

(No Model.)

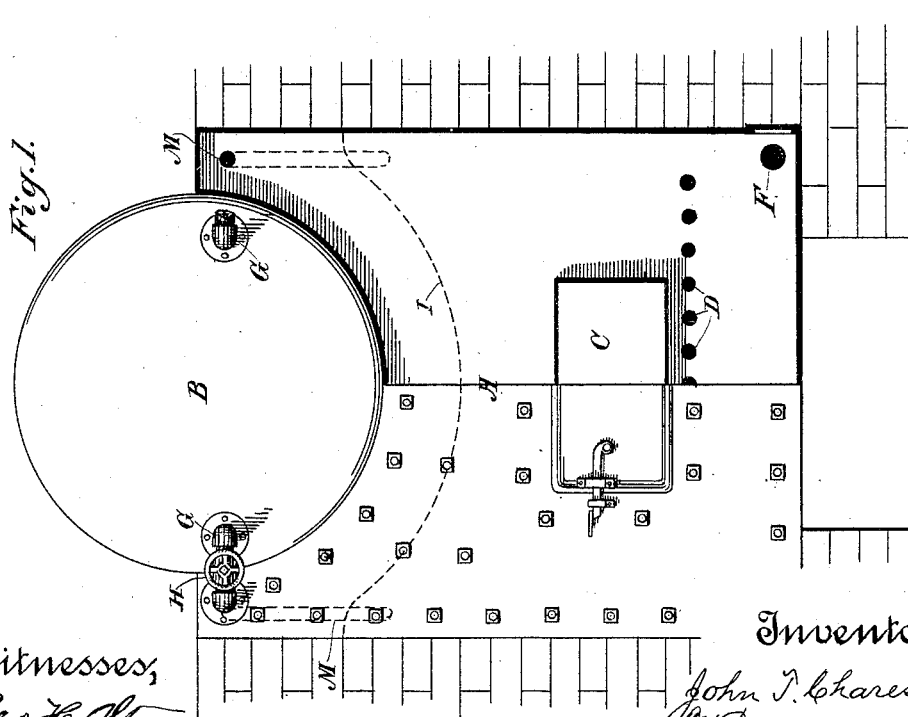
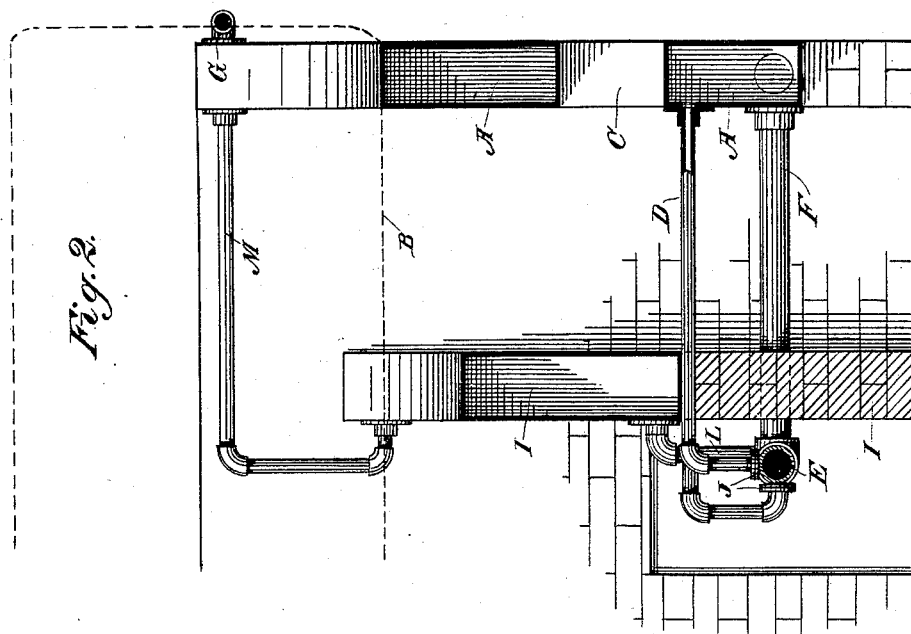
2 Sheets—Sheet 1.

