

June 10, 1930.

R. E. CRAMER

1,763,418

OVEN

Filed May 18, 1929

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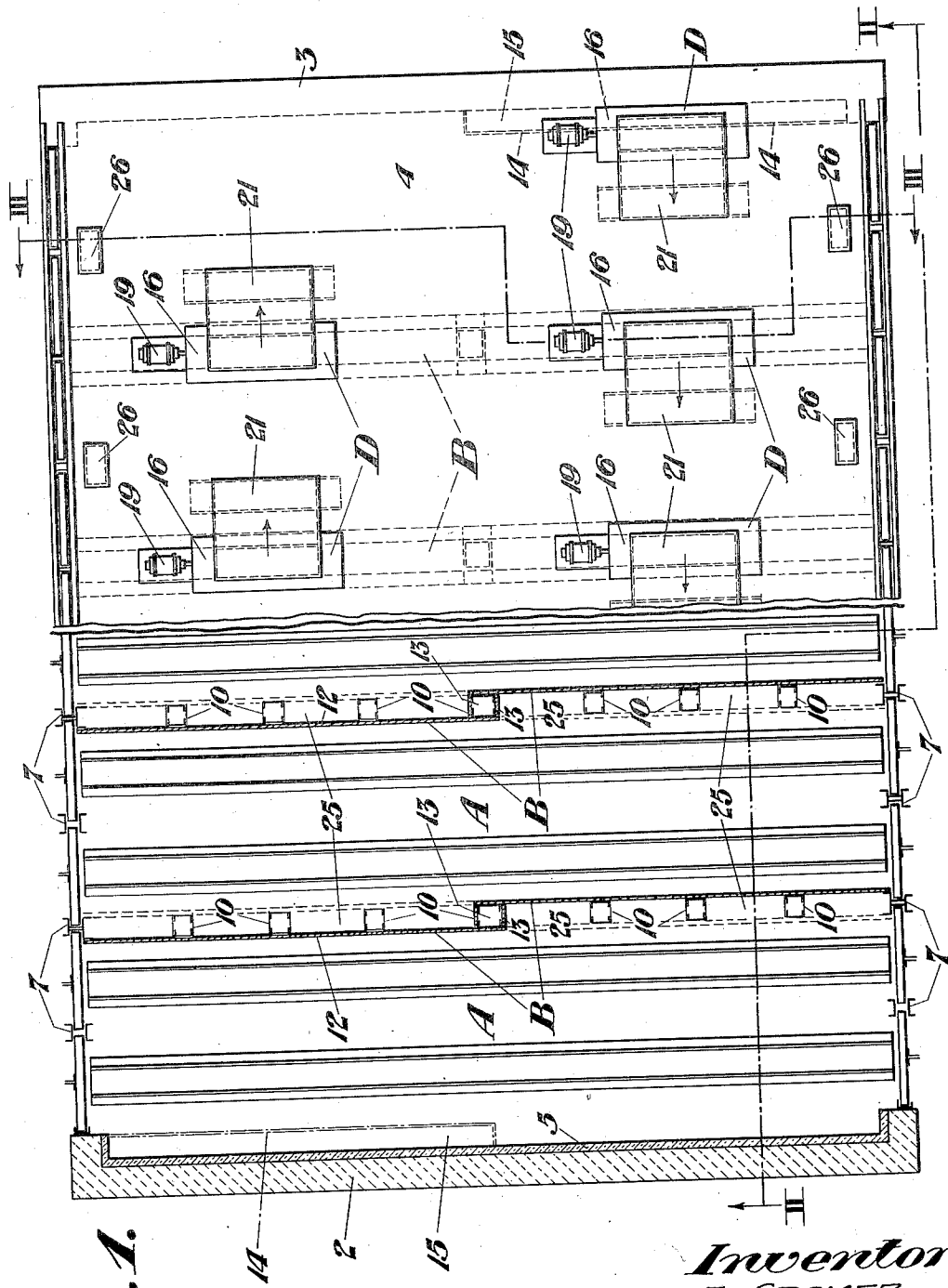


Fig. 1.

