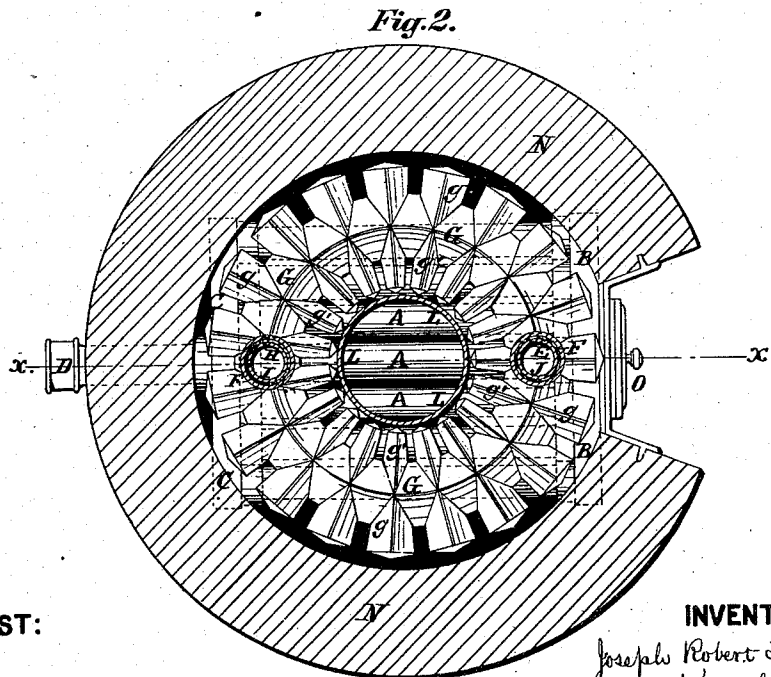
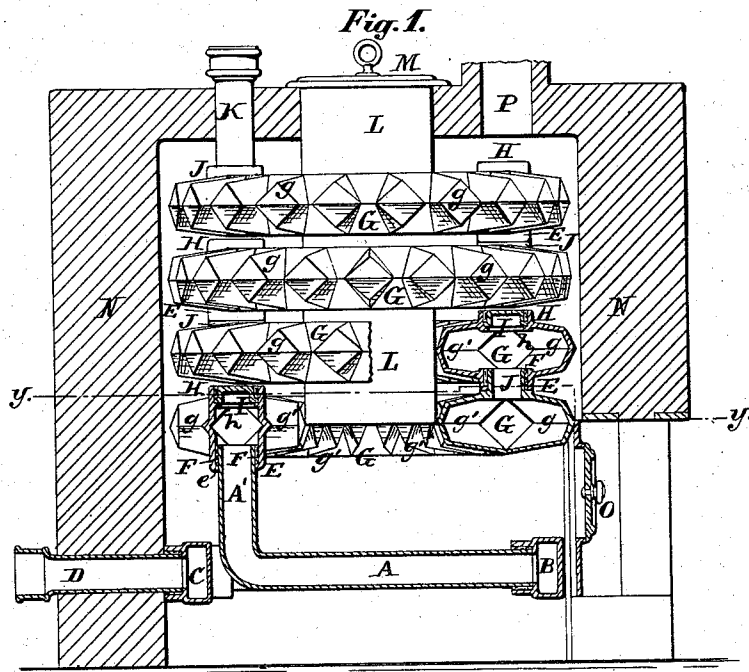


J. R. LAMB.

Sectional Boilers for Water and Steam Heaters.

No. 154,688.

Patented Sept. 1, 1874.



ATTEST:

Robert Burns.
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UNITED STATES PATENT OFFICE.

JOSEPH ROBERT LAMB, OF JACKSONVILLE, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENT, TO JOSEPH W. BRANCH, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN SECTIONAL BOILERS FOR WATER AND STEAM HEATERS.

Specification forming part of Letters Patent No. 154,688, dated September 1, 1874; application filed May 12, 1874.

To all whom it may concern:

Be it known that I, JOSEPH ROBERT LAMB, of Jacksonville, Morgan county, Illinois, have invented a certain Improved Sectional Boiler for Water and Steam Heaters, &c., of which the following is a specification:

My invention relates to that class of boilers in which a number of cast-iron sections are imposed one upon another. My improvement consists partly in the manner of construction of each section, and partly in the manner in which they are connected together, and also in the relative position in which the sections are placed.

