

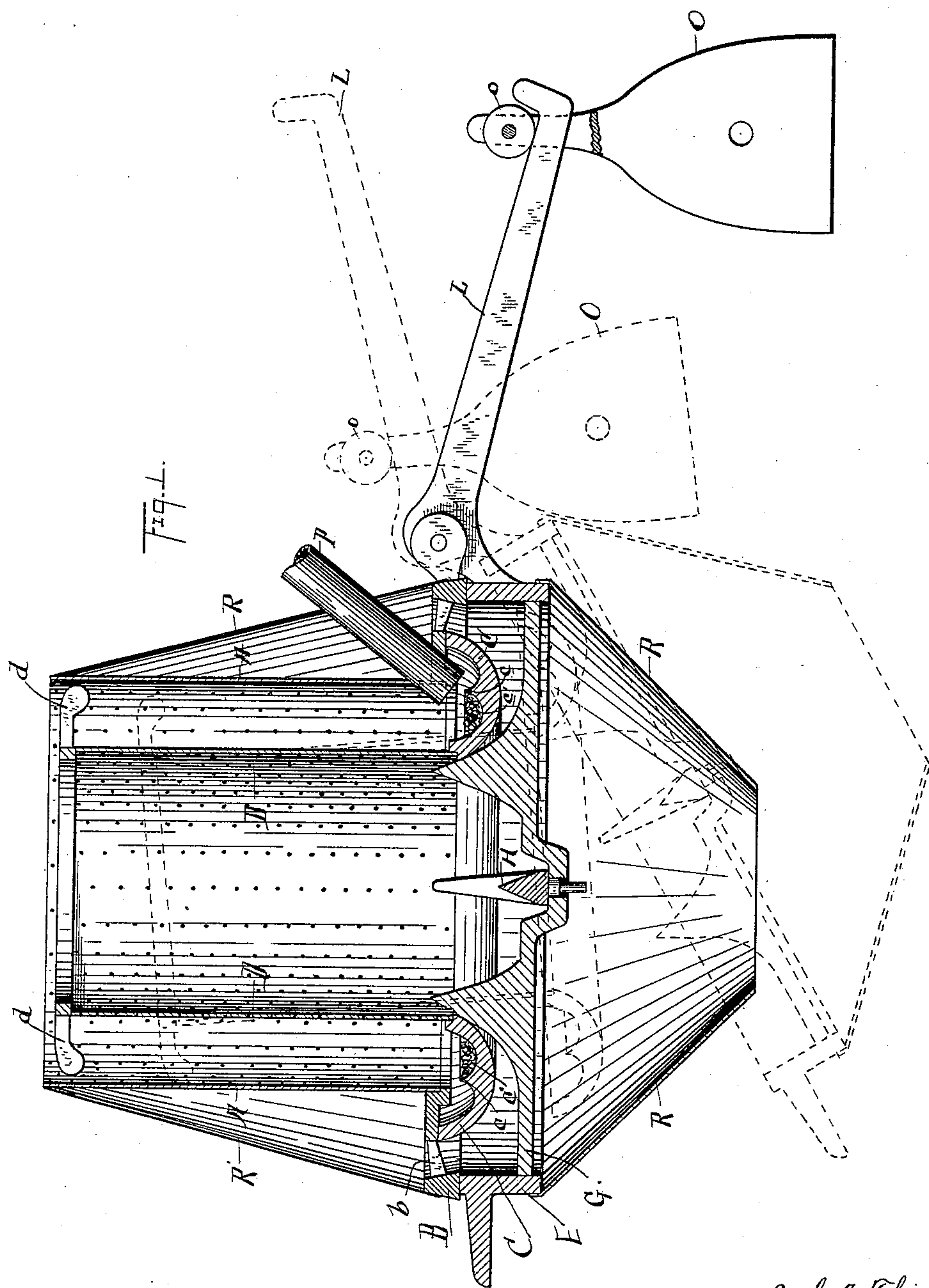
(No Model.)

2 Sheets—Sheet 1.

E. A. THISSELL & W. H. WILDER.  
VAPOR BURNER.

No. 464,627.

Patented Dec. 8, 1891.



