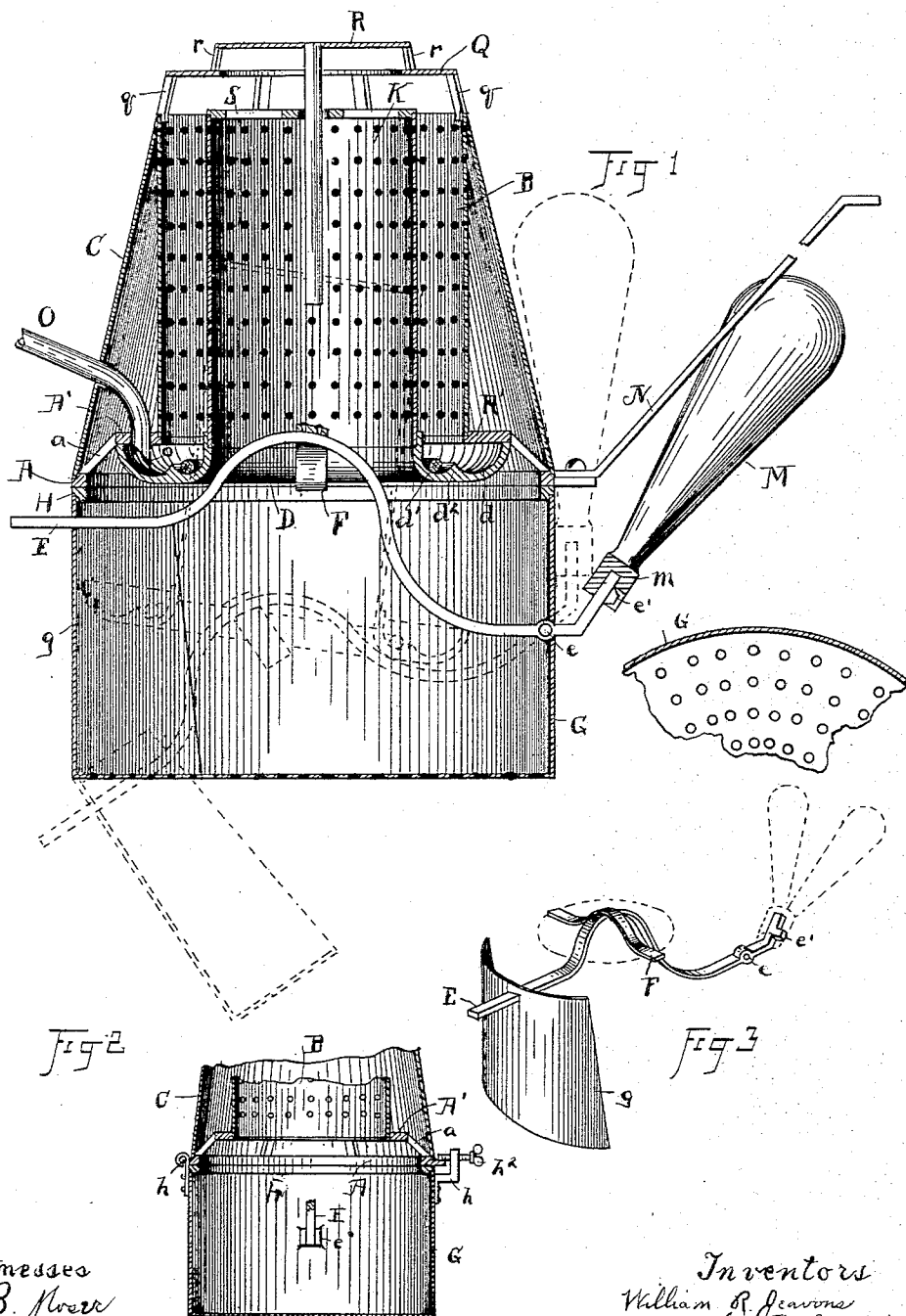


(No Model.)

J. A. LANNERT & W. R. JEAUVONS.
VAPOR BURNER.

No. 476,543.

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VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 476,543, dated June 7, 1892.

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To all whom it may concern:

Be it known that we, JOHN A. LANNERT and WILLIAM R. JEAVONS, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Vapor-Burners; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to vapor-burners; and the object of the invention is to provide means for easily lowering and raising the burner-bowl when initial starting of the burner occurs and to protect the burner from air drafts or currents which might cause the flame to flicker and vapor to escape combustion.

The invention therefore consists in the construction, arrangement, and combination of parts, substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical central sectional elevation of the burner in which the bowl is shown in full lines in raised position, as when in use, and in dotted lines as it appears when lowered for "initial" starting, so called. Fig. 2 is a cross-section at right angles to Fig. 1, showing fragments of the outer combustion-tube and the converging inflector and the permanent annular frame supporting said parts and the annular frame and attached hood hinged and locked on said permanent frame. Fig. 3 is a perspective view, reduced, of the lever and cross-spring thereon for supporting the burner-bowl and the hood-door suspended on its end, and detached from the lever at the right is the bifurcated weight, which serves as an automatic balance for the parts, as hereinafter more fully described.

