

Oct. 18, 1955

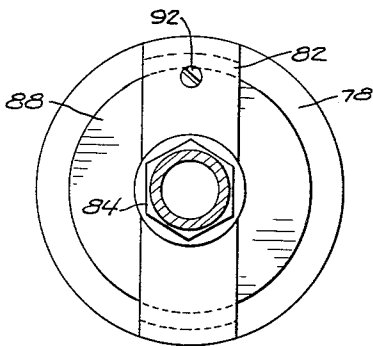
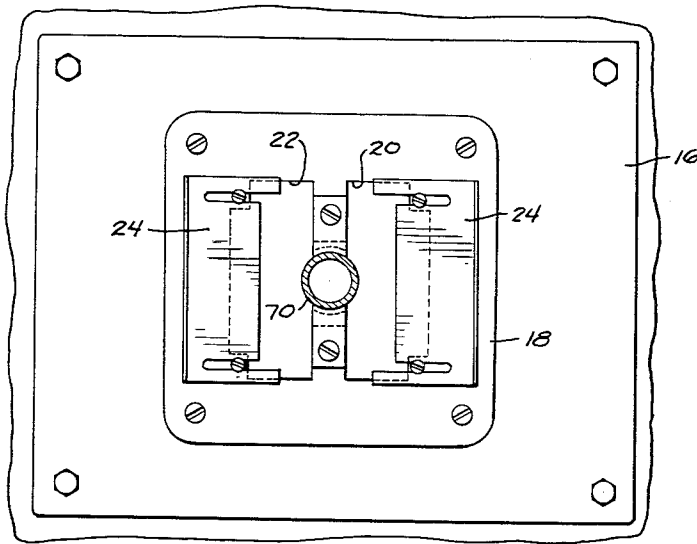
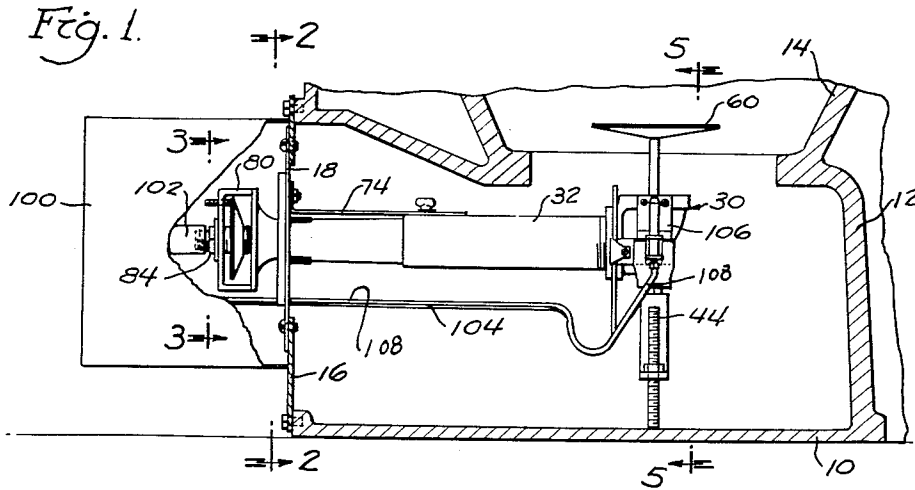
R. L. BUYSSE

