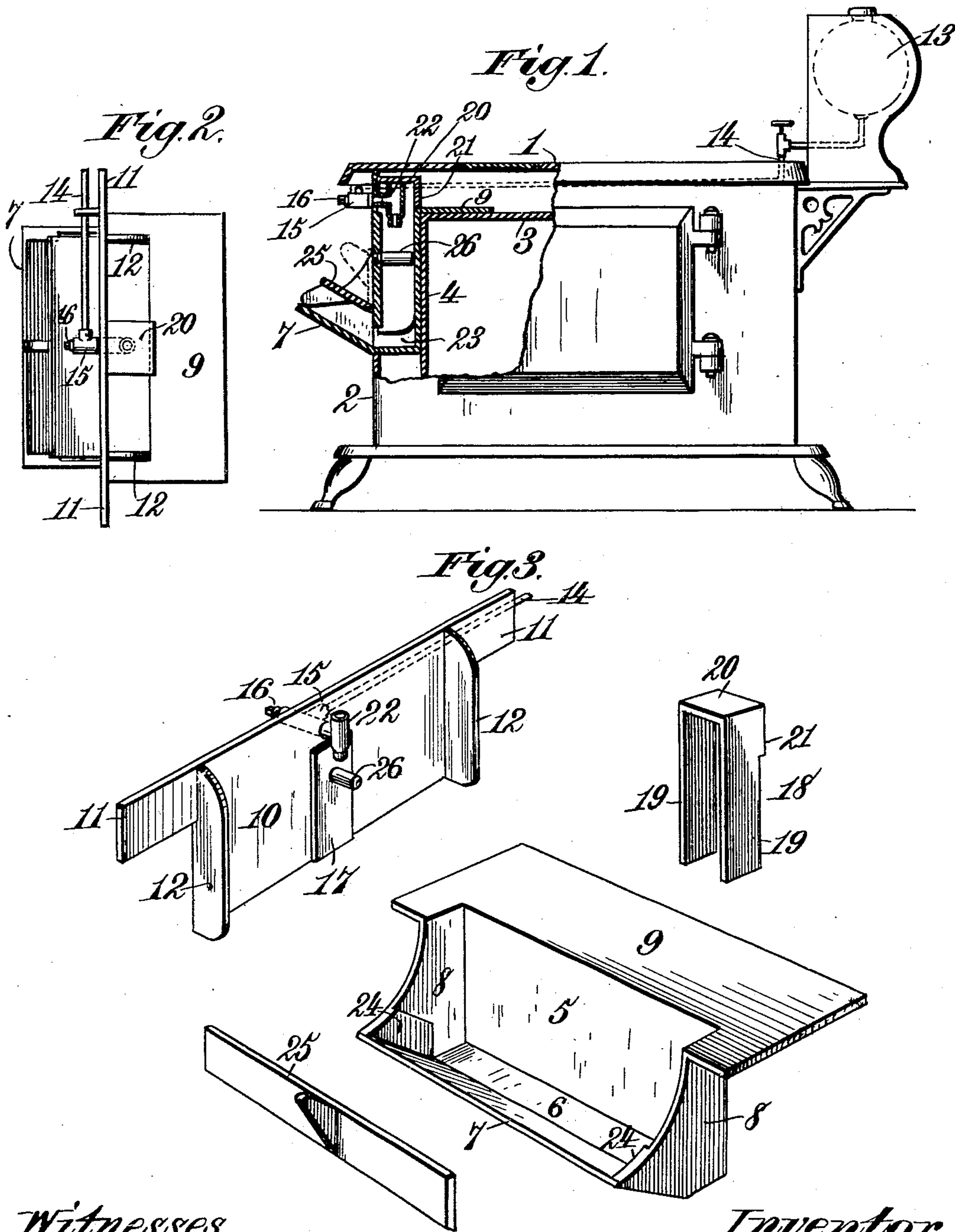


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J. W. NEUMANN.
LIQUID FUEL BURNER.
(Application filed Jan. 24, 1902.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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TO JOHN E. NORRIS, OF LOUISVILLE, KENTUCKY.

LIQUID-FUEL BURNER.

SPECIFICATION forming part of Letters Patent No. 702,880, dated June 17, 1902.