A represents what is shown here as an annular rim, which has occasional inwardly-projecting arms a , connecting with an inner rim or ring A' , which at its inner annular edge supports the outer combustion-tube B. The ring or rim A is supposed to be stationary, and may, in fact, be attached to the top of the stove when the burner is secured to the stove, as now generally is the case. This construction affords a free air-passage between the

two parts A and A' on the outside of tube B, and this open outer space is inclosed by the inflector C, set upon rim or plate A at its bottom and converging to the top of the tube B. The inflector C protects the burner above its base about the combustion-tube from air-currents and compels the air which passes up between the rims A A' to feed into the burner or combustion chamber and feed the flame therein.

D is the burner-bowl, which in this instance, and preferably, has an annular form, and is provided with two channels, grooves, or depressions d d' , separated by a rib d^2 , as is now well known in this art, and is not set up as novel in this specification. This bowl is supported and adapted to be raised and lowered by the lever E, which has a curved spring cross arm or bar F, fixed upon its bowed center and engaging the bottom of the bowl, as appears clearly enough in Fig. 1. The lever E is hinged at e to what may be termed a "hood" G, which is fixed at its upper end to an annular ring or rim H, hinged at one side to the rim or plate A, as h , Fig. 2, and having a small arm or projection h' , with a set-screw h^2 at the opposite side to engage the rim A and hold the hood firmly thereon. The two parts A and H are normally held together, as seen in Fig. 1; but when occasion requires the hood and its attached parts may be swung down to one side and the inside of the burner made conveniently available for cleaning or other purposes. Any suitable catch, lock, or holder may be employed in lieu of parts h h^2 . The hood G serves as a support for the lever E, as well as a guard against air currents or drafts about the center and bottom of the burner, and, with the inflector C, practically incloses the burner about its sides.

The weight of the burner-bowl D and the inner combustion-tube K, as well as of the hood-door I, is wholly upon lever E, and to counteract and overcome this weight so that the bowl and the other parts will be held normally in working position a counter-weight M is provided for the said lever. This counter-weight is here shown as bifurcated or split, so that it is adapted to pass the brace N and take the vertical position seen in dotted lines in Fig.

1 when the bowl D is lowered. Otherwise the weight would not be thus divided. The outer end of lever E is bent to stand at an angle of about forty-five degrees to a vertical plane, and has a locking-lug *e'* at one side to engage a notch in the socket of the shank *m* of the weight which fits upon the end of the lever. This lug prevents the weight from turning. The weight M is made sufficiently heavy to not only counter-balance the bowl D and other attached parts when the bowl is raised, but to hold the bowl snugly against the rim A', so as to prevent air from entering the vapor-distributing chamber in said bowl beneath said rim or plate. Yet the difference in weight is not so great that it is not easily overcome when the bowl D is to be depressed for starting the burner. When thus depressed the counter-weight assumes a vertical position and rests its weight upon its pivot, so that the bowl will remain down until its position is changed by hand. The weight, furthermore, bears against the frame A H or the hood and serves to limit the downward movement of the bowl. Then when the bowl is again raised the counter-weight not only helps to lift, but holds, the parts in working position.

O represents the oil-supply pipe, which has a pen-shaped extremity to feed the oil to the bowl. When up, the feed is into the outer channel *d*, and when down the feed is into the inner channel *d'* upon or about the wick therein, and the lever E, being pivoted at a lower plane than the frame A, serves to carry the bowl to one side of the center when down, so as to cause feeding onto or about this wick, which is now known in this art. The spring cross-arm F helps to cushion the bowl D against plate A' and to take up any inequalities between bowl and plate above.

The weight M may be made integral with lever E; but separate parts are preferred on account of convenience in manufacture and shipping.

By having the weight of the hood G and its attached parts supported from the upper frame the weight upon lever E is reduced to the minimum, and the operation of the burner thereby made easier than it would be if the lever also supported the hood. This also enables the lever to be made lighter than formerly. The hood being permanently suspended from the main frame, access to the bowl when lowered must be provided. This is done by means of door *g*, which is fixed on the outer end of lever E in such position and manner that said door will move with the said lever, and when up close the opening in the front of the hood through which the bowl is reached and the light applied. Any sufficient and suitable means of fixing the door on the lever may be adopted.

