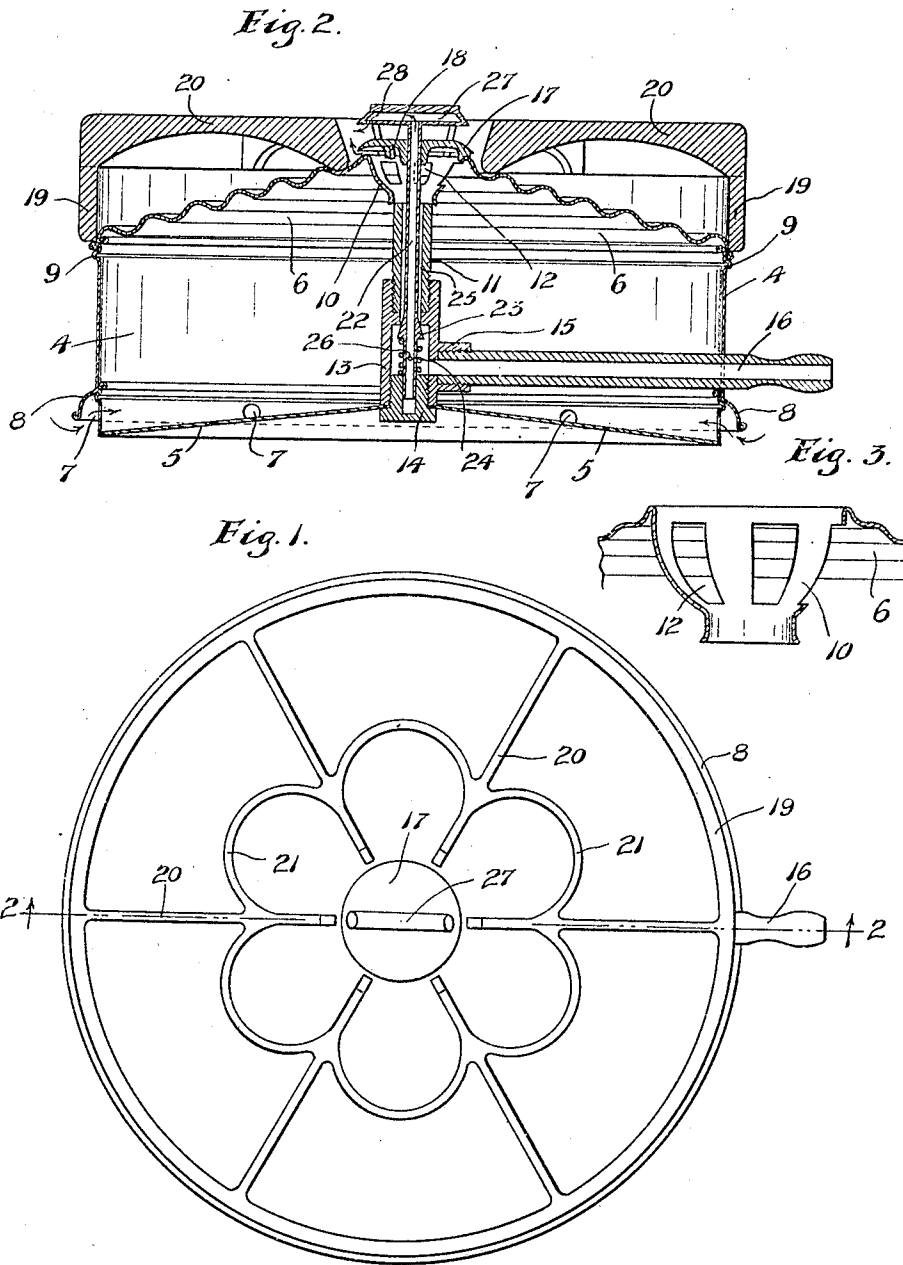


C. K. ERIKSTRUP.
GAS BURNER.
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1,291,814.

Patented Jan. 21, 1919.



WITNESSES.
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CHRISTEN K. ERIKSTRUP, OF MINNEAPOLIS, MINNESOTA.

GAS-BURNER.

