Dec. 29, 1942. B. T. REYNOLDS 2,306,467

LONG FLAME ORCHARD HEATER

Filed April 16, 1940

Fig. 1.

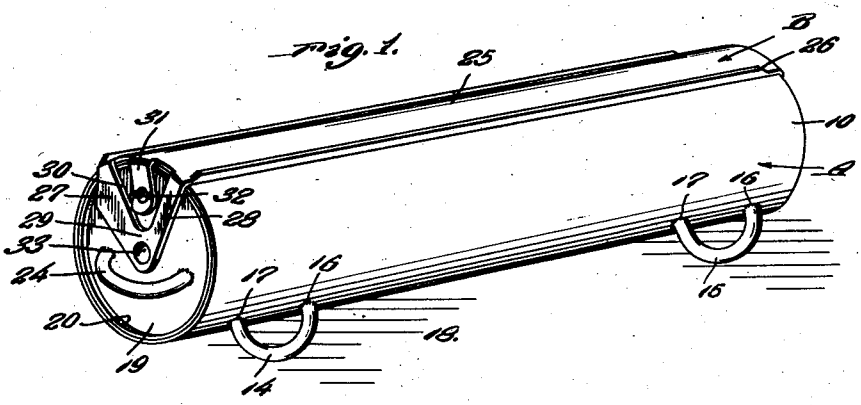


Fig. 2.

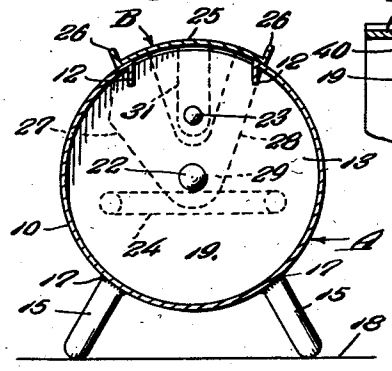


Fig. 6.

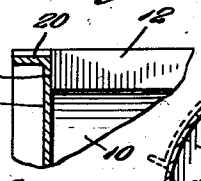


Fig. 3.

Fig. 4.

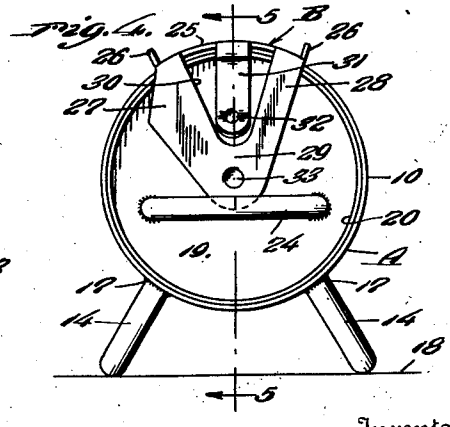
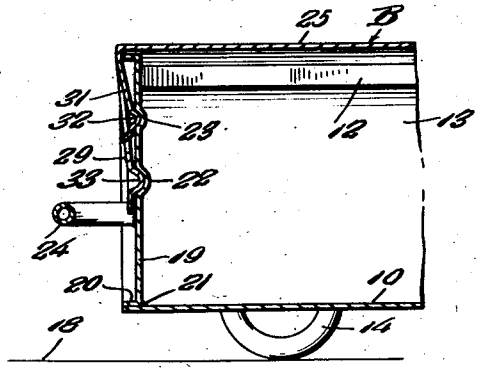


Fig. 5.



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LONG FLAME ORCHARD HEATER

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Application April 16, 1940, Serial No. 329,946

4 Claims. (Cl. 158—91)

This invention relates to a long flame orchard heater.

It has been the custom to provide heat for perishable fruit trees, in the citrus belt of this country, in order to warm the air in the neighborhood of the trees so as to prevent the fruit from freezing. It has been found that the burning of oil in containers without forced draft, is the most desirable method of supplying the heat, not only for the ease with which it is stored and transported, but because of a certain amount of smudge that is emitted with the heat. This smudge retards the rise of the heat in the convention currents, and consequently retains the heat in the area of the tree for longer periods than is possible with combustible products that emit little or no smudge or smoke.

