(No Model.)

C. W. INGRAHAM.

VAPOR BURNER.

No. 441,763. Patented Dec. 2, 1890.

FIG_1_

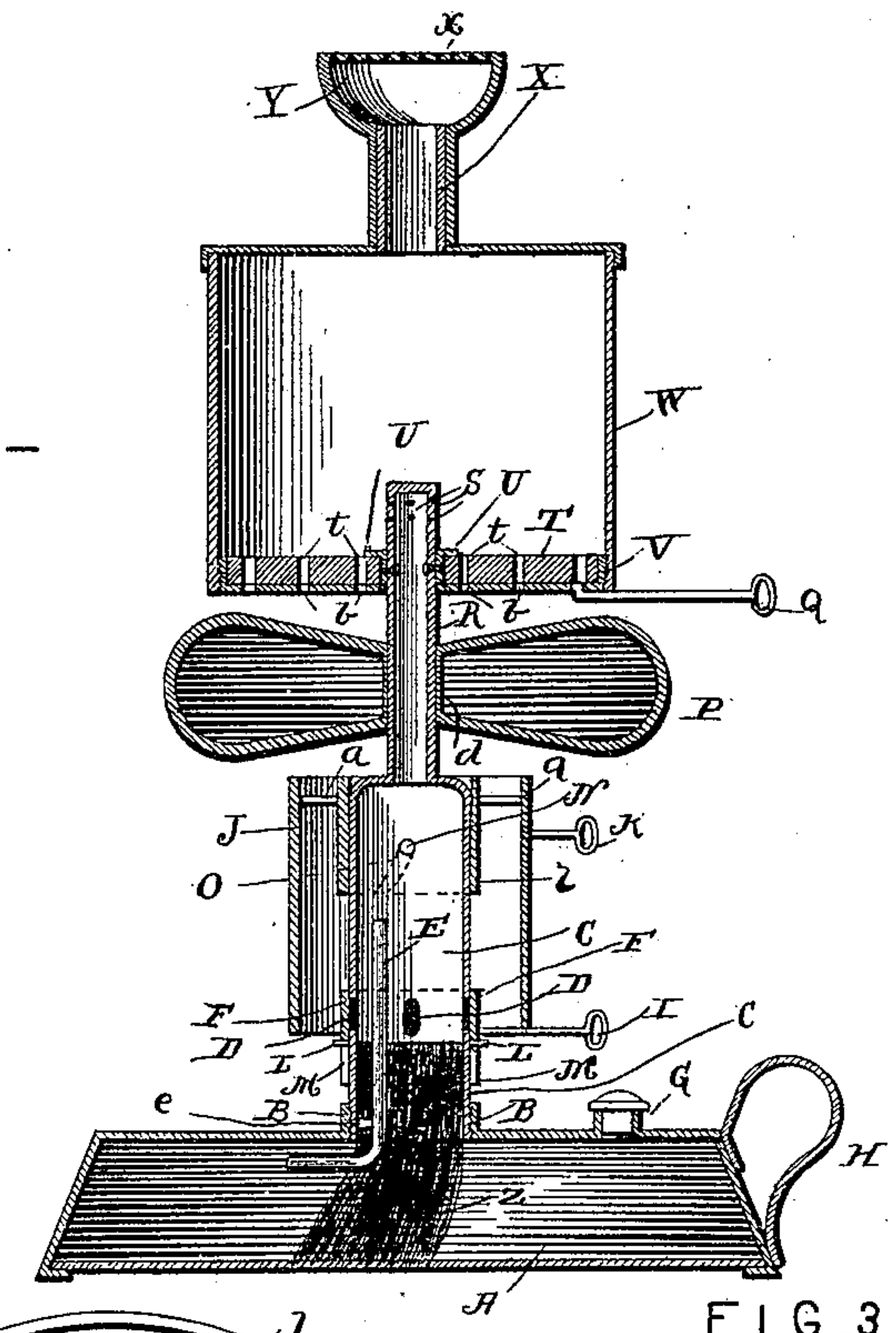


FIG_2_

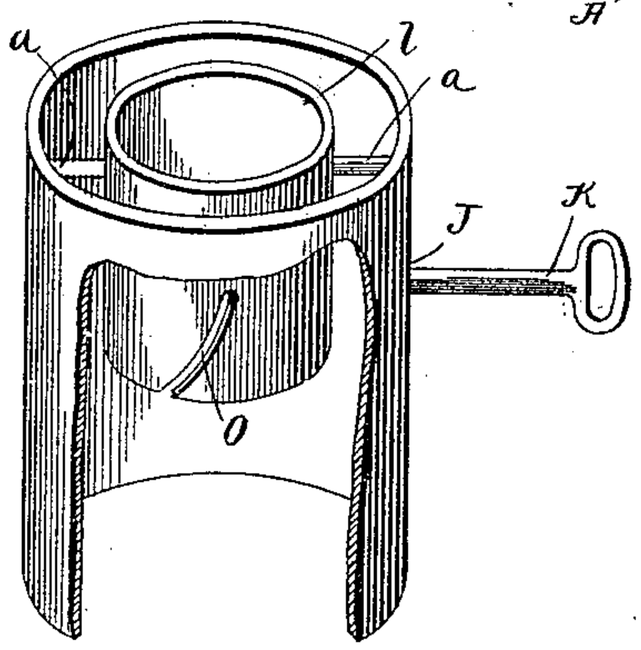


FIG_3_

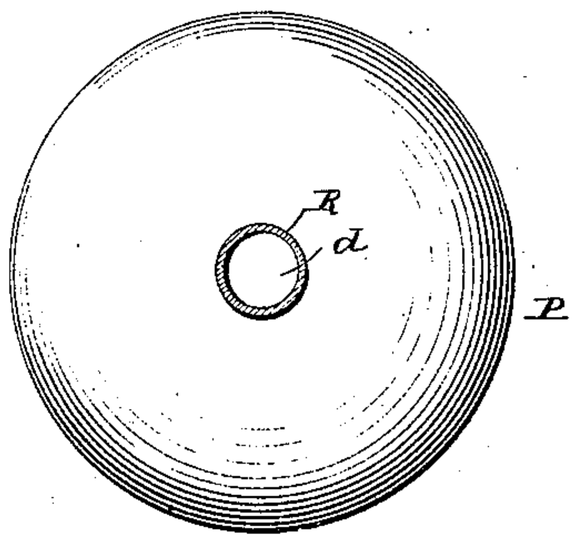


FIG_5_

