No. 725,974. PATENTED APR. 21, 1903.

R. LIVINGSTON.

BURNER.

APPLICATION FILED MAR. 13, 1902.

NO MODEL.

Fig. 1

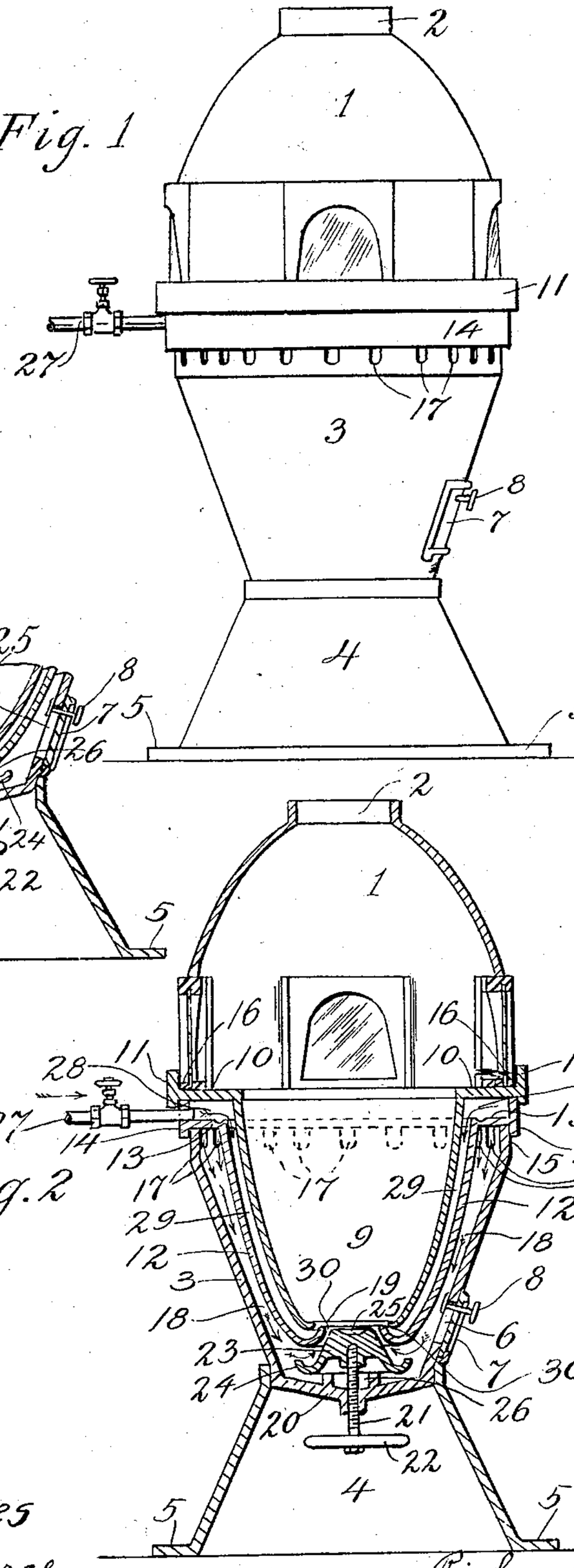

Fig. 3

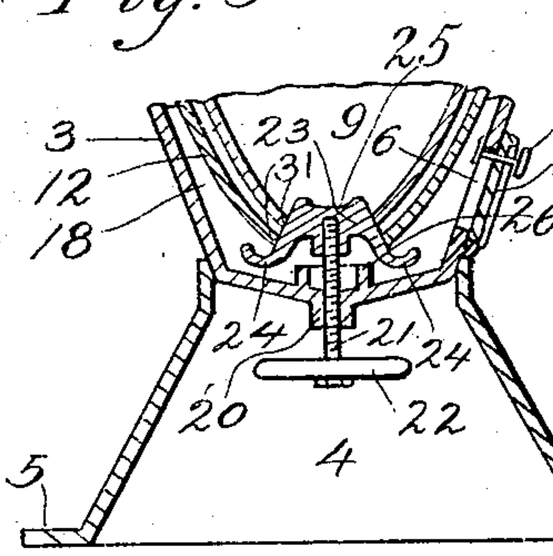

Fig. 2

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UNITED STATES PATENT OFFICE.

RICHARD LIVINGSTON, OF LOS ANGELES, CALIFORNIA.

BURNER.

SPECIFICATION forming part of Letters Patent No. 725,974, dated April 21, 1903.

Application filed March 13, 1902. Serial No. 98,087. (No model.)

To all whom it may concern:

Be it known that I, RICHARD LIVINGSTON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Burner, of which the following is a specification.

This invention relates to burners, and particularly to that class constructed to burn liquid fuel; and some of the objects of the invention are to provide such a burner of this general character which is simple in construction and efficient in operation.

Another object of the invention is to provide a burner capable of use with heating apparatus of ordinary construction without materially changing the same.

It is also an object of this invention to provide for the thinning or volatilization of the fuel during the passage of the same to the orifice of the burner, and also to heat the air used and to burn the heated fuel and air at a common point or place.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts, substantially as more fully described in the following specification, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevational view of one form of heating apparatus to which this invention may be applied. Fig. 2 is a longitudinal central sectional view of the construction shown in Fig. 1, and Fig. 3 is a fragmental sectional view illustrating a modification of the walls of the fuel and air chambers.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings and particularly to Figs. 1 and 2 thereof, the reference character 1 designates the upper portion or dome of one form of heating apparatus with which this invention may be used, and the dome 1 may be provided with an annular flange or collar 2 to receive a pipe or stack (not shown) to carry off the products of combustion in the usual manner.

