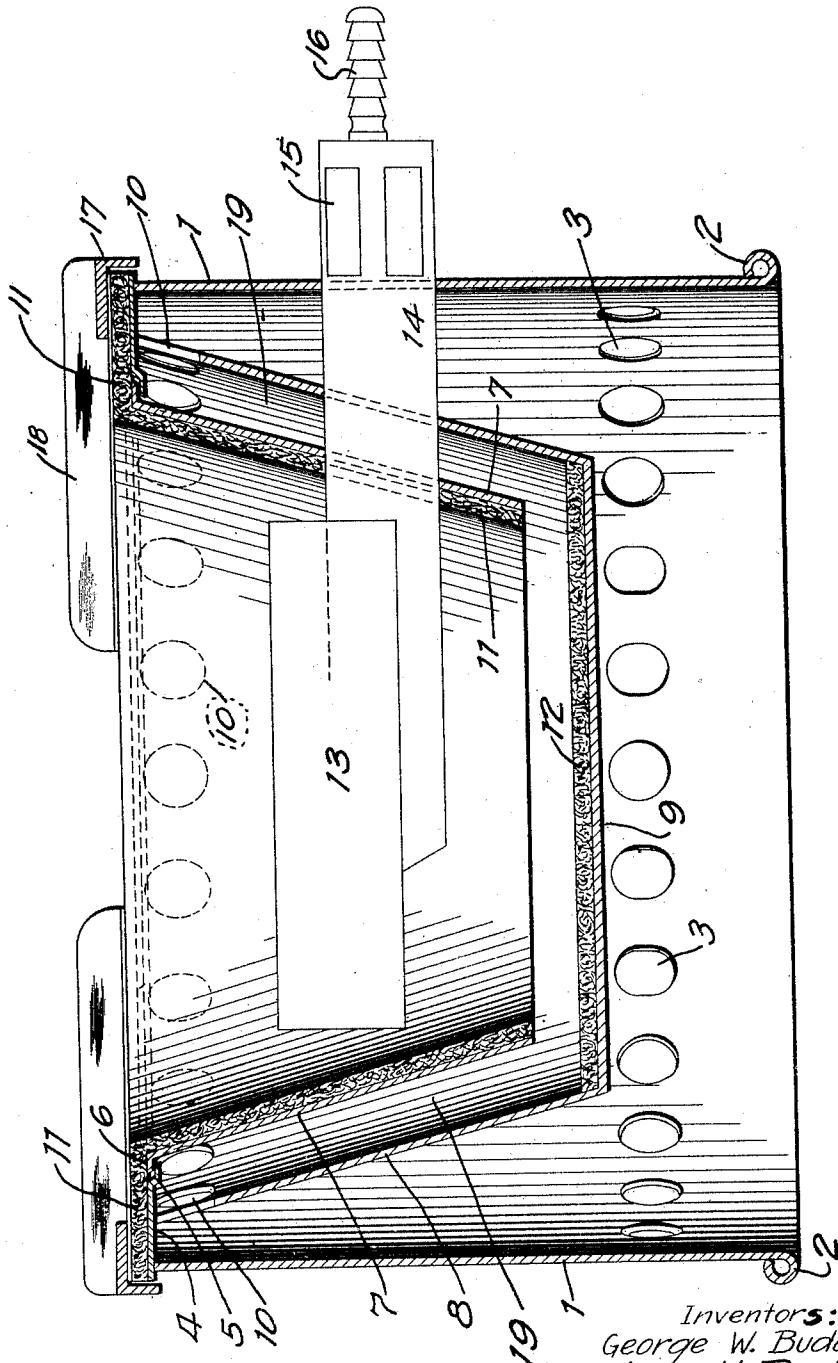


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GAS BURNER.
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UNITED STATES PATENT OFFICE.

GEORGE W. BUDDE AND CHARLES H. BUDDE, OF ST. LOUIS, MISSOURI.

