

Feb. 6, 1934.

E. N. DOLLIN ET AL

1,945,934

BURNER

Filed Feb. 11, 1933

2 Sheets-Sheet 1

Fig. 1.

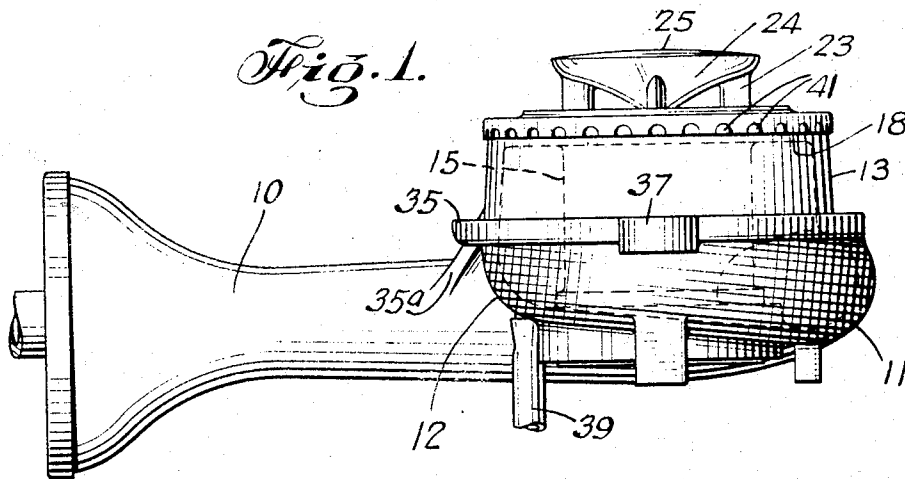


Fig. 2.

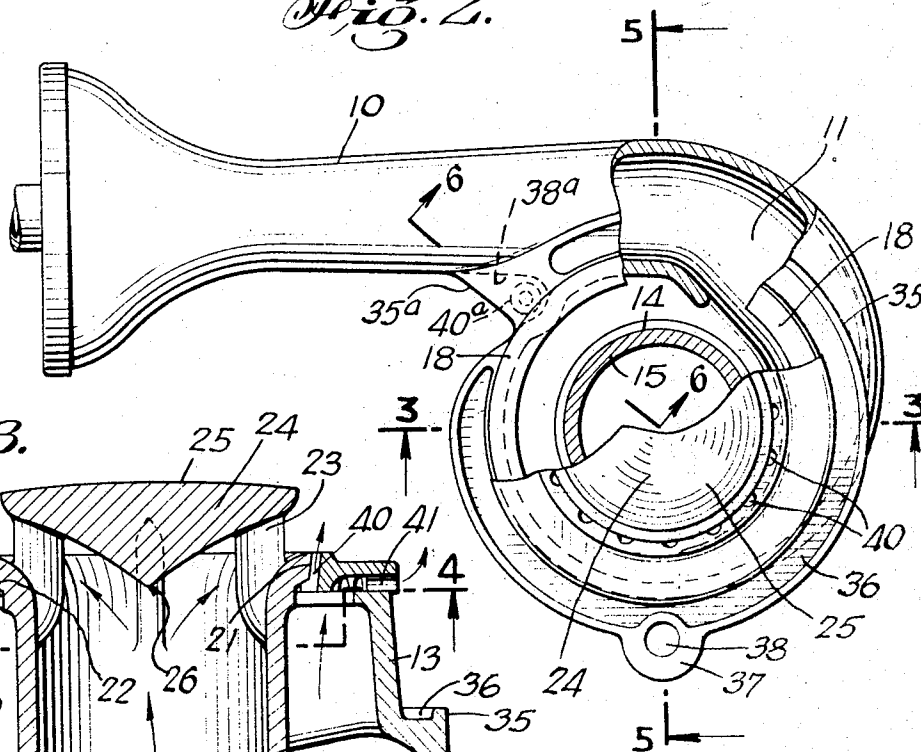
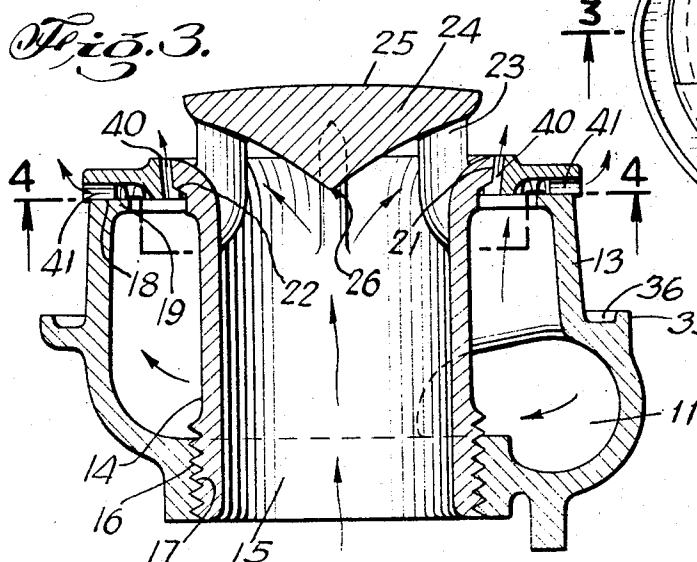


