

(No Model.)

O. EWERT & J. A. MEHLING.
HYDROCARBON OIL BURNER.

No. 417,479.

Patented Dec. 17, 1889.

Fig 1

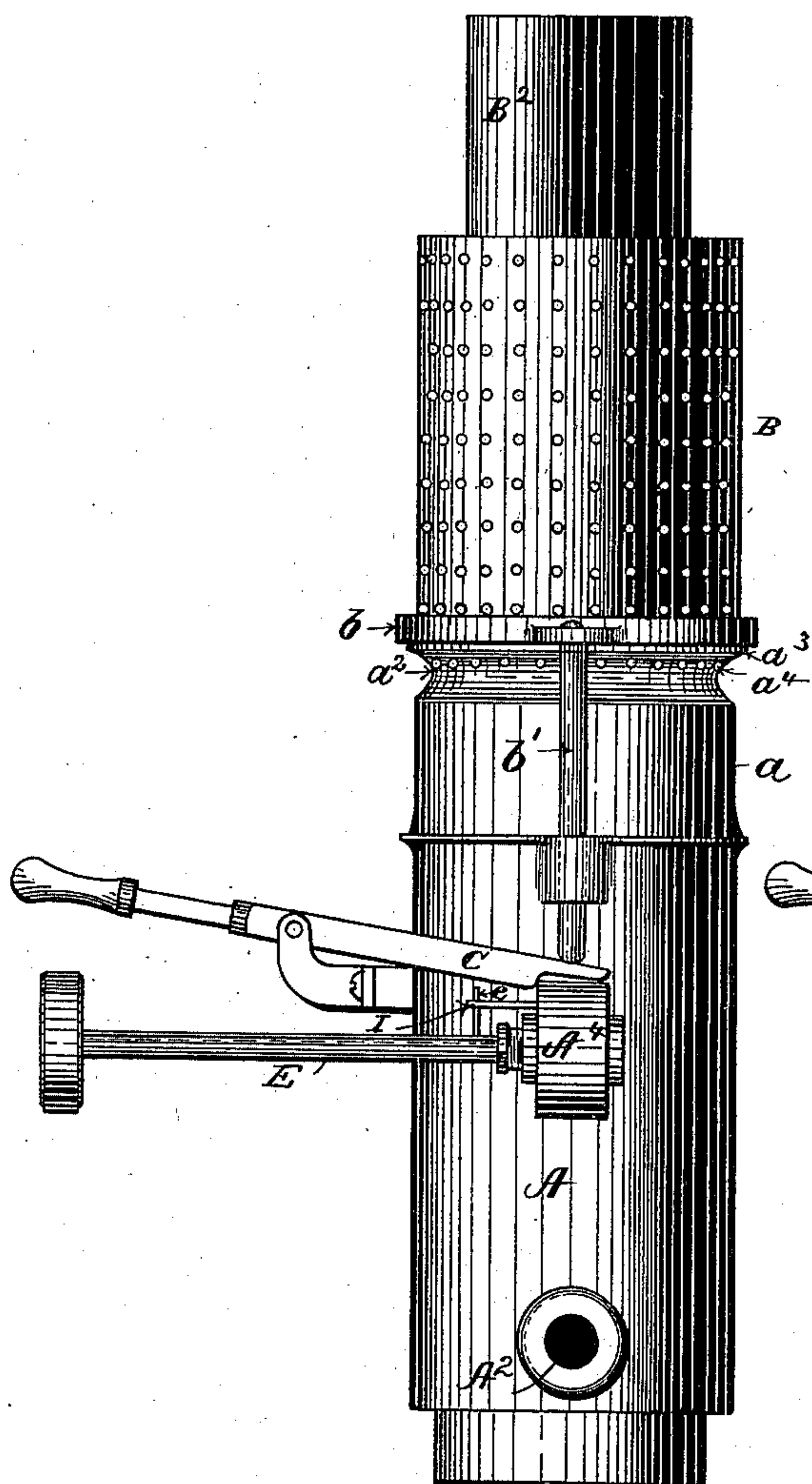


Fig. 2.

