

R. M. HAMMOND.

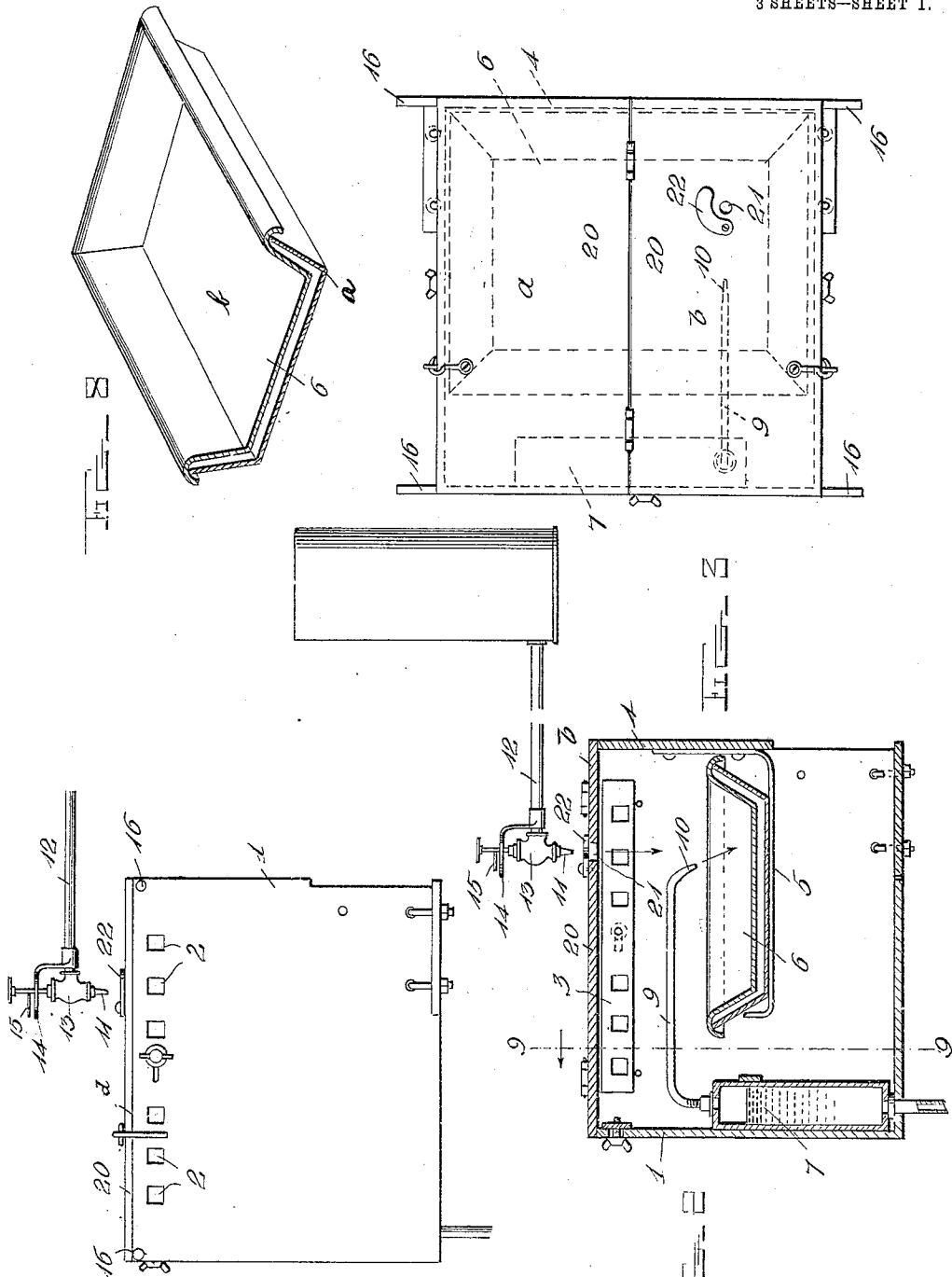
LIQUID FUEL BURNER.

APPLICATION FILED MAR. 24, 1908.

Patented Nov. 16, 1909.

