H. T. LIBBY.

ORCHARD HEATER.

APPLICATION FILED DEC. 16, 1912.

1,072,242. Patented Sept. 2, 1913.

Fig. 1.

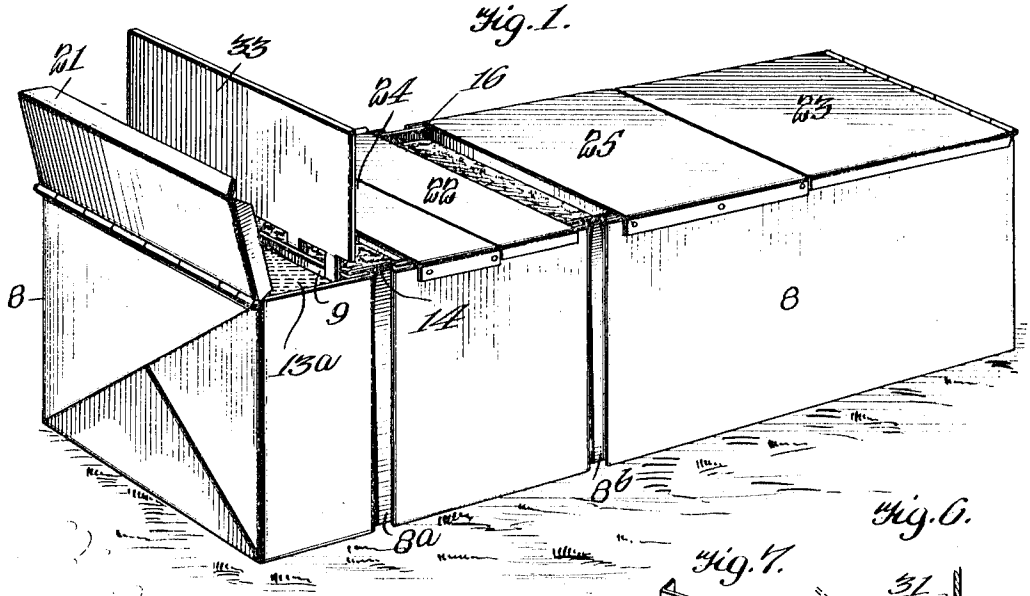


Fig. 6.

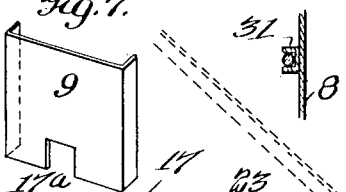


Fig. 7.

Fig. 2.

Fig. 5.

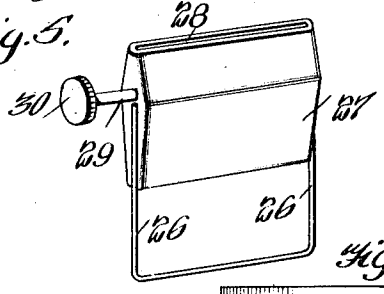


Fig. 3.

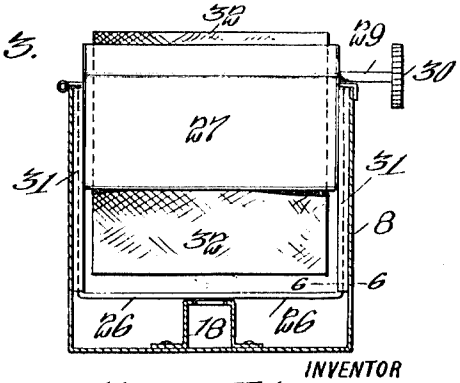
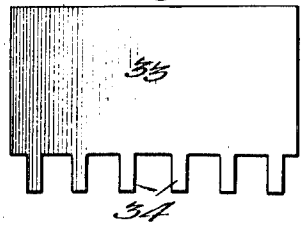


Fig. 4.



WITNESSES

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ORCHARD-HEATER.

1,072,242. Specification of Letters Patent. Patented Sept. 2, 1913.

Application filed December 16, 1912. Serial No. 736,968.