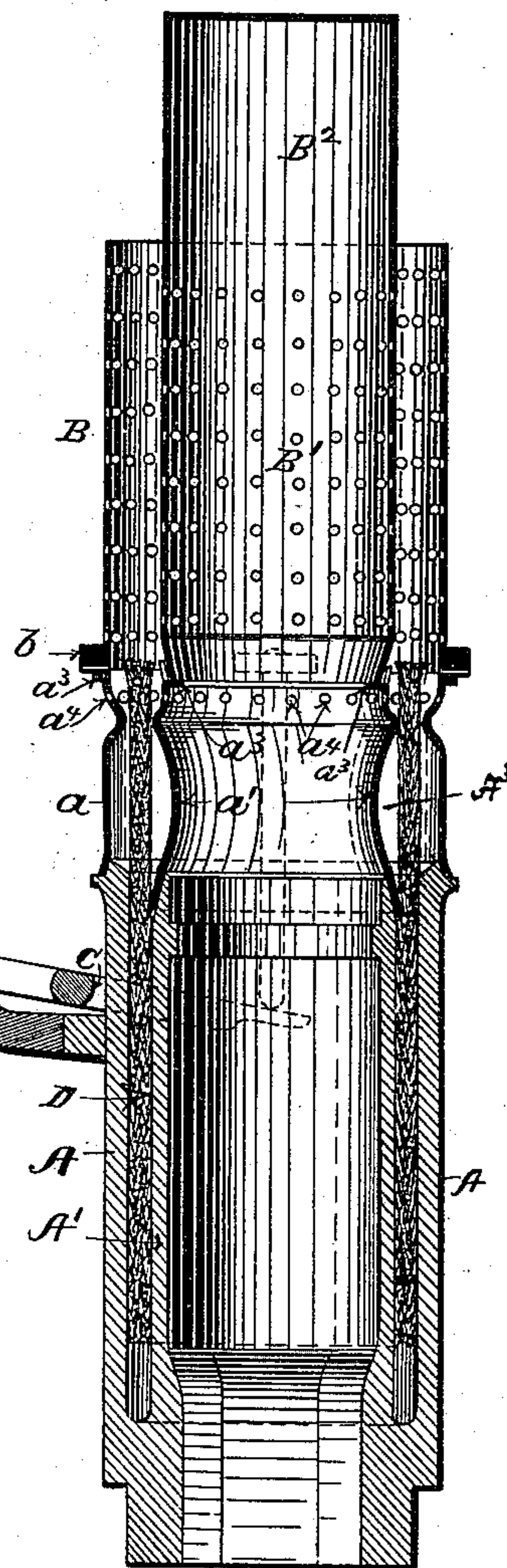
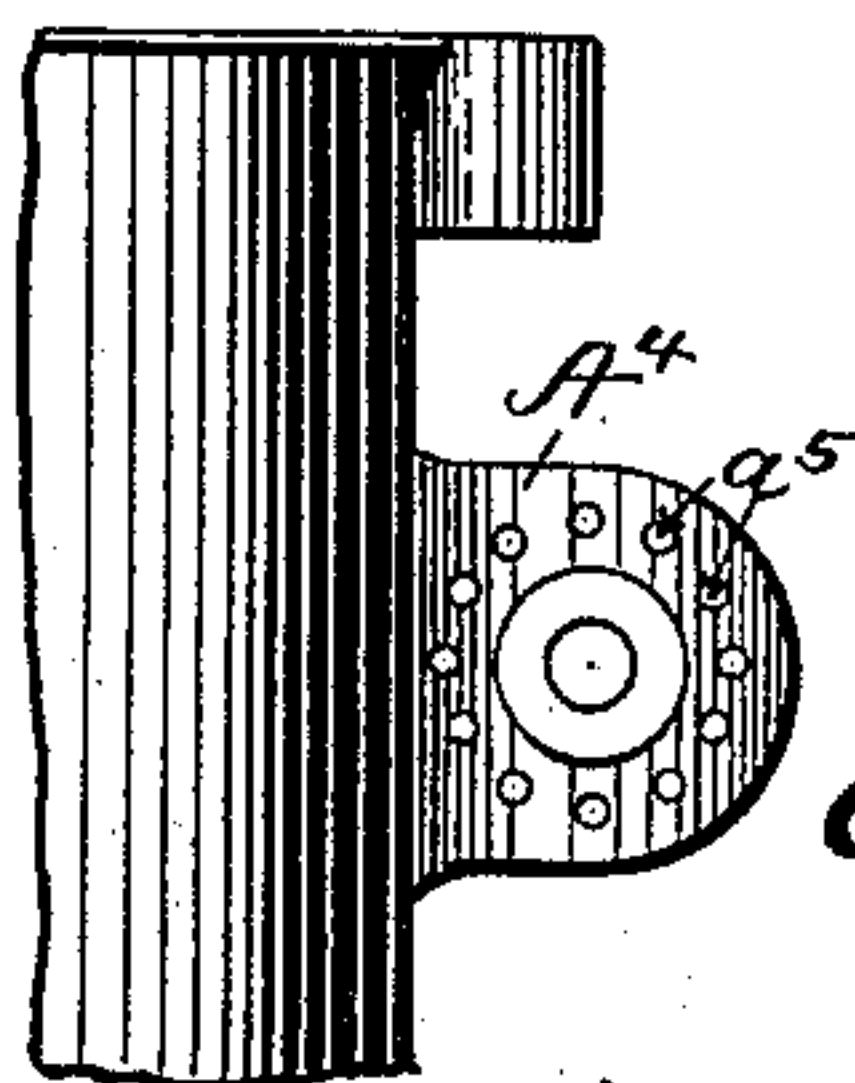