Fig. 3.



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2 Sheets-Sheet 2

Fig. 4.

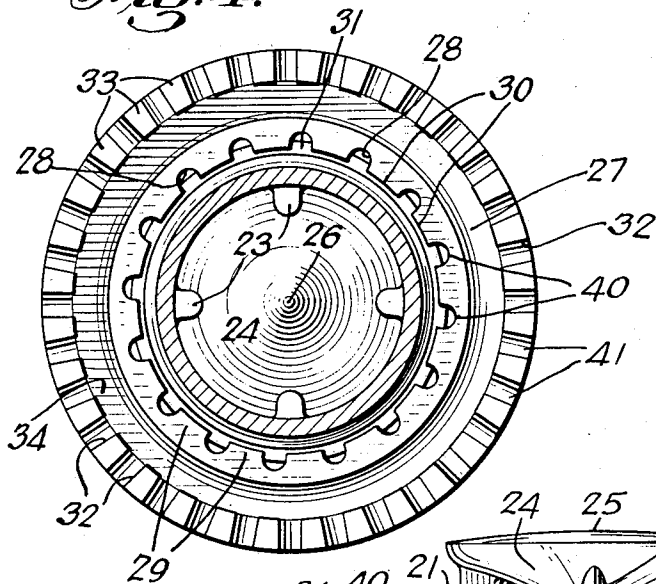


Fig. 5.

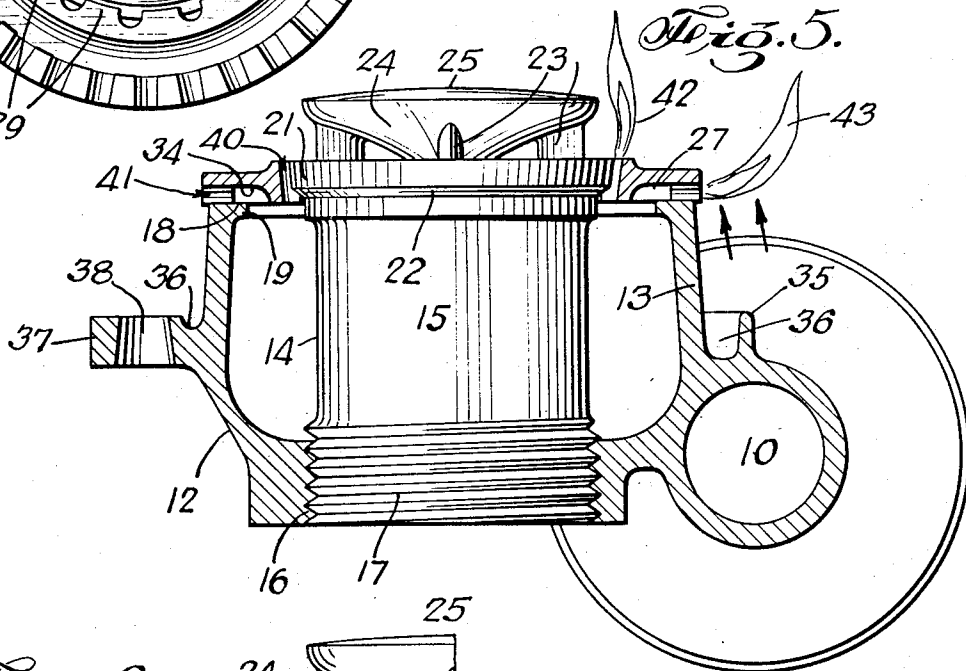
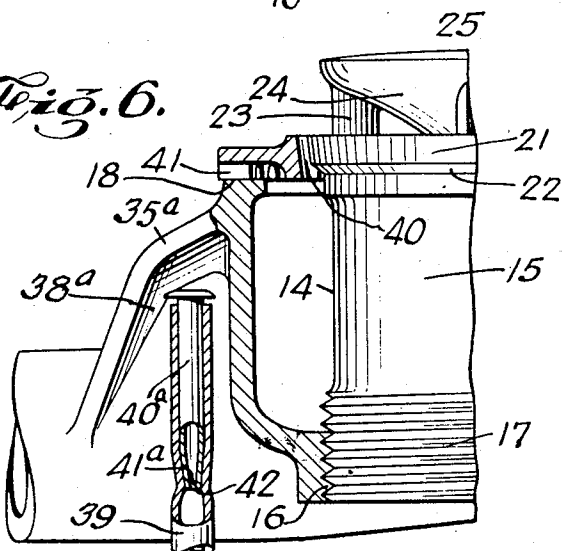


