

(No Model.)

2 Sheets—Sheet 1.

E. A. EDWARDS.
ATMOSPHERIC HEATER.

No. 509,023.

Patented Nov. 21, 1893.

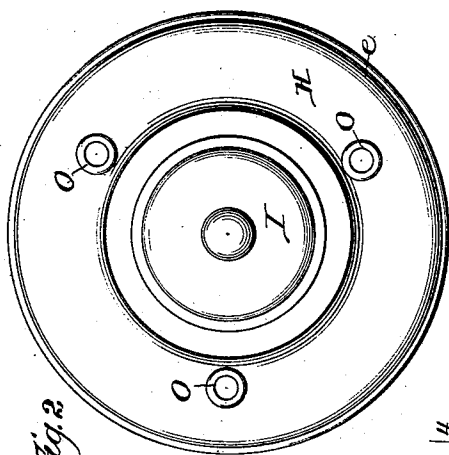


Fig. 2

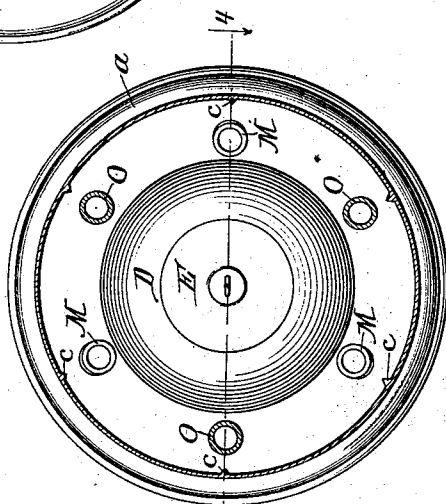


Fig. 5

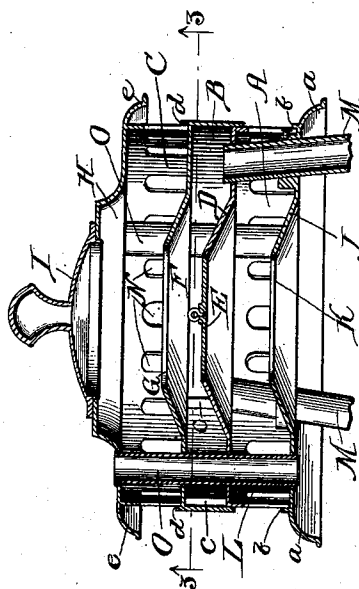


Fig. 4

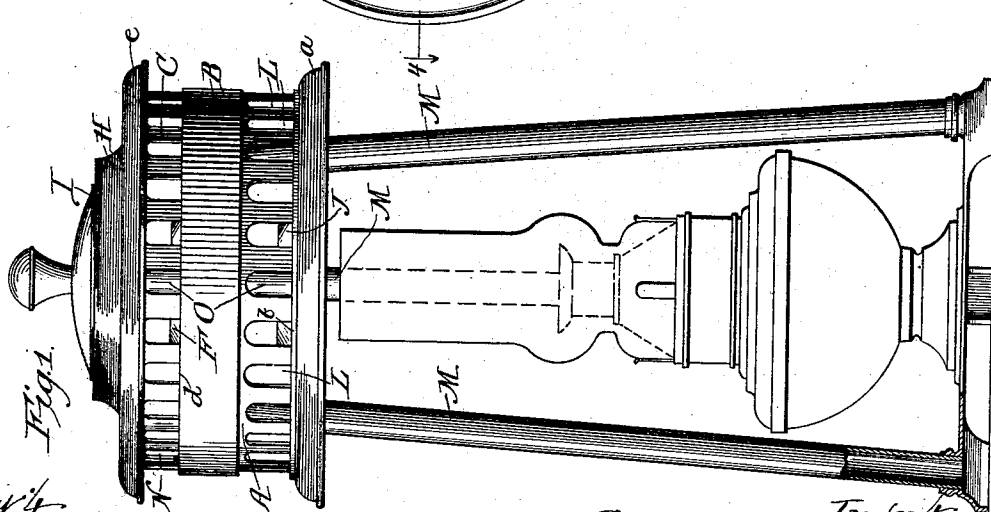


Fig. 1

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2 Sheets—Sheet 2.