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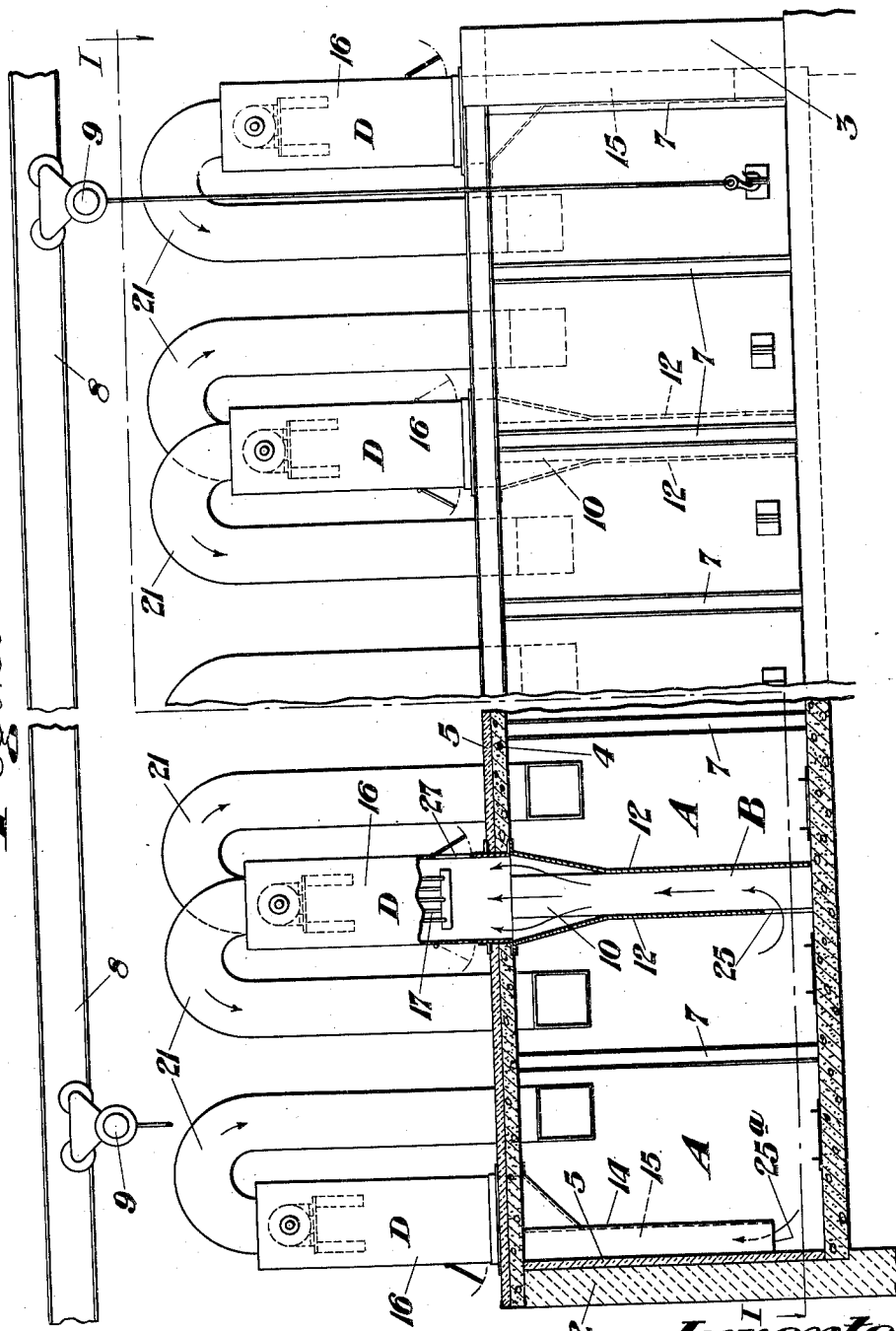
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Fig. 2.



