ABSTRACT: A top gas burner for a stove in which the burner housing thereof has a gas inlet port and an annularly disposed chamber communicating with said inlet port and defined in part by spaced inner and outer sidewalls. The upper margin of the inner sidewall of the burner housing has a first ring of gas outlet ports disposed therein in communication with said chamber and includes a flange which projects outwardly of the inner sidewall and which is positioned above said first ring of gas outlet ports. The upper margin of the outer sidewall of the burner housing has a second ring of gas outlet ports disposed therein in communication with said chamber and includes a flange which projects outwardly of the outer sidewall and which is positioned above said second ring of outlet ports. The burner housing has a bore extending from the upper margin of its inner wall to the upper margin of its outer wall adjacent a respective gas outlet port in each wall.
1. TOP GAS BURNER FOR A STOVE

SUMMARY OF THE INVENTION

This invention relates to burners for stoves and has specific application to top burners for gas cooking stoves.

The gas burner of this invention includes a burner housing having a gas inlet port and an annularly disposed chamber communicating with the inlet port and defined in part by spaced inner and outer sidewalls. The upper margin of the inner sidewall of the burner housing has a first ring of gas outlet ports disposed therein in communication with the housing chamber and includes a flange which projects outwardly of the inner sidewall and which is positioned above the first row of gas outlet ports. The upper margin of the outer sidewall of the burner housing has a second ring of gas outlet ports disposed therein in communication with the housing chamber and includes a flange which projects outwardly of the outer sidewall and which is positioned above the second row of gas outlet ports. The burner housing has a bore extending from the upper margin of the inner wall to the upper margin of the outer wall adjacent a respective gas outlet port in each of the outer and inner walls to enable the gas issuing from said first and second rows of gas outlet ports to be nearly simultaneously ignited by a pilot light positioned preferably in the open center of the burner housing.

During use of the stove or range a certain amount of spillage from the containers on the stove can be expected. A good portion of this spillage generally runs down over the burners, and in prior art burners, it is common for this spillage to enter and clog the gas outlet ports thereby necessitating frequent cleaning of the burner. Also, on occasion, such spillage causes clogging and extinguishment of the pilot-light flame. The removal of such spillage from the burners and pilot light is made inconvenient and difficult due to the fact that the spillage generally cakes and hardens on the burner. In the gas burner of this invention, the burner housing includes flanges which extend over the burner outlet ports and serve to provide a shield from the spillage. Also, hoods and covers are provided for the pilot light so as to shield the gas outlet ports and primary air inlet ports of the pilot light from spillage.

Through a unique arrangement of outlet ports in the inner and outer walls of the burner housing of this invention, maximum flame concentration and heat output are obtainable for a given size burner, thus speeding the cooking time when using such containers as pressure cookers or other heat-absorbing vessels. It has been found that a 5½-inch burner, constructed in accordance with the teachings of this invention, generates between 50,000 and 52,000 B.t.u. of heat, as compared to the generation of 25,000 to 30,000 B.t.u. of heat by prior art burners of similar size. In prior art burners, the flames commonly extend around the bottom and up the sides of the container during periods of high heat output thereby creating a discoloration and scorching of the sides of the container and further creating an unnecessary waste of heat. In the burner of this invention, the flames thereof due to their concentration and heat output generally contact only the bottom of the container where maximum heat transfer occurs.

Accordingly, it is an object of this invention to provide a top burner for a gas stove whose operation and efficiency are not affected by spillage from cooking containers.

It is another object of this invention to provide a top burner for a gas stove which can be safely ignited from a pilot light when adjusted for low heat.

Other objects of this invention will become apparent upon reading of the invention’s description.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of this invention has been chosen for purposes of illustration and description wherein:

FIG. 1 is a perspective view of the burner with portions removed for purposes of illustration.

FIG. 2 is a sectional view of the burner taken along line 2-2 of FIG. 1.

FIG. 3 is a top plan view of the burner.

FIG. 4 is an enlarged elevational view of the burner as viewed from the right of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment illustrated is not intended to be exhaustive or to limit the invention to the precise form disclosed. It is chosen and described in order to best explain the principles of the invention and its application and practical use to thereby enable others skilled in the art to best utilize the invention.

The preferred embodiment of the gas burner of this invention illustrated in FIGS. 1-4 is designated generally by the reference numeral 10. Burner 10 includes a housing 12 which is preferably formed of cast iron or similar material. Housing 12 has an annular chamber 18 and a gas inlet port 14 which communicates with chamber 18. Annular chamber 18 is defined by an outer sidewall 20 and an inner sidewall 22 which are interconnected by a lower end wall 24 and an upper end wall 26. Inlet port 14 is defined by a venturi-shaped tabular part 16 having one end preferably joined to sidewalls 20 and 22 of chamber 18 in a tangentiallylike manner so as to enable gas passing through port 14 to enter one side of chamber 18 and flow circularly therearound. Lower end wall 24 of chamber 18 is preferably upwardly inclined in the direction of gas flow beginning at the entrance of port 14 into the chamber.

