

W. H. BAILEY, DEC'D.

U. G. JONES, ADMINISTRATOR.

FURNACE.

APPLICATION FILED APR. 11, 1910.

1,002,193.

Patented Aug. 29, 1911.

3 SHEETS—SHEET 1.

Fig. 1

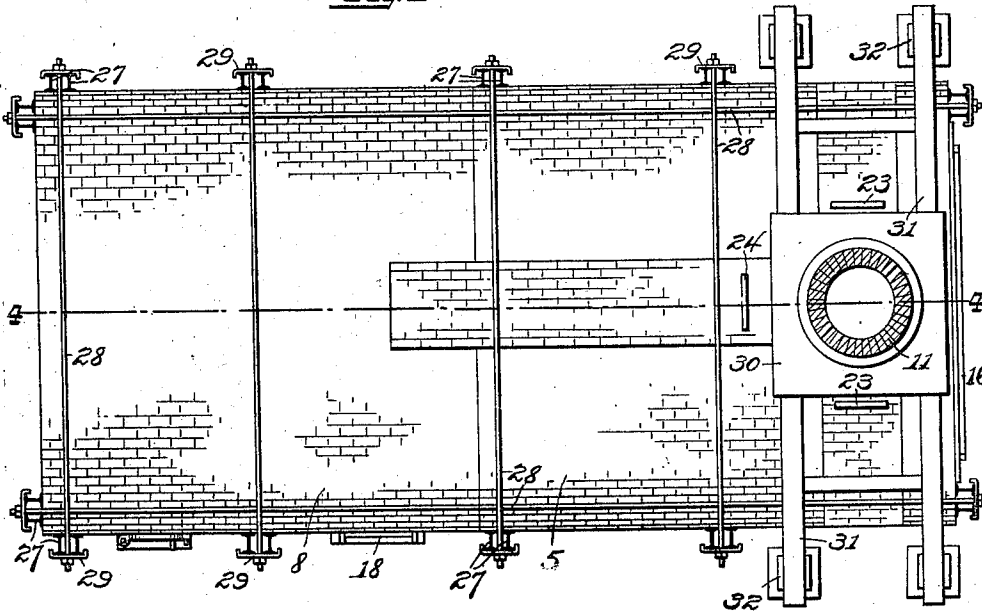
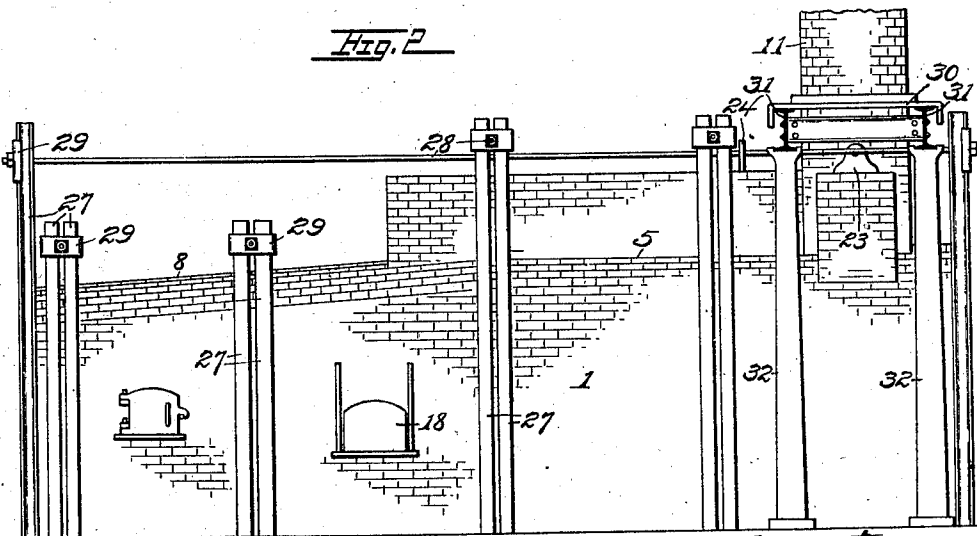


