

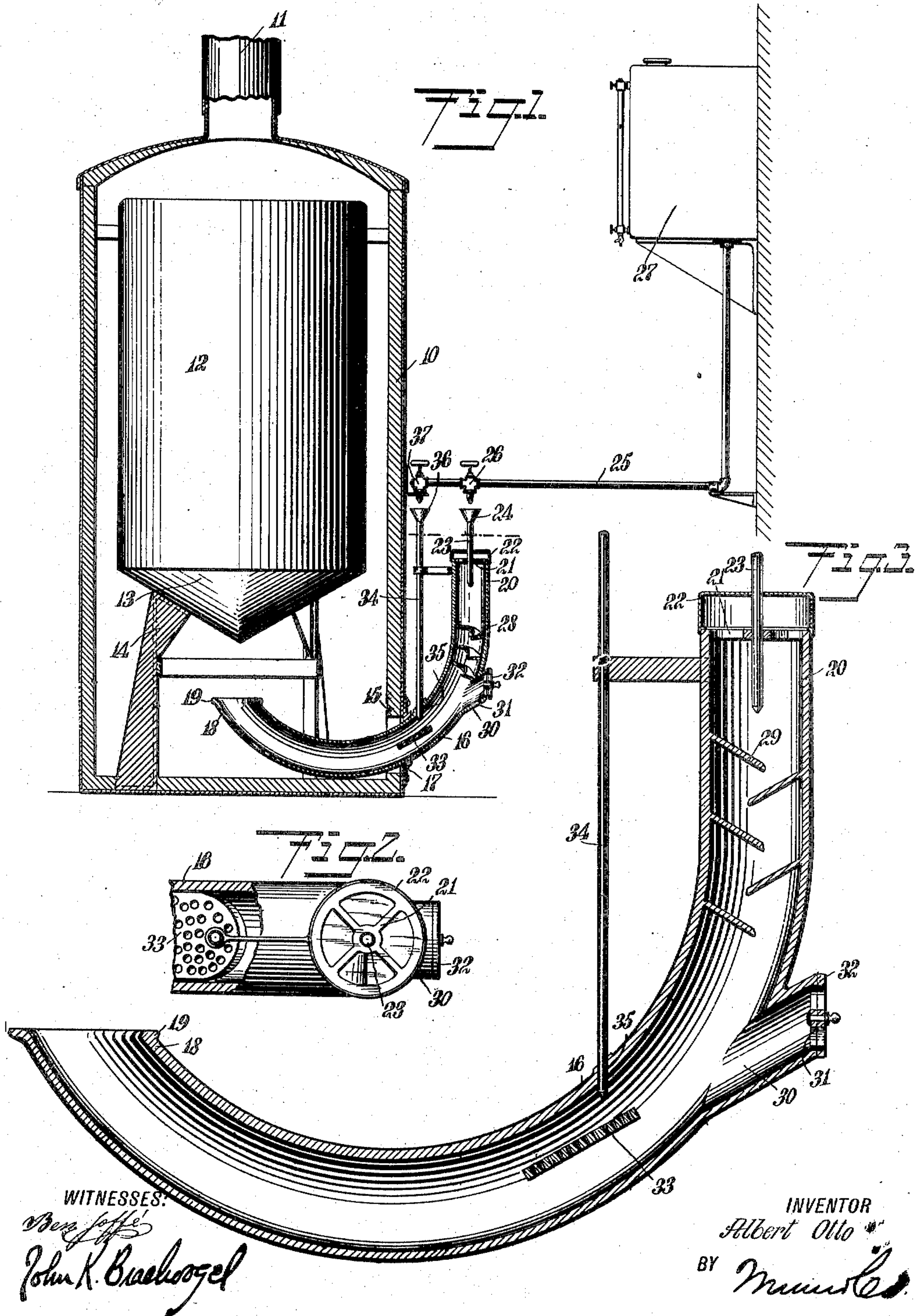
A. OTTO.

BURNER.

APPLICATION FILED NOV. 30, 1909.

967,657.

Patented Aug. 16, 1910.



UNITED STATES PATENT OFFICE.