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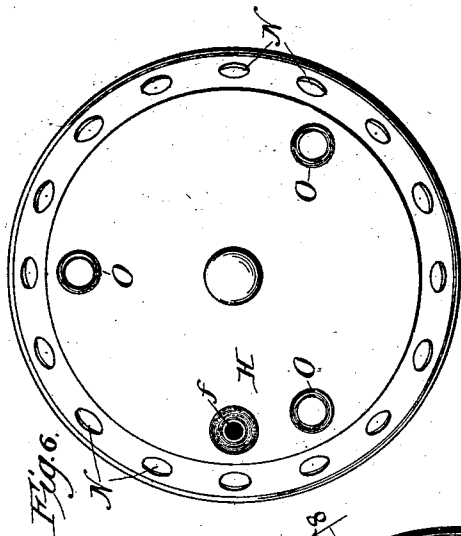


Fig. 8.

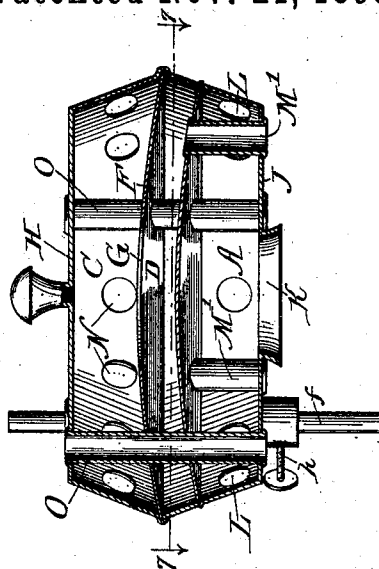


Fig. 7.

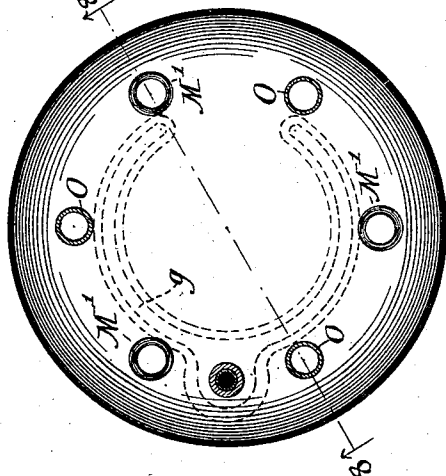
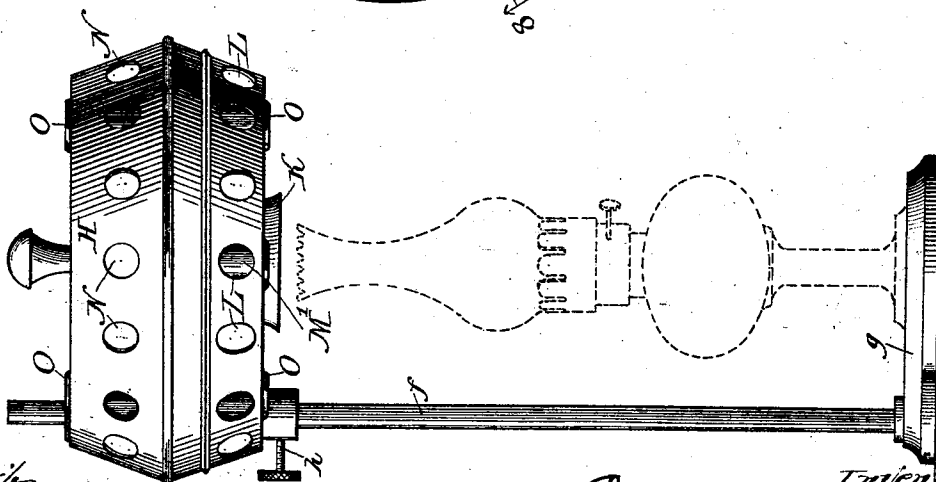


Fig. 5.



