J. L. HAMILTON.

ORCHARD HEATER.

APPLICATION FILED OCT. 31, 1913.

1,091,216.

Patented Mar. 24, 1914.

2 SHEETS—SHEET 1.

Fig. 2

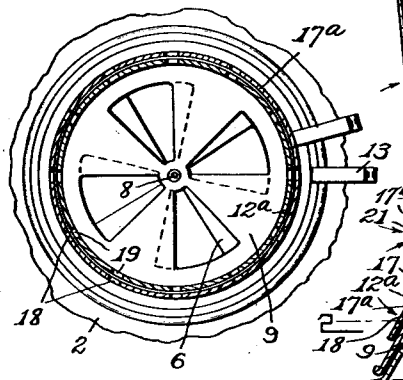
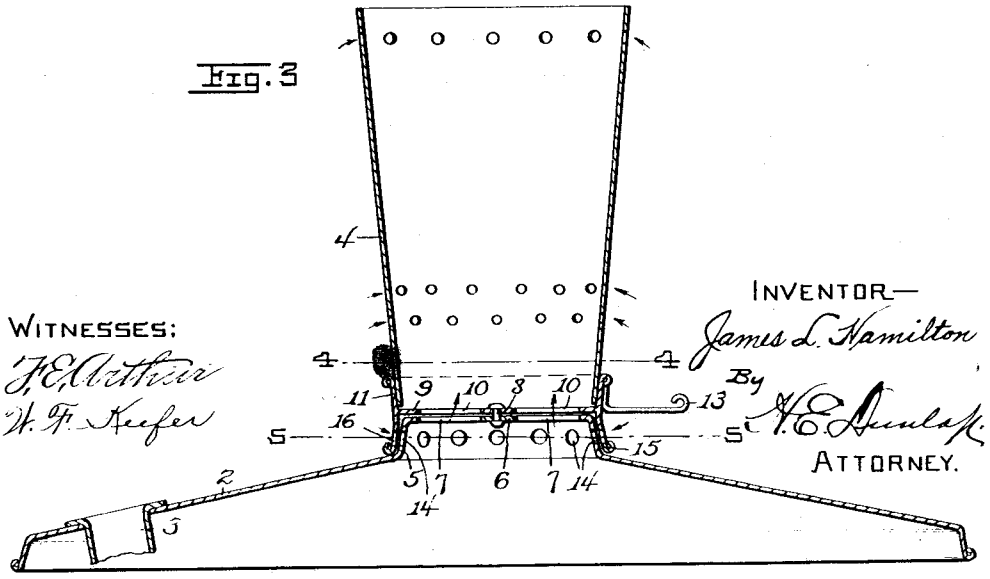


Fig. 1.

Fig. 3



WITNESSES:

J. E. Arthur

W. F. Keefer

INVENTOR—

James L. Hamilton

By H. C. Arnold

ATTORNEY.

J. L. HAMILTON.

ORCHARD HEATER.

APPLICATION FILED OCT. 31, 1913.

1,091,216.

Patented Mar. 24, 1914

2 SHEETS—SHEET 2.

Fig. 4

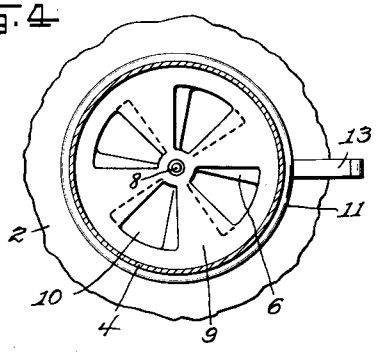


Fig. 5

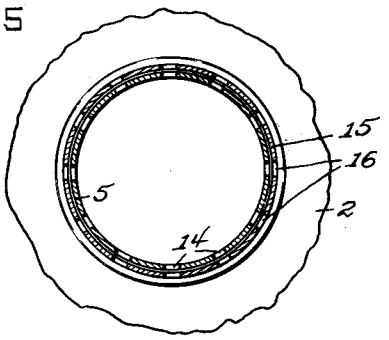
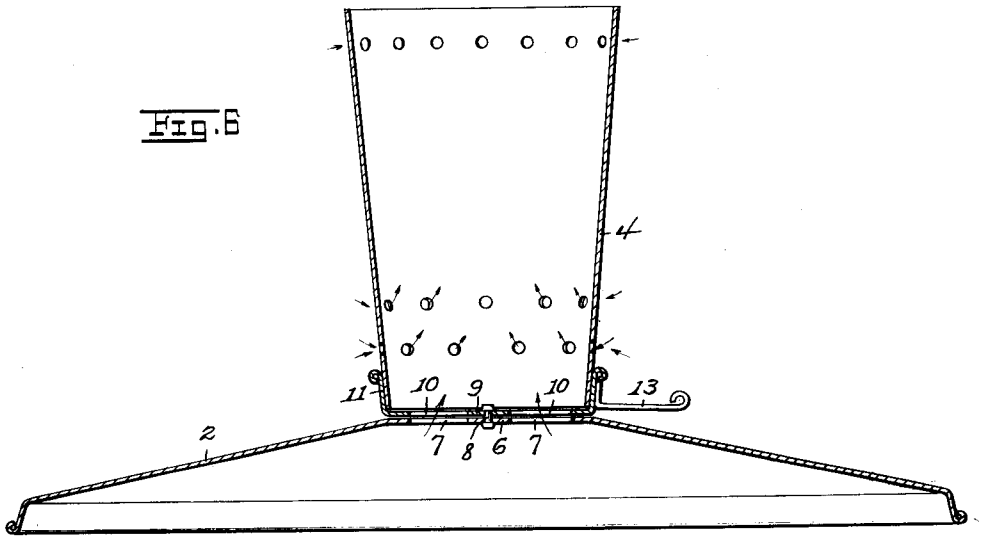


