D. C. GILLETT.

GROVE HEATER.

APPLICATION FILED MAR. 14, 1917.

1,232,276. Patented July 3, 1917.

Fig. 1.

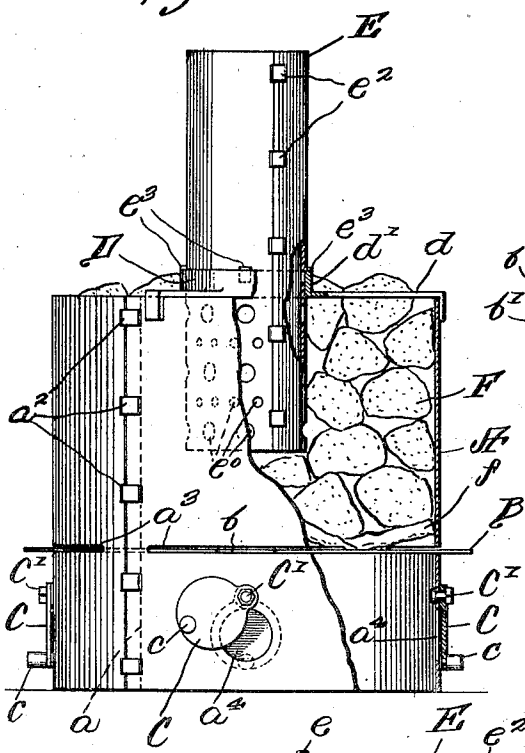


Fig. 2.

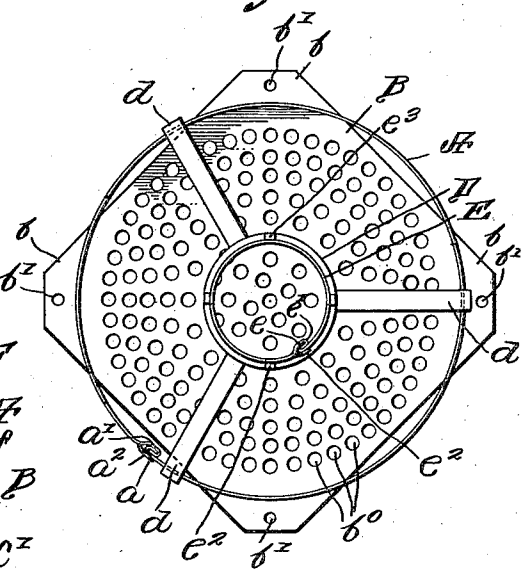


Fig. 3.

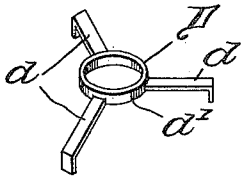


Fig. 5.

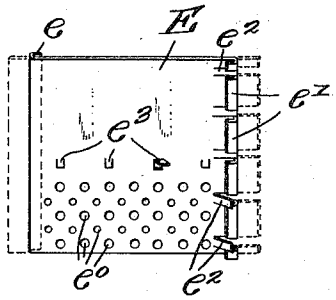
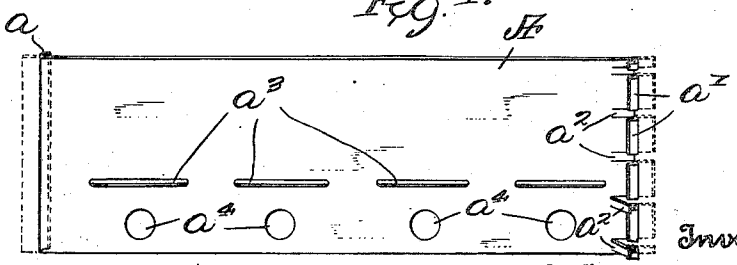


Fig. 4.



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UNITED STATES PATENT OFFICE.

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GROVE-HEATER.

1,232,276. Specification of Letters Patent. Patented July 3, 1917.

Application filed March 14, 1917. Serial No. 154,740.

To all whom it may concern:

Be it known that I, DAVID C. GILLETT, a citizen of the United States, residing at Tampa, in the county of Hillsborough and State of Florida, have invented certain new and useful Improvements in Grove-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in heaters more especially intended for use in the open air for the purpose of protecting groves of fruit trees and truck and vegetables during abnormally cold weather, and it is intended more especially for use to protect citrus groves against the freezes which infrequently occur in those localities where such trees are normally found.

