(No Model.)

W. H. BAILEY.

REHEATING FURNACE.

No. 571,258. Patented Nov. 10, 1896.

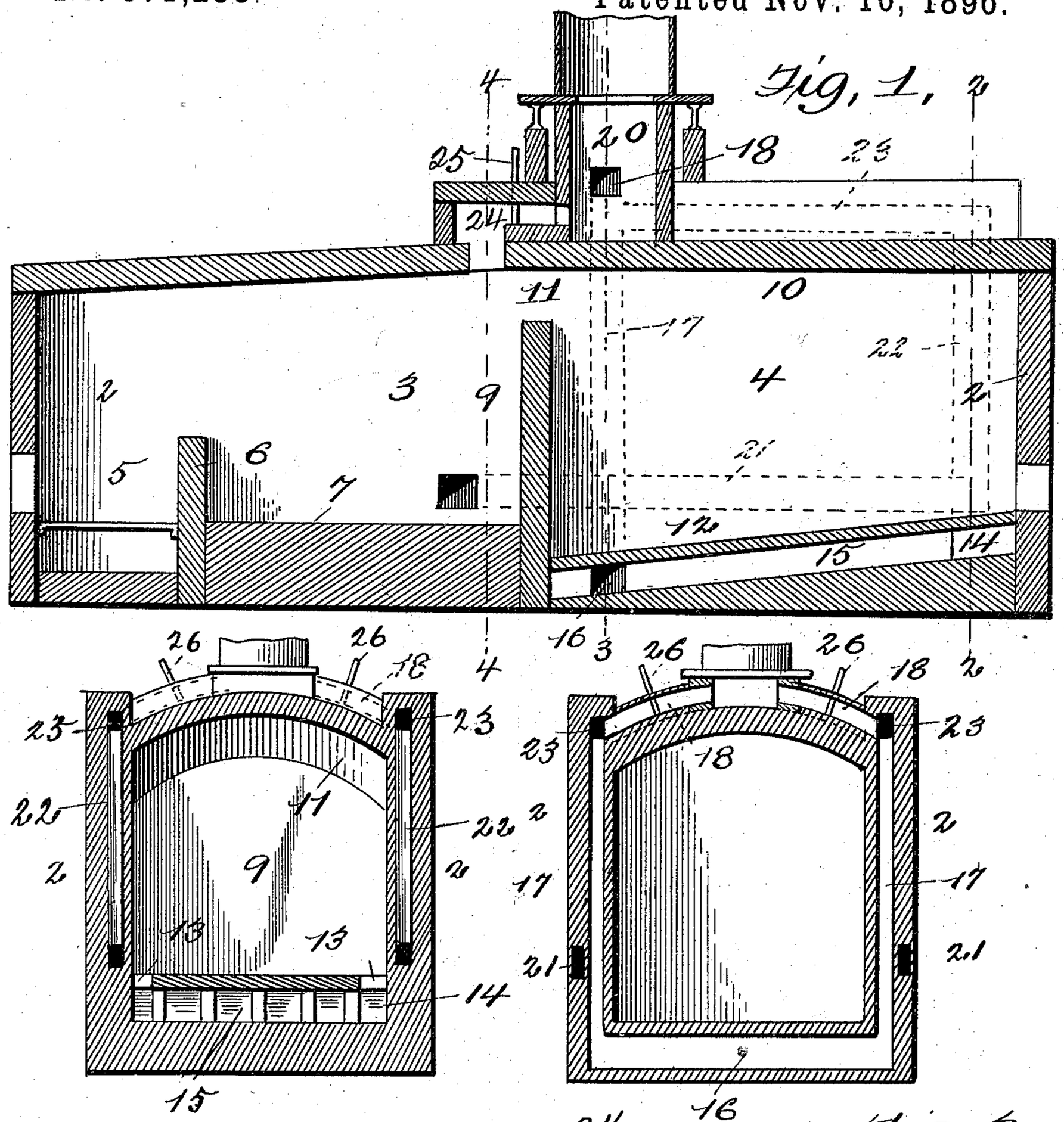

Fig. 1.

