

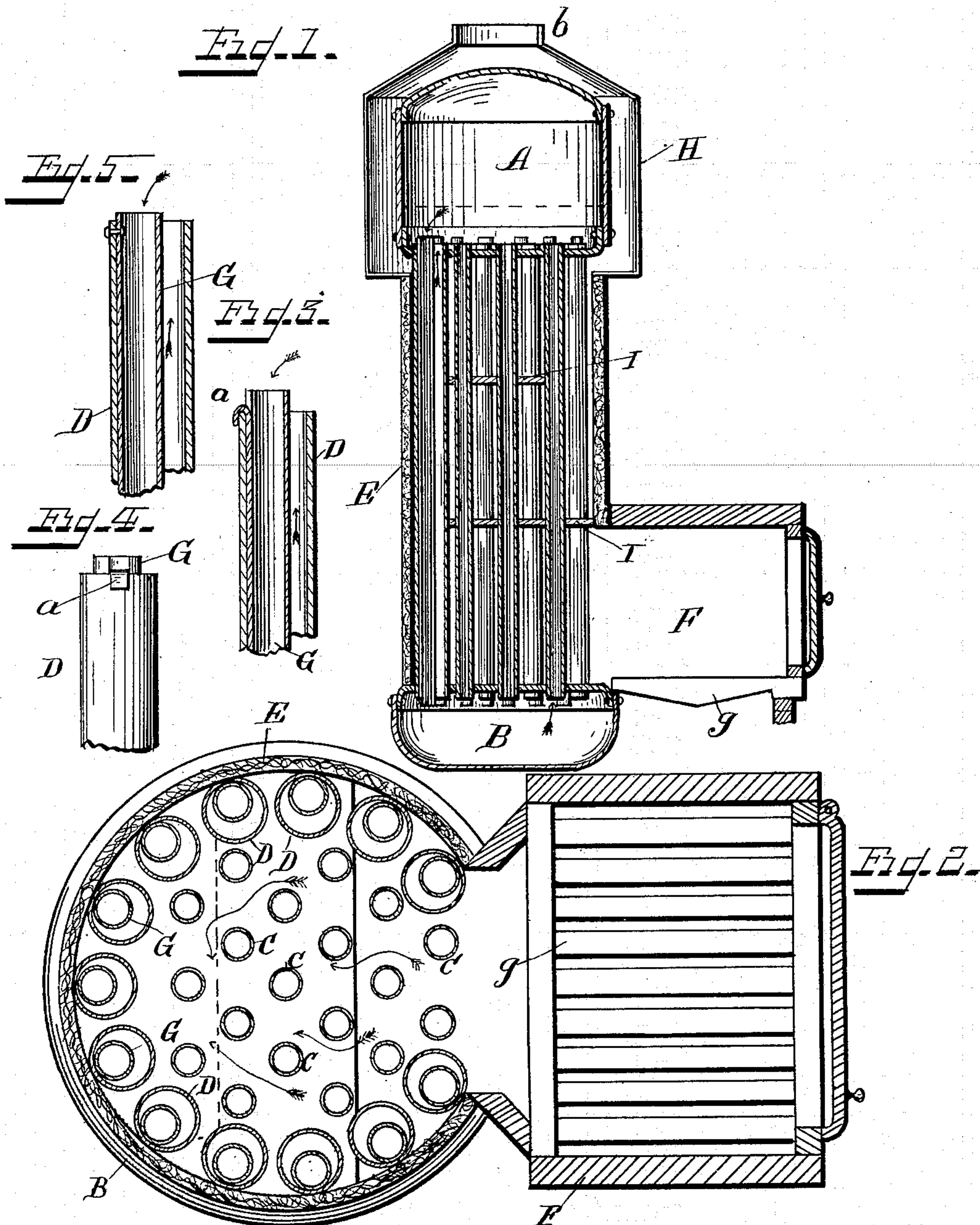
No. 615,489.

Patented Dec. 6, 1898.

E. P. LYNN.
STEAM GENERATOR.

(Application filed Jan. 26, 1898.)

(No Model.)



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ELMORE P. LYNN, OF CINCINNATI, OHIO.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 615,489, dated December 6, 1898.

Application filed January 26, 1898. Serial No. 668,050. (No model.)

To all whom it may concern:

Be it known that I, ELMORE P. LYNN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Steam-Generators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to upright tubular boilers, and has for its object the production of a boiler of novel construction whereby it can be made of small and compact size and light weight adapted for vehicle-motors, though capable of other uses and in any size, and whereby under the construction employed the steam is generated with the greatest possible economy of fuel and with the greatest rapidity, thus making the boilers not only especially useful in motor-vehicles, but in steam fire-engines and other engines where it is desirable to obtain superheated steam in the shortest time and with the greatest economy of fuel.

