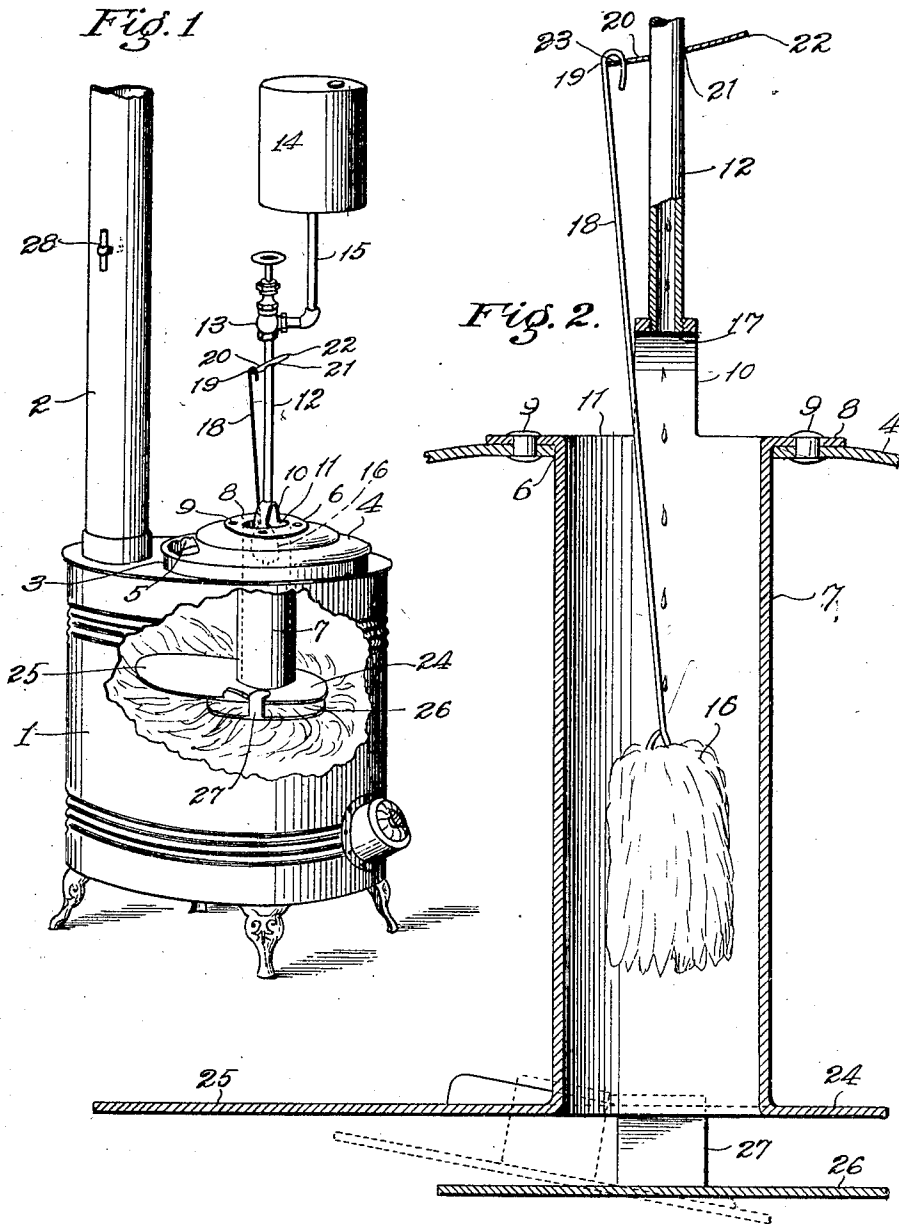


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 ADJUSTABLE DOWNDRAFT OIL BURNER.
 APPLICATION FILED JAN. 9, 1908.

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Patented June 22, 1909.



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UNITED STATES PATENT OFFICE.

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ADJUSTABLE DOWNDRAFT OIL-BURNER.

No. 926,008.

Specification of Letters Patent.

Patented June 22, 1909.

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To all whom it may concern:

Be it known that I, DAVID C. LAMB, a citizen of the United States, residing at Watts, in the county of Los Angeles and State of California, have invented a new and useful Adjustable Downdraft Oil-Burner, of which the following is a specification.

This invention relates to an oil-burner constructed in the nature of an air-tight stove, and includes in combination with a sheet-iron air-tight stove of ordinary construction, an attachment for such stove whereby petroleum oils of low gravity may be satisfactorily burned for heating purposes.

An object of the invention is to provide means for burning low-gravity oil for heating purposes.

Another object is to provide for the ordinary sheet-iron air-tight stove an attachment by which the same may be supplied with fire from low-gravity oil.

Another object is to provide an oil-burner which is adjustable for the purpose of adapting the same to satisfactory operation at the time of igniting and at the time when in full heat, and also to provide for adjusting the burner so as to deliver the flame properly in different-sized stoves.

A further object of the invention is to provide means whereby the burning of liquid fuel in a stove is made perfectly safe and free from liability of explosion, and also to insure continuous burning while the heater is in use. Provision is also made for a sight-feed which will be constantly open to inspection of the user.