Fig. 3.



Witnesses
H. R. Edelen.
Geo. W. King

Inventor
Otto Ewert & John A. Mehling
By Leggett & Leggett.

UNITED STATES PATENT OFFICE.

OTTO EWERT AND JOHN A. MEHLING, OF CLEVELAND, OHIO.

HYDROCARBON-OIL BURNER.

SPECIFICATION forming part of Letters Patent No. 417,479, dated December 17, 1889.

Application filed March 6, 1889. Serial No. 302,194. (No model.)

To all whom it may concern:

Be it known that we, OTTO EWERT and JOHN A. MEHLING, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Oil Burners; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to improvements in hydrocarbon-oil burners for heating; and it consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

Our invention is designed as an improvement on an oil-burner described in United States Letters Patent No. 361,934, granted April 26, 1887, to Otto Ewert, one of the present applicants. The burner described in patent aforesaid was quite satisfactory as regards the heat developed; but there were certain objectionable features, to wit: The wick-tube became heated to such a degree as to char the wick for some distance below the flame, in consequence of which the wick had frequently to be trimmed off an inch or two at a time; also, owing to the high temperature of the wick-tube, a considerable quantity of the oil was vaporized therein, and, although it is probable that more or less of such vapor united with the flame of the wick and was consumed, yet so much of this vapor escaped at the junction of the chimney and wick-tube that the odor thereof was extremely offensive; also, while the diaphragm of the inner perforated chimney-tube performed its function in causing the upward current of air to pass into the flame, still the flame would assume a conical form above the chimney, thus inclosing an air-space above the diaphragm, and the air in such space would from expansion from time to time burst through the sheet of flame and cold air from the outside would burst through the flame to supply the partial vacuum, and the result of such disturbance in the flame was disagreeable odors. In view of these difficulties we have devised the im-

proved burner illustrated in the accompanying drawings.

Figure 1 is a side elevation. Fig. 2 is an elevation in section through the center of the burner. Fig. 3 is a detail hereinafter described.

The wick-tube is of the so called "Argand" variety, and is usually of cast-iron, and having outer and inner annular walls A A', integral at the bottom and inclosing an annular space for the wick, such space near the bottom being in open relation with the oil-supply pipe A². To prevent the main or cast-iron portion of the wick-tube from becoming overheated and charring the wick, we provide an extension thereof consisting of inner and outer walls a a', preferably of thin sheet metal, joined in any suitable manner, respectively, to the walls A A', so as to form tight joints. These extension-walls by reason of their being thin and exposed to the air do not transmit much heat to the cast metal below. Walls a a' are separated so far that the wick does not come in contact therewith except at the upper part, where these walls at a² are contracted to engage the wick just below the upper end thereof, and from thence wall a is flanged outward and wall a' is flanged inward—that is to say, both walls diverge from the wick, as shown at a³, thus forming a broad base for the inner and outer chimney-tubes B B' to rest on. These flanged sections a³ of the wick-tube extension are perforated, as shown at a⁴, for purposes hereinafter mentioned.

For supporting the wick walls a a' may be lined with suitable material that is a poor conductor of heat—such, for instance, as asbestos or plaster-of-paris; or such lining may be omitted, leaving, as shown, an air-chamber A³, through which the wick passes, the wick being usually stiff enough to support itself through such chamber, and in either case, by reason of the wick being in the main separated from walls a a', the wick is not charred except at or near the flame. With such construction the cast-iron portion of the wick-tube becomes only moderately

heated, and consequently but little oil is vaporized in the wick-tube. Whatever vapor there may be that is generated in the wick-tube it must pass up by the side of the wick, and, however small in quantity such escaping vapor may be, some provision other than the wick-flame must be had for burning these vapors; otherwise the burner will emit a strong odor. To this end the perforations a^4 are made to admit air to commingle with these vapors and support combustion, these perforations being located, as shown, below the end of the wick and in close proximity to where the wick protrudes from the reduced section of the wick-tube extension and close to where such vapor escapes from the wick. The result is that small globules of flame are seen burning on the inside of the flanges at perforations a^4 and no odor escapes, whereas if these perforations are temporarily closed for a few minutes a strong odor is emitted, although such closing of these perforations a^4 does not affect the flame of the wick, the latter being supplied with air admitted through the perforations of the chimney.