To all whom it may concern:

Be it known that I, HARRY T. LIBBY, a citizen of the United States, and a resident of Alvin, in the county of Brazoria and State of Texas, have invented certain new and useful Improvements in Orchard-Heaters, of which the following is a specification.

My invention relates to orchard heaters—that is to heaters adapted to be placed out in the orchard for the purpose of preventing injury to fruit trees from cold.

More particularly stated, my invention contemplates a heater provided with a number of compartments separated from each other by appropriate means for preventing the undue transmission of heat, my construction thus promoting safety of the apparatus.

My invention further contemplates the use of one or more flames supplied by fuel at points spaced apart along the heater so that either a single flame or a number of such flames as desired may be employed according to circumstances.

My invention further relates to various improvements in the heating mechanism for the purpose of improving the general efficiency of the same.

Reference is made to the accompanying drawings forming a part of this specification in which like letters indicate like parts.

Figure 1 is a perspective view showing my heater complete and ready for use; Fig. 2 is a longitudinal vertical section through the heater showing it as it appears when flame is issuing from one of the compartments; Fig. 3 is a vertical section through my heating mechanism, showing the same as used with one kind of burner; Fig. 4 is a detail showing the wind shield which I employ for protecting the flame from the wind; Fig. 5 is a detail showing in perspective a detachable burner which I may employ in connection with the other parts; Fig. 6 is a fragmentary section on the line 6—6 of Fig. 3, showing how the burner is supported within the casing; and, Fig. 7 is a perspective view of one of the partitions.

The casing 8 having generally the form of a box is made of sheet metal and is provided with pleats 8^a, 8^b, for facilitating the introduction and support of the partitions. These partitions are shown at 9, 10, 11, 12, and are of the general type indicated in Fig. 7. Each partition is provided with an opening disposed midway of its bottom edge. Each partition is further provided with side flanges, these flanges being inserted into the folds of the pleats 8^a, 8^b so as to support the partitions and hold the same firmly in position as well as to space the partitions relatively to each other. By aid of the partitions there are formed a number of compartments 13, 14, 15, 16, 17. Within these compartments are contained portions 13^a, 15^a, 17^a, of combustible oil, such for instance, as coal oil. By combustible oil, I mean such oil as when heated will generate or throw off a vapor capable of burning so as to support or maintain a flame as indicated at the left of Fig. 2. Between the compartments 13, 15, and 17, are compartments 14, 16 which are filled with masses 14^a, 16^a of earth, sand, or any appropriate material suitable for preventing the rapid transmission of heat.

I provide a conduit 18 having the form of an inverted trough as will be understood from Figs. 2 and 3. This conduit is provided with an opening 19 in which is removably inserted a closure member 20 such as a cork. In using a heavy oil, such for instance as crude petroleum, I remove the cork 20 so as to allow the liquid to pass or circulate freely through the opening 19. In the event that I use a lighter oil such for instance as gasolene, I place the cork 20 in the opening 19 and remove all liquid from the entire device. I then fill the compartment 17 with the gasolene which finds its way through the conduit 18 and into the compartment 13, but is unable to effect an entrance into the compartment 15. The compartment 15 thus serves as an air chamber, and together with the compartments 14, 16, with their contents, effectively prevents the travel of heat from the compartment 13 to the compartment 17.

I provide a number of lids 21, 22, 23, for the purpose of normally covering portions of the casing. These lids may be severally tilted and thus opened. I also provide a number of plates 24, 25, in this instance two in number serving as coverings for portions of the casing, these plates coacting with the movable lids but being always firmly fixed in position upon the casing.

