

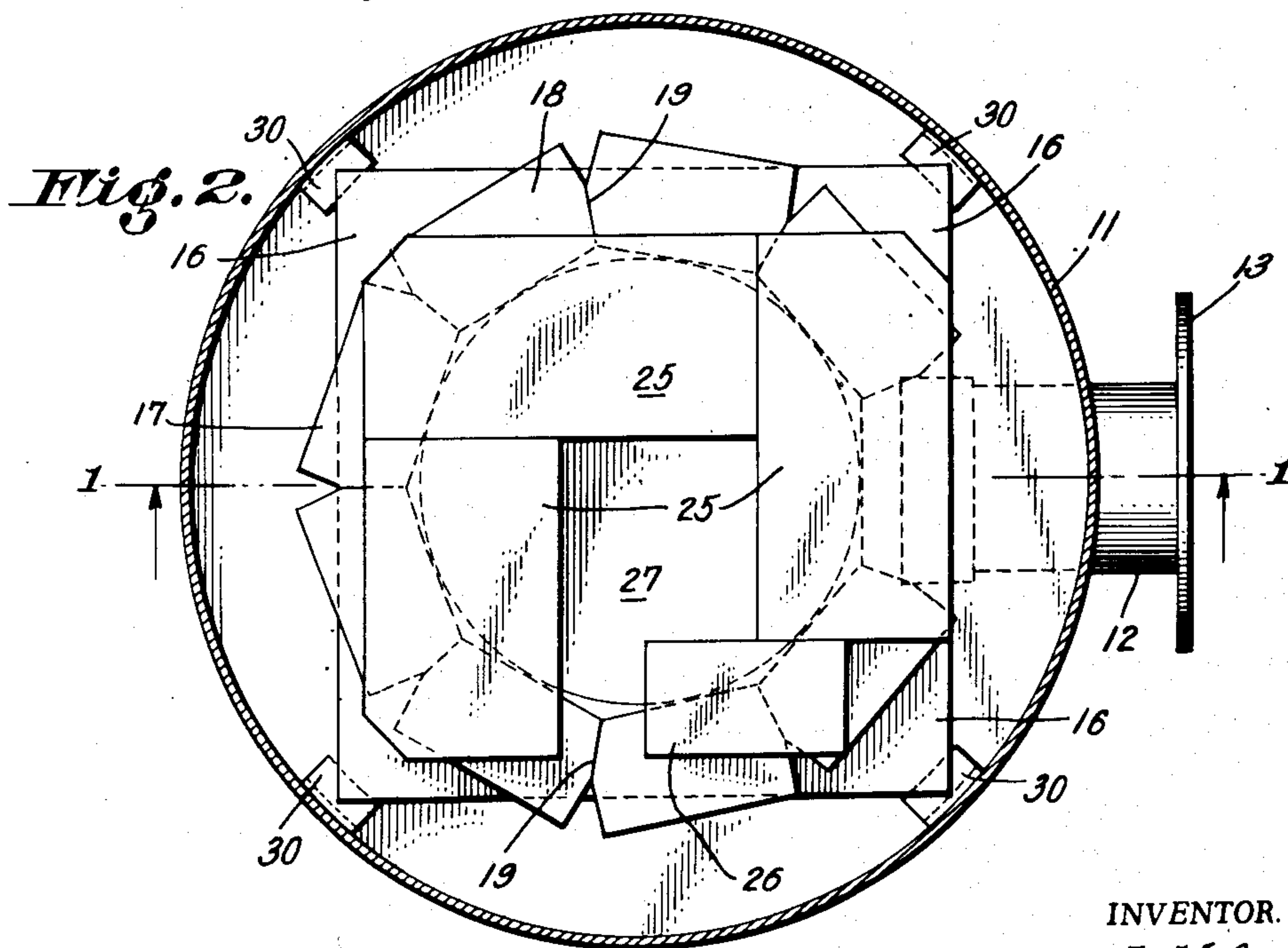
