May 17, 1949. E. H. MUELLER 2,470,713

DOUBLE GAS BURNER WITH REMOVABLE CAP

Filed June 4, 1945 2 Sheets-Sheet 1

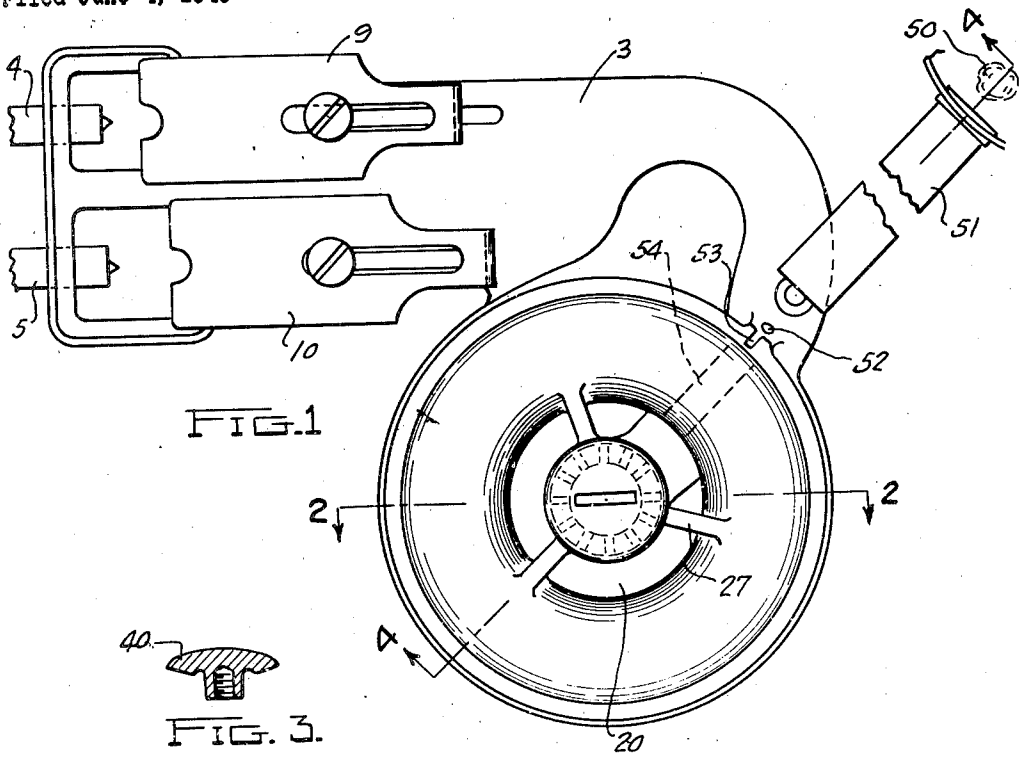


FIG. 1

FIG. 3.

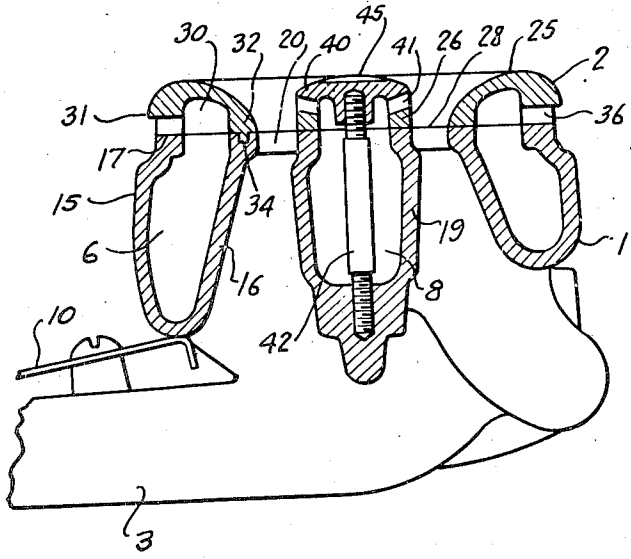


FIG. 2.

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FIG. 4.

