

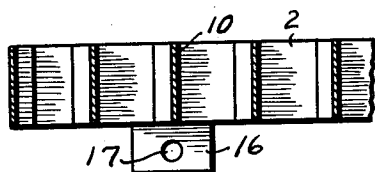
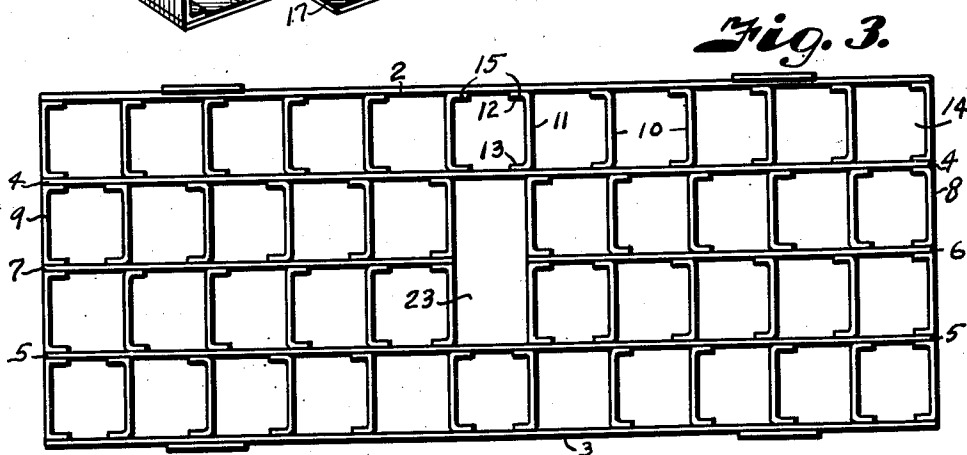
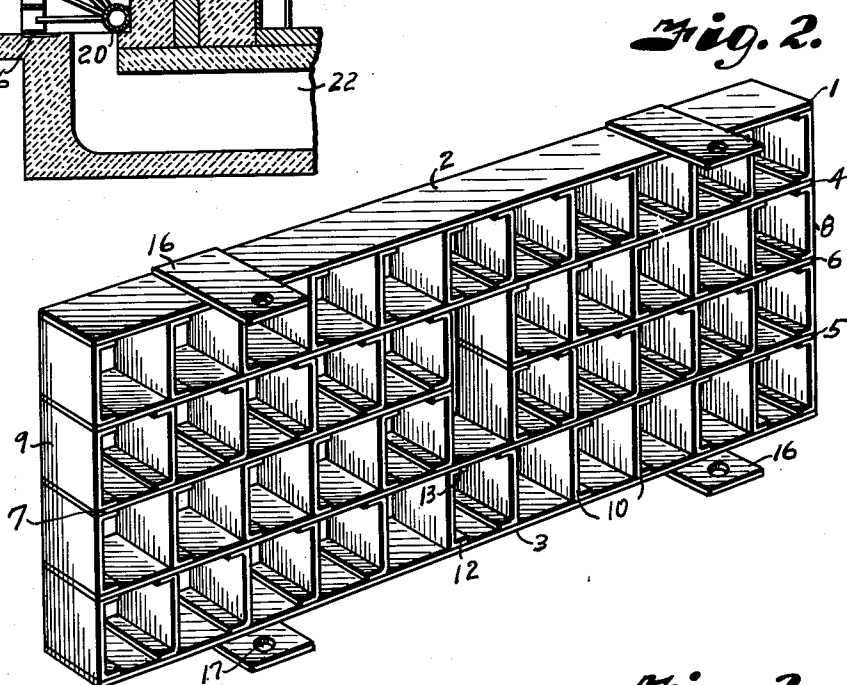
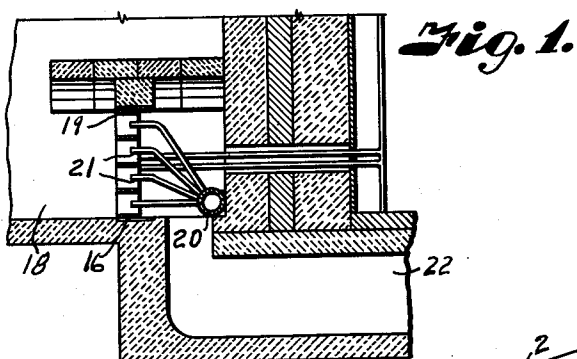
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2,532,671

MIXING DEVICE FOR GAS BURNERS

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MIXING DEVICE FOR GAS BURNERS

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1 Claim. (Cl. 158-106)

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This invention relates to mixing devices for furnaces, and more particularly to mixing devices or plates for use in connection with gas furnaces in oil stills or the like wherein it is desirable to maintain constant flow of a substantially large volume of hot gases at a uniform temperature in heating relation to the still.

Heretofore mixing devices or plates of this character have been made from cast iron or like material having round openings therein of varied size which structures would tend to burn out quickly and which were required to be replaced at frequent intervals, and which plates would not provide for even distribution of heat to the furnace.

