

No. 814,646.

PATENTED MAR. 6, 1906.

G. GRIFFITHS.
PRODUCTION OF HEAT AND SMUDGE.
APPLICATION FILED APR. 10, 1905.

Fig. 1

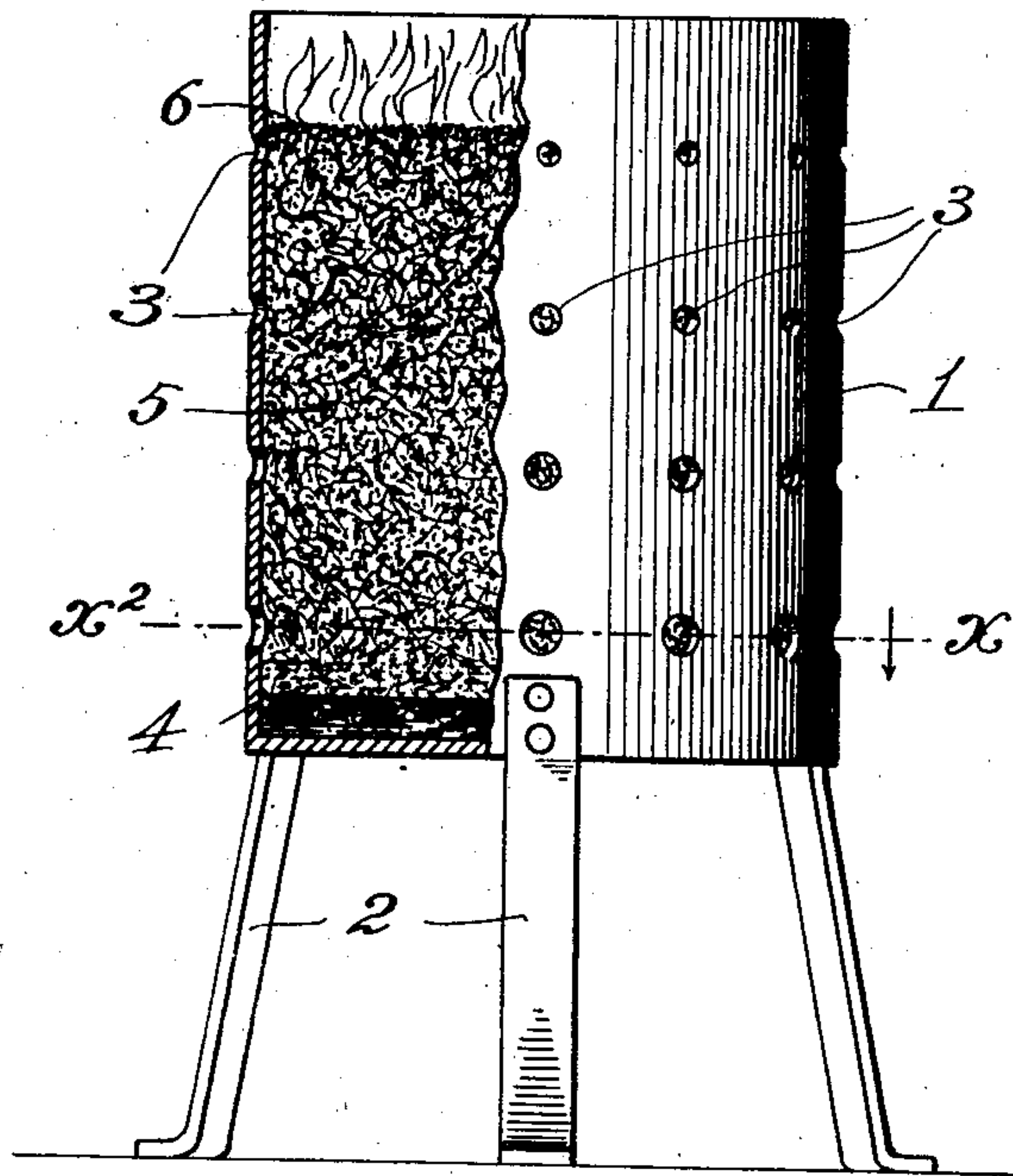
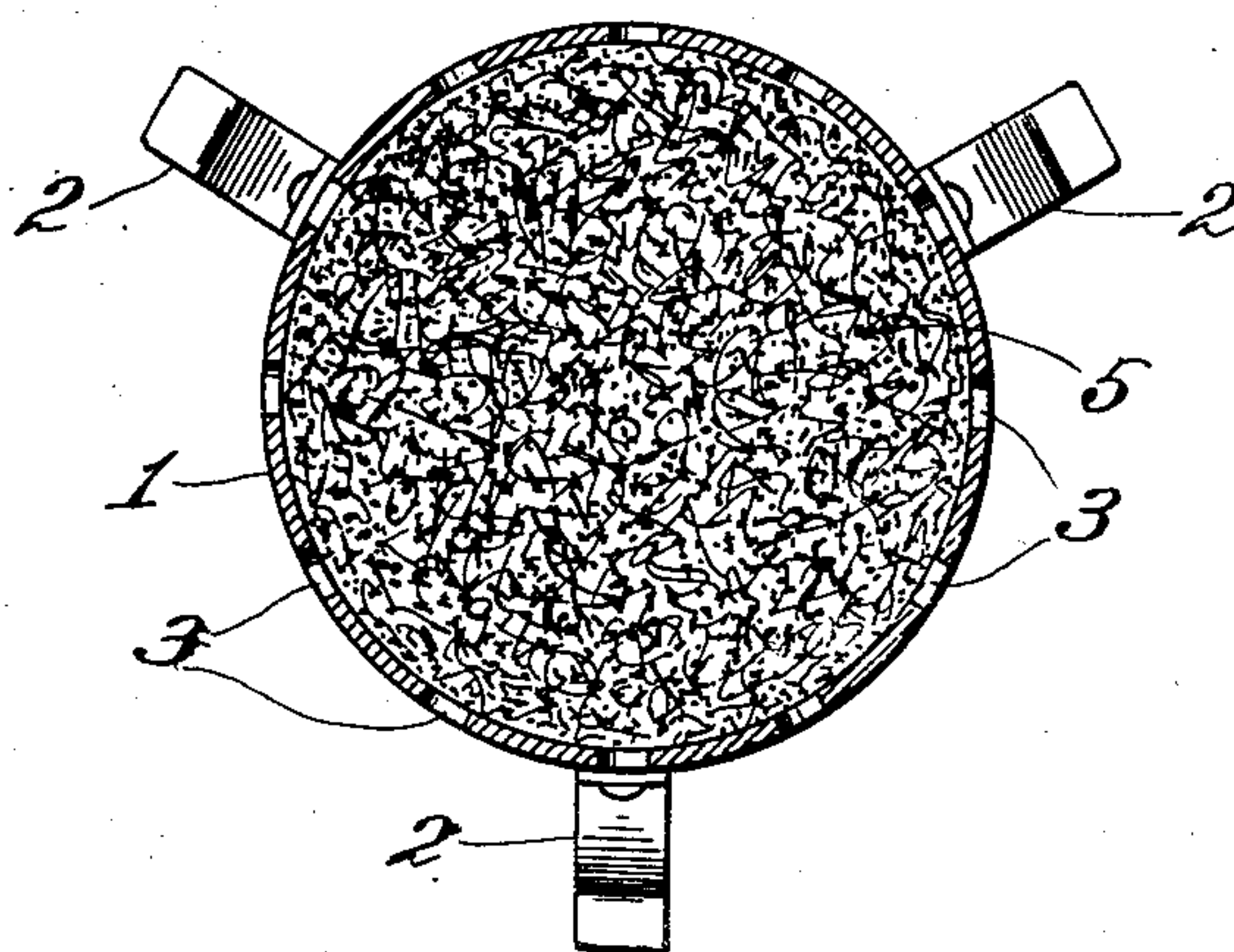