Fig. 2



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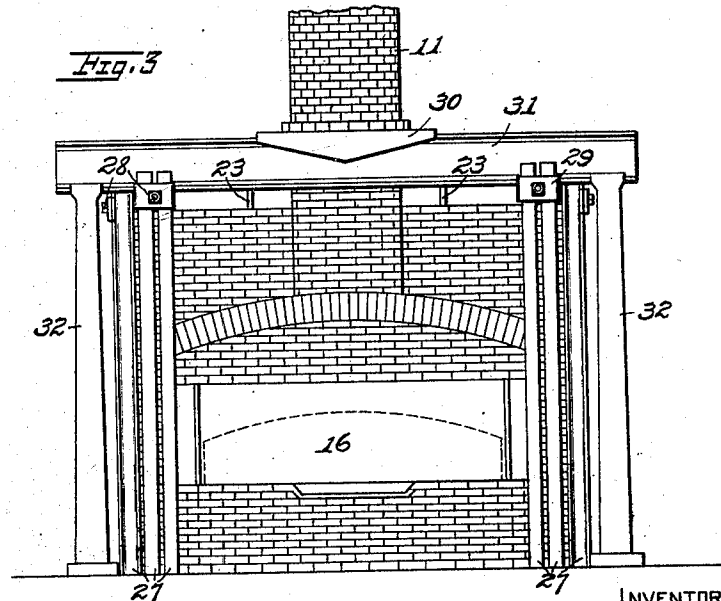
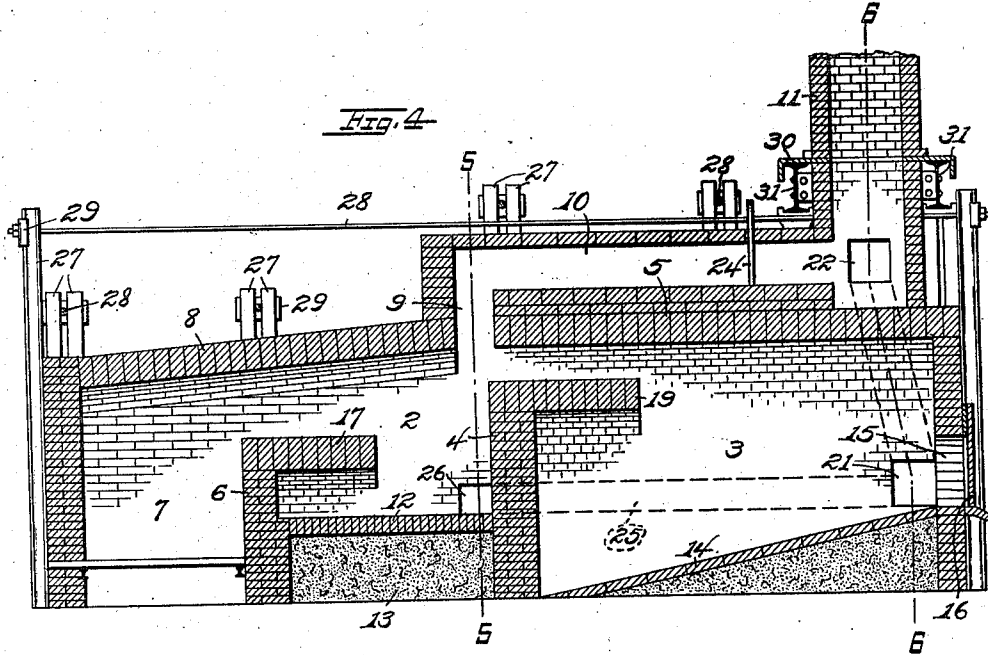
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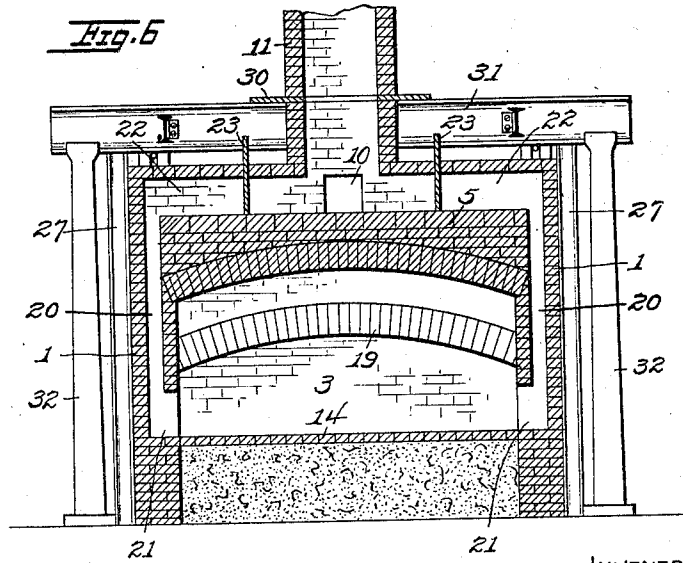
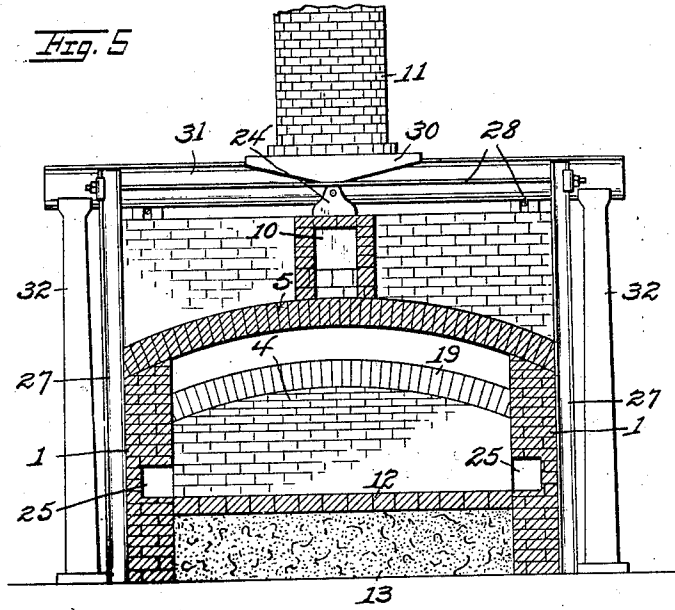
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3 SHEETS-SHEET 3.



