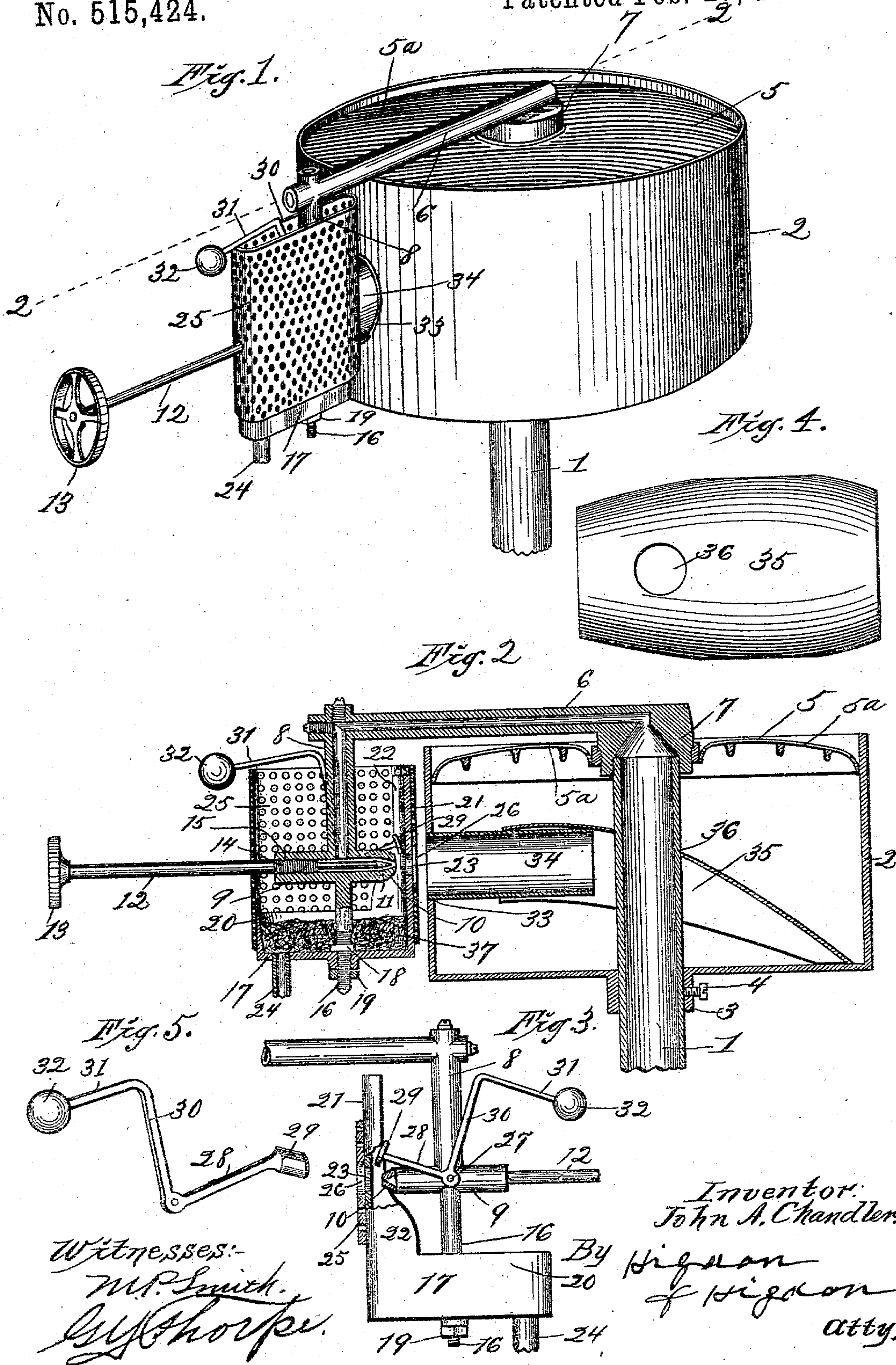


(No Model.)

J. A. CHANDLER.
VAPOR BURNER.

No. 515,424.

Patented Feb. 27, 1894.



UNITED STATES PATENT OFFICE.

JOHN A. CHANDLER, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF
TO NELLIE D. WATERS, OF SAME PLACE.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 515,424, dated February 27, 1894.

Application filed January 19, 1893. Serial No. 458,944. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. CHANDLER, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Vapor-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in burners, for transforming inflammable oils to vapor, then consuming said vapor by combustion, for heating, cooking and other analogous purposes; and the object of my invention is to produce a burner, whereby the oil is conducted up through the vapor bowl, and over the flame surface thereof, where it is immediately converted into vapor; thence guided and discharged into the interior of the vapor-bowl, where escaping through the burner-cap, it is immediately ignited.