The invention may be variously applied, and I shall illustrate the same in the form I at present deem preferable for general use as an air-tight heater.

The invention includes the heater, the various parts and combinations hereinafter more particularly described and claimed.

The accompanying drawings illustrate the invention.

Figure 1 is a broken perspective view of a heater embodying this invention in a form at present deemed most desirable. Fig. 2 is an axial section of the attachment for an ordinary air-tight stove, portions being broken away to contract the view.

1 designates the hollow body or chamber of an ordinary sheet-iron air-tight stove provided with the usual vent, as the stove-pipe

2, and also with the usual top having an orifice 3.

4 designates a lid for the orifice 3, the same being provided with the usual collar 5 fitting in said orifice and arranged inside the rim of the lid so that the lid will be held firmly in said orifice to support the attachments hereinafter described.

6 designates a hole in the center of the lid, and 7 a vertical, elongate, open-ended draft-and-generating tube inserted in said hole and provided with a flange 8 that rests on the lid 4 and fastened thereto by any suitable means, as rivets 9.

10 designates a yoke fastened to and bridging the mouth 11 of the tube 7.

12 is a feed-pipe screwed into and opening through the yoke 10 and extending upward above said yoke and provided with a needle-valve 13 and supplied from a tank 14 which may be of any suitable character and located in any suitable place, the same being connected with the upright feed-pipe 12 by a supply pipe 15 leading from the tank to the needle-valve which controls the supply of liquid fuel that may pass to the feed-pipe.

16 designates a refractory wick preferably made of asbestos suspended below the outlet 17 of the feed-pipe 12 by vertically-adjustable means as a wire 18 provided at its top with a hook 19 caught into a clip 20 which consists of a perforated plate through the perforation 21 of which the feed-pipe 12 extends, so that said plate may slide freely up and down the feed-pipe whenever the plate is in horizontal position. The wick 16 is arranged a distance above the open bottom of the tube to provide an open air and vapor mixing space in the tube between the wick and the open bottom of the tube so that a comparatively even mixture of air and vapor will issue from the bottom of the tube. Said plate projects on the opposite sides of the perforation to form on one side a handle 22 and on the other side an arm 23 which is perforated to receive the hook 19 so that when the clip is adjusted to any elevation on the feed-pipe, and the wick and wire are allowed to cant the clip-plate at an angle to the horizontal,—as shown in both of the figures of the drawing,—the clip will cramp upon the feed-pipe so that the friction thereof on said pipe will be sufficient to support the wick at any elevation in the draft-and-generating tube 7.

The hook may fit tightly in the perforation so that the wire is rigidly connected with the clip 20 so the center of support for the wick is approximately coincident with the axis of the feed-pipe, thus to cause the wick to hang directly beneath the oil-pipe. Said wick is preferably a bunch of asbestos fabric or fibers arranged to fill a considerable cross-sectional area of the tube, and is arranged directly below the outlet of the feed-pipe so that the drops of liquid fuel which fall from the feed-pipe into the draft-and-generating tube will be caught and absorbed by the wick, so that when the fuel is ignited the wick will become heated and vapors will be generated at that portion of the draft-and-generating tube in which the wick is located, and as the vapors become mingled with oxygen flowing through said tube, the vapors will burn and generate the required heat; and in case an interval of considerable time,—say, a half minute or a minute, more or less,—should occur between the drops, the vapors from the oil absorbed by the wick will maintain the blaze.

24 designates a flame-spreader and air-and-vapor mixer at the foot of the draft-and-generating tube 7. The same preferably projects to a greater extent from one side of the tube than from the other sides thereof, and in placing the attachment in the stove, care is taken that the greater projection 25 of said spreader extends toward the side of the stove from which the stove-pipe 2 leads, thus to continue the spreading operation as the vapors proceed toward the vent through said stove-pipe.

26 designates an adjustable plate suspended beneath the flame-spreader 24 to regulate the flow of vapors. Said plate is provided with hangers 27 to rest on the top of the flame-spreader 24 and adapted to slide therealong. Said hangers are of considerable width to extend along the flame-spreader, and the top of said flame-spreader is provided with two wedge-shaped lugs increasing in thickness toward the end of the projecting portion 25 of said spreader, so that when the adjustable plate is moved toward such end, the edges of the hangers that are farthest from the axis of the tube 7 will engage and rest upon the wedge; whereupon the adjustable plate will tilt as shown in dotted lines in Fig. 2, to narrow the space between the top of the plate and the bottom of the flame-spreader, thereby in some degree obstructing the flow of vapor along the underside of the flame-spreader toward the vent of the stove, and causing greater flow of vapor around the margins of the flame-spreader farther from the vent.

The tube, its yoke or bridge, and the spreader and the adjustable plate are preferably of cast iron or other strong refractory material.

In the form shown in the drawings, the tank, the oil pipes, valve, and draft tube and its attachments are all carried by the lid of the stove and may be removed from the stove whenever desired; and the ordinary lid of the stove, not shown, may then be placed thereon; so that when it is not desired to use liquid fuel the stove may be readily returned to condition for burning wood or other fuel. Furthermore, the tube and the parts connected therewith may be sold independently of the stove, for application to air-tight stoves now in use.

