Nov. 1, 1932. J. L. BREESE, JR 1,885,891

HEATER

Filed Nov. 7, 1930 2 Sheets-Sheet 1

Fig. 1.

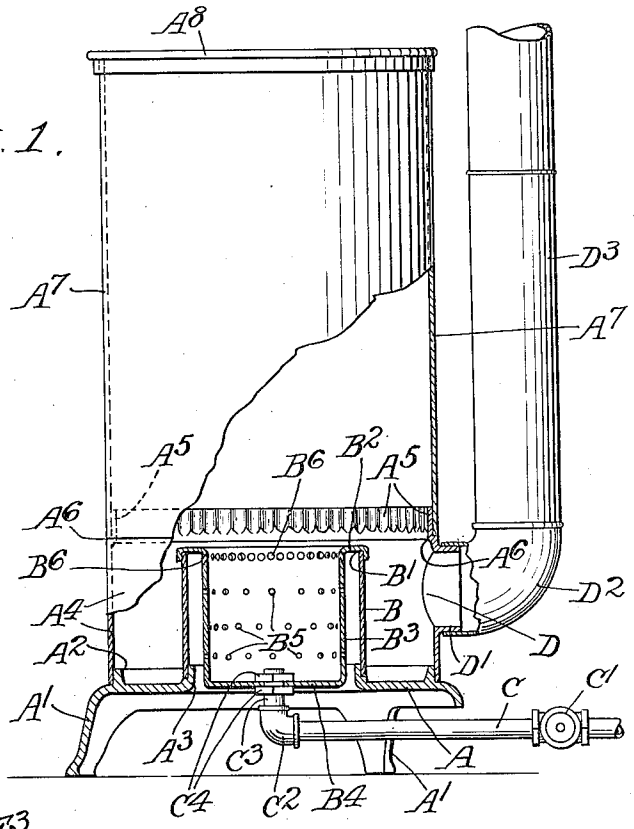


Fig. 2.

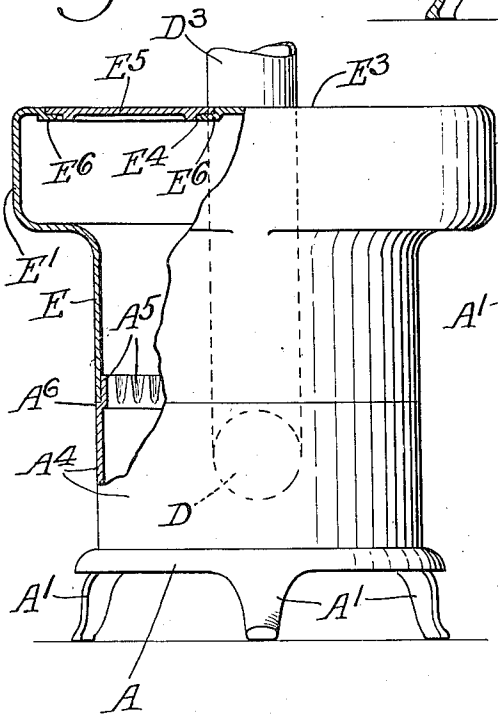
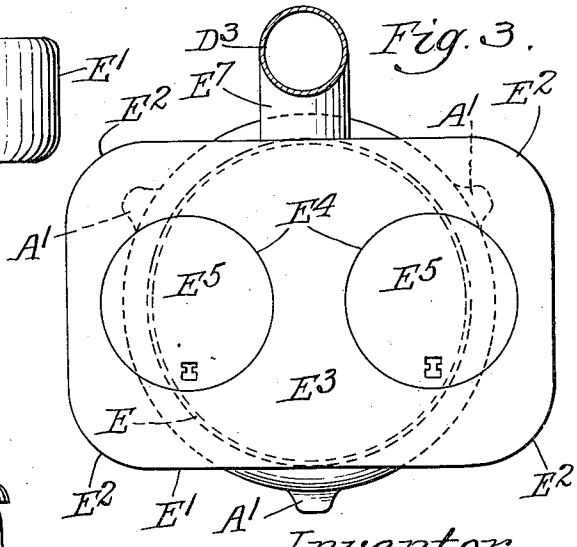


Fig. 3.



