

(No Model.)

2 Sheets—Sheet 1.

N. W. PRATT.
STEAM BOILER SETTING.

No. 549,746.

Patented Nov. 12, 1895.

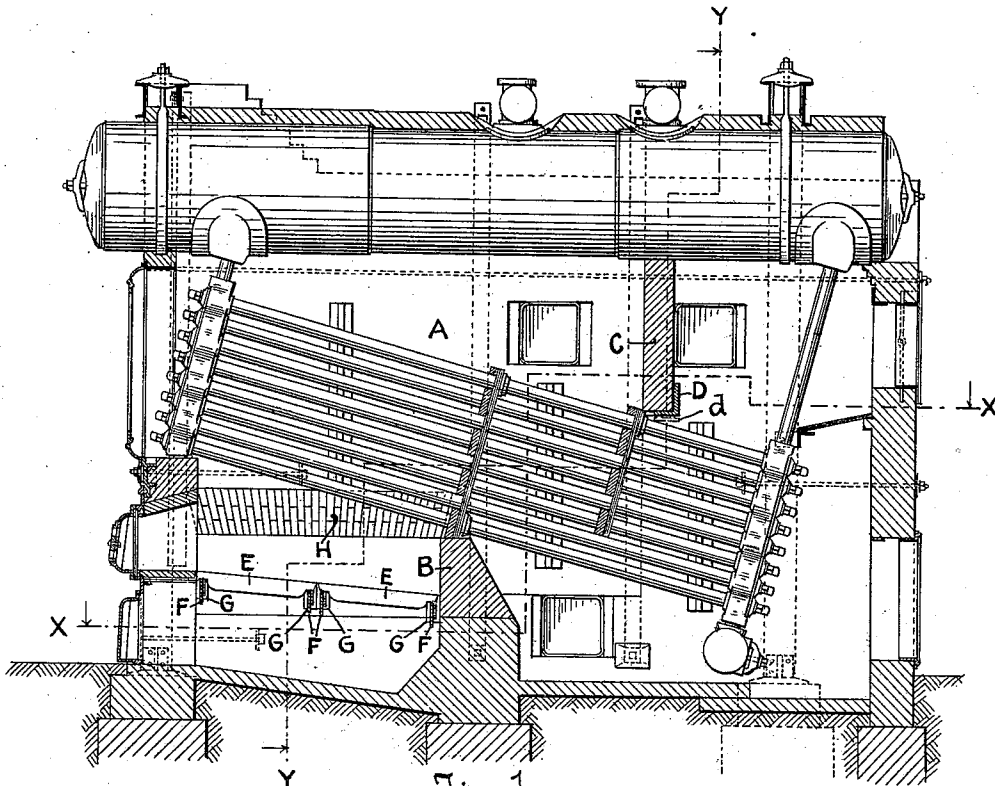


Fig. 1.

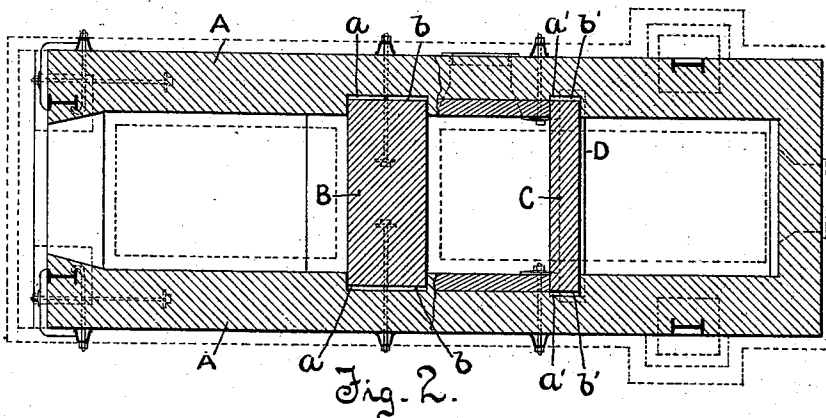


Fig. 2.

