July 22, 1924. 1,502,601

G. VAN BALLEGOOIJEN

HEATER

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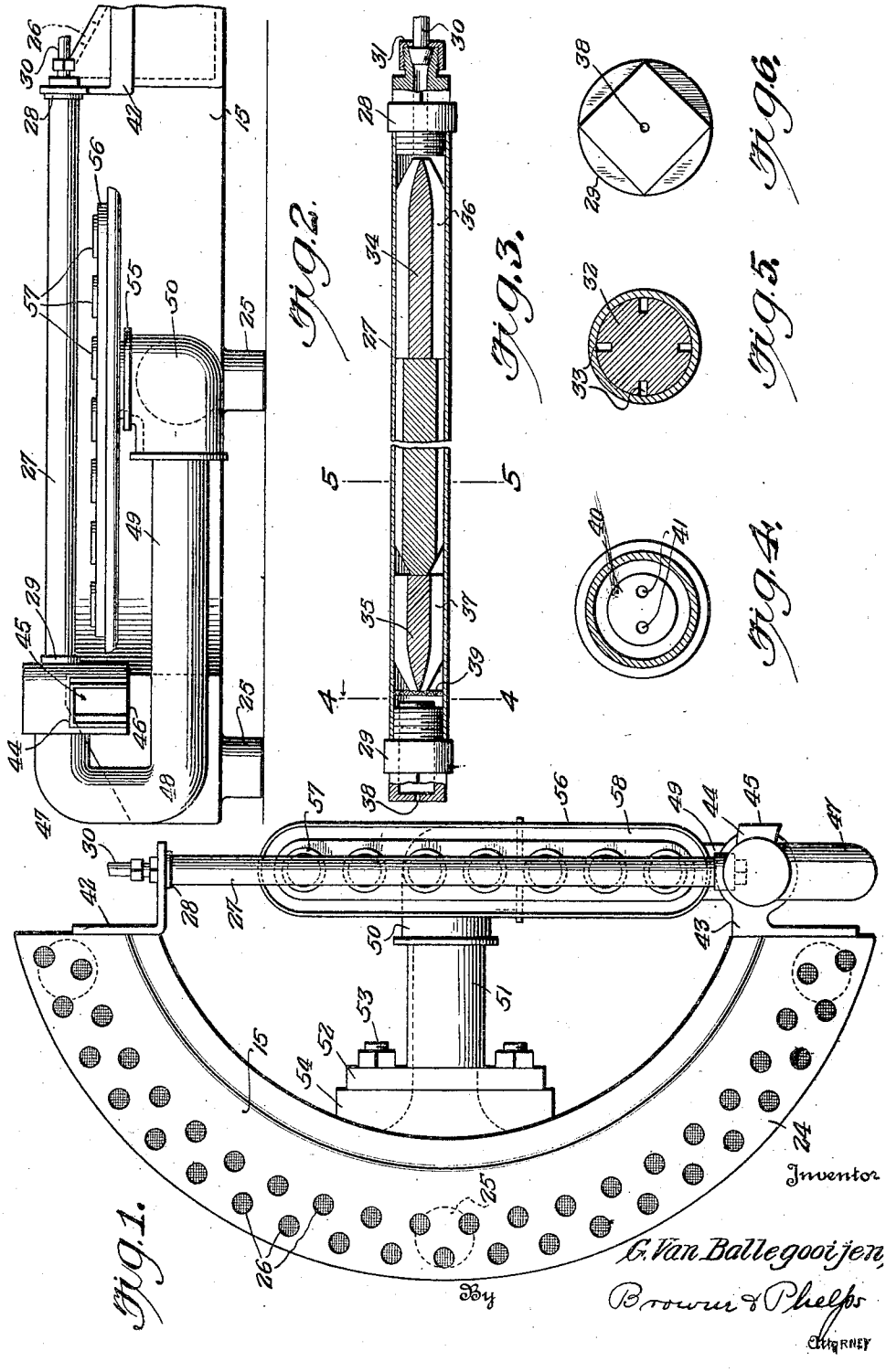


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Inventor

G. Van Ballegooijen,

By Brown & Phelps

Attorney

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UNITED STATES PATENT OFFICE.

GEORGE VAN BALLEGOOIJEN, OF ZION, ILLINOIS.

HEATER.

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To all whom it may concern:

Be it known that I, GEORGE VAN BALLEGOOIJEN, a citizen of the United States, residing at Zion, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Heaters, of which the following is a specification.

The invention relates to heaters, and has as an object the provision of a device for heating apartments utilizing oil as a fuel. A further object of the invention is the provision of a heater, using oil as a fuel which will heat the apartment without vitiating the air therein by products of combustion.

An illustrative embodiment of the invention is shown in the accompanying drawings, in which—

Fig. 1 is a plan view of a complete burner.

Fig. 2 is an elevation of a burner, partly broken away, seen from the right of Fig. 3.

Fig. 3 is a detail central vertical section on an enlarged scale of the retort provided by the invention.

Figs. 4 and 5 are detail transverse sections upon a further enlarged scale, taken on lines 6, 6 and 7, 7 of Fig. 3.