A further object of my invention is to produce a burner, the drip-cup of which is located without the vapor-bowl, and convenient of access at all times, and also to produce a burner which shall possess the maximum degree of vapor and heat producing power, with a most economical consumption of fuel; and a still further object is to produce a burner of simple, strong, compact and inexpensive construction.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement as will be hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1, represents a perspective view of a vapor burner, embodying my invention. Fig. 2, represents a vertical central sectional view of the same, taken on the line 2—2 of Fig. 1. Fig. 3, represents a side elevation of the drip-cup detached from the vapor-bowl, and showing a portion of the generating tube with its connections, in their proper positions relative to the drip-cup. Fig. 4, represents a plan view in detail of the deflector plate located within the vapor-bowl. Fig. 5, represents a detail perspective view of the switch-lever for guiding the oil to the drip-cup.

In the drawings, 1 designates the stand-pipe which is connected in the usual manner to the supply pipe from the oil-reservoir, (not shown) which is located in any convenient position.

2 designates the vapor-bowl, which may be of the cylindrical form shown, or of any other desirable form, and which is provided with an opening in its bottom and with a depending flange or collar 3 surrounding said opening.

The free end of the stand-pipe 1, is inserted upward through the opening in the bottom of the vapor-bowl a suitable distance, and a set-screw 4 passing through the flange 3, secures the vapor-bowl thereon at the desired point. The upper open end of the vapor-bowl is provided with a skeleton burner-cap 5, which is of marginal contour to fit within the upper end of said bowl and is composed of cross-strips 5^a arranged a slight distance apart. This burner-cap 5 is provided with an opening vertically over the opening in the bottom of the bowl, and the depending cylindrical end 7 of a generating-tube 6, is fitted within said opening and secured upon the upper end of the stand-pipe 1, which thus communicates with the interior of the generating tube. This generating tube 6, extends horizontally outward over the burner cap 5, and is formed at its outer end, at a suitable distance beyond the outer side of the vapor-bowl, with the depending tube 8, the passage of which communicates at its upper end with the passage of the generating tube, and at its lower end with the passage of a horizontally arranged tube 9. The forward end of the passage of the tube 9 is formed with a needle-valve seat 10 and a needle valve 11 is adapted to close the same. This needle-valve 11 is provided with a valve-stem 12 and the usual hand wheel 13 is carried at its outer end. This valve-stem 12 is screw-threaded at 14 to engage the screw-threads 15 in the outer end of the passage of the horizontal tube 9. A supporting rod 16 is also formed integral with the said tube 9 and extends vertically downward through an opening in the bottom of the drip-cup 17, and is screw-threaded for a suitable distance. Retaining nuts 18 and 19 engage

the said screw-threaded end of the depending rod 16, and bear respectively against the upper and lower sides of the bottom of the drip-cup, and thus support the drip-cup in its proper position.

The formation of the drip-cup is as follows: The bottom is preferably of elongated rectangular form, and a wall 20 entirely surrounds said bottom at its outer margins, and at one end the wall 20 is extended vertically upward at 21, said upward extension having side marginal flanges 22, and at about midway the height of said extension 21, an opening 23 is provided, which is adapted to be directly opposite and a slight distance from the discharge opening of the valve-seat. A waste-pipe 24 also extends vertically upward through the bottom of the drip-cup and near its outer end. A foraminous casing 25 of similar contour entirely surrounds the side walls of the drip-cup 17 and extends upwardly a slight distance above the upper end of the extension 21 of said drip-cup, and within a slight distance of the generating tube 6. This foraminous casing is provided with an opening 26 registering with the opening 23 of the extension 21 of the drip-cup, and also with an opening through which the valve-stem 12 extends and operates. A switch lever, approximately Z-shaped is pivoted at 27 to one side of the valve-tube 9, and is provided at the forward end of the lower arm 28 with the closing-cap 29 which extends inwardly from and at right-angles to said arm. The upwardly extending arm 30 of said lever is of sufficient length to extend a slight distance above the upper end of the foraminous casing 25 and a weight or enlargement 32 is carried at the outer end of the rearwardly extending arm 31 of said switch lever; the tendency of said weight being to hold the closing-cap 29 above the outer end of the tube 9; the object of which will be hereinafter referred to. An opening 33 is provided in the side of the vapor-bowl directly opposite the opening 23 of the extension 21 of the drip-cup, and a horizontal guide-tube 34 is fitted within said opening 33 and extends inwardly of the vapor-bowl toward the stand-pipe 1, and the inner end of said guide tube 34 opens under a curved deflector-plate 35, which rests at its opposite ends upon the bottom of the bowl and the inner end of the guide tube 34, and is also provided with an opening 36 surrounding closely the stand-pipe 1. This deflector plate is of concavo-convex form, and of sufficient width to distribute and diffuse thoroughly the vapor over the entire area of the interior of the vapor bowl.