WITNESSES:

Chas. Hanemann,
Edson Salisbury Jones

INVENTOR

Nat W. Pratt

BY

Chas W. Jordan
ATTORNEY

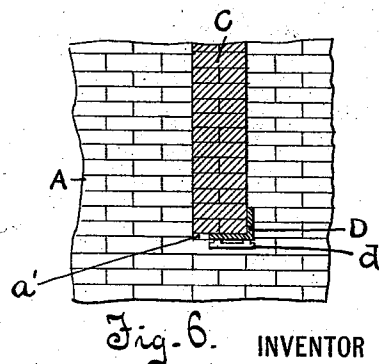
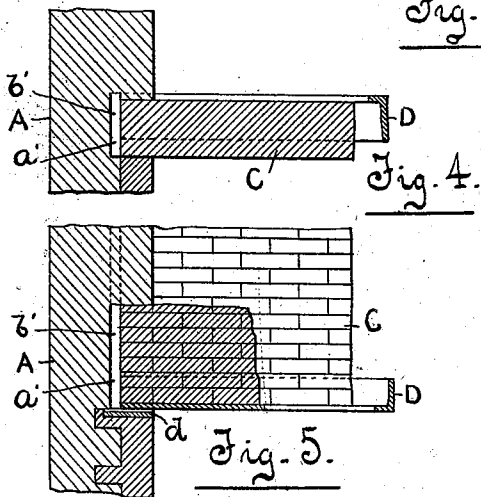
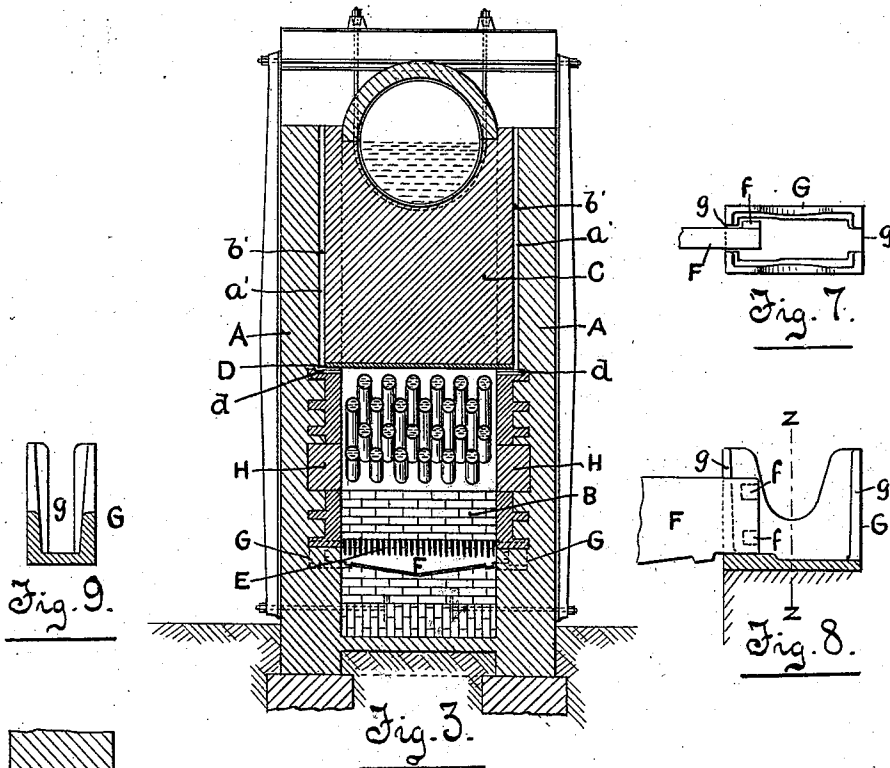
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WITNESSES:

Chas. Hanemann,
Edson Salistany Jones

Fig. 6. INVENTOR

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UNITED STATES PATENT OFFICE.

NAT W. PRATT, OF BROOKLYN, NEW YORK.

STEAM-BOILER SETTING.

SPECIFICATION forming part of Letters Patent No. 549,746, dated November 12, 1895.

