

(No Model.)

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

No. 464,076.

Patented Dec. 1, 1891.

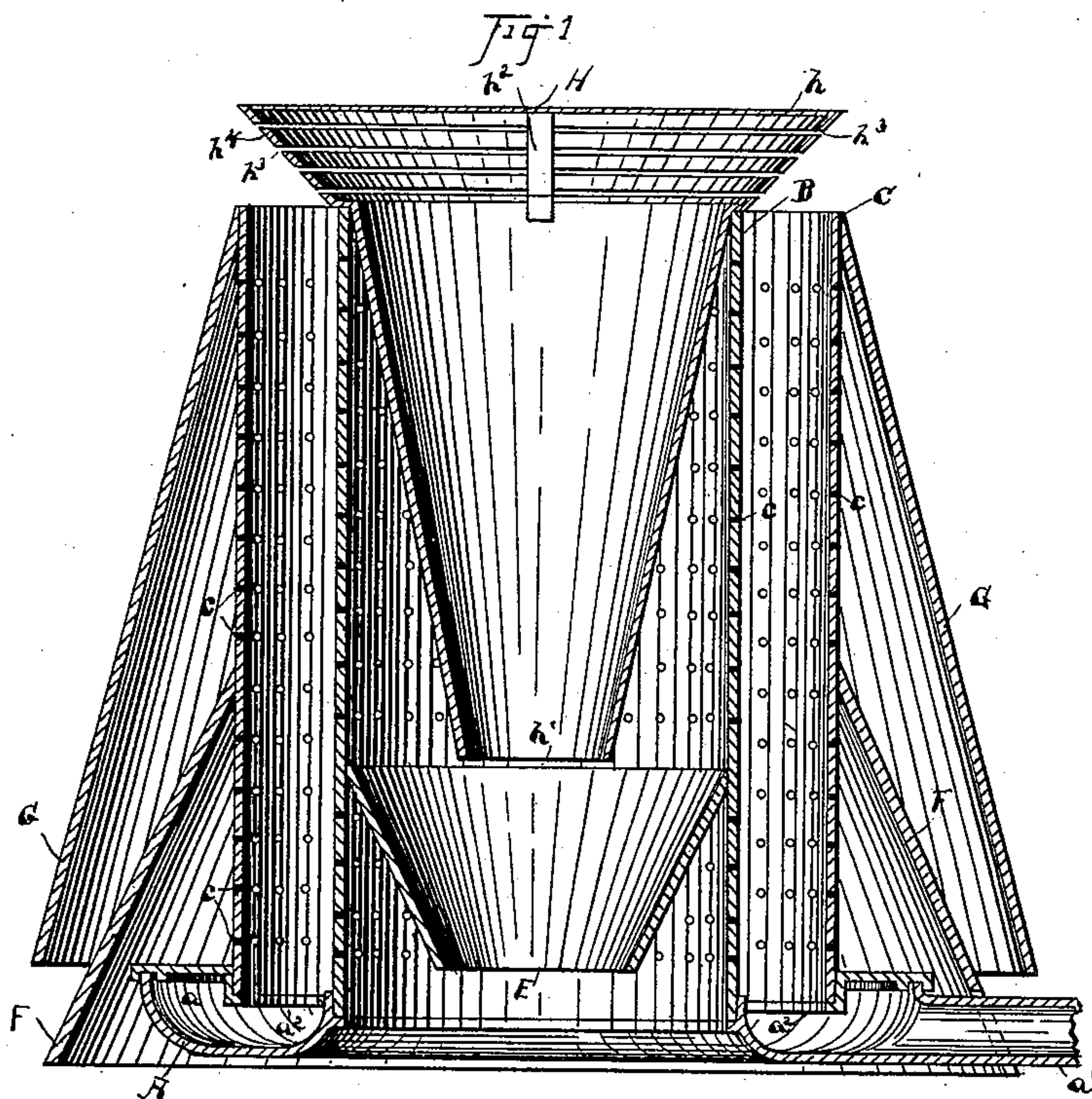


Fig 2

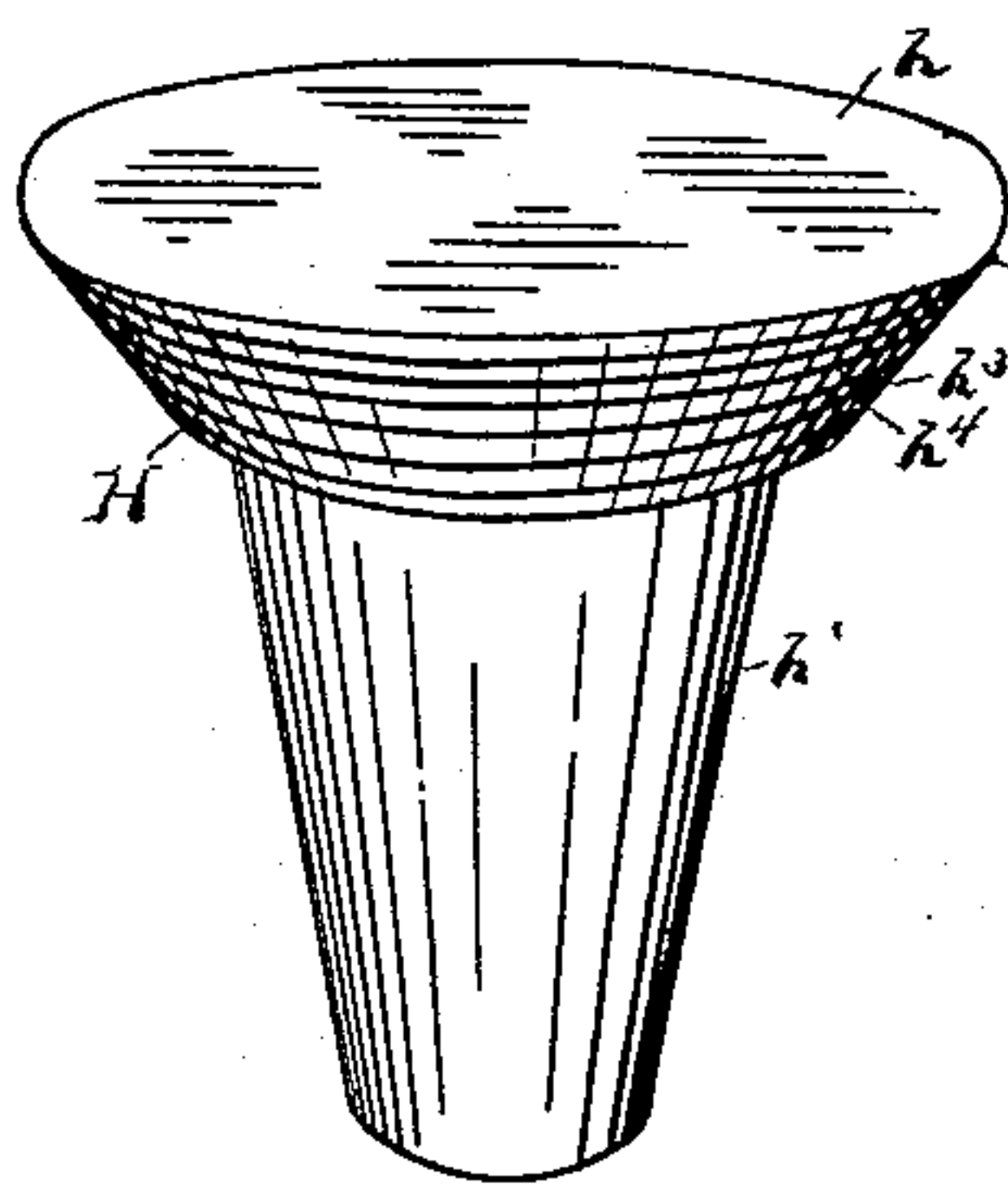
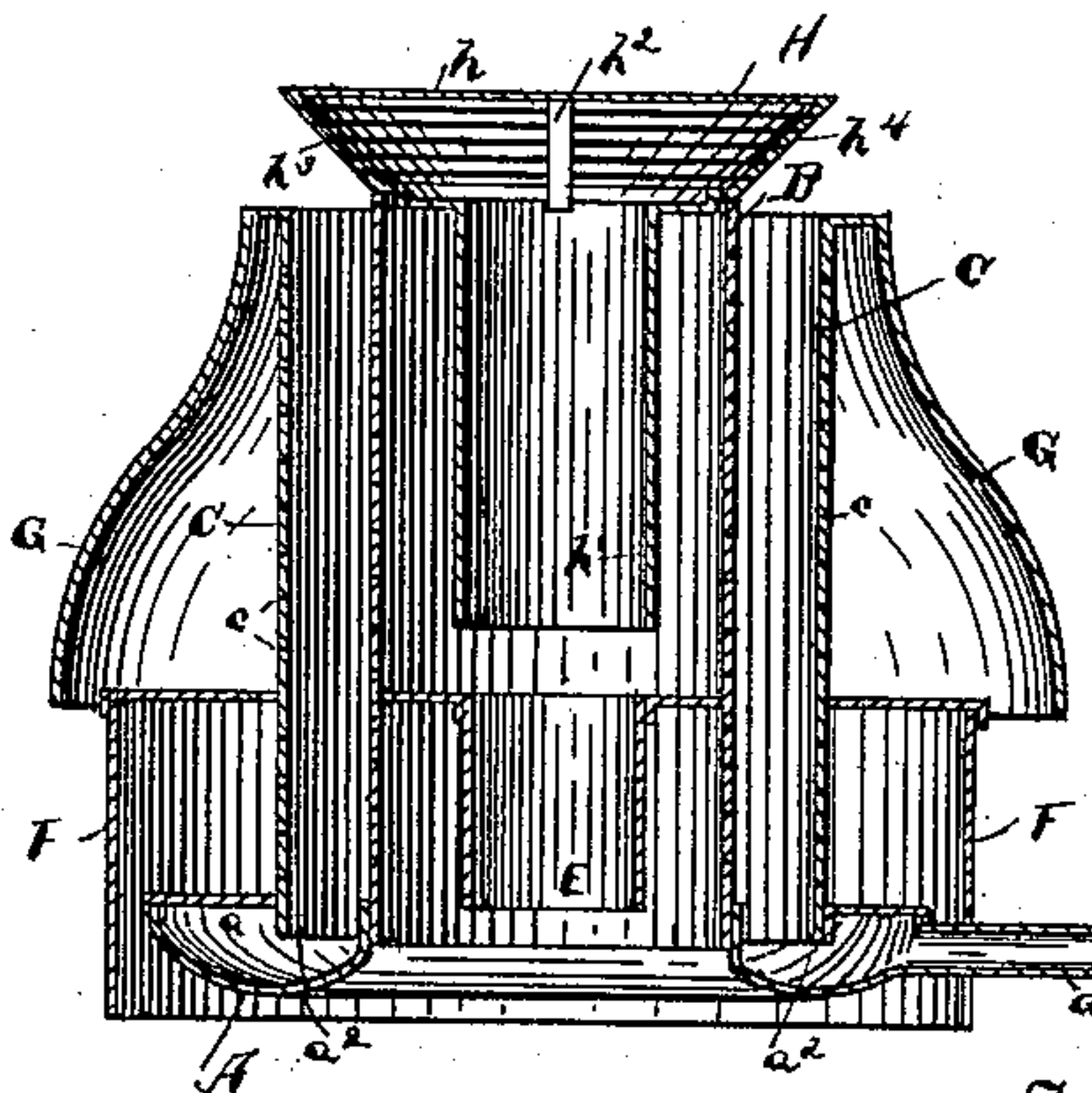