ALBERT OTTO, OF FREDONIA, KANSAS.

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Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed November 30, 1909. Serial No. 530,594.

To all whom it may concern:

Be it known that I, ALBERT OTTO, a citizen of the United States, and a resident of Fredonia, in the county of Wilson and State of Kansas, have invented a new and Improved Burner, of which the following is a full, clear, and exact description.

This invention relates to burners for use in heating stoves, furnaces, boilers and the like, and relates more particularly to a device of this class comprising a downwardly extending conduit having an upwardly disposed discharge outlet, means for gravitationally feeding fuel into the conduit, means in the conduit for vaporizing the fuel, and means for regulating the entrance of air into the conduit.

An object of the invention is to provide a simple, economic and efficient burner in which crude oil can be efficiently burned to give a maximum of heat with a minimum of waste, which can be used with stoves or burners of different kinds and for different purposes, which can be easily adjusted, which is simple and compact in form, and which requires little attention when in use.

A further object of the invention is to provide a burner of the class described, in which a down draft of the air used in the burning of the fuel is effected, in which the fuel is fed in gravitationally, and in which a thorough mixture of the vaporized fuel and the air is effected.

The invention consists in the construction and combination of parts, to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a longitudinal section of a heating stove having an embodiment of my invention applied thereto; Fig. 2 is a fragmentary plan view of the burner showing it partly in section; and Fig. 3 is an enlarged longitudinal section of a burner having details of modified form.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that while the burner is particularly useful in connection with crude oil, any other fluid or similar fuel which can be fed gravitationally into the burner,

can be advantageously employed therewith. I prefer to fashion certain of the parts from cast iron, as this metal possesses radiating properties which I have found useful in the burner. For example, one of the parts, which when heated serves to vaporize fuel discharged thereupon, is best fashioned from cast iron. However, this and others of the constructive details form no part of the invention and can be varied in accordance with individual preference and special conditions, without departing from the underlying spirit of the invention.

Referring more particularly to the drawings, I have shown for example, a stove having an outer casing 10, provided at the top with a chimney or flue 11. The casing 10 is of cylindrical shape and has therein a correspondingly formed member 12, preferably fashioned from cast iron, and filled with fire-brick or other suitable material which tends to throw off heat to the surrounding space when the stove is in operation. The lower end 13 of the member 12 is preferably conical, and fashioned from cast iron. Supports 14 of any suitable form assist in mounting the member 12 in position. At one side, near the bottom, the outer casing has an opening 15 through which extends a downwardly directed, preferably curved burner tube or conduit 16. A suitable fixture 17 is secured at the opening 15 and has an opening within which the burner tube can fit snugly. The burner tube has an upwardly disposed discharge or outlet end 18, located under the point of the end 13 of the member 12, and as will appear hereinafter, serving to direct the flames resulting from the combustion of the fuel, upward against the end 13. If so desired, the outlet extremity of the burner tube may have an outwardly disposed, annular strengthening lip 19.

The inlet end 20 of the burner tube has a grating or spider 21 which permits air to enter the burner tube, and upon which is removably mounted a transparent cap 22 fashioned from mica or other suitable material which is substantially heat-proof. The transparent cap permits the state of the combustion in the tube to be observed. When the cap is in position it is impossible for smoke or flames to escape at the inlet end of the conduit. A feed pipe 23 extends into the inlet end of the burner conduit and

is centrally disposed with respect thereto. It has a funnel-shaped entrance 24 and passes through suitable openings in the cap and the grating. A fuel supply pipe 25 extends across the upper end of the burner and above the feed pipe has a manually-controllable feed cock 26. The pipe leads to a suitable reservoir 27 in which the crude oil or other fuel is stored. By suitably adjusting the cock or valve 26 the fuel can be allowed to feed gravitationally into the feed pipe 23, drop by drop or at any desired speed. Within the burner tube a small distance below the end of the feed pipe 23 are baffles 28 consisting for example, of spiral ribs or vanes.