3 SHEETS—SHEET 1.

940,149.



Witnesses

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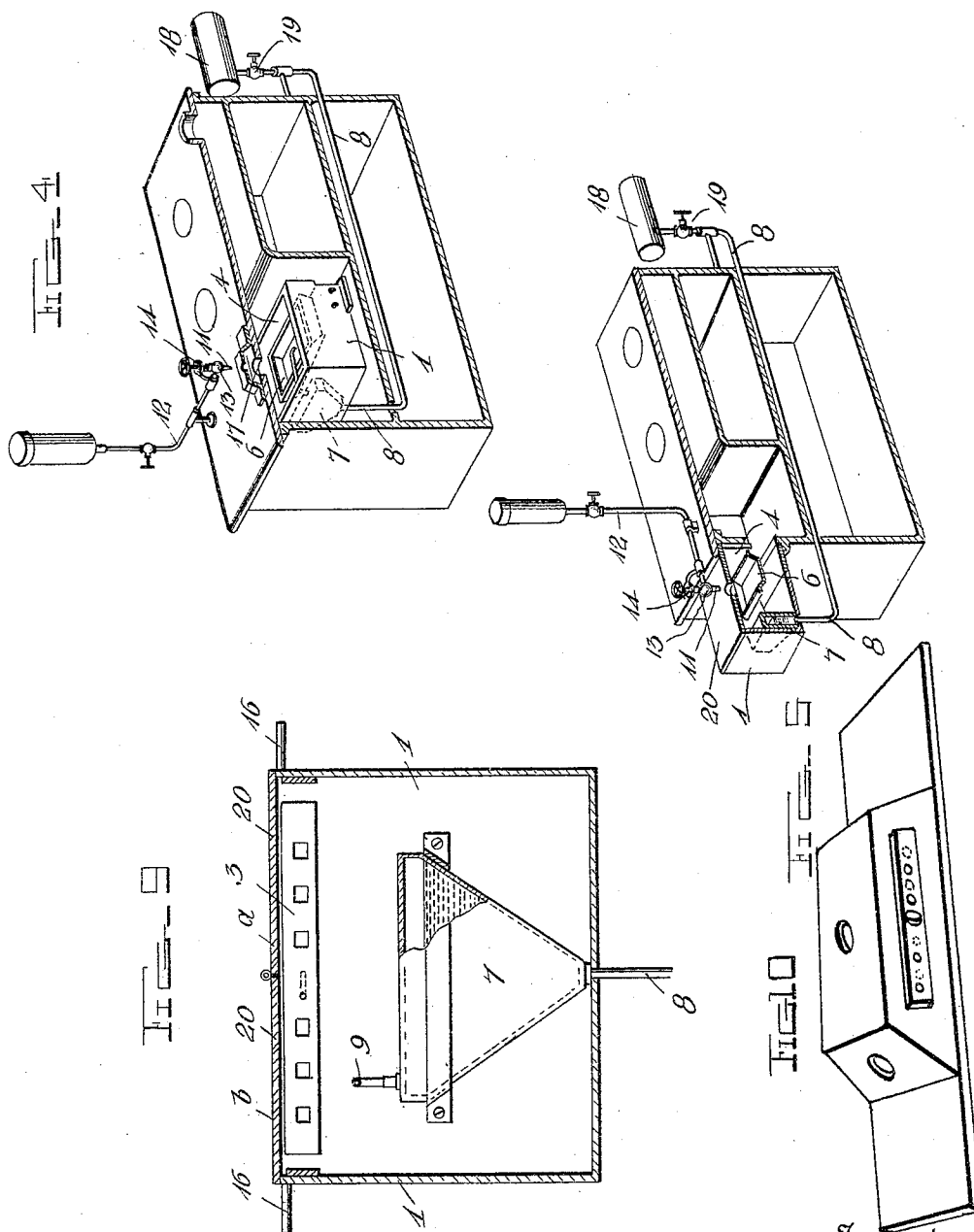