J. T. CHAREST.

WATER FRONT ATTACHMENT FOR BOILERS.

No. 422,070.

Patented Feb. 25, 1890.



Witnesses,
Geo. H. Strong
J. H. House

Inventor,
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By Devery & Co.
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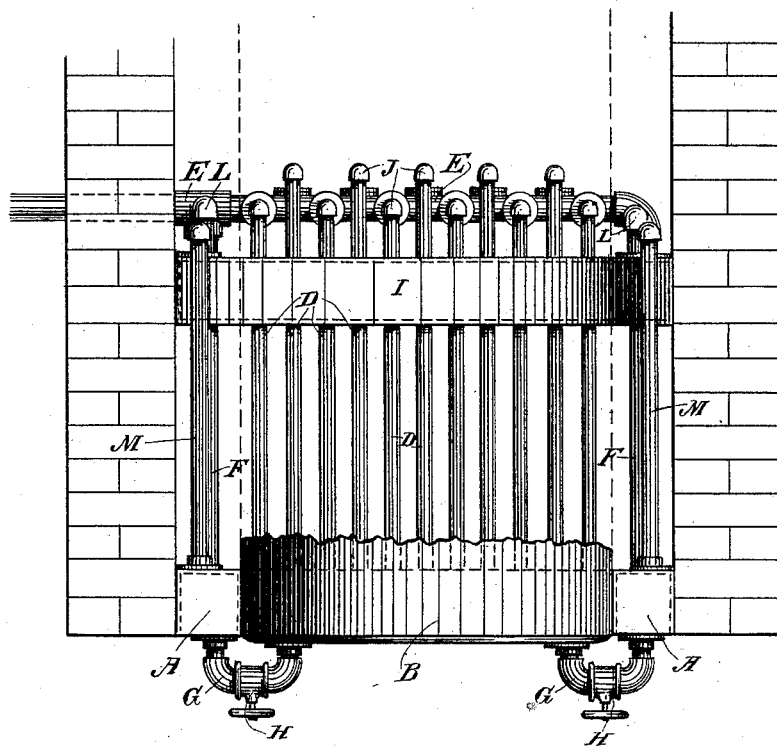
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Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN T. CHAREST, OF RED BLUFF, ASSIGNOR OF ONE-THIRD TO JOSEPH MARCOTT, OF SAN JOSÉ, CALIFORNIA.

WATER-FRONT ATTACHMENT FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 422,070, dated February 25, 1890.

Application filed August 30, 1889. Serial No. 322,463. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. CHAREST, of Red Bluff, Tehama county, State of California, have invented an Improvement in Water-Front Attachments for Boilers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to what I term a "water-front attachment for boilers."

It consists of an independent furnace-front, which may be built into the usual brick-work of a stationary boiler, said front being made hollow, so as to contain water, and having pipes connecting its upper part with the boiler or boilers, cocks by which connection may be cut off or regulated at pleasure, tubular grates connected with the lower part of said front, and a water-supply pipe delivering water through the tubular grates, and also directly into the lower part of the front and through the bridge-wall.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a front elevation showing one-half of the boiler and the front in section. Fig. 2 is a longitudinal vertical section. Fig. 3 is a plan view.

A is the front of the boiler-furnace, which in the present case is made with the upper part fitted to receive and support a single boiler B; but it will be manifest that it may be made to support as many boilers in battery as it may be desired to use. This front is made with front and rear walls separated from each other, so as to leave a water-space of any suitable dimensions between the front and back walls, and the walls are held together by any suitable number of stay-bolts, which will retain them in their proper position. The usual fire or ash door openings are made through the front, connecting with the interior of the furnaces. From the lower inner portion of this front pipes D extend backward into the furnace, these pipes being made of any suitable material and diameter, and being screwed or otherwise secured into the plate of the furnace-front, so as to have an open communication with its interior. These pipes lie parallel with each other, and near enough together to form a grate, upon which the fuel rests in the same manner as with any