WITNESSES

*Bellevue Lowrie*  
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INVENTORS

by *H. F. Fisher*  
ATTORNEY

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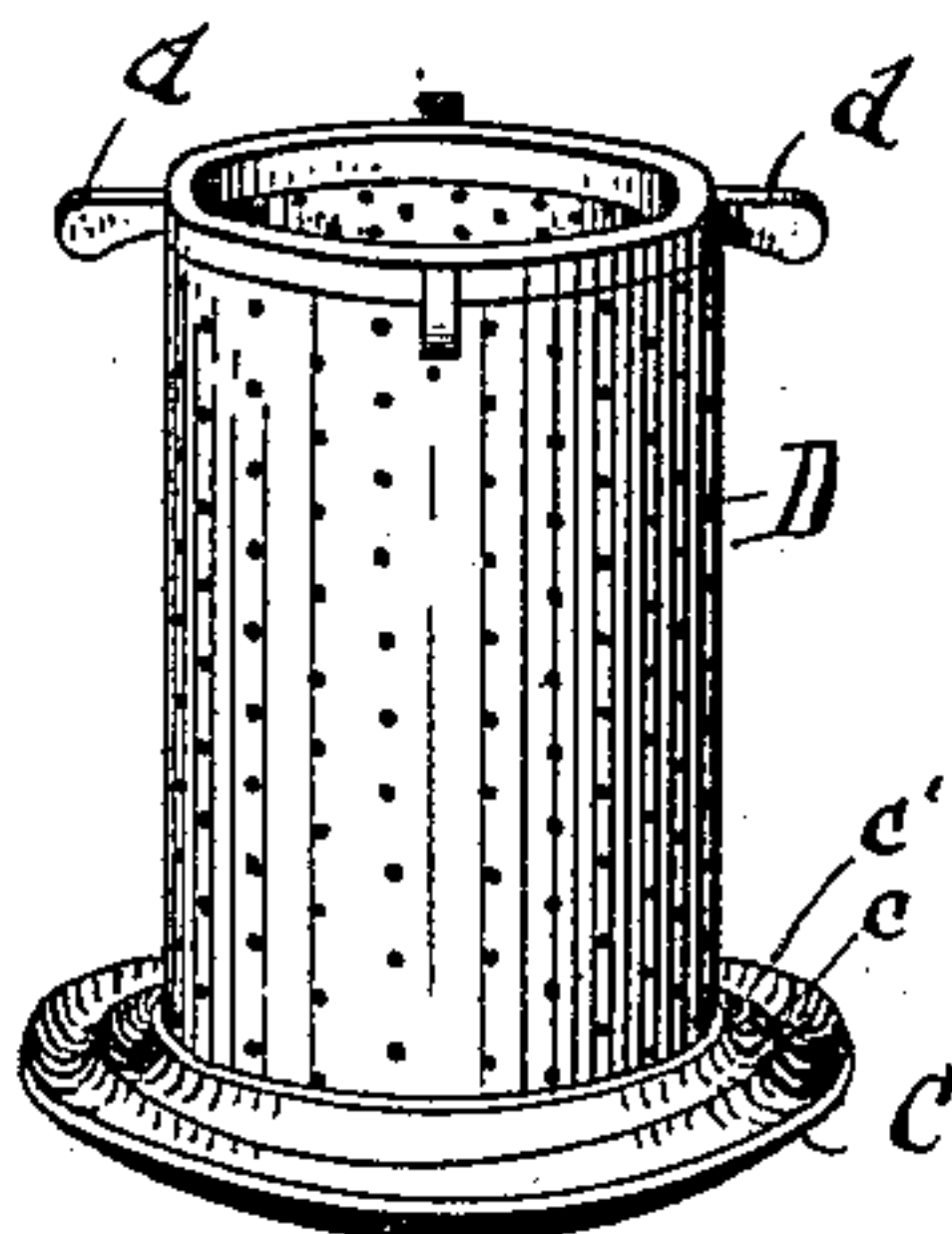


Fig. 2.

