

H. A. MARKS.

OIL BURNER.

APPLICATION FILED SEPT. 2, 1910.

1,020,616.

Patented Mar. 19, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

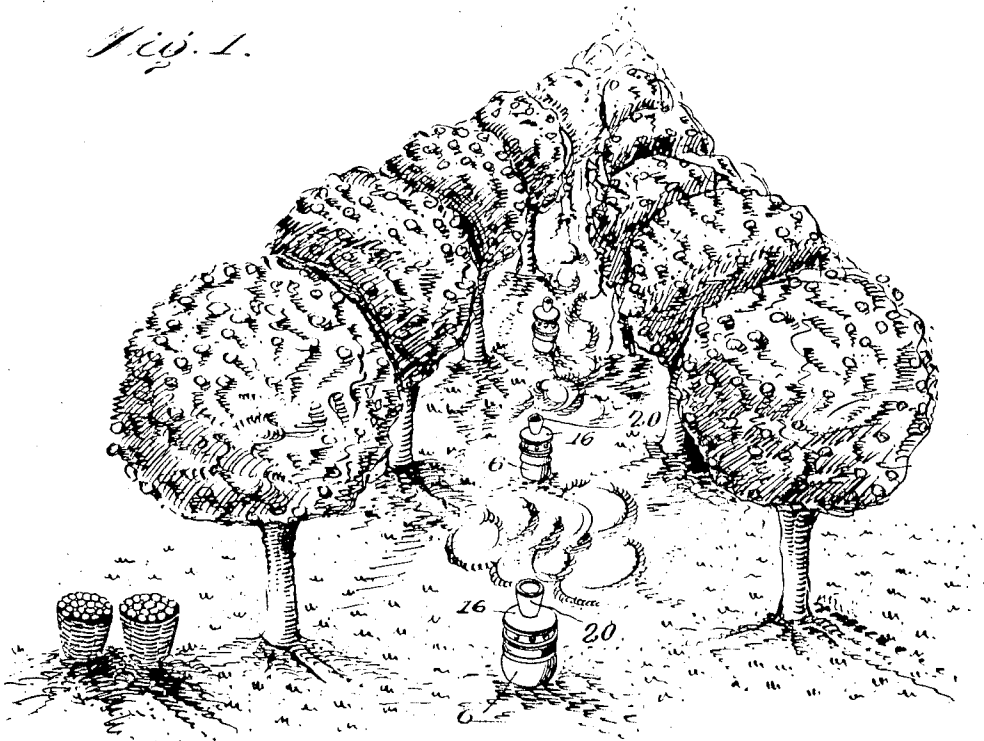
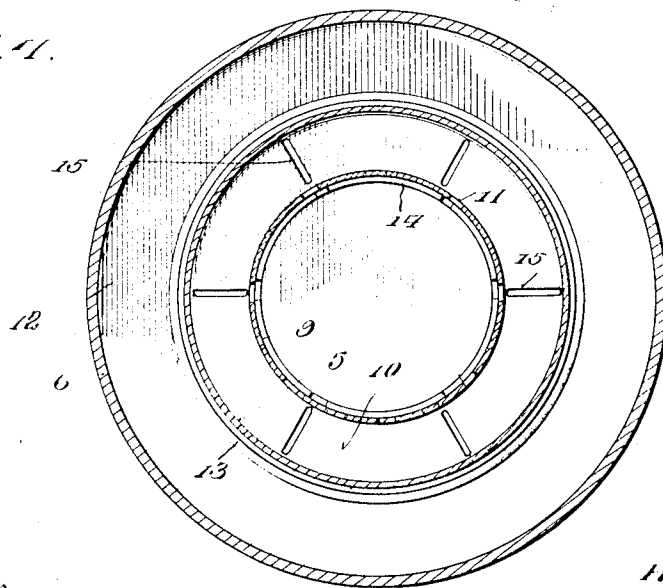


Fig. 4.



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2 SHEETS—SHEET 2.