Application filed January 24, 1902. Serial No. 91,122. (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 particularly to that class of such burners that are designed to be set in the fire-boxes of cook-stoves or which form a part of the fire-boxes; and it has for its object to provide a burner of the class described which will be extremely simple in construction, economical in use, and capable of being thoroughly cleaned to remove deposits of soot and carbon. It also has for its object to provide a burner of the kind referred to in which the liquid fuel will be rapidly and thoroughly vaporized and in which the heavy residuums which are not capable of vaporization will be consumed.

To these ends my invention consists in the features and in the construction, arrangement, and combination 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 transverse vertical central sectional view showing the burner applied to a cook-stove. Fig. 2 is a top plan view of the burner, and Fig. 3 is a detail perspective view of the parts separated.

Before proceeding to a detailed description of the invention it should be explained that the burner may be set in the fire-box of a cook-stove of ordinary construction, or it may form a part of the stove itself, and the latter arrangement is the preferred one.

Referring to the drawings, the numeral 1 indicates the top of a cook-stove of ordinary construction; 2, the front thereof; 3, the top of the oven, and 4 the front of the latter.

The body of my improved burner consists of a metallic frame or casting comprising a trough-shaped body that is adapted to be set within the fire-box of the stove. Said trough-shaped body consists of a vertical plate 5, provided at its bottom with a horizontal flange 6, which terminates at its front edge in an

upwardly-inclined flange 7, vertical side or end pieces 8 being united to said vertical plate on its horizontal and inclined flanges and said end pieces closing the ends of the trough-shaped body. Projecting horizontally rearward from the upper edge of the vertical plate 5 is a horizontal flange or shelf 9, which rests on or may form a part of the top of the oven, and the vertical plate 5 in like manner rests against the front or may form a part of the front of the oven. Removably fitted between the ends 8 of the trough-shaped body is a vertical plate 10, provided at its upper end with lateral extensions 11, which rest on the top plate 9 and hold the lower edge of the plate 10 a slight distance above the bottom of the trough. Formed on the inner or rear side of said plate are two vertical flanges 12, which fit against the ends 8 and the vertical plate 5 and hold the plate 10 the proper distance from and parallel with the oven-plate 5. Fixed in any convenient position, preferably in the rear of the stove, is an oil-reservoir 13, from which leads a pipe 14, which extends along one side of the stove and in front of the latter and is connected at its ends to a valve-casing 15, consisting of a T-shaped coupling, one end of which is fitted in and projects through the plate 10 and in the opposite end of which is fitted a threaded valve 16, by means of which the supply of oil through the burner may be regulated. To the end of the valve-casing which projects through the plate 10 is coupled a T-shaped tube 22, which is vertically arranged and open at both its upper and lower ends. Formed on the inner or rear side of the plate 10 below the burner-tube is a rectangular boss or raised portion 17, and fitted over said boss and between the plates 10 and 5 is a metallic casting or casing 18, comprising two vertical parallel plates 19, united at the top by a cover-plate 20 and also provided on the rear side of its upper end with a transverse plate 21. This casing, together with the plates 5 and 10, forms a vertical rectangular chamber, and the cover 20 of said chamber rests on the upper open end of the T-shaped burner-tube 22. The sides 19 of said chamber do not quite reach to the bottom of the trough, whereby spaces 23 are left between the bottom of said chamber and the bottom of the trough for

the exit of the oil vapors. Fixed on the inner sides of the end pieces 8 of the trough are cleats 24, and resting on said cleats is a damper consisting of a rectangular metallic plate 25, the lower edge of which is beveled, so that when said plate is turned to a perpendicular position it will rest against the plate 10 and be held in such position. Normally the plate rests in the position shown in full lines in Fig. 1; but it may be turned up vertically to the position shown in dotted lines in said figure, or it may be entirely removed to afford access to the casing when it is desired to clean out the latter.

15 A threaded hole is formed in the plate 10 beneath the burner-tube 22, and screwed through said hole into the generating-chamber is a rod or pin 26.

The operation of my improved burner is as follows: Oil is fed from the reservoir by means of the feed-pipe to the burner-tube 22 and drops from the latter down through the generating-chamber onto the pin 26, flows around said pin, and drips from the under side of the latter onto the bottom of the trough, where the oil is ignited, and the flames rising to the right and left of the generating-chamber quickly heat it, so that the oil afterward dripping through said chamber is quickly and thoroughly vaporized. The vapor escapes from both sides of the generating-chamber through the openings 23 and passes over the plates 5 and 9 in a broad sheet of flame, which heats both the fire-box and oven. The heavy residuum which is not readily vaporized drops down to the bottom of the trough, which is heated to a high temperature, and is there burned, the burner thus utilizing every portion of the fuel. It will be observed that the generating-chamber may be readily removed from between the plates 5 and 10 and that the damper is also removable, thus rendering it convenient to clean out every portion of the device. Also by making the T-shaped burner open at both ends a brush or similar cleaning device may be conveniently inserted in the burner-tube to clean out the interior of the latter.