These freezes come rarely, sometimes only after the lapse of a number of years, and they are generally of sudden development and of short duration. It is therefore, not necessary to have a heating plant permanently located in the grove for the purpose of heating same; but it is desirable to have a number of cheap portable heaters, which may be cheaply transported in the knocked down condition from the factory to the grove, may be conveniently stored away protected from the weather when not in use, and which may yet be quickly mounted in place when needed, and readily knocked down again and removed for storage in places where they may be protected from the weather.

Furthermore, it is especially desirable to arrange the heater so that the heat emanating therefrom may be widely scattered in the air, thereby rendering it necessary to use few of the heaters, in this type of apparatus, the principal aim being to quickly supply a large quantity of heated air without any special regard to high economy in the use of fuel.

The present invention is intended to provide an apparatus to comply with the aforementioned requirements and will be more clearly understood after reference to the accompanying drawings, in which:

Figure 1 shows a front elevation, partly broken away, of the heater when in use;

Fig. 2 is a plan of the heater when empty;

Fig. 3 is a perspective view of the spider for supporting the smoke stack;

Fig. 4 is a perspective view of the sheet metal blank used in making the shell or main body of the heater; and

Fig. 5 is a perspective view of the sheet metal blank used in making the smoke stack of the heater.

Figs. 3, 4, and 5 are on a smaller scale than are Figs. 1 and 2.

The heater consists primarily of a cylindrical shell A, a grate B mounted near the base thereof, and a smoke stack E projecting in the open top of the shell, down toward, but preferably not reaching, the said grate.

The cylindrical shell is preferably made of a single sheet of metal, which may be shipped flat to the point of destination and there have the ends bent, as shown in Fig. 4, where a represents a hook-shaped flange made out of one end of the sheet and a' represents reversely-disposed hook-shaped flanges made out of the other end of the sheet, between which flanges are the tongues a^2.

When the sheet is bent into the cylindrical shape, as shown in Fig. 2, these hook-shaped flanges a' engage the hook-shaped flange a, and the tongues a^2 are bent over oppositely as shown in Figs. 1 and 2, thus forming a firm lock.

The sheet A is provided with slots a^3, through which the corners b of the grate B project. This grate consists preferably of a flat polygonal sheet of metal perforated as at b° and the edges b fit freely into the openings a^3 so that the grate may be shaken readily when desired. In order to conveniently shake the grate, holes b' are provided in the corners, in which metal hooks or chains may be engaged, whereby the grate may be conveniently shaken when desired.

Near the bottom the shell A is provided with draft openings a^4 closed by the doors C, which doors are preferably adjustably connected to the shell by bolts and nuts C'; or, if desired, rivets may be used. By making the hinged joint tight, the door may be swung to the desired position and left there, as shown in Fig. 1, without swinging to the closed position.

These doors are preferably provided with handles c.

D represents a spider having the legs *d* connected to the ring *d'*, which ring is slightly larger than the smoke stack E, so that the smoke stack may pass freely therein into. This smoke stack is preferably constructed out of a flat sheet, as shown in Fig. 5, having the hook flange *e* at one end engaging the similar hook flanges *e'* at the other end when the sheet is bent to form a smoke stack, and tongues e^2 may also be provided to engage the outside of the smoke stack, as shown in Figs. 1 and 2. The smoke stack is also provided with tongues e^3 cut therein, which may be bent out, as shown in Figs. 1 and 5, to engage the ring *d'*, and thus support the smoke stack on the spider. The portion of the smoke stack that projects down into the heating chamber of the heater is provided with a series of perforations e^0, preferably of different sizes, as shown.

F represents the fuel, preferably coke, and *f* represents the kindling material, such as kindling wood, used to start the fire.

I have shown the grate as a substantially rectangular sheet of metal, but any polygonal form may be used as desired, provided corresponding slots are made in the shell A.

The edges of the grate are inserted in the openings a^3, as the metal sheet A is being bent into the cylindrical shape to form the shell of the heater.