Inventor
James L. Breese Jr.
by Parker & Carter
Attorneys.

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Fig. 4.

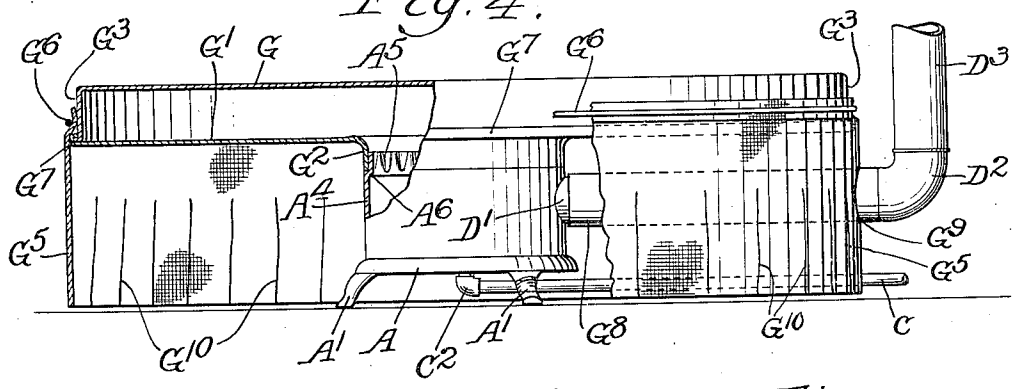


Fig. 5.

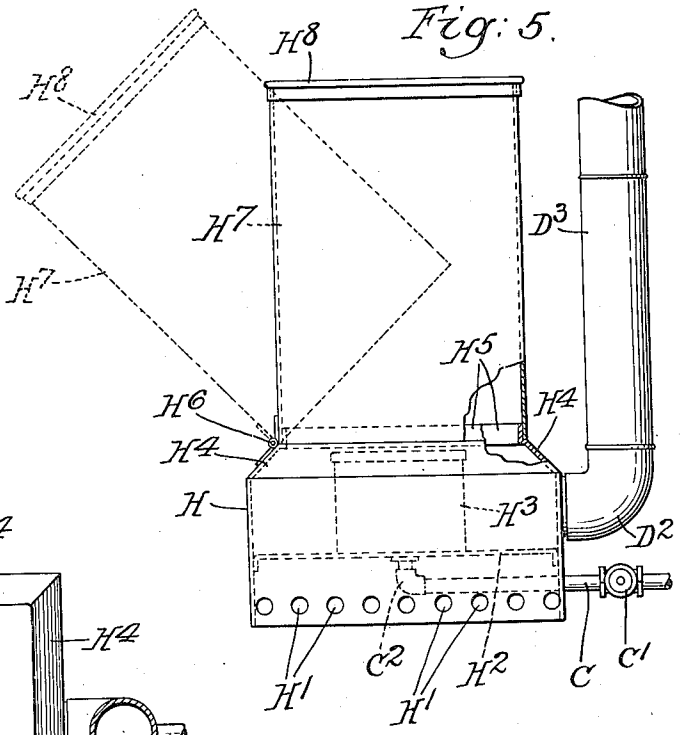
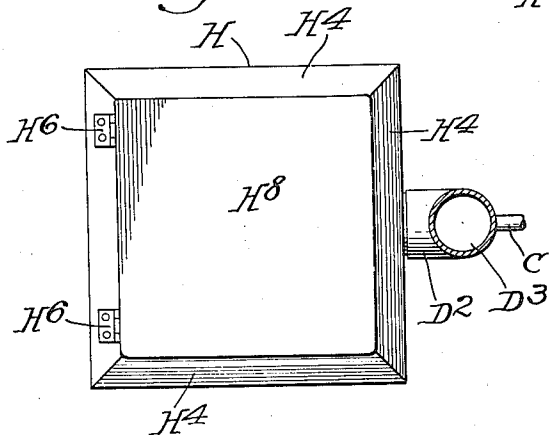


Fig. 6.



