Sept. 14, 1926. 1,599,412

A. M. GOLDSTONE

COMBINED OIL AND GAS BURNING HEATER

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Fig. 1.

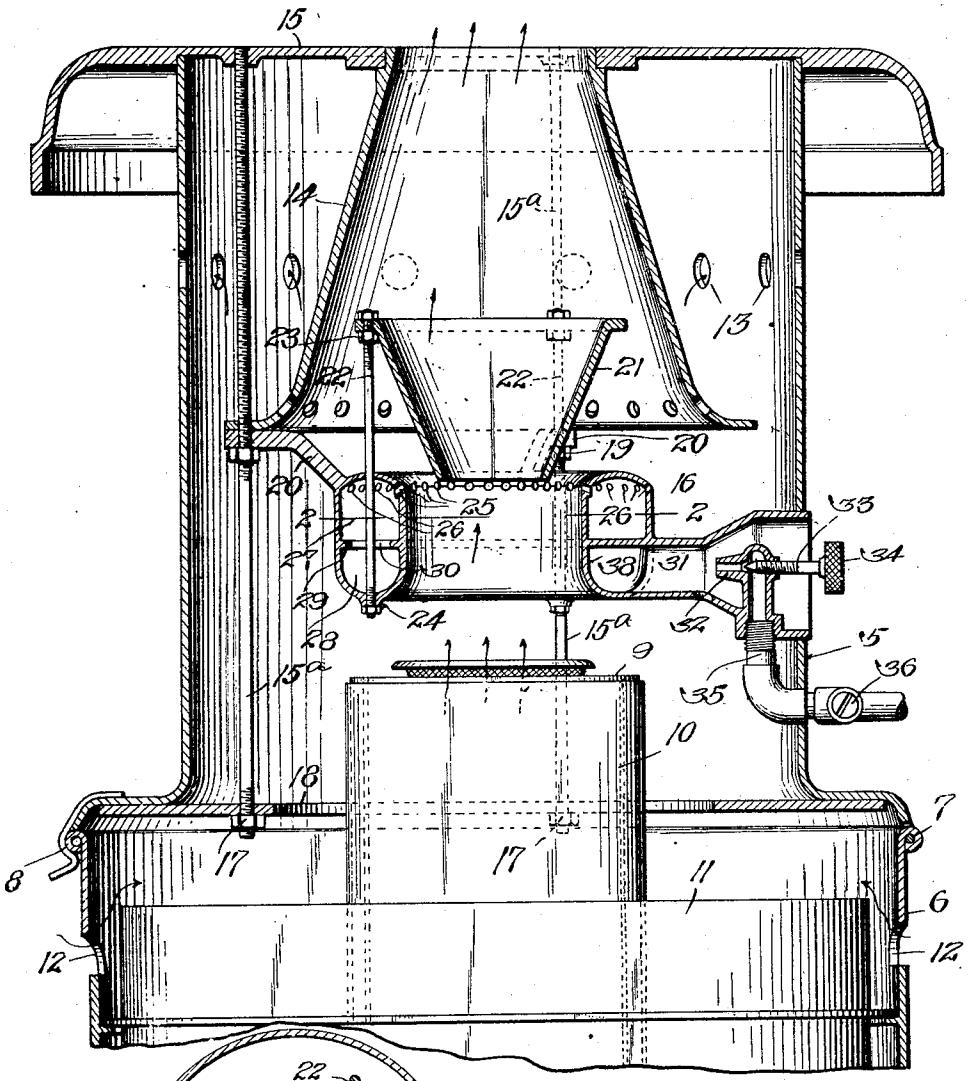
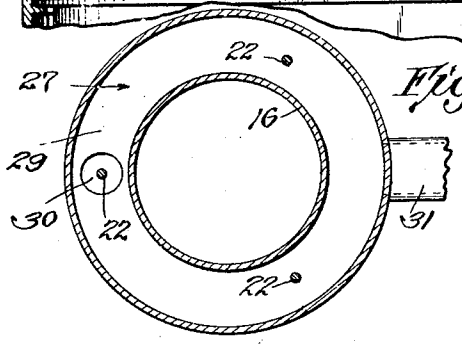


Fig. 2.



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UNITED STATES PATENT OFFICE.

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COMBINED OIL AND GAS BURNING HEATER.

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This invention relates to heating stoves, and especially to a combined oil and gas burning heater.

One object of the invention is to provide an improved heater that is capable of being used as either an oil-burning heater, a gas-burning heater, or a duplex heater that burns both gas and oil simultaneously in the same radiating casing or stove-body, thereby providing a wide variation of temperatures to suit the atmospheric temperatures or weather temperatures, also providing a gas-burner with a pre-heating oil-burner to facilitate a more thorough combustion of the gas as it escapes from the burner.