It is one of the objects of the present invention to provide a construction that will form a long flame close to the surface of the ground, which construction makes a strong stable burner that is easily transported and positioned in a desired area without the likelihood of being upset, and without the likelihood of burning the operator.

Another object of the invention is to provide a heater construction with curved walls which promotes better combustion of the oil than is experienced in the customary, open bucket-type of heater that has all the walls substantially perpendicular. It is believed that the curved walls reflect the heat and produce better burning.

A still further advantage of the present invention resides in a design which affords regulation of the burning oil and consequently the emission of heat, by a lid or cover which may be adjusted to different positions while the fuel oil in the heater is burning.

An additional feature of the invention is a construction which permits all of the major parts to be produced by stamping operations, and promotes economy in the assembly of the heater.

Further objects of the invention are to provide a heater which is strong, compact, and durable, highly efficient in its intended uses, and comparatively inexpensive to manufacture and operate.

With the foregoing and other objects in view the invention consists of a novel combination, organization, and arrangement of parts, as will be more specifically described and illustrated in the accompanying drawing, but it is to be understood that changes, modifications, and variations may be resorted to without departing from the invention set forth in the appended claims.

In the drawing, wherein like characters of reference indicate like structure throughout the several views:

Figure 1 is a perspective view of the present invention with the lid in closed, latched, position.

Figure 2 is a vertical diametric sectional view thereof.

Figure 3 is a vertical diametric sectional view similar to Figure 2 showing the lid in the open position.

Figure 4 is an end elevation with the lid in closed position.

Figure 5 is a fragmentary vertical axial section thereof taken approximately along the line 5—5 of Figure 4; and

Figure 6 is a fragmentary sectional view of one end of the fire-pot, shell, or casing with the lid removed showing a lip on the side wall cut away to accommodate the flange on the end wall.

The heater of the present invention is formed of a hollow elongated cylindrical fire-pot, shell, or casing A and a lid, or cover B, which rocks within certain limits between open and closed positions. The fire-pot, shell, or casing A is filled with oil in the beginning until it is completely full, and in the proportions selected to illustrate the invention, the capacity is about ten gallons of oil, and will burn for about ten to fourteen hours without replenishing.

The side wall 10 is circular, having a space between the confronting longitudinal edges to provide a continuous opening, or mouth 11. The longitudinal edges are turned inward to provide a lip 12 on each side of the opening and these lips extend into the chamber 13 of the fire-pot to overcome splashing. The side wall is formed of metal, and I prefer to use a sheet iron that is workable in customary stamping operations. The sheet iron may be coated with some non-corrosive alloy, such as is used in galvanizing processes, or it may be uncoated, depending upon the length of useful life desired in the completed heater. The width of the mouth, or opening 11, is approximately 45 degrees of the circumference, and is positioned so as to be bisected by the vertical diameter of the receptacle, and it extends from one end of the fire-pot to the other. It will be understood that there is a space between the level of the oil in the fire-pot or casing A and the opening 11 so that the fire-pot shall furnish a reservoir for the oil and also a combustion chamber above the level of the oil even when the fire-pot is initially filled and thereafter replenished. The products of combustion are emitted through opening 11, and air to support

combustion in the chamber also enters through the opening. The full exposure of the opening 11, that is, when the lid or cover B is fully open as indicated by the solid lines in Figure 3 of the drawing, promotes the normal rate of combustion for the heater of the present invention. A pair of runners are located adjacent each end of the fire-pot, one pair being designated 14, and the other 15. The individual runners of each pair, as illustrated, are formed of bowed round metal rods, the free ends of the bowed rods being welded to the side wall 10 at 16, 17. The crowns of the bowed runners engage the ground indicated at 18, and they slide along the ground similar to the runners on a sled, when it is desired to move the heater. The runners of each pair are transversely spaced equal distances from the middle of the receptacle so as to provide great stability and, at the same time, maintain the fire-pot spaced from the ground.