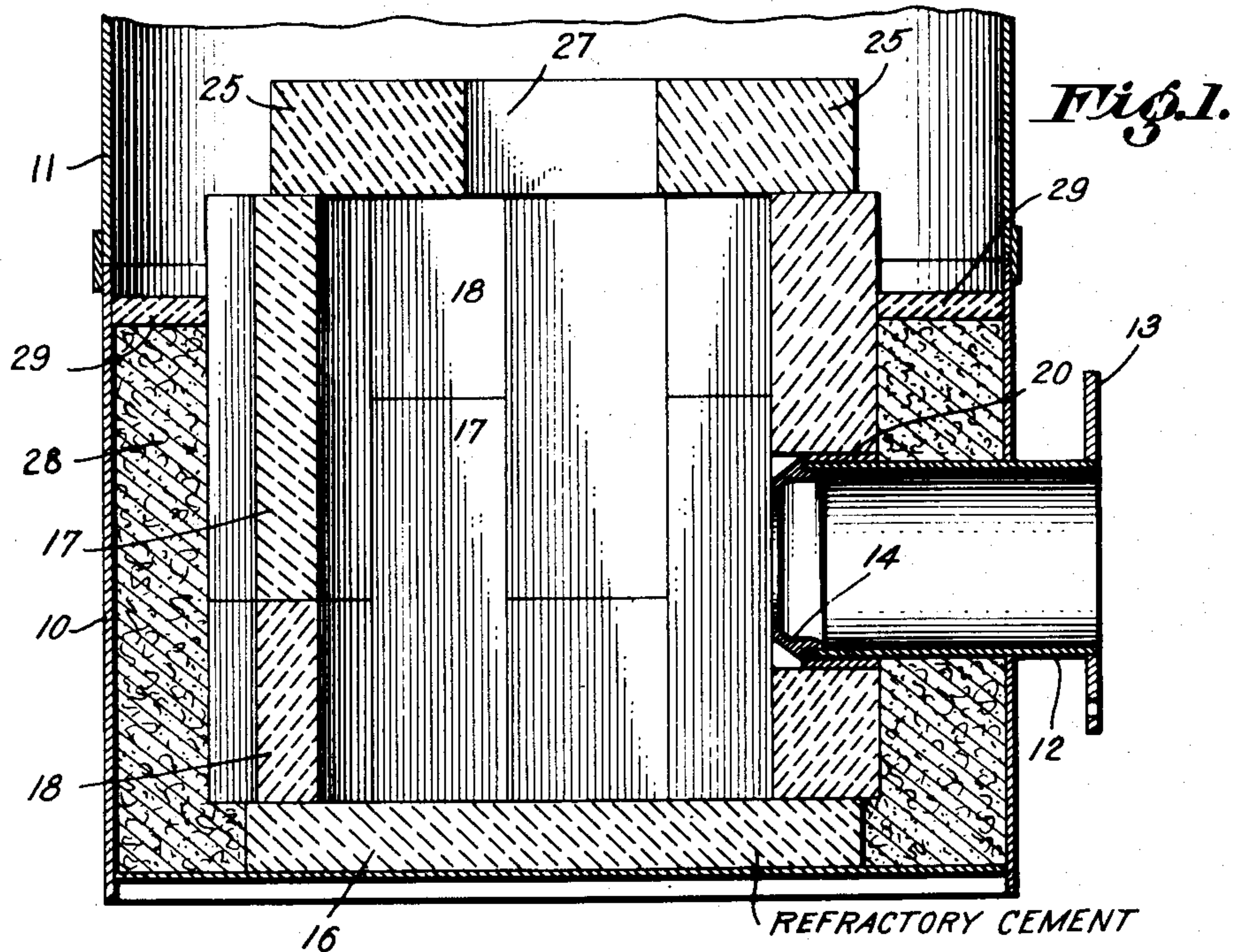
Feb. 17, 1953