Fig 3



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UNITED STATES PATENT OFFICE.

JOHN A. LANNERT AND WILLIAM R. JEAVONS, OF CLEVELAND, OHIO.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 464,076, dated December 1, 1891.

Application filed October 15, 1890. Serial No. 368,177. (No model.)

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.

Our invention has reference to vapor-burners; and it consists in the use of deflectors, in connection with perforated or open-work burner-tubes in which combustion occurs, and in other features of construction and combinations of parts, all 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 a burner provided with our improvements. Fig. 2 is a separate perspective view of the combined air and flame deflector cone and head set loosely upon the top of the inner tube. Fig. 3 is a view of a modification.

On the burner itself as an article of manufacture we make no claim, the invention therein contained being subject-matter of Patent No. 438,548, dated October 14, 1890.

A represents the burner bowl or base having a vapor-distributing chamber a , and an oil-inlet arm a' for pipe connection. Vaporization of the fluid occurs when the burner is heated, as in regular use, in or about the inlet a' , and the continuous chamber a thus becomes, essentially, a vapor-distributor, in which the vapor under its own pressure travels or is carried around to all parts of the said chamber and escapes therefrom under equal pressure at all points through the narrow neck or channel a^2 into the free space between the burner-tubes. The burner here shown is circular; but the shape or form is not material.