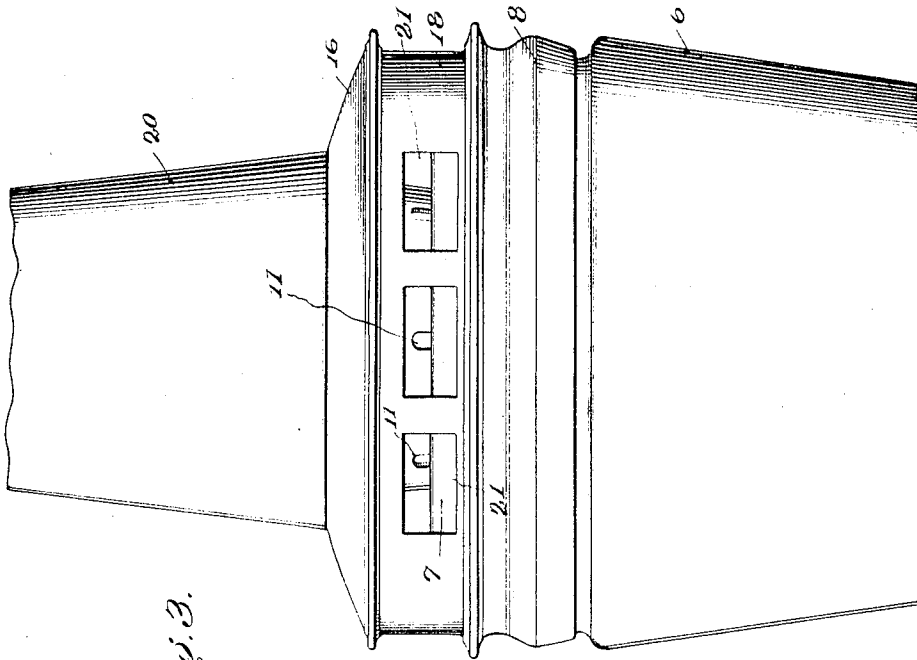


Fig. 3.

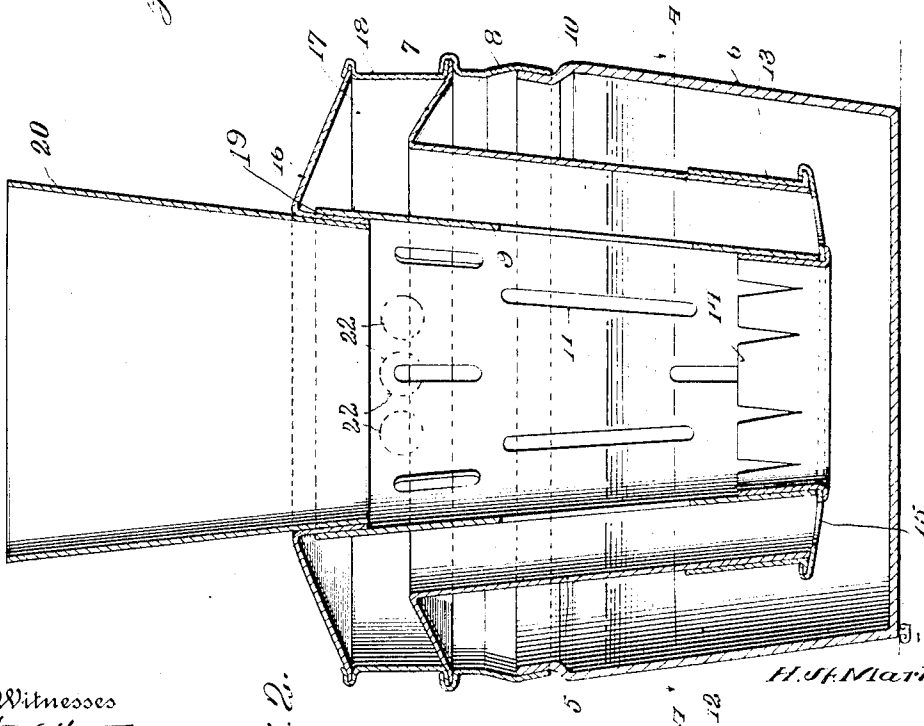


Fig. 2.

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UNITED STATES PATENT OFFICE.

HENRY A. MARKS, OF WINTERHAVEN, FLORIDA.

OIL-BURNER.

1,020,616.

Specification of Letters Patent. Patented Mar. 19, 1912.

Application filed September 2, 1910. Serial No. 530,251.

To all whom it may concern:

Be it known that I, HENRY A. MARKS, citizen of the United States, residing at Winterhaven, in the county of Polk and State of Florida, have invented certain new and useful Improvements in Oil Burners, of which the following is a specification.

This invention relates to oil burners of that general class especially designed for use in orchards for dissipating frost and preventing injury to the fruit in case of a sudden fall in the temperature.

The object of the invention is to provide a burner of simple and durable construction, capable of being readily inserted within a barrel, tank or other oil container and by means of which the oil in said container may be caused to burn with a steady flame until entirely consumed without requiring constant watching on the part of an attendant.

A further object is to provide a burner, the construction of which is such as to produce intense heat at the zone of flame and at the same time cause the smudge to ascend and form in effect a blanket to prevent settling of frost.