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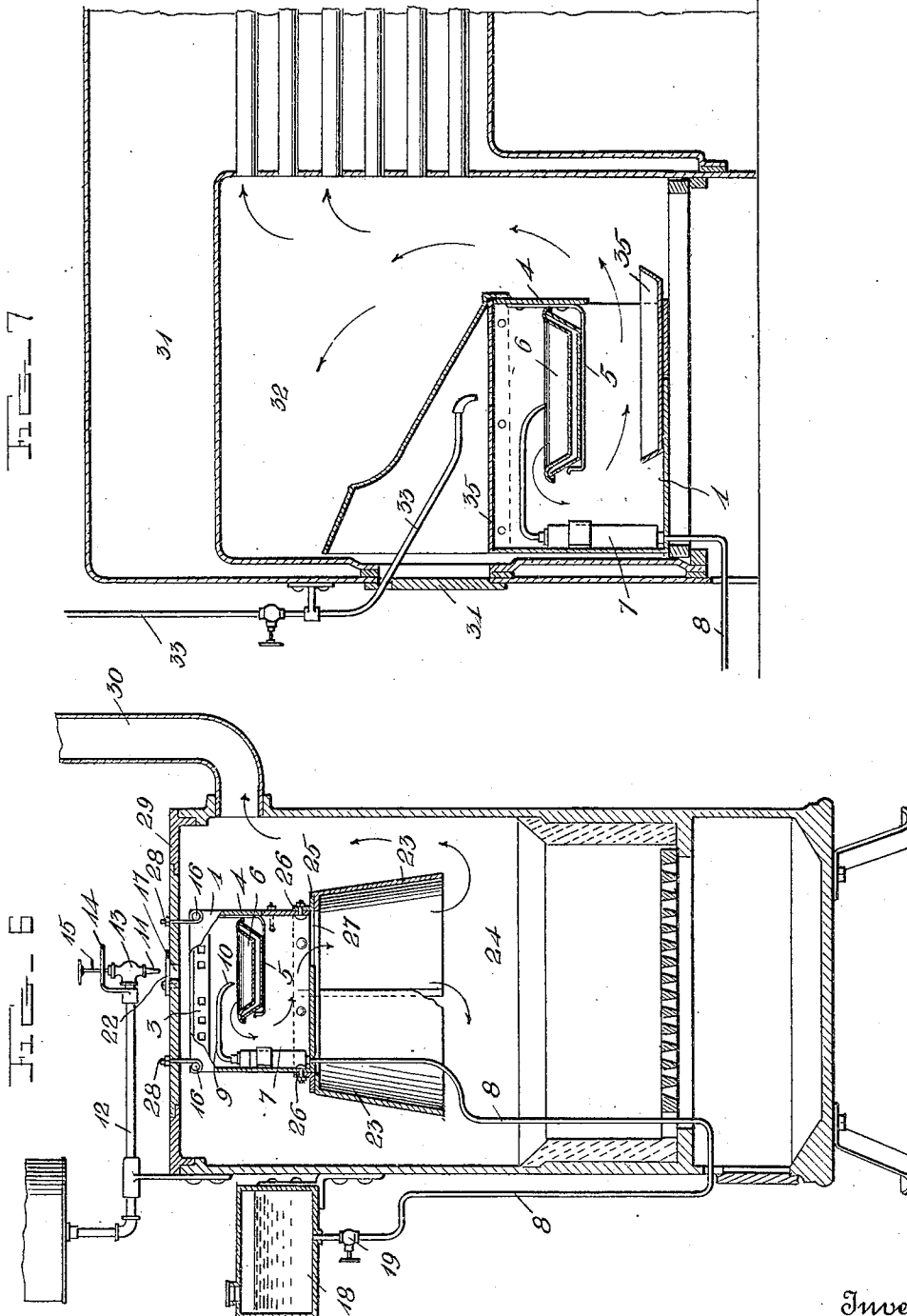
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UNITED STATES PATENT OFFICE.