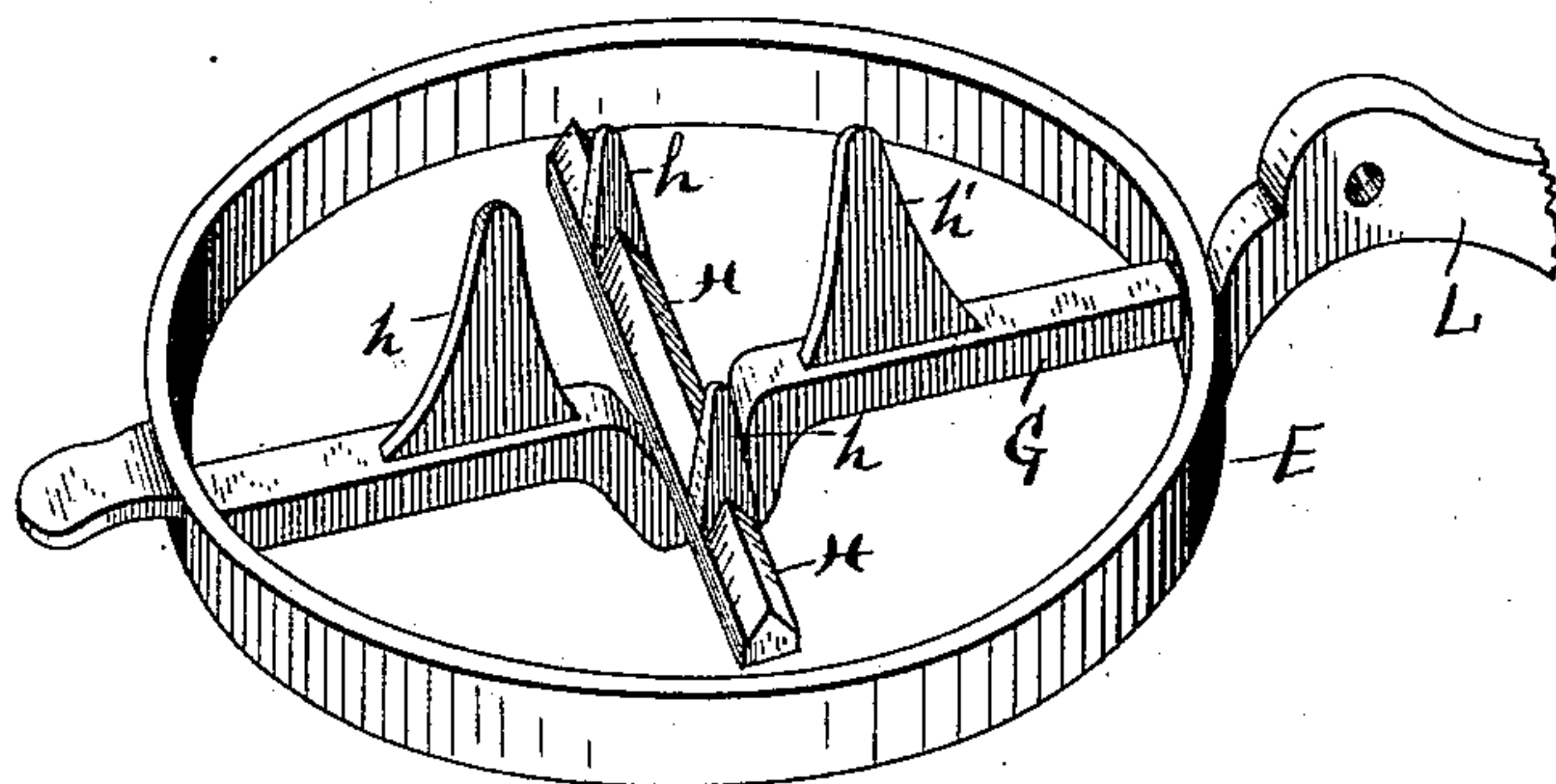


Fig. 3.

