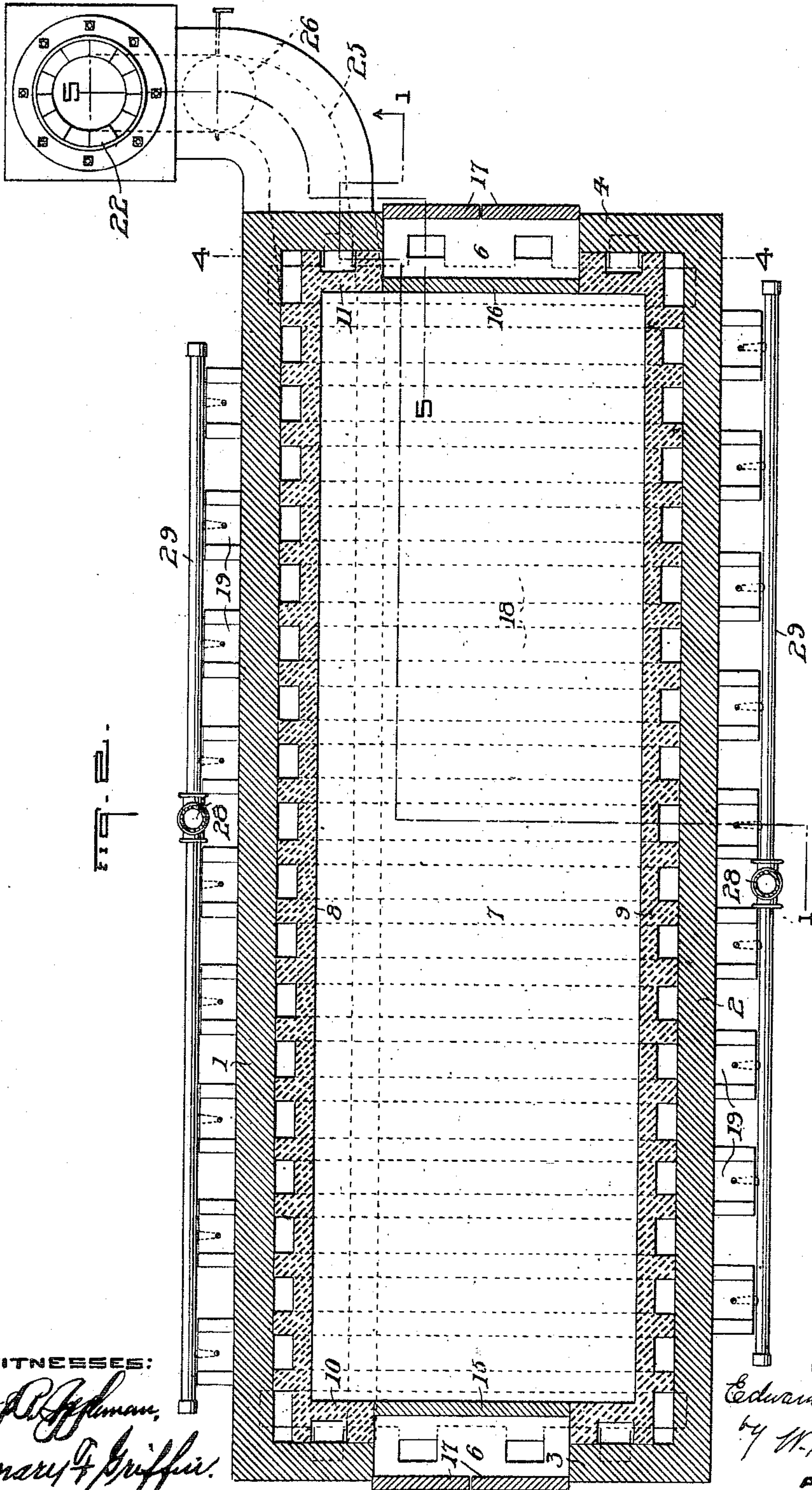


E. H. HOLMES.
ANNEALING FURNACE.
APPLICATION FILED JAN. 2, 1908.

Patented June 20, 1911.

3 SHEETS—SHEET 2.

995,460.



