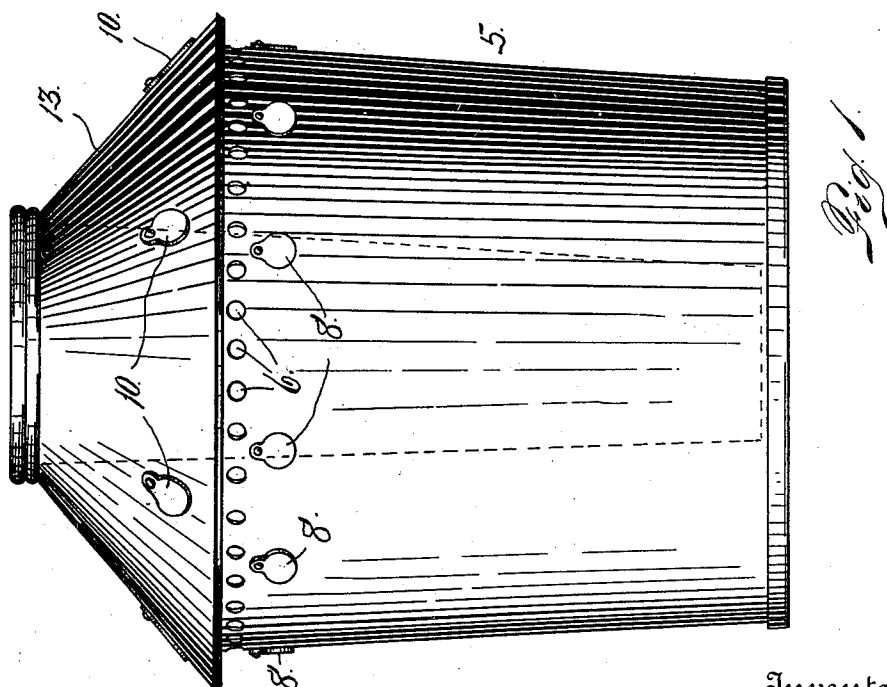
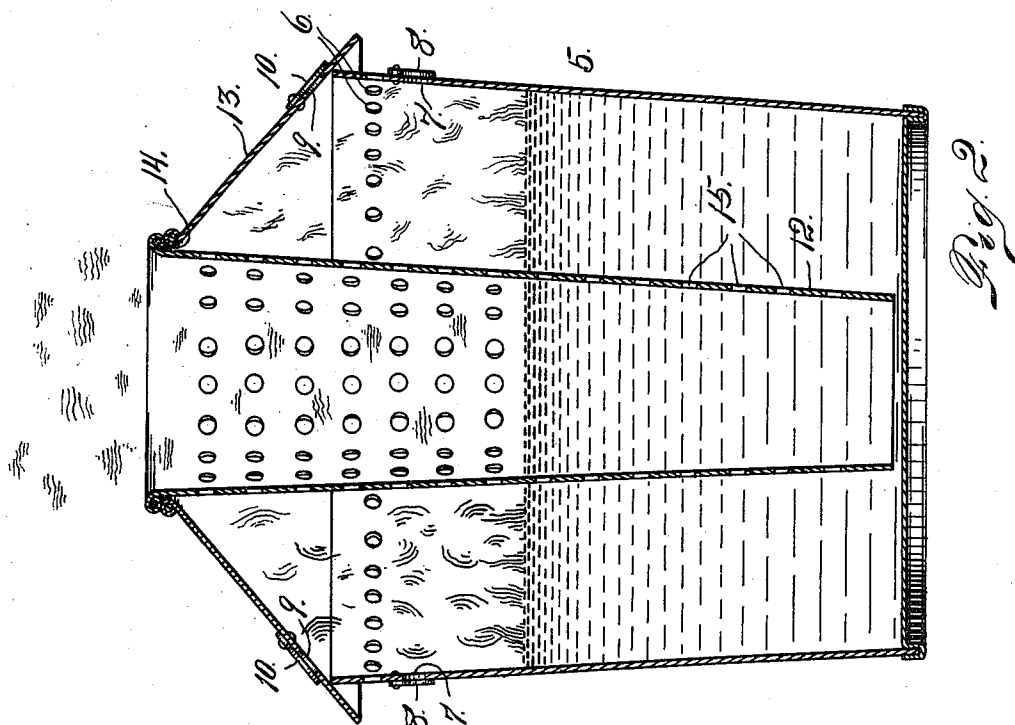


J. L. HAMILTON.
 ORCHARD HEATER.
 APPLICATION FILED JUNE 26, 1909.

976,072.