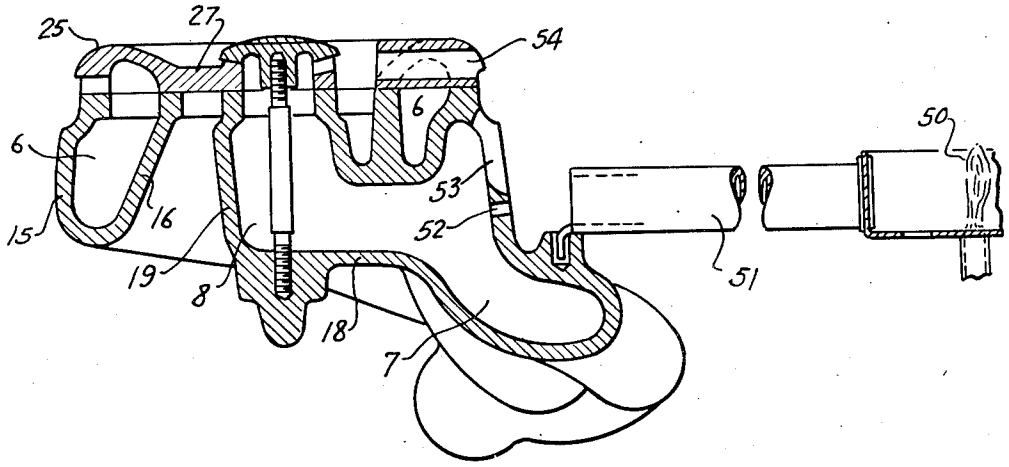


FIG. 6.

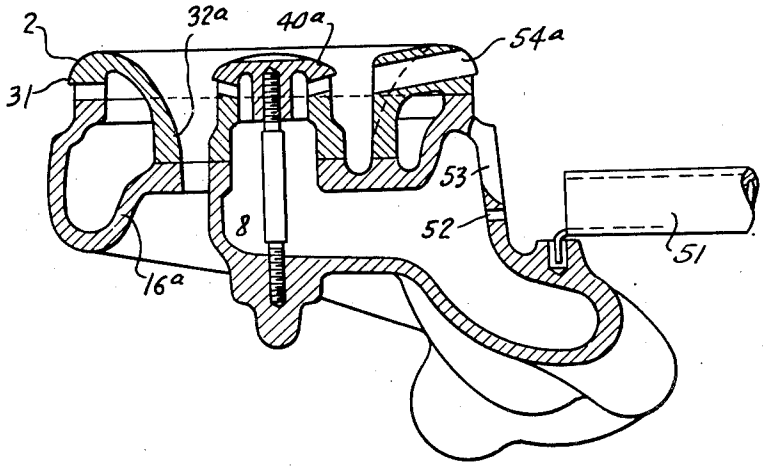
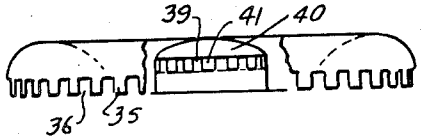


FIG. 5.



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DOUBLE GAS BURNER WITH REMOVABLE CAP

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4 Claims. (Cl. 158—116)

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This invention relates to a gas burner and it has to do particularly with a dual or double burner which has inner and outer burner heads and wherein only the inner burner may be employed when it is desired to provide a small amount of heating as in simmering of foodstuffs.

The burner of this invention is intended particularly for use in gas stoves or ranges although it may be employed in any gas burning equipment.

It is the general object of the invention to provide an improved burner structure comprised of a minimum number of parts and which can be easily made, assembled and dissassembled and provided to the public at economical cost. While the burner is of the dual or double head type the top or cap portion of the burner is comprised of a single cap element so constructed that the two head burner structure is provided. A further object of the invention is to provide an improved igniting arrangement wherein the inner burner may be ignited in a positive manner from a remotely positioned pilot light and in this connection an arrangement is provided which gives a positive, sure action.

The invention will be better understood by a consideration of the following detailed description in conjunction with the accompanying drawings:

Fig. 1 is a plan view of a dual burner constructed in accordance with the invention.

Fig. 2 is a cross sectional view taken substantially on line 2—2 of Fig. 1.

Fig. 3 is a detail view of a securing member.

Fig. 4 is a view largely in cross section and taken substantially on line 4—4 of Fig. 1.

Fig. 5 is a view of the cap member of the burner.

Fig. 6 is a cross sectional view similar to Fig. 4 but showing a modified structure.

As illustrated in Figs. 1 and 2 the burner comprises basically a body member 1, which may be a ferrous casting and a top or cap member 2 which may be, and preferably is, formed of corrosion resisting metal such as a white metal alloy. The body member has a mixer tube structure 3 fashioned to receive the outlet jets 4 and 5 of a suitable control valve (not shown) which discharges the gas into the mixer tubes. The mixer tube has two passages, one of which opens into a channel 6 and the other of which 7 extends to an inner chamber 8 (Fig. 4). Double mixer tubes of this nature have been heretofore known. The mixer tube is provided with openings for primary

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air, each of which may be controlled by a slide shutter 9 and 10.