Fig. 6.



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1,945,934

BURNER

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Application February 11, 1933. Serial No. 656,265

15 Claims. (Cl. 158—116)

This invention relates to improvements in burners, being particularly directed to burners for use in domestic and commercial gas ranges.

Broadly, it is an object of this invention to provide for a burner which, due to the novel formation of the gas chamber, the assembly and disposition of the combustion ports, and the application of a baffle dome or head, will provide for an economically operable and highly efficient device.

Further, it is an object of this invention to provide for a burner of the type described, wherein flames are developed and directed through two series of ports respectively horizontally and vertically disposed, the said flames, due to the construction of the burner, being non-converging and being directed so as to respectively act upon the outer periphery and the center of the base of the vessel being heated, to thus attain optimum conditions for heating.

Still further, it is an object of this invention to provide for a port assembly in a burner, wherein combustion ports are formed in horizontal and vertical planes for the development of a vertical flame from the vertical ports for heating the center of a vessel, and a substantially right-angularly directed flame from the horizontal ports, thereby to heat the outer periphery of the base of a vessel, the horizontal flame acting on the peripheral surfaces of vessels being capable, upon actuation of the petcock, to be adjusted for various sizes of vessels.

Further, it is an object of this invention to provide a burner having a novel structural formation involving three distinct elements, either formed separately and assembled, or provided as a unitary integral structure, the three elements involving first: a burner body, second: a duct, and third: a port ring; the interior of the burner body and the exterior of the baffle duct forming the gas chamber and the upper wall portions of the burner body and the duct serving in combination with the peripheral grooves on the port ring, to provide for horizontal and vertical combustion ports, with a baffle disposed on the duct serving to preheat secondary air and control the circulation of air with respect to the flames developed in the vertical ports.

Still further, it is an object of this invention to provide, in conjunction with a burner of the type described, a novel hood formation and associated pilot light, the hood serving two purposes, the first to provide a spillover trough for the burner, and second, to provide a niche in which a jet normally burning gas with a white flame will, due to the dispersion of gas passing from

the jet and striking the walls of the niche, provide for a thin layer of gas which, in mixing with secondary air there present, will burn with a constant blue flame.

These and other advantages, capabilities and features of the invention will appear from the subjoined detailed description of one specific embodiment therefor illustrated in the accompanying drawings, in which

Figure 1 is a side elevation of the burner.

Figure 2 is a plan view of the burner partly broken to show the interior thereof.

Figure 3 is a side elevation in section taken along lines 3—3 of Figure 2.

Figure 4 is a plan view in section taken along lines 4—4 of Figure 3.

Figure 5 is a rear view partly in section taken along lines 5—5 of Figure 2.

Figure 6 is a front view in section taken along lines 6—6 of Figure 2.

Referring to the reference characters in the drawings, numeral 10 represents a Venturi tube leading from the petcock (not shown), the said Venturi tube being adapted to converge into conduit 11, which is spiral in form and defines the gas chamber, the outer wall of the gas chamber being defined by the wall 13 of burner body 12, and the inner wall of the gas chamber being defined by the outer wall 14 of the duct 15. The said burner body 12 and the duct 15 are interlocked by cooperation of the interior threading 16 along the base of the burner body and the exterior threading 17 along the base of the duct.

The top of wall 13 of the burner body is flattened as at 18 and is formed to provide an inwardly defined integral flange or rim 19, which serves to provide a baffle for the swirling gas mixture passing through the gas chamber towards the horizontal and vertical ports to be later described.

