

(No Model.)

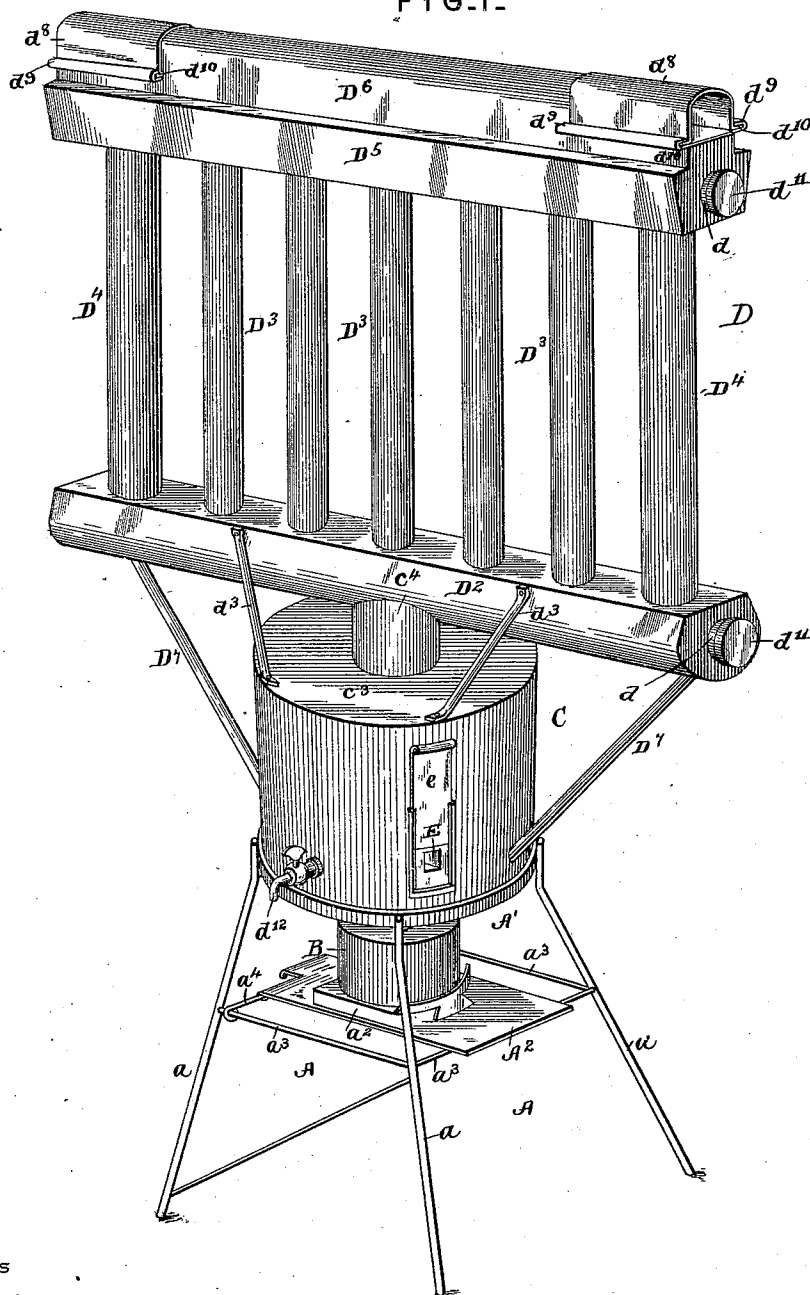
2 Sheets—Sheet 1.

A. HALLETT.
HOT WATER HEATER.

No. 468,993.

Patented Feb. 16, 1892.

FIG. 1.



