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T. J. TORPY ET AL

2,540,359

FURNACE

Filed May 13, 1949

FIG. 1.

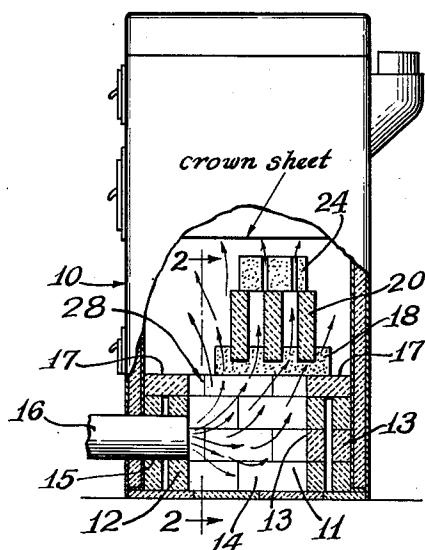


FIG. 3.

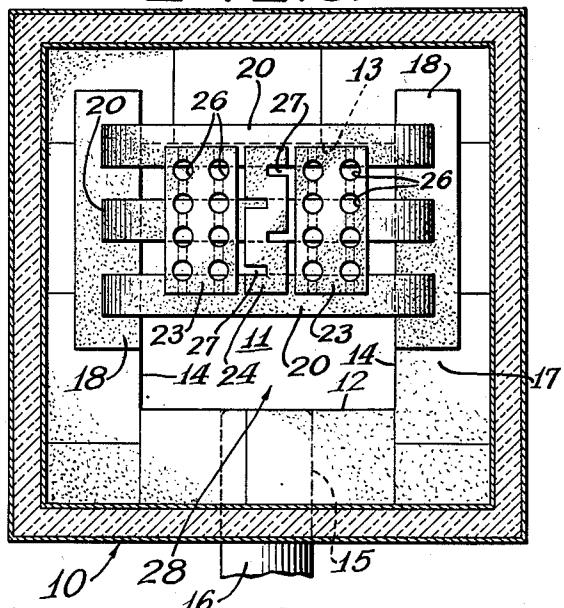


FIG. 2.

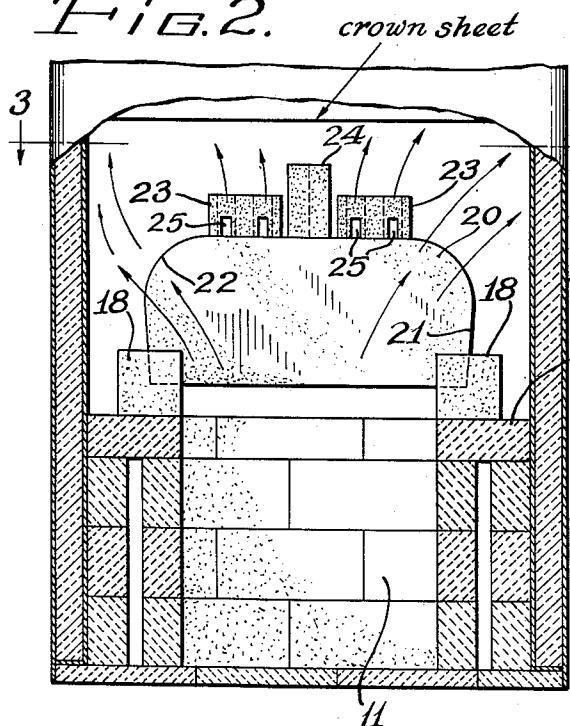


FIG. 4.

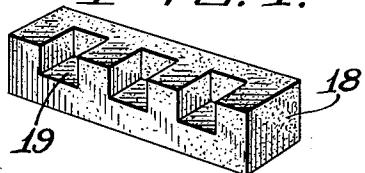


FIG. 5.

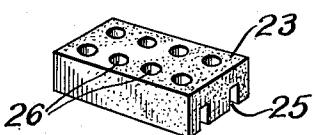
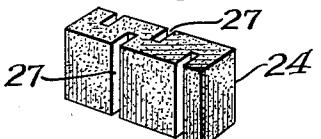


FIG. 6.