Another object is to provide an improved stove embodying the "truncated cone flue" shown and described in my recent U. S. Patent No. 1,510,052, in connection with a similar but smaller and inverted truncated cone deflector and flue-element, and in connection with an annular burner which is also a flue-element.

Another object is to provide a stove of this character that is exceedingly free from danger of the escaping gas, by the provision of a hinge-jointed metal feeding tube, thereby eliminating rubber tubing (or other flexible tubing which quickly deteriorates and breaks when overheated) from a close connection with the burner.

Another object is to provide a stove of this character having both burners in position for easy access for cleaning, and in which the gas-burner does not interfere with the trimming of the wick of the oil-burner, nor with the filling of the oil-tank which is removable in the same manner that such tanks are removable from the casings of the well known type of oil-heaters.

Another object is to provide an improved form of gas-burner in which the gas and air are thoroughly mixed before passing to the flame.

Other objects and important features are pointed out or implied in the following details of description, in connection with the accompanying drawings in which:

Fig. 1 is a central vertical sectional view through the main part of the stove, the lower part being broken away and omitted. Fig. 2 is a horizontal sectional view of the gas burner, the section being in the plane indicated by line 2—2 of Fig. 1, the entrance channel being broken off.

Referring to these drawings in detail, in which, similar reference characters refer to similar parts in both views: The stove-body is of a well known type consisting of two substantially cylindrical hollow parts 5 and 6 hinged to one another at 7 and provided with a catch 8 which holds these upper and lower sections in the normal closed relation, but permits them to be swung on their hinge to permit access to the burners, for cleaning them and for trimming the wick of the oil-burner 10 on an oil-tank the top of which is shown at 11. The body-member 6 has any appropriate number of air inlets 12, and the body-member 5 has air-outlets 13 around the main flue-member 14 which is the hollow "truncated cone flue" previously mentioned. This flue-member is fixed in a central opening of the stove-top 15, and this top is preferably secured on the upper end of the body-member 5 by means of two or more threaded rods 15^a and their nuts 17, the latter engaging with the lower surface of an anchoring plate 18 having openings through which these rods 15^a extend from the stove-top or cover.

The burner 10 is cylindrical and concentric or co-axial with the cylindrical members 5 and 6, the truncated cone flue 14 is in axial alinement with the oil burner 10, and the gas burner 16 is annular and in axial alinement with the oil burner and truncated cone flue, being between these members. It is supported in place by the rods 15^a in conjunction with nuts 19, apertured arms 29 being provided on the upper part of the burner for receiving the rods 15^a and engaging with the nuts 19 in such relation that these several parts also support the truncated cone flue by keeping it pressed firmly in the central opening in the stove-top 15. This feature is an improvement over my prior patent (above mentioned), in that it eliminates the comparatively expensive means to secure the cone-flue to the stove-top.

At a central or co-axial position with respect to the gas burner and the main flue-member 14, the inverted truncated cone 21 is supported by two or more threaded rods 22 and their nuts 23, these rods being threaded into the burner 16, as indicated at 24. The lower end of the hollow truncated cone 21 is within the central opening of the gas-burner, in position to receive (on its outer surface) the flame from an annular series of gas-outlets 25 and to deflect or spread the flame while radiating heat therefrom. The

upper end of this member 21 is within the lower end of the main or larger truncated cone-flue, so the latter receives (against its inner surface) the heated air and the radiated heat from the outer surface of the member 21, and this intensifies the heat (of the truncated cone-flue 14) beyond the degree of heat in a construction where the flame is not spread outward. The lower part of the flue-member 14 is in position to receive the flame from an outer annular series of gas-outlets 26, and this further intensifies the heat of the flue-member 14. The outward radiation of heat from the relatively heavy or thick wall of the member 14 heats the air in the annular space around this member, and such heated air passes out in all horizontal directions through the air-outlets 13.

While part of the draught enters through the openings 12, a part of it enters through the central opening of the burner 10 and tank 11, which members are of a well known type and need no further description. The air that passes straight up from the burner 10, through the members 16, 21 and 14, is not so intensely heated as the air that passes out horizontally through the openings 13, but attains sufficient force and velocity to drive it above the more intensely heated air; so there follows a tendency of this lesser-heated air to descend through the greater-heated ascending air, resulting in an even distribution of temperature in the room being heated with this heater, in contradistinction to the usual previously known heaters which send the volume of greater-heated air straight up to the ceiling of the room, and there it tends to remain while the lower and colder air has an equal tendency to remain at the lower part of the room.