A vent cap 32 is mounted over the free end of tabular part 16 of port 14. Vent cap 32 has a central aperture 34 which is adapted to receive a conduct from a gas supply source and preferably has two additional apertures 36 positioned on opposite sides of aperture 34 through which a selected amount of air enters and mixes with the gas entering port 14 through aperture 34. Vent cap 32 includes a shiftable closure plate 37 through which the size of apertures 36 can be varied.

Burner housing 12 may include lower projections 38 and outwardly projecting tabs or lugs 39 which serve to support and anchor the housing in the stove. Burner 10 as thus far described is representative of a typical gas burner.

Inner sidewall 22 of chamber 18 includes an upper annular marginal part 38 which is preferably inwardly inclined in part and which includes an outwardly projecting substantially horizontal annular flange 40 at its upper edge. The outer edge of flange 40 preferably lies in substantially the same plane as the lower vertical wall part of inner sidewall 22 and includes a downturned lip 42. Upper margin 38 of sidewall 22 has a plurality of gas outlet ports 44 formed therein in a ring. Outlet ports 44 are preferably equally spaced apart with each such outlet port being located below flange 40 and inwardly of lip 42 thereof, as best shown in FIG. 2.

Outer sidewall 20 of chamber 18 includes a lower substantially vertical wall part 46 and an upper annular marginal part 48. Marginal part 48 of wall 20 preferably includes an inwardly inclined portion 52 which extends upwardly from lower wall part 46, a substantially vertical portion 54 which extends upwardly from inclined portion 52, and a substantially horizontal annular flange 50 which projects outwardly from the upper edge of vertical portion 54. The outer edge of flange 50 preferably lies in substantially the same plane as the vertical wall part 46 of sidewall 20 and includes a downturned lip 56. Vertical portion 54 of outer wall marginal part 48 has a plurality of gas outlet ports 58 formed therein in a ring. Outlet ports 58 are preferably equally spaced apart with each such outlet port being located below flange 50 and inwardly of lip 56 thereof, as best shown in FIG. 2. Inclined portion 52 of outer wall marginal part 48 has a plurality of gas outlet ports 60 formed therein in upper and lower spaced rings. Each ring of outlet ports 60 preferably has an equal number of ports with each port 60 in the lower ring of ports being located under and paired with an outlet port 60 in the upper ring of ports. Each pair of upper and lower ports 60 is preferably grouped with an
adjacent pair of upper and lower ports 60, and each group of adjacent pairs of ports is located under the intervening space 61 between adjacent ports 58 as best shown in FIG. 4. Each outlet port 60 is preferably located inwardly of lip 56 of flange 50.

A bore 62 extends through upper margins 38 and 48 of sidewalls 22 and 20 and a thickened portion 27 of end wall 26 of chamber 18 which interconnects the upper margins. Bore 62 has one end opening near one or more outlet ports 58 and 60 in sidewall 20 below flange 50 and has its opposite end opening near one or more outlet ports 44 in sidewall 22 below flange 40 and is preferably upwardly or inclined from sidewall 20 to sidewall 22. Lip 56 of flange 50 includes an extension 57 which is spaced outwardly of the opening of bore 62 in sidewall 20 and which is positioned at least partially over one or more outlet ports 60 in sidewall 20 as best shown in FIGS. 2 and 4. It is to be understood that in some constructions of this invention more than one bore 62 can extend through the upper margins of sidewalls 20 and 22.

A pilot light, designated generally by the reference numeral 65, projects from the bottom of burner housing 12 into central area 66 of the burner housing enclosed by inner sidewall 22. Pilot light 68 includes an upper tip part 72 and a lower base part 74. Pilot light 68 has an axial bore which extends through its base part 74 and into tip part 72. Tip part 72 has at least one and preferably a plurality of radially directed equally circumferentially spaced gas outlets 76 therein which communicate with the axial bore in the pilot light. A cover 78 having a downwardly inclined annular outer margin 80 is mounted to tip part 72 adjacent to above outlets 76 therein so as to provide a shield from spillage or burning during use of the burner. Base part 74 of pilot light includes at least one and preferably a plurality of radially directed equally circumferentially spaced primary air inlets 82 which communicate with the axial bore in the pilot light. A hood 84 is mounted to base part 74 of the pilot light and includes a depending sidewall which is laterally spaced from and which preferably extends downwardly over inlets 82 so as to also provide a shield from spillage which occurs during use of the burner. Base part 74 of the pilot light is adapted to be connected to a conduit from a gas supply source. Tip part 72 of the pilot light is preferably concentrically located within central burner area 66 and positioned just below the level of gas outlet ports 44 in inner sidewall 22.

