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MOUNTING FOR REPLACEABLE GAS BURNER

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Fig. 1

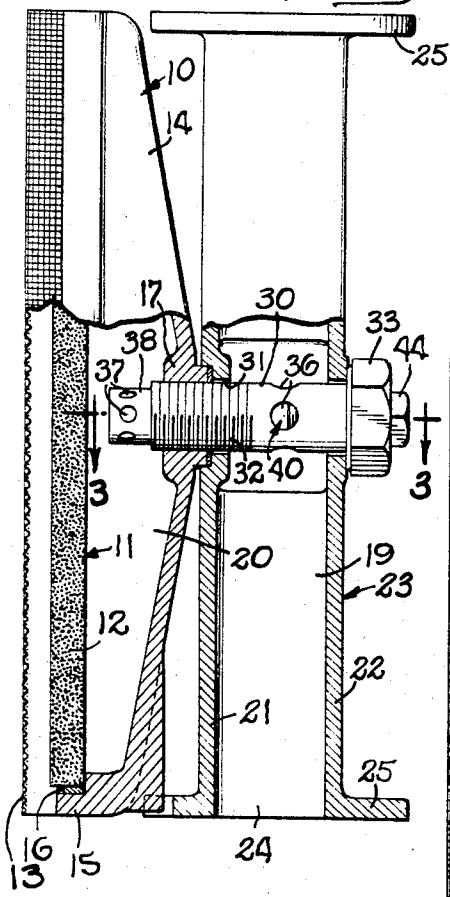


Fig. 2

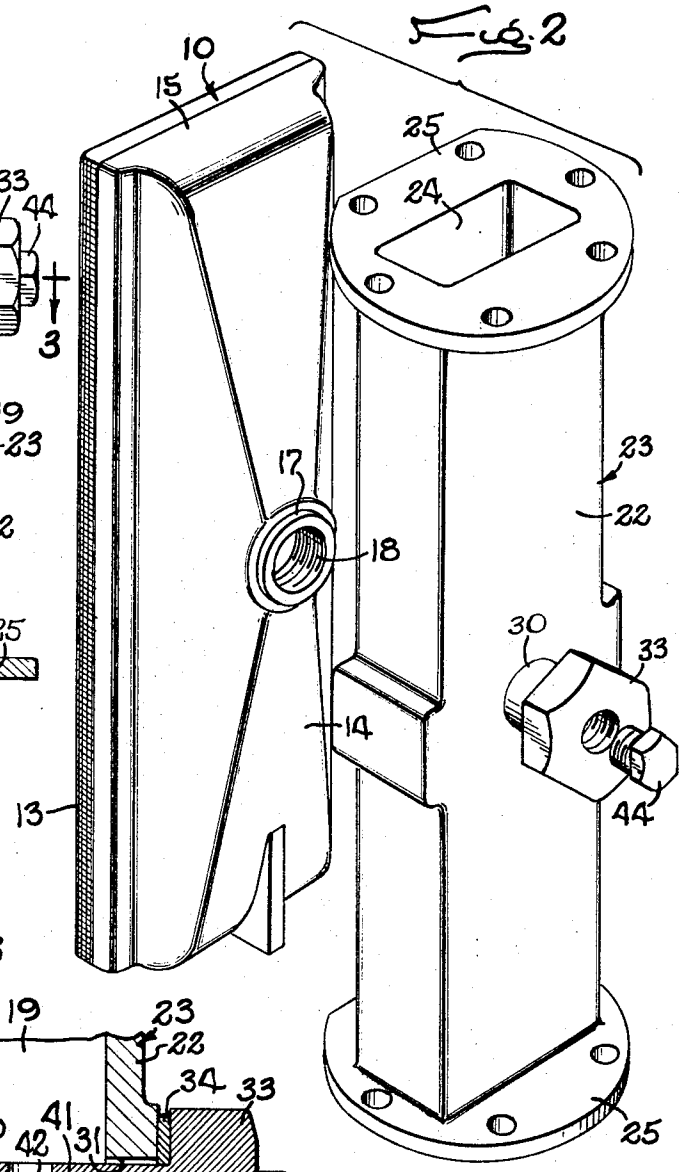
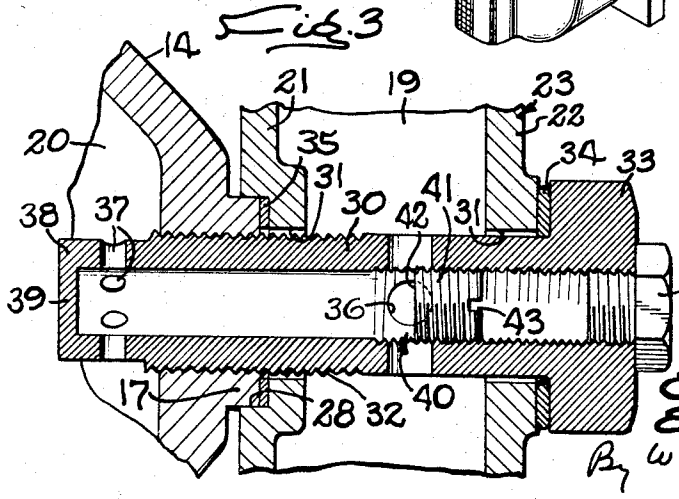