ROYAL M. HAMMOND, OF DELLVALE, KANSAS.

LIQUID-FUEL BURNER.

940,149.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed March 24, 1908. Serial No. 422,886.

To all whom it may concern:

Be it known that I, ROYAL M. HAMMOND, a citizen of the United States, residing at Dellvale, in the county of Norton and State of Kansas, have invented certain new and useful Improvements in Liquid-Fuel Burners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to oil burners, and particularly to that type of burner used in connection with heating ranges or stoves, furnaces or boilers.

The object of the invention is to provide a device of this character which may be utilized inside of a stove, furnaces, or boiler fire-boxes, to furnish all the heat, or may be used outside of a stove adjacent the fire door in connection with an ordinary coal or wood fire.

A further object of the invention is to provide a device of this character whereby it may be converted into an ordinary wood or coal fire-box in short order.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of the device; Fig. 2 is a vertical central sectional view thereof; Fig. 3 is a top plan view; Fig. 4 is a perspective view partly in section of the device applied to the fire-box of a stove; Fig. 5 is a similar view showing the device applied to the outside of a stove adjacent the fire door; Fig. 6 is a vertical sectional view of the device applied to a self-feeding heating stove; Fig. 7 is a longitudinal sectional view with parts broken away of a tube boiler with the device applied within a fire-box; Fig. 8 is a perspective sectional view of the fuel pan used in connection with boiler burners; and Fig. 9 is a vertical sectional view on the line 9—9 of Fig. 2. Fig. 10 is a detail perspective view of the damper employed in Fig. 4.

Referring more especially to the drawings, 1 represents a suitable casing, preferably rectangular in form, having arranged around its upper edge a plurality of apertures, 2, which are governed by sliding

damper plates, 3, which regulate the size of the openings to determine the amount of heat given off to the stove. One side, 4, of the casing is made in sections which are detachably secured to the other portion thereof, and the upper section of this side has secured to it, a pair of supporting brackets, 5, which extend inwardly within the casing and support a fuel pan, 6. This fuel pan is preferably double in form, that is, the outer pan *a* is made of relatively heavy material, while the inner pan *b* is made of lighter material, and may be removed from the outer pan so that the unburned products of combustion which settle therein may be beaten out and the pan replaced by a new one when worn or burned out. Located in the casing adjacent the opposite side from that to which the pan is secured, I provide a wedge-shaped steam chest, 7, which has an inlet water supply pipe, 8, secured to its bottom and passing through the bottom of the casing to a suitable source of supply. A steam pipe, 9, leads from the upper part thereof and has a discharge nozzle 10, arranged over the fuel pan, 6, in position to commingle its output with the oil discharged from the nozzle, 11, carried upon the oil supply pipe, 12. This nozzle, 11, is connected to a suitable valve, 13, having upon its upper end a graduated dial, 14, over which a suitable pointer, 15, is adapted to pass to indicate the amount of oil supplied.

When the device is used in the fire-box of a heating stove or range, I preferably provide a pair of arms, 16, on either side of the casing which may be secured in any suitable manner to the stove so as to hold it in proper position therein. The lower half of the side 4 of the casing is removed so that the draft which passes through the opening, 17, will go in over the burner pan and out under it to the stove flue. In this form of application, I dispense with the lid for the casing and support the nozzle, 11, above the stove top.

In order to regulate the supply of water to the steam chest, I conduct the pipe, 8, around to a suitable reservoir, 18, which is connected to the pipe 8, through a suitable valve 19, by which the flow may be regulated. When in full blast, the steam is generated very rapidly in the steam chest, 3, and as the pressure increases therein, drives the water back through the pipe 8 into the

reservoir, 18, and thereby maintains a normal pressure and discharge. The nozzle, 10, and steam pipe 9, may be removed and the reservoir, 18, arranged on a level with the steam chest, 7, so that water will stand at the desired height in the steam chest, and thus be allowed to boil away, the steam being allowed to pass out through an opening where pipe 9 is removed. This will produce a very quiet, clean fire. This is important and a much better plan for giving a quieter fire than the pipe and nozzle.

When the device is attached to a stove as shown in Fig. 5, I provide a cover 20, preferably formed of sections *a*, *b*, hinged together so that one side may be raised for access to the burner pan. The opposite side is provided with an aperture, 21, through which the nozzle, 11, drops its output, and this aperture is governed by a draft slide, 22, as is customary. The lower section of the side, 4, is removed, and the device applied so that the draft from the opening 21 may pass over the burner pan under the same and through the fire door to the fire-box and eventually to the stove flue.