A further object is to provide a burner including inner and outer tubular members spaced apart to form an intermediate draft passage, the outer member being suspended within an oil container having its outer wall spaced from said container to form a circumferential oil chamber in communication with said draft passage.

A further object is to provide a burner in which the burning surface or zone of flame is confined within the lines of the inner tubular member, means being provided for admitting air through the draft passage to the surface of the oil, and means being also provided for permitting the escape of excess gas.

A still further object of the invention is generally to improve this class of devices, so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof, reference is to be

had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of an oil burner constructed in accordance with my invention, showing the manner of using the same; Fig. 2 is a vertical sectional view; Fig. 3 is a side elevation, showing the flue in reverse position; Fig. 4 is a transverse sectional view taken on the line 4-4 of Fig. 2 and looking in the direction of the arrow.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The improved oil burner forming the subject matter of the present invention comprises an outer tubular member 5, preferably conical in shape, as shown, and adapted to be suspended within a barrel, tank or other oil container, indicated at 6. The lower or contracted end of the tubular member 5 is spaced from the bottom of the container 6, while the upper or flared end thereof is provided with a downwardly inclined flange 7 to which is secured in any suitable manner, a depending supporting rim 8 adapted to fit over the oil container and thus support the burner within said container.

Disposed within the outer member 5, is an inner tubular member 9, also preferably conical in shape and spaced from the outer member to form a circumferential draft chamber 10, there being a plurality of vertically disposed slots 11 formed in the tubular member 9 and through which air is admitted to the surface of the burning oil, thereby to promote combustion. The outer member 5 is spaced from the interior wall of the container 6 to produce a circumferential oil reservoir 12 which communicates with the interior of the inner tubular member 9 so that the oil in said member 9 and reservoir 12 will always remain at the same level, regardless of the height thereof.

Secured to the lower end of the outer member 5 is a cup shaped closure 13 having an outer flange which engages the exterior wall of the member 5 and an interior flange 14 which receives the lower or contracted end of the inner tubular member 9 and serves to center the latter within the outer tubular member.

The bottom of the cup-shaped member 13

is formed with a plurality of radially disposed slots 15, through which air passes to the oil in the bottom of the container when the level of the oil falls below the bottom of the cup-shaped member 13, thus to supply air to the oil in the bottom of the container and permit the heavy oil or sediment to be entirely consumed.

The container is provided with a cap or cover, the top 16 of which is spaced from the flange 7 to form an intermediate air chamber 17, the outer edge of the top 16 of the cover being secured by a connecting plate 18 to the flange 7 and also to the supporting rim 8. It is to be understood that the members 8, 16 and 18, together form the cap or cover for the container, and that said cap or cover is formed in sections merely for the purpose of convenience in assembling the parts. The top 16 of the cover is provided with a central opening, the walls of which are bent downwardly to form a depending flange 19 adapted to receive and frictionally engage the exterior walls of a flue 20. The flue 20 is preferably tapered or flared so as to direct the flame and smudge upwardly on diverging lines and thus increase the heat radiating surface of the burner.

Formed in the side wall or connecting plate 18 of the cover, are a plurality of substantially rectangular openings 21, through which air is admitted to the draft passage 10 and thence through the slots 11 to the surface of the oil for the purpose of promoting combustion. Suitable openings 22 are also preferably formed in the connecting plate for the purpose of permitting the escape of excess gas, thereby to prevent said gases from igniting and damaging the burner.

It will here be noted that the zone of flame is confined within the lines of the inner tubular member 9 regardless of the height of the oil in the reservoir 12 so as to prevent the flame from burning the interior walls of the container and exterior walls of the outer tubular member 5.

In operation, the burner is suspended within a tank, receptacle or other oil container by means of the rim 8, after which the oil within the inner tubular member 9 is ignited and the flue 20 inserted in the top of the cover, as best shown in Fig. 2 of the drawings. As the oil is consumed and the level of said oil gradually falls, the air admitted through the openings 21 will pass through the slots 11 in the inner tubular member to the surface of the oil, in the manner before stated, it being here noted that these slots 11 are disposed in staggered relation around the entire circumference of the inner tubular member 9 for the purpose of insuring a uniform delivery of air to the oil regardless of the height of said oil with-

in the tubular member 9. When the level of the oil reaches the bottom of the outer tubular member, the air in the draft passage 10 will pass through the radiating slots 15 to the oil in the bottom of the container so that the entire volume of oil in the container will be consumed.

It is preferred to make the cup-shaped closure detachable so that the latter may be readily disconnected from the outer tubular member 5 when it is desired to remove the inner tubular member 9 for the purpose of cleaning the same.

