

W. R. JEA VONS.
HEATER.
APPLICATION FILED JAN. 11, 1911.

1,029,757.

Patented June 18, 1912.

2 SHEETS-SHEET 1.

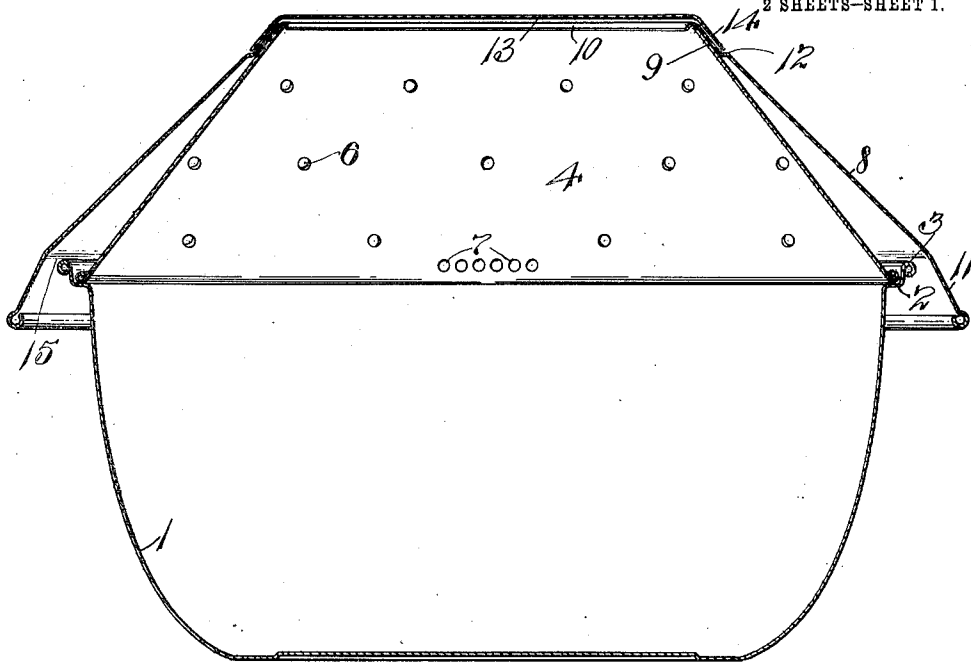


FIG. 1

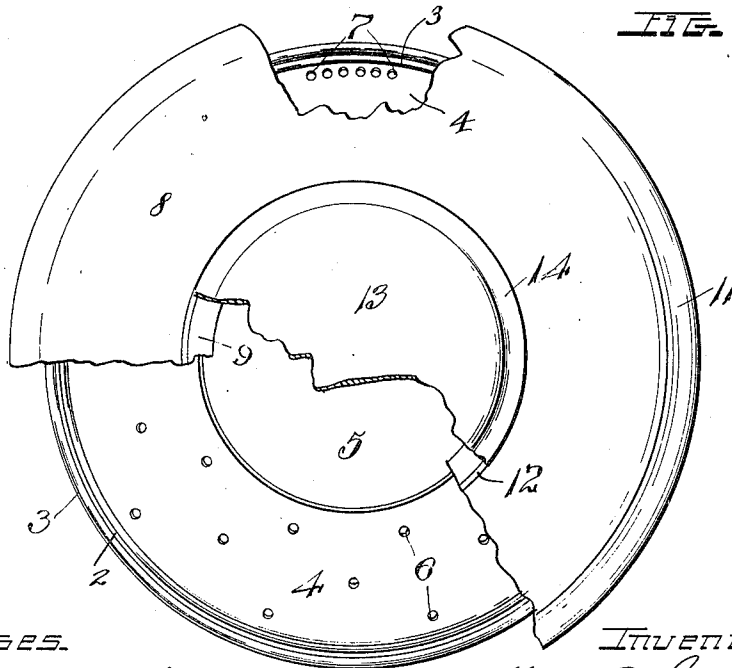


FIG. 2

Witnesses.