The principal objects of the present invention are to provide a mixing device for furnaces which will provide even distribution of heat to a furnace or the like; to provide a device which will withstand extreme heat; to provide a device of this character which is strong and easy to construct; and to provide a device of this character simple, economical to manufacture and efficient in operation.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings wherein:

Fig. 1 is a transverse cross section through the mixing device shown installed in a furnace and showing the tubes leading from the burner to the mixing plate.

Fig. 2 is a perspective view of my invention.

Fig. 3 is a plan view thereof.

Fig. 4 is a transverse cross section particularly illustrating the anchoring member.

Referring more in detail to the drawings:

1 designates a mixing device embodying the features of my invention comprising side members 2 and 3 and intermediate members 4 and 5 extending the full length with the side members. 6 and 7 designate intermediate longitudinal members terminating short of the center of the structure as best illustrated in Fig. 2 for a purpose later described. It will be noted the mixing device is substantially rectangular in shape and has ends 8 and 9 and a plurality of transverse partitions as indicated at 10 forming a plurality of substantially square openings through the mixing device.

The structure is preferably made from stainless steel metal or sheet material capable of withstanding intense heat and may be of desired thickness and width.

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A plurality of substantially square chambers are formed in the mixing device by a plurality of members 11 having laterally turned ends 12 and 13 so that the members are substantially U-shaped. The partition members are welded to the longitudinal side and intermediate members 2, 3, 4, 5 and 6 as best illustrated in Fig. 3 to form the plurality of chambers 14. Reference to Fig. 3 will disclose that the ends 8 and 9 are formed by the U-shaped members 11 having their flanges 12 and 13 turned inwardly to provide smooth end surfaces and the flanges welded or otherwise secured to the side and intermediate members as previously stated.

It will be noted that the partition members 11 on the upper row of the mixing plate shown in Fig. 3 are facing the left on the right side of the device and the U-shaped members face the right on the left-hand side of the structure so that the two center partition members face each other as indicated at 15. The U-shaped partition members in the second row of Fig. 3 are turned oppositely from the upper row so that the flanges 12 and 13 will face in the opposite direction in the parallel rows of openings. The U-shaped members in the third row from the top are turned in the opposite direction from the second row so that the flanges thereof will face in opposite directions the lower row are turned oppositely to the third row. This assembly of the partition members forms a stronger structure for the mixing device for the reason that the flanges 12 and 13 will act as braces against the longitudinal sides 2 and 3 and partition members 4, 5 and 6 of the structure.

Brackets or supporting members 16 may be welded or otherwise suitably secured to the sides 2 and 3 substantially near the respective ends thereof for anchoring the device in a furnace as later described. The brackets or supporting members 16 are provided with openings 17 for fastening of the members to the supporting structure by suitable means (not shown).

Referring to Fig. 1 which shows a section of the furnace in which the mixing device is used, 18 designates a combustion chamber and 19 the mixing device located in an archway of the furnace. 20 designates a burner having a plurality of pipes or jets 21 leading therefrom to each of the respective openings or chambers of the mixing device as shown in Fig. 1. The burner is located in the chamber back of the mixing plate and is provided with the usual air duct 22 as in conventional practice.

With the mixing plate constructed as described the flame from the gas or other fuel from the burner 23 through pipes 21 will be separated and spaced over the entire area of the mixing device and be emitted through the openings or chambers of the mixing plate to the combustion chamber. It will be noted that a larger opening is provided in the center portion of the mixing device as indicated at 23 (Fig. 3) which will provide a space for an oil burner and pipes leading therefrom, when it is desired to use oil instead of gas as a fuel.

It will be obvious that I have provided an improved mixing device for furnaces or the like which will provide an even distribution of air from the air duct 22 to each of the device openings and uniform combustion of the fuel from the burner jets for uniform heat input to the combustion chamber and which will withstand intense heat, obviating the necessity for replacement at frequent intervals. While I have here shown the device to be of rectangular shape, it will be obvious that any desired shape may be employed.

What I claim and desire to secure by Letters Patent is:

A mixing device fabricated of sheet metal strips for use with multiple jet burners, including a plurality of spaced horizontal parallel sheet metal bar members, U-shaped sheet metal members having legs turned inwardly and secured to the respective ends of said spaced parallel members for forming end walls of the device, a plurality of spaced vertical parallel sheet

members partitions extending between and transversely of adjacent horizontal members and having the same width as said horizontal members for dividing said device into a plurality of substantially square through openings each of which is adapted to be aligned with a burner jet to form an unimpeded through mixing chamber of uniform cross sectional area for each jet, said vertical partitions being arranged in spaced vertically aligned rows, and right angular flanges on the partition edges adjacent the horizontal members, said flanges being secured to said horizontal members, the flanges on each partition being turned in an opposite direction to the flanges on the adjacent partitions in the same vertical row and flanges on the partition at one end being turned in an opposite direction to the flanges on the partitions between the same horizontal members at the other end of said device.

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