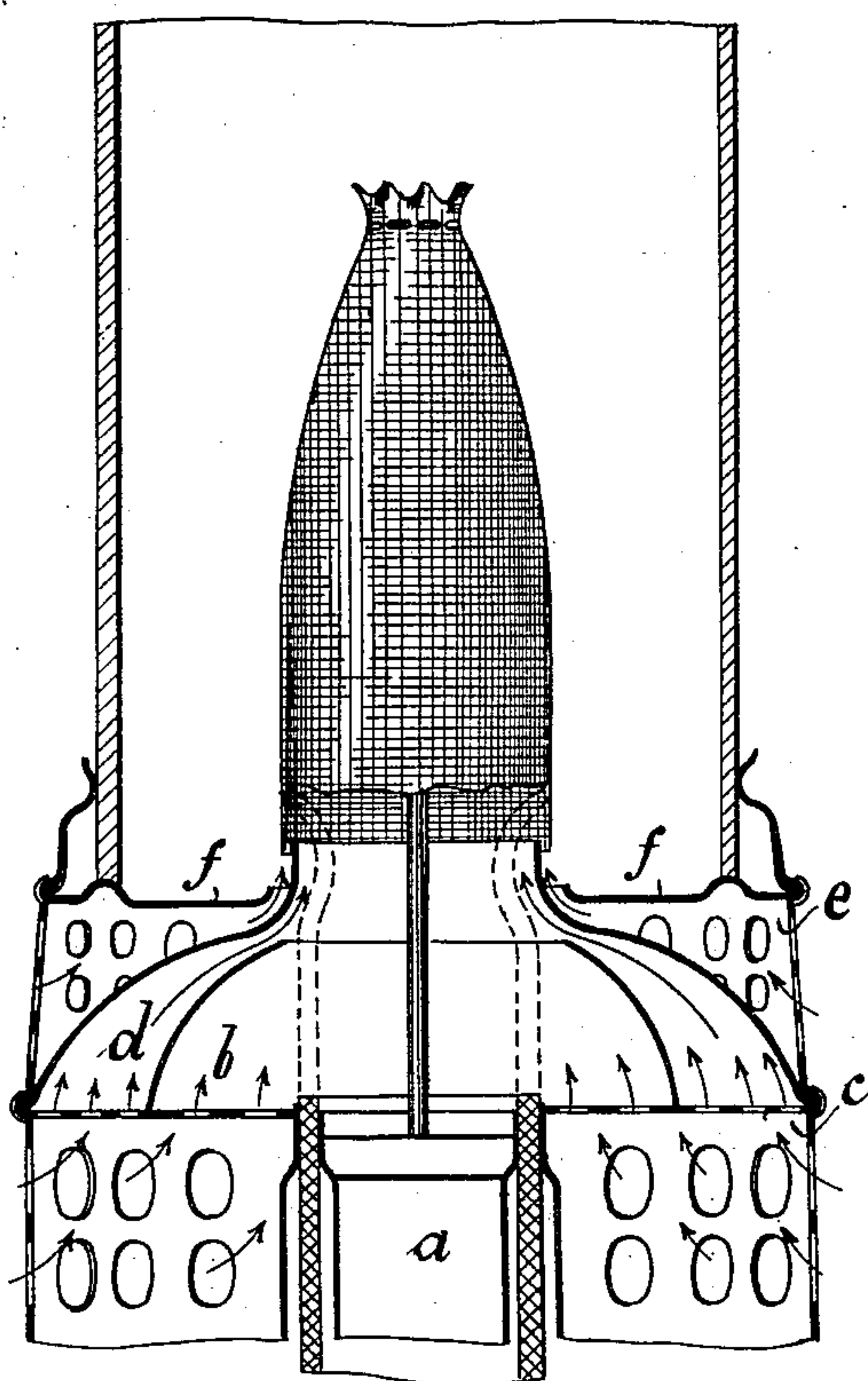


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E. LEHMANN.
INCANDESCENT BURNER FOR HYDROCARBONS.
APPLICATION FILED JUNE 27, 1902.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

ERNST LEHMANN, OF WIESBADEN, GERMANY.

INCANDESCENT BURNER FOR HYDROCARBONS.

SPECIFICATION forming part of Letters Patent No. 731,060, dated June 16, 1903.

Application filed June 27, 1902. Serial No. 113,536. (No model.)

To all whom it may concern:

Be it known that I, ERNST LEHMANN, a subject of the German Emperor, residing at Wiesbaden, Germany, have invented certain
5 new and useful Improvements in Incandescent Burners for Hydrocarbons, of which the following is a specification.

The present invention relates to burners for wick-lamps of all kinds, and more particularly for those in which liquid combustibles—such as spirit, paraffin, and the like—are used for incandescent lighting, the object of the invention being to render the blue flame non-luminous at a suitable point above the upper
15 edge of the wick and at the same time to give it the required form in order to closely impinge on the mantle or incandescent body. This is effected by means of a lateral external current of air conducted between two superposed burner-caps and adapted to annularly constrict the flame. I am aware that burner-caps of this kind are known, and they are frequently employed with incandescent lamps; but with these arrangements, how-
25 ever, it is only possible to let the external air-current act upon the flame at the height of the upper edge of the wick, the caps being intended, since their orifices are narrower than the diameter of the wick-tube, to constrict the already non-luminous flame in order to thereby produce the shape suitable for illuminating effect and otherwise obtained by means of flame-dividers, burner-disks, and the like.

