July 16, 1929. H. M. HEYN 1,721,484

GAS BURNER

Filed March 7, 1928

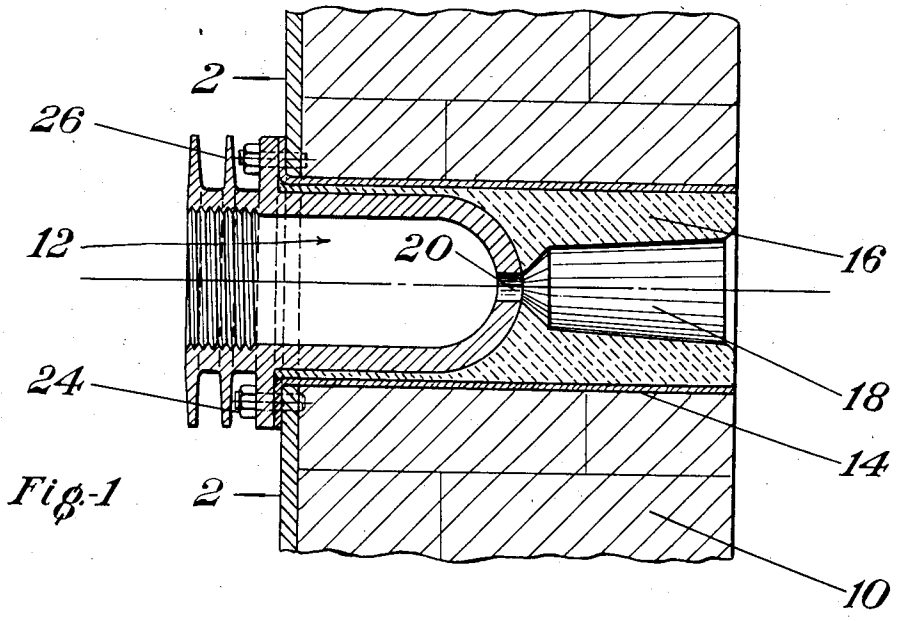


Fig. 1

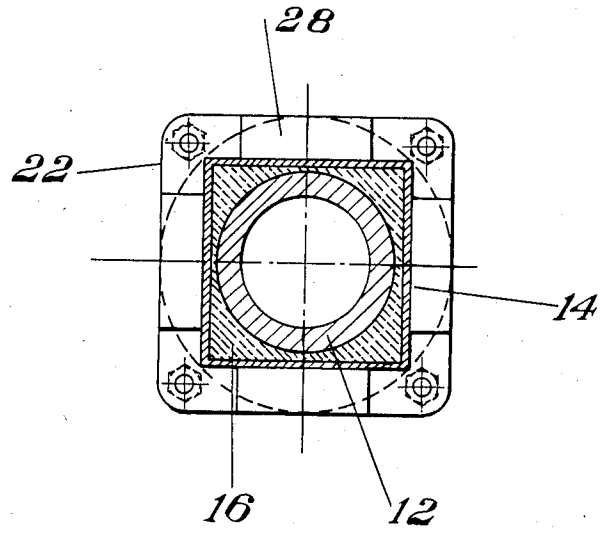


Fig. 2

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Patented July 16, 1929. 1,721,484

UNITED STATES PATENT OFFICE.

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GAS BURNER.

Application filed March 7, 1928. Serial No. 259,703.

This invention relates to means for burning gaseous mixtures of fuel gas and air and has among its objects to provide a burner assembly which shall be adapted for ready placement in and removal from a furnace setting; which shall be constructed to withstand high temperatures; and which shall be particularly well adapted for use with metallurgical furnaces generally.

In the drawing, Fig. 1 is a longitudinal section through the improved burner assembly shown as positioned in a furnace setting 10 this setting being shown as a portion of a furnace wall and Fig. 2 is a transverse section on line 2—2 of Fig. 1.

