

C. E. COOKERLY.
HYDROCARBON BURNER.

Patented June 16, 1891.



UNITED STATES PATENT OFFICE.

CHARLES E. COOKERLY, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF TO GRANT DAVIDSON, OF SAME PLACE.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 454,332, dated June 16, 1891.

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To all whom it may concern:

Be it known that I, CHARLES E. COOKERLY, of Kansas City, in the county of Jackson and State of Missouri, have invented a new and
5 Improved Hydrocarbon-Burner, of which the following is a full, clear, and exact description.

My invention relates to improvements in hydrocarbon-burners; and the object of my invention is to produce a simple and efficient
10 burner which may be readily adapted to various shapes of stoves and which will furnish a great heat at small cost.

To this end my invention consists in certain features of construction and combinations of parts which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate
20 corresponding parts in all the figures.

Figure 1 is a vertical transverse section on the line 1 1 of Fig. 2. Fig. 2 is a vertical longitudinal section on the line 2 2 of Fig. 1.
25 Fig. 3 is an enlarged detail perspective view of the deflector, and Fig. 4 is an enlarged perspective view of the steam-pan.

In the drawings, A represents a stove-casing, which may be of any desired shape and
30 which has a suitable flue-opening *a* near the top, and bolted to the inner side of the casing near its central portion, so as to extend entirely around the same, is a narrow floor or ledge B, having on its outer and inner sides
35 flanges B', which enable it to be easily attached to the casing, and which also prevent the displacement of the stack C, which rests upon the floor. The ledge B and stack C will thus divide the fire-box of the stove into an
40 upper and lower chamber, so that the air passing upward through the central opening within the ledge and stack will give sufficient draft. The stack C is open at top and bottom and rests at its lower edge upon the ledge
45 B, so that it may be easily removed by simply lifting it therefrom. The stack converges slightly toward the top and its back is curved and made to project forward, as is best shown in Fig. 1, said curved portion C' being hinged
50 to the lower portion, as shown at *c*. Within the stack is an oil-box D, which is supported

upon a bar E, said bar extending transversely across the fire-box beneath the ledge B, from which it is suspended by the bolts *e*, which project downward through the ledge and
55 through the ends of the bar, and it will thus be seen that by means of these bolts the distance between the bar and ledge may be regulated. The box D has a central oil-chamber D' in its upper face, and is provided around
60 the edges with vertical flanges *d*, between which and the oil-chamber is a horizontal flat portion *d'*, which supports the deflector, as described below.

A feed-pipe F extends through an opening
65 in the front of the stove-casing and is made to extend upwardly through an aperture in the base of the box D into the chamber D', in which it terminates. The upper end of the feed-pipe is closed and provided with lateral
70 perforations *f*, through which the oil flows to the chamber. The pipe F is connected with a suitable oil-supply and is provided with an ordinary valve F', by means of which the flow of oil is regulated. The deflector G is preferably
75 rectangular in shape, as best shown in Fig. 3, and is made to fit closely within the flanges *d* of the oil-box D, so as to rest upon the flat portion *d'* of the same.

The deflector is provided with a bottom
80 plate G', which fits closely in the box D, and which is provided with perforations *g* to admit oil, and the deflector is also provided with a top plate G², which is parallel with the bottom plate and which is made to extend in a plane
85 slightly above that of the top edge of the body of the stack C, the two plates being united along one edge by a vertical web G³. The deflector G is open at both ends and on the front side, and the deflector is bolted to the oil-box
90 to prevent it from being displaced.