Fig. 6



WITNESSES:

H. E. Arthur

W. F. Keefer

INVENTOR—

James L. Hamilton.

BY H. C. Dunlap

ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES L. HAMILTON, OF GRAND JUNCTION, COLORADO, ASSIGNOR TO HAMILTON ORCHARD HEATER COMPANY, OF WHEELING, WEST VIRGINIA, A CORPORATION OF WEST VIRGINIA.

ORCHARD-HEATER.

1,091,216. Specification of Letters Patent. Patented Mar. 24, 1914.

Application filed October 31, 1913. Serial No. 798,428.

To all whom it may concern:

Be it known that I, JAMES L. HAMILTON, a citizen of the United States of America, and resident of Grand Junction, county of Mesa, and State of Colorado, have invented certain new and useful Improvements in Orchard-Heaters, of which the following is a specification.

This invention relates broadly to improvements in orchard heaters, and specifically to draft controlling devices for such heaters.

The primary object of the invention is to produce an orchard heater of the oil burning type having a stack and provided with means whereby the passage between the oil container and the stack may be restricted to any extent desired for regulating the rapidity of combustion.

A further object of the invention is to provide, in an orchard heater of said type, adjustable means for controlling the passage of gases from the oil container to the stack, associated with regulatable means for admitting air to said gases before they enter said stack. And a further object is to provide, in a device of the character mentioned, a pair of concentric stacks, each rotatable with respect to the other, whereby the admission of air to said stacks for facilitating the combustion of gases may be controlled.

With these and other important objects in view, the invention resides in the features of construction, arrangements of elements and combinations of parts which will hereinafter be exemplified, reference being herein had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a central vertical section of an orchard heater embodying my invention; Fig. 2 is a horizontal section on the line 2—2, Fig. 1; Fig. 3 is a view somewhat similar to Fig. 1, illustrating a modification; Fig. 4 is a horizontal section on the line 4—4, Fig. 3; Fig. 5 is a similar section on the line 5—5, Fig. 3; and Fig. 6 is a view similar to Fig. 3, illustrating a further modified form of the invention.

Referring to said drawings, in which like designating characters distinguish like parts throughout the several views—1 indicates a liquid fuel, or oil, reservoir or container which may be of any preferred form, but which is herein shown as being of circular tapered form. Removably fitted on said reservoir is a cover 2 having an opening therein at a point laterally of its center, in which is fitted an air-inlet tube 3 adapted, when its lower end is uncovered, to admit a strong draft of air to the surface of the oil.

As is well understood, the most volatile, readily combustible portion of the low grade oils usually employed in heaters of this character lies at or near the surface, and, as the level of the oil is lowered, the quality of the oil gradually becomes poorer and, consequently, combustion constantly becomes more difficult. In the heater which forms the subject matter of the present invention, when the oil has burned down to a level where combustion becomes more or less difficult, the lower end of the tube 3 is uncovered, admitting therethrough upon the surface of the oil a draft of air which acts to materially facilitate combustion.

When the reservoir 1 is full, or nearly full, the surface oil vaporizes quite rapidly, rendering it advantageous to restrict the size or area of the opening or passage through which the reservoir 1 communicates with the superposed stack 4 commonly employed in order to retard combustion in the stack. As the fuel level lowers, and vaporization becomes less rapid, it becomes necessary to gradually increase the area of said passage or opening giving it greater capacity for supplying gases to the stack in order that the rate of combustion may be maintained substantially uniform. And, when said fuel level has lowered below the bottom of the draft tube 3, it is advantageous to regulate the volume of the draft admitted through said tube so that an increased volume may be admitted as the bottom of the reservoir is approached. To attain the regulation above referred to, with its resultant advantages, I have devised means whereby the capacity of the communicating passage between the reservoir and the stack may be adjusted, which means will now be described.