The upper external portion of wall 14 of the duct 15 is shaped to provide a shouldered formation incorporating a wide slightly angularly shaped surface 21 and a narrow angular surface 22, the purpose of which will be indicated, in conjunction with the port ring to be later described. On the interior and upper portion of wall 14 of the baffle duct there are formed integral upstanding supports or pillars 23, which have integrally formed therewith and carry at their upper extremities baffle plate 24, which is in the form of an inverted cone, the base 25 of which is in the form of a smooth dome, and the apex 26 of which projects within the interior hollow portion of the duct,

thereby providing for a directional displacement of air as indicated by the arrows in Figure 3, while at the same time, due to its proximity to the flame and vessel being heated, such baffle will

5 of itself become heated and thus preheat incoming air passing through the interior of the duct and forming the secondary air for the vertical flame to be later described.

In assembly, the port ring 27 is disposed so that
10 the ribs 33 thereof on the periphery thereof rest upon upper surface 18 of wall 12 of the burner body, then duct 15 is dropped through the central aperture of the port ring and the base thereof
15 screwed together with the base of the burner body through their respective threaded sections 17 and 16; at this time surface 22 on the baffle duct will rest against surface 31 of the ribs 29, while surface 21 of the baffle duct will rest against surface 30 of the ribs 29, thereby defining the
20 vertical ports 40. As shown in Figure 5, horizontal ports 41 will be defined by the upper surface 18 of the wall 12 of the burner body and the grooves 32 of the port ring.

When the device is assembled, as above stated,
25 the respective elements are in a perfect tight non-gas-leaking fit, and the gas mixture passing from the Venturi tube 10 through the conduit 11 into the gas chamber in a swirl is discharged through the two ports 40 and 41 in respectively
30 a vertical flame as at 42 and a substantially horizontal flame, which is turned or bent upwardly in a substantially right-angular direction as at 43, with secondary air being supplied for the horizontal flame as shown by the arrows in Figure 5, and preheated secondary air for the vertical
35 flame being supplied from the interior of the duct in the path of the arrows shown in Figure 3, the preheating being effected by the heat effect developed by the baffle 24.

Referring to all the figures in the drawings, but in particular to Figure 4, port ring 27 is in this instance formed of a die-casting in the shape of a substantially flat apertured disk, the inner periphery of which has formed therealong a series
40 of spaced semi-circular grooves 28 separated by ribs 29, which have merging faces 30 and 31 respectively so inclined to be symmetrical to surfaces 21 and 22 on wall 14 of the duct for cooperating therewith. Along the outer periphery
50 and on the lower surface of port ring 27 are formed a series of semi-circular grooves 32 disposed in spaced relationship and separated by ribs 33, the ribs and ports being of such depth as to permit the formation of a grooved annular channel 34 thereadjacent.

On the burner body 12 there is formed intermediate of its depth, hood 35 having a spillover
60 trough 36 and an ear 37 provided with an aperture 38, so that the burner body may be fastened by any well-known manner to a support therefor.

Referring to Figure 6, there is disclosed therein the niche 38a defined by the hood 35a, in which there is disposed conduit 39 carrying pilot tube
65 40a, which pilot tube has a restricted pinhole portion 41a at its lower end, while its upper open end is of greater cross-section, the said pilot tube being disposed within the conduit by pinching the same as at 42. When the gas issuing from the
70 pilot tube is ignited, the gas is caused by its dispersion against the inner walls of the niche 38a to form a thin flat jet or spray of gas which intermixes thoroughly with the secondary air disposed in the niche, producing a blue flame, although the normal flame without protection of

such niche formation would be of a white flickering light. As is obvious from Figure 6, the flame from the pilot tube 40 will pass along to the horizontal ports defined by the port forming ring.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

We claim:

1. A hollow gas burner having a gas inlet leading to its interior and having an air opening extending vertically through it, said burner being provided with two circumferential series of combustion ports, one series of ports extending horizontally and the other series of ports extending vertically, and a baffle disposed above the air opening for directing and preheating secondary air for the vertical ports.

2. A gas burner, having a burner body and an air duct member cooperating therewith to provide a gas chamber, a port ring carried on said burner body and duct member above the gas chamber, and being provided with spaced horizontal and vertical ports on its respective outer and inner peripheral surfaces.