WITNESSES:

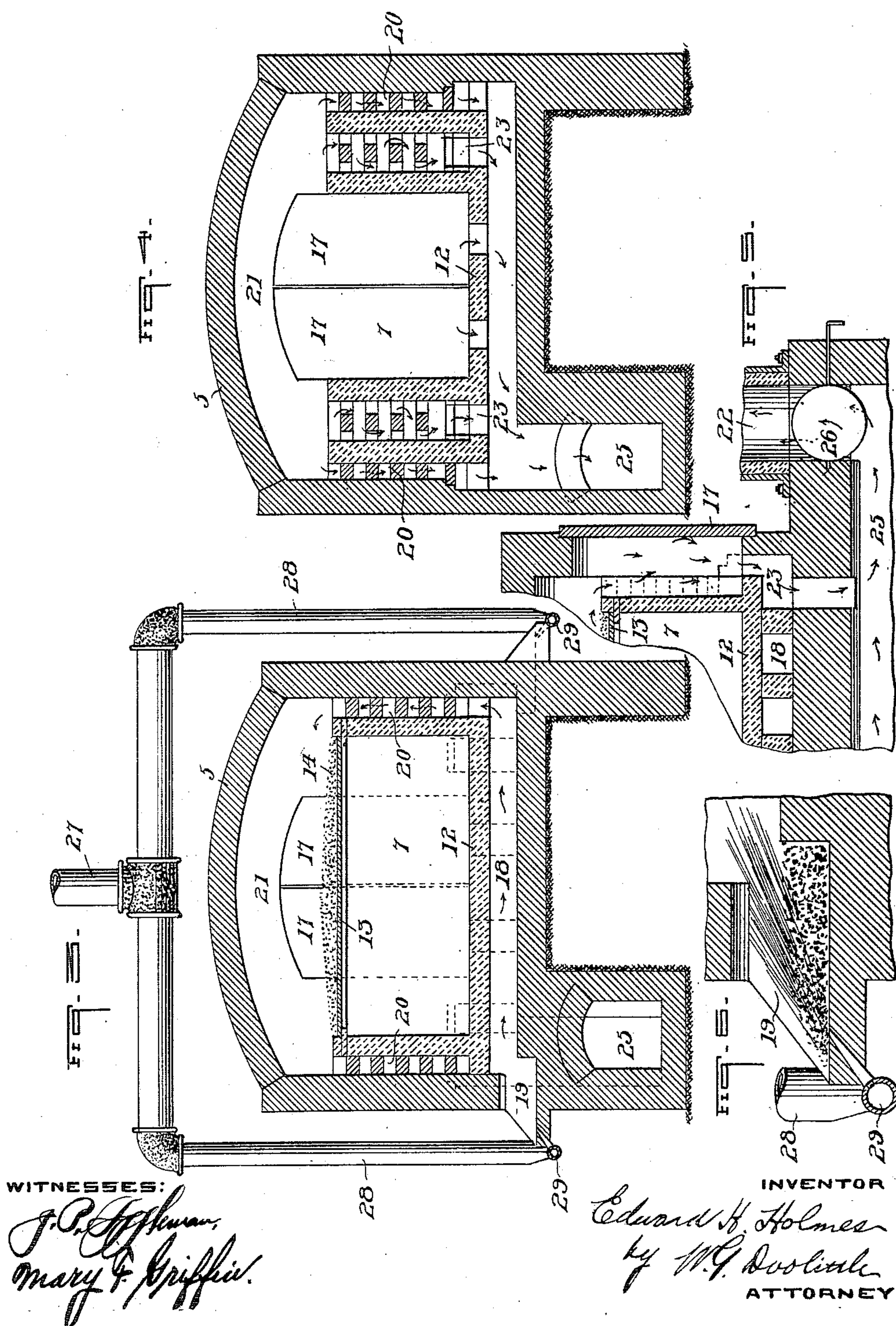
J. R. Hoffman.
Mary E. Griffin.

INVENTOR

Edward H. Holmes
by *W. E. Doolittle*
ATTORNEY

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UNITED STATES PATENT OFFICE.

EDWARD H. HOLMES, OF BEAVER, PENNSYLVANIA.

ANNEALING-FURNACE.

995,460.

Specification of Letters Patent. Patented June 20, 1911.

Application filed January 2, 1908. Serial No. 408,994.

To all whom it may concern:

Be it known that I, EDWARD H. HOLMES, of Beaver, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Annealing-Furnaces, of which the following is a specification.

In the accompanying drawings, which illustrate applications of my invention, Figure 1 is a part side elevational view and a part sectional view of an annealing furnace embodying my invention; Fig. 2 a longitudinal sectional view taken on line 2—2 of Fig. 1; Fig. 3 a cross sectional view, the section being taken on line 3—3 of Fig. 1; Fig. 4 a similar view taken on line 4—4 of Fig. 2; Fig. 5 a detail vertical sectional view of the rear of the furnace taken on line 5—5 of Fig. 2; and Fig. 6 an enlarged detail view of a fire-box.

Referring to the drawings, the annealing-furnace as illustrated and as preferred comprises side-walls 1 and 2, front and rear end-walls 3 and 4 and an arched roof 5. The front and rear walls proper of the furnace are each constructed with an opening 6 as is usual in this class of furnaces.