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UNITED STATES PATENT OFFICE.

EVAN A. EDWARDS, OF CHICAGO, ILLINOIS.

ATMOSPHERIC HEATER.

SPECIFICATION forming part of Letters Patent No. 509,023, dated November 21, 1893.

Application filed December 27, 1892. Serial No. 456,396. (No model.)

To all whom it may concern:

Be it known that I, EVAN A. EDWARDS, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Atmospheric Heaters, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in atmospheric heaters and is especially designed for use in connection with stand, hand and other lamps for utilizing the heat developed thereby without in any manner interfering with the ordinary uses thereof, or impairing, lessening, or otherwise affecting the diffusion of light thereby. But it will hereinafter appear that my heater is equally well adapted for use in connection with gas-burners or any other source of light and heat, or of heat alone.

The prime object of my invention is to heat the maximum volume of air from a given quantity of heat, although in a more limited sense my invention has for a further object the utilization of the heat developed by a flame primarily employed for illuminating purposes.

Another object is to provide a portable heater capable of use in connection with an ordinary lamp or other like source of heat, for utilizing the heat produced thereby to heat a materially larger volume of air than would ordinarily be heated by the lamp, and by simply placing the lamp and heater in proper juxtaposition without any connection therebetween, or any modification or change in the construction or ordinary uses of the lamp.

A further object is to provide a heater capable of ready conversion from an atmospheric or radiating heater to a direct heater for culinary purposes, and in either case utilizing the heat resulting from the use of the lamp or other source of heat as an illuminator, and this too without modifying the construction or ordinary uses of the lamp.

These and other objects hereinafter set forth and pointed out in the claims are accomplished by the devices illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of the preferred form of heater embodying my invention; Fig. 2, a plan view thereof; Fig. 3, a

horizontal section on the line 3, 3, of Fig. 4; Fig. 4, a central vertical section on the line 4, 4, of Fig. 3; Fig. 5, a side elevation of a modification of my invention; Fig. 6, a plan view thereof; Fig. 7, a horizontal section on the line 7, 7, of Fig. 8; and Fig. 8, a central vertical section on the line 8, 8, of Fig. 7.

The arrows at the ends of the section lines in Figs. 3, 4, 7 and 8 indicate the directions in which the views are taken on these lines.

Similar letters of reference indicate the same parts in the several figures of the drawings.

In Figs. 1 to 4 I have shown a heater especially designed for use in connection with what are known as "stand" lamps, of which the lamp known to the trade as the "Pittsburg lamp" is a type, while in Figs. 5 to 8 I have shown a heater more especially adapted for use in connection with any of the many forms of "hand" lamps now in common use, the principal difference between the heaters and lamps of the two classes shown, being the size and the illuminating and consequently the heating capacity thereof.

Referring by letter to the accompanying drawings—A indicates the chamber for the products of combustion; B, the main heating chamber; and C, the auxiliary heating chamber of my heater which, while shown as cylindrical, may obviously have any other desired configuration. Between the chamber for the products of combustion and the main heating chambers there is an imperforate diaphragm D, or a diaphragm provided with a central opening normally closed by a removable plate or cover E, for a purpose hereinafter described, while the main and auxiliary heating chambers are separated by a diaphragm having a central perforation G therein affording open communication between the two chambers.

The auxiliary heating chamber has an imperforate cover H, or one provided with a central opening normally closed by a removable cap I for a purpose described farther on. The lower diaphragm J of the chamber for the products of combustion is also imperforate except for a central opening K of sufficient size to readily admit to said chamber the products of combustion from the lamp or other source of heat, which products escape from the chamber through the perforations or

openings L in the side walls of the heater, without entering the other chambers.