The novelty of my invention will be hereinafter set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a central sectional side elevation of so much of a boiler as is necessary to illustrate my present invention. Fig. 2 is an enlarged plan view of the same on the dotted line X x of Fig. 1. Fig. 3 is a sectional side elevation of the upper end of one of the outer combined up-and-down circulating-tubes. Fig. 4 is an elevation of Fig. 3, looking to the right. Fig. 5 is a view corresponding to Fig. 3, but showing a modification in the manner of securing the inner to the outer tube.

The same letters of reference are used to indicate identical parts in all the figures.

In Fig. 1, A represents the steam-drum, and B the mud-drum, located directly beneath it at the proper distance, these two drums being connected by a series of upright tubes C D, of which the latter constitute the outer row of tubes, preferably in circular form and of larger diameter than the tubes C. The tubes B are arranged close together to form a support for an enveloping covering of non-conducting material E, which entirely sur-

rounds them from the mud-drum to a point slightly below their upper ends, except that an opening is left in this covering on one side at its lower end for the introduction of the products of combustion from the fire-chamber F, whose grate-bars g are preferably about on a line with the top of the mud-drum. Within each of the pipes D is a down circulating-pipe G, extending from the steam-drum to the mud-drum on the side of the pipe D next to the covering E and secured thereto either by rivets, as shown in Fig. 5, or by cut-out bent-over portions a, as seen in Figs. 3 and 4.

Surrounding the steam-drum and the upper ends of the tubes connecting the two drums is a chamber H, resting on the covering E and having at its upper end a connection b for a smoke-stack.

Within the covering E are arranged baffle-plates I, of the usual or any suitable construction, to direct the products of combustion thoroughly around the tubes C before they escape into the chamber H around the steam-drum and out through the smoke-stack.

The steam-drum is provided with its usual accessories, (not shown,) such as feed-water pipe, steam-exit pipe, safety-valve, and gages.

By the above-described construction I provide a boiler simple and cheap to build, which is compact and light and will generate steam very rapidly, and by the arrangement of the outer tubes D close together I provide an efficient support for the non-conducting covering E, which may be of asbestos, mineral wool, or any other suitable non-conducting covering, and by the arrangement of the tubes G next to said covering and within the tubes D they are least subjected to the heat and a perfect circulation from the steam-drum to the mud-drum is insured. Again, by discharging the products of combustion entirely around the steam-drum and at the upper ends of the tubes the steam is superheated and altogether the best results are accomplished with the greatest economy.

Having thus fully described my invention, I claim—

1. In a boiler, the combination of a vertically-set upper steam-drum, a vertically-set mud-drum below the steam-drum, a series of upright tubes connecting the two drums the

outer row of which are arranged close together and contain within them down circulating-pipes from the steam-drum to the mud-drum, a covering surrounding said tubes, a chamber surrounding the steam-drum and the upper ends of the tubes and provided with a smoke-stack, and a fire-chamber opening into the covering around the tubes at their lower ends, substantially as described.

2. In a boiler, the combination of a vertically-set upper steam-drum, a vertically-set mud-drum below the steam-drum, a series of upright tubes connecting the two drums the outer row of which are arranged close together and contain within them down circulating-pipes from the steam-drum to the mud-drum, a covering surrounding said tubes, baffle-plates within said covering, a chamber surrounding the steam-drum and the upper ends of the tubes and provided with a smoke-stack and a fire-chamber opening into the covering around the tubes at their lower ends, substantially as described.

3. In a boiler, the combination of a vertically-set upper steam-drum, a vertically-set mud-drum below the steam-drum, a series of upright tubes connecting the two drums the outer row of which are arranged close to-

gether and contain within them down circulating-pipes from the steam-drum to the mud-drum, a non-conducting covering surrounding said tubes, a chamber surrounding the steam-drum and the upper ends of the tubes and provided with a smoke-stack and a fire-chamber opening into the covering around the tubes at their lower ends, substantially as described.

4. In a boiler, the combination of a vertically-set upper steam-drum, a vertically-set mud-drum below the steam-drum, a series of upright tubes connecting the two drums the outer row of which are of larger diameter than the others and arranged close together and contain within them down circulating-pipes from the steam-drum to the mud-drum, a covering surrounding said tubes, a chamber surrounding the steam-drum and the upper ends of the tubes and provided with a smoke-stack, and a fire-chamber opening into the covering around the tubes at their lower ends, substantially as described.

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