Witnesses

Jas. K. McLathran
H. F. Riley

Inventor

Amos Hallett

By his Attorneys,

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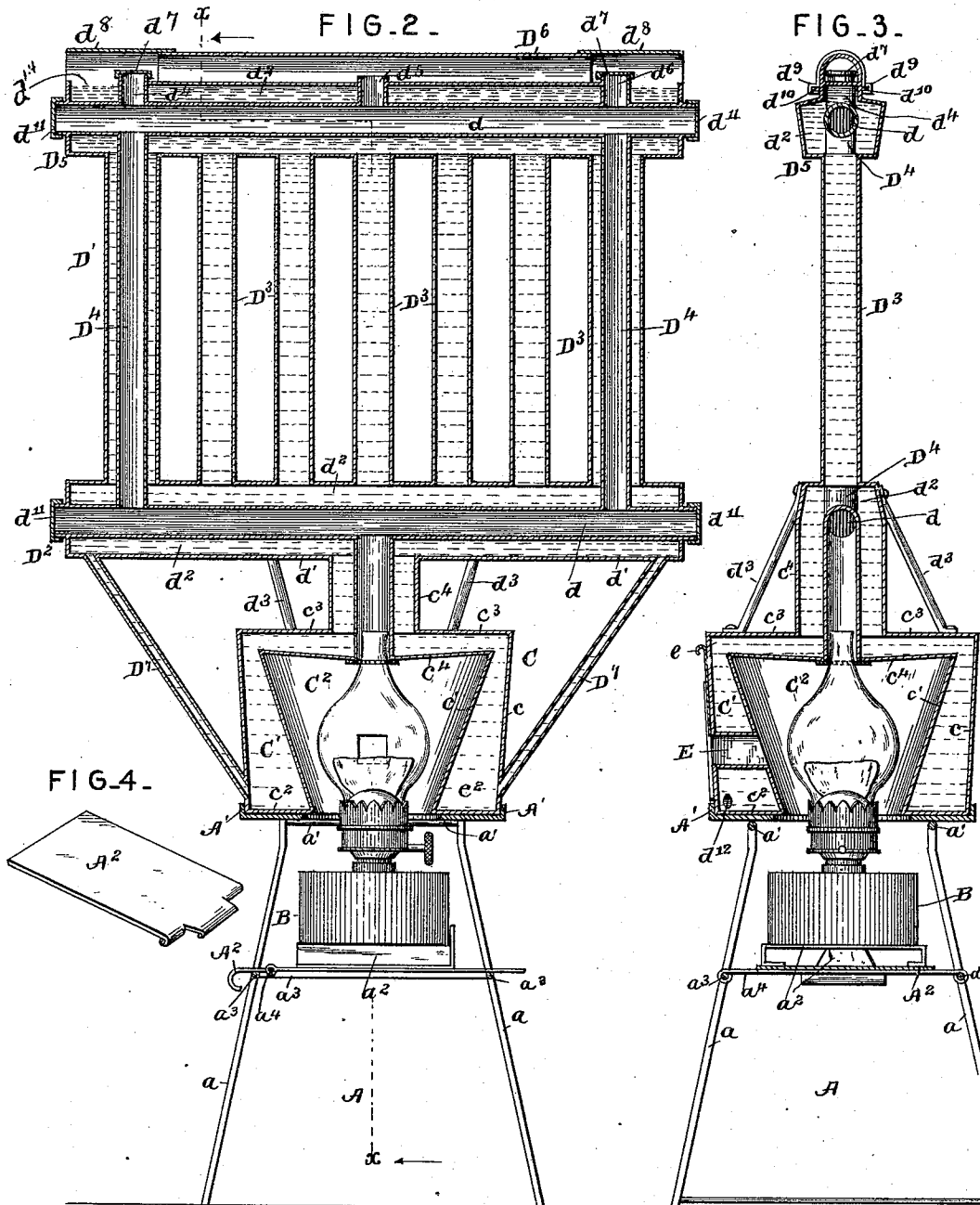
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HOT WATER HEATER.

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Inventor

Jas. K. McArthur
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UNITED STATES PATENT OFFICE.

AMOS HALLETT, OF CHATTANOOGA, TENNESSEE.

HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 468,993, dated February 16, 1892.