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# UNITED STATES PATENT OFFICE

WILLIAM H. BAILEY, DECEASED, LATE OF WHEELING, WEST VIRGINIA; ULYSSES G. JONES ADMINISTRATOR.

## FURNACE.

1,002,193.

Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed April 11, 1910. Serial No. 554,842.

To all whom it may concern:

Be it known that WILLIAM H. BAILEY, deceased, late a citizen of the United States of America, and resident of Wheeling, county of Ohio, and State of West Virginia, did invent certain new and useful Improvements in Furnaces, of which the following is a specification.

This invention relates to improvements in furnaces, and more particularly to a combined sheet and pair furnace for rolling mills; and it consists in the particular construction, arrangement and combination of parts which will hereinafter be fully described.

The primary object of the invention is to provide a furnace of the two-chambered reheating type wherein the heat employed for heating the pairs in the primary or pair heating chamber is utilized for heating the sheets in the reheating chamber.

A further object is to provide means whereby the heating of the sheets and pairs in the chambers is accomplished with but little flame coming into direct contact with the metal, thus to a great extent avoiding the injurious effect which results from such direct contact. And a still further object is to provide a furnace of the character mentioned wherein the side-walls and top of the reheating chamber are uniformly heated.

In describing the invention in detail, reference is herein had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top plan view of the furnace; Fig. 2 is a side elevation of the same; Fig. 3 is a front-end elevation of the same; Fig. 4 is a longitudinal section on the line 4—4, Fig. 1; and Figs. 5 and 6 are cross-sections respectively taken on the lines 5—5 and 6—6, Fig. 4.