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By J. R. Hull
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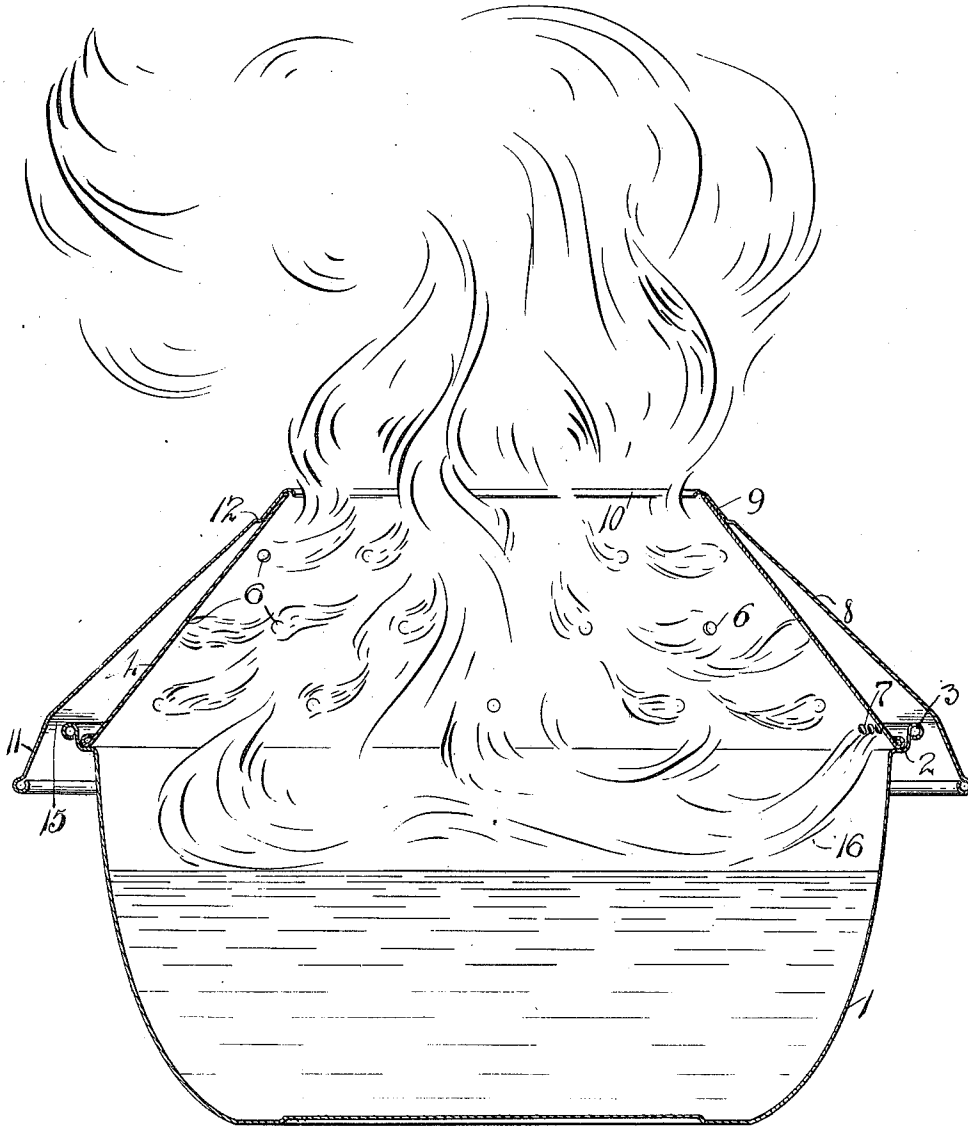


FIG. 3

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UNITED STATES PATENT OFFICE.

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HEATER.

1,029,757.

Specification of Letters Patent.

Patented June 18, 1912.

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To all whom it may concern:

Be it known that I, WILLIAM R. JEAUVONS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Heaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to heating devices that are known to the trade as "orchard heaters", said heaters being used by fruit growers for the purpose of preventing the freezing of the blossoms and of the fruit by the advent of unseasonable cold weather. Heaters for this purpose as hitherto constructed consist generally of receptacles for crude, fuel oil, which receptacles are placed at suitable intervals apart to protect an orchard or grove. The oil burns, with imperfect combustion, and heats the air in the vicinity of the trees to a sufficient temperature to prevent freezing. In practice, the preliminary vaporization of the oil is secured by pouring a small quantity of gasoline or similar light, inflammable hydro-carbon on top of the heavier oil in the receptacle and igniting this gasoline. The heat generated by the gasoline is sufficient to initiate the vaporization of the heavier oil and the vapor thus generated will ignite and thereafter combustion will continue by the heat of the burning vapor of such heavier oil.