The chimney consists of inner and outer perforated tubes B B' aforesaid, the latter being detachably secured to the inner flange a^3 by springs, substantially as ordinary lamp-chimneys are secured to the holder. Tube B is permanently secured to ring b , the latter having depending steady-pins b' , with a forked lever C for engaging these steady-pins for raising the tube B for purpose of lighting the burner, all of which are substantially as described in the patent aforesaid.

Heretofore, as described in the patent aforesaid, a diaphragm was located inside tube B', near the top of the latter, to prevent a current of air from passing up through such tube and to deflect the air through the perforations of the tube into the flame. With such construction the flame converged to a point some distance above the end of tube B', thus inclosing an air-space of conical shape above the diaphragm, and as the air was expanded by the flame jets of heated air would break through the flame and jets of cold air from the outside would break in through the flame and fill the partial vacuum. Such disturbance of the flame seemed to result in imperfect combustion; at least a perceptible odor was emitted with each disturbance of the flame. To remedy this difficulty, we provide an extension or core B² to fill the flame, such extension being integral or detachably connected with tube B'; as the case may be. This extension may be solid or may be a shell closed at the top in case no diaphragm is used, either of which will answer the purpose. This core or flame-filler extends upward to such close proximity to the bottom of the vessel or whatever is to be heated that the flame does not converge and inclose an air-space, but, on the contrary, spreads as it im-

pings the article that is being heated, and the flame under such condition remains unbroken and odorless. We employ toothed wheels (not shown) mounted on spindle E for raising and lowering wick D, this spindle passing out through a stuffing-box. The hollow boss A⁴ of the wick-tube, that incloses the feed-wheel, and at the end thereof through which the spindle passes, has a series of holes a^5 arranged in concentric order with the spindle, these holes extending only part way through the end wall of the boss. A removable plug I is provided, the same being adapted to fit the holes a^5 . Spindle E has a lateral pin e for engaging the plug I, such engagement serving as a stop in raising the wick. After trimming the wick the latter is raised to the proper position for lighting and plug I is placed in the hole a^5 next in advance of pin e , where it remains until the wick is again trimmed, and serves as a stop, so that on lighting the burner the wick is not raised too high. This adjustable plug, being outside and always accessible, is convenient of manipulation, and of course requiring no screw-driver or other tool.

This burner is more especially adapted to burn the heavier grade of hydrocarbon oil known as "kerosene."

We will add that perforations a^4 need not be round holes, as small slits will answer the purpose.

What we claim is—

1. In a hydrocarbon-oil burner, a wick-tube of the Argand variety having an upward extension of thin metal, the inner and outer walls of the extension being separated from the wick except at or near the burning-point of the wick, substantially as and for the purpose set forth.

2. A wick-tube of the Argand variety, the same having an extension inclosing an air-chamber, through which the wick passes without contact with the inclosing-walls of such chamber, the latter being located below and extending to near the burning-point of the wick, substantially as set forth.

3. In a hydrocarbon-oil burner, a wick-tube of the Argand variety having an upward extension, the walls thereof, near the upper end, being contracted to engage the wick, and above such contraction the walls being flanged or flared away from the wick, such flanges having perforations, substantially as set forth.

4. In a hydrocarbon-oil burner, a wick-tube of the Argand variety having an upward extension, the inner and outer walls of the extension being separated from the wick except at or near the burning-point of the latter, where they are contracted to engage the wick, the said tube being perforated at points above the contracted portion thereof, substantially as set forth.

5. The combination, with the burner and spindle for moving the wick, substantially as

indicated, and a hollow boss in which the spindle is supported, the said boss having a series of holes in concentric order with the spindle, of a movable plug adapted to fit the
5 respective holes and a lateral pin projecting from the spindle for engaging such plug to serve as a stop in moving the wick, substantially as set forth.

In testimony whereof we sign this specification, in the presence of two witnesses, this 12th day of December, 1888.

OTTO EWERT.

JOHN A. MEHLING.

Witnesses:

W. R. EDELEN,

ALBERT E. LYNCH.