

No. 639,969.

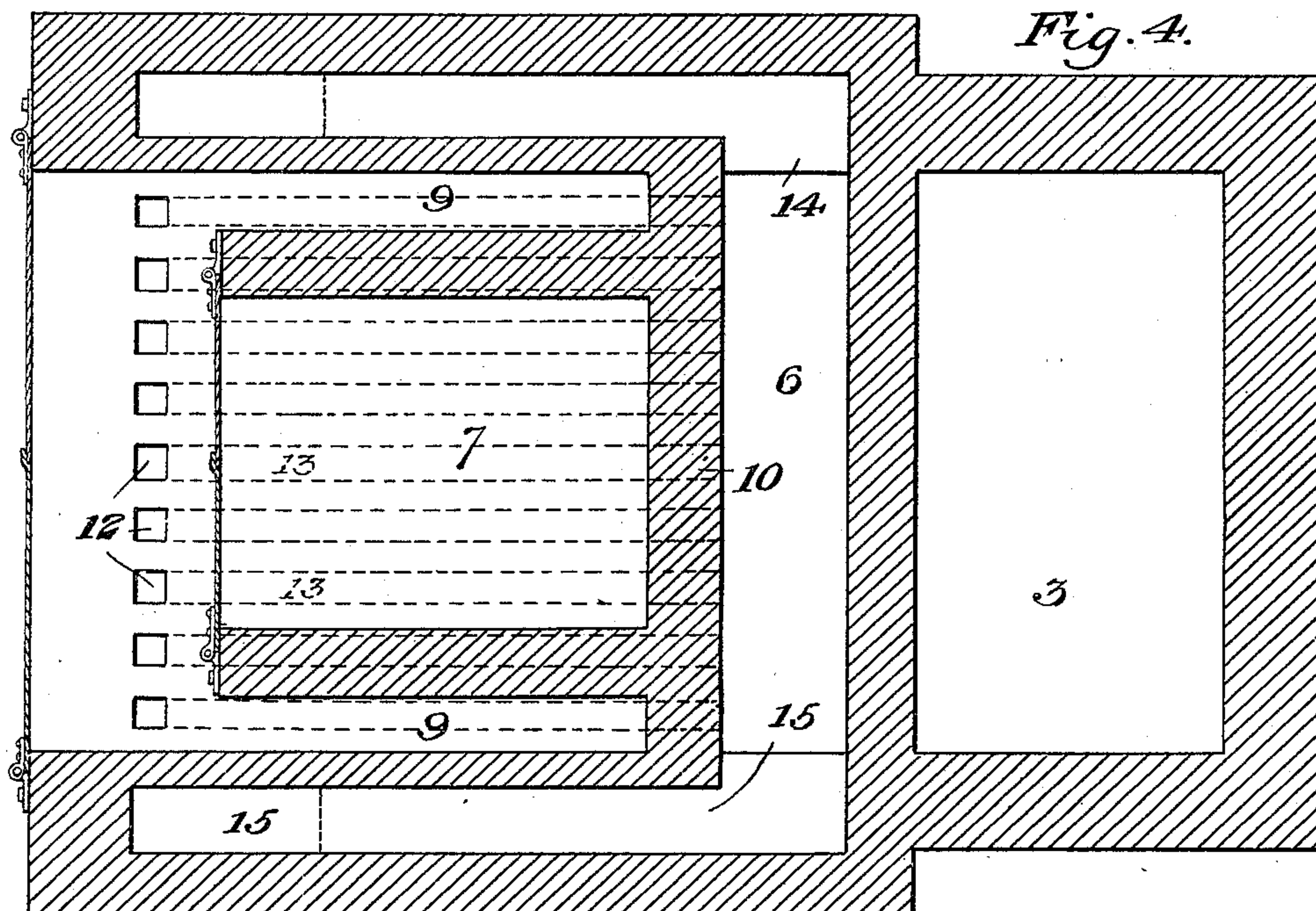