It is the general purpose of this invention to provide a construction of heater which will not only secure efficient vaporization and combustion of the oil but will enable the parts of the heaters to be conveniently "nested," whereby the heaters will occupy a minimum amount of room when not in use.

A further object of the invention is to provide a construction of heater in which a substantially constant volume of flame may be secured at all times and, as a means for securing this particular result as well as improving the general operation of such heaters, to provide an extremely efficient manner of distributing the air to the heater.

A further object of the invention is to so construct the parts that, while securing an efficient operation, the heaters may be conveniently, quickly, and efficiently extinguished when it is desired to put them out of commission.

With the foregoing objects in view, the invention may be defined further as consisting

of the combinations of elements embodied in the claims hereto annexed and illustrated in the drawings forming part thereof, where-in—

Figure 1 represents a vertical sectional view taken through the central portion of a heater constructed in accordance with my invention; Fig. 2 a top plan view of such heater, parts of the extinguisher and hood being broken away to reveal the construction of the parts therebeneath; and Fig. 3 a view similar to Fig. 1 with the extinguisher removed.

Describing the various parts by reference characters, 1 denotes the receptacle for the fuel oil, said receptacle being of any convenient shape but preferably flaring from the bottom to the top, to facilitate nesting. At its upper end, the receptacle is provided with a substantially horizontal ledge 2, there being a short upwardly projecting flange 3 extending from the outer periphery of such ledge.

Detachably supported on the flange 2 is the air distributor 4, said distributor being tapered from the bottom upwardly, being shown as frusto-conical and formed preferably of sheet metal, the upper end being open to provide a central discharge outlet 5. This distributor is provided with a number of perforations 6, which are preferably distributed uniformly throughout the body of the distributor. In addition to these perforations, the distributor is provided with a series of perforations 7, grouped closely together and preferably arranged in horizontal line just above the bottom of the distributor.

Coöperating with the air distributor is a hood, said hood comprising a frusto-conical body 8 of greater inclination than the inclination of the distributor body. At its upper end, the hood is provided with an annular band 9 which is of the same inclination as the distributor and is of such size as to fit the upper end of the distributor, the extreme upper end of the hood being bent inwardly and downwardly to form a flange 10 by means of which the hood is supported from and positioned with reference to the distributor. The lower portion of the hood is preferably bent downwardly or at a smaller inclination than the body of the hood, as shown at 11 and extends a considerable distance below the bottom of the distributor.

A substantially horizontal ledge 12 is formed between the upper band 9 of the hood and the body 8 thereof, and this shoulder or ledge forms a support for the lower end of an extinguisher cap, said cap comprising a cover 13 and a flared or frusto-conical skirt 14 adapted to fit more or less closely the upper band 9 of the hood, the lower end of the skirt 14 resting on the ledge 12.

With the construction of parts as described, the operation will be as follows: Crude or "fuel" oil is poured into the receptacle 1 to the desired height, through the central opening 5 in the distributor, if the latter is in place. A small quantity of gasoline or other light and volatile hydrocarbon will be poured into the receptacle on top of the oil and ignited in any suitable manner. The air to support combustion will flow through the annular space 15 provided between the hood and the upper edge 3 of the receptacle 1. This air will pass through the openings 6 and 7 and the air thus supplied will be sufficient to maintain a flame within the distributor and receptacle and to provide a sufficient vaporization to maintain such combustion. The manner in which this result is secured is illustrated in Fig. 3. The air flowing through the openings 7 will be directed downwardly toward the gasoline (at the beginning of the operation) and toward the surface of the crude oil. The downward direction given to the air flowing through these openings maintains a flame, as shown at 16, which is always directed toward and plays upon the surface of the liquid fuel. This is true, even though the level of the oil in the receptacle varies considerably, and the construction shown furnishes a flame having a predetermined size and direction for maintaining a definite amount of vaporization of liquid fuel for the purposes of combustion and this flame is not liable to be extinguished, even at the beginning of the operation, when the gasoline is furnishing the vapor for the flame.

