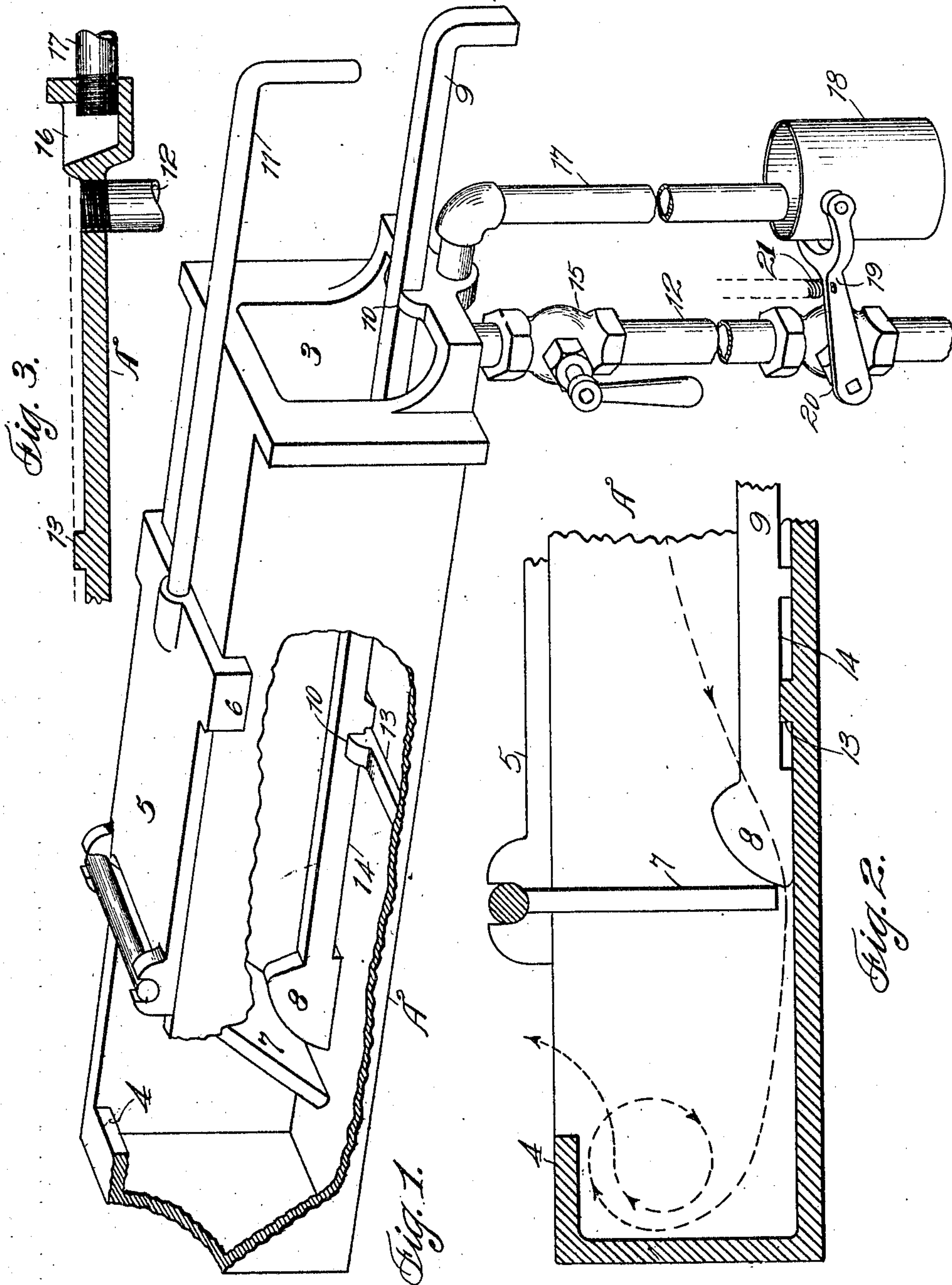


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PATENTED NOV. 12, 1907.