When it is desired to use the device for coal or wood, or any other solid fuel, at times when oil has run out for some reason or other, the side 4 is removed in its entirety, with the burner pan brackets and pan.

When the device is applied to self-feeders or the like, suitable baffle plates are provided which throw the products of combustion underneath the burner pan so that it will be constantly heated to properly convert the steam and oil into gases, which are readily burned.

In Fig. 6 I have shown the device as applied to a self-feeding heating stove and in this instance I secure to the bottom of the casing an extension skirt, 23, which is preferably frusto-conical in form and depends to a point adjacent the upper part of the ordinary fire-box, 24. This skirt is secured to the casing 1, by a pair of semi-cylindrical castings, 25, which, when put together, form a square opening and are provided with bolting flanges, 26. In this application of the device, the side, 4, is maintained in place, and a piece from the bottom is removed to form an aperture, 27, directly under the pan, 6. The device is suitably supported by bolts, 28, which connect the casing with the top, 29, of the heater. The steam chest 7 has its outlet pipe, 8, extending down through the grate of the stove and passing upwardly through the usual supply tank, 18, so that it receives the combined heat directly upon the tank and the heat which is confined within the skirt, 23. To indicate the course of the products of combustion I have shown a smoke-stack, 30, and have indicated the course by arrows.

In Fig. 7 I have illustrated a boiler, 31, which has secured within the fire-box, 32, an oil burner similar in construction to that described in the other figures of this application, and having an oil supply pipe, 33, leading through the fuel door, 34, and to a point over the top, 35, of the casing, 1. The steam chest, 7, has its pipe, 8, leading down through the grate bars and out through the ash pit door to a reservoir, or to any suitable source of supply. In this form of the device I preferably use an extension tray, 35, which rests in the casing 1, so that any oil which is splashed out of the casing may be burned in or before it reaches the tray, 35. The side 4 has its lower section removed as in Fig. 1, so as to allow the products of combustion to pass around adjacent the steam chest, 7, and under the fuel pan.

In order to regulate the amount of air in proportion to the fuel and steam supplied when the device is used in a fire-box of a range, I employ a device which covers the opening formed in the top of the stove and put a draft slide therein so as to govern the amount of air passing through the hole in the stove. A small peep-hole may be provided in this casting which is covered by any suitable non-fusible transparent material such as mica or the like.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation. Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters-Patent, is:

1. In a device of the class described, the combination with a casing having a flue opening in its side, a burner pan arranged on said side and above said opening, thereby causing the products of combustion to be directed under the pan to keep it heated, and a boiler in the casing having means to direct steam to said pan.

2. In a device of the class described, the combination with a casing having a removable side and an opening beneath the same, a burner pan secured within the casing on said side and above said opening, thereby causing the products of combustion to be directed under the pan to keep it heated, and a boiler in the casing having means to direct steam to said pan.

3. In a device of the class described, the combination with a casing having a removable side and a flue opening beneath the same, brackets carried on said side, a burner

pan removably secured on said brackets to cooperate with the flue opening to cause the products of combustion to be directed beneath the pan to keep it heated, and a boiler in the casing having means to supply steam to the pan.

4. In a device of the class described, the combination with a casing having a removable sectional side, a burner pan secured to one of the sections of the removable side, a source of fuel supply adapted to feed fuel to said burner pan, a boiler arranged in the casing and having a nozzle for the discharge of steam to said burner pan, said casing having an opening beneath the pan whereby the products of combustion are caused to travel underneath the same to keep it heated.

5. In a device of the class described, the combination with a casing, of a supporting pan arranged therein, a sediment pan removably held in the supporting pan and separated therefrom except at the supporting edges, means for feeding fuel thereto, a boiler arranged in the casing for supplying steam to the pan, means for regulating the supply of air to the burner, and means to regulate the supply of water to the boiler.

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

ROYAL M. HAMMOND.

Witnesses:

ELIAS F. COLEMAN,
MARION C. KNOX.