The hood not only protects the distributor and the interior of the burner against drafts, but directs the air evenly to the entire perforated area of the distributor and in a proper manner to secure best results. With the construction shown herein, there will be no combustion in the space between the hood and the distributor, and hence no accumulation of smoke or soot on these parts. The downward extension 11 of the hood prevents wind from blowing into the interior of the burner and thus contributes to the even and proper distribution of air to the interior of said burner, with a resultant even quality in the flame.

When it is desired to discontinue the use of the burner or heater, the extinguisher may be used. The shape of the extinguisher en-

ables it to fit the top of the hood while the ledge 12 protects the lower edge of the extinguisher and prevents the extinguisher from being blown off the hood by the action of the wind.

It will be observed that the receptacle, the air distributor, the hood, and the extinguisher, are all of flaring shape. This enables the like parts of a large number of heaters or burners to be "nested", thereby enabling the heaters to occupy but little space when out of commission.

Having thus described my invention, what I claim is:

1. In a device of the character described, the combination of a receptacle for liquid fuel, a perforated tapered air distributor above the fuel in said receptacle and arranged to receive all the vapors generated from such fuel, and a tapered hood mounted on the upper end of the distributor and extending below the lower end thereof and forming therewith an air space decreasing in width from bottom to top.

2. The combination, with an oil receptacle having an outwardly projecting ledge at its upper end, said ledge having an upwardly projecting peripheral flange, of a perforated air distributor having its lower edge resting on said ledge, and a protecting hood over said air distributor and having its lower end extending below said flange and spaced therefrom.

3. The combination, with an oil receptacle having an outwardly projecting ledge at its upper end, said ledge having an upwardly projecting peripheral flange, of a tapered air distributor having its lower edge resting on said ledge and being provided with perforations in the body thereof, and a protecting hood over said air distributor and having its lower end extending below said flange and spaced therefrom, there being one or more apertures provided near the lower edge of said distributor for maintaining a vaporizing flame in proximity to the fuel in said receptacle.

4. In a device of the character set forth, the combination of a liquid fuel receptacle, an open top perforated air distributor which is wider at the bottom than at the top having its lower portion supported by the upper portion of the receptacle at a point above the surface of the liquid therein and forming therewith a chamber embracing the entire surface of the liquid in said receptacle, and a hood adapted to be supported above the air distributor and to protect the perforations thereof and arranged to direct air through said perforations.

5. In a device of the character set forth, the combination of a liquid fuel receptacle, a perforated air distributor which is wider at the bottom than at the top having its

lower portion supported by the upper portion of the receptacle at a point above the surface of the liquid therein and forming therewith a chamber embracing the entire surface of the liquid in said receptacle and providing an air supply for combustion within such chamber through such perforations, said chamber being provided with one or more special perforations located in closer proximity to the surface of the oil in the receptacle than the other perforations for the purpose of maintaining a larger supply of flame at such point.

6. In a device of the character set forth, the combination of a liquid fuel receptacle, an air distributor which is wider at the bottom than at the top having its lower portion supported by the upper portion of the receptacle at a point above the surface of the liquid therein and forming therewith a perforated chamber embracing the entire surface of the liquid in said receptacle, said chamber being provided with one or more special perforations located in closer proximity to the surface of the oil in the receptacle than the other perforations for the purpose of maintaining a larger supply of flame at such point.

tacle than the other perforations for the purpose of maintaining a larger supply of flame at such point.

7. In a device of the character set forth, the combination of a liquid fuel receptacle, a perforated air distributor which is wider at the bottom than at the top having its lower portion supported by the upper portion of the receptacle at a point above the surface of the liquid therein and forming therewith a chamber embracing the entire surface of the liquid in said receptacle and providing an air supply for combustion within such chamber through such perforations, the air distributor being provided immediately above its junction with the oil receptacle with one or more special perforations for the purpose of maintaining a larger volume of flame at this point.

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

WILLIAM R. JEAVONS.

Witnesses:

J. B. HULL,

ALBERT H. BATES.