It has been found in practice that the smoke stack creates a draft upward therethrough, and down through the top of the fuel as well as up through the grate, so that the fuel burns in a layer above the grate, the hot products of combustion being carried up by the smoke stack, and the fuel in the lower portion only of the heating chamber is consumed. To keep the fire going it is only necessary to supply fresh fuel at the top of the heater.

The sheets for forming the shell of the heater and the smoke stack are preferably shipped in flat form to the place of destination, and there they may be set up for use as desired.

The grate is already in the form of a flat sheet; and attaching means for the doors are preferably provided separately by which said doors may be quickly applied to the heater.

After use in the orchard, the heaters may be knocked down again and conveniently stored in compact form in a small space, or they may be left standing, as shown in the drawings.

Owing to this knock-down feature, the heaters may be more cheaply shipped than if they are already in a set-up condition, and they may be stored in a much smaller space, when not in use.

If desired, the plates may be shipped with the ends bent, as shown in Figs. 4 and 5; but it does not require any special skill to bend the sheets in the manner stated, and this may be done by simple bending instruments, one or more sets of which may be furnished with a supply of the heaters in the knocked down condition.

It will thus be seen that I provide a light, cheap, simple, and efficient heater which may be readily transported in the knock-down state to the place where it is to be used, and may be readily returned to said knock-down shape and put back in storage, when desired.

It will be obvious that various modifications might be made in the herein described apparatus and in the construction, combination and arrangement of parts which could be used without departing from the spirit of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. A knock-down heater comprising a cylindrical sheet metal shell, open at both ends, a grate detachably mounted therein, a smoke stack projecting down into said shell, and a spider detachably mounted on top of said shell and supporting said smoke stack, substantially as described.

2. A knock-down heater comprising a cylindrical sheet metal shell, open at both ends, a grate detachably mounted therein, a smoke stack projecting down into said shell, a spider supporting said smoke stack detachably mounted on top of said shell, with draft openings provided in said shell below said grate, and doors hinged to said shell and controlling said openings, substantially as described.

3. A knock-down heater comprising an annular cylindrical shell made of a single sheet of metal having fastening means at each end thereof, a grate detachably mounted in said shell, a smoke stack projecting down into said shell, and a spider detachably mounted above said shell and supporting said smoke stack, substantially as described.

4. A knock-down heater comprising an annular cylindrical shell made of a single sheet of metal having fastening means at each end thereof, a grate detachably mounted in said shell, a smoke stack also formed of a single sheet of metal having fastening means at each end thereof, and a spider supporting said smoke stack detachably mounted above said shell, substantially as described.

5. A knock-down heater comprising a cylindrical sheet metal shell, open at both ends, said shell being provided with a series of elongated slots horizontally disposed, a grate formed of an angular shaped perforated flat metal sheet having its corners projecting into said slots and having lateral play therein, a smoke stack projecting down into said shell, and a spider detachably mounted on

top of said shell and supporting said smoke stack, substantially as described.

6. A knock-down heater comprising a cylindrical sheet metal shell, open at both ends, said shell being provided with a series of elongated slots horizontally disposed, a grate formed of an angular shaped perforated flat metal sheet having its corners projecting into said slots and having lateral play therein, a smoke stack projecting down into said shell, a spider supporting said smoke stack, detachably mounted on top of said shell, with draft openings provided in said shell below said grate, and doors hinged to said shell and controlling said openings, substantially as described.

7. A knock-down heater comprising an annular cylindrical shell made of a single sheet of metal having fastening means at each end thereof, said shell being provided with a series of elongated slots horizontally disposed, a grate formed of an angular shaped perforated flat metal sheet having its corners projecting into said slots and having lateral play therein, a smoke stack projecting down into said shell, and a spider detachably mounted above said shell and supporting said smoke stack, substantially as described.

8. A knock-down heater comprising an annular cylindrical shell made of a single sheet of metal having fastening means at each end thereof, said shell being provided with a series of elongated slots horizontally disposed, a grate formed of an angular shaped perforated flat metal sheet having its corners projecting into said slots and having lateral play therein, a smoke stack also formed of a single sheet of metal having fastening means at each end thereof, and a spider supporting said smoke stack detachably mounted above said shell, substantially as described.

In testimony whereof, I affix my signature.

DAVID C. GILLETT.