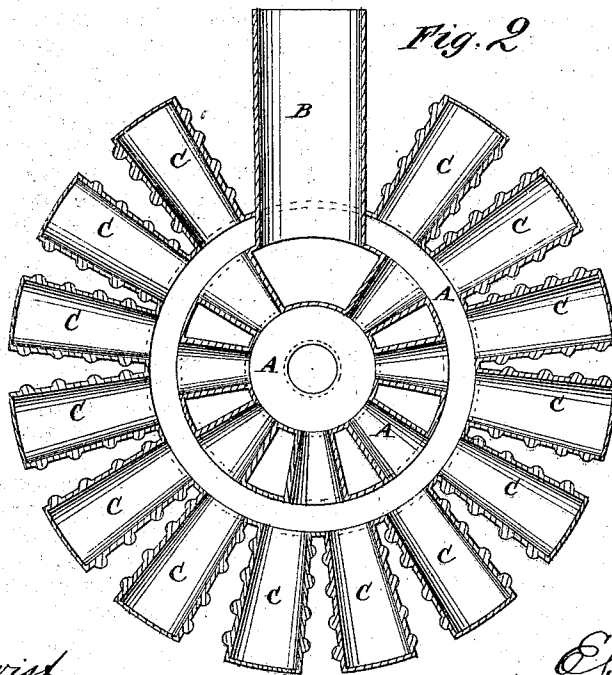
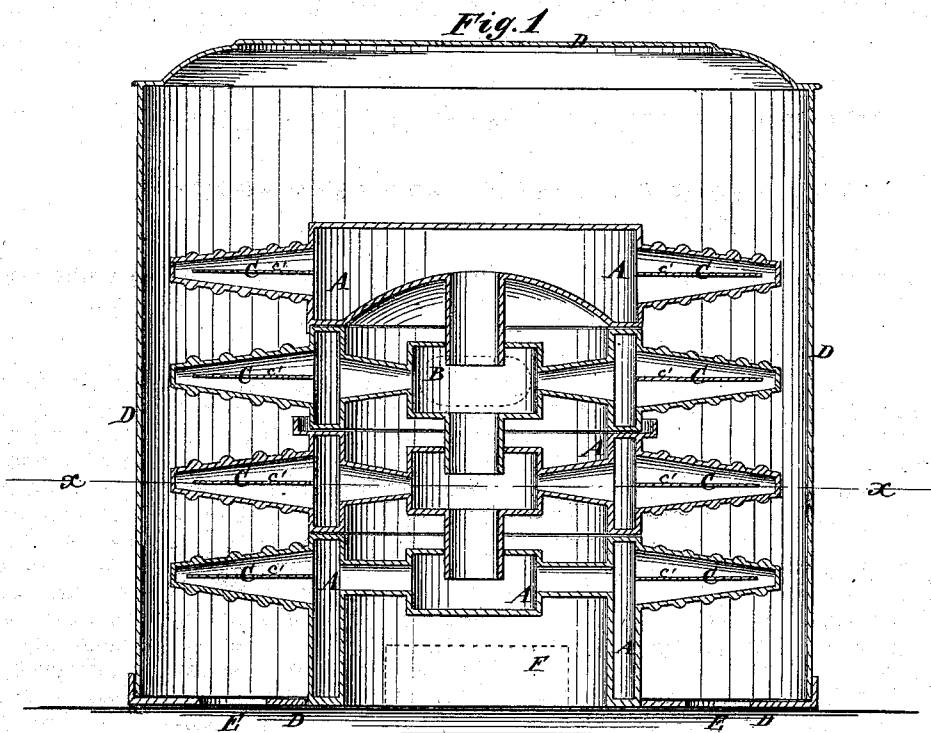


E. B. LIGHT.
Steam and Water Heaters.

No.155,658.

Patented Oct. 6, 1874.



WITNESSES:

N. W. Almquist
Chadwick

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UNITED STATES PATENT OFFICE.

EDWARD B. LIGHT, OF WESTFIELD, MASSACHUSETTS.

IMPROVEMENT IN STEAM AND WATER HEATERS.

Specification forming part of Letters Patent No. **155,658**, dated October 6, 1874; application filed April 11, 1874.

To all whom it may concern:

Be it known that I, EDWARD B. LIGHT, of Westfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in an Improved Boiler, of which the following is a specification:

Figure 1 is a vertical section of my improved heater. Fig. 2 is a horizontal section of the same, taken through the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The invention consists in the improved construction of sectional boilers, as hereinafter described.

A are the sections of the boiler, each of which consists of a hollow hub and hollow ring, connected with each other by radial tubes, as shown in Figs. 1 and 2. The lower end of the hub of each upper section screws into the upper end of the hub of each lower section, or are connected by a screw-nipple, so as to securely connect the several sections to each other. The rims or rings of the sections rest upon each other, as shown in Fig. 1, and the top of each lower rim should be provided with a flange to receive a sand or other seal to prevent the products of combustion from escaping between said rings. The ring of the lower section A is extended downward to form the fire-box, as shown in Fig. 1, or the fire-box may be cast separate, and connected with the lower sections by screw-nipples, or otherwise. The arms C are provided with a horizontal diaphragm or partition, *c'*, extending from their inner ends nearly to their outer ends, so that, as the steam rises and enters said arms above the diaphragm *c'*, it may force the air out beneath them, which is discharged through a cold-air valve located at some suitable place at or near the water-line. When the heating is done by hot water, the effect of said diaphragm is to cause a circulation of water through said arms, equalizing

the temperature. The upper section is made in the form of a cap with a concave lower side to form the top of the fire-chamber. In one of the sections A, preferably the one next the top, is formed a flue, B, through which the products of combustion escape to the chimney. Any desired number of the sections A may be used. Upon the outer sides of the hollow rings of sections A are formed a number of hollow radial arms, C, which are flattened toward their outer ends, and may be made, with ribs, flanges, or corrugations, to furnish a large amount of radiating surface. The outer ends of the radial arms C are closed, and their inner ends open into the rings of the boiler. The arms C may be detachable, and connected by a screw-joint or otherwise, or may be cast upon said rings. The heater is surrounded with a casing, D, which may be brick work or sheet iron, as may be desired. The air to be heated may be introduced through openings E below the radial arms C, or through an opening, F, in the lower part of casing D, and may be discharged through openings in the upper part of said casing. The boiler A should be provided with pipes in the ordinary way for admitting and drawing off the water. In this way a heater of any desired capacity may be produced by simply increasing the number of the sections A.

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

The combination of several corresponding sections, A, forming central and more distant circular connected spaces, the latter having radial end-closed tubes C with horizontal diaphragms *c'*, as shown and described, to form a steam and water heater.

EDWARD B. LIGHT.

Witnesses:

A. M. WAY,
L. B. HOPE.