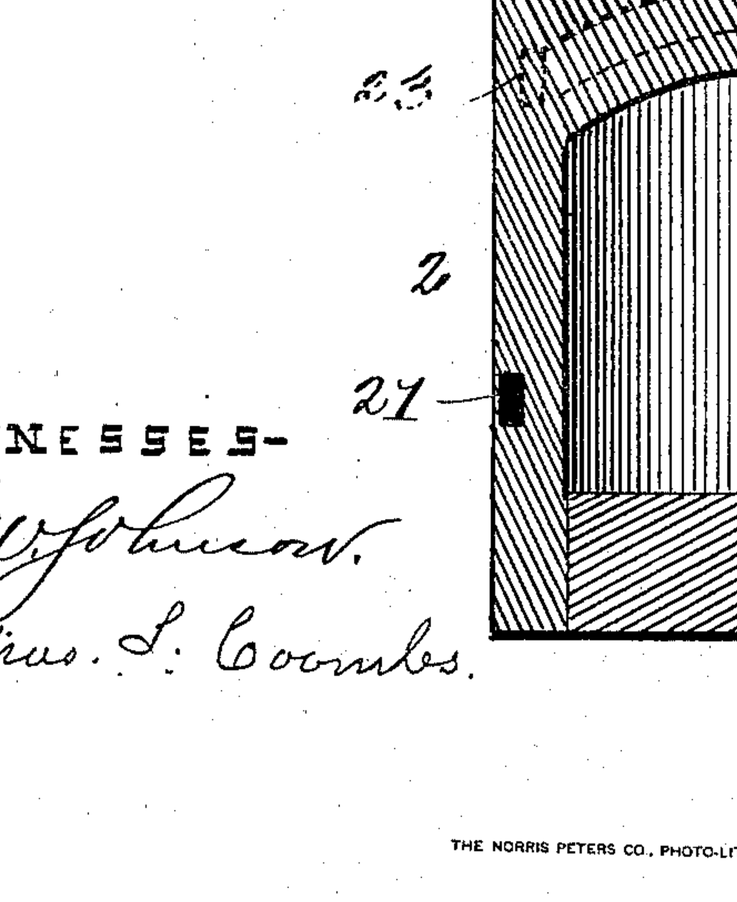

Fig. 2.

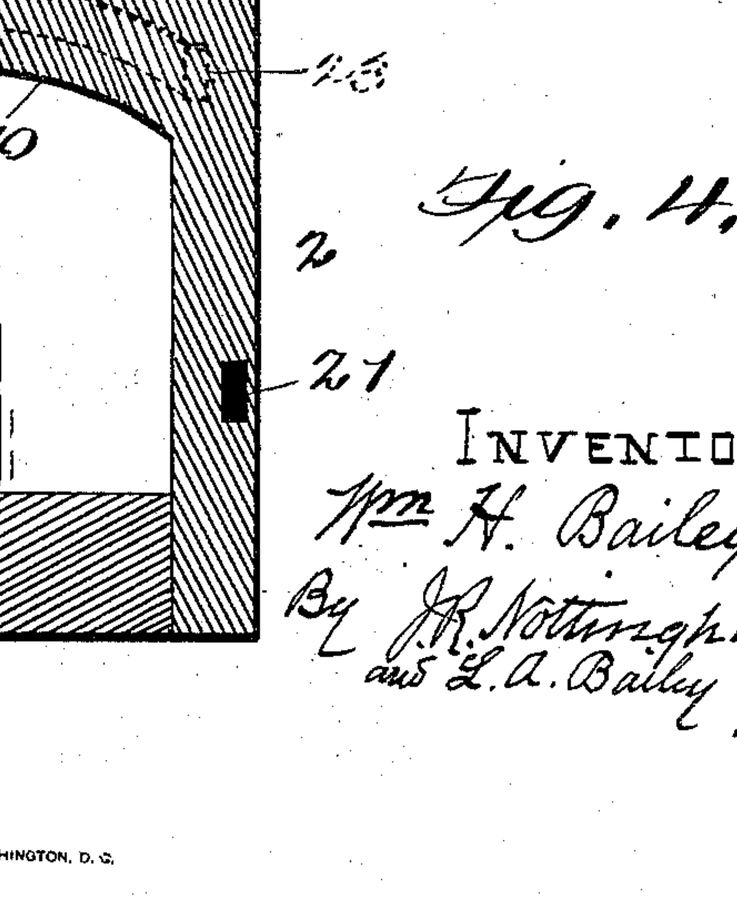

Fig. 3.

Fig. 4.

WITNESSES-

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UNITED STATES PATENT OFFICE.

WILLIAM HENRY BAILEY, OF PIQUA, OHIO.

REHEATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 571,258, dated November 10, 1896.

Application filed June 20, 1896. Serial No. 596,299. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY BAILEY, a citizen of the United States, residing at Piqua, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Reheating-Furnaces; and I do hereby 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.

This invention relates to certain improvements in that class of furnaces employed in the manufacture of sheet-iron and steel plate known as "reheating-furnaces," in which sheets are heated and reheated in the process of finishing.

The object of the invention is to provide for uniformly heating the bottom, walls, and top or crown of the reheating-chamber.