Fig. 6 is an end view upon an enlarged scale of the retort of Fig. 3.

The burners provided by the invention are each shown as comprising a segmental shell 24 supported upon feet 25, preferably cast integral with the shell from such material as cast iron. To permit the escape of flame from the burner 24, there is shown a plurality of openings 26, preferably provided with coverings of screen, of material adapted to withstand the heating effect of the flame, the screen having the effect of preventing the striking back of the flame into the interior of the shell.

To generate a gas for burning, there is shown a retort 27 comprising a tubular member closed at its ends by plugs 28, 29. Oil for fuel may be conducted to the retort by means of a pipe 30 shown as connected to the plug 28 by means of a well known form of joint 31. Within the tubular member 27 there is shown a stick 32 of carbon, having channels 33 longitudinally formed in its surface, the stick 32 having a diameter substantially equal to the internal diameter of the tube 27. To hold the carbon 31 in position there are shown plugs 34, 35, preferably of a metal such as brass, said plugs also being provided with longitudinal channels 36, 37 in their surfaces.

The channels 36 are adapted to permit a free flow of oil to the carbon 32, and the channels 33 therein conduct the oil to all portions of the carbon, the carbon being porous to some extent will have its body soaked with the oil, and being heated to a high temperature will subject the mass of the oil absorbed thereby to a very powerful heating effect throughout the mass in a finely divided condition, thereby generating gas with great efficiency. The effects secured by the structure of the invention seem to indicate that there is a catalytic action of some nature by the heated carbon upon the oil to produce a gas which burns with great efficiency and apparently gasifies the fuel more thoroughly than plain heating, as in former devices, or than in heating in connection with carbon in devices wherein the carbon is a mere lining within the retort tube.

The thus formed gas is allowed to pass to the outlet of the burner by means of the channels 37 in the passage 35. To avoid stoppage of the minute opening 38 in the plug 29 through which the gas escapes, a screen 39 is shown beyond the plug 35. To prevent undue motion of the screen 39 by impact of the plug 35, there is provided a plug 40 screwing into the internally threaded opening, through plug 29, which plug 40 is shown as provided with openings 41 for passage of gas to the outlet 38.

The retort 27 is shown as supported at its intake end by means of a clip 42 secured to one end of the segmental casing 24, and by means of a hollow casting 43 secured to the opposite end of the casing 24, the retort 27 being located in an opening in the casing 43 to deliver gas to the interior of the casting. To admit air into the interior of the casing 43 for mixture with the gas to provide a combustible gaseous mixture, there is shown an air intake 44, open at its outer side 45 and at its bottom 46, as indicated particularly in Fig. 4. As indicated in Fig. 2, the open ends 45 of the two burners 15, 16, which are formed to mate, right and left, are in register when the burners are assembled with the casing, and therefore the air enters only through the open bottom 46

of the two air inlets 44. The combined air and gas is conducted downwardly through an elbow 47 and through an elbow 48 and tube 49, back to the approximate center of the burner where a three-way elbow 50 is situated. One opening in the elbow 50 connects with the tube 49. A second opening connects with a tube 51, which terminates in a casting 52, adapted to be bolted as by means of stud bolts 53 to a boss 54 formed upon the casting 24, the boss 54 and casting 52 having passages formed therethrough to conduct the mixture to the interior of the casing 24.

The third opening on the elbow 50 is shown as connected to a collar 55 connecting the interior of a hollow casing 56 extending longitudinally under the retort 27. A plurality of perforated bosses 57 are shown upon the upper portion of the shell 56, through which a portion of the combustible mixture may escape and being ignited may apply heat to the retort 27 for generation of gas.

To start the action of the burner, a channel 58 is shown surrounding the shell 56, into which channel alcohol or gasoline may be poured and ignited to provide the initial heat to start the burner into action.

The oil conduit 30 may, if desired, be carried out through the opening 17 in the bottom of the drum 10, or, if preferred, other openings, not shown, may be formed in the wall of the casing 10 for their passage. By opening the doors 21, 22 access may be secured to the burners for the placing of the material in the channels 58 for lighting of the burners.

Minor changes may be made in the physical embodiment of the invention without departing from its spirit.

I claim:

1. A liquid fuel burner comprising, in combination, a tubular generator, a stick of compressed carbon, said carbon having longitudinal channels in its surface to conduct fuel to all portions thereof, and means for applying continuous heat to said tube while the burner is in operation.

2. A liquid fuel burner comprising, in combination, a tubular retort, a stick of compressed carbon in said retort having a diameter substantially equal to the internal diameter of said retort, said carbon having a plurality of longitudinal channels in its surface, a metallic plug in said retort at each end of said carbon, each plug having a longitudinal channel in its surface for passage of fuel.

3. A liquid fuel burner comprising in combination, an arc shaped shell, a conduit communicating with said shell adjacent the central portion of its concave side, a retort supported from the ends of said shell and subtending the arc, a retort heating burner comprising a shell underlying said retort and having burner openings and a communication with said conduit, a mixing chamber at the end of said conduit, said mixing chamber having an inlet for air and an opening receiving the jet from said retort, said arcuate shell having burner openings.

GEORGE VAN BALLEGOOIJEN.