Inventor
James L. Breese Jr.
by Parker & Carter
Attorneys.

Patented Nov. 1, 1932 1,885,891

UNITED STATES PATENT OFFICE

JAMES L. BREESE, JR., OF SANTA FE, NEW MEXICO, ASSIGNOR TO OIL DEVICES CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

HEATER

Application filed November 7, 1930. Serial No. 493,938.

My invention relates to stoves or heaters and has for one object the provision of a stove in which a base or burner portion may be employed with a readily accessible mixing chamber or firepot. Another object is the provision of means for readily and quickly demounting the stove, wholly or partly. Another object is the provision of a stove having separable combustion and radiation portions. Another object is the provision of a stove or heater having reversible or interchangeable radiation or heating portions. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation with parts in section;

Figure 2 is a similar view of a variant form of my device;

Figure 3 is a plan view of the structure shown in Figure 2;

Figure 4 is a side elevation with parts in section, a further modification of my device;

Figure 5 is a similar view of a further modification; and

Figure 6 is a plan view of the structure shown in Figure 5.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring first to Figure 1, A generally indicates a bottom portion having the legs or supports A^1. The bottom and legs are in Figure 1 shown as integrally formed, although I do not wish to be specifically so limited. Upwardly projecting from the bottom A is an outer circular rim or flange A^2 and an inner rim or flange A^3. Press-fitted about the outer flange A^2, and conforming to its cylindrical outer surface, is an outer wall or housing member A^4. It is inwardly reduced, about its upper edge, as at A^5, with a consequent shoulder A^6. A^7 indicates a radiation member which may be slidably mounted upon the reduced portion A^5, with its lower edge abutting against the shoulder A^6. A^8 is any suitable top or closure for the member A^7.

Mounted about the flange A^3 is the wall or partition member B, herein shown as cylindrical. Resting upon its upper edge, as at B^1, is the ring B^2, from which depends the inner wall B^3, the bottom of which is closed as by the bottom B^4. The wall B^3 is formed with a plurality of primary air apertures B^5. About the upper edge of the wall B^3 are the secondary air apertures B^6, which may be upwardly and inwardly inclined.

C indicates a fuel line, which may be controlled as by the valve C^1. It communicates with an elbow C^2, whence extends a line C^3 which passes upwardly through the bottom B^4, its upper end terminating somewhat above said bottom. C^4 C^4 indicate spacing nuts or the like, which may be screwthreaded upon the line or pipe C^3, and which serve to lock it adjustably in relation to the bottom B^4.

D is a flue aperture formed in the side of the member A^4, and surrounded by a tubular flange D^1, to which may be secured the elbow D^2, in communication with the flue pipe or chimney D^3.

Referring to Figures 2 and 3 I illustrate a variant form of radiation member which includes the cylindrical lower portion E and the generally rectangular upward extension or expansion E^1 herein shown as having rounded corners E^2. The flat top E^3 of the portion E^1 may be provided with apertures E^4 in which may be seated removable covers E^5 resting upon the circumferential rims or lips E^6. In the form of Figure 2 the elbow D^2 may be laterally extended somewhat if necessary, as at E^7, in order to permit variation in size of the member E^1.

Referring to Figure 4 I illustrate a further variation of radiation member applicable to a base like or substantially like that shown in Figures 1 and 2. I illustrate therein a radiation member having a flat top G of diameter greatly exceeding that of the base. The lower wall G^1 is provided with a central downwardly extending flange G^2 which conforms closely to the portion A^5 of the member A^4, and seats on the shoulder A^6. G^3 is a circumferential wall, herein shown as cylindrical, joining the top and bottom mem-

bers G and G^1. G^5 is any suitable apron, of a diameter substantially that of the member G^3, and secured thereto, for example by the circumferential tension member G^6, the member G^3 being provided, at its junction with the member G^1, with a slight lateral enlargement G^7. A laterally extended flue member G^8 is necessary, which passes through the member G^5, as at G^9, to communicate with the elbow D^2 and flue D^3. The member G^5 may be of fabric, slit for example as at G^{10} G^{10}, for use as a brooder or hover, for young chicks, the chickens passing freely in through the slits, and enjoying the warmth within.