Patented Nov. 15, 1910.



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JAMES L. HAMILTON, OF GRAND JUNCTION, COLORADO.

ORCHARD-HEATER.

976,072.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES L. HAMILTON, citizen of the United States, residing at Grand Junction, county of Mesa, and State of Colorado, have invented certain new and useful Improvements in Orchard-Heaters; 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in orchard heaters, my object being to provide a construction of this class in which the maximum heating results may be obtained from a minimum quantity of fuel.

My improved construction consists of a fuel receptacle especially adapted for use in burning liquid fuel as crude oil. Within the center of this receptacle is placed a frusto-conical tube or chimney, which is perforated throughout its length and projects considerably above the fuel receptacle, its upper portion being surrounded by a hood, which is cone-shaped, its larger extremity resting on top of the fuel receptacle, while its upper extremity is provided with an opening into which the upper end of the perforated chimney is fitted. The upper part of the fuel receptacle, just below the hood, is provided with perforations for the admission of air for draft purposes. In case additional draft is required, additional perforations, normally closed, may be opened both in the upper part of the fuel receptacle and in the hood, above said receptacle.

Having briefly outlined my construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is a side elevation of my improved orchard heater. Fig. 2 is a vertical, longitudinal section of the same.

The same reference characters indicate the same parts in all the views.

Let the figure 5 designate the fuel receptacle, which as illustrated in the drawing, is formed slightly frusto-conical in shape, its lower extremity being smallest and gradually increasing in diameter from the bot-

tom toward the top. The upper portion of this receptacle is provided with a circumferential row of perforations 6 for draft purposes. It is also provided with a number of auxiliary perforations 7, adapted to be closed by valves or cut-offs 8, which are pivotally connected with the top of the receptacle, adjacent the perforations to be controlled. These auxiliary perforations may be used or not, as desired. I have also shown auxiliary draft perforations 9 in the hood, normally stopped by closures 10, which are hinged adjacent the perforations to be closed and are substantially of the same construction as the valves 8 of the receptacle. Both sets of auxiliary perforations may be used in case more draft or a hotter fire is desired. In some sections of the country, the temperature falls considerably lower than in other sections during the periods when orchard heaters are required. In the sections where the mercury falls lowest during these periods, the auxiliary draft perforations may be left open, thus producing a hotter fire and consuming a relatively greater quantity of fuel.

Within the center of the fuel receptacle is located a tube or chimney 12, which is perforated from top to bottom, and projects above the top of the fuel receptacle, being surrounded by a hood 13, whose lower part rests on the upper edge of the receptacle, and whose upper extremity is open, as shown at 14, to allow the upper extremity of the chimney 12 to pass therethrough. The chimney is provided with perforations 15, which are formed therein at suitable intervals throughout the length of the chimney, the latter having the shape of a frustum of a cone, its lower extremity being smallest.

When the device is in use, a suitable quantity of oil or other suitable liquid fuel is placed in the receptacle which may be made of any desired size. This fuel may completely fill the receptacle, that is up to a point close to the draft perforations 6 and 7, or it may be at any desired lower level. The fuel of course enters the chimney 12 through the perforations and stands at the same level therein as in the body of the receptacle. The fuel is originally lighted in the chimney and the fire will burn temporarily only in the chimney or until the surface of the oil in the entire receptacle is heated sufficiently to ignite. As soon as the oil between the walls of the receptacle and the walls of

the tube or chimney ignites; the fire ceases in the tube, but will burn in the combustion chamber or the portion of the fuel receptacle outside of the chimney. The fumes and converted gases pass up through the perforations in the chimney and out into the open.

The space between the sloping walls of the hood and the top of the liquid fuel in the receptacle affords a chamber of sufficient capacity for combustion purposes, even when the receptacle is full. As the oil burns lower in the receptacle, the said combustion chamber increases in capacity and more holes in the chimney are uncovered to allow for the escape of the increased products of combustion, the said conditions tending to produce perfect combustion at all times. Attention is called to the fact that the air necessary for purposes of combustion is fed into the combustion chamber at practically one level only, that level being near the top of the receptacle, whereby the entire depth of the receptacle below these perforations is available for holding the fuel. As the perforated tube or chimney extends considerably above this level, there is a slight draft created, which serves to draw the air through the perforations into the receptacle, into the rising gases, carbureting them, whereby combustion is made practically perfect. By virtue of this construction, no air is admitted to the fire except under the hood, and every particle of air that is admitted must pass into the rising gases, thus making combustion as nearly perfect as practicable.