In Figs. 1 to 4 the heater is shown as supported upon the hollow legs M which extend through the chamber A and open at their inner ends into the main heating chamber B, thus forming ducts or passages for conducting the air from near the floor, or from a point comparatively remote from the heater, directly into the heating chamber, from whence it passes through the opening G into the auxiliary heating chamber C, escaping therefrom through the perforations N in the side walls of the heater without coming into direct contact with the heated air and products of combustion from the lamp and yet, in its passage through the heater, being raised to a temperature nearly equal to that of such products.

It will be readily understood that the upper ends of the legs or air-ducts passing through the chamber A become heated to a very high degree which causes an enforced circulation of air therethrough, the heated air being forced by the cooler air in the lower end of the leg to rise into the main heating chamber where it is subjected to a still greater heat, the lower diaphragm of this chamber directly opposing and deflecting the products of combustion from the lamps, so that the heated air continues to rise and passes out of the heater at the side near the top thereof as before described. The volume of heated air is further augmented by the tubes O, which pass entirely through all the chambers of the heater and preferably terminate at the upper and lower sides of the heater in close proximity thereto, thus forming direct and open passages for the air in the immediate vicinity of the heater, which will be caused to freely and rapidly circulate through the tubes by reason of the relatively high temperature thereof.

In practice I prefer to employ three legs for the heater thus affording the maximum space therebetween for the lamp which is set immediately under the heater between the legs, as illustrated in Fig. 1, with the end of the chimney in close proximity to the opening K in the lower diaphragm J of the chamber A so that the heated air and products of combustion rising from the chimney will carry with them into the said chamber a relatively large volume of air, which not only increases the heating capacity of the device as a whole but also prevents or overcomes any tendency to smoking, and destroys the unpleasant odor which might otherwise arise therefrom.

When it is desired to utilize the heater for culinary purposes, it is only necessary to remove the plate and caps E and I when the heat from the lamp will strike directly against the bottom of any vessel placed upon the heater, the products of combustion escaping either around the vessel or through the perforations N in the side walls of the auxiliary heating chamber. I am thus enabled to readily convert the heater from an atmos-

pheric heater into a stove and for either use, secure the maximum heat developed for the intended purpose.

The heater may be composed of any suitable material, but for the uses just described I prefer to construct it of cast iron and have shown in Figs. 1 to 4 a most advantageous and novel construction when so made, consisting generally of four cast sections having such relative diameters that they may be piled upon and supported by one another. The lower section preferably comprises the lower diaphragm J of the chamber A and a downturned ornamental, but not indispensable, flange *a*, and an upturned annular flange *b* within which seats the next section comprising the upper diaphragm of the said chamber and the perforated side wall thereof. Over this section fits the third section comprising the upper diaphragm of the main heating chamber and the imperforate side walls of such chamber, the latter, as more clearly indicated in Figs. 3 and 4 being provided with shoulders or inwardly extending projections *c* which rest upon the section next below, the said section also being provided at its upper edge with an annular flange *d* within which seats the topmost section comprising the top or cover for the auxiliary heating chamber and the perforated side wall thereof together with an ornamental down-turned flange *e* corresponding with the flange *a* upon the bottom section. These sections are bound together by the air tubes O which alternate with the air duct M, the ends of which tubes are expanded on the outside of the top and bottom sections as clearly illustrated in Fig. 4, thus firmly uniting the sections of the heater into a single body without other fastening being necessary.

In Figs. 5 to 8 I have illustrated a form of heater especially designed for use in connection with ordinary hand lamps, and as for such purpose the heater need not be so strong nor weighty as in the case before described. It may be economically composed of tin or sheet metal, as more clearly shown in Figs. 7 and 8 with the same chambers, members and disposition of parts as that in the construction previously described and which are correspondingly lettered in said figures.

