

June 13, 1939.

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2,162,374

GAS BURNER

Filed Oct. 18, 1937

2 Sheets-Sheet 1

Fig. 1.

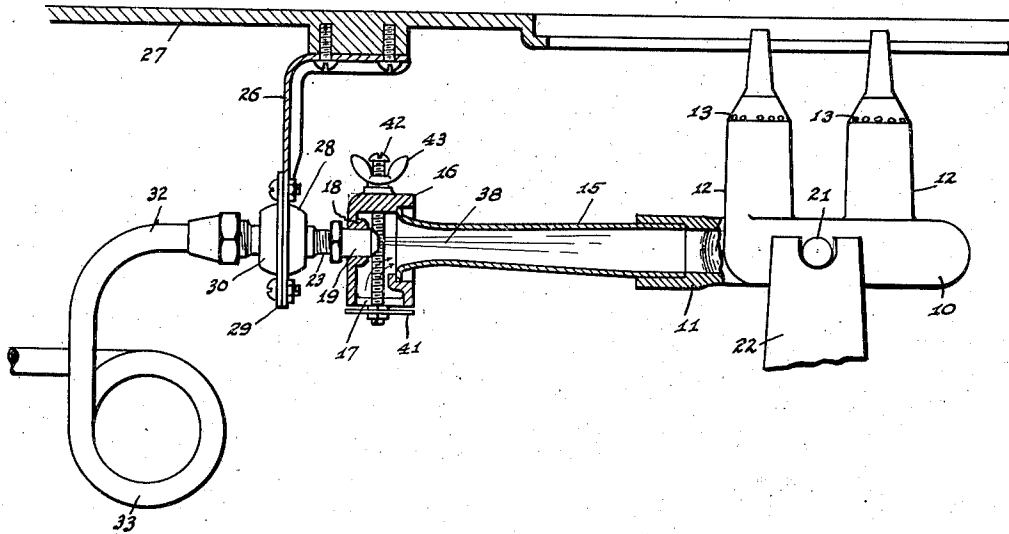


Fig. 2.

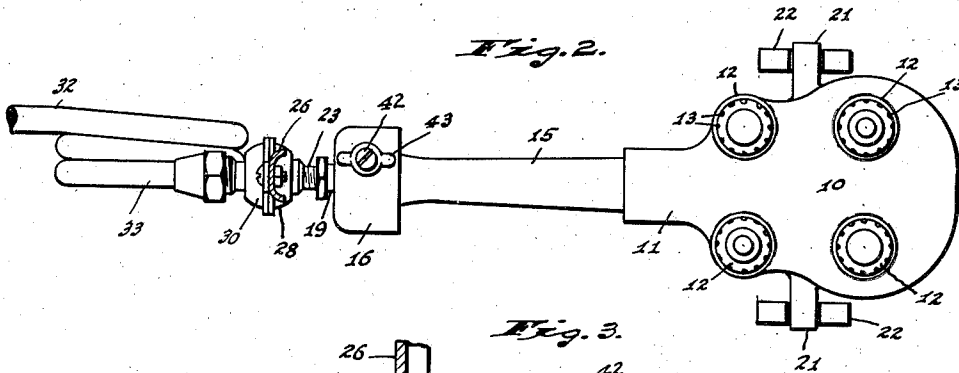
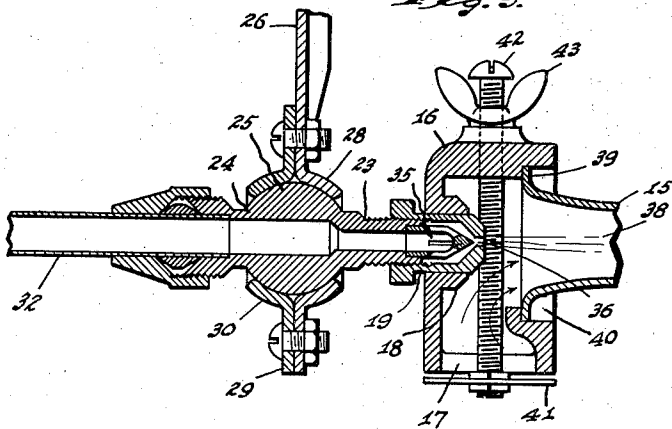


Fig. 3.



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Fig. 4.