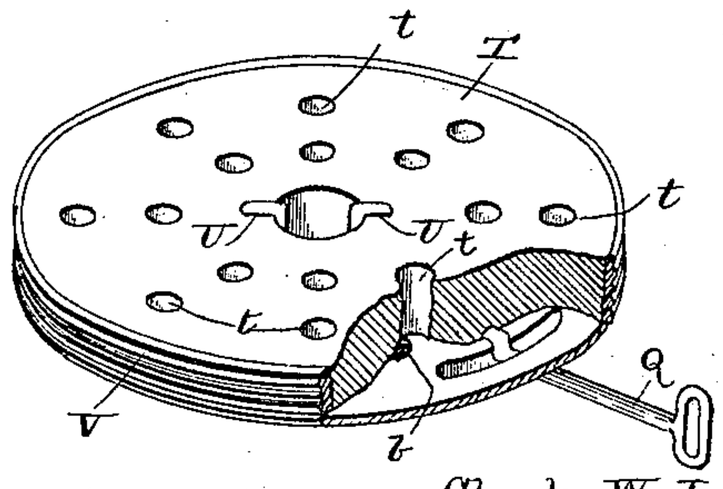
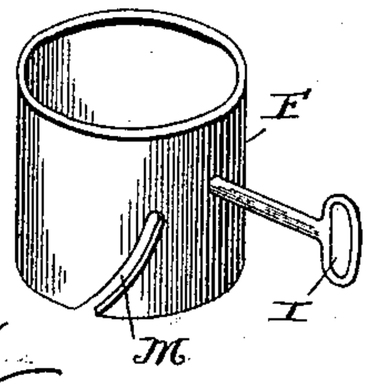


FIG_4_



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES WESLEY INGRAHAM, OF EIGHT MILE, OREGON.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 441,763, dated December 2, 1890.