Fig. 3



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MOUNTING FOR REPLACEABLE GAS BURNER

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The primary object of this invention is to provide for a hollow gas burner head a new and improved mounting which permits of convenient and low cost replacement of the burner head in service use.

Another object is to secure the burner head detachably to its mounting by the use of a tubular clamping element through which combustible gas is conducted into the burner.

A further object is to utilize the clamping tube as part of a simple flow regulating valve adjustable selectively from the exterior of the head and its mounting.

The invention also resides in the novel construction and arrangement of the parts of the regulating valve.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which—

FIGURE 1 is a side elevational view of a burner head and the improved mounting with parts broken away and shown in section.

FIG. 2 is an exploded perspective view.

FIG. 3 is a fragmentary section taken along the line 3—3 of FIG. 1.

The invention is especially adapted for use in a gas burner in which an air-gas mixture is delivered through a hollow head **10** closed on one side by a generally flat plate **11** having transversely extending pores or fine passages **12** through which the gas mixture is forced and burns at the outer surface of the plate. In so-called infrared burners, the plate is usually rectangular and most commonly composed of a porous layer of silicon carbide.

The flame plate **11** covers the open side of a hollow dish-shaped casing or manifold **14**, which is an iron casting, and forms with the plate the self-contained burner head **10**. Herein, the periphery of the plate is seated in an internally recessed and shouldered flange **15** of the casing and is secured thereto by cement **16** or other suitable means. To accelerate the development of the desired radiant heat, a screen **13** of a suitable alloy is disposed a short distance in front of the burner face and suitably supported from the burner head flange **15**.

The bottom of the casing converges from the flange to a central tubular hub **17** defining an opening **18** through which an air-gas mixture is delivered under pressure from a chamber **19** into the burner chamber **20**. The chamber **19** is disposed between spaced walls **21** and **22** of a box-like rectangular casing **23** closed at the sides and having openings **24** at opposite ends within flanges **25**. The gas mixture is supplied to the chamber **19** through a pipe (not shown) coupled to one of the flanges and usually constituting the support for the burner assembly resulting from clamping the casings **14** and **23** together. The other flange may be covered by a plate or coupled to another pipe for conducting the gas to or receiving gas through one or more other interconnected burner units. The wall **21** of the casing **23** is flat and formed at the center with an outwardly opening recess **28** in which the outer end of the hub **17** of the burner head is seated in the final assembly. The head is thus centered on the casing **23**.

In accordance with the present invention, the burner head is secured detachably to the casing wall **21** (FIG. 1) by a clamping element which takes the form of a tube **30** constructed and arranged in the burner head mounting so as to perform additional functions including conducting gas from the chamber **19** to the burner head while preserving the ready replaceability of the burner head. For this purpose, the tube is cylindrical and long enough to extend through alined holes **31** in the casing walls **21** and **22** and the hole through the hub **17** which becomes alined with these holes when seated in the recess **28** as shown in FIG. 1. Preferably, the clamping action is effected by a threaded coupling comprising a thread **32** around the inner end portion of the tube mating with an internal thread in the hub **17**. A head **33** of polygonal shape is formed on the outer end of the tube and adapted to be turned to screw the tube into the hub, the manifold and burner head casings becoming clamped together rigidly when the head comes into abutment with a gasket **34** backed by the wall **22** and a gasket **35** comes between the hub **17** and the bottom of the recess **28**.