In Fig. 3 I have shown a modified form of the burner in which the baffles 29 consist of oppositely disposed, downwardly inclined plates, each substantially semi-circular in form and alternating. Underneath the baffles, the burner tube has a laterally disposed branch 30 having at the end a grid 31 with which is pivotally associated a damper 32 by means of which the entrance of air into the burner can be regulated. The damper it will be understood, is of any suitable form adapted to the purpose. Beyond the air inlet 30, the burner tube has therein a grid or plate 33 consisting preferably of a cast iron member having a plurality of openings therethrough. A feed pipe 34 extends downwardly into the burner tube, through an opening 35 and has at the upper end a funnel-shaped entrance 36 located under a second valve or cock 37 of the fuel supply pipe 25. By suitably regulating the valve 37, fuel can be fed into the burner tube through the feed pipe 34 and allowed to drop on to the grid or vaporizing device 33.

The operation of the burner depends upon the fact that when crude oil or like fuel is subjected to heat it will vaporize; if the resulting vapor is mixed with air in suitable quantities a highly combustible and efficient fuel mixture is formed. The fuel entering through the pipe 23 burns at the upper end of the tube, first falling upon the baffles, which are heated by the flame so that it vaporizes. The combustion of the fuel entering the pipe 23 depends upon the air mixed therewith. The air can enter through the grating 21 if the cap 22 is removed, or if the cap is provided with an opening. The heat generated by the fuel entering through the feed pipe 23 heats the tube and also the grid or vaporizing device 33 so that when the fuel from the feed pipe 34 falls upon the grid it is instantly converted into vapor which is mixed with the air entering through the branch tube or air inlet pipe 30, so that it can escape at the outlet 18 of the tube in the shape of a burning and incandescent, gaseous mixture, the flames from which in the present instance, serve to heat parts of

the stove, which in turn, radiate the heat to the surrounding atmosphere.

Having thus described my invention I claim as new, and desire to secure by Letters Patent:—

1. A burner, comprising a conduit, two independent fuel-feeding pipes discharging into said conduit at separated points thereof, said conduit having an air inlet, and a vaporizing member positioned under and adapted to receive fuel from one only of said pipes, and being adapted to be heated by the combustion of the fuel from the other of said pipes.

2. A burner, comprising a conduit, two independent fuel-feeding pipes discharging into said conduit at separated points thereof, said conduit having an air inlet between said pipes, and a vaporizing member within said conduit and adapted to receive fuel from one of said feed pipes, said member being adapted to be heated by the combustion of the fuel entering said conduit from the other of said feed pipes.

3. A burner, comprising a conduit, two independent fuel-feeding pipes discharging into said conduit at separated points thereof, said conduit having an air inlet between said pipes, and a vaporizing member within said conduit and adapted to receive fuel from one only of said feed pipes, said member being adapted to be heated by the combustion of the fuel entering said conduit from the other of said feed pipes, said conduit having baffles therein between said feed pipes.

4. A burner, comprising a conduit having an air inlet, a gravitational fuel feed discharging into said conduit, baffles arranged to receive fuel from said feed, a vaporizing device adapted to be heated by the combustion of the fuel, and a second gravitational fuel feed adapted to discharge fuel on to said device, whereby the last-mentioned fuel can be vaporized, said device being positioned to receive fuel from said second feed inlet.

5. A burner, comprising a conduit having an air inlet, a gravitational fuel feed discharging into said conduit, baffles arranged to receive fuel from said feed, a vaporizing device adapted to be heated by the combustion of the fuel, and a second gravitational fuel feed adapted to discharge fuel on to said device, whereby the last-mentioned fuel can be vaporized, said conduit having an adjustable air inlet between said fuel feeds.

6. A burner, comprising a conduit having a discharge end and an inlet end, a fuel feed pipe extending into said inlet end of said conduit, a removable, transparent cap mounted at the inlet end of said conduit, baffles within said conduit, under said inlet end, said conduit having an adjustable air inlet under said baffles, a vaporizing grid be-

tween said air inlet and the discharge end of said conduit, and a second fuel feed pipe extending into said conduit and arranged to discharge fuel on to said grid, said feed pipes being arranged to have fuel pass there-through gravitationally.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

ALBERT OTTO.

Witnesses:

M. McGRATH,
ERNEST OTTO.