During pilot light and burner use, air flows upwardly through central area 66 and around the pilot light. This air acts as a secondary source of combustion air for the pilot light and burner and must on occasion, depending upon the construction of the burner, be regulated to prevent an excessive overdraft which could affect pilot light and burner operation. This secondary air regulation may be accomplished by the inclusion of an annular flange part 83 which projects outwardly from vertical wall part 41 of inner sidewall 22 into central area 66 and surrounds pilot light 68 with clearance.

In operation, burner 10 of this invention, including pilot light 68, is mounted to the top of a stove. Pilot light 68 preferably remains lit at all times. When it is desired to light burner 10, a valve is actuated which permits gas to flow through the gas inlet port 14 of burner housing 12 where it first mixes with primary air drawn into port 14 from the atmosphere through apertures 36 of vent cap 32 and then flows into annular chamber 18 in the burner housing and simultaneously out ports 44, 58 and 60 in the chamber sidewalls. Gas issuing from outlet ports 44 in inner sidewall 22 is immediately ignited upon contact with the pilot-light flame. Gas issuing from those outlet ports 58 and 60 in outer sidewall 20 adjacent bore 62 in the burner housing flows into bore 62, principally by the drawing action or “chimney effect” created by the rush of the secondary combustion air upwardly through central area 66 of the burner over the open end of bore 62 in sidewall 22, and is ignited by either the pilot-light flame or the flames at those ports 58 and 60 located adjacent the bore opening in inner sidewall 22. Ignition of the gas in bore 62 causes ignition of the gas issuing from ports 58 and 60. Extension 57 of flange 50 serves to help funnel or direct the gas issuing from the ad-

Any spillage over the heating portion of burner housing 12 will run down and over flanges 40 and 50 which act as overhanging protective gas outlet ports 44, 58 and 60 from becoming clogged. Similarly, any such spillage will contact cover 78 and hood 84 of the pilot light 68 and as such be prevented from clogging gas outlets 76 and primary air inlets 82 of the pilot light. Flanges 40 and 50 of the burner housing cover 78 of the pilot light are constructed and arranged so as not to appreciatively interfere with the heating action of the burner or the burner gas-ignition function of the pilot light.

During burner use, atmospheric air passes upwardly around outer sidewalk 20 over ports 58 and 60 therein. This air acts as a secondary source of combustion air for the gas issuing from ports 58 and 60. By having a group of paired outlet ports 60 positioned under each space between ports 58, a portion of the air passing upwardly over the outer surface of wall 20 flows between adjacent groups of paired ports 60 and over ports 58. In this manner, the gas issuing from each port 58 and 60 receives a portion of this secondary air and is aided in its combustion, thus increasing the heat output and efficiency of the burner.

What I claim is:

1. A top gas burner for a stove comprising a burner housing having a gas inlet port and an annular chamber which communicates with said inlet port and which is defined in part by spaced inner and outer annular sidewalls each having an upper margin, the upper margin of said inner sidewall having a first ring of circumferentially spaced gas outlet ports in communication with said chamber and including an annular outwardly projecting flange positioned above and spaced over said first ring of ports, the upper margin of said outer sidewall including an inwardly inclined wall part and a straight wall part which projects upwardly from said inclined wall part, said straight wall part having a second ring of circumferentially spaced gas outlet ports in communication with said chamber and said inclined wall part having a third ring of circumferentially spaced gas outlet ports in communication with said chamber, the upper margin of said outer sidewall including an annular outwardly projecting flange positioned above and spaced over said second and third ring of ports.

2. The gas burner of claim 1 wherein the outlet ports of said third ring of ports are located under the spaces between outlet ports of said second ring of ports.

3. The gas burner of claim 2 wherein there are two outlet ports of said third ring of ports located under each space between outlet ports of said second ring of ports.

4. The gas burner of claim 1 wherein said inclined wall part has a fourth ring of circumferentially spaced gas outlet ports therein, at least one outlet port in each third and fourth rings of ports being located under each space between outlet ports of said second ring of ports.

5. The gas burner of claim 4 wherein each outlet port of said fourth ring of ports is located under an outlet port of said third ring of ports.

6. A top gas burner for a stove comprising a burner housing having a gas inlet port and an annular chamber which communicates with said inlet port and which is defined in part by spaced inner and outer annular sidewalls, said inner sidewall including an upper margin having a ring of circumferentially spaced gas outlet ports in communication with said chamber, a pilot light disposed with clearance within the open burner area enclosed by said inner sidewall, said pilot light including an upper tip part having at least one gas outlet thereof, said tip part mounted on said tip part above and extending outwardly of said gas outlet, said tip part being positioned adjacent said ring of ports, said pilot light including a base part having at least one inlet for introducing and mixing air with gas flowing through said pilot light to said gas outlet, and a hood mounted to said pilot light and positioned spaced over said inlet.