The combustion-chamber is surmounted by a flame-deflecting ring Q, extending in this instance wholly over the combustion-chamber, and has legs or supports *q* on which it rests and is held above the combustion-tubes,

thus affording a flame-space between the said ring and the said tubes. This ring has the effect somewhat of a damper upon the flame, as well as serving to direct or deflect more or less of the flame toward the center, thus avoiding a dead place at the center of the bottom of the vessel to be heated, as occurs when an ordinary deflector is used and the flame is all deflected outward. Above this ring Q is a plate or shield R, of smaller diameter than said ring and having legs *r* resting on the ring Q. This plate or shield is designed, chiefly, to prevent water from dropping or falling into the burner by accident or otherwise, and is not intended as an additional deflector and does not materially affect the action of the flame. It is not therefore essential to the operation of the deflector-ring, as herein described. A central stem or rod is suspended from this top plate through the lower one into the inner tube, and is stayed laterally by a spider S, resting on the inner tube. This stem serves as a guide for said tube when the tube is raised and lowered. It will be observed that the counter-weight is fixed on the lever, and the word "fixed" is used in contradistinction to a counter-weight or weight that changes its position on the lever. Hence though the weight be fixed it may also be detachable, and is shown as detachable from the lever for convenience in manufacture and shipping, as described. The bottom of the suspended hood is perforated, so as to admit the requisite volume of air to the burner, and, being otherwise closed, prevents untoward air-currents from reaching the burner from the bottom.

The peculiar shape of the delivery end of the oil-supply pipe serves two important purposes. In the first place the forward and downward point answers as a shield to prevent the vapor from passing directly into the combustion-chamber when the lighter hydrocarbons are used and there is more or less vaporization of the oil in the pipe itself, and, secondly, when oil is fed to the bowl instead of vapor the oil runs down the tapering sides to the point or extremity *o*, from which it feeds into either of the channels *d'* or *d''*, as the bowl is up or down.

In making connection between the counter-weight and the lever any construction and arrangement of the parts may be adopted which will throw the weight on the lever when the bowl is raised and transfer the weight to the pivot when the bowl is down, so that the bowl will remain down by gravity. Placing the counter-weight at an angle to the lever, substantially as shown, serves this purpose very satisfactorily; yet this, obviously, is not the only way in which the result can be reached.

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

1. In a vapor-burner, the upper supporting-frame, the movable burner-bowl, and the lever and a support therefor, and a spring cross-

arm on the lever forming a rest for the bowl, substantially as described.

2. In a vapor-burner, the stationary upper part, the detachably-secured hood, the burner-bowl, and the supporting-lever therefor, substantially as described.

3. The stationary upper part of the burner, the lever and a support therefor and a counter-weight on the lever, the movable bowl, and the elastic cross-arm on the lever bearing up the bowl, all combined and operating substantially as described.

4. In a vapor-burner of the kind described, the movable bowl and the lever supporting the bowl, having a fixed counter-weight to balance the bowl in working position and a support for the lever, substantially as described.

5. In a vapor-burner, the supporting-lever, the detachable bifurcated counter-weight, and means to keep the said weight from turning, substantially as described.

6. The stationary upper frame, the movable bowl, the lever and a support therefor, and a counter-weight detachably fixed on the lever, substantially as described.

7. The movable bowl, the lever for supporting the bowl, and a weight thereon at an angle to a vertical plane, substantially as described.

8. In a vapor-burner, the movable bowl, the lever for supporting the bowl, the bifurcated counter-weight for said lever, and a support for the lever, substantially as described.

9. In a vapor-burner, the fixed upper part and the pivoted supporting-lever having an upward extension to form a stop against the said fixed part, substantially as described.

10. In a burner, a fixed upper frame and a hood suspended from said frame, in combination with a burner-bowl and a lever pivoted in said hood and supporting said bowl, substantially as described.

11. In a vapor-burner, the stationary upper part of the burner, the detachably-secured hood, a movable burner-bowl, and a pivoted lever for the bowl, substantially as described.

12. The stationary upper part of the burner, a hood hinged thereto, a movable burner-bowl, and a lever for the bowl, pivoted in the hood, substantially as described.

13. The stationary part of the burner, in combination with a hood suspended therefrom, a lever with a counter-weight pivoted on the hood, and a bowl with a flue resting on said lever, substantially as described.

14. The burner provided with the hood about its bottom, a burner-bowl, a lever to support the said bowl, and a door for the hood, fixed to said lever, substantially as described.

15. In a vapor-burner, the fixed upper part, the hood beneath the same, having an opening in its side, and the door to close said opening, substantially as described.

16. In a vapor-burner, the fixed upper frame, the hood affixed thereto having a perforated bottom, and the door for said hood, substantially as described.

17. In a vapor-burner, a supply-pipe having at its end a combined conductor for the oil and shield for the vapor, said part formed with tapered or inclined sides running substantially to a point, substantially as described.

18. The burner provided with perforated tubes forming a combustion-chamber between them and a flame-deflecting ring over said combustion-chamber and above said tubes, substantially as described.

19. The burner provided with perforated tubes forming a combustion-chamber between them, combined with a flame-deflecting ring arranged over said combustion-chamber, and a protecting-shield above said ring, substantially as described.

Witness our hands to the foregoing specification this 10th day of July, 1891.

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WILLIAM R. JEAVONS.

Witnesses:

H. T. FISHER,

NELLIE L. McLANE.