There are several points of difference between the devices as illustrated but such differences are merely a matter of choice and not of necessity and simply serve to show the modifications of which my invention is capable. For instance, the removable lids E and I of the combustion and auxiliary heating chambers are not shown in this modified form, but obviously they may be also used in connection herewith. Another difference is that the air ducts for conducting the air into the main heating chamber are shown as short tubes M' drawing air from the immediate vicinity of the heater just the same as the air tubes O in both constructions. This difference is due to the fact that the supporting

legs which constitute the air ducts of the preferred construction, may be dispensed with without departing from the spirit of my invention and for the uses now described, may be advantageously dispensed with and the heater be supported upon a rod *f* having preferably a crescent shaped foot *g* designed to partially encompass the base of the lamp as illustrated in Fig. 5, the heater being adjustable upon such rod by means of a set screw *h*, or in any other well known manner. It is also obvious that should it be desired to supply the air to the main heating chamber from a point comparatively remote therefrom, this supporting rod may be hollow and serve as an air duct as in the first described construction.

While I have shown and described the auxiliary heating chamber in connection with the chamber, for the product of combustion and the main heating chamber, I do not desire to limit myself to the employment of this third chamber, nor do I desire to limit myself to any particular form or kind of heat generator although a lamp or gas jet is preferred for economical reasons and my heater as shown in the drawings is especially designed for use in connection therewith, as by such use a room may be heated for the same cost which would otherwise be spent in illuminating it alone, a most important advantage from an economical point of view as well as being a matter of great convenience especially in small towns and the country where other forms of light are scarce and heat not easily attainable.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In an atmospheric heater, the combination with a chamber for the products of combustion and a main heating chamber above but separated from said first mentioned chamber by an imperforate diaphragm, of an auxiliary heating chamber above the main heating chamber and separated therefrom by a perforated diaphragm, air ducts opening into the main heating chamber and passing through but having no communication with the chamber for the products of combustion, and air tubes or flues passing through all of said chambers without communication therewith, substantially as described.

2. In an atmospheric heater, the combination with a chamber for the products of combustion and a heating chamber above and separated from said first mentioned chamber by a diaphragm having a central opening closed by a removable cap or plate of air ducts for said heating chamber, substantially as described.

3. In an atmospheric heater, the combination with a chamber and a heating chamber for the products of combustion above and separated from said first mentioned chamber by

a diaphragm having a central opening closed by a removable cap or plate of air ducts opening into the heating chamber and passing through the chamber for the products of combustion but having no communication therewith, substantially as described.

4. In an atmospheric heater, the combination with a chamber for the products of combustion and a main heating chamber above and separated from the first mentioned chamber by a diaphragm having a central opening closed by a removable plate or cap, of an auxiliary heating chamber above the main heating chamber and separated therefrom by a diaphragm having a central opening, the cover for said auxiliary heating chamber being also provided with a central opening closed by a removable cap, and air ducts opening into the main heating chamber, substantially as described.

5. In an atmospheric heater, the combination with a chamber for the products of combustion and a heating chamber above and separated from said first mentioned chamber by an imperforate diaphragm of an auxiliary heating chamber above the main heating chamber and separated therefrom by a perforated diaphragm, and hollow legs extending through the chamber for the products of combustion and opening into the main heating chamber, constituting air ducts therefor, substantially as described.

6. In an atmospheric heater, the combination with a chamber for the products of combustion and a main heating chamber above and separated from the first mentioned chamber by an imperforate diaphragm, of an auxiliary heating chamber above the main heating chamber and separated therefrom by a perforated diaphragm, air flues or tubes open at each end and extending through all of said chambers without communication therewith, and hollow legs passing through the chamber for the products of combustion and opening into the main heating chamber, constituting air ducts therefor, substantially as described.

7. An atmospheric heater composed of four sections, the lower one comprising the diaphragm J, the next resting thereon and comprising the diaphragm D with the perforated side walls of the chamber for the products of combustion, the next resting on the diaphragm D and comprising the diaphragm F and the imperforate side walls of the main heating chamber, and the next resting on the diaphragm F and comprising the cover H and the perforated side walls of the auxiliary heating chamber, in combination with the air flues or tubes O and air ducts for the main air chamber, substantially as described.

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Witnesses:

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