The circular end walls 19 of the fire-pot are also formed of flat sheet iron, each of them having a continuous peripheral flange 20, bent outwardly in the stamping operation at right angles to the wall. The flanges 20 of the end walls 19, abut the inner face of side wall 10, adjacent the edges at the ends, and are secured by any means, such as by welding 21, to make an oil tight chamber 13. In stamping the end walls, a semispherical concave depression 22 is made in the center, and a like depression 23 is formed between the depression 22 and the flange 20 in perpendicular alignment therewith. An arcuate tubular rod 24, one for each end wall 19, has its ends anchored to each of the end walls, as by welding, and the crowns of these tubular rods form a handle to receive a long hook by which the fire-pot is dragged along the ground on the runners 14—15. The arcuate handles 24 are disposed parallel to the horizontal diameter of the end walls but slightly below the center for a purpose later to be explained. The edges at the ends of the lips 12, are cut away at 40, see Figure 6, to accommodate the inset position of the end walls 19.

The lid, or cover B, is preferably made of sheet steel of sufficient strength and resiliency to provide a springiness for the purposes explained hereinafter. The lid has a transversely arcuate crown 25 conforming in curvature with the circumference of side wall 10, and this crown is coextensive with the length of the receptacle A. The crown is spaced slightly from the surface of the side wall so as to permit it to be moved relative thereto without binding. Along the longitudinal margin of the crown the opposite edges are turned up to provide a ridge 26 which may be engaged by a hook to operate the lid to various positions from a distance from the heater so the operator will not be burned.

At each end the crown 25, has an integral rocker member stamped out of the sheet metal when the lid is formed, and it is bent inwardly at substantially right angles to the crown. Each of these rocker members consists of two flat arms 27, 28, merging in a head portion 29. The arms are cut out, or punched at 30, in the stamping operation, and a portion of the metal so cut out, is fashioned to provide an integral latching ear 31. This ear is bent inwardly and is positioned in the space 30 between the arms, and there is a teat 32 formed by depressing the metal near the free end that engages with depression 23, in the end wall 19, when the teat registers with the depression in the closed position. The teats ride along the end walls 19 in wiping engagement therewith, when the lid is rocked to positions intermediate the open and closed positions, the ear having sufficient spring to permit it to be flexed for the purpose of unlatching the lid. When the teat seats in depression 23 it exerts sufficient tension to hold the lid in latched closed position until the ear is flexed. A semispherical knob, or a half-portion of a ball 33 is made in the metal of each of the head portions 29 of the rocker members. These knobs 33 respectively seat in the cavities 22 in the end walls, and form a pivot for the rocker members when the knobs turn in their respective sockets or depressions.

The handles 24 are positioned with respect to the path of the arms of the rocking members to provide a limit stop for the lid. The outer edges of arms 28 engage one side of each handle 24, to limit the swing of lid B, and support the lid in the fully open position with opening 11 uncovered, as shown in dotted lines to the right of Figure 3. The outer edges of the arms 27 engage the other sides of the respective handles 24 to limit the swing of the lid and support it in a position about two thirds open, i. e. where only two thirds of the opening 11 is uncovered, as shown by the dotted lines to the left of Figure 3. Thus it will be seen that the rocker members cooperate with handles to regulate the size of the opening 11 that is uncovered, and at the same time provide supporting limit stops to hold the lid in the regulated position. It will be seen then, that flames and smudge from oil burning in the chamber 13 will pass through the opening, or mouth 11, and if the heat is too intense the lid may be swung to the partly open position indicated to the left of Figure 3; or the lid may be swung to the closed position shown in Figure 4, in which event combustion in the chamber will be stifled. In addition to serving to stifle combustion in the closed position, the lid not only acts as a cover to prevent foreign matter from falling into the oil in the fire-pot while the heater is not in use, but it reduces the spilling of oil to a minimum when the fire-pot is slid along the ground on the runners.