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2,628,670

COMBUSTION CHAMBER

Filed Sept. 8, 1949



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2,628,670

COMBUSTION CHAMBER

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Application September 8, 1949, Serial No. 114,548

1 Claim. (Cl. 158—1)

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This invention relates to heating devices and more particularly to an improved combustion chamber for use with gun type fuel oil burners.

The flame produced by a gun type oil burner is large, intensely hot, and fast burning. It is customary to provide a furnace firebox with a refractory combustion chamber designed to promote the complete combustion of the fuel and air mixture, and to prevent the direct impingement of the burning mixture on the metal parts of the furnace. Such combustion chambers are usually assembled from blocks of refractory material adapted to be heated by and to confine the combustion flame. The construction of combustion chambers from refractory blocks of special shape is well known.

It is an object of this invention to provide an improved combustion chamber having a restricted outlet promoting efficient combustion of the fuel and air mixture.

It is another object of this invention to provide an improved combustion chamber tending to minimize the noise of combustion.

It is a further object of this invention to provide a novel combustion chamber construction assembled from blocks of refractory material which may be easily inserted through a furnace opening and positioned to form a combustion chamber having a restricted off center outlet.

It is a still further object of this invention to provide a combustion chamber which may be readily disassembled and replaced.

Other objects and advantages of this invention will be readily apparent from the following description and the accompanying drawing illustrating a preferred embodiment of the invention.

Referring to the drawing, Figure 1 is a vertical sectional view of a preferred form of combustion chamber assembled in the lower portion of a furnace, only a portion of the furnace structure being shown. Figure 2 is a plan view of the combustion chamber shown in Figure 1, without the insulating fill between the combustion chamber and the furnace base.

In the drawings, the lower or base portion of a furnace is indicated by the numeral 10. The furnace casing 11 may be supported by the base 10. The furnace base 10 is provided with a lateral opening to receive a combustion tube 12 provided with a flange 13 on the outer end adapted to be secured to a fuel oil burner assembly (not shown). The inner end of the tube 12 may be provided with a deflecting ring 14 for directing the flow of combustion air.

The combustion chamber includes a bottom

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plate 16 supported on the bottom of the base 10. The plate 16 may be square as shown in Figure 2 and may be molded solid of a refractory cement or may be formed of blocks of refractory material. The side walls of the combustion chamber are formed from blocks 17 and 18 of refractory material. The blocks 17 may be about nine inches long and the half blocks 18 about four and one-half inches long. The blocks 17 and 18 are provided with beveled sides, as designated by the numeral 19, to permit the blocks to be arranged to form a substantial circular combustion chamber. The combustion chamber is assembled by placing on end full and half blocks alternately to stagger the horizontal joints between adjacent rows of blocks. Blocks in the row adjacent the combustion tube 12 may be cut or molded to fit around the side inlet tube 12 and deflector 14, and may be sealed thereto with a suitable heat resisting cement 20.

The upper end of the circular combustion chamber is provided with a restricted outlet cover formed from three blocks 25 and a smaller block 26, all of refractory material. The blocks 25 and block 26 are arranged on the upper ends of blocks 17 and 18 so that an L-shaped outlet opening 27 is provided with the center of area of the opening 27 offset from the central vertical axis of the combustion chamber. One leg of the L-shaped opening 27 extends to upper edge of the chamber side wall. The offset restricted outlet provided by the opening 27 considerably reduces the operating noise level of fuel oil burners used with combustion chambers of the type illustrated and described.

The space between the combustion chamber and the furnace base 10 may be filled with a heat insulating material 28 which may be topped with a layer 29 of heat resisting cement. The bottom of the furnace base 10 may be provided with angle clips 30 to position the bottom plate 16 of the combustion chamber. The arrangement of blocks 17 and 18 illustrated provides a combustion chamber having a diameter of approximately ten inches inside diameter. Obviously more or less rows of blocks may be provided to assemble a combustion chamber of larger or smaller diameter.

The combustion chamber construction disclosed herein may be used with the improved heater assembly shown in my application, Serial No. 110,931, filed August 18, 1949, to provide an oil burning heating unit relatively quiet in operation. The shape of the combustion chamber and its off center relatively small outlet opening

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greatly reduces the combustion noise level and permits an efficient heating unit to be installed in a space or room which may also be used for other purposes because of the resulting quietness of operation of the heater.

It will be apparent that various changes in minor details, proportions, and design may be made in the combustion chamber shown within the scope of this invention as defined in the following claim.

I claim:

A heating plant combustion chamber for use with a gun-type oil burner, said combustion chamber comprising a horizontal refractory base, a plurality of rows of vertically extending refractory blocks arranged side by side on said base to form a substantially circular combustion space, one row of said vertically extending blocks being apertured to receive the nozzle end of a gun-type oil burner, a plurality of horizontally arranged refractory blocks supported on the upper ends of said vertically extending blocks and projecting over the upper end of said substantially circular combustion space and defining a single upwardly directed outlet opening for said combustion space, said single outlet opening being substantially

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L-shaped in a horizontal plane, one leg of said single outlet opening extending to the side wall of said combustion space, and the other leg of said single outlet opening being substantially rectangular in a horizontal plane and having its central vertical axis displaced laterally from the central vertical axis of said circular combustion space.

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