Application filed April 24, 1890. Serial No. 349,406. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WESLEY INGRAHAM, a citizen of the United States, residing at Eight Mile, in the county of Morrow and State of Oregon, have invented a new and useful Lamp-Stove, of which the following is a specification.

This invention relates to heaters, and more especially to that class thereof known as "vapor-burners;" and the object of the same is to provide an improved heater of this character.

With this end in view the invention consists in the specific details of construction illustrated in the drawings, and hereinafter more fully described and claimed.

In the said drawings, Figure 1 is a central vertical section of this vapor-burner complete. Fig. 2 is a perspective detail of the lowermost fender, partly broken away, to show its interior construction. Fig. 3 is a plan view of the upper fender. Fig. 4 is a detail perspective of the regulator. Fig. 5 is a perspective detail of the valve at the bottom of the mixing-chamber, partly broken away, to show the construction of parts operating in connection therewith.

Referring to the said drawings, the letter A designates a bowl for the reception of petroleum or gasoline, or both, and the said bowl has the usual handle H and a plug G, through which it may be fed. Screwed into said bowl by means of the threads B is a tube C, provided, where shown, with about four oval holes D, and the upper end of this tube is continued in a reduced extension R, and provided near its upper end with about eight holes S.

The letter L designates a pair of pins projecting from opposite sides of the tube C below said oval holes D, and F is a regulating-ring surrounding said tube, having two inclined slots M, embracing said pins, and provided with an operating-handle I. By this means, when the handle is moved from side to side, the slots in the regulator, engaging the pins L, will cause said regulator to move spirally up and down upon the tube C, and the holes D will be thereby more or less opened at their upper ends, as will be obvious.

Z is a wick, whose lower end extends to the bottom of the bowl A, and whose body passes up within the tube C to a point about opposite said holes, and this wick is raised and lowered by any suitable means, not here shown and forming no part of the present invention.

A small pipe E is preferably arranged within the tube C, being connected to one side thereof at the point *e*, and this tube extends from a point within the bowl A above the liquid therein to a point within the tube C above the holes D. The object of this pipe is to conduct into the tube any vapor which may be formed within the bowl by reason of the heat communicated thereto from the flame. Surrounding the tube C above the regulator F is a sleeve *l*, provided with inclined slots O, embracing pins N on the sides of said tube in substantially the same manner as did the slots M in the regulator above described.

J is a pipe surrounding the sleeve *l*, than which it is considerably larger and longer, its lower end extending downwardly to a point opposite the lower ends of the holes D, and the pipe J is connected to the sleeve *l* by bars *a*, as seen in Fig. 2, the whole being turned upon the tube C by a handle K, similar to that upon the regulator. This device is what I call the "fender," because when it is lowered the lower end of the larger pipe J stands opposite the holes D, inside of which the flame is located, and the latter is therefore prevented from being extinguished by sudden drafts of air; but the fender may be raised, when desired, so as to gain access to or permit inspection of the regulator and the parts within it.

The letter W designates a mixing-chamber, which is detachably secured by threads V to its bottom, and the latter is provided with a number of holes *b*, and is centrally rigidly mounted upon the extension R. Within this chamber is located a disk T, which turns around the extension R and rests upon the bottom of the chamber, being operated by a handle Q, projecting downwardly through a slot in said bottom, and said disk is provided with holes *t*, adapted to register with the holes *b* in the bottom, or when the disk is turned

by the handle to be thrown partially or wholly out of register therewith, whereby the disk constitutes a regulating-valve governing the admission of air through the bottom of the mixing-chamber to join the vapor that issues from the holes S. Said mixing-chamber has an upwardly-extending tube X, upon which is tightly but removably fitted a burner Y of any approved construction, and the upper end of this burner is enlarged, so as to present a large heating-surface or so as to support a dish or cooking-vessel, the upper end of the burner being covered by a fine sieve *x*, whereby soot and other particles are prevented from dropping into the device.