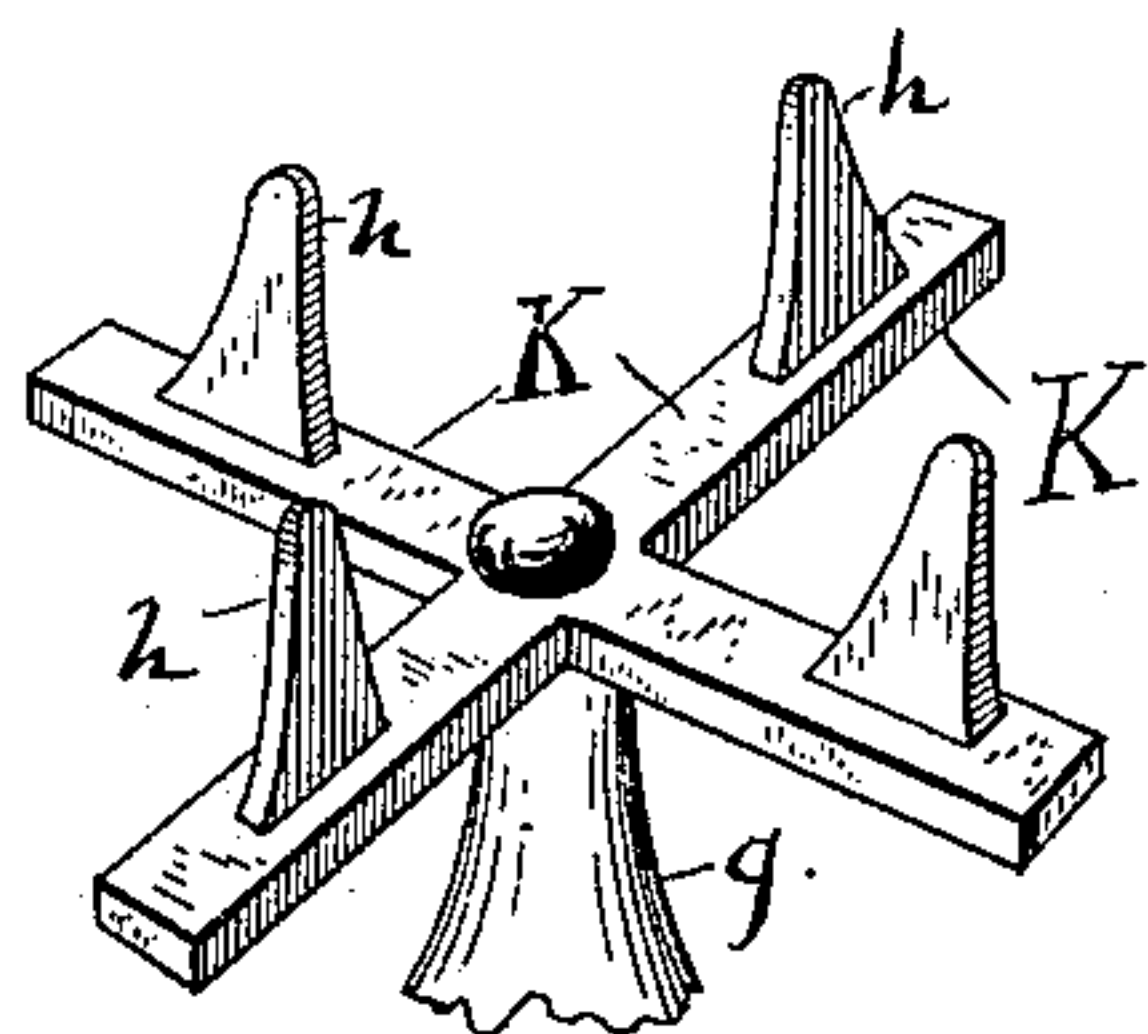


Fig. 4.