C. C. CLEVELAND.
OIL BURNER.

APPLICATION FILED MAR. 20, 1907.



WITNESSES:

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CHARLES C. CLEVELAND, OF SAN FRANCISCO, CALIFORNIA.

OIL-BURNER.

No. 870,933.

Specification of Letters Patent.

Patented Nov. 12, 1907.

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To all whom it may concern:

Be it known that I, CHARLES C. CLEVELAND, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

My invention relates to hydrocarbon burners, and especially to burners for use in cook stoves, grates and the like, where it is desired to use crude oil as a fuel.

10 The object of my invention is to provide a burner which can be inserted into an ordinary cook stove or grate, and which will have means for regulating the draft and for regulating the quantity and volume of the flame, and in which the oil may be fed in sufficient quantities to the burner by gravity.

15 A further object is to provide a means for automatically cutting off the oil supply in case the fire should go out, or in case a greater quantity of oil is being fed to the burner than is desired.

20 The invention consists of the parts and the construction and combination of parts as hereinafter fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a perspective view (partly broken away) 25 showing my invention. Fig. 2 is a longitudinal section through the rear end of the burner, the dotted curved line indicating the approximate air currents. Fig. 3 is a section of the front end of the burner showing the overflow.

30 A represents a metal box which comprises the shell or casing of my burner. This box is of any suitable size, shape and material. It is preferably oblong in form and is of a size sufficient to readily pass through the end door of a firebox of an ordinary stove. The flanges 2 are arranged adjacent to one end of the box 35 and adapted to abut against the sides of the door opening in the stove or to be clamped to the stove or otherwise securely held in place.

When the burner is put in the stove the outer end 40 is allowed to project just outside the stove so that sufficient quantities of air for combustion purposes may be admitted through a suitable end opening 3 in the box. The inner end of the box is closed and the top part for a short distance from the inner end is also 45 closed to constitute an overhanging ledge 4 as shown. This overhanging ledge or wall 4 is important as will be more particularly pointed out shortly. The top of the box is otherwise open for the major part of its length, except as this top opening is closed more or 50 less by the sliding plate or cover 5. This cover plate 5 is slidably held in position by suitable means as the lateral guide flanges 6 on the cover engaging the sides of the box. By moving the cover toward the rear ledge 4, the top opening in the box is closed more or 55 less, and by moving the cover in the opposite direction this opening is enlarged correspondingly; the purpose

of the cover being to regulate the opening in the box so as to give a larger or smaller flame. This cover carries a depending damper or valve plate 7 which normally reaches within about a quarter of an inch of 60 the bottom of the box. The purpose of this damper plate is to control the quantities of air admitted into the firebox and to create a strong draft close to the bottom of the box. This damper plate may be raised more or less by means of the wedge-member 8 which 65 is carried by the rod or handle 9, which extends out through the opening 3 in the box and is slidable in suitable guides as 10. The movements of the cover plate are effected by means of a suitable handle or rod 11 which also extends outward to a point within con- 70 venient reach of the operator.

Oil for fuel purposes is admitted up through the pipe 12 into the box A at any convenient point between the outer end of the box and the cross-bar or baffle 13 in the 75 bottom of the box. This baffle 13 is about one-quarter of an inch in height and forms a dam behind which a limited quantity of oil may accumulate. The front-end wall of the box is high enough so that the oil will first overflow the baffle 13. The rod 9 is sufficiently cut out as shown at 14 to accommodate the baffle 13, 80 and when the cover 5 is drawn outward to open up the box to its fullest capacity the damper 7 will not be drawn back beyond the baffle.