7 designates the annealing-chamber of the furnace adapted to contain the articles to be annealed. The annealing-chamber comprises side-walls 8 and 9, front and rear walls 10 and 11, and a floor 12. The top of the chamber is closed by a series of metal or asbestos plates 13 extending across the chamber and supported on the side-walls thereof. In practice, plates 13 are covered with slag or scale, as shown by the numeral 14. This construction produces a practically air-tight annealing-chamber.

In order to introduce and to remove the articles to be annealed, the front and rear walls proper of the annealing-chamber are each formed with a passage, said passages, after the articles are placed within the chamber, are closed by built up front and rear partitions or walls 15 and 16.

17 designate front and rear doors of the furnace.

Extending under and adjacent to the floor 12 of the annealing-chamber, I provide a series of combustion passages 18 which passages communicate with combustion-chambers or fire-boxes 19 formed in each of the side-walls 1 and 2. These combustion-chambers or fire boxes 19 may be utilized when coal is used as a fuel or when gas or

oil is used, my invention being designed for coal, gas, or oil. The fire-boxes or combustion-chambers are preferably arranged in alternate order in each side-wall of the furnace as particularly shown by Fig. 2. Each of the horizontal combustion passages 18 communicates with the vertical passage 20 located between the side-walls of the annealing-chamber and the side-walls of the furnace, thereby permitting the heated air and products of combustion to travel up the sides of the annealing-chamber and into a large open chamber 21 located between the top of the annealing-chamber and the arched roof 5 of the furnace. The provision of the large chamber 21 is important in that it provides for the combustion of the fuel that has not already taken place in the passages 18 and 20; also it provides a construction whereby the furnace is more quickly cooled after a heat.

22 designates the furnace stack which is preferably placed as shown at the rear of the furnace or at the rear of a series of annealing-furnaces.

As shown by the arrows the direction of the heated air after it reaches chamber 21 is toward the rear and front of the furnace passing over the top of the annealing-chamber to either the rear-flue 23 or to the front flue 24 and from said flues 23 and 24 into passage 25 and from thence into the stack.

26 designates a damper for controlling passage 25.

When coal is used as the fuel, I employ an air-blast which blast is delivered to the respective fire-boxes through pipes 27, 28 and 29.

What I claim is:

1. In an annealing furnace, the combination with an annealing-chamber, of a series of combustion-chambers arranged in one side-wall of the furnace, flues extending under the floor of the annealing-chamber and in communication with the combustion-chambers, a series of combustion-chambers arranged in the opposite side-wall of the furnace and alternating with the first mentioned combustion-chambers, a chamber between the top of the annealing chamber and the roof of the furnace, side-flues, front and rear end flues, a stack at one end of the furnace, and a conduit in communication with the front and rear flues and with the stack.

2. In an annealing-furnace, the combination with an annealing-chamber, of a series

of combustion-chambers arranged in one side wall of the furnace in communication with passages extending under the floor of the annealing-chamber, a series of combustion-chambers arranged in the opposite side wall of the furnace and alternating with the first mentioned combustion-chambers, a large open chamber between the top of the annealing-chamber and the roof of the furnace, side flues between the side walls of the annealing-chamber and the furnace, front and rear flues, a stack at one end of the furnace, and a passage or flue in communication with the front and rear flues and with the stack.

3. In an annealing-furnace, the combination with an annealing-chamber, of a series of combustion-chambers arranged in one side wall of the furnace in communication with passages extending under the floor of the annealing-chamber, a series of combustion-chambers arranged in the opposite side wall of the furnace and alternating with the first mentioned combustion-chambers, a large open chamber between the top of the annealing-chamber and the roof of the furnace, side flues between the side walls of the annealing-chamber and the furnace, front and rear flues, a stack at one end of the furnace, a passage or flue in communication with the front and rear flues and with the stack, and a damper in said last mentioned passage.

4. In an annealing furnace, the combina-

tion with an annealing-chamber, of a series of combustion-chambers arranged in a side-wall of the furnace, a series of flues extending under the floor of the annealing-chamber, a chamber between the top of the annealing-chamber and the roof of the furnace, side flues, front and rear end flues in communication with the chamber over the annealing-chamber, a stack located at one end of the furnace, a conduit located below the combustion-chambers, said end flues connecting the chamber above the annealing-chamber and the conduit, whereby heated air is passed downwardly from said chamber to the conduit, said conduit being in communication with the stack.

5. In an annealing-furnace, the combination with an annealing-chamber, of a series of combustion chambers in a side wall of the furnace, means in communication with the combustion chambers for drawing heated air and products of combustion into contact with the floor and sides of the annealing chamber, and causing the heated air and products of combustion to pass over the top of the annealing chamber in opposite directions and down the end walls thereof.

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

EDWARD H. HOLMES.

Witnesses:

STANLEY M. LANGDON,
W. G. DOOLITTLE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."