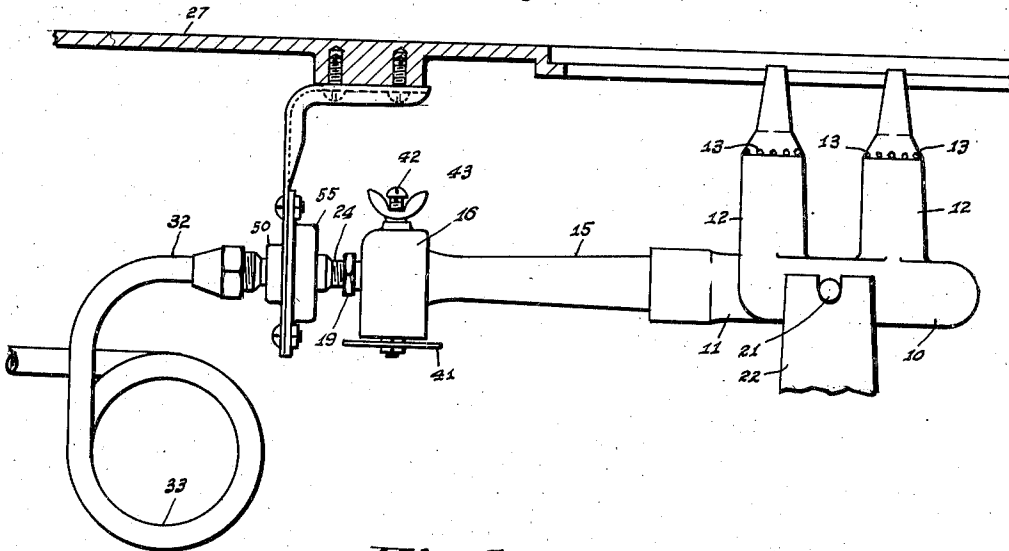


Fig. 5.

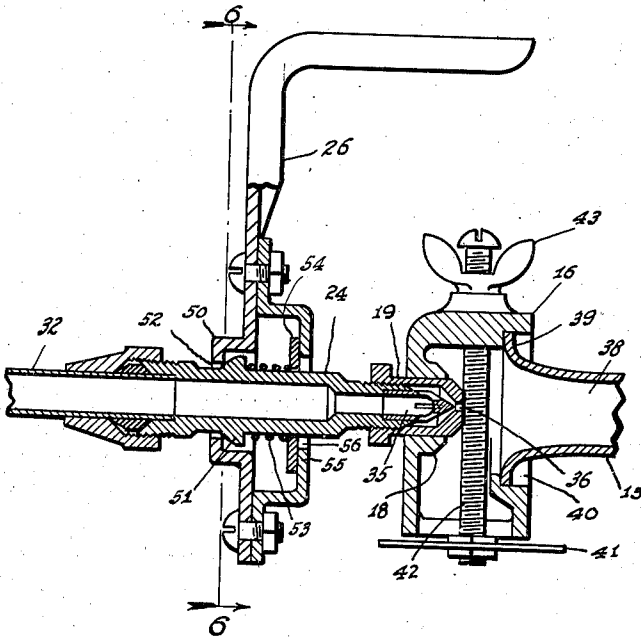
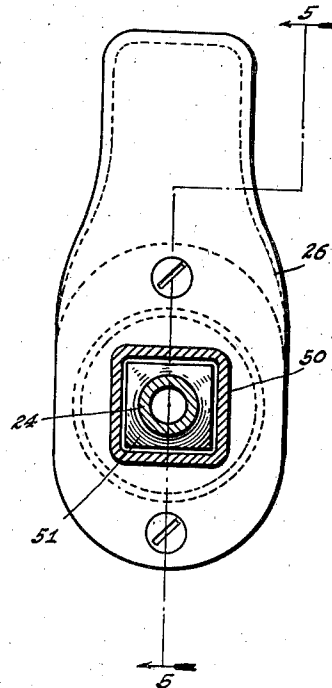


Fig. 6.



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2,162,374

GAS BURNER

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Application October 18, 1937, Serial No. 169,537

6 Claims. (Cl. 158—99)

In the common manner of constructing gas ranges each burner and its associated mixture conduit and air-admission bell are formed as a unit, usually as a casting the hollow interior of which is provided during the casting operation by a suitable core. Ordinarily, the burner-castings of the range are individually removable; and to this end it is customary to support them in part from a rigidly-mounted gas-supply spud which enters a central hole in the end wall of the air-admission bell and in part from brackets or other rigid elements disposed adjacent the burner proper. In order to make possible engagement and disengagement of the burner and its adjacent supporting means, it is necessary that the spud have a relatively loose fit in the end wall of the air-admission bell and that its bearing within such end wall be relatively short so as to permit angular swinging of the burner-casting when the spud is in place.

The construction above described possesses certain disadvantages and inefficiencies in respect to the flow of gas and air through the mixture conduit connecting the air-admission bell with the burner proper. In the first place, the necessity for a loose fit of the spud within the central opening in the air-admission bell, coupled with inaccuracies in manufacture and erection, result in most instances in a misalignment of the spud with the mixture-passage, thus tending to create eddy currents in the mixture and, especially in the case of a short mixture conduit, an unequal distribution of combustible mixture to the ports of the burner. In the second place, the cored passage constituting the interior of the mixture conduit has relatively rough walls which create friction opposing mixture-flow to the burner.