GAS-BURNER.

1,367,296.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, GEORGE W. BUDDE and CHARLES H. BUDDE, citizens of the United States, residing in the city of St. Louis and State of Missouri, have invented new and useful Improvements in Gas-Burners, of which the following is a specification.

This invention relates to stoves using gas as a heating medium, and has for its broad objects to provide means for conserving the heat evolved from the gas burner, for securing theoretically complete combustion of the gas at the burner, and for utilizing heat radiated from the burner for heating the air supplied to promote combustion.

The above objects are attained by a novel construction of stove wherein the burner is surrounded by a member, preferably of, or lined with, a heat insulating material providing a combustion chamber and serving to localize the application of the flame and heat of combustion, and said member is inclosed at a distance by a second member, which provides for the passage of air in a zone exterior to the combustion chamber and then into the bottom of the same, whereby such heat as is radiated or dispersed laterally will be to a large extent utilized in heating the air thus circulating about and supplied to the combustion chamber.

Aside from the general objects above outlined, the invention has for further objects certain details of construction and combinations and arrangements of parts, all of which will be more clearly understood from the detailed description following.

The invention is illustrated in the accompanying drawing, in which the figure is a central vertical sectional view through a stove constructed according to our invention.

Referring to the drawing, the numeral 1 indicates the casing of the stove which, in its simplest form, may consist of a cylinder of any suitable metal, such as sheet iron, beaded at its bottom edge, as indicated at 2, to strengthen the structure, and being further provided at a suitable distance from its bottom edge with a series of perforations 3, to permit the entrance of air into the casing. Secured on the top of the cas-

ing 1 is an annular ring 4, which is provided with a depending annular shouldered portion 5, which is adapted to receive an annular supporting flange 6, provided at the top of a metal cone-shaped member 7, the latter being in the form of a truncated cone with its smaller end projecting into the casing 1. The numeral 8 indicates a second metal cone-shaped member, which is secured at its upper end, in any suitable manner, to the annular ring 4, and has its wall extending parallel to and at a distance from the wall of the member 7. The cone-shaped member 8 provides a chamber which is closed at its lower end by a bottom 9, which extends parallel with, and at a distance from the lower open end of the member 7, and at a suitable distance above the circular row of apertures 3 in the wall of the casing 1. The cone-shaped member 8, as will be seen, provides a chamber, and this chamber is provided at its upper end, adjacent to the ring 4, with a circular series of apertures 10, for the admission of air. Supported on the top of the annular ring 7, and extending into and covering the entire inner surface of the wall of the member 7, is a layer of asbestos 11. A similar layer of asbestos, 12, is supported on the bottom 9 of the chamber 8. The numeral 13 indicates the gas burner, which is of the usual, or any preferred construction, being attached to a supply pipe 14 provided with air ports 15 and a nipple 16, to which latter a rubber or other tube may be connected for supplying gas to the burner. On the top of the stove there is provided the usual grid 17, comprising a circular series of radially disposed ribs 18, as will be understood.

In operation, the gas at the burner 13 being ignited, air will be drawn into the casing 1 through the openings 3, and passing upward in the casing and then through the openings 10 in member 8 will pass down in the space 19 between the walls of the two members 7 and 8 and enter the former at the bottom, supplying oxygen to the ignited gas to promote and secure complete combustion thereof. This is the more necessary as, when a vessel such as a pot, or skillet, is placed on the grid 17, the combustion cham-

ber provided by the member 7 is, to a large extent, inclosed, and the ignited gas would otherwise be prevented from having the necessary amount of air supplied thereto to secure proper combustion. In its passage downward around the member 7 the air supplied to the combustion chamber will be highly heated, and thus enter the combustion chamber in the best condition to promote combustion of the gas at the burner. In this way we not only utilize the radiated heat for heating the air, but this heat is, in effect, reapplied for the purpose of heating.