Having thus described my invention, what I claim is:

1. An orchard heater comprising an elongated hollow cylindrical fire-pot axially disposed and equipped with an unobstructed fuel oil reservoir and combustion chamber, said fire-pot including a circular side wall and flat end walls secured thereto; said fire-pot being further provided with a peripheral opening of substantially forty-five degrees in the upper segment of the side wall coextensive with the length thereof, and communicating with the reservoir and chamber through which opening the products of combustion are emitted at a normal rate of combustion; an arcuate lid to provide a cover for the said opening when in the closed relation; supporting elements rigidly connected with the side wall; handle means connected with an end wall for engagement to move the fire-pot, said handle means including spaced abutments; a rocker member carried by each end of the lid and overlapping portions of the end walls; coacting means on the end walls of the fire-pot and the rocker members to furnish a pivot upon which the lid swings in a path back and forth across the said opening, said coacting means including projections and counter depressions; coacting means, one on an end wall of the fire-pot, and the other carried by the lid for detachably latching the lid

in closed relation with respect to said opening when in one position thereby serving to stifle combustion in the chamber and also to prevent the spilling of oil when the fire-pot is moved; automatically coacting means on a rocker member and on one abutment for supporting the lid in partially open relation with respect to said opening when in a second position; and automatically coacting means on a rocker member and the other abutment for supporting the lid in open relation with respect to said opening when in a third position, thereby producing the normal rate of combustion in the chamber.

2. A portable orchard heater comprising a substantially cylindrical fire-pot having an unobstructed fuel oil reservoir and combustion chamber, said fire-pot being provided with an axially disposed opening extending less than 180 degrees around the circumference in the upper segment of the side wall and communicating with the reservoir and chamber through which the products of combustion are emitted; supporting means carried by the side wall; a substantially arcuate lid substantially conforming to the curvature of the side wall of the fire-pot and rockably connected with an end wall thereof to swing in a path back and forth over said opening; and coacting means carried by the lid and a wall of the fire-pot to support the lid relative to the opening in three different positions in the swinging path of the lid, said positions being such as to fully cover, partially cover, and fully expose the opening to control the rate of combustion in the chamber.

3. An orchard heater comprising a substantially cylindrical fire-pot having an unobstructed fuel oil reservoir and combustion chamber, said fire-pot being provided with an axially disposed opening in the upper segment of the side wall and communicating with the reservoir and chamber through which the products of combustion are emitted; a substantially arcuate lid substantially conforming to the curvature of the side wall of the fire-pot and rockably connected with an end wall thereof to swing in a path back and forth over the opening; coacting means carried by the lid and a wall of the fire-pot to support the lid in open relation with respect to said opening when in one position to promote a normal rate of combustion in the chamber; coacting means carried by the lid and a wall for supporting the lid in partially open relation with respect to said opening when in a second position, whereby the normal rate of combustion in the chamber is altered; and coacting means carried by the lid and a wall for supporting the lid in closed relation with respect to said opening when in a third position, thereby serving to stifle combustion in the chamber and also prevent foreign matter from falling into the reservoir when the heater is not in use.

4. An orchard heater comprising a substantially cylindrical fire-pot having an unobstructed fuel oil reservoir and combustion chamber, said fire-pot being provided with an axially disposed opening in the upper segment of the side wall and communicating with the reservoir and chamber through which the products of combustion are emitted; a substantially arcuate lid substantially conforming to the curvature of the side wall of the fire-pot and rockably connected with an end wall thereof to swing in a path back and forth over the opening; automatically coacting means carried by the lid and a wall to support the lid in partially open relation with respect to said opening when in one position, whereby the normal rate of combustion in the chamber is altered; and coacting means carried by the lid and a wall for supporting the lid in closed relation with respect to said opening, when in a second position thereby serving to stifle combustion in the chamber and also prevent foreign matter from falling into the reservoir when the heater is not in use.

BOB T. REYNOLDS.