Gas from the supply chamber **19** is admitted to the tube **30** through one or more holes **36** formed in and angularly spaced around the tube between the walls **21** and **22** of this chamber. The gas flows inwardly along the tube and is delivered into the burner head through one or more holes **37** in an end portion **38** of the tube projecting beyond the hub **17** into the chamber **20**. By closing the end of the tube at **39** and employing a series of holes angularly spaced around the tube, the gas mixture is distributed more evenly to the passages across the back of the burner plate **11**.

In gas burners of the above character, it is frequently desirable to adjust the rate of flow of the gas mixture to the burner head. To this end, the clamping and gas conducting tube **30** constructed and mounted as above described is utilized as part of a valve **40** of very simple construction forming a permanent part of the detachable mounting for the burner head and easily adjustable from the exterior of the manifold casing **23** while the burner head is secured to this casing. Herein, the movable part of the valve comprises a plug **41** telescoped into the outer end portion of the tube **30** and adapted for adjustment of its inner end **42** back and forth across the holes **36**. Preferably, the plug is a screw threaded into the tube with a slot **43** in its head exposed at or through the outer end of the tube after removal of a headed cap **44** also threaded into the outer end of the tube. By turning the screw head in opposite directions, the plug **41** may be advanced or retracted in the tube thus uncovering any selected part of the area of the holes **36** to correspondingly change the supply of gas to the burner head.

When it is desired to remove and replace the burner head **14**, the tube head **33** is turned to retract the inner end of the tube out of the hub **17** thus releasing the burner head for convenient removal as a unit from its mounting. A new head may then be placed against and centered on the casing wall and the tube **30** screwed back into the hub thus clamping the new burner head to the casing. During such replacement, the setting of the valve **40** is not disturbed since the axial position of the plunger **41** is disposed within the tube and forms therewith a self-contained valve unit.

We claim as our invention:

1. A gas burner having, in combination, a casing defining a chamber for receiving a combustible gas mixture and having spaced walls with alined holes extending therethrough, a burner head having a back wall abutting one of said first walls around one of said holes and having an internally threaded hole smaller than and alined with the latter hole, said head having a chamber covered by a wall with passages therethrough for passing said mixture for combustion, a tube extending through said first holes and having a head at its outer end abutting said casing, means operable in response to turning of said tube relative to said casing to clamp said casing and said head into

sealed abutment, while permitting removal of said head by turning and retracting said tube, and holes in said tube establishing communication between the tube and said casing chamber within the latter and between said tube and head chamber within the latter.

2. A gas burner assembly as defined in claim 1 in which the clamping of said burner head to said casing is effected by a threaded connection between said burner head and said tube.

3. A gas burner assembly as defined in claim 1 in which said burner head and casing are centered relative to each other by telescoping of parts on the two.

4. A gas burner assembly as defined in claim 1 including a plunger disposed in and closing the outer end of said tube and adjustable along the latter to vary the area of communication between said tube and said casing chamber and therefore the flow of gas to said burner head.

5. A gas burner assembly as defined in claim 4 in which said plunger is a screw threaded into the outer end portion of said tube.

6. A gas burner having, in combination, a casing defining a chamber for receiving a gas mixture and having spaced walls with alined holes extending therethrough, a hollow burner head having a back wall abutting one of said first walls around one of said holes and having an internally threaded hole alined with the latter hole, said

head having a front wall with passages therethrough for passing said mixture for combustion at the outer face of the wall, a tube extending through said first holes and having a head at its outer end abutting said casing and threaded at its inner end into said threaded hole to clamp said casing and said head in sealed abutment, while permitting removal of said head by turning and retracting said tube, said tube communicating at its inner end with the interior of said burner head, a valve hole in said tube communicating with said chamber, a valve member threaded into the outer end of said tube and projecting along the latter to dispose its inner end adjacent said valve hole, and means by which the outer end of said member may be gripped and turned to advance or retract the member and change the uncovered area of said valve hole.

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