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GAS BURNER CONVERSION UNIT

Filed Sept. 20, 1950

2 Sheets-Sheet 1



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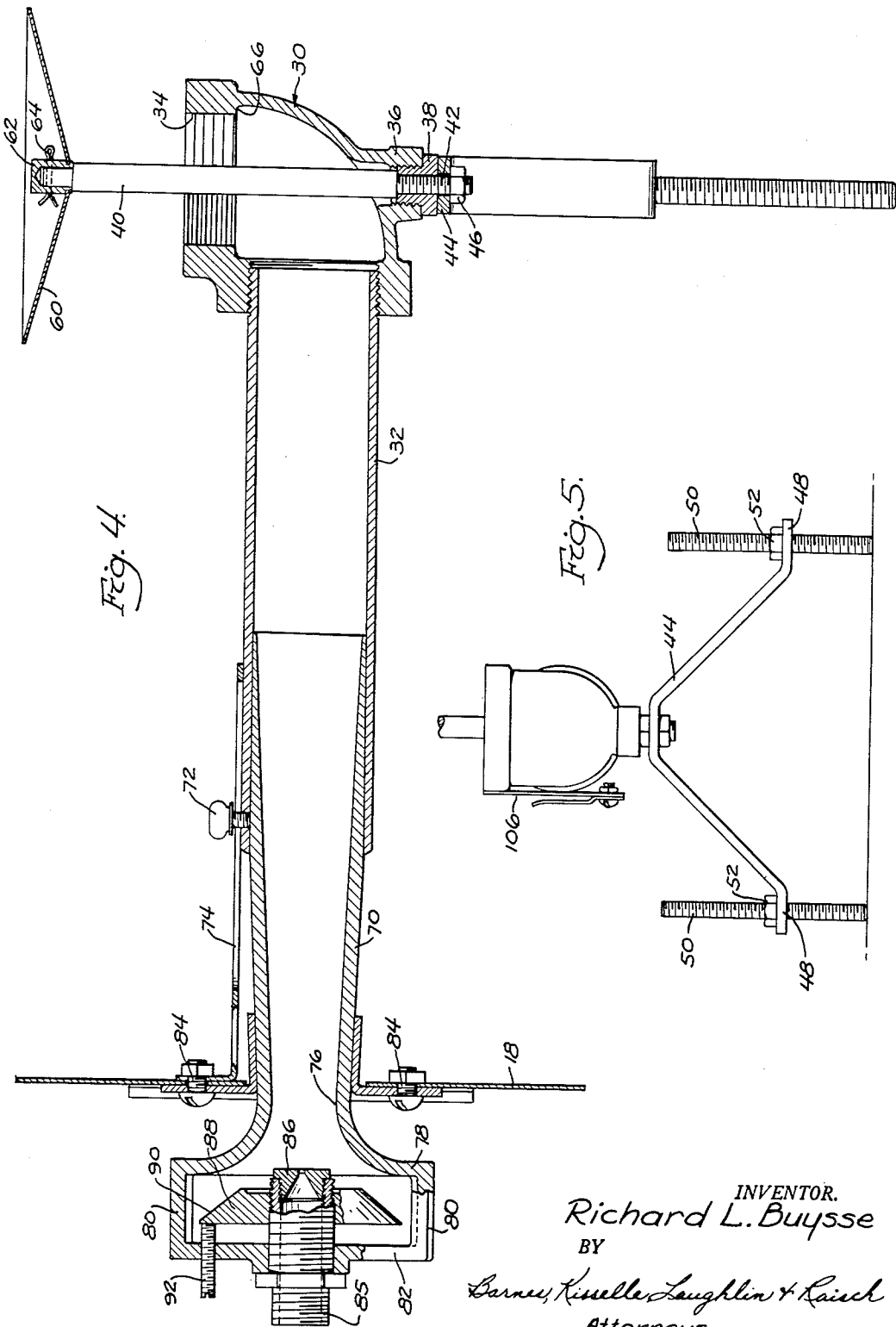
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GAS BURNER CONVERSION UNIT

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Application September 20, 1950, Serial No. 185,816

4 Claims. (Cl. 158—113)

This invention relates to a gas conversion unit and has particularly to do with a novel type of low-cost conversion unit which can be made primarily of standard plumbing equipment and which has all the features of adjustability and safety required for a good gas conversion unit.

It is the purpose of this disclosure to show a burner construction which has a single operating port with a flame deflector and supporting bracket combined with a common fastening device. Another object is the provision of a simple burner construction adjustable to varying projection positions within a furnace and a one-piece burner mixer unit co-operating with the burner.

Briefly, the invention consists of utilizing a standard elbow unit with a nipple opening, an adjustable support therefor, and a flame deflecting unit positioned above the nipple port and combined with the adjustable support.

Other objects and features of the invention will be apparent in the following description and claims.

Drawings accompany the specification, and the various views thereof may be briefly described as:

Figure 1, an installation view showing the conversion unit mounted in a furnace.

Figure 2, a vertical view on line 2—2 of Figure 1 showing the mounting plate.

Figure 3, a view on line 3—3 of Figure 1.

Figure 4, an enlarged vertical section of the burner unit.

Figure 5, a view on line 5—5 of Figure 1.

Referring to the drawings, a furnace base 10 having walls 12 and a fire pot 14 is shown in section in Figure 1. The ash pit opening is closed by a panel 16 on which is mounted a sub-panel assembly 18 through which passes the mixer unit of the burner. Rectangular secondary air openings 20 and 22 are placed in panel 18 and sliding plates 24 are adjustably supported on the panel 18 to regulate the flow of secondary air supply into the furnace.

The burner unit consists primarily of a standard pipe T or elbow 30 having one end threaded over a pipe 32. The other opening 34 of the elbow 30 projects upwardly, and a small nipple opening 36 is provided at the base of the unit closed by a plug 38 in which is mounted a rod 40 having a threaded projection 42 passing through the plug and through the top of an adjustable support 44. A nut 46 holds the support and the rod 40 in position on the plug 38. The downwardly extending arms of the support or bracket 44 have horizontal projections 48 through which threaded pins 50 extend, locked in place by nuts 52.

At the top of rod 40 is a flame deflector 60 which is shaped as a flat inverted cone with a cup-like central attachment member 62 which caps over the rod 40 and is held in place by transfixing pin 64. This arrangement prevents assembly of the deflector in any but the proper position.