A steam-pipe H extends horizontally through the upper rear part of the deflector G, said pipe having jets *h* in its front side, as shown, and having coupled to one end a steam-supply
95 pipe H', which may be connected with any steam-generator, although it is better that superheated steam be used in connection with the device. The pipe H' should have a suitable valve therein to regulate the flow of steam.
100 Directly beneath the steam-pipe H is a steam-pan J, which is somewhat dish-shaped, as best

shown in Figs. 1 and 4, and which is provided with a forwardly-extending curved lip *j* and with a vertical flange *j'* at the back, by means of which it is bolted to the back plate or web *G*³ of the deflector. It will thus be seen that the pan will serve to throw the steam to the front side of the burner, and that it will also catch any drops of water which may issue from the steam-pipe, and as the pan is kept constantly hot the water will quickly turn to steam. The lower part of the deflector *G* is completely filled with a wick *K*, formed of closely-coiled wire or of similar indestructible material, the wick being packed closely, so as to fill the space between the vertical flanges *d* of the oil-box, although the wick should not be so closely packed but that the oil-vapor may pass upward through it.

The operation of the burner is as follows:
 20 The oil is fed into the chamber *D'* of the oil-box so that it will flow upward through the perforations *g* in the deflector *G* and into the wick *K*. The oil is then lighted and the steam turned on through the steam-pipes *H'* and *H*.
 25 After the fire is lighted the supply for the oil-pipe is adjusted so that the oil will only pass a little above the bottom of the deflector *G*. The oil will then be vaporized by the heat of the wick, and the vapor and steam will be turned into gas, which will burn brightly and the flame will issue from the three sides—that is, from beneath the front and ends of the plate *G*² of the deflector.

It will readily be seen that the ledge *B* may be made to fit any style of stove-casing, and that the stack *C* may be made to correspond with the ledge, so that the entire device may be easily adapted to stoves of any style.

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

1. A hydrocarbon-burner comprising an oil-box adapted to have an oil-supply pipe connected therewith, a wick located in the upper portion of the box, a deflecting-plate supported above the wick, and a steam-pipe beneath the deflecting-plate having jets therein, substantially as described.

2. A hydrocarbon-burner comprising an oil-box having a chamber in its lower portion and a wick in its upper portion, an oil-supply pipe delivering into the oil-chamber, a deflecting-plate above the wick, and a steam-pipe beneath the deflecting-plate, said pipe having jets therein, substantially as described.

3. In a hydrocarbon-burner, the combination, with a box containing an oil-chamber, of a deflector fitting within the box, consisting

of two parallel connected plates, the lower one of which is apertured, a wick supported on said apertured plate, and a perforated steam-pipe located within the deflector above the wick, substantially as described.

4. In a hydrocarbon-burner of the character described, the combination, with the deflector and the steam-pipe extending through it, of a steam-pan bolted to the deflector and extending beneath the pipe, and an oil-burner arranged beneath the steam-pan, substantially as described.

5. A hydrocarbon-burner comprising an oil-box having a chamber in the lower part thereof, an oil-supply pipe delivering in the chamber, a deflector consisting of two parallel plates connected at the back, the lower plate being perforated, a wick filling the lower part of the deflector, and a steam-pipe located in the upper part of the deflector and provided with jets, substantially as described.

6. The combination, with a stove-casing having a ledge extending around the inner wall of the fire-box thereof and a stack resting upon the ledge, of a hydrocarbon-burner suspended within the stack, substantially as described.

7. The combination, with a stove-casing having a ledge extending around the inner wall thereof and a stack resting upon the ledge, of a cross-bar adjustably suspended from the ledge, and a hydrocarbon-burner supported upon the cross-bar and within the stack, substantially as described.

8. In a hydrocarbon-burner, the combination, with the oil-box having a central chamber, a vertical flange, and a flat portion between the flange and the chamber, of a deflector fitting within the box and resting upon the flat portion thereof, said deflector having openings in its bottom portion and being open at the ends and one side, the wick in the bottom portion of the deflector, the steam-pipe located in the upper part of the deflector and provided with jets, and the steam-pan bolted to the deflector beneath the steam-pipe, substantially as described.

9. The combination, with the stove-casing having a ledge on its inner wall and the hydrocarbon-burner supported on the ledge, of a stack mounted on the ledge and converging toward the top, which is open in front, the rear portion of the stack above the burner being hinged, substantially as described.

CHARLES E. COOKERLY.

Witnesses:

GRANT DAVIDSON,
EDWIN E. McMECHAN.