Having described my invention, what I claim is—

1. In a liquid-fuel burner, the combination with a casing adapted to be arranged in the fire-box of a stove and communicating at its upper end with the offtake-flue of said stove and at its lower end with the atmosphere, of a burner-tube arranged within said casing and comprising a vertical tube open at its opposite ends, means for normally closing the upper end of said tube, a generating-chamber in said casing and inclosing the burner-tube, said chamber being open at its bottom only, and means for feeding liquid fuel to said burner intermediate its ends, substantially as described.

2. In a liquid-fuel burner, the combination with a casing adapted to be arranged within the fire-box of a stove and communicating at

its upper end with the offtake-flue of said stove, a vertical plate closing the front of the casing, said casing being provided at its lower end with a trough and having an aperture communicating with the atmosphere, a burner-tube arranged within said casing and consisting of a vertically-arranged tube open at its opposite ends, a vertical generating-chamber in said casing and inclosing the burner-tube, said chamber being open at its bottom only, and means for feeding liquid fuel to said burner-tube, substantially as described.

3. In a liquid-fuel burner, the combination with a hollow casing adapted to be arranged within the fire-box of a stove and communicating at its upper end with the offtake-flue of said stove said casing being provided at its lower ends with a trough, a burner-tube arranged within the casing and comprising a vertically-disposed tube open at its opposite ends, means for supplying liquid fuel to said burner-tube, and a generating-chamber removably arranged in said casing surrounding said burner-tube and opening at its lower end into said trough, the top of the generating-chamber resting on and closing the upper end of the burner-tube, substantially as described.

4. In a liquid-fuel burner, the combination with a hollow casing adapted to be inserted within the fire-box of a stove and communicating at its upper end with the offtake-flue of said stove, said casing being provided at its lower end with a trough having an aperture communicating with the atmosphere of a burner-tube arranged within said burner-casing, means for supplying liquid fuel to the burner-tube, and a generating-chamber surrounding said burner-tube and opening at its lower end into said trough, said tube being arranged to discharge the liquid fuel downwardly through said generating-chamber, substantially as described.

5. In a liquid-fuel burner, the combination with a hollow casing adapted to be arranged within the fire-box of a stove and communicating at its upper end with the offtake-flue of said stove, said casing being provided at its lower end with a trough communicating with the atmosphere, a burner-tube arranged within said casing and comprising a vertically-disposed tube open at its opposite ends, a generating-chamber inclosing said burner-tube and covering the upper open end of the said burner-tube said generating-chamber terminating at its lower end above the bottom of said trough, and means for supplying liquid fuel to said burner-tube, substantially as described.

6. In a liquid-fuel burner, the combination with a casing adapted to be arranged within the fire-box of a stove and communicating at its upper end with the offtake-flue of said stove, a vertical plate forming the front of the casing, said casing being provided at its lower end with a trough and having an aperture communicating with the atmosphere, a

burner-tube arranged within said casing and consisting of a vertically - arranged tube, means for feeding liquid fuel to the burner-tube, a generating-chamber inclosing said burner-tube and a pin arranged beneath the burner - tube and extending transversely through the generating-chamber between the top and bottom of the latter, substantially as described.

10 7. In a liquid-fuel burner, the combination with a casing adapted to be arranged within a fire-box of a stove and communicating at its upper end with the offtake-flue of said stove, an imperforate vertical plate closing
15 the front of the casing, and provided on its inner side with a rectangular boss, said casing being provided at its lower end with a

trough and having an aperture communicating with the atmosphere, a burner-tube arranged within said casing and consisting of 20 a vertically-arranged tube open at its lower end, a vertical generating-chamber fitted in such casing over the said rectangular boss and inclosing the burner-tube, said chamber being open at its bottom only, and means for 25 feeding liquid fuel to said burner, substantially as described.

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

JOHN W. NEUMANN.

Witnesses:

NICHOLAS A. PRANTZ,
D. L. BEVINGER.