Referring to said drawings, in which like designating characters distinguish like parts throughout the several views, 1 indicates the side-walls of the furnace, 2 the primary or pair-heating chamber, and 3 the sheet or reheating chamber, said chambers being separated by a bridge-wall 4 which is built up from the ground or foundation of the furnace near to and directly underlying the rear end of the crown 5 of the reheating chamber.

Located in the rear of the primary heating chamber 2 and separated therefrom by

a bridge-wall 6 is the fire-box or combustion-chamber 7, said bridge-wall being built up from the ground or foundation near to an overlying crown 8 which is divided from said crown 5 by a vertical flue 9 communicating with a horizontal flue 10 leading over the crown 5 to the stack 11. The floor 12 of the primary heating chamber is located at a suitable level above the ground or foundation-level and preferably overlies a bed or filling 13 of a suitable heat-retaining material, such as slag or brick-bats; and the floor 14 of the reheating chamber is preferably inclined downward in a rearward direction from the base of the door-opening 15 through which the sheets are inserted and removed from said chamber, said opening 15 being provided with a door 16.

An arch-like protecting shield or hood 17 is directed forward from the top of the bridge-wall 6 a distance substantially half the length of the primary heating chamber 2, said hood 17 being designed for shielding, to a considerable extent, the pairs placed in said chamber through the side-door 18, preventing them from being directly contacted by the flame resulting from combustion of the fuel. A similar protecting hood 19 is directed forward from the top of the bridge-wall 4 for shielding the sheets placed in the reheating chamber from the flames resulting from combustion of the gases.

Substantially vertical flues 20 are provided within the side walls at the front end of the furnace, said flues communicating at their lower ends with passages 21 leading into the reheating chamber close to the front wall thereof, and communicating at their upper ends with horizontal passages 22 leading to the stack. Dampers 23 are provided in the passages 22 whereby the draft therethrough may be regulated. A similar damper 24 is located in flue 10.

Extending longitudinally through the opposite side walls and communicating at one end with the lower ends of the flues 20 are flues 25 for the primary heating chamber, the opposite ends of said flues 25 communicating with said primary heating chamber through passages 26 located adjacent to the bridge-wall 4 and directly above the floor 12. As is obvious the arrangement of the various flues not only provides for the removal of the products of combustion from

both heating chambers, but it is also such that the side walls and crown of the reheating chamber receive therefrom an auxiliary heating.

5 Suitable reinforcement for the furnace walls is effected by the provision of upright I-beams 27, arranged in pairs at oppositely-  
10 disposed points against the side and end walls, oppositely disposed pairs being connected by truss-rods 28 extended across or  
15 over the top of the furnace and having their ends attached to yokes or cross-heads 29 by means of which the beams constituting the pairs are coupled or bound together.

15 The stack 11 is located over the front end of the reheating chamber, as shown, being mounted upon a centrally apertured plate  
20 30 which rests upon horizontal transverse beams 31 which rest at their opposite ends upon suitable supports, as upright supporting columns 32 disposed without the furnace  
25 walls.

What is claimed as new is—

25 In a sheet and pair furnace, a combustion chamber, a primary heating chamber located in front of said combustion chamber, a bridge-

wall separating said chambers, a reheating chamber located in front of said primary heating chamber, a bridge-wall separating the two chambers last mentioned, a stack located over the front end of the reheating chamber, a flue leading over the entire length of the crown of the reheating chamber from the primary heating chamber to said stack for heating said crown, and flues leading longitudinally through the side-walls of said reheating chamber from said primary heating chamber, thence upward through said walls and over the crown to the stack, and passages leading through said walls from the front end of the reheating chamber and communicating with the last mentioned flues.

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

ULYSSES G. JONES,  
*Administrator of the estate of William H. Bailey, deceased.*

Witnesses:

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