By inclosing the burner in the member 7, which in turn is covered with asbestos to prevent in large measure the radiation of heat, we provide that the effective heat generated by the burner is greatly increased, not only by restricting radiation, but by localizing the application of the flame and heat to the object to be heated, and thereby preventing the lateral dispersion both of the flame and heat, as occurs in the use of ordinary gas burners used in the open. However, notwithstanding the use of asbestos, the intense heat of combustion raises the temperature of the asbestos and of the member 7 to a very high degree; but, as explained above, the resultant heat which is radiated from the exterior of the member 7, will be utilized in heating the incoming air admitted through the opening 10, so that such heat is not lost, but is largely returned in the form of heated air to the combustion chamber.

The layer or sheet of asbestos 12 serves as a heat insulating and refracting medium, to cause the heat, which would otherwise radiate from the bottom 9, to be deflected back into the combustion chamber.

It will be understood, of course, that after operating for a little while even the casing 1 will be heated to some degree, as well as the member 8, so that the air will begin to be heated as soon as it enters the openings 3, and will be further heated in its passage upward in contact with the wall of the chamber 8 to the openings 10.

We have found, in practice, that a burner constructed as we have herein shown and described, produces a very high degree of heat as compared with the ordinary gas burner in common use; and, by localizing the application of the flame of the burner, without thereby lowering the degree of combustion of the gas, but, on the contrary, increasing it; and, further, by localizing, that is preventing lateral dispersion of, the heat and flame, a given quantity of material, such as water, for example, may with our burner be brought to a given temperature with much more rapidity than with the same burner, using the same flow of gas, but not provided with our improvement; or, which amounts to the same thing, the water can be brought

to boil at the same time with our stove as in the use of the ordinary burner, but with a greatly reduced consumption of gas.

We have shown our invention as embodied in a single-burner, portable stove; but it will be understood that the same may be utilized in the construction and operation of a gas range employing any desired number of burners,

While we have shown and described the members 7 and 8 as being cone-shaped, we do not wish to be limited to this particular shape, as it is perfectly obvious, without illustration that the same could be in the form of cylinders, or that they could be elliptical or even rectangular in cross-section without in any manner departing from the purpose of the invention.

We claim:—

1. A stove comprising a gas burner, a conical member surrounding said burner and open at the top and bottom, a second conical member inclosing said first member at a distance therefrom and provided with air inlets at its top, whereby air may pass into said inlets and downward in the space between said members and into said first-named member; said members terminating in substantially the same plane at the top of the device.

2. A stove comprising a gas burner, a heat insulating member surrounding said burner and open at the top and bottom, a second member inclosing said first-named member at a distance therefrom, and terminating in substantially the same plane at the top of the device and provided with air inlets at its top, and a heat insulating medium supported on the bottom of said latter member.

3. A stove comprising a cylindrical casing provided toward its bottom with air inlets, a gas burner located within said casing, a conical member surrounding said burner, and a second conical member inclosing said first-named member at a distance therefrom and provided with air inlets at its top, said casing and members terminating in substantially the same plane at the top of the device.

4. A stove comprising a casing provided toward its bottom with air inlets, a gas burner located within said casing, a member supported from said casing and surrounding said burner, and a second member also supported from said casing and inclosing said first-named member at a distance therefrom and provided with air inlets at its top, said casing and members terminating in substantially the same plane at the top of the device.

5. A stove comprising a casing supporting a grid and provided with air inlets toward its bottom, a gas burner located within said casing beneath said grid, a mem-

ber supported by said casing and surround-
ing said burner and being open at the top
and bottom, and a second member also sup-
ported from said casing and inclosing said
5 first-named member at a distance therefrom
and being provided with air inlets at its
top, said casing and members terminating

in substantially the same plane at the top
of the device.

In testimony whereof we have hereunto 10
set our hands.

GEORGE W. BUDDE.
CHARLES H. BUDDE.