The lower portion 3 of the heating apparatus is preferably provided with a flaring base 4, having an attaching-flange 5, by means of which the apparatus may be secured in position, and the lower portion 3 is desirably provided with an opening 6 to afford access to the burner and adjacent parts, and the opening 6 is preferably closed by a door 7, which may be secured in position by slides, or a yoke may be employed for this purpose, and a handle 8 is preferably employed to facilitate the operation of the door.

Between the upper and lower portions 1 and 3 of the heating apparatus there is preferably removably secured an interior conical shell 9, provided with an annular laterally-extending flange 10, desirably terminating in a T-shaped rim 11, and outside of the shell 9 is a somewhat similar shell 12, having a lateral annular flange 13, terminating in a T-shaped rim 14, and the flange 13 is constructed to rest upon the rim 15 of the lower portion 3, substantially as shown in Fig. 2 of the drawings, and to be held thereon by the T-shaped or double rim 14, which in turn supports the annular flange 10 of the interior shell 9, said flange receiving the rim 16 of the dome or upper portion 1, substantially as shown.

The dome 1 is preferably constructed with a plurality of air-inlets 17 to admit fresh air into the annular air-chamber 18, formed by the walls of the lower portion 3 of the heating apparatus and the walls of the exterior shell 12, so that the air is directed downwardly to the bottom of this shell, which preferably terminates in an upwardly-directed annular seat 19, and through this seat or opening the air passes, as indicated by arrows upon the drawings.

Adjustably mounted in a bearing 20 of the bottom portion 3 is a valve-stem 21, carrying the usual handle 22, and upon the other end of said stem is secured a substantially frusto-conical valve-plug 23, preferably provided with an annular upwardly-directed rim 24 and with a hollow center 25 in the manner illustrated. Around the stem 21 is preferably secured a collar 26, constructed to limit the outward movement or opening of the valve 23, and when the valve 23 is seated or forced in contact with the seat 19 no air is admitted through said seat, as will be understood.

The oil may be introduced through a valved connection 27, Figs. 1 and 2, into the annu-

lar oil-chamber 28, from whence the thinned oil gravitates into the inclined portion 29 of the chamber, and thence to the burner-orifice 30, where the commingled oil and air are burned.

It will be understood that the incoming air and oil are both heated from the heat disseminated from the combustion-chamber, and both are delivered to the burner in a heated state, thereby augmenting the potency of the burner.

The operation of the invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings and the following explanation thereof. The valve in the supply-pipe 27 is opened, and oil is allowed to flow into the annular oil-chamber 28, where it is somewhat thinned by the heat from the combustion-chamber, and flows downwardly through the depending portion 29 to the burner 30, where the thinned or volatilized oil is mixed with the air entering through the air-inlets 17, and passing down through the air-chamber and up around the valve 23, as indicated by arrows on the drawings, and the commingled heated air and oil is burned at the burner 30, as before explained.

This invention is not limited to use with heating apparatus of the construction shown, as the same is illustrated merely as a type of apparatus that may be employed, and any fluid agent can be used; nor is the invention confined to the specific construction, combination, and arrangement of parts herein shown and described, and the right is reserved to make all such changes in and modifications of the same as come within the spirit and scope of the invention.

.In Fig. 3 of the drawings there is illustrated a modification of the construction hereinbefore described and shown, wherein the valve 23 performs an additional function, in that it cuts off the supply of oil as well as air, and this result is accomplished by the formation of the interior and exterior shells 9 and 12, substantially as shown at 31, Fig. 3, wherein the valve 23 abuts against the edges of the orifices of said shells. In other respects the construction illustrated in Fig. 3 is substantially similar to that hereinbefore described in connection with Figs. 1 and 2 of the drawings, and further explanation thereof will not be required.

I claim—

1. A heating apparatus provided with a support, an exterior shell having a lateral flange resting on the upper edge of said support and having a bottom opening, an interior shell having a flange supported on the flange of said exterior shell and having a bottom opening registering with the opening in said exterior shell and means for introducing fuel between the shells and for introducing air between said exterior shell and support to burn the fuel at said openings.

2. A heating apparatus provided with a support, an exterior shell having a lateral flange resting on the upper edge of said support and having a bottom burner-opening, an interior shell having a flange supported on the flange of said exterior shell and having a bottom burner-opening registering with the first opening, means for introducing fuel between said shells and for introducing air between said shell and support and a valve to control the admission of air.

3. A heating apparatus provided with a base having air-inlets at the upper edge thereof, an exterior shell having a lateral flange resting on the upper edge of said base and having an opening in the lower end thereof, the edge of said shell around said opening being deflected inwardly and upwardly, an interior shell having a flange supported on the flange of the exterior shell and being open at the bottom thereof and the edges of said interior shell around said opening being deflected inwardly and terminating adjacent the inwardly and upwardly turned edges of said exterior shell, means for introducing fuel between the said shells, a dome having a flue-opening and supported on the flange of the inner shell, a valve-plug arranged to seat in the opening of the exterior shell and means for adjustably supporting such plug from said base.

4. A heating apparatus provided with a base having air-inlets in the upper edge thereof, an exterior shell having a lateral flange resting upon the upper edge of said base and having an opening in the lower end thereof, an interior shell having a flange supported on the flange of said exterior shell and having an opening in the lower end thereof, means for introducing fuel between said shells, a dome supported on the flange of said inner shell and a valve constructed to seat in the opening of said exterior shell.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD LIVINGSTON.

Witnesses:

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