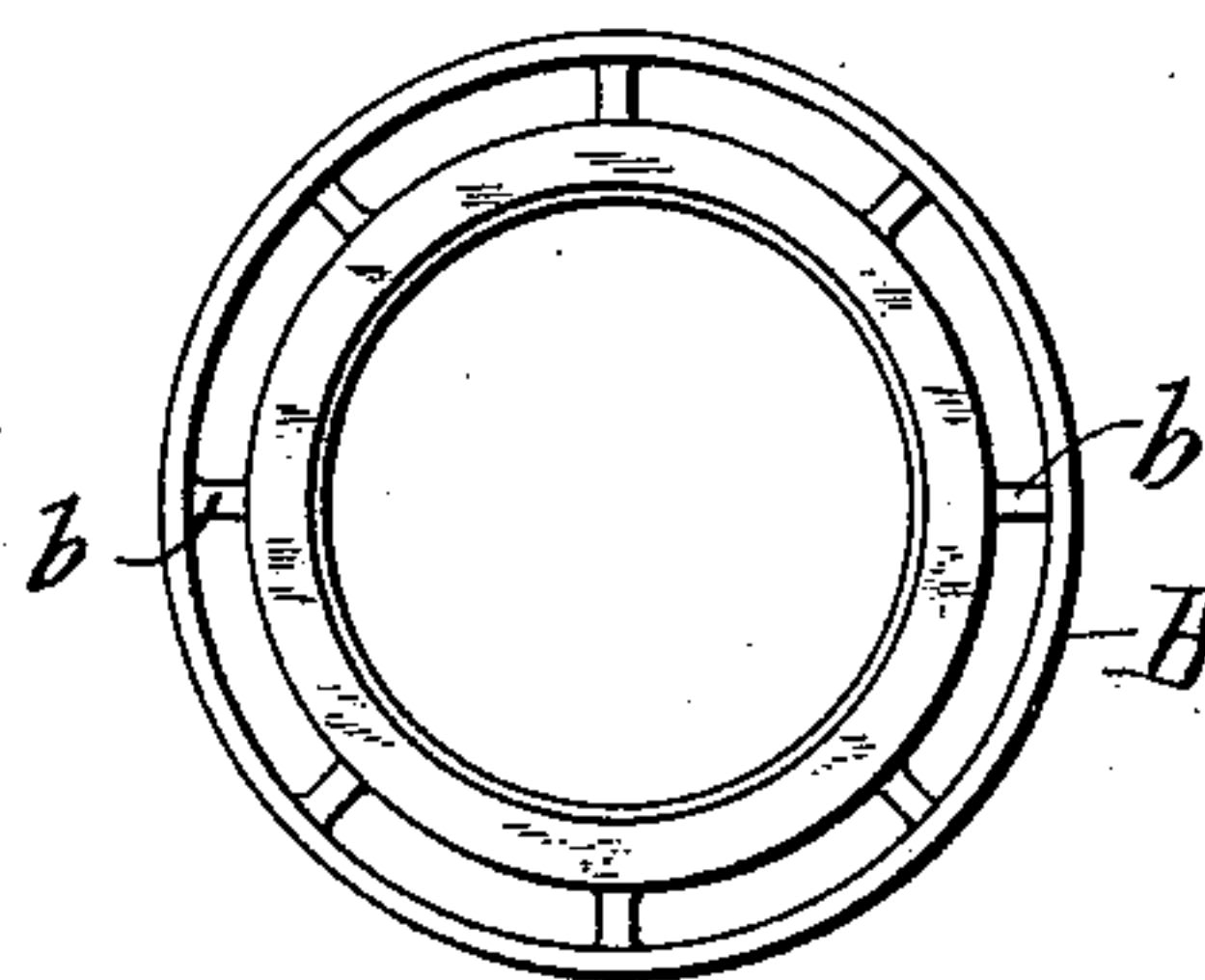


Fig. 5.

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# UNITED STATES PATENT OFFICE.

EARL A. THISSELL AND WILLIAM H. WILDER, OF FLORENCE,  
MASSACHUSETTS.

## VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 464,627, dated December 8, 1891.

Application filed March 2, 1891. Serial No. 383,405. (No model.)

*To all whom it may concern:*

Be it known that we, EARL A. THISSELL and WILLIAM H. WILDER, citizens of the United States, residing at Florence, in the county of Hampshire and State of Massachusetts, 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 improvements in vapor-burners, and more particularly of the type set forth in patent to W. R. Jeavons, No. 438,548, dated October 14, 1890, the object being to provide a convenient and easy mode of adjustment to the burner-bowl for the purpose of initial starting.

To this end the invention consists in the construction and arrangement 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 view of a burner embodying the novel elements of the invention. Fig. 2 is a perspective view of the inside tube and the vaporizing-bowl rigidly secured thereto. Fig. 3 is a perspective view of the hinged base for said bowl and tube, and Fig. 4 is a perspective view of a rocking frame adapted to pivot on the center of the hinged base in lieu of the balance and rocking bar shown in Fig. 3 and of the projections on the cross-bar shown in said view. Fig. 5 is a plan view of the top skeleton frame.