It is the object of my invention to improve the construction of gas burners by elimination of the disadvantages above noted. More specifically, it is my object to produce a gas range in which the mixture-supply conduit associated with each burner will have a smooth interior surface and in which the spud will be held positively in proper alinement with the mixture conduit. A further object of my invention is to prevent inaccuracies in manufacture from interfering with proper relative positioning of the spud and mixture passage.

In carrying out my invention I form each mixture-supply conduit as a separate element, desirably of metal tubing shaped to provide interiorly the desired Venturi form. One end of this tube is connected to the burner proper, while

the other end is connected to an air-admission fitting. This fitting is provided, in alinement with the mixture conduit, with a spud-receiving opening which has a relatively close fit on the spud, and which has considerable axial extent so as to hold the spud and mixture conduit positively in alinement with each other. To permit insertion and removal of the burner the spud is supported by means providing for a limited swinging movement relative to the body of the range and is supplied with gas through a flexible tube.

The accompanying drawings illustrate my invention: Fig. 1 is a side elevation illustrating a burner embodying my improved construction supported in operative position beneath the cooking top of a gas range, parts of the construction being broken away and shown in cross-section; Fig. 2 is a plan view of the burner construction illustrated in Fig. 1; Fig. 3 is a fragmental vertical section illustrating details of the spud-mounting; Fig. 4 is a side elevation of a modified form of burner; Fig. 5 is a longitudinal section on the line 5—5 of Fig. 6; and Fig. 6 is a transverse section on the line 6—6 of Fig. 5.

In the construction illustrated in the drawings, the burner 10, which has a hollow interior, is shown as provided with a neck 11 and with vertically projecting circular bosses 12 each having at its upper end an annular row of discharge ports 13. While this particular type of burner is preferred, it is not essential in the practice of my invention.

The neck 11 is counter-bored for the reception of one end of a piece of metal tubing 15 constituting the conduit through which the combustible mixture is supplied to the burner. The other end of the tube 15 is received in a hollow fitting 16, conveniently a casting, which is provided at its bottom with an air-admission opening 17 and in the wall opposite the tube 15 with an inwardly projecting circular boss 18 drilled concentrically for the reception of the spud 19 through which gas is delivered. The opening through the boss 18 fits the spud 19 rather closely and desirably has an axial extent somewhat more than half the diameter of the spud in order that the spud may be positively held in correct alinement with the tube 15.

The spud 19 supports the weight of the outer end of the assembly comprising the burner 10, the conduit 15, and fitting 16. For the purposes of supporting the burner end of the assembly, the burner is shown as provided with oppositely projecting lugs 21 receivable respectively in

notches in the upper ends of two stationary brackets 22 mounted in any convenient manner on the range. This method of supporting the burner-end of the assembly, however, is illustrated merely by way of example.

To permit engagement and disengagement of the pins 21 and the notches in the brackets 22 while the spud 19 is in place in the boss 18, a certain amount of angular movement of the burner-assembly is necessary. As the character of the fit between the spud and the interior of the boss 18 is such as to prevent relative angular movement of the spud and burner-assembly, the spud is supported from the range through a mounting which permits a certain freedom of angular movement. One form of such a mounting is illustrated in Figs. 1, 2, and 3, where the spud is shown as screw-threadedly mounted on the neck 23 of a tubular fitting 24. The tubular fitting 24 is provided intermediately with a ball-like enlargement 25 which is supported for universal movement in a bracket 26 conveniently secured to and projecting downwardly from the cooking top 27 of the range. In the arrangement illustrated, the bracket 26 is formed with a circular flange 28 the interior of which has a spherical configuration conforming to the ball-like projection 25 on the fitting 24; and the bracket carries a removable cap 29 having a flange 30 similar to the flange 28 but projecting in the opposite direction.

At the end remote from the spud 19, the fitting 24 is adapted for attachment by any convenient means to a gas-supply tube 32. This tube is desirably of metal and adjacent its points of attachment to the fitting 24 has a portion formed into a helical coil 33 which provides sufficient flexibility to permit angular movement of the fitting 24 about the center of the ball-like projection 25. As any movement of the tube 24 incident to an insertion or removal of the burner assembly is mainly in a vertical plane, the helical coil 33 is desirably disposed with its axis horizontal.

As is usual in gas ranges, provisions are made so that adjustment of the spud 19 on the neck 23 of the fitting 24 will operate to regulate the amount of gas discharged from the spud. For this purpose there may be provided in the outer end of the neck 23 a hollow plug 35 longitudinally slotted so that gas can escape into the interior of the cap-like spud 19 and provided with a conical point co-operating with a central opening 36 in the inner end of the spud to form a regulating valve.