It is evident that by increasing or decreasing the size of the perforations in the receptacle and chimney, a greater or smaller fire may be had. In the State of California, where the temperature rarely falls more than a few degrees below freezing, particularly during the season when this device would be required, this heater can be manufactured to burn a gallon of oil in six hours and furnish all the heat that would be required in that State; while in Colorado, the perforations would need to be larger so that the heater could consume a gallon of oil in four hours, with greater heat than in the first case; however, in both cases, practically perfect combustion is obtained.

It is evident that the device may be made to hold any desired quantity of oil. It is practicable to make it any size, having a capacity of from 1 to 4 gallons. In the State of Colorado, the heater should preferably be made to hold 3 gallons, this size being adapted to burn from 12 to 13 hours. This requires no night refilling of the heaters.

Another excellent feature of this device, is that the fire is in direct contact with the outer wall of the receptacle, with the result

that there is a strong lateral radiation of heat from the bottom to the top of the receptacle, thus giving better protection to any class of vegetation that is low on the ground, as vegetables, straw-berries, etc.

My improved device is constructed for the purpose of obtaining combustion as nearly perfect as possible in a heater of relatively large carrying capacity. On a quiet night, with practically no wind, the heater burns with no smoke. This feature recommends it for use especially in lemon growing sections, where smoke must be avoided in heating the orchards.

Having thus described my invention, what I claim is:

1. An orchard heater, comprising a fuel receptacle having draft perforations near the top thereof, a centrally located perforated tube or chimney projecting above the top of the receptacle, the perforations of the chimney extending both above the top of the receptacle and downwardly below said top, whereby they are gradually uncovered as the fuel is consumed, and a frusto-conical hood applied to the top of the receptacle and having an opening in its top, the chimney fitting closely in and closing said opening.

2. An orchard heater, comprising a fuel receptacle of frusto-conical shape, its larger extremity being uppermost, a tube or chimney centrally located in the receptacle and projecting above the top of the same, the said tube being perforated from top to bottom, the upper part of the receptacle being also perforated, and a hood applied to the top of the receptacle, the said hood having the shape of the frustum of a cone, with its smaller extremity uppermost, the top of the hood having an opening adapted to be closed by the upper extremity of the tube or chimney which fits closely therein.

3. An orchard heater, comprising a fuel receptacle, having draft openings near its top, a frusto-conical, perforated tube or chimney centrally located in said receptacle and projecting above the top thereof, the perforations extending downwardly into the receptacle, whereby they are gradually uncovered as the fuel is consumed, and a frusto-conical hood having its smaller extremity uppermost, the hood being applied to the top of the said receptacle and having an opening adapted to be closed by the upper extremity of the perforated chimney which fits closely therein.

4. An orchard heater, comprising a fuel receptacle having perforations in its upper portion for draft purposes, also auxiliary perforations, the receptacle being equipped with adjustable closures for the last named perforations, a perforated tube or chimney centrally located in the said receptacle and projecting above the top of the latter, the

perforations extending downwardly into the receptacle, whereby they are gradually uncovered as the fuel is consumed, a frusto-conical hood applied to the top of the receptacle, the said hood having its smaller extremity uppermost and provided with an opening adapted to be closed by the upper extremity of the perforated chimney which fits closely therein.

10 5. An orchard heater, comprising a fuel receptacle, having draft openings formed in the upper portion thereof, a perforated tube or chimney centrally located in the receptacle, the perforations extending downwardly below the top of the receptacle, whereby they are gradually uncovered as the fuel is consumed, the perforations also extending above the top of the receptacle, a hood applied to the top of the receptacle, the hood being of the shape of the frustum of a cone, having its smaller extremity uppermost, and provided with an opening surrounding the top of the perforated chimney which fits closely therein, and closes the same, the hood being provided with aux-

iliary draft openings, for the purpose set forth.

6. An orchard heater, comprising a fuel receptacle having draft openings in its upper extremity, a perforated tube or chimney centrally located in said receptacle and projecting above the draft perforations of the latter, the perforations of the tube or chimney extending downwardly into the receptacle whereby they are gradually uncovered as the liquid fuel is consumed, a frusto-conical hood applied to the top of the chimney and having its upper extremity open to receive the chimney which fits closely therein and closes said opening, the hood being provided with auxiliary draft-openings and equipped with adjustable closures for said openings, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES L. HAMILTON.

Witnesses:

ETHEL BLACKWELL,
E. G. GOLDSWORTHY.