The body is provided with an outer wall 15 and an intermediate wall 16, the upper surfaces of which may, in the form shown in Fig. 2, be in a common plane as illustrated at 17. The burner body also has a wall formation 18 which extends inwardly of the body more or less under a portion of the wall 16 and it is shaped to provide the inner chamber 8 defined by wall 19, the upper surface of which, in the form shown in Figs. 2 and 4, terminates in the plane 17. Accordingly, gaseous fuel may be introduced into the chamber 6 or the chamber 8 or both. The body is so constructed, as illustrated, to provide an inner opening 20 for the passage of secondary air, this passage being partially interrupted where the portion 18 passes to the central chamber.

The cap member is of one piece construction formed with an outer ring-like part 25 and an inner hub-like part 26 integrally formed with the outer part by a suitable number of bars 27 which leave the opening 20 in its open condition, the intermediate part of the cap having openings 28 which align with the opening 20 in the body. The upper surface of the cap member is suitably shaped advantageously with a curved contour as illustrated for providing a desired nicety of appearance.

The underside of the cap is provided with a channel 30 defined by opposite walls 31 and 32 and these walls rest upon and fit against the top surface of the walls 15 and 16. Thus, the channel 30 cooperates with and the cap closes the chamber 6. The cap may be located on the body by one or more projections and recesses 34. The outer wall 31 of the cap member is formed with a plurality of substantially radially extending alternate projections and recesses. The projections 35 seat on the top of the wall 15 and with the recesses form gas outlet ports 36. The top surface of the hub-like part 26 is formed with alternate recesses and projections, being illustrated at 39, and the opening in the hub member is closed by a securing piece 40 to thus close the chamber 8 except for gas outlet ports. The securing piece 40 seats on the upper surfaces of the projections 39 and forms gas outlet ports 41. These ports, as indicated, may be slightly upwardly inclined so that the flames supported by gas issuing therefrom are directed upwardly and outwardly.

In order to hold the parts in assembly, an assembly member 42 is screw threaded into the body as illustrated in Fig. 2, and into the hold-

ing member 40. It may be convenient to have the structure arranged so that the member 42 remains relatively permanently united to the body so that the securing member 40 may be screwed onto the member 42 or removed therefrom. For this purpose the securing member may have a slot 45 for the reception of a suitable tool or coin. The cap member may, and preferably is, a single die casting with the projections 35 and 39 formed thereon. The assembly can be easily made and any time it is necessary to get into the burner to inspect it or clean it the cap and body may be separated by the simple removal of the securing piece 40.

The igniting of the burner is illustrated in Figs. 1 and 4. As shown, there is a pilot flame 50 remotely positioned and cooperating with the burner through the means of a flash tube 51. The body is provided with a port 52 which opens into the passage 8 which conducts the gaseous fuel to the inner burner. Immediately above this passage is a slot also opening into the inner burner passage, the slot being illustrated at 53. This slot extends upwardly from a location in proximity to port 52 to a location near the upper part of the body. The cap is formed with a guard passage 54 extending therethrough and illustrated. This passage 54 has its outer end opening immediately above the slot 53 and its inner end opening so that it extends in a direction toward the inner burner. As is well known to those versed in the art when gas is supplied to the chamber 8 for the inner burner, some of the gas is discharged through the port 52 and thence into the tube 51. This gas flows through the tube and is ignited by the flame 50 with a resultant flash-back or explosion. Gas also flows out through the slot 53 and the resultant explosion ignites the gas issuing from port 52 and slot 53. When the gas is supplied to the inner burner it also discharges through the ports 41 and some of this gas flows into the passage 54 so that it is ignited by the flame from the slot 53. This results in the flame flashing back through the guard passage 54 to ignite the gas issuing from the ports 41.