I do not limit the invention to use with heating stoves, but may fit the same to cooking-stoves and ranges by closing all draft inlets thereof and fitting the fire-box of the stove with a lid provided with this draft-and-generating tube.

It is to be understood that a purpose of the stove-chamber provided with a draft vent, as the stove-pipe 2, is to afford means for producing a draft through the draft-and-generating tube, and that such draft may be regulated by the usual damper indicated at 28 in Fig. 1.

The attachment may be readily disjointed for storage by unscrewing the feed-pipe from the oil-tank and from the support at the top of the draft-tube, whereupon the feed-pipe may be inserted into the draft tube for greater compactness.

In practical use the wick is preferably adjusted to near the top of the draft tube for starting the burner into operation, and a small quantity of the liquid fuel is allowed to drop in a fine stream or by separate drops onto the wick to saturate the same, and then the fuel will be ignited and will produce a flame which will flow down through the tube and will cause the heat requisite for heating the tube so that the vaporization will rapidly proceed.

As the parts within the stove-chamber become well heated, the wick may be lowered so that the flame is first produced nearer the adjustable plate, and in some cases it may be found desirable to allow the wick to rest on the plate. The yoke holds the fuel-supplying means spaced above the top of the tube so that the feed is always open to the sight of the user.

I claim:—

1. An oil-burner comprising a chamber provided with a draft vent, a tube discharging into said chamber, and a wick removably mounted in said chamber to receive liquid from said tube, said wick being adjustable.

2. An oil-burner comprising a chamber provided with a draft vent and with an orifice in its top, an open-ended tube in said orifice, a feed-pipe connected with said tube to discharge liquid fuel therein, and a vertical adjustable wick in said tube.

3. An oil burner comprising a vertical

open-ended tube, a feed pipe to discharge into the top of said tube, means to cause a draft through said tube, a wick adjustably mounted in said tube to receive liquid fuel from said feed-pipe, and a combustion chamber into which said tube opens directly.

4. An oil-burner comprising a vertical open-ended tube, a feed pipe to discharge into the top of said tube, means to cause a draft through said tube, and a vertical adjustable wick in said tube to receive liquid fuel from said feed-pipe.

5. In an oil burner, a vertical draft-and-generating tube open at top and bottom, means to cause a draft through said tube, a feed-pipe to discharge into the top of said tube, a refractory wick in the tube, and means for adjustably connecting said wick with said feed-pipe.

6. In an oil burner, a vertical draft-and-generating tube open at top and bottom, means to cause a draft through said tube, a feed-pipe to discharge into said tube, a refractory wick in the tube, and means for adjustably connecting said wick with said feed-pipe.

7. In an oil-burner, a vertical draft-and-generating tube open at top and bottom, means to cause a draft through said tube, a feed-pipe to discharge into said tube, a refractory wick in the tube, a clip adjustable on said feed-pipe, and a connection between said clip and wick.

8. In an oil burner, a vertical open-ended tube, a combustion chamber into which said tube opens directly, means to cause a draft through said tube, means to supply liquid fuel to the tube, a wick adjustably mounted in the tube to receive said fuel, and a plate beneath the open bottom of the tube and spaced therefrom.

9. In an oil burner, a vertical open-ended tube, a combustion chamber into which said tube opens directly, means to cause a draft through said tube, means to supply liquid fuel to the top of the tube, a wick adjustably mounted in the tube to receive said fuel, and an adjustable plate beneath the open bottom of the tube and spaced therefrom.

10. In a burner, the combination of a vertical open-ended tube, means to cause a draft through said tube, means to supply liquid fuel to said tube, a refractory wick to receive said fuel, a spreading plate at the bottom of the tube, and a tiltable plate adjustably arranged beneath and spaced apart from the open lower end of the tube.

11. A vertical open-ended tube, means to cause a draft through said tube, means to supply liquid fuel to the top of said tube, a spreader plate projecting at the bottom of said tube and provided on its top with a wedge, an adjustable plate provided with hangers adapted to rest upon said wedge to tilt the plate, and a wick above the plate.

12. A vertical open-ended elongate tube, means for mounting said tube so as to discharge downwardly into a stove, a feed-pipe discharging into said tube, a wick in the tube to receive the liquid discharged from said feed-pipe, an open air and vapor mixing space being provided in the tube between the wick and the open bottom of the tube, and a distributing plate in position to project from the bottom of the tube toward the vent of the stove.

13. A vertical open-ended tube, means for mounting said tube, so as to discharge downwardly into a stove, a feed pipe discharging into said tube, a wick in the tube to receive the liquid discharged from said feed pipe, a distributing plate in position to project from the bottom of the tube toward the vent of the stove, and a plate spaced from said tube and adjustable along said distributing plate.

14. An oil burner comprising a draft tube open at the top, means spaced above such top to drop liquid fuel into the tube, a wick to receive the fuel, and means for adjusting the wick in the tube.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 31st day of December 1907.

DAVID C. LAMB.

In presence of—

JAMES R. TOWNSEND,
M. BEULAH TOWNSEND.