Referring to the form of Figures 5 and 6 I illustrate a somewhat different form of base which includes for example a rectangular base wall H apertured for air admission as at H^1. Upon any suitable bottom or frame or supporting means H^2 is positioned a mixing chamber generally indicated at H^3 which may be identical with the mixing chamber shown in the earlier views. The wall H is herein shown as terminating in an inwardly inclined portion H^4 with an upstanding flange H^5 thereabout. Hinged to the portion H^4, as at H^6, is the radiation member H^7, with its top H^8.

It will be realized that whereas I have described and shown a practical and operative device, nevertheless many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as in a broad sense illustrative and diagrammatic rather than as limiting me to my specific showing.

The use and operation of my invention are as follows:

I find it desirable to provide a burner or heater or stove in which the combustion chamber or fuel chamber or mixing chamber is readily accessible. I have shown my invention in connection with a fluid hydrocarbon burner, in which a liquid hydrocarbon is supplied, as along the line C, to the bottom of a chamber formed by the wall B^3 and the bottom B^4. The liquid hydrocarbon is gasified or vaporized in response to the heat of combustion above it, and as it rises it is mixed with a primary air supply entering through the apertures B^5. This preliminary mixture then receives a secondary air supply through the apertures B^6, and burns off at or above the top of the mixing chamber so formed, preferably largely above it. Heat is radiated from the radiating member A^7 H^7 or the like. The flue, however, is associated with the base and lies in the general level of the mixing chamber. Thus the heated products of combustion are trapped in the radiation member and do not escape through the flue until they have sufficiently lost their heat to circulate downwardly through the level of the flue. The result is a very economical and efficient use of the heated products of combustion, and in practice the flue D^3 is relatively cold, as compared to the hot and often overheated flue of a heating unit where a flue is employed in the direct upward line of movement of the heated products of combustion. A further and very important advantage of my device is the ready accessibility to the mixing chamber. Thus in the forms of Figures 1 to 4 the radiation member may easily be slipped upwardly about and off of the flange A^5, and in the form of Figures 5 and 6 the radiation member may be moved on its hinge H^6, in order to permit ready access to the mixing chamber, which may be cleaned, repaired, or the like. Not only is such a disposition advantageous in the use of the device, but it is highly advantageous in manufacture and assembly and in shipping. Thus a standard base may be employed, to which may be applied a considerable variety of different radiation members, which may vary widely in size and shape and function. The same user may, if desired, have two or more different radiation members which he can apply selectively to a single base. Thus the base shown in Figure 1 may be employed with a garage heater in winter. It may be converted into a laundry stove by the application of the radiation member E, shown in Figure 2. It may be converted into a brooder or hover by application of the members shown in Figure 4.

Whereas I have shown my invention as applied to a hydrocarbon burner, it is clear that it may also be employed with burners burning other fuels and I do not wish to be limited to its use with a hydrocarbon burner, except to the extent that I so limit myself in my claims.

I claim:

1. In a burner, a base, a mixing chamber mounted upon said base and having air inlet means, means for delivering a fluid fuel to said mixing chamber for mixture with the air, a drum mounted upon said base and surrounding said mixing chamber, a flue mounted upon said drum and in communication with the space between said drum and mixing chamber, the connection between drum and flue being below the upper edge of said drum, and a radiation member movably mounted upon said drum, the interior of said radiation member being in communication with the space within the mixing chamber and with the space between mixing chamber and drum.

2. In a burner, a base, a mixing chamber mounted upon said base and having air inlet means, means for delivering a fluid fuel to said mixing chamber for mixture with the air, a drum mounted upon said base and sur-

rounding said mixing chamber, a flue mounted upon said drum and in communication with the space between said drum and mixing chamber, the connection between drum and flue being below the upper edge of said drum, and a radiation member removably mounted upon said drum, the interior of said radiation member being in communication with the space within the mixing chamber and with the space between mixing chamber and drum.