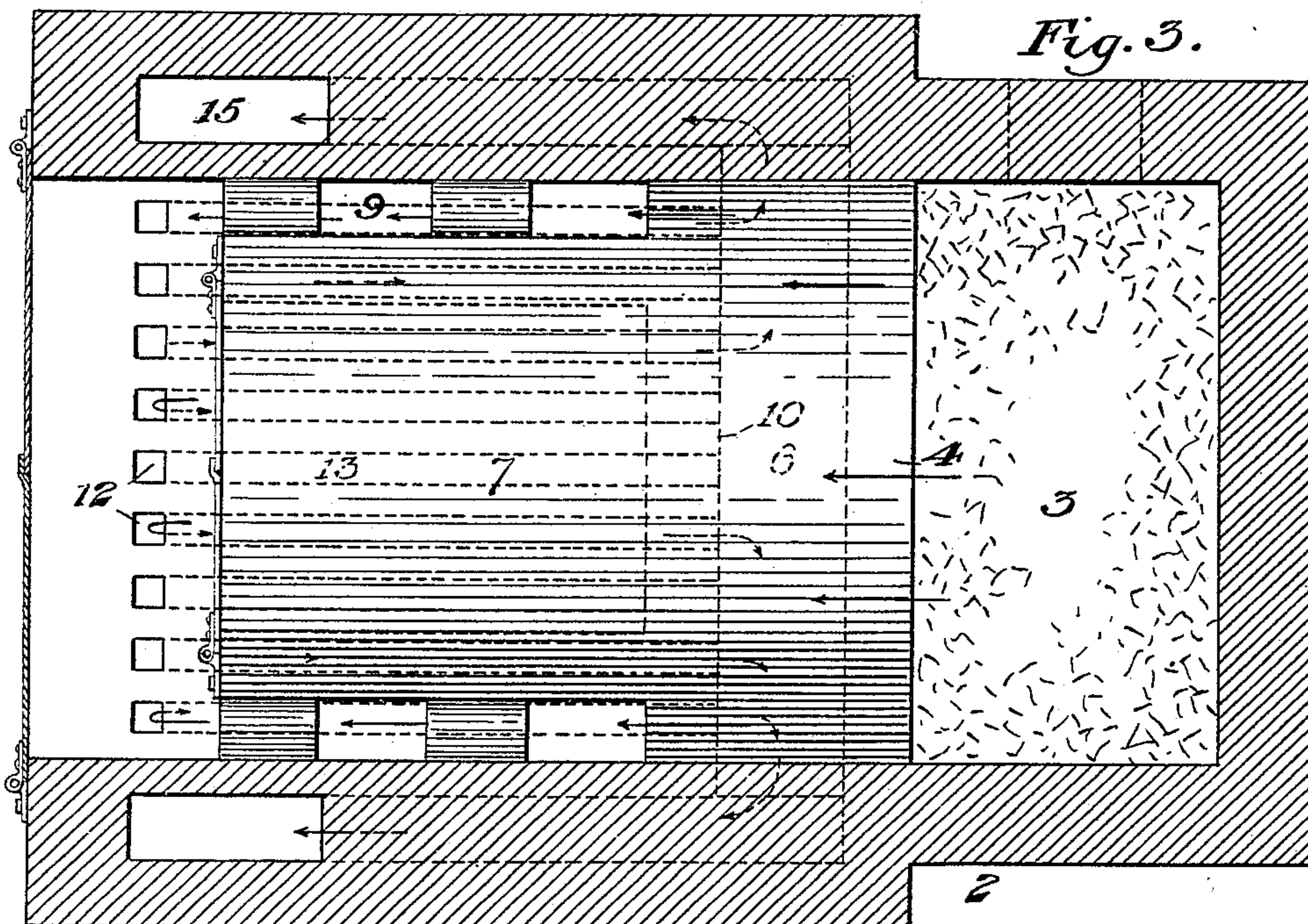
Patented Dec. 26, 1899.

