

UNITED STATES PATENT OFFICE.

JOHN W. NEUMANN, OF LOUISVILLE, KENTUCKY, ASSIGNOR OF ONE-HALF
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LIQUID-FUEL BURNER.

SPECIFICATION forming part of Letters Patent No. 698,408, dated April 22, 1902.

Application filed October 12, 1901. Serial No. 78,515. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. NEUMANN, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented new and useful Improvements in Liquid-Fuel Burners, of which the following is a specification.

This invention relates to liquid-fuel burners, and especially to that class of burners adapted to be set in the fire-boxes of cooking and other stoves; but it will be evident to those skilled in the art that the burner may be employed in connection with stoves and furnaces of various different kinds.

The invention has for its object to provide an exceedingly simple, economical, and efficient burner for burning petroleum and similar hydrocarbon oils in which the flames and gas will be given a rotary whirling motion before being brought into direct contact with the atmospheric air fed to the burner, whereby the gases will be thoroughly heated before comingling with the air, and thus insure complete combustion with practically little or no waste.

It also has for its object to provide simple and novel means for controlling the supply of atmospheric air to the burner and for feeding the oil thereto; and it has for its further object to improve and simplify the structure and increase the efficiency generally of this class of burners.

To these ends my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a perspective view showing my improved burner applied to a cooking-stove, only a portion of the stove being illustrated. Fig. 2 is a transverse vertical sectional view thereof, and Fig. 3 is a perspective view of the blower or damper for regulating the admission of air to the burner.

In the drawings I have shown by way of example the burner applied to a cooking-stove, the numeral 1 indicating the top of the stove, 2 the front thereof, 3 the oven, 4 the fire-box, and 5 the flue extending from the

fire-box over the top of the oven to the off-take-flue, chimney, or stovepipe, all constructed in a usual and well-known manner. Formed in the front wall 2 of the stove is a rectangular aperture 6, which serves for the admission of atmospheric air to the burner. Disposed in the fire-box 4 is a burner-tray consisting of a metallic casing having a trough-shaped body portion 7, approximately semi-cylindrical in cross-section, and an overhanging hood 8, that extends vertically upward from the rear side of the body portion 7 and is thence curved over said body portion and downward to a point 11 above and in front of the forward edge 9 of the body portion of the tray. From thence the hood is extended vertically to form a flange 10, that is fitted against the front 2 of the stove above the aperture 6. As shown, the upper forward edge 11 of the burner-tray is disposed above and in the same vertical plane with the lower edge 12 of the aperture 6, formed in the front wall of the stove. Arranged in the fire-box beneath the burner-tray is a shield 13, consisting of a metallic plate, trough-shaped in cross-section, which extends underneath and in rear of the burner-tray and at its upper rear end is provided with a horizontal flange 14, which extends over and rests on the top of the oven 3. The front portion of said shield extends upwardly through the aperture 6 and rests against the lower edge 12 thereof, the upper front edge of the shield preferably terminating in a horizontal flange 15, which forms a seat for the damper or blower presently to be described.

Leading from any suitable oil-reservoir, preferably consisting of a tank (not shown) supported back of the stove, is an oil-feed pipe 16, that extends across and in front of the stove and thence downward into the fire-box and at its lower end is provided with a T 17, that is suspended horizontally within the body portion 7 of the burner-tray and above its bottom, the opposite ends of said T being open, as shown.

As before stated, air is admitted to the burner through the aperture 6, formed in the front wall of the stove, and the quantity admitted to the burner is regulated by a damper or blower consisting of a flat metallic

plate 18, provided on its inner side and near its lower edge with a hook-shaped flange 19, that is adapted to rest on and hook over the flange 15 of the shield 13. Riveted or otherwise suitably attached centrally to the plate 18 is a handle 19', consisting of a curved metallic strap, the lower end of which when the damper is in position rests against the front 2 of the stove and aids in holding the damper in place.

The operation of the burner will be readily understood. Oil is conducted by the pipe 16 to the T 17 and drips from the opposite ends of the latter into the burner-tray. The oil in the tray being ignited, the flames and hot gases ascend and are deflected forward and downward by the arched or concaved hood 8, as indicated by the arrows in Fig. 2 of the drawings, and when they reach the front edge 11 of the burner-tray they meet and commingle with the inwardly-induced current of air. The heated gas being thus supplied with oxygen is ignited and consumed, the flames and products of combustion then passing around and down beneath the burner-tray and thence up in rear of the latter and off through the flue 5. Owing to the arched overhanging hood 8 of the burner-tray the flames and gas are given a rotary whirling movement, whereby the gas becomes highly heated before meeting incoming currents of atmospheric air, so that when the gas is mixed with the air it is in the best condition to insure perfect combustion. The flames and products of combustion in passing underneath and up behind the burner-tray heat the latter and cause the oil to be instantly vaporized on striking the tray. This result is promoted by the flames enveloping the T 17 and the lower end of the oil-feed pipe, whereby the oil is highly heated and is in a state to be easily volatilized as it drips from the end of the T. In practice a regulating-valve will be provided for the oil-supply pipe, as usual. As before stated, air is admitted to the burner through the aperture 6, and normally said aperture will supply sufficient air to maintain a high heat in the fire-box of the stove. If, however, only a moderate heat is desired, the blower or damper 18 is then fitted in place, as shown in Fig. 2 of the drawings, thereby reducing the area

of the air-inlet opening, and consequently diminishing the volume of air supplied to the burner. Hence the combustion will be slower and the generated heat less. The admission of air may be still further regulated and controlled by sliding the damper or blower endwise across the aperture.

Having now described my invention, what I claim is—

1. In a liquid-fuel burner, the combination with a substantially trough-shaped fuel-tray having an arched and symmetrically-curved overhanging hood, of a shield arranged underneath and in front and rear of the said tray, and a damper comprising a flat plate having an inner flange adapted to rest on the front edge of said shield and support the damper, said damper being arranged to partially close the aperture between the shield and hood, substantially as described.

2. In a liquid-fuel burner, the combination with a combined fuel-tray and hood consisting of a scroll-shaped integral casting comprising a lower portion, substantially semi-circular in shape in cross-section and constituting a fuel-tray and an upper portion comprising an arched and symmetrically-curved hood, the free end of which extends above and in front of the free edge of the tray, of means for feeding liquid fuel to said tray, substantially as described.

3. In a liquid-fuel burner, the combination with a combined tray and hood consisting of an integral casting, scroll-shaped in cross-section and having a lower portion, substantially cylindrical in cross-section and constituting a fuel-tray and an upper portion comprising an overhanging arched and symmetrically-curved hood, the free end of which terminates at a point in front of and above the free edge of the tray and provided with a vertically-extending portion, substantially as described and for the purpose specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN W. NEUMANN.

Witnesses:

D. L. BEDINGER,
JOHN P. LACKSTEDER.