The provision of the port 52 is for the projection, with some velocity, of a stream of gas which will enter and pass through the flash tube 51. The flame propagated by gas issuing from a port, such as a port 52, is quite likely to become extinguished, as by "blowing" and, accordingly, is not sufficiently stable to provide the desired reliability and sureness of action for the ignition of a burner. Nevertheless, the port 52 will project gas into the flash tube which becomes ignited, and as above pointed out this will ignite the gas issuing from slot 53 as well as the port 52. The gas issuing from the slot 53 is not projected with a velocity as high as the gas projected from the port 52. The flame burning from slot 53 is very stable and is not liable to "blow" which is an action apparently incident to a relatively high velocity of the gas. Accordingly, a very positive action is provided in that the gas from slot 53 will ignite and will remain ignited under all normal conditions. When the gas is turned into the chamber 6 for the outer burner it issues from the ports 36 and some of these ports, as will be appreciated by reference to Fig. 1, lie in close proximity and in igniting relationship with the flame at slot 53. Accordingly, the gas issuing from these adjacent ports will become ignited and the flame will "chain" around the periphery of the burner igniting the gas issuing from all the ports 36.

In the form shown in Fig. 6 many of the parts are the same as those heretofore described and for purposes of clarity and brevity the same reference characters are applied. The principal variation in this form is that the cap member 2 has an inner wall portion 32a which extends considerably downwardly relative to the outer wall section 31. Likewise, the wall 16a of the body is correspondingly lower. In this form, also, it will be noted that the passage 54a is at somewhat of an angle to the horizontal and that the center portion of the cap and the securing member 40a are in a slightly lower position relative to the form shown in Fig. 4.

I claim:

1. A double gas burner comprising a body member having outer and intermediate walls defining an outer chamber, said walls having top surfaces, an inner wall defining an upwardly opening inner chamber, said inner wall having a top surface, separate conduit means for conducting gas to the outer chamber and to the inner chamber, a cap member disposed on the body member, the underside of the cap member having alternate downwardly extending projections and recesses with the projections contacting the top surface of the outer wall to provide outwardly opening ports leading from the outer chamber for the issuance of flame supporting gas, said cap member seating on the intermediate wall to close the outer chamber, said cap member seating on the inner wall, the cap member having an aperture therein in substantial alignment with the inner chamber, upper surfaces of the cap member around said aperture having alternate upwardly extending projections and recesses, and a closure piece secured in position over the aperture and contacting with the upwardly extending projections around the aperture so that the recesses provide outwardly opening ports for the issuance of flame supporting gas.

2. A double gas burner comprising a body member having outer and intermediate walls defining an outer chamber, said walls having top surfaces, an inner wall defining an upwardly opening inner chamber, said inner wall having a top surface, separate conduit means for conducting gas to the outer chamber and to the inner chamber, a cap member disposed on the body member, the underside of the cap member having alternate downwardly extending projections and recesses with the projections contacting the top surface of the outer wall to provide outwardly opening ports leading from the outer chamber for the issuance of flame supporting gas, said cap member seating on the intermediate wall to close the outer chamber, said cap member seating on the inner wall, the cap member having an aperture therein in substantial alignment with the inner chamber, upper surfaces of the cap member around said aperture having alternate upwardly extending projections and recesses, and a combined closure piece and securing member attached to the body member and closing the aperture in the cap member, said piece fitting upon the upwardly extending projections around the aperture in the cap member and cooperating with the recesses to provide ports for the issuance of flame supporting gas which open outwardly from the central chamber.

3. A cap member for a double gas burner comprising, an integrally formed body having an outer peripheral portion, a substantially annular center

portion disposed in spaced relationship to the outer portion, ribs extending between the outer and center portions for connecting them together, the underside of the outer portion of the cap having peripherally formed alternate downwardly extending projections and recesses adapted to seat upon a burner body to provide ports for the issuance of flame supporting gas, the upper side of the center portion having peripherally arranged alternate upwardly extending recesses and projections and a closure piece for seating upon the upwardly extending projections of the center portion and cooperating with the recesses to form outwardly opening ports for the issuance of flame supporting gas.

4. A double gas burner comprising a body member having outer and intermediate walls defining an outer chamber, said walls having top surfaces, an inner wall defining an upwardly opening inner chamber, said inner wall having a top surface, separate conduit means for conducting gas to the outer chamber and to the inner chamber, a cap member disposed on the body member, the underside of the cap member having alternate downwardly extending projections and recesses with the projections contacting the top surface of the outer wall to provide outwardly opening ports leading from the outer chamber for the issuance of flame supporting gas, said cap member seating on the intermediate wall to close the outer chamber, said cap member seating on the inner wall, the cap member having an aperture therein in substantial alignment with the inner chamber, said cap member having upper surfaces around said aperture, and a closure piece secured in position over said aperture and contacting with said upper surfaces around said aperture, the closure piece and the said upper surfaces of the cap member being so relatively formed with alternate projections and recesses on one of them to provide outwardly opening ports for the issuance of flame supporting gas.

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