The novel form of gas burner here shown is particularly useful in the relation specified, but is susceptible of other uses and in other relations and combinations. This burner comprises two annular chambers or passages 27 and 28 separated by a partition 29 having an opening 30 through one side. An inlet or tubular passage 31 is at the diametrically opposite side from the opening 30, and the outer end of this passage is outwardly flared to accommodate a needle-valve-case 32 having a threaded needle 33 therein and provided with a screw-head 34 outside of the stove-body and adapted to be manipulated for adjusting the needle-valve. The needle-valve-casing communicates with a gas-pipe 35 which may extend out through an opening in the wall of the body-member 5 and have a hinge-joint at 36. This gas-pipe is of metal and has its outer end at such distance, from the flames and heat of the burners, that such outer end may have a rubber gas-tube (not shown) secured thereto without danger of over-heating the rubber gas-tube. The hinge-joint 36 may be of the form used in connection with wall-fixtures for gas-lights, or of any appropriate form, or may be omitted.

When the gas from the needle-valve-casing enters the lower passage 28, it strikes the opposing wall at 38 and is thereby divided and spread, so part of it goes on one side of the inner annular wall, and the other part goes on the other side of this wall, these divided streams of gas meeting at the opening 30. Air is sucked in through the space around the needle-valve-casing and comes into contact with the divided and spread gas (from the point 38) and begins to thoroughly mix with the gas which has thus been spread to facilitate the mixing or carbureting. The outer annular wall of the passage 28 continually changes the direction of flow of the mixture, thus retarding the flow and agitating the mixture and thereby more and more evenly distributing the gas throughout the volume of air. If the burner 10 is lighted, it preheats the mixture of air and gas before it passes through the opening 30 into the distributing chamber or passage 27 from which it passes to and through the outlets 25 and 26.

It will be seen that I have provided a very convenient, efficient, thoroughly practical and comparatively low-cost heating stove, according to the construction here shown; but it is to be understood that I do not limit my patent protection to the exact details here described and shown; for I may make numerous changes within the scope of the inventive ideas.

What I claim as my invention is:

1. A stove including an upper body-member, a lower body-member, these body-members being joined to one another by means that permits their joint to be opened for gaining access to their interior, an oil-tank and oil burner in said lower body-member, and a gas burner in and secured to the upper body-member in position to be preheated by said oil burner.

2. In a stove, the combination of a hollow stove-body having a flue-member extending through its top, a burner under said flue-member, and a hollow inverted truncated cone having its main part above the said burner and within the said flue-member and adapted to deflect heated air from the burner onto the inner surface of said flue-member, for the purposes specified.

3. The structure defined by claim 2, and means secured to the top of the stove and to the said burner for supporting the latter in its fixed position with respect to said flue-member.

4. The structure defined by claim 2, and rods secured to said top and to said burner in position for holding the latter and said flue-member in fixed relation to said top.

5. The structure defined by claim 2, and means on said burner for holding said inverted truncated cone in fixed relation to said flue-member.

6. The structure defined by claim 2, and a second burner under the first said burner and in position to preheat the first said burner.

7. In a stove, the combination of a hollow body-member, a stove-top thereon and having an opening therethrough, a heat-radiating flue-member fitted in said opening a burner under said flue-member, rods secured to said stove-top, means combining with said rods to hold the stove-top in place, and means on said rods for holding said flue-member in said opening and for holding said burner in fixed relation to said flue-member.

8. The structure defined by claim 7, and an upwardly flaring heat-deflector having its main part above the said burner and in position to deflect heat onto the inner surface of said flue-member, for the purposes specified.

9. The structure defined by claim 7, the said burner having an air-passage therethrough, and a hollow inverted truncated cone having an air-passage therethrough, whereby air can pass through the burner and inverted truncated cone and thence through the said flue-member for the purpose specified, and whereby heat from the burner is deflected against the inner side of the heat-radiating flue-member.

10. In a stove, the combination of a stove-body, a stove-top thereon, a heat-radiating and downwardly flared flue-member extending through said stove-top, a heat-radiating and heat-deflecting and upwardly flared flue-member in position to deflect heat from its outer surface onto the inner surface of said downwardly flared flue-member, a burner having an opening therethrough and in position to form a third flue-member and to direct its flame against the inner surface of the downwardly flared flue-member and against the outer surface of the upwardly flared flue-member, and a second burner having an opening therethrough and constituting a fourth flue-member, this second burner being under the first said burner and in position to direct its flame onto the first said burner and thereby preheat the gas in the first said burner, all of said flue members being substantially vertically alined.

In testimony whereof I affix my signature.

ABRAHAM M. GOLDSTONE.