ordinary grate. The rear ends of these pipes are bent downward at approximately right angles with the fuel-supporting portion, and their downwardly-bent ends are connected with a transverse pipe E, which extends transversely across the furnace-space, just behind the bridge-wall and below the level of the tops of the pipes which form the grate-surface. At each end this pipe E is connected by means of pipes F with the lower part of the furnace-front, and it extends outwardly through the side of the boiler-setting, and is connected with the supply-pump which furnishes water to the boiler. The lower part of the bridge-wall I is built of brick or masonry, and the hollow grate bars or pipes pass through it before being bent down to connect with the tube E. As the grate-bars must lie near together and the flanges by which couplings are made project considerably, it will be necessary to so arrange the coupling-flanges J that they will not interfere with each other. This I do by connecting the alternate pipes at the side and at the top, as shown in Figs. 2 and 3, which allows the tubes of the grates to lie near enough together.

The upper portion of the bridge-wall is made hollow and similarly to the front previously described. From the pipe E or branches F connections I open into the bridge-wall and supply it with water, and other pipes M lead from its upper part to the upper part of the front A, into which the water from the bridge-wall rises, and is discharged as it becomes heated and is displaced by fresh supply.

From the upper part of the furnace-front pipes G connect with the boiler upon each side, these pipes opening into the highest part of the space in the furnace-front, and they are provided with gates or valves H, by which communication may be cut off with either one or all, so that in case of necessity the space in the furnace-front and the grates may be cut off from that within the boiler.

The operation of my device will then be as follows: Water being forced into the pipe E from the pump is distributed through the pipes F and the bridge-wall, and also through

the hollow grate-bars D, and is discharged thence into the lower part of the space formed between the tubular walls of the front A. The water is thus caused to circulate freely
 5 through these pipes, and is heated as it passes through the pipes forming the grate and delivered into the space between the front and rear walls of the furnace-front, rising to the top, and being discharged thence gradually
 10 through the pipes G into the boiler B. The water becomes considerably heated by reason of the fire upon the grates and by the heat from the furnace acting upon the inner wall of the furnace-front and upon the bridge-
 15 wall, and the whole device serves as a water-heater, utilizing a considerable amount of heat from the furnace to raise its temperature to the proper point before its delivery into the boiler.

20 If for any reason it is necessary to temporarily close the communication between the boiler and the interior of this furnace-front, it may be done by closing the valves H in the pipes G.

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

30 1. The independent hollow furnace-front, having its walls supported by stay-bolts, fire and ash door openings through it, the upper edge of said front being conformed to the front end of one or more boilers and connected there-
 35 with by means of the pipes opening through the upper part of the furnace-front into the boilers, in combination with the tubular grate-bars having one end opening into the space in the furnace-front and the other ends connected with a supply-pipe extending trans-
 40 versely across the lower rear portion of the furnace, substantially as described.

2. A boiler-furnace having the surrounding walls and bridge-wall, a front composed of inner and outer walls of iron, with a water-space between them, boilers conforming with the upper part of said front and having pipes
 45 with cut-off cocks connecting said boilers with the space in the furnace-front, tubular grate-bars opening through the inner wall of the furnace-front below the fire-door, a horizontal
 50 pipe through which water is supplied, said pipe being connected with the rear ends of the tubular grate-bars, and having the independent supplemental pipes connecting it directly with the lower part of the hollow fur-
 55 nace-front upon each side of the grate-bars, substantially as described.

3. A boiler-furnace having the surrounding walls, an independent hollow iron front, a boiler conforming with the upper part of said
 60 front, the front tubular grate-bars, and a hollow bridge-wall, in combination with a supply-pipe having connections whereby water may be discharged from it to the front, the grate-bars, and the bridge-wall, substantially as de-
 65 scribed.

4. A boiler-furnace, an independent hollow front and hollow bridge-wall, hollow tubes connected with the front and extending back through the masonry base below the bridge-
 70 wall, a water-supply pipe connected with said hollow fixtures, the couplings of the grate-bars with the supply-pipe alternating, substantially as described.

In witness whereof I have hereunto set my hand.

JOHN T. CHAREST.

Witnesses:

S. H. NOURSE,

H. C. LEE.