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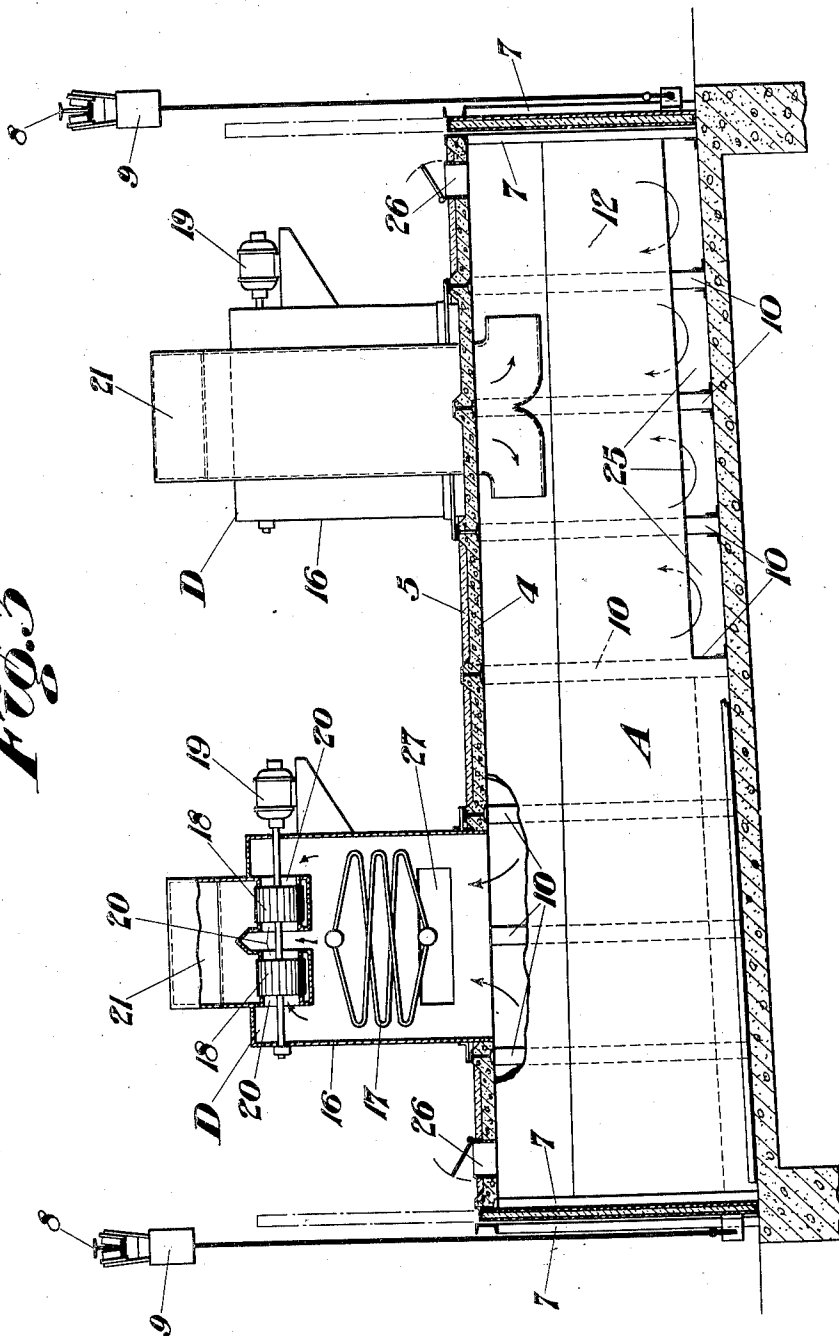
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Fig. 3



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UNITED STATES PATENT OFFICE

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OVEN

Application filed May 18, 1929. Serial No. 364,234.

This invention relates to ovens and, while not limited thereto, relates to rod baking and drying ovens and the like, and has for one of its objects the provision of a novel heating arrangement whereby heated air is constantly recirculated through the oven sub-chambers.

Another object is to provide for the forced circulation of heated air through the oven chambers so as to cause an even heating of the oven chambers.

In the drawings:

Figure 1 is a plan, partly in section, of an oven constructed in accordance with this invention.

Figure 2 is an elevation, taken on the line II—II of Figure 1.

Figure 3 is a sectional elevation taken on the line III—III of Figure 1.

Referring more particularly to the drawings, the main oven chamber has end walls 2 and 3, and top wall 4, which may be of brick or other usual construction with or without a layer of heat-insulating material 5, as desired. The back and front of the oven chamber are closed by doors which are slidably mounted in guides 7 for vertical movement to permit the charging and discharging of buggies loaded with rods.

Suitable overhead tram-rails 8 are mounted along the back and front of the oven and each tram-rail carries a hoisting apparatus 9 adapted to be detachably connected to the respective doors for raising and lowering said doors.

The main oven chamber is divided from front to back into sub-oven chambers A by hollow partition walls B, portions of which serve as flues for the circulation of air through the oven. The walls B are composed of spaced rows of columns 10 covered with metal plates 12 forming spaced side walls. The spaces between the side walls of the partitions B are divided intermediate their ends by transverse plates secured to the center column of each partition, as at 13, so as to form separate flues.