Fig. 2



Witnesses:
C. C. Holly
A. P. Knight

Inventor
George Griffiths
by Townsend Bros
his attys.

UNITED STATES PATENT OFFICE.

GEORGE GRIFFITHS, OF LOS ANGELES, CALIFORNIA.

PRODUCTION OF HEAT AND SMUDGE.

No. 814,646.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed April 10, 1905. Serial No. 254,744.

To all whom it may concern:

Be it known that I, GEORGE GRIFFITHS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in the Production of Heat and Smudge, of which the following is a specification.

The main object of this invention is to provide for the production of heat and smudge in orchards at times when the latter are liable to be damaged by frosts, the said heat and smudge being produced in such manner as to provide a maximum of protection in the most convenient and economical manner.

A further object of the invention is to provide for the production of a smudge which will effectually protect the vegetation without depositing smut on the fruit or leaves.

Systems or methods of smudging now in general use are open to the following objections: Combustion of the smudge-producing materials is difficult to start, expensive to maintain, and liable to cease before full combustion is completed, thereby failing to effect its purpose and wasting much of the combustible. Furthermore, the smudge produced, particularly when crude oil is used as a basis or as an element in the combustible, is liable to be of a heavy moist nature, so that it adheres to the fruit, smutting or soiling the same in an objectionable manner, the smut permeating the fruit and imparting an objectionable flavor.