In operation the oil is admitted in a suitable quantity through the oil pipe 12 into the box A, the latter being 85 arranged at a slight incline in the stove so that the oil naturally flows by gravity toward the inner end. When some of the oil has passed over the baffle and underneath the draft plate 7 to the inner end of the firebox and the cover having been sufficiently drawn 90 back, the oil is ignited. As the heat rapidly increases the box becomes heated up and the oil becomes volatilized shortly after entering the box A. By reason of the draft induced by the burning gases in the space on the inner side of the damper 7, the oil vapors and a 95 suitable quantity of air from the outside, is drawn in with a swish underneath the damper plate 7 and becomes ignited inside the box A. The volume of flame passes out through the opening in the top of the box A and into the firebox; the size of the flame being regulated according to the size of the top opening in the box 100 A. The mixed air and inflammable gas are drawn underneath the plate 7, strike the rear end of the box A and are deflected upward to be met by the overhanging ledge 4 whereupon they are again directed horizontally toward the front of the box; this setting up a swirling motion in the box A and insuring a perfect mixture and a more perfect combustion. 105

If the ledge 4 or some equivalent substitute for it was omitted, the mixture would not be so good, and more- 110 over all the flame would be banked up at one end of the firebox, which would be bad. As it is the swirling ac-

tion which is set up in the box tends to give not only a better flame but to distribute it more advantageously throughout the whole firebox. If more air is needed for the mixture, the rod 9 with its wedge 8 are shoved in underneath the damper 7 to lift the latter and consequently increase the draft opening. By moving the cover 5 forward and back, a larger or smaller flame results.

The quantity of oil fed to the burner may be regulated by a suitable cock 15. In order to guard against overflow in case the fire should go out, or for any other reason, I may employ the following simple means: Adjacent to the outer end of the box A is formed a small pocket 16, the rim of which is slightly above the level of the baffle 13. This pocket 16 connects with a drain-pipe 17 which is adapted to discharge into a cup 18 carried by a lever 19 which controls a cut-off-valve 20 in the oil feed pipe 12. This latter valve is normally held open by means of a spring 21. In the event that the box A should fill up with oil so that the surplus overflows into the drain pipe 17, the cup 18 will finally accumulate a sufficient load to overcome the tension of the spring 21 and rock lever 19 to close the valve 20 in the oil feed pipe and so cut off the further flow of oil to the burner until the cup 18 has been emptied.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is—

1. An oil burner having in combination a box-like structure, open at the top and at one end, a movable cover-plate for the open top of the box, a movable damper-plate carried by the cover-plate and regulating the air-draft, said damper-plate having its lower end terminating short of the bottom of the box, and an oil-pipe delivering into the box at a point between the open end thereof and the damper-plate.
2. An oil burner comprising a box-like-structure, open

at the top and at one end and provided with a movable cover for the open top, a damper-plate carried by the cover and regulating the air draft, an oil pipe delivering into the box at a point between the open-end of the box and said damper, and a baffle in the bottom of the box between the point where the oil enters the box and said damper.

3. An oil burner comprising a box-like-structure, open at the top and at one end and provided with a movable cover for the open top, a damper-plate carried by the cover and regulating the air draft, an oil pipe delivering into the box at a point between the open-end of the box and said damper, a baffle in the bottom of the box between the point where the oil enters the box and said damper, and means independent of said cover for regulating the damper.

4. An oil burner comprising a box-like-structure, open at the top and at one end and provided with a movable cover for the open top, a damper-plate carried by the cover and regulating the air draft, an oil pipe delivering into the box at a point between the open-end of the box and said damper, a baffle in the bottom of the box between the point where the oil enters the box and said damper, and means including a wedge-member engageable with the damper to tilt the latter to increase or decrease the air draft opening.

5. An oil burner comprising a box having an opening at one end for the admission of air and having an opening on top for the outlet of burning gases, a sliding cover for said last-named opening, said box closed at the rear and having an overhanging ledge proximate thereto, a damper-member carried by said sliding cover, an oil feed pipe, said damper cooperating with said rear end wall and said overhanging ledge whereby the current of air induced underneath said damper is deflected by said closed rear end and said overhanging ledge horizontally toward the front of the box.

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

CHARLES C. CLEVELAND.

Witnesses:

S. H. NOURSE,
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