Nov. 8, 1927. 1,648,192

H. PRELL

STOVE

Filed Dec. 15, 1924

FIG. 1.

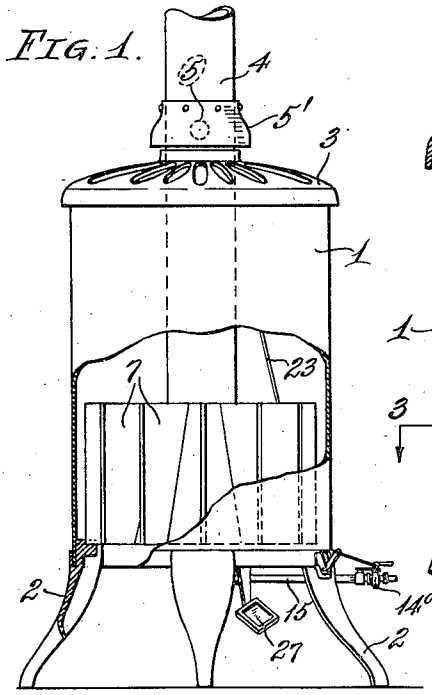
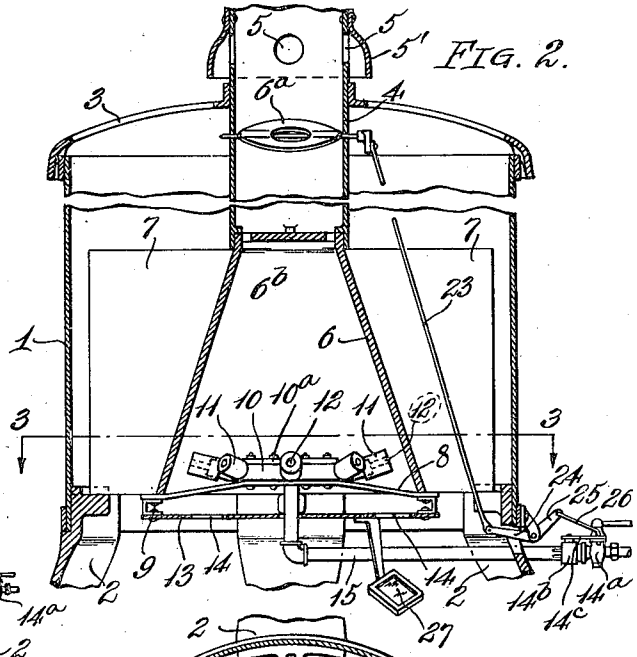


FIG. 2.



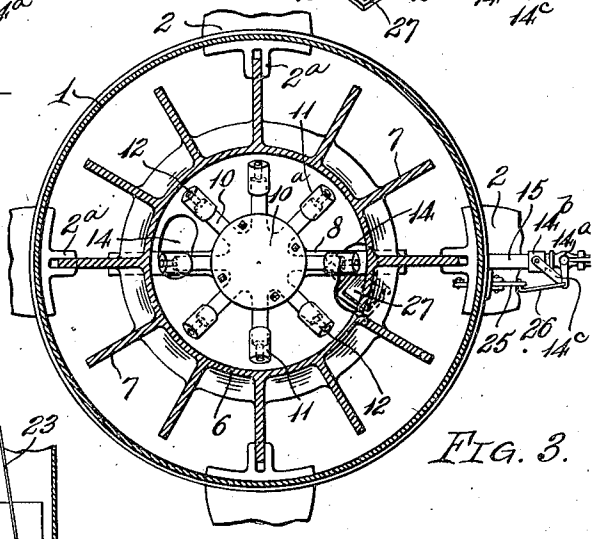


FIG. 3.

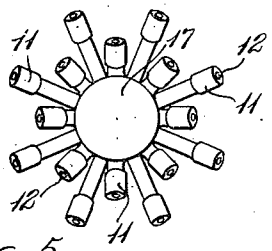


FIG. 5.

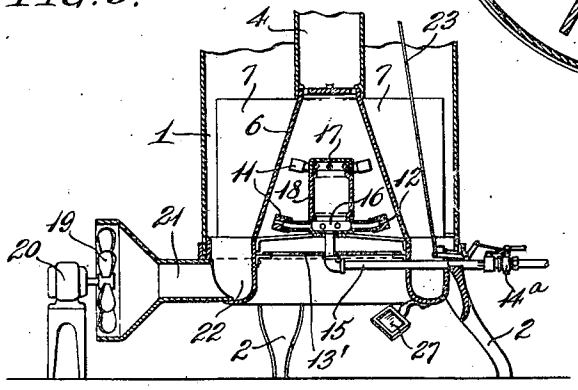


FIG. 4.