Upon the extension R, just below the mixing-chamber W, is tightly fitted a sleeve *d*, and extending outwardly and radially from the upper end of this sleeve is a plate P, which is bent inwardly and again connected with the sleeve *d* at its lower end, the whole forming another fender below the holes *b* in the bottom of the mixing-chamber W, which fender may be adjusted vertically upon the extension R and will prevent a sudden inflow of air through the said openings or holes *b* into the mixing-chamber. To said extension R, inside the hole through the center of the valve T, are secured two tongues U, whose upper ends are bent outwardly from said extension and beneath which the valve T turns as it is operated by the handle Q.

This improved vapor-stove being constructed as above described, the operation thereof will be as follows: A light is applied through one of the holes D to the inflammable liquid, which is drawn upwardly by capillary attraction through the wick Z, and the regulator F is turned so that the proper amount of air will be admitted through the holes D to mix with the burning liquid and create vapor. The regulator-fender J is turned, as above described, so as to prevent the sudden admission of an excessive quantity of air which would interfere with the formation of this vapor. The vapor rising through the extensions R issues from the holes S, (the upper end of the extension being closed,) and air admitted through the holes *b* in the bottom of the mixing-chamber W, its admission being regulated by the valve T, as above explained, mixes with the vapor in this chamber. The upper fender P prevents a sudden draft of air rushing into the mixing-chamber, which would cause the mixing to be imperfect and the burning to be irregular. The mixed vapor and air passes upwardly through the tube X into the burner Y, and where it issues from the sieve *x* it will burn with a non-luminous flame, possessing great heating power.

If a dish or vessel be placed upon the burner Y, the contents thereof will be quickly and highly heated; or if the entire device be placed within a surrounding drum or suitably arranged in any other manner the heat from the flame may be used for heating purposes, all as is well known in the art and forms no part of the present invention.

Having described my invention, what I claim is—

1. In a vapor-burner, the combination, with the bowl A, the tube C, rising therefrom and having a number of holes D, a mixing-chamber and a burner carried by the upper end of said tube, and a regulator surrounding said holes, of a sleeve *l*, fitting said tube above the holes therein and having inclined slots O, pins N on said tube, with which said slots engage, a pipe J, surrounding said sleeve and extending below the lower end thereof, bars *a*, connecting said sleeve and pipe, and an operating-handle K, extending outwardly from said pipe, as and for the purpose set forth.

2. In a vapor-burner, the combination, with the bowl A, a tube C, rising therefrom and having a number of holes D, a mixing-chamber and a burner carried by the upper end of said tube, and means, substantially as described, for regulating the admission of air through said holes, of a small pipe E, secured within and to one side of the tube C and extending from a point within the bowl above the liquid therein to a point within the tube above the holes therein, as and for the purpose set forth.

3. In a vapor-burner, the combination, with the bowl A, the tube C, rising therefrom and having a number of holes D, a regulator around said holes, and an extension R from the upper end of said tube, of a mixing-chamber W, mounted upon said extension and having holes *b* in its bottom, a disk T, moving over said bottom and around said extension, and having holes *t* adapted to register with said holes in the bottom, an operating-handle Q, connected to said disk, and a burner Y at the upper end of said chamber, all substantially as described.

4. In a vapor-burner, the combination, with the bowl A, the tube C, rising therefrom and having a number of holes D, a regulator around said holes, and an extension R from the upper end of said tube, of a mixing-chamber W, mounted upon said extension and having holes *b* in its bottom, a regulating-valve T for controlling the admission of air through said holes, a sleeve *d*, tightly fitting upon said extension, a fender-plate P, extending outwardly from said sleeve for the purpose set forth, and a burner Y at the upper end of said mixing-chamber, all substantially as described.

5. In a vapor-burner, the combination, with the bowl A, the tube C, rising therefrom and having a number of holes D, a regulator around said holes, an extension R from the upper end of said tube, and the tongues U, mounted upon said extension and having outwardly-bent upper ends, of a mixing-

chamber W, mounted upon said extension and having holes *b* in its bottom, a regulating-valve T, moving upon said bottom around said extension and beneath the outwardly-bent upper ends of said tongues, said valve having holes *t* and an operating-handle Q, and a burner Y at the upper end of said mixing-chamber, all substantially as and for the purpose hereinbefore set forth.

CHARLES WESLEY INGRAHAM.

Witnesses:
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