3. A gas burner, having a burner body and an air duct member cooperating therewith to provide a gas chamber, a port ring carried on said burner body and duct member above the gas chamber, and being provided with spaced horizontal and vertical ports on its respective outer and inner peripheries, said duct member having a hollowed interior and carrying thereabove a baffle plate for directing and preheating secondary air for service upon flame formed at the ports.

4. In a gas burner of the class described, a burner body and a hollow air duct, said burner body and duct being attachable to provide a gas chamber, and a port ring having horizontal grooves and interior vertical grooves on respectively its outer and inner peripheries, and adapted to rest upon and against the burner body and duct to provide horizontal and vertical combustion ports.

5. In a gas burner of the class described, a burner body and a hollow air duct, said burner body and duct being attachable to provide a gas chamber, and a port ring having horizontal grooves and interior vertical grooves adapted to rest upon and against the burner body and duct to provide horizontal and vertical combustion ports on respectively its outer and inner peripheries, and a baffle member supported above the interior of the hollow duct for directing and preheating air passing through the duct for service as secondary air with respect to flame formed in the vertical combustion ports.

6. In a gas burner of the class described, a burner body and a hollow air duct, said burner body and duct being attachable to provide a gas chamber, and a port ring having horizontal grooves and interior vertical grooves on respectively its outer and inner peripheries, and adapted to rest upon and against the burner body and duct to provide horizontal and vertical combustion ports, and a hood disposed peripherally on said burner body to provide a drip catch-all.

7. In a gas burner of the class described, a burner body and a hollow air duct, said burner body and duct being attachable to provide a gas chamber, and a port ring having horizontal grooves and interior vertical grooves on its respective outer and inner peripheries adapted to rest upon and against the burner body and duct to provide horizontal and vertical combustion

ports, a hood disposed on the periphery of said burner body, and a pilot light positioned in a niche within said hood and adapted to distribute a flame against at least one of the horizontal ports.

8. In a gas burner of the class described, a gas chamber and a hollow air duct, a plurality of circumferential series of combustion ports, one series of ports being directed horizontally, and the other series of ports being directed vertically, and a baffle member carried in said hollow duct for directing and preheating secondary air.

9. In a gas burner of the class described, a gas chamber and a hollow air duct, a plurality of circumferential series of combustion ports, one series of ports being directed horizontally, and the other series of ports being directed vertically, and a baffle member carried in said hollow duct for directing and preheating secondary air, said baffle member being in the form of a cone, the apex of which depends downwardly within the hollow duct.

10. In a gas burner of the class described, a gas chamber and a hollow air duct, a plurality of circumferential series of combustion ports, one series of ports being directed horizontally, and the other series of ports being directed vertically, and a baffle member carried in said hollow duct for directing and preheating secondary air, said baffle member being in the form of a cone, the apex of which depends downwardly within the hollow duct, and the base of which is shaped to provide a smooth dome.

11. In a gas burner of the class described, a burner chamber and a hollow air duct, a ring having a plurality of series of ports on its respective peripheries, one of said port series being angularly directed with respect to the other, and a baffle supported on said duct adjacent and above one of the series of ports, said baffle being adapted to direct and preheat air passing through the duct for service as secondary air with re-

spect to the flame formed at the series of ports thereadjacent.

12. In a gas burner of the class described, a burner body and a hollow air duct, said burner body and duct being formed of cast iron, and attachable to provide a gas chamber, and a die-cast annular port ring having a plurality of series of spaced ports on its respective peripheries, the said series of ports being angularly disposed with respect to one another, and a baffle disposed above and adjacent one of said series of ports for directing and preheating secondary air for service with respect thereto.

13. In a gas burner having a gas inlet leading to its interior and having an air opening extending vertically through it, said burner being provided with circumferential series of spaced combustion ports, a hood disposed on the periphery of said burner, and a pilot light positioned in a niche within said hood and adapted to distribute a flame against a combustion port.

14. In a gas burner having a gas inlet leading to its interior and having an air opening extending vertically through it, a baffle placed above said air opening for directing and preheating secondary air, said burner being provided with circumferential series of spaced combustion ports, a hood disposed on the periphery of said burner, and a pilot light positioned in a niche within said hood and adapted to distribute a flame against a combustion port.

15. In a gas burner of the class described, a gas chamber and a hollow air duct, a plurality of circumferential series of combustion ports, each series being directed at respectively different angles, and a baffle member carried on said hollow duct for directing and preheating secondary air, for service with the gas mixture passing from the ports thereadjacent.

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