(No Model.)

H. L. BEACH.

BOILER FRONT AND SETTING.

No. 404,821. Patented June 11, 1889.

Fig. 1

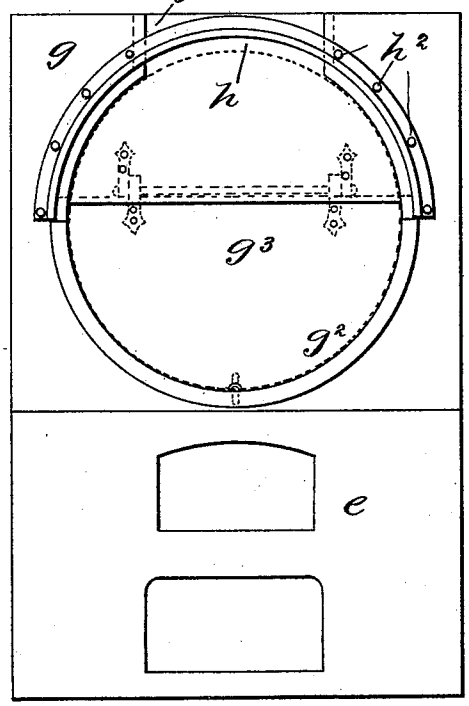
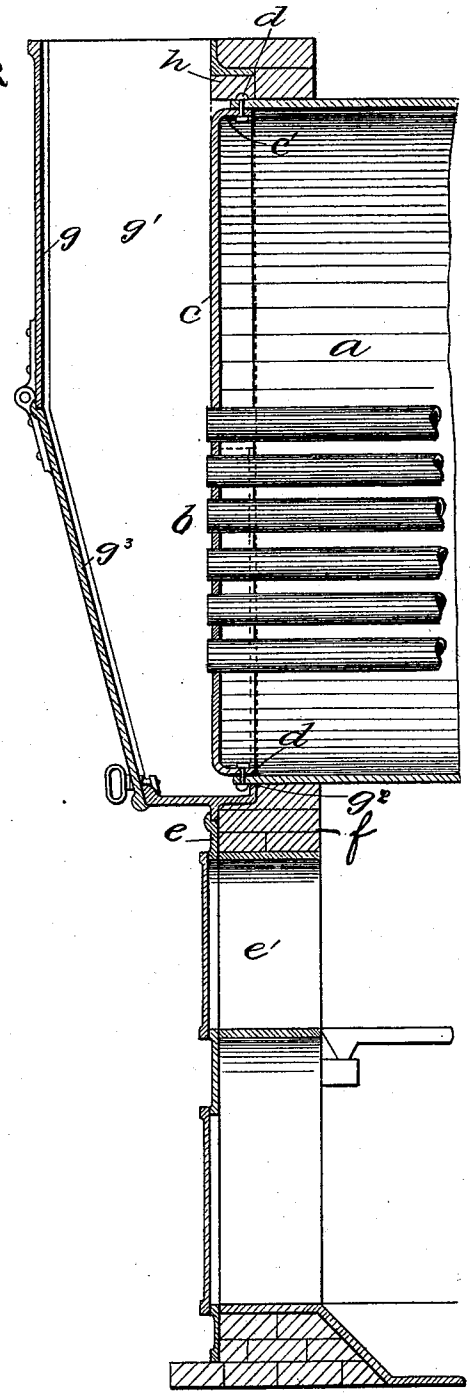


Fig. 2



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UNITED STATES PATENT OFFICE.

HENRY L. BEACH, OF HARTFORD, CONNECTICUT.

BOILER FRONT AND SETTING.

SPECIFICATION forming part of Letters Patent No. 404,821, dated June 11, 1889.

Application filed January 24, 1889. Serial No. 297,336. (No model.)

To all whom it may concern:

Be it known that I, HENRY L. BEACH, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Boiler Fronts and Settings, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to so construct a return tubular boiler as to prevent or greatly lessen the burning out of the bottom of the boiler at or near the junction of the shell and the boiler-head, and also to provide a boiler and setting that will permit easy access to the front end of the boiler, as for the purpose of repairs.