W. GRIFFITH & J. M. ANDERSON.
HEATING AND ANNEALING FURNACE.

(No Model.)

(Application filed Dec. 17, 1898.)

2 Sheets—Sheet 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM GRIFFITH AND JOHN M. ANDERSON, OF PITTSBURG,
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HEATING AND ANNEALING FURNACE.

SPECIFICATION forming part of Letters Patent No. 639,969, dated December 26, 1899.

Application filed December 17, 1898. Serial No. 699,548. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM GRIFFITH and JOHN M. ANDERSON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Heating and Annealing Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal section of our improved furnace. Fig. 2 is a vertical cross-section on the line II II of Fig. 1. Fig. 3 is a sectional plan view, the section being on the line III III of Fig. 2. Fig. 4 is a similar view on the line IV IV of Fig. 2.

The object of our invention is to provide a furnace for heating or annealing copper, zinc, brass, gold, silver, sheet-iron, packs of black-plate, bars, billets, and other metals and articles which it is necessary to soften to the desired degree by the annealing process or for melting or smelting purposes. We have especially designed the furnace so as to cause an even distribution of the heat upon all sides of the annealing or heating chamber.

Our invention consists in arranging the flues and parts so as to accomplish this result.

The caloric is carried over the annealing-chamber and downwardly at the sides of the same to ports arranged in the bottom of the furnace and thence beneath the chamber to a chamber between the combustion-chamber and the annealing or heating chamber and thence to a suitable stack.

In the drawings, 2 represents the outer walls of our improved heating or annealing furnace.

3 is the combustion-chamber, provided with suitable grate-bars and charging-door.

The bridge-wall 4 extends up to within a short distance of the main roof of the furnace. The top of the bridge-wall 4 forms the roof of the chamber 6 and is preferably extended, so as to form the roof of the annealing or heating chamber 7.

Between the outer walls 2 of the furnace and the side walls of the annealing-chamber a chamber 9 is formed and at the end next the chamber 6 is closed by the partition-wall

10, which extends completely across the furnace, as shown in Figs. 3 and 4. The space between the roof of the chambers 6 and 7 and the main roof 5 forms a flue 8, through which the caloric is drawn by the draft of the stack and heats the roof of the annealing-chamber 7. That portion of the heat which is nearest the side walls 2 is drawn downwardly into the chambers 9 and impinges upon the side walls of the annealing-chamber 7, the chambers 9 affording sufficient space to permit the side walls of the annealing-chamber to be heated to the required degree.

The open end of the annealing-chamber 7, as well as the open end of the furnace, are provided with suitable doors. (Not shown.) The doors which close the end of the annealing-chamber may be suitably luted or otherwise sealed, so as to exclude the atmosphere from contact with the sheets within.

The front end of the annealing-chamber is set back a short distance from the front end of the furnace, and when the doors of the annealing-chamber and the furnace are closed forms a chamber 11, into which the caloric current passes from the flue 8 and thence downwardly to ports 12 in the floor of the furnace at a point within the chamber 11, thus imparting the necessary heat to the front end of the annealing-chamber. The ports 12 are in the floor of the chamber 11 and communicate with the flue or flues 13 beneath the bottom of the annealing-chamber 7, thus imparting the necessary degree of heat to the bottom of the annealing-chamber.

The flue or flues 13 communicate with the chamber 6, formed in the bridge-wall. The heat is collected in this chamber and heats the rear wall of the annealing-chamber before its exit to the stack.

It will thus be seen that the annealing-chamber is kept at a uniform temperature on all sides, which is essential to the successful working of such furnaces for the purposes hereinbefore mentioned. Exit-ports 14 in the side walls 2 within the chamber 6 communicate with stack-flues 15, built in the side walls 2, and thence extending forwardly to a stack 16, as shown in the drawings. It is obvious that after the heat has been utilized it is unim-

portant whether the stack be located as shown in the drawings or not; but the stack may be located at some other point.

The advantages of our invention will be appreciated by those skilled in the art, since we are able to uniformly distribute the heat to all parts of the heating or annealing chamber, and we derive all the advantages of annealing-boxes without the difficulties and annoyance incident to their use and with much less trouble and expense.

Modifications may be made within the scope of our claims by the skilled furnace-builder in the number and location of the flues without departing from the spirit and scope of our invention, since

We claim—

1. A heating or annealing furnace having a combustion-chamber and a bridge-wall, a heating-chamber, having a flue above it formed by the roof of the furnace, the top of the bridge-wall and the roof of the heating-chamber, side chambers, extending along said heating-chamber, ports in the floor of the furnace in front of said chambers, a flue or flues beneath the furnace-floor, said ports communicating therewith, a chamber located between the combus-

tion-chamber, the heating-chamber, and the side chambers, said flues beneath the furnace-floor leading thereinto, exit-openings in said chamber and a stack in communication therewith; substantially as described.

2. A heating or annealing furnace, having a combustion-chamber and a hollow bridge-wall, a heating-chamber, a flue between the top of the bridge-wall, the roof of the heating-chamber, and the roof of the furnace, side chambers extending along the side walls of the heating-chamber, ports in the floor of the furnace, in front of the heating-chamber, a flue or flues beneath same, said ports communicating therewith, a chamber formed within the hollow bridge-wall into which said flue or flues beneath the heating-chamber lead, openings in said chamber, and a stack in communication with said chamber by means of said openings; substantially as described.

In testimony whereof we have hereunto set our hands.

WILLIAM GRIFFITH.
JOHN M. ANDERSON.

Witnesses:

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