The operation is as follows: When the burner is to be used, the valve 11 is opened, and the weighted end of the switch lever elevated, so that the closing-cap at the forward end of said lever will be opposite to and close the opening 23 in the extension 21 of the drip-cup; the oil is now allowed to flow from the reser-

voir up through the stand-pipe 1, thence through the generator tube 6 and tube 8 into the valve tube 9, whence it escapes from the open and forward end thereof and falls into the drip-cup (because the opening 23 opposite to the end of the valve-tube 9 is closed by the closing cap 29 of the switch lever) which is filled with asbestos 37; the asbestos becomes saturated, and any excess of oil in the drip-cup escapes through the waste-pipe 24. It will be seen that the solid or non-foraminous extension 21, and the side flanges 22 thereof, will cause any oil coming in contact therewith to drain into the drip-cup, and not escape or be wasted, as it would were the extension and the flanges foraminous. A lighted match is now applied to the saturated asbestos and the quantity of oil therein burns a sufficient time to thoroughly heat the valve-tube and the vertical tube 8 and the oil therein is generated into vapor; the weighted switch-lever is now released and assumes its normal position, as shown in Figs. 1, 2 and 3, thus raising the closing-cap 29 from opposite the opening 23 of the extension 21, and allowing the generated vapor therein to be discharged from the valve-tube through the opening 23 and into the vapor-casing through the guide-tube 34. The vapor now thoroughly mixes and commingles with the air within the vapor-bowl, and is then lighted by applying a flame to surface of the burner-cap, where the combustion takes place; the flames now impinging against the generator tube 7 thoroughly vaporize the oil passing therethrough. This vaporization of the oil in the generating tube 6, and its discharge thence as vapor into the vapor-bowl where it is mixed with air for combustion, continues as long as the oil from the reservoir is allowed to flow.

From the above description, it will be seen that I have produced a burner, which utilizes the maximum of heat producing power to thoroughly generate the oil into vapor, thereby resulting in an economic consumption of fuel, and also a burner which is simple, strong, compact, durable and inexpensive of construction.

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

1. In a vapor-burner, the combination with a bowl having a burner-cap upon its upper end, and an opening in its side, of a generator-tube having a valve-tube having its discharge end opposite the opening in the side of the bowl, and a drip-cup containing an absorptive material, and also having an upward extension or arm interposed between the discharge end or nozzle of the valve-tube and the opening of the bowl, and a drain-pipe communicating with the drip-cup, and a lever having a closing-cap at one end and a weight at the other end, pivoted to the valve tube and arranged so that the closing-cap may be interposed between the nozzle of the valve-

tube and the opening in the extension or arm of the drip-cup, to close said opening, substantially as set forth.

2. In a vapor-burner, the combination with
5 a bowl or casing having a burner-cap and an opening in its side, of a valve-tube having its discharge end opposite the opening in the side of the casing and having a valve, and a drip-cup having an arm or extension provided with
10 an opening opposite the discharge end or nozzle of the valve-tube and the opening of the bowl or casing, and a foraminous casing surrounding said drip-cup and extending upwardly above the valve-tube, and having an
15 opening for the valve-stem and an opening registering with the opening of the drip-cup extension and the opening of the bowl or casing, substantially as set forth.

3. In a vapor-burner, the combination with
20 the burner having an opening in its side, of a drip-cup, and a valve-tube having its discharge end or nozzle opposite said opening, and a switch-lever pivotally carried by the valve-tube and having a closing-cap at one
25 end adapted to deflect the oil from the valve-tube to the drip-cup, and a weight at the outer end of said switch-lever adapted to automati-

cally move the closing-cap from its position opposite the discharge end of the tube, substantially as set forth.

4. In a vapor-burner, the combination with
a bowl or casing having an opening in its side, a stand or supply-pipe passing vertically through the bowl or casing, and a conveyer-tube having its outer end communicating with
35 the opening in the side of the bowl and having its inner end adjacent to the stand-pipe, and a valve-tube connected to the stand or supply-pipe, and having its discharge end opposite the outer end of the conveyer-tube, of
40 a concavo-convex deflector-plate arranged obliquely so that its concave side is opposite the inner end of the conveyer-tube, and one end rests upon said tube and the other upon the
45 bottom of the bowl, and also having an opening fitting around the stand or supply-pipe, substantially as set forth.

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

JOHN A. CHANDLER.

Witnesses:

M. P. SMITH,
G. Y. THORPE.