Application filed June 9, 1891. Serial No. 395,694. (No model.)

To all whom it may concern:

Be it known that I, AMOS HALLETT, a subject of the Queen of Great Britain, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Hot-Water Heater, of which the following is a specification.

This invention is an improvement in water-heaters, and has for its objects to provide a device whereby water may be heated rapidly, thoroughly, and at small cost for the purpose of heating churches, offices, dwellings, green-houses, chicken-houses, and the like.

The invention has for further objects the production of a water-heater which will be simple in construction, effective in operation, durable in use, compact, and portable, which will not only be comparatively cheap in its first cost, but also inexpensive in using.

The invention has for still further objects the production of a water-heater with which an ordinary lamp may be used without causing disagreeable odors, smoke, or extra labor, and the greatest amount of the heat given off by the lamp be utilized in raising the temperature of the water.

With these objects in view the invention resides in the various novel details of construction and in the combination of parts hereinafter fully described, and particularly pointed out in the claims.

In the drawings in which I have illustrated my invention, and in which like letters of reference indicate corresponding parts, Figure 1 is a perspective view of my device. Fig. 2 is a vertical central section through all the pipes and the rest of the heating device. Fig. 3 is a vertical transverse section on the line $x x$ of Fig. 2, and Fig. 4 is a detail view of the sliding rest.

In the drawings, the letter A designates a lamp-stand and heater-support, which consists of a frame composed of the legs a , secured together by the brace-bars a' . The top of the frame is provided with an annular rest or support for the water-heater proper, which support is designated by the letter A'. A lamp stand or support is provided by the sliding rest A², which consists of a platform or base-plate, which is adjustably supported

by the brace-bars a^3 by means of a rod a^4 . From the base-plate a lamp-seat a^2 is erected.

The letter B designates a lamp, which may be of any usual, ordinary, convenient, or special construction, the lamp as such not being of my invention. This lamp is placed upon the seat a^2 , the sliding rest A² slid in place, so that the lamp will be directly beneath the opening of the annular support A', and the chimney placed upon the lamp.

C designates the lower reservoir of the water-heater, which consists of the casing c on the outside, the inner casing c' on the inside and the annular heads c^2 and c^3 at the bottom and top of the reservoir, respectively. This arrangement of parts divides the reservoir into a water-chamber C' and a chimney or draft-chamber C². It will be observed that the water-chamber C' extends above the chimney, draft, or heating chamber C², an annular diaphragm c^4 being provided at the top of the heating-chamber C².

The letter D indicates the upper reservoir and flue-chamber, and the whole may be conveniently described as consisting of concentric tubes forming an upright portion D', which communicates with the lower horizontal portion D², which is also composed of concentric tubes or of nearly tubular parts substantially concentric with each other, and this lower horizontal portion D² is connected by means of tubes D³ and concentric tubes D⁴ on either end, all of which are vertical, with a horizontal portion D⁵ at the top, which consists of concentric tubes, or, as shown, of a tube situated in the center of a casing the sides of which, as seen in cross-section, form a trapezoid, and above this portion D⁵ is a flue-outlet and smoke-escape portion D⁶, which connects directly with the water-space in the portion D⁵. The concentric tubular portions D', D², D⁴, and D⁵ all communicate with one another, and may be, for brevity, each described as consisting of an interior smoke flue or tube d and an exterior tube d' , surrounding the tube d and forming between the two an annular water-space d^2 . These spaces—that is, the smoke-spaces within the tubes d and the water-spaces d^2 —all communicate in such a manner that the products of