B represents the inside burner-tube, and C the outside burner-tube, and both tubes are supported upon the base or bowl on either side of the vapor-outlet from the chamber a , through the narrow neck or passage a^2 . These tubes are filled with numerous fine perforations c , through which air is admitted to

supply and support combustion between the tubes, it being of course understood that the flame does not burn below the point where such openings for the admission of air occur, because there is no air-opening lower down to feed the flame; but hydrocarbon vapors are liable to considerable and quick expansion under the influence of flame, and thus it occurs at the point where combustion begins and where in this case there is not sufficient air to make combustion complete that more or less vapor is liable to be forced out through the perforations c unconsumed and to escape into the air, causing disagreeable odors in the room and robbing the burner to that extent of its fuel. This liability is especially noticeable when the burner is first started and when it has been turned low—an effect noticeable in common oil-lamps. We overcome this objection and defect by means of deflectors, which extend around about the sides of the burner-tubes, as shown, and serve to convey the escaping vapor or gas back into the burner-chamber to be consumed. Thus we have three several deflectors E, F, and G, located as seen in Fig. 1. The inner deflector E is secured to the inner tube B, and the outer deflectors F and G are secured to the outer tube C, and the said deflectors are so arranged that they will concentrate and carry back into the burner-chamber between the tubes any vapors or gases that may escape from the burner-chamber through the perforations c at any point below the point of attachment of said deflector or perchance from about the burner.

Sometimes in starting the burner more or less oil may creep out upon its outer surface and vaporize there as the burner becomes heated, and this vapor would be diverted by the deflector into the flame and be consumed. Both of these deflectors extend down near to or about or below the burner-bowl, and terminate above at such elevation that though the burner be turned low the gases which may have escaped will be carried back into the burner-space and into the flame and be consumed rather than enter the perforations above the low flame, and thus get away without being burned, as they might if the deflectors engaged the tubes at a higher point. The deflector E, by deflecting and impinging

more air on the flame below its point of contact with the tube or chimney and inversely by slightly retarding the air immediately above it, causes the tube to become intensely heated at a lower point than would occur if the deflector were not used. The tube being in close metallic connection with the diffusing or generating chamber causes it to heat more quickly and to a more intense degree, thus contributing to the efficiency of the device for vaporizing heavy oils. The deflector G is fixed to the outer tube at or near its top, and extends down to the plane of the burner, or nearly thereto, and serves to intercept any escaping vapor not caught by the plate F, or that may escape above the same. We have shown three such deflectors attached by rivets or otherwise at different elevations; but the number thereof and the position may be varied.

H is a combined air and flame deflector, as well as a shield for the burner. This part consists of the head h and the conical tube h' . The head and tube can be separated, but are preferably made in a single piece, and the head is provided with vertical ribs h^2 at intervals inside, and has parallel slots h^3 formed about its side. In form it has the shape of a section of a cone, its narrower portion resting on the top of the inner burner-tube and its wider portion extending outward a sufficient distance to protect the combustion-chamber between the tubes. For this purpose, as well as to divert the air laterally through slots h^3 , the top of the head is closed, as seen in Fig. 2, and the bottom is open. The conical-shaped deflector-tube h' extends into the space within the inner tube a greater or less distance—say half way the length of the tube—and is open at its bottom, so that a free air-passage is formed through the same and through the lateral slots h^3 in the head. By closing the top of the flame-deflecting head h water is prevented from spilling into the burner-chamber between the tubes, and by giving the head ventilation through the slots h^3 or equivalent openings the head is free of disagreeable odors, and at the same time fresh air is supplied to the flame-diverting surface h^4 of the head and thus contributing to perfect combustion of the vapors. The outer deflector G serves

as a shield for the burner from the outside, as well as to form an avenue to lead the air and outside gases into the burner-chamber.

In Fig. 3 we show a modification in which the two lower deflectors stand at right angles to the sides of the tubes, and the flame-deflecting head has a plain cylindrical extension instead of one that is conical.

The invention is understood to comprise deflectors connected with the burner-tubes, however constructed or arranged, provided they serve the purposes herein set forth.

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

1. In a burner, parallel perforated tubes forming a combustion-chamber between them, and a perforated flame-deflector arranged at the top of the inner perforated tube to make a substantially continuous perforated wall with said inner tube, substantially as described.

2. In a burner, parallel perforated tubes forming a combustion-chamber between them, the inner perforated tube rising to a greater height than the outer tube, and a cover of greater diameter than the inner tube to protect the chamber and closing the top of said inner tube, substantially as described.

3. In a burner, the parallel perforated tubes forming a combustion-chamber between them, in combination with the deflector-head flaring outwardly and upwardly from the top of said inner tube and perforated on its flaring surface, whereby a substantially continuous inner perforated wall is formed through and by said head, substantially as described.

4. A combustion-chamber formed by two concentric perforated tubes, and a burner-bowl supporting said tubes and having an air-passage through its center into the inner of said tubes, in combination with an air-deflector in the lower portion of the inner tube and having a central air-passage, substantially as described.

Witness our hands to the foregoing specification this 7th day of October, 1890.

JOHN A. LANNERT.

WILLIAM R. JEAVONS.

Witnesses:

H. T. FISHER,

NELLIE L. McLANE.