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## UNITED STATES PATENT OFFICE

2,540,359

## FURNACE

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1 Claim. (Cl. 110—97)

**1**

This invention relates to furnaces which may be used for general purposes but is particularly directed to furnaces for heating purposes such as those utilizing oil or gas for fuel. Furnaces of this kind are provided with combustion chambers of various shapes and forms, and the present invention comprises an attachment or improvement for such combustion chambers.

The objects of the invention are to provide means for improving the combustion characteristics of such furnaces and to provide for more complete burning of the fuel; to provide an extension or attachment for combustion chambers to increase the capacity and to provide more perfect combustion; to provide an attachment or extension for combustion chambers which may be made of few parts and which may be readily installed, and to provide such further advantages and improvements as will appear more fully hereinafter.

In the accompanying drawings illustrating this invention:

Fig. 1 is a side view of a boiler having a combustion chamber including our improvement, parts being broken away or shown in section for convenience in illustration;

Fig. 2 is an enlarged vertical section of the furnace taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 2; and

Figs. 4, 5 and 6 are perspective details of some of the blocks or parts used in our construction.

As shown in these drawings, a boiler 10 which may be of any ordinary or preferred form of construction is provided with a combustion chamber 11. This chamber has the usual front wall 12, back wall 13 and side walls 14. The front wall has an opening 15 for the burner pipe 16, all of this being of any suitable or well known construction. Our extension or attachment for improving combustion is mounted on the top 17 of the combustion chamber and includes two bearing blocks or supporting members 18 which are mounted on either side of the combustion chamber as shown particularly in Figs. 1 to 3. These blocks have grooves or recesses 19 for receiving vertically arranged plates 20, the ends 21 of these plates preferably converge toward the bottom, and the outer walls of the recesses are similarly shaped in order to make tight joints. The upper corners are rounded as shown at 22.

These plates support a plurality of blocks 23 and 24 which are mounted transversely of the plates and extend substantially across all of them.

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In the present instance, three of such plates are shown but any suitable number may be provided in accordance with the size of the furnace.

Blocks 23 have one or more longitudinal grooves 25 in their lower faces and also have a plurality of vertical holes 26. The blocks 24 are provided with a plurality of vertical grooves 27 in the opposite faces thereof and one of these blocks is preferably positioned between two adjacent

10 blocks 23.

All of these blocks or members are made of any suitable refractory material and are preferably cemented together to hold them securely in operative positions. The parts are positioned as 15 shown in Fig. 1 so that a substantial opening is left at the front of the combustion chamber as shown at 28.

The fuel enters through the pipe 16 and is ignited in the combustion chamber in any well 20 known manner and the gases of combustion pass up through the opening 28 and also up and around the plates 20 and around and through the block or bricks 23 and 24. All of these auxiliary members soon become heated to incandescence 25 and thereby cause secondary combustion of the gases and more complete utilization of the fuel. Furthermore, these parts being made of refractory material or material such as commonly used for furnaces will hold their heat for a considerable 30 time after the fuel supply has been shut off, as in the automatic operation of such furnaces, and will serve to aid in quickly igniting the fuel when it is again turned on.

While we have shown our attachment as applied to a square furnace, it may also be applied to other shapes such as round furnaces by merely making the parts to properly conform to the same, and other changes may be made in the details of construction in order to adapt the 35 same to various boilers, or the like, without departing from the scope of the invention as set forth in the following claim in which we claim:

The combination with a combustion chamber, of a pair of bearing blocks mounted on the chamber at opposite sides thereof, a plurality of plates mounted on said blocks and extending across the combustion chamber, the ends of said plates converging downwardly and fitting in correspondingly shaped recesses in the bearing blocks, a brick extending across the top of the plates at the centers thereof and having a plurality of vertical grooves therein, and bricks extending transversely on the top of the plates adjacent to the 45 first named brick and having longitudinal grooves

in the lower faces, and a plurality of vertical holes extending upwardly from the grooves.

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## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS			
	Number	Name	Date
	1,362,789	Hamilton	Dec. 11, 1920
	1,694,014	Kimmick	Dec. 4, 1928
	1,924,274	Franz	Aug. 29, 1933
	1,989,400	Cameron et al.	Jan. 29, 1935
	2,099,704	Pirich	Nov. 23, 1937
	2,186,373	Faulds	Jan. 9, 1940
10	2,286,688	Roth	June 16, 1942
	2,355,923	O'Day	Aug. 15, 1944
	2,369,995	Arnold	Feb. 20, 1945