A represents the outer perforated tube, and B the top fixed frame to which the said tube is secured. This frame is preferably made in skeleton form, so that there will be as little heat as possible conducted away from the inner rim or ring portion of the frame, which forms a partial cover for the vaporizing-bowl, to the outer portion of the frame, where it would be dissipated. To this end only a few connecting bars or webs *b* are employed between the inner and the outer portions of the said top frame B, and the remainder of the space is open. Of course this construction may be considerably varied and still keep

within the spirit of the invention. It will be understood that the frame B is fixed and stationary on the stove-frame.

C represents the burner or vaporizing-bowl, provided in its bottom with two concentric grooves separated by a slightly-raised rib *c*, and a strand or wick *c'* of any suitable non-combustible material is shown in the inner groove. This wick is in the inner groove and inside of the cover B, as seen in Fig. 1, because it is employed only for initial lighting or starting of the burner and performs no office whatever in maintaining a flame when the burner is once under headway. The inner combustion-tube D is secured rigidly to the inner edge of the bowl C, as is now well known in this art, and when the bowl is in regular working position its outer groove is substantially covered by the rim or frame B, so as to produce a chamber between said parts for the equal distribution of the vapor and the production of equal combustion at all points between the tubes A and D.

The bowl C, for convenience of initial lighting, as well as for other reasons, is supported from below on an adjustable frame E. This frame is preferably made to conform to the circular outline of the burner, and at its center has a cross-bar G, on which, in Fig. 3, is a balance or rock bar H, and in Fig. 4 a spider K, designed to substitute the bar H, if preferred. The bar H or the spider K is pivotally secured on the support G, so as to accommodate the lifting mechanism to any inequalities in the contact-surface between the bowl C and the inwardly-projecting rim of frame B, against which it bears from below when in working position, the joint between these parts being close so as to not admit air from the outside. If the support for the bowl were rigid throughout, it might bear upward more forcibly on one side than the other, and thus possibly expose one side of the burner to air-drafts between the bowl and its cover, and thus cause the burner to emit more or less yellow flame and greatly impair combustion; but by employing a pivoted or balancing rest as the immediate support of the bowl the frame E may incline more or less one way or another and yet serve through said balance



to bring the bowl up to its proper position at all points. This obviously is a very advantageous and useful arrangement and renders the raising and lowering of the bowl practicable and satisfactory. Any suitable balancing-support serving the purpose of the forms shown may be adopted.

In Fig. 3 the balance-bar H is shown as having two guide-posts *h*, while two other guide-posts *h'* are rigid with the cross-bar G. These come inside the bowl C and serve to keep it centered in its up-and-down movements. For a like purpose and contributing to the guiding and supporting of the bowl and the tube D, fixed thereto, the said tube has projections *d* at its top, which bear against the outer tube and are adapted to slide thereon when the tube D is tilted and moved in either direction.

For convenience and ease in making the adjustments referred to, the frame E is provided with an arm L, on which is a gravitating counter-balance or weight O, adapted to rest at the extremity of the arm when the parts are raised, as seen in full lines, Fig. 1, and to run down toward the fulcrum on its roller *o* when the parts are lowered, as seen in dotted lines. A sliding weight or its equivalent in mechanism might be employed, and when the counter-balance assumes the latter position the parts will remain down until restored to working position by hand. In the lowered position the wick *c'* is brought directly beneath the drip of the oil-supply pipe P, and oil for initial starting is then supplied to said wick and a light applied thereto, after which the parts are immediately raised to working position.

R is an inverted cone or hood with an aperture at its lower portion for the admission of air. This hood may be made of the same piece as the frame E or an extension thereof, fastening to it by any suitable means. This aperture through its bottom is made of such size as to admit the proper amount of air to the burner. On account of the inclination of the sides of the hood, as shown, the interior of the burners is protected from drafts and air-puffs, which might seriously interfere with the smooth operation of the burner. Again, the inclination of the hood is such that the radiant heat from the heated parts is reflected from side to side and back to the burner, thus contributing to a hotter condition of parts and the atmosphere and a more satisfactory vaporization of the oil.