The size of the T 30 is preferably around two and one-half inches at the threaded openings although this size may be varied in accordance with the requirements. An ordinary cast T is perfectly adequate for this purpose,

and it is important to note that the walls of the elbow are thinner between the threaded ends than they are at the threaded ends. This provides an annular shoulder 66 at the bottom of the threaded port 34, enlarging away from the port.

Pipe 32 telescopes over the end of mixer tube 70 and is held in a defined relationship therewith by a thumb screw 72. A slotted strip 74 fastened to plate 18 limits the outward extension of the two parts to prevent improper assembly. The mixer tube 70 has the usual venturi shape. The venturi 76 fans out into an annular ring-like portion 78, and behind the venturi is an integral U-shaped part having legs 80 and a connecting base 82. This part 82 extends diametrically across the venturi but is spaced behind it as shown in Figure 4. The mixer tube is fastened to the plate 18 by L-shaped brackets 83 welded at one leg to the tube and bolted at the leg to the plate by bolts 84.

Through a threaded opening in the portion 82 is a threaded brass coupling unit 85 having at one end a gas outlet nozzle insert 86. Adjustably screwed on the outside of the coupling 85 within the U-shaped member is a primary air control plate 88 having a conical surface 90 adjacent the venturi opening of the mixer tube. A screw 92 passing through the base 82 provides a positive adjustable stop and lock for the plate 88.

As shown in Figure 1, a control box 100 is connected by a coupling 102 to the coupling 85. A pilot light tube 104 passes into the burner and terminates adjacent the burner port. Suitable thermostatic controls can be mounted on a clip 106 screwed to the side of the burner port elbow 30. These controls are held on the bracket 106 by gravity and may be removed by using the tube 108, which is relatively stiff, as a handle. It is then unnecessary to open the fire pit to repair or replace the thermostatic unit.

Attempts to form a single port burner by bending up the end of a pipe have not been satisfactory because a short radius is difficult to obtain while the attachment of the T 30 to the pipe 32 has provided a very successful single port burner with a low overall height, making it adaptable to small compartments. The reasons for this are not fully known since it is impossible to analyze accurately all conditions existing when gas is flowing. The shoulder 66 is believed to be one critical part of the construction which somehow causes gas flow proper for good burning and effective quiet ignition of this unit under automatic control. Full gas and air mixture is obtained and the port restriction keeps a slightly increased pressure in the T adjacent the port to insure steady flame.

The present construction has proved extremely versatile in the conversion of heating units requiring all the way from 50 to 300,000 B. t. u. per hour. Pot type oil burners as well as large coal furnaces can all use this same conversion unit. For larger installations a nipple may be threaded into opening 34 and a longer rod 40 used to support deflector plate 60.

What I claim is:

1. A gas burning conversion unit comprising in combination a mixer tube, a pipe telescoping over the mixer tube to extend into a fire chamber, a panel mounted around and normal to said tube to be mounted at a wall opening in a furnace and to serve as a support for the mixing tube, a burner element comprising a standard pipe elbow connected at one end to said pipe and having the other opening of the elbow projecting upwardly to provide a burner port, said elbow having end openings terminating in normal planes and connected by a toroidal passage of slightly larger diameter than said openings and connected at least to the burner port opening by a curved shoulder, and a nipple opening formed in said elbow di-

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rectly below the burner port as positioned above, a plug screwed in said nipple opening, a rod supported vertically on said plug having a threaded portion extending through the plug, a supporting bracket for the elbow pierced by said threaded portion held thereon by a nut at one end of the rod, and a flame dispersing baffle comprising a plate supported at the other end of said rod.

2. A burner element for a conversion unit as defined in claim 1 in which the supporting bracket consists of two oppositely disposed legs formed of a single strip of metal, the end of each leg being pierced vertically by a threaded supporting pin operating in a threaded opening in the leg.

3. A burner element for use in a gas conversion unit as defined in claim 1 in which the flame dispersing baffle plate is shaped as an inverted cone and is supported on the vertical rod by a cup-like attaching means which can be applied to the rod in a fastened position only in a manner to dispose the inverted cone in the inverted position.

4. In combination in a gas conversion unit, an extensible mixer tube, means associated therewith for mounting said tube in the wall of a furnace at the mixer end, a burner element for said unit which comprises a body having openings at horizontal and vertical faces thereof on adjoining sides, one of said openings being provided to receive said mixer tube for fluid combustible mixture and

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the other of said openings being provided as a burner port, said openings extending into the body for a substantial distance, the walls of said body forming a toroidal passage between said openings, the diameter of said passage being slightly greater than that of the openings and the walls of said passage being connected to said openings by a shoulder formation in the body, and means associated with said body to support the burner element and mixer tube at the burner end.

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