The end walls of the oven chamber are each provided with an inwardly spaced plate lining 14 along half of their length so as to

provide end flues 15 for the circulation of air from the endmost sub-chambers A.

Suitable heating units D are mounted on the top of the main oven chamber and are arranged in pairs over the partition walls B, one over each of the flue portions thereof, and single units are mounted over the end flues 15. The heating units comprise a vertically disposed casing member 16, the lower end of which is open and communicates with the flue portion of the wall over which it is mounted. The separate flue portions of the walls B are provided with elongated ports 25 adjacent their lower ends, the forward flue portion having its port 25 opening into the sub-chamber A on one side of the wall, and the rear flue portion having its port 25 opening into the sub-chamber A on the other side of the wall, so that each sub-chamber is provided with exhaust ports in its opposite walls. The endmost sub-chambers have one exhaust port 25^a in the flues 15. A steam coil 17 is mounted in the casing 16 to heat the air drawn therethrough. A pair of fans 18 are mounted in the upper end of the casing and are adapted to be operated by a motor 19. The fans 18 have their inlet ports 20 opening into the casing 16 and their outlet ports opening into a conduit 21 forming a hot air flue. The conduit flue 21 extends down through the top of the oven and communicates with the sub-chamber A from which the air is drawn to be heated. From the above it will be seen that each sub-chamber A is served from opposite sides adjacent opposite ends by separate heating units D which cause a constant recirculation of heated air throughout the sub-chambers.

The steam coils 17 of the heating units D are adapted to have their inlets connected to a suitable supply main (not shown), and the outlets of said coils are connected to a suitable drain main (not shown).

The top wall of the oven above each of the sub-chambers A is provided with normally closed vents 26 through which portions of the air being circulated may be allowed to escape when the humidity of the air becomes too great. Normally closed and controllable inlet openings 27 are also provided

adjacent the lower end of each of the heater casings 16 through which fresh air may be admitted to the circulating system, when desired, to make up for the humid air permitted to escape through the vents 26 or to control the temperature of the air being circulated.

The type of rod baking and drying oven has a materially greater baking and drying capacity than the direct fired ovens of the prior art, due to the fact that a more uniform temperature is maintained throughout the oven compartments or sub-chambers. No labor is required for firing or maintaining the ovens since they receive their heat from the central steam plant. The expensive repairs necessary in the direct fired ovens, partly made necessary by the fact that the products of combustion must at all times be kept from entering the oven chambers, are entirely eliminated. Many other advantages such as low first cost and generally improved operation will also be apparent to those skilled in the art.

While I have shown and described one specific embodiment of my invention, it will be understood that I do not wish to be limited thereto since various modifications may be made without departing from the scope thereof, as defined in the appended claims.

I claim:

1. A rod baking and drying oven comprising a rectangular main oven chamber divided into a plurality of sub-chambers by partition walls, means for heating and circulating the air in each of said sub-chambers, said means withdrawing the air from each sub-chamber from a point along one side wall to the rear of the transverse center of said sub-chamber and from a point along the other side wall forward of the transverse center of said sub-chamber, and returning the air heated to the upper part of said sub-chamber from which it is withdrawn at points to the rear and forward of its transverse center.

2. A rod baking and drying oven comprising a rectangular main oven chamber divided into a plurality of sub-chambers by hollow partition walls, said walls being separated vertically intermediate their ends to form separate vertical flues, said walls being provided with openings in their opposite faces on the opposite sides of said vertical separation, said openings forming ports to the respective flues from the sub-chambers on the opposite sides of said wall whereby each sub-chamber is provided with a flue port in each side wall extending inwardly from its end toward the center, at least two heater units for causing a circulation of and heating the air of each of said sub-chambers, each of said units comprising a casing through which air is adapted to be drawn, a steam coil in said casing, and an exhaust fan for drawing air through said casing, one of said units having its casing in communication with the par-

tion wall flue at one side of said chamber and the other unit having its casing communicating with the partition wall flue at the other side of said chamber, and flues leading from each of said casings into the upper portion of said sub-chamber whereby the air will be drawn from said sub-chambers through said partition wall flues and heated by said steam coils and returned through said last named flues into the upper portion of said chambers.

In testimony whereof, I have hereunto set my hand.

ROBERT E. CRAMER.