The burner assembly comprises a metallic burner body 12 tubular in cross section; a metallic tube 14 into which the burner body extends for some distance; a body of refractory cement 16 which forms a liner between the burner body and the tube and which also forms a combustion tunnel 18 into which the gaseous mixture from the burner is discharged for burning, the burner being provided with a jet orifice 20 through which the gaseous mixture is discharged. The tube 14 is preferably square in cross section by reason of the fact that rectangular holes are most easily provided in furnace walls where the walls are built from brick. The tube is preferably of a heat-resisting alloy in order the better to withstand the high temperature usually encountered in metallurgical furnaces. Chrome iron alloy has been successfully used but other alloys may be employed. The tube is of a length substantially the same as the thickness of the furnace setting or wall in which the burner assembly is to be positioned in order to properly protect the wall opening as will be readily understood.

The burner body is provided with a flange 22 which is preferably square in plan and of a width greater than the size of the hole or opening in the furnace wall in order to permit the burner assembly to be secured to the wall by suitable securing means 24 passed through the flange and to permit sealing of the outer edges of the opening against infiltration of air into the furnace. The burner body is of relatively massive construction in order that the heat imparted to the nose or nozzle end of the burner may be readily absorbed and conducted away therefrom. For dissipating the absorbed heat the burner body is extended beyond the flange 22 and provided with one or more circumferential heat-dissipating webs 26. The outer end of the burner body is adapted for connection with a suitable supply conduit as will be readily understood.

The tube 14 is secured to the burner flange 22 as by laterally extending lugs 28 which are welded to the flange thus in effect making the burner body and tube an integral structure. The tube is somewhat larger than the burner body in order to provide a space therebetween for the refractory cement filling 16. The combustion tunnel is formed by placing a form or mandrel within the tube and in alinement with the burner nozzle and filling in the surrounding space with cement. The burner nose and the bottom of the combustion tunnel are so formed as to reduce to a minimum the amount of metal of the burner exposed to the heat generated within the tunnel.

A burner assembly constructed in accordance with the present invention enables placement of the burner in its furnace setting with the minimum amount of time and trouble and also permits its ready removal therefrom. Prior to my invention it has been customary to insert the burner body itself in the opening in the furnace setting and to fill in the empty space with cement. Formation of the combustion tunnel in the furnace setting has however required the operations to be carried on within the furnace chamber and at the best has been a time-consuming operation. According to my invention the burner assembly is made up on a work bench with consequent saving in time. The advantages of my construction will be readily appreciated by those skilled in the art to which the invention appertains.

What is claimed is:

1. A burner assembly comprising an elongated heat-resisting alloy tube, a relatively short tubular burner body projecting into the tube, a cement filling between the burner body and tube, and a refractory combustion tunnel opening out of the tube and into which the burner discharges.

2. A burner assembly comprising a tube of heat-resisting alloy, a metallic burner body having a discharge orifice at one end, said body extending into said tube, a refractory combustion tunnel extending from the discharge end of the burner and opening outwardly at the end of said tube, and a refractory lining between the walls of the burner body and said tube.

3. A burner assembly comprising a cylindrical burner body having a discharge orifice at one end, a radial flange on said body intermediate its ends, a metallic tube telescoped over said body and integrally secured to said flange, and a combustion tunnel of refractory material extending from the discharge end of the burner to the adjacent end of the tube and into which the burner discharges.

4. A gas burning unit comprising an elongated body which is highly resistant to heat and formed with two alined chambers which communicate through a restricted passage, one of said chambers opening out of the body and constituting a combustion chamber, and a tubular burner positioned in said other chamber and adapted to discharge into the combustion chamber.

5. The combination with a furnace wall having an opening therethrough, of a metallic tube positioned in said opening for ready removal therefrom, an elongated burner body fixedly positioned within said tube and terminating short of the inner end of the tube, a refractory combustion tunnel of outwardly flaring form secured within and opening out of the tube, said tunnel at its inner end having a restricted opening, and means for securing the burner to said wall.

6. A burner assembly comprising a metallic conduit terminating in a jet orifice the terminal of the conduit being rounded, a refactory conduit seated against the rounded terminal of said conduit, and a metallic tube telescoped over said conduits and adapted to maintain them in longitudinal alinement.

In testimony whereof I affix my signature.

HENRY M. HEYN.