citizen of the United States, residing at Belleville, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Furnaces; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in furnaces for heating metals, such as iron and steel; and it consists in certain novel features hereinafter described and claimed.

The object of my invention is to provide a furnace which will permit the rapid handling of a large quantity of metal and in which one lot of bars may be removed from the furnace or inserted therein while a different lot is being heated.

A further object is to provide means for controlling the circulation of the heated currents through the furnace.

These objects I accomplish by the use of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view of a furnace constructed in accordance with my invention. Fig. 2 is a detail side view of the valve or damper, and Fig. 3 is a detail perspective view of the ring which supports the end of the damper. Fig. 4 is a detail vertical section through one end of the damper, showing the operating mechanism and the supporting-rollers.

The body of the furnace A is constructed of bricks or other suitable material in the usual manner, and is provided with a central fire-chamber B, from which extend the lateral beds C to support the metallic bars. The fire-chamber is provided with the usual grate-bars D and the ash-pit E, as shown, and below the floor of the furnace I form a flue F, which extends across the entire width of the furnace and communicates at its ends with the vertical flues G, which extend up to the beds C, as clearly shown. In the end walls of the furnace I provide the air-openings or checkers H, which admit sufficient air to the

flues F and G to maintain a perfect combustion.

The chimney rises centrally from the roof of the furnace, and is constructed of any suitable material, being reinforced at its lower end by the columns I. Between the chimney and the fire-chamber and in the plane of the lateral beds C, I arrange the damper or valve J, by which the heated currents are caused to pass over one or the other bed, as may be desired and as will be fully set forth hereinafter. This damper is composed of two circular plates or disks K, arranged at the ends of the furnace and provided on their inner faces with the substantially V-shaped flanges or ribs L, to which I secure the ends of the fire-brick partitions M, said partitions extending the entire length of the furnace and being provided with the longitudinal passages M', which register with the openings N in the plates or disks K and through which and the said openings I pass the pipes O to receive and hold water, and thereby prevent the damper and pipes from being overheated. The ends of these pipes are threaded to receive securing-nuts, so that the end disks may be forced together, and the damper thus secured in position, and they join at their ends the branch pipes P, which communicate with the water-supply. The disks K are provided on their outer sides with the annular flanges Q, on which I form the racks R, which are engaged by the pinion S, mounted in suitable bearings on the end walls of the furnace, so that the damper may be readily turned into the proper position. Small rollers T are mounted in the end walls of the furnace to support the damper and enable it to turn readily and easily, when desired.

The operation of the furnace will be readily understood. The bars of iron or steel are placed on the lateral beds and a fire is kindled in the fire-chamber in the usual manner. The damper is turned so as to bring one edge down to the plane of the upper edge of the bridge-wall on one side, and the hot air and products of combustion will be thus directed over the bed on the opposite side. They will pass over this bed and then down the flue G into the bottom horizontal return-flue. Thence they will pass up the vertical flue at the opposite side of the furnace and then over the

second bed and over the damper into the chimney. It will thus be seen that the heated currents are caused to pass over the beds at both sides of the furnace, and consequently may
5 be made to act on two lots of metal at the same time. This feature will be found especially advantageous where a very large quantity of metal is to be treated, as both beds can be filled and the fire started. The metal on the
10 bed over which the heat first passes will be raised to a high temperature, and at the same time the temperature of the other lot of metal will be raised, but to a lesser degree. When the first lot of metal has been sufficiently heated,
15 the damper is turned so as to cause the heat to pass through the furnace in the contrary direction, thus permitting the second lot of metal to be thoroughly heated while the first lot is being removed from the furnace and a fresh
20 supply placed therein.

From the foregoing it will be seen that no time is lost in changing the supply of metal to the furnace, and a large quantity of metal can be treated in a comparatively short time.

25 My furnace is very simple in its construction and its advantages are thought to be obvious from the foregoing description, taken in connection with the annexed drawings.

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

1. A furnace for treating iron and steel, having a central fire-chamber, lateral metal-supporting beds extending therefrom, flues leading
35 from the ends of said beds, and a rotary damper above the fire-chamber and between the said beds, adapted to divert the products of combustion from either bed.

2. A furnace for treating iron and steel, having a central fire-chamber, lateral metal-supporting beds extending therefrom, vertical

flues at the ends of the said beds, communicating with the spaces above the same, a bottom return-flue passing below the beds and connecting the said vertical flues, an escape
45 flue or chimney, and a damper arranged between the beds and adapted to divert the products of combustion from either bed.

3. The combination, with the furnace having the central fire-chamber, the lateral beds,
50 and flues to carry the products of combustion from said beds, of the rollers mounted in the end walls of the furnace and the rotary damper resting upon the said rollers and extending
55 over the fire-chamber and adapted to divert the products of combustion from either bed.

4. The combination, with the furnace having a central fire-chamber, lateral beds extending therefrom, and flues leading from the
60 said beds, of the rotary damper arranged above the fire-chamber and adapted to divert the products of combustion from either bed and consisting of end disks mounted in the end
65 walls of the furnace and a substantially V-shaped partition secured to and extending between the said disks.

5. The combination, with the furnace having a central fire-chamber, lateral beds extending therefrom, and flues leading from the
70 said beds, of the damper arranged above the fire-chamber and adapted to divert the products of combustion from either bed and consisting of end disks and a V-shaped partition extending between the same and cooling-pipes
75 extending between the pipes and securing the parts together.

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

SIMEON BUNN.

Witnesses:

WM. WEHMEIE,
WM. E. SIEFERT.