3. In a burner, a base, a mixing chamber mounted upon said base and having air inlet means, means for delivering a fluid fuel to said mixing chamber for mixture with the air, a drum mounted upon said base and surrounding said mixing chamber, a flue mounted upon said drum and in communication with the space between said drum and mixing chamber, the connection between drum and flue being below the upper edge of said drum, and a radiation member hinged upon said drum, the interior of said radiation member being in communication with the space within the mixing chamber and with the space between mixing chamber and drum.

4. In a burner, a base, a mixing chamber mounted upon said base and having air inlet means, means for delivering a fluid fuel to said mixing chamber for mixture with the air, a drum mounted upon said base and surrounding said mixing chamber, a flue mounted upon said drum and in communication with the space between said drum and mixing chamber, the connection between drum and flue being below the upper edge of said drum, and a radiation member movably mounted upon said drum, the opposed portions of radiation member and drum being formed to permit a ready slip fit, the radiation member being slidably removable from the drum, the drum including a portion adapted to underly and support the lower edge of the radiation member, the interior of said radiation member being in communication with the space within the mixing chamber and with the space between mixing chamber and drum.

5. In a burner, a base, a mixing chamber mounted upon said base and having air inlet means, means for delivering a fluid fuel to said mixing chamber for mixture with the air, a drum mounted upon said base and surrounding said mixing chamber, a flue mounted upon said drum and in communication with the space between said drum and mixing chamber, the connection between drum and flue being below the upper edge of said drum, the drum being provided with supporting means adapted to receive, selectively, a plurality of radiating members of different form, the interior of each such radiation member being in communication with the space within the mixing chamber and with the space between chamber and drum.

6. In a burner, a base, an open topped mixing chamber mounted upon said base and having air inlet means positioned below the upper edge of the chamber, means for delivering a fluid fuel to said mixing chamber, a drum surrounding said mixing chamber, the base including a bottom closure connecting said drum with a wall of said mixing chamber, a flue mounted upon said drum, the connection between drum and flue being below the upper edge of said drum, and a radiation member removably positioned upon said drum, the interior of said radiation member being in communication with the space within the mixing chamber with the space between mixing chamber and the drum.

7. In a device for burning fluid hydrocarbons, a base, an open topped chamber supported upon said base, means associated with the base for supplying fluid hydro-carbon fuel to said mixing chamber, means for supplying primary and secondary air for mixture with the fuel in the mixing chamber, a flue, mounted upon the base, adapted to carry off the exhaust gases of combustion, and a closed radiation member movably positioned upon the base the interior of said member being in communication with and overlying the interior of the mixing chamber, and being in communication with the flue, the connection between flue and base being located exteriorly of the mixing chamber and at a level below the level of connection between base and radiation member.

8. In a burner, a base, a mixing chamber mounted upon the base, means for supplying air to said mixing chamber, means for supplying a fluid hydro-carbon to said mixing chamber, a flue mounted upon said base, in communication with the mixing chamber, and a radiation member movably positioned upon said base at a level above that of the flue, the interior of the radiation member being in communication with the interior of the mixing chamber and with the flue.

9. In a burner, a base, a mixing chamber mounted upon the base, means for supplying air to said mixing chamber, means for supplying a fluid hydro-carbon to said mixing chamber, a flue mounted upon said base, in communication with the mixing chamber, and a radiation member movably positioned upon said base at a level above that of the flue, the interior of the radiation member being in communication with the interior of the mixing chamber and with the flue, said radiation member including a lateral extension substantially exceeding the base in diameter, and a flexible housing member depending therefrom.

10. In a burner, a base, a mixing chamber mounted upon the base, means for supplying air to said mixing chamber, means for supplying a fluid hydro-carbon to said mixing chamber, a flue mounted upon said base, in communication with the mixing chamber,

and a radiation member movably positioned upon said base at a level above that of the flue, the interior of the radiation member being in communication with the interior of the mixing chamber and with the flue, the radiation member having a flat top, the top being apertured, and covers adapted to close said apertures.

Signed at Santa Fe, county of Santa Fe and State of New Mexico, this 3rd day of November, 1930.

JAMES L. BREESE, JR.