35 The annexed drawing represents one form of the invention in vertical section.

The burner shown in the drawing comprises in the known manner a double wick-tube *a*, passing through the chamber containing the liquid combustible, in order to allow of a central supply of air. The upper part of this tube is surrounded by a suitable gallery *e*, provided with numerous perforations for the supply of external air and shut off at the top by a plate *f*, which may be horizontal or somewhat inclined or provided with guide-surfaces. A bell-shaped cap *d*, cylindrical at the top, passes through said plate *f*, so as to produce an annular aperture to allow air
45 to reach the incandescent body from outside. Below this cap *d* a second cap *b*, also bell-shaped, is arranged, resting on a plate *c*, pro-

vided in the lower part of the gallery. Outside the periphery of the cap *b* the said plate *c* is provided with numerous perforations, 55 whereas within the diameter of said cap *b* there are only a small number of perforations. The upper open part of the bell-shaped cap *b* has a diameter as large as or larger than that of the flame in order that the latter will not be constricted at that point. The cap *d*, placed above the cap *b*, is so shaped that the surfaces of the two caps are not concentric, but eccentric, in order to form a suitable injector or nozzle-like aperture approximately at that spot at which is the cylindrical extension of the cap *d*, which may be of any desired diameter and may serve as a support for the incandescent mantle. It is not essential that an aperture of this kind 70 should be produced for the entire circumference. For an efficient supply of air it would be sufficient if the aperture is formed in a suitable manner at separate places. The relative arrangements of the two caps *b* and *d*—that is to say, the dimensions and shapes—are not determined ones; but they must be adapted to the shape of the incandescent body, the nature of the combustible used, and the flame formed, and so on. By slight modifications with regard to the other parts of the constructions described the principle of the invention is also in no way affected. Thus, for instance, the annular aperture between the cylindrical part of the cap *d* and the plate *f* can be dispensed with and the latter provided with apertures or slots. The said plate *f* can also be provided with small bosses, upon which the chimney is placed, so that air is admitted. The annular wall of the cap *d* can 90 also be provided interiorly with projections, corrugations, or the like, by which means the constriction of the flame produced by the air-current would be further assisted. Further, the lower plate *c*, on which the cap *b* rests, 95 can be closed inside the periphery of same or be entirely dispensed with, according to requirements, and the method of fastening the various parts is quite optional.

As indicated by the direction of the arrows, 100 the air coming from the lower part of the gallery *e* impinges on the plate *c*, is divided into two currents, the more powerful of which passes through the apertures outside the pe-

riphery of the cap *b* and then between the walls of the two caps *b* and *d*, the weaker current passing underneath the cap *b* and there partially mixing with the flame burning at the upper edge of the wick. The current of air passing between the two caps is forced with a powerful draft through the nozzle-like or injector-like orifice and at this point meets the upwardly-burning blue flame, which is here rendered non-luminous, the central air-current assisting therein. At the same time the flame is constricted by the air-current acting annularly on it and is thus given above the burner-cap *d* the shape suitable for the incandescent body. In order that the latter will be acted upon all over by the flame, another air-current of less strength is admitted through the annular orifice between the plate *f* and cap *d*, which current meets the fabric of the mantle exteriorly and causes an expansion of the flame coming from inside.

What I claim is, in an incandescent burner for hydrocarbons—

1. The combination with an annular wick-tube, of two superposed truncated domed caps each open above and below, their lower apertures being larger than their upper apertures and the upper aperture of the lower cap being larger than that of the upper cap, said caps being spaced one from the other and the lower one from the upper edge of said wick-tube and having their walls so shaped as to form an annular tapering passage between them and means for admittance of air to said passage at the lower end for the purpose set forth.

2. The combination with an annular wick-tube, of two superposed truncated domed caps each open above and below, their lower

apertures being larger than their upper apertures, and the upper aperture of the lower cap being larger than that of the upper cap, said caps being spaced one from the other and the lower one from the upper edge of said wick-tube, and having their walls so shaped as to form an annular tapering passage between them and means for admittance of air to said passage at the lower end, the outer cap extending at its upper orifice into a cylindrical form and means for suspending an incandescent mantle over said cylindrical extension for the purpose set forth.

3. The combination with an annular wick-tube, of two superposed truncated domed caps, each open above and below, their lower apertures being larger than their upper apertures, and the upper aperture of the lower cap being larger than that of the upper cap, said caps being spaced one from the other and the lower one from the upper edge of said wick-tube and having their walls so shaped as to form an annular tapering passage between them and means for admittance of air to said passage at the lower end, the outer cap extending at its upper orifice into a cylindrical form, means for suspending an incandescent mantle over said cylindrical extension, and an annular plate surrounding the upper part of the exterior cap and leaving an annular passage between its inner edge and the exterior face of the said cap immediately below the cylindrical extension thereof.

In witness whereof I have signed this specification in the presence of two witnesses.

ERNST LEHMANN.

Witnesses:

JEAN GRUND,
CARL GRUND.