To this end the invention consists of a furnace having a sheet-heating chamber in which the sheets are initially heated, and a reheating-chamber wherein they are heated for finishing, the bottom, top, and walls of the reheating-chamber being provided with suitable flues leading from the primary heating-chamber to the smoke-stack, as will be hereinafter more fully explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 illustrates a longitudinal vertical sectional view of a furnace constructed according to my invention; Fig. 2, a transverse sectional view taken on line 2 2 of Fig. 1; Fig. 3, a similar section on line 3 3 of said figure, and Fig. 4 a similar view on line 4 4 of the same figure.

Referring particularly to the several views, the numeral 2 indicates the walls of the furnace, which are preferably constructed of brickwork, as usual.

The numerals 3 and 4 indicate, respectively, the heating and reheating chambers, and 5 the fire-box or chamber, which is located at the back of the heating-chamber 3 and separated therefrom by a bridge-wall 6.

The numeral 7 indicates the hearth of the heating-chamber of the furnace, upon which the sheets to be heated are piled. The heating and reheating chambers are separated from each other by a bridge-wall 9 of brickwork, which is built up from the ground or foundation of the furnace to near the crown 10 thereof, leaving a passage 11 of sufficient width and depth for the passage of the gaseous products of combustion to pass from the heating-chamber to the reheating-chamber.

The numeral 12 indicates the floor of the reheating-chamber, said floor being constructed of tiles arranged close together, so as to render the floor practically gas-tight and inclined from front to rear. The floor on each side near the front of the chamber is provided with an opening 13, which connects with a transverse flue 14, situated beneath the floor. This flue 14 is connected by a series of longitudinal flues 15 with a transverse flue 16, situated beneath the floor at the rear of the reheating-chamber. Leading from the flue 16 and passing through the wall at opposite sides of the reheating-chamber is a flue 17, which connects with a flue 18, passing over the crown or top of the furnace and opening into the smoke-stack 20, which is supported upon I-beams near the center of the furnace.

Leading from the heating-chamber 3, through the wall at each side of the furnace, is a longitudinal flue 21, which connects with a flue, 22, passing up through the wall near the front of the furnace, and connecting with a longitudinal flue, 23, passing through the upupper part of the wall opening into flue 18, and passing over the crown of the furnace to the smoke-stack. The heating-chamber is connected with the smoke-stack by a flue 24, which is provided with a damper 25 for controlling the escape of the products of combustion and regulating the draft of the furnace, and also for directing the heat from the heating-chamber into the reheating-chamber through the passage 11.

The flues 18 are each provided with a damper 26 for controlling and regulating the heat in the reheating-chamber, and also for controlling the escape of the products of combustion.

The reheating-chamber at its front is provided with suitable doors for the insertion and removal of the sheets, while the heating-chamber is provided at its side with a door for similar purposes.

The combustion-chamber is provided with the usual door for firing.

In operation the heat passes from the heating-chamber through the passage 11 into the reheating-chamber, thence through the openings 13 into transverse flue 14, through flues 15 into the transverse flue 16, and thence by way of flues 17 and 18 to the smoke-stack. The passage of the heat through these flues thoroughly heats the inclined bottom and a portion of the side walls. A portion of the heat from the heating-chamber passes through the flues 21 into the flues 22 and thence by way of flues 23 to the smoke-stack, thus heating the said walls of the reheating-chamber, an important feature of my invention being the thorough and uniform heating of the bottom and side walls of the reheating-chamber, whereby the annealing of the sheet or metal plates may be accomplished without danger of scaling.

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

1. In a reheating-furnace, the combination with fireplace and the primary heating-chamber connected with the smoke-stack by a damper-controlled flue, of the reheating-chamber connected with said chamber, flues leading from said reheating-chamber beneath the floor of the same, the vertical flues passing from said floor-flue through the side walls to the crown of the furnace, and the flues passing from said side flues through said crown then to the smoke-stack, substantially as specified.

2. In a reheating-furnace, the combination with fireplace and the primary heating-chamber, connected with the smoke-stack by a damper-controlled flue, of the reheating-chamber connected with said primary chamber, the flues leading from said primary chamber through the side walls of the reheating-chamber, and connecting with the vertical flues in said side walls, and the longitudinal flues connecting with said vertical flues and leading to the smoke-stack, substantially as specified.

3. In a reheating-furnace, the combination with the fireplace and the primary heating-chamber connected with the smoke-stack by a damper-controlled flue, of a reheating-chamber communicating with the primary chamber, a series of flues situated beneath the floor of the reheating-chamber and connected therewith by suitable openings, vertical flues leading from the flues beneath the floor of the reheating-chamber through the side walls of said reheating-chamber and connecting with the smoke-stack, and longitudinal flues leading from the primary chamber through the side walls of the reheating-chamber and connecting with vertical flues which connect with longitudinal flues leading to the smoke-stack, substantially as specified.

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

WILLIAM HENRY BAILEY.

Witnesses:
DURBIN VOLKER,
E. H. WUERDEMAN.