In some instances I ignite the oil, or rather the vapor arising from the oil, directly and without the aid of a burner, as indicated at the left of Fig. 2. It is sometimes desirable however to employ a burner carrying a wick. I therefore provide a burner 27, shown more particularly in Figs. 3 and

5. This burner carries a loop 26 of wire having substantially a U-shape and secured at its ends upon the burner. The burner is further provided with a slot 28 and with a wick shaft 29, the latter having a milled head 30 and being provided with a well known means for raising and lowering a wick 32. Within the compartments 13, 15, are mounted slide-ways 31 each having the form indicated in Fig. 6, these slide-ways being arranged in pairs. The guide wire 26 of the burner 27 is fitted and otherwise adapted to enter the slide-ways 31 and by this means the burner is retained in position and properly spaced relatively to other parts. The wick is shown at 32 and extends through the slot 28, being controllable by rotation of the milled head 30. As the wind may tend sometimes to interfere with the flame or flames used in connection with this purpose, I provide one or more shields 33 each having integral with it a number of spring fingers 34 so arranged that the shield may be mounted in position upon one of the partitions 9 or 11. The casing is then turned, so that the wind, owing to its direction, will strike against the wind shield 33 and the flame will thus be protected and prevented from blowing out. In order to mount the wind shield in position, the spring fingers 34 are bent or sprung slightly so that every other finger is upon a side of the shield opposite to that where the next successive finger is placed. The structure is calked, painted internally, or otherwise treated to render it air-tight.

The operation of my device will be readily understood from the foregoing description.

One or some of the compartments 13, 15 is brought into use according to whether we desire to have one or more flames, and this is ordinarily determined by the temperature of the atmosphere. Again, the burner shown in Fig. 5 may or may not be employed, this depending mainly upon the character of the fuel used. The compartment 15 may be used either as an oil chamber in the nature of a resorvoir or may be used as a burner chamber. In either of these events, the fuel employed is heavy oil not very volatile. If a highly volatile oil, such as gasolene, be used, the compartment 15 is maintained empty as above explained and thus serves as an air chamber. When the device is employed as just stated, the flames issuing from the compartment 13 are located some distance from the nearest portion of the compartment 17 and the compartment 17 is protected from heat because of this distance as well as because of the character of the intervening elements serving as heat insulators. The compartment 17 may, if desired, be used as a combustion compartment in which event the flames will issue through the opening made by raising the lid 23. In this event the compartments 13 and 15 may be used as oil reservoirs.

As may be readily understood from the foregoing description, any or all of the compartments employed may be used as combustion chambers and any compartments not so used may be employed as fuel reservoirs. Again, any desirable number of burners 27 may be employed and arranged so that each combustion chamber contains one or more of said burners.

I do not limit myself to the precise form shown, the scope of my invention being commensurate with my claims.

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

1. A device of the character described comprising a casing provided with a plurality of partitions which together form a plurality of oil storage compartments and oil burning compartments, a conduit extending through two of said partitions and establishing communication from an oil storage compartment to an oil burning compartment comparatively distant therefrom, said conduit being provided with an opening which merges into one of said compartments, and a closure member for closing said opening.

2. A device of the character described comprising a casing, a plurality of partitions mounted therein and adapted to form separate oil storage compartment and oil burning compartments, and a wind shield provided with spring fingers for engaging said partitions in order to prevent wind from extinguishing the flame issuing from a compartment adjacent said wind shield.

3. A device of the character described comprising a casing, a plurality of partitions mounted therein and spaced apart to form separate compartments, means for establishing communication between said compartments, and a wind shield provided with spring fingers adapted to bend in different directions for engaging one of said partitions for the purpose of supporting the same in proper position to prevent atmospheric winds from extinguishing a flame issuing from a compartment adjacent said wind shield.

4. An orchard heater comprising an oblong box provided with a plurality of partitions spaced apart and forming a number of separate compartments, a conduit extending from one compartment to another for the purpose of establishing communication therebetween, a filling in one of said compartments located between other compartments for the purpose of separating the latter, and means for causing a flame to issue from one of said compartments.

5. An orchard heater comprising an ob-

long box, a plurality of partitions mounted therein and spaced apart so as to form compartments, some of said partitions being provided with openings, a conduit extending from the opening in one partition to the opening in another partition for the purpose of establishing communication between two compartments located some distance apart, and a wind shield located between two of said compartments.

6. An orchard heater comprising a casing provided with an oil burning compartment, an oil storage compartment, a heat insulating compartment located between said oil burning compartment and said oil storage compartment, means for establishing communication between said oil storage compartment and said oil burning compartment, and a wind shield mounted between said oil burning compartment and said oil storage compartment.

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Witnesses:
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