By removing the flue 20 and replacing said flue on the top of the cover with the enlarged or flared end thereof extending downwardly, the flame and smudge may be directed upwardly on converging lines, as best shown in Fig. 3 of the drawings. When the flue 20 is positioned on the burner, as shown in Fig. 2, the flame will be concentrated at the base of the flue so as to produce intense heat, and when the flue is removed and inverted, as shown in Fig. 3 or placed slightly to one side of the opening in the cover, the volume of smudge may be materially increased so as to form an enveloping blanket above the trees which prevents the settling of frost and consequent injury to the fruit.

Having thus described the invention, what is claimed as new is:

1. The combination with an oil container, of a burner suspended within the container and including inner and outer tubular members spaced apart to form an intermediate air passage, the zone of flame being confined within the lines of the inner tubular member, and a cover forming a closure for the upper portion of the air passage and provided with means for admitting air through said cover and passage to the surface of the oil at the zone of flame.

2. The combination with an oil container, of a burner suspended within the container and including an outer member, an inner member spaced from the outer member to form a circumferential air passage, means for admitting air through said passage to the surface of the oil within the inner member, and a flue forming a continuation of said inner member.

3. The combination with an oil container, of a burner suspended within the container and including inner and outer tubular members spaced apart to form an intermediate air passage, the inner member having its lower end open and its side walls provided with slots, and a perforated cup-shaped member connecting the lower ends of the inner and outer members.

4. The combination with an oil container, of a burner suspended with the container and including spaced tubular members, one of which is perforated and the other spaced

from the interior walls of the container to form an intermediate oil reservoir, said members being spaced apart to produce a circumferential draft passage, a cover provided with an air chamber communicating with the draft passage, there being openings formed in the cover for admitting air through the chamber and draft passage to the surface of the oil confined within the inner tubular member.

5. The combination with an oil container, of an outer tubular member suspended within the container and having its upper end provided with a laterally extending flange, a cover having an air chamber and provided with a depending supporting rim for engagement with said container, an inner perforated tubular member spaced from the outer tubular member to form a draft passage communicating with the air chamber, a closure connecting said members and having slots formed in the bottom thereof, said inner tubular member having its lower end open and communicating with the oil in the container.

6. The combination with an oil container, of an inner tubular member suspended within the container and having its lower end open, an outer tubular member spaced from the container and inner member to form an oil chamber and a draft passage, respectively, a cover having a depending flange bearing against the inner tubular member, said cover being provided with means for admitting air through the cover and passage to the surface of the oil within the inner tubular member, and a reversible flue disposed above the inner tubular member.

7. An oil burner including an outer tubular member adapted to be suspended within an oil container, an inner perforated tubular member spaced from the outer member to form an intermediate draft passage, a closure connecting the lower ends of said tubular members and having slots formed therein, and a flue forming a continuation of the inner tubular member.

8. An oil burner including an outer downwardly tapered tubular member adapted to be suspended within an oil container and having its upper end provided with an outwardly extending flange, a downwardly tapered perforated inner tubular member spaced from the outer member to form an intermediate draft passage, a cover having a central opening in the top thereof, the walls of which are bent downwardly to form a flange for engagement with the inner tubular member, said cover being provided

with a depending supporting rim for engagement with the container and provided with a plate having openings on one side thereof to permit the passage of air to the inner tubular member and openings on the other side thereof to permit the escape of excess gas, and a closure connecting the lower ends of both tubular members and having its bottom formed with spaced slots.

9. The combination with an oil container, of a burner suspended within the container and including an outer member, an inner open-ended perforated tubular member spaced from the outer member to form a circumferential air passage adapted to communicate with the oil in the container, means for supporting the burner within the container, and means for admitting air to said passage.

10. An oil burner including inner and outer tubular members of different lengths adapted to be suspended within an oil container, said tubular members being spaced apart to form a circumferential air passage, and the inner tubular member being provided with openings, and a cover connecting the tubular members and provided with means for admitting air through said cover and passage to the surface of the oil at the zone of flame.

11. An oil burner including a cover having an air chamber and provided with a depending supporting rim adapted to engage an oil container, an outer tubular member depending from the cover, and an inner perforated tubular member spaced from the outer tubular member to form a draft passage communicating with the air chamber, said inner tubular member having its lower end open and adapted to receive oil from said container.

12. An oil burner including a cover having means for engagement with an oil container and provided with an air chamber, an outer tubular member depending from the cover and having its upper end provided with a laterally extending flange for engagement with said cover, and an inner perforated tubular member having its lower end open and its side walls spaced from the outer tubular member to form a draft passage communicating with the air chamber.

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

HENRY A. MARKS. [L. s.]

Witnesses:

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EMMA BAYLEY.