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UNITED STATES PATENT OFFICE.

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STOVE.

Application filed December 15, 1924. Serial No. 755,971.

This invention relates to improvements in stove structures.

The objects of this invention are to provide an improved form of fire pot for use either with gas or electricity and in which the fire pot has the proper degree of taper so as to utilize the maximum heat from the burner and thereby produce maximum efficiency; to provide such a fire pot and burner structure in which the source of heat is in close proximity to the fire pot or, in other words, so that the heating portion of the flame, as in case of the gas burner, impinges against the wall of the fire pot; and furthermore one in which the flame of the gas burner will impinge against the wall of the fire pot at approximately 90° thereto.

Other objects of this invention are to provide increased radiating surface area for the fire pot and also to provide a forced draft for facilitating radiation and circulation of heat from the fire pot; and to provide a fire pot of such material as is most conducive to heat radiation.

Other objects of this invention consist in providing means for insuring the products of combustion being effectively carried off from the stove so as to prevent their escape into the room; and in providing also means for preventing undue escape of the heat through the chimney, in this way conserving as much as possible the heat in the stove and thereby increasing the heat radiation.

Other objects will be apparent from the following description and claims when considered together with the accompanying drawings.

Fig. 1 shows my improved stove structure in elevation with part of the outer shell broken away; Fig. 2 is a vertical sectional view; Fig. 3 is a view taken on line 3—3 of Fig. 2; Fig. 4 is a partial vertical section corresponding to Fig. 2 and illustrating a modified or multiple form of burner with a forced draft; Fig. 5 is a plan view of the multiple burner showing the staggered arrangement of the burner tips.

The outer drum or shell 1 is supported in any suitable manner upon the legs 2 and is provided with the grating top 3 up through which extends the products of combustion pipe 4 which in turn has its lower end mounted upon the upper end of the fire pot. The pipe 4 is provided also with the openings 5 of sufficient size to cause a draft or circulation of air from the room up therethrough and in this way facilitate the escape of the products of combustion up through the pipe so as to prevent their escape into the room. The guard 5′ prevents the rise of any flame which might accidentally flare through openings 5. The fire pot comprises the tapering body portion 6 which has cast integral therewith the radially extending vanes 7, any number of which may be employed. The taper of the portion 6 corresponds substantially to that of the natural taper of the flame of a gas burner, this arrangement serving as a means of conserving or utilizing the maximum degree of heat from the burner. In other words, the flame from the burner will naturally hug the tapering portion of the fire pot. The strap 8 which extends across the bottom of the fire pot has its ends secured thereto at the points 9 and serves as a means of supporting the burner, as for instance, the gas burner 10 illustrated in the present form; it being understood, of course, that electric heating coils may be substituted in this same stove structure.

The burner 10 is provided with radiating and slightly upwardly extending tubular portions, each of which is provided with a frictionally engaging burner tip 11 so arranged that the flame through the opening 12 thereof will impinge substantially normally against the inner face of the inclined wall of the burner, or preferably will be directed slightly upwardly away from normal so as to insure upward rather than downward deflection of the flame and in this way avoid danger of the flame creeping about the lower edge of the fire pot. A plate 13 is secured across the bottom opening of the fire pot and is provided with suitable openings 14 to permit lighting of the burner. The feed pipe 15 for the gas supply extends through the bottom portion of the stove and is connected to the inside of the burner. The fire pot is further supported by the vanes 7 resting upon the upper ends of the legs as clearly illustrated in the drawings, these vanes being shown as resting between ridges 2^a which may be provided upon the upper ends of the legs to prevent accidental displacement of the fire pot.

As illustrated in Fig. 2, the burner is provided with a removable cap portion 10^a which serves to close the top thereof by means of the screw bolts indicated, the lower

side of the burner being provided with an integral closure formed as part of the casing. In the other device illustrated in Fig. 4, however, I have provided what might be termed a multiple burner comprising the lower member 16 and the upper member 17 which are provided with the intermediate tubular member 18 for connecting the same. This tubular member rests upon the annular flange provided about the opening in the top of the burner member 16 and engages the flange about the opening provided in the lower side of the upper member 17 as clearly illustrated in Fig. 4. The lower side of the lower burner member 16 is closed except for the opening for the gas feed pipe 15. Both of the upper and lower burner members are provided with the radially extending tubular portions, as in the first form, but it will be noted that the radiating tubes on the upper burner member 17 are somewhat shorter than those on the lower burner member, this difference in length corresponding to the tapering form of the fire pot, and the upper and lower tubular portions are staggered, as illustrated in Fig. 5. These tubular extensions are all provided with the burner tips 11 and are arranged with respect to the inner surface of the fire pot in the same manner as already described in connection with the first form. The purpose of the increased number of burner tips is to increase the degree of heat to be radiated from the fire pot and in this connection I have provided a fan or blower 19 driven by the electric motor 20 and arranged at the enlarged opening of a pipe 21 which opens into the annular channel portion 22, which in turn is suitably mounted in the bottom end of the stove. This channel member opens upwardly so that air is distributed about the bottom of the stove and is forced by the blower up between the vanes of the fire pot and serves in this way to cause an increased circulation or distribution of the heat from the vanes of the fire pot. A plate 13′ is provided in this form as in the first form.