The tube 15 is desirably formed as indicated to provide the conventional Venturi construction 38. For the purpose of attachment to the air-admission fitting 16, the adjacent end of the tube 15 is formed into an outwardly projecting annular flange 39 which is receivable in a recess 40 in the inner face of the fitting 16 and is secured in place therein as by welding or brazing.

The proportions of the mixture supplied to the burner through the tube 15 are controlled by a disk 41 of larger diameter than the air-admission opening 17 and mounted on the lower end of a screw 42 which is screw-threadedly mounted in the upper wall of the fitting 16 and which projects downwardly through the opening 17. A lock-nut 43, mounted on the upper end of the screw 42, holds it in any desired position of adjustment.

The modification of my invention shown in Figs. 4 to 6 is essentially the same as that illustrated in Figs. 1 to 3 except for the presence of

provisions which prevent the fitting 24 from rotating about its axis and which therefore facilitates adjustment of the spud 19. In this arrangement, the bracket 26 is formed with an outwardly projecting hollow boss 50 of non-circular cross-section, here shown as square. The fitting 24 is provided intermediately with a flange 51 which is similar in shape to the boss 50 and which is received therein. The boss 50 has a central opening 52 through which the body of the fitting 24 extends. The outer surface of the flange 51 is beveled, desirably spherically, and is held against the inner edge of the opening 52 by a compression spring 53 which surrounds the fitting 24 and the opposite end of which bears against a washer 54 which engages a cap 55 removably secured to the bracket 26 over the open rear end of the hollow boss 50. The cap 55 has a central opening 56 for the passage of the fitting 24; and both the opening 56 and the opening 52 in the boss 50 are larger in diameter than the body of the fitting 24.

The flange 51 is somewhat smaller than the interior of the boss 50 so that the fitting 24 possesses a certain freedom of swinging movement which is greatest in planes parallel to the sides of the flange. As the greatest swinging movement to which the fitting 24 is subject is in a vertical plane incident to the insertion or removal of the burner, the boss 50 is desirably arranged with opposite parallel sides which are disposed vertically. This arrangement functions generally as does that illustrated in Figs. 1 to 3; but, because of the non-circular character of the boss 50 and flange 51, the fitting 24 is prevented from rotating about its axis during any adjustment of the spud 19.

In both illustrated modifications of my invention, the close fit between the spud 19 and the spud-receiving opening in the fitting 16 and the relatively long bearing of the spud within such opening insures accurate positioning of the spud coaxial with the recess 40 which locates the mixture-supply conduit 15. I thus insure that the jet of gas emerging from the spud will be accurately coaxial with the venturi 38 and that the creation of eddies will be avoided. Contributing to this result is the fact that the conduit 15, being formed of metal tubing, has accurate dimensions and a smooth inner surface.

I claim as my invention:

1. In combination, a gas burner having a hollow body portion provided with discharge ports and a horizontally extending mixture-supply conduit, supporting means engaging said body portion, said supply conduit being provided at its outer end with an axial opening and with an additional opening for the admission of air, a gas-supply spud closely received in said axial opening, and means supporting said spud and permitting swinging movement thereof in a vertical plane to permit disengagement of said burner from its supporting means.

2. In combination, a gas burner having a hollow body portion provided with discharge ports and a horizontally extending mixture-supply conduit, supporting means engaging said body portion, said supply conduit being provided at its outer end with an axial opening and with an additional opening for the admission of air, a gas-supply fitting, a spud screw-threadedly mounted on one end of said fitting and closely received in said axial opening, and a support for said fitting permitting swinging movement thereof in a vertical plane to permit disengagement of

said burner from its supporting means, said fitting and its support having co-operating provisions preventing rotation of said fitting about its axis.

3. In combination, a gas burner having a hollow body portion provided with discharge ports and a horizontally extending mixture-supply conduit, supporting means engaging said body portion, said supply conduit being provided at its outer end with an axial opening and with an additional opening for the admission of air, a gas supply fitting having a port closely received in said axial opening, and means supporting said fitting for a limited universal movement while preventing its rotation about its axis.

4. In combination, a gas burner having a hollow body portion provided with discharge ports

and a horizontally extending mixture-supply conduit, supporting means engaging said body portion, said supply conduit being provided at its outer end with an axial opening and with an additional opening for the admission of air, a gas supply fitting having a port closely received in said axial opening, and means supporting said fitting for a limited universal movement.

5. The invention set forth in claim 1 with the addition that said supply conduit is in part a piece of metal tubing having a venturi-like constriction.

6. The invention set forth in claim 4 with the addition that said supply conduit is in part a piece of metal tubing having a venturi-like constriction.

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