The present invention provides for burning a suitable combustible in such manner that the combustion is produced at a relatively high temperature and in a definite regular manner, so that complete combustion is assured. The basis or main element in this combustible is petroleum having the general nature of California crude oil—that is to say, having a heavy or an asphaltum base—admixed with constituents of lighter gravity and greater volatility, this fluid combustible being carried on and distributed over a suitable carrier or vehicle, consisting of a solid combustible, such as wood or ligneous material, in a suitable state of separation—for example, sawdust or shavings, or both.

An object of the present invention is to carry out the combustion of the above-described combustible in such manner that the lighter or more volatile of the constituents will be consumed first and the heavier con-

stituents will be reserved for the latter part of the combustion and will finally be consumed.

The invention affords the following advantages: The initial combustion of the lighter constituents gives a hot quick fire which easily heats the whole mass and insures an easy starting and continuance of the combustion. The high heat thus attained has not only the advantage of heating up the air, but conduces to ready combustion and results in a dry or non-adherent smudge. The final combustion of the heavier constituents produces great quantities of smudge or smoke at the time when it is most needed—for example, at or about sunrise—serving, in the first place, to conserve the heat which has been generated by the previous combustion and, in the second place, to prevent a violent or sudden dissipation of the frost which may have fallen on the fruit.

The accompanying drawings show an apparatus suitable for carrying out the method.

Figure 1 is a partly-broken elevation of a vessel in which the combustion is effected. Fig. 2 is a horizontal section thereof on the line X² X² in Fig. 1.

1 designates the vessel or pot, which may be of any suitable shape—for example, tubular or cylindrical—with a closed bottom and supported on legs 2. Said vessel is provided in its side wall with openings or perforations 3, spaced or distributed around the same and from the upper to the lower portion thereof, leaving, however, the extreme lower portion or the vessel imperforate to form a receptacle or cup closed at the bottom and sides. The combustible 5, consisting, preferably, of shavings or sawdust in any desirable proportion, saturated or soaked with crude oil, so as to carry and hold as much crude oil as will be contained therein without running off at ordinary temperature, is placed in this vessel 1 and ignited at the top. As the combustion proceeds the heat generated thereby warms the oil in the underlying material, with the result that the more volatile portions thereof are vaporized and passing upward are consumed, while the heavier or asphaltic portions of the oil are rendered sufficiently thin and fluid to cause them to run down into the lower portion of the vessel. As the material burns down from the top to the level of the successive openings or perforations in the sides of the vessel the said openings or perfo-

2
 rations permit the air to gain access to the
 fuel at the point of consumption, thereby
 maintaining the combustion and preventing
 any choking or extinguishing thereof. The
 5 mineral material or ashes 6 contained in the
 fuel being unconsumed are gradually accu-
 mulated and fall as the fuel burns away and
 will finally remain in the bottom of the vessel
 along with the heavier asphaltic portion of
 10 the fuel, (indicated at 4.) This unconsumed
 material will then act as a wick or absorbent
 carrier for the heavier portion or the fuel,
 feeding and exposing the same to the action
 of the air in such manner as to maintain the
 15 combustion. It is well known that it is diffi-
 cult to burn such heavy asphaltic material
 when exposed in liquid form, unless the tem-
 perature be greater than can be maintained
 in a small vessel or unless artificial or force
 20 draft be used. The reason of this is that the
 body of liquid exerts a cooling or dampening
 effect on the flame and is itself so non-volatile
 that the heat cannot heat it sufficiently when
 in a compact body to generate the vapor nec-
 25 essary for continued combustion; but by pro-
 viding the mineral wick above referred to
 the heavy fluid is exposed in such manner as
 to readily take up the heat and be continu-

ously volatilized sufficiently to continue the combustion.

What I claim is—

A heat and smudge producing method
 which consists in inclosing the lower part of a
 fuel mass, of divided ligneous material coated
 with petroleum having a heavy base, to pre- 35
 vent access of air thereto, igniting the upper
 part of the mass and allowing access of air
 thereto as it burns away, to cause the petro-
 leum at the upper part of the mass to be sepa-
 rated by the heat of the combustion, into a 40
 lighter constituent which burns off and into a
 heavier residuum, and rendering such heav-
 ier residuum sufficiently fluid by the action
 of heat to cause it to run down into the lower
 part of the mass, to allow the ashes of the fuel 45
 mass to accumulate together with this resid-
 uum at the bottom of the mass, and to cause
 combustion of the residuum by the aid of said
 ashes acting as a wick.

In testimony whereof I have hereunto set 50
 my hand, at Los Angeles, California, this 1st
 day of April, 1905.

GEORGE GRIFFITHS.

In presence of—

JOHN C. STEDMAN,
 T. H. FAWCETT.