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To all whom it may concern:

Be it known that I, CHRISTEN K. ERIKSTRUP, a subject of the King of Denmark, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Gas-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved gas burner especially adapted for use on cooking stoves, and to such ends, generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The invention involves a novel arrangement of air heating chamber whereby the air will be brought to a quite high temperature before it is commingled with the gas; and the invention further involves the arrangement of a pilot burner.

In the accompanying drawings which illustrate the invention in its preferred form, like characters indicate like parts throughout the several views.

Referring to the drawings:

Figure 1 is a plan view of the complete burner;

Fig. 2 is a vertical section taken on the line 2-2 of Fig. 1; and

Fig. 3 is a fragmentary view in vertical section showing the top plate or diaphragm of the air preheating chamber.

The air preheating chamber, as preferably constructed is made up of a cylindrical side wall 4, a bottom plate 5, and a top plate or diaphragm 6. The bottom plate 5 has an upturned marginal flange formed with the air intake ports 7. The cylindrical wall 4 has an outwardly flaring flange 8 that rests upon the upturned marginal flange of the bottom plate 5. The wall 4 near its upper edge has an outwardly pressed bead 9 and the top plate 6 is arranged to telescope over the extreme upper edge of the said wall plate and to rest upon the bead 9.

The top plate 6 is formed with concentric corrugations that increase the radiating surface thereof, and at its central portion it is provided with a depressed cup 10 that is slightly telescoped into the upper end of an outer tube 11. In its walls the cup 10 has circumferentially spaced air passages 12.

At its lower end the outer tube 11 is screwed into a tubular coupling head 13, the lower end of which is closed by a screw-threaded plug 14. The plug 14 is passed through an axial perforation in the bottom plate 5, and it has a projecting flange that clamps the adjacent central portion of said bottom plate against the lower end of the coupling sleeve 13, thereby rigidly supporting the sleeve 13 and tube 11. At one side the sleeve 13 has a projecting hub 15 into which the inner end of a radial gas pipe 16 is screwed. This gas pipe 16 extends through one side of the wall 4 and is adapted to be connected to a rubber hose, or to be connected otherwise to a main gas supply pipe.

Loosely resting on the upper portion of the cup 10 is a deflecting cap 17. This deflecting cap 17 at its rim has circumferentially spaced rest lugs 18 that bear upon the upper portion of the cup 10 and space the rim of said cap from the upper portion of said cup so as to permit the lateral and upward escape of the commingled-air and gas, as indicated by arrows marked on Fig. 2. Resting upon the flanged rim of the top plate 6 is a metal ring 19 that is provided with inwardly projecting radial griddle supporting arms 20. These griddle supporting arms 20 terminate short of the deflecting cap 17 and preferably they are tied together by loops 21 cast integral therewith.

Working axially through deflecting cap 17, cup 10, outer tube 11, and coupling sleeve 13 is a small inner gas tube 22 that constitutes a portion of the pilot burner and serves as a valve stem. The lower end of this tube 22 is seated for vertical movement in an axial seat formed in the plug 14. Within the coupling sleeve 13, tube 22 is provided with a conical valve 23 which under the action of a light coiled spring 24 normally closes a port 25 formed in said sleeve. The spring 24 reacts against the plug 14 and against said valve. Below the valve 23, tube 22 is formed with a small gas port 26. Secured to the upper end of the tube 22 is a small, transversely extended horizontal tubular head 27 preferably closed at one end and provided at its other end with a very small gas discharge port 28.

The operation of the burner is substantially as follows: When there is no cooking utensil on the griddle support, or skeleton, the spring 24 will cause valve 23 to close port 25 and the main supply of gas will then be

cut off; but there will be a small supply of gas through port 26, tube 22, head 27, and port 28 which will support a small gas flame that will serve as a pilot for starting the main gas flame whenever the head 27, tube 22, and valve 23 are depressed. This depressing of the said parts 27, 22, and 23 will take place whenever a cooking utensil is placed upon the griddle support. Here it will be noted that normally the upper portion of the head 27 is above the upper surface of the griddle support. It will also be noted that there is sufficient clearance between the inner tube 22 and the outer tube 11 to permit the desired flow of gas for the main flame.