To this end my invention consists in the combination of a boiler having the flange of the head turned inward and a boiler-front having a socket lying back of the line of rivets; and it further consists in details of the boiler-front, the boiler-head, and the setting, and in the combination of the several parts, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a rear view of the boiler-front. Fig. 2 is a detail view, in vertical central section, through the boiler-front and front end of the boiler.

In order to obviate defects of construction of prior boilers and to insure greater durability of a part adjacent to the front, and to lessen the liability of burning out, the boiler is constructed as shown in the accompanying drawings, wherein—

The letter *a* denotes the shell, *b* the flues of a return tubular boiler, and *c* the boiler-head, the flange *c'* of this head facing inward, and being united to the end of the shell by rivets *d*. The boiler-front is made up, as to the lower part, of the cast-metal front *e*, having a mouth-piece *e'*, and the usual doors for access to the ash-pit. This cast-metal front is backed up by fire-brick *f* in the usual manner to protect it from the effect of the heat.

The upper section *g* of the boiler-front is preferably made of cast metal, and projects so as to provide a smoke-chamber *g'*, into which the ends of the flues or tubes *b* open. This section *g* of the boiler-front has on the back side a boiler-socket g^2 of such size and shape that the lower half of the boiler fits snugly into the socket formed in the rear wall of this section, while the upper half of the socket is formed with a free space sufficient to allow the boiler-head to be readily inserted in the socket, and this space is afterward filled up with fire-brick *h* or any suitable material to make the joint smoke-tight. In order to make this front end of the boiler readily accessible for the purpose of inspection or repairs, I prefer that the edge of the socket g^2 should lie back of the line of rivets *d*, as illustrated in the sectional view in Fig. 2, and this not only serves this purpose, but is also of some additional advantage in the prevention of the burning out of the front of the boiler.

The front of the upper section *g* is provided with a door g^3, that permits access to the smoke-chamber.

As is shown in the sectional view in Fig. 2, the thickness of the fire-brick lining of the front of the fire chamber or furnace is comparatively less than would be required if the front edge of the shell and line of rivets did not project within the smoke-chamber, in which place all parts of the front head and adjacent shell are kept at a high temperature and protected against drafts of cold air. The water in the boiler, by contact with the bottom of the shell, prevents the burning of the bottom plate. This minimum depth of lining permits easy access to the furnace and all parts of the grate-surface, so that a clean and bright fire can be easily kept up.

The front end of the boiler is accessible for repairs and inspection through the door g^3; or, if need be, the upper part, to which the door is hinged, may be taken off by removing the bolts h^3, by means of which it is secured to the front wall of the section *g*.

It is not material to the practice of my improvement that the flange of the head shall turn inward, so long as the end of the boiler rests in the close-fitting socket-piece that lies back of the line of rivets, and I do not limit myself to the precise construction of these parts as shown.

I claim as my invention—

1. In combination with a boiler having a head with the inturned flange secured thereto, the boiler-front composed of a section *e* and the section *g*, the latter box-like in form and constituting the smoke-chamber *g'*, and

having in its rear wall the socket g^2 for the end of the boiler, all substantially as described.

2. In combination with a tubular boiler having the shell a, the head c, with inturned flange c', secured to said shell by rivets d, the section e of the boiler-front, and the hollow section g, with the boiler-socket g^2 in the rear wall, the edge of said socket lying back of the line of rivets d, all substantially as described.

3. In combination with a boiler having a flanged head secured therein, the lower front section e and the hollow upper front section g, having the boiler-socket g^2, the edge of which lies back of the front line of rivets, all substantially as described.

4. In combination with a boiler front and setting composed of the lower section e and the hollow upper section g, forming smoke-chamber g', and having a boiler-socket g^2 greater in vertical diameter than the boiler, the boiler having the flanged head secured therein by a line of rivets, the socket adjacent to the lower half of the boiler lying back of the front line of rivets, all substantially as described.

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Witnesses:
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