To operate the burner, bear down on the lug *e* on frame E, when the parts will assume the position shown in dotted lines, Fig. 1. In this movement the lever H will rise, as shown, the weight O move toward the center, and the parts remain at rest in that position. In this movement the bowl C has lowered and moved toward the supply-pipe so that the inner concentric channel containing the absorbent is directly under the said pipe. Then turn on the oil, which will now drop on the wick or absorb-

ent. By lifting on the lug *e* the parts are restored to the operative position, and the oil will then drip into the outer concentric channel of the bowl. Meantime the oil on the absorbent is burning to heat this outer channel to a vaporizing condition.

When it is desired to remove the bowl C for cleaning or the like, the parts are lowered, as hereinbefore described.

The hood R may be constructed and arranged as here shown, so as to provide an opening at its bottom for the admission of air to the burner, or it may be perforated more or less for this purpose. If perforated, the bottom might be closed, except as perforations might be formed thereon for ventilation, as herein described.

Again, to prevent air-drafts from interfering with the operations of the burner, a hood R' is arranged about the upper part of the burner and encircles the combustion-tubes. This hood preferably converges from its base to its top, which rests against the outside tube, and preferably is imperforate, so as to exclude air, except as it is drawn in from beneath through the lower hood. The lateral projections *d* on the inner combustion-tube, at its top, might have a ring connected with their extremities which would bear against the outer tube and take the lateral pressure when the tube is adjusted. This ring might have any form that would serve the purpose. The balance-bar H might be rigidly or otherwise connected to the burner-bowl and pivoted on the bar G, substantially as here shown, or in any equivalent way.

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

1. In a vapor-burner, the pivoted supporting-frame, the vaporizing-bowl, and an intermediate balance on which the bowl rests, substantially as described.

2. The movable supporting-frame, a balance for the bowl free to rock thereon, and said bowl and the combustion-tube fixed thereto, substantially as described.

3. The vaporizing-bowl, a movable frame supporting the bowl, and a counter-weight for said frame, substantially as described.

4. The pivoted supporting-frame having an arm and a movable counter-weight, and a vaporizing-bowl supported by said frame, substantially as described.

5. The fixed upper frame and outer tube, and the pivoted lower frame and bowl and inner tube, and automatic mechanism to keep the lower frame in raised position, substantially as described.

6. The movable supporting-frame and a central support for the vaporizing-bowl, provided with projections to center the bowl, and said bowl and the tube affixed thereto, substantially as described.

7. The supporting-frame and centering mechanism thereon for the vaporizing-bowl,



and said bowl and the tube thereon having lateral projections at its top, substantially as described.

5 8. The bowl-supporting frame, the hood with downwardly-projecting sides adjusted to the bottom thereof, and the burner mechanism above said frame, substantially as described.

10 9. The bowl-supporting frame, the hood with inwardly and downwardly converging sides fixed to the bottom thereof, and the burner mechanism above said frame, substantially as described.

15 10. The burner-bowl, the combustion-tubes and the supports therefor, and a hood with a central opening and downwardly and inwardly converging sides beneath said bowl, substantially as described.

20 11. The burner-bowl, a pivoted support for the bowl, and a hood with an opening or openings dependent from said support, substantially as described.

12. The burner-bowl, the combustion-tubes

and their supports, and a hood beneath said bowl having downwardly and inwardly converging sides, substantially as described. 25

13. In a vapor-burner, a hinged supporting-frame having a downwardly-converging hood and means for holding said frame open or closed, substantially as described. 30

14. A pivoted supporting-frame, a central movable support for the vaporizing-bowl in said frame and said bowl, and a tube affixed thereto, substantially as described.

15. A burner provided with an inwardly and downwardly converging hood at its bottom and an inwardly and upwardly converging hood about its upper portion, substantially as described. 35

Witness our hands to the foregoing specification this 13th day of February, 1891. 40

EARL A. THISSELL.

WILLIAM H. WILDER.

Witnesses:

H. K. PARSONS,

W. J. ANGELL.