When the main burner is in action, the metal parts of the air chamber which is made up of the bottom plate 5, side plate 4, and top plate 6 will get quite hot so that the air that is drawn in through the ports 7 will be preheated. The hot air from the said chamber will pass through the openings 12 of the cup 10 and will there commingle with the gas which is delivered upward into said cup through the annular passage between the tubes 11 and 22. Inasmuch as the air is hot when it is thus commingled with the gas, the commingling will be more complete and the resulting combustion will produce a hotter flame than when cold air is used as is customary. The commingling hot air and gas will strike against the under surface of the deflecting cap 17, and being spread in all radial directions thereby will escape through the passage between the outer edge of said cap and the uppermost portion of the cup 10, and will be ignited by the pilot light which constantly burns at the small gas escape passage 28.

When a griddle, kettle, or other cooking utensil is on the griddle support, the flames will strike against the bottom thereof, and will be deflected radially outward through the space, or combustion chamber proper which is between the bottom of such utensil and the upper surface of the top plate 6. The top plate, therefore, will be made very hot and, consequently, the air coming into contact with the under surface of the said top plate before it is commingled with the gas, will be made very hot and, in fact, will be brought nearly or quite to the flashing point of the gas before it is commingled with the gas. This, as is obvious, produces the most intense combustion that it is possible to produce with the gas employed. The gas may be ordinary city gas, natural gas, or hydrocarbon vapor produced from gasoline or kerosene.

What I claim is:

1. A gas burning device comprising a utensil supporting skeleton, an air preheating chamber having a top plate located immediately below said supporting skeleton, a

commingling chamber at the central portion of said top plate, said commingling chamber having communication with said air preheating chamber, and a gas supply tube leading to said commingling chamber.

2. A gas burning device comprising an air preheating chamber having bottom, side and top plates, said top plate having a cup-like commingling chamber located at its central portion and provided with openings connecting it to the upper portion of said air preheating chamber, a deflecting cap overlying but spaced from said commingling chamber, a gas supply tube depending from said commingling chamber, and a utensil supporting skeleton supported immediately above said top plate.

3. A gas burning device comprising an air preheating chamber having bottom, side and top plates, said top plate having a cup-like commingling chamber located at its central portion and provided with openings connecting it to the upper portion of said air preheating chamber, a deflecting cap overlying but spaced from said commingling chamber, a gas supply tube depending from said commingling chamber, and a utensil supporting skeleton supported immediately above said top plate, the said top plate being corrugated and the said cup-like commingling chamber being formed integral therewith.

4. A gas burning device comprising an air preheating chamber having bottom, side and top plates, said top plate having a cup-like commingling chamber located at its central portion and provided with openings connecting it to the upper portion of said air preheating chamber, a deflecting cap overlying but spaced from said commingling chamber, a gas supply tube depending from said commingling chamber, and a utensil supporting skeleton supported immediately above said top plate, the said deflecting cap being below the upper surface of said supporting skeleton.

5. A gas burning device comprising an air preheating chamber having bottom, side and top plates, said top plate having a cup-like commingling chamber located at its central portion and provided with openings connecting it to the upper portion of said air preheating chamber, a gas supply tube leading to said commingling chamber, a deflecting cap overlying but spaced from said commingling chamber, and a utensil supporting skeleton supported immediately above said top plate, a yielding pressed valve normally closing the passage through said gas tube, said valve having a stem normally projecting above the upper surface of said supporting skeleton.

6. A gas burning device comprising an air preheating chamber having bottom, side and top plates, said top plate having a cup-

like commingling chamber located at its central portion and provided with openings connecting it to the upper portion of said air preheating chamber, a gas supply tube leading to said commingling chamber, a deflecting cap overlying but spaced from said commingling chamber, and a utensil supporting skeleton supported immediately above said top plate, a yieldingly pressed valve normally closing the passage through said gas tube, said valve having a stem normally projecting above the upper surface of said supporting skeleton, the said valve stem being in the form of a tube provided at its lower portion with a port in communication with the gas supply, and provided at its upper end with a head having a small gas escape passage affording a pilot light.

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTEN K. ERIKSTRUP.

Witnesses:

CLARA DEMAREST,
B. G. BAUMANN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."