combustion, heated gases, and smoke may pass throughout the smoke-spaces within the tubes d until the said products of combustion, &c., escape from the said tubes d into the upper escape portion D^5 and then pass outward to the surrounding atmosphere, in so doing passing over the water in the water-space d^2 in the portion D^5 and being purified or freed from odor thereby. The annular water-spaces d^2 are connected in such a manner that the water may circulate from one portion to the other and back again. The water-chamber C' is connected directly with the annular water-space d^2 where the vertical portion D' joins the reservoir, and the said water-chamber C' is further connected with the annular water-space d^2 by means of the angularly-disposed tubes D^7 . The upper reservoir and flue-chamber D is supported and held upon the lower reservoir C not only by means of the upright portion D' and the angularly-disposed tubes D^7 , but, for the purpose of affording additional strength and support to the structure, brace-rods d^3 are provided, the said brace-rods connecting the lower reservoir with the upper. The tubular portions D^3 directly communicate with and connect the water-spaces d^2 in the upper horizontal portion D^5 .

It will be very evident from the description and from the drawings that when the tubes are filled with water and the lamp burning that the water will very quickly be heated and that any inequalities in the temperature of the different portions of the device will speedily be corrected by the free circulation of the water through all the parts from top to bottom. It will also be evident that by the arrangement of the heating-chamber C^2 and the tubes d that the greatest possible use will be made of the heat derived from the combustion of the lamp.

To utilize the heat the more effectually or to cause the draft to escape in the direction desired, the central tube d of the portion D^5 is provided with three outlet-tubes d^4 , d^5 , and d^6 , all connected with the escape portion D^6 and extending above the water-level in d^2 , the outlet-tube d^5 being in the center of the length of the portion D^5 and the outlet-tubes d^4 and d^6 being at the ends or near the ends thereof and being provided with caps or stoppers d^7 , in order to shut off the draft at either end or at both ends, as may be desired, the central outlet-opening d^5 being always open. The smoke-escape portion D^6 is provided at either end with sliding caps or cowls d^8 , which are provided with outwardly-turned flanges d^9 , adapted to fit and move within the guide-ways d^{10} . By moving these cowls d^8 the outlet for the smoke may be made more direct and the draft therefore increased, as desired.

The tubes d may be provided, as shown in

the drawings, with caps or stoppers d^{11} at all their ends, the said caps or stoppers being provided to permit the cleaning of the tubes d .

The device may be filled by pouring water into the water-space d^2 through openings d^{14} in the portion D^5 and has a suitable water-outlet d^{12} .

An opening E is provided in the lower reservoir C , through which the lamp-flame may be observed, and this opening is provided with a sliding cover e .

An indented flange is provided at the top of the heating-chamber C^2 to hold the lamp in place and to allow heated air to pass.

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

1. In a water-heater, the combination, with the lamp-stand A , having a sliding rest A^2 for the support of a lamp, and annular reservoir-support A' , of the lower reservoir C , adapted to rest upon the support A' , and an upper reservoir D , connected to the lower reservoir, the upper reservoir consisting of water-spaces and smoke-flues connected with each other and both terminating in the outlet or escape portion D^6 , the water-spaces in the upper reservoir communicating with the water-chamber C' in the lower reservoir, and the smoke-flues in the upper reservoir connecting with the heating-chamber C^2 in the lower reservoir, all substantially as and for the purpose set forth.

2. In a water-heater, the combination, with the lower reservoir, the upper reservoir, and the lamp, of the smoke-escape portion D^6 , communicating directly with the smoke-tube d and with the water-space d^2 in the portion D^5 , all substantially as and for the purpose set forth.

3. In a water-heater, the combination, with the lower reservoir, the upper reservoir, and the lamp, of the smoke-escape portion D^6 , communicating directly with the smoke-tube d and also with the water-space d^2 in the portion D^5 , the said smoke-escape portion D^6 being provided with sliding cowls upon the ends, substantially as and for the purpose set forth.

4. In a water-heater, the combination, with the reservoir and the lamp, of a lamp-stand consisting, substantially, of a frame composed of legs a , secured together by brace-bars a' , and a sliding rest A^2 , adjustably supported upon the brace-bars a^3 by its rods a^4 , all substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

AMOS HALLETT.

Witnesses:

G. D. BRAMBLETT,
R. E. ALBRECHT.