Pressed in the cover 2 at a point which is preferably central of the said cover is an upwardly tapered circular neck 5 which terminates in a horizontally disposed circular plate or diphragm 6 in which is provided one or more openings or passages 7, said

openings or passages being herein shown as four in number and as substantially triangular in form. Mounted upon said diaphragm 6 and having pivotal connection therewith, as shown at 8, is a rotatable disk 9 having therein openings or passages 10 corresponding in number and form with those in said diaphragm, said disk being adapted for rotation to effect either a partial or complete registration of said passages according as it is desired to limit the capacity of the latter or permit of the unobstructed passage of gases to the superposed stack 4. Said disk may have formed integral therewith or attached thereto a peripheral upwardly directed flange 11, as shown in Figs. 3, 4 and 6, in which case the stack is closely seated within the confines of the flange and is rotatable with the disk, or it may be attached to the outwardly flared, or bell-shaped, end 12^a of an inner upwardly and inwardly tapered stack 12, as shown in Fig. 1. Rotation of the disk 9 with respect to the diaphragm 6 for regulating the gas supply to the stack may be accomplished in any suitable manner, a short lever 13 adapted to be grasped for rotating the disk being herein shown.

For admitting an air supply to the interior of the reservoir below the diaphragm, a plurality of perforations 14 may be provided, as shown in Fig. 3, in which case a depending apron 15 formed on or carried by the disk 9 and having perforations 16 corresponding to said perforations 14 and adapted to be moved into partial or complete registration with the latter for regulating said air supply, may be provided, as shown in the last mentioned figure. It will be noted that adjustment of the disk shown in said figure simultaneously regulates the draft from the reservoir to the stack and the air supply to the reservoir through perforations 14 and 16.

In the construction shown in Fig. 1, provision is made for admitting a regulatable air supply to the interior of the inner stack 12, a rotatable collar 17 of double bell shape being mounted with its lower bell shaped portion 17^a in embracing relation to the lower end 12^a of said inner stack, and perforations 18 and 19 being respectively provided in said portion 17^a and end 12^a which are adapted to be moved into and out of registration by rotation of said collar, effected through the intermediacy of a short lever 20 mounted on said collar. The outer stack 4, which is preferably of frusto-conical form, has its smaller end loosely disposed within the upper bell-shaped portion 17^d of said collar so that it is normally rotatable with the latter. For admitting a controllable air supply to the interior of said outer stack below the point at which the gas enters said stack, perforations 21 and 22 are respectively provided in said collar and in said stack which are adapted to be moved into and out of registration by rotation of the stack with respect to said collar.

As is obvious from the foregoing the adjustments hereinbefore described are such that air may be supplied in widely varying volumes for mixing with the gases generated within the reservoir, enabling the operator to adjust the device for fuels of widely varying grades in the manner tending most nearly to produce perfect and uniform combustion.

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

1. In an orchard heater, the combination with a fuel reservoir, of a cover for said reservoir, said cover having a portion provided with a plurality of draft passages, a disk pivotally mounted on said portion, said disk having draft passages therein corresponding to those in said portion and being adapted for rotation for adjusting the extent of registration of said passages, and a stack mounted upon and rotatable with said disk.

2. In an orchard heater, the combination with a fuel reservoir, of a cover for said reservoir, said cover having a portion provided with a plurality of draft passages, a disk pivotally mounted on said portion, said disk having draft passages therein corresponding to those in said portion and being adapted for rotation for adjusting the extent of registration of said passages, an annular disk-embracing element, and a stack of inverted frusto-conical shape associated with said element.

3. In an orchard heater, the combination with a fuel reservoir, of a cover for said reservoir, said cover having a portion provided with a plurality of draft passages, a disk pivotally mounted on said portion, said disk having draft passages therein corresponding to those in said portion and being adapted for rotation for adjusting the extent of registration of said passages, an inner stack mounted upon and rotatable with said disk, a collar having a portion mounted on said stack, said collar being normally rotatable with said stack and being also rotatable with respect to said stack, said collar and said stack having perforations therein adapted for registration, and an outer stack fitted on and normally rotatable with said collar.

4. In an orchard heater, the combination with a fuel reservoir, of a cover for said reservoir, said cover having a portion provided with a plurality of draft passages, a disk pivotally mounted on said portion, said disk having draft passages therein corresponding to those in said portion and being adapted for rotation for adjusting the extent of registration of said passages, an inner stack

mounted upon and rotatable with said disk, a collar having a portion mounted on said stack, said collar being normally rotatable with said stack and being also rotatable with respect to said stack, said collar and said stack having perforations therein adapted for registration, an outer stack being also rotatable with respect to said collar, and means adjusted by rotation of said outer stack with respect to said collar whereby an air supply is admitted to the outer stack.

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

JAMES L. HAMILTON.

Witnesses:
H. E. DUNLAP,
W. F. KEEFER.