Each section is made in annular form, and has hollow projections extending both inwardly and outwardly. Each section communicates in one place with that above and that below it, the communication being made at opposite sides alternately, so that the circulation is through the annular space of each section to reach the communication with the section above. The joints of the communicating nipples are made with iron-cement, and without the use of any bolts or rivets.

In the drawings, Figure 1 is a section at *xx*, Fig. 2. Fig. 2 is a section at *yy*, Fig. 1. The parts beyond the section-line are shown in both figures.

The furnace is shown as having water-tubes A in communication at both ends with water-castings B C, the rear one, C, of which communicates with the return-water pipe D. This is not a necessary form of construction, as ordinary solid grate-bars might be used, and the return-water pipe communicate directly with the lower one of the boiler-sections. The central hollow grate-bar turns up at A', and communicates with the first annular section of the boiler proper by means of a nipple, E, having an annular flange, *e*, forming the bottom of the cement-box F, between the end of the pipe A' and the nipple E. The nipple E extends downward from the annular cast section G, which is quadrangular in cross-section, as shown, its corners projecting directly upward and downward and to each side. On the outer and inner sides of the section G are hollow extensions *g g'*, extending, respectively, outwardly and inwardly, so as to greatly increase the

heating-surface. These projections are quadrangular in section, and the angles extend, respectively, upwardly, downwardly, and horizontally, as shown. The sections G are so placed, in respect to each other, that the projections *g g'* of each section are vertically over the spaces between the projections of the section next below. Directly over the nipple E is an orifice, H, with an annular flange or nipple, *h*. This orifice is to give access to the joint for the insertion of the iron-cement F. After the joint is made the orifice is stopped by a plug, I, fixed in place by iron-cement. These nipples E and orifice H are placed in the space between two of the projections *g g' g g'*, and exactly opposite the said space in the same section G is the upwardly-extending nipple J, in line with one of the projections *g*, and that *g'*. Over the nipple J sets the nipple E of the next section, the joint F being made in a similar manner to that before described. The sections G are all exactly uniform in construction, and, in order to admit of their arrangement so that the spaces in one section are in vertical line with the projections in the next, the projections are made in an unequal number in each section, so that the nipple E may be between the projections, and the nipple J in line with the same. The flange or nipple *h* forms a support for that side of the section next above it. The nipple J of the upper section, G, receives or connects with outflow-pipe K, leading to the heat-radiators in the rooms of building, when the boiler is used for this purpose. L is a tube, into which the fuel is fed from the top, through an opening which is closed by a cover, M, the arrangement being such as is known as base-burning. The case N is shown in outline, and may be of brick or metal. O is the furnace-door, and P the chimney-flue.

I have shown and described my improvement as applied to heating water for circulation through radiators for heating buildings; but it is obvious that the novel features in the same are equally applicable to a boiler for the production of steam for driving an engine or for steam-radiators. The necessary modifications would affect only those parts on which no novelty is claimed. For instance, the base-

burning tube L might be removed, and the discharge-pipe K be made to communicate with a steam dome or chamber; and the pipe K might also communicate with that D by a circulating-pipe.

One special advantage gained by making the boiler of a number of exactly uniform sections is, that a greater or less number may be used, according to the required amount of duty of the furnace, a single section being operative, or a larger number.

No bolts or stays are needed, as the application of the iron-cement of the joints F attaches the sections together with the requisite power.

The boilers may be very quickly erected, without noise, as each section may be rolled into place, and no riveting is required in putting them together.

It is apparent that the cost of this boiler would be very low.

I claim as new and of my invention—

1. The annular sections G, provided with radial hollow projections *g g'*, substantially as set forth.

2. The sections G, having upward and downward connecting nipples J E on opposite sides of the sections, in combination with the projections *g g'*, substantially as and for the purpose set forth.

3. The combination, in the sections G, of the nipples E and J, flanged orifice H, and cap I, all constructed substantially as set forth.

JOSEPH ROBERT LAMB.

Witnesses:

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FRANCIS M'CULLOUGH.