In both forms I have provided an apertured damper 6^a which is pivoted in the pipe 4 and is regulated in conjunction with the gas valve 14^a, these two parts being connected by the lever and rod mechanism 23, 24, 25 and 26, the rod 26 being connected to the arm of the gas valve. The air mixer 14^b is also connected for regulation with the gas valve by means of the link 14^c, this type of fuel regulator being known as the "Stanley-Hale," although any other suitable form may be used. With this arrangement, the draft up the chimney can be regulated according to the quantity of gas and both by the same operation, with the result that the quantity of air drawn up through the fire box is increased or diminished according to whether there is more or less fuel supplied to the burner 10. This improved damper arrangement will permit sufficient draft and exhaust and at the same time prevent undue loss of heat up through the chimney. Thus the proper heating relation is maintained between the flame and the wall of the fire pot and maximum heating efficiency thereby obtained. The fire pot in my improved stove structure is preferably formed of cast aluminum or copper so as to afford the highest possible degree of heat radiation. By means of the mirror 27, it may readily be determined whether the stove is burning.

Thus it will be seen that I have devised a stove of comparatively simple structure and yet possessing a high degree of efficiency for conservation of heat and radiation as well as circulation thereof.

Having described my invention, I claim:

1. A stove structure, comprising an upwardly tapering body of heat radiating material, and a flame burner arranged within the lower portion of said body and provided with a plurality of outwardly and slightly upwardly extending flame directing tips terminating in close proximity to said body, whereby the flames from said burner tips will impinge against said body and naturally follow and hug the upwardly tapering form thereof.

2. A stove structure, comprising a casing, an upwardly tapering body of heat radiating material arranged within said casing in spaced relation thereto so as to provide therebetween a chamber into which is admitted the cold air to be heated, and a flame burner arranged within the lower portion of said body and provided with a plurality of outwardly extending tip portions terminating in close proximity to said body, whereby the flames from said burner tips will impinge against said body with maximum heating effects, said body being provided with a plurality of heat radiating vanes arranged within said cold air chamber so as to increase the heat radiating surface effective upon the cold air in said chamber.

3. A stove structure, comprising casing means, an upwardly tapering body of heat radiating material arranged within said casing means in spaced relation thereto, and a burner arranged within said body and carried thereby, said body being provided with outwardly extending heat radiating vanes mounted upon said casing means and thereby supporting said tapering body and the burner carried thereby.

4. A stove structure, comprising a casing, an upwardly tapering body of heat radiating material arranged within said casing in spaced relation thereto so as to provide therebetween a chamber to which is admitted the cold air to be heated, a flame burner arranged within the lower portion of said

body and provided with a plurality of outwardly extending tip portions terminating in close proximity to said body, whereby the flames from said burner tips will impinge against said body with maximum heating effects, said body being provided with a plurality of heat radiating vanes arranged within said cold air chamber so as to increase the heat radiating surface effective upon the cold air in said chamber, and a fan having operative connection with said chamber for creating a circulation of air therethrough.

5. In a stove structure, the combination of an upwardly tapering heat radiating body, and a pair of flame burners arranged within said body in superposed relation, each of said burners being provided with a plurality of outwardly extending flame directing tips terminating in close proximity to said body, whereby the flames from said tips will impinge against said body with maximum heating effects, the tips of one burner being arranged in staggered relation relative to the tips of the other burner.

6. A stove structure, comprising a casing body, a base upon which said casing body is supported, an upwardly tapering body of heat radiating material arranged within said casing body in spaced relation thereto so as to provide an air chamber therebetween into which is admitted the cold air to be heated, said tapering body being provided with a plurality of outwardly extending vanes integral with said body and supported upon said base, a burner arranged within the lower end portion of said tapering body and carried thereby, and a discharge pipe for the products of combustion sleeved over the upper end portion of said tapering body and supported upon the vanes thereof.

In testimony whereof I hereby affix my signature.

HENRY PRELL.