Application filed February 11, 1895. Serial No. 538,034. (No model.)

To all whom it may concern:

Be it known that I, NAT W. PRATT, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Steam-Boiler Settings, of which the following is a specification.

This invention relates to the settings of steam-boilers; and the improvements consist in forming recesses in the side walls of the setting, so as to receive the ends of the usual transverse walls and beams, and in leaving a space between the ends of said parts and side walls, so that the longitudinal expansion of the former under the action of heat will not bulge the side walls; also, in so mounting the transverse grate-bar bearers or supports on the side walls as to allow of the longitudinal expansion of said bearers without their ends thrusting out the walls, and, further, in building into the side walls arches located at the top of the furnace, whereby the brick above said arches will be supported when the fire-brick lining of the furnace is removed after being damaged or burned out to be replaced by a new lining, all as herein-after described and claimed.

In the accompanying drawings, Figure 1 represents a central longitudinal section of a boiler-setting embodying the improvements. Fig. 2 shows a horizontal section of the same on line *x x* of Fig. 1. Fig. 3 represents a vertical transverse section of the same on line *Y Y* of Fig. 1. Fig. 4 represents in horizontal section a portion of one of the side walls and a part of the hanging bridge-wall and its supporting-beam, showing the recess in the side wall and the space between said wall and the end of the bridge-wall and beam. Fig. 5 shows a part of one of the side walls in vertical section and a portion of the hanging bridge-wall and its supporting-beam, partly in elevation and partly in section, illustrating how the bridge-wall and beam are combined with the side wall. Fig. 6 represents a portion of the side wall in elevation and the hanging bridge-wall and its supporting-beam in transverse section. Fig. 7 shows a top view of a portion of one of the grate-bar bearers and the box which receives the end of said bearer, so that the bearer may expand

longitudinally without damaging results. Fig. 8 represents a side view of such portion of the bearer and a vertical longitudinal section through the box. Fig. 9 shows a transverse section through said box on line *Z Z* of Fig. 8.

A A represent the side walls of the boiler-setting, which are usually composed of brick masonry.

B denotes the bridge-wall at the rear end of the furnace, which wall is composed of similar masonry.

As shown in Fig. 2, the side walls A are each provided with a recess *a*, the said recesses receiving the ends of the bridge-wall B, and between the ends of the bridge-wall and the side walls sufficient spaces *b* are left to allow the bridge-wall to expand longitudinally under the action of the heat of the furnace without its ends coming in contact with the side walls and bulging them outward.

The hanging bridge-wall C, of masonry, is supported on a beam D, which is preferably L-form in cross-section. The ends of this beam enter recesses *a'* in the side walls and preferably rest upon plates *d*, Figs. 5 and 6, so that the masonry immediately below the beam ends shall not be disturbed by the expansion and contraction of the beam under the varying action of heat from the furnace. The recesses *a'* are continued upwardly to the height of the wall C, as shown in Fig. 3, and between the ends of said wall, the ends of the beam, and the side walls sufficient spaces *b'* are left to allow the wall C and beam D to expand longitudinally without the ends of the said wall or beam coming in contact with the side walls and thrusting them outward.

The grate-bars E are usually supported upon transverse bearers F, the ends of which have heretofore been built into the side walls of the furnace. These bearers are subjected to intense heat and their longitudinal expansion is considerable. In order to provide for such expansion in a way to prevent the side walls of the furnace from being forced outward or otherwise damaged, I locate boxes G in the side walls, which boxes receive the ends of the bearers, as particularly shown in Figs. 7 and 8. The adjacent ends of these boxes are each furnished with a vertical slot *g*, (the ends of the bearers passing through

said slots and resting upon the bottoms of the boxes,) so as to keep the bearers in proper lateral relation, and the ends of the bearers are preferably provided with projecting lugs *f*, which prevent the bearers from being displaced endwise. Preferably, also, each end of a box *G* is vertically slotted, so that, if desired, the boxes may be turned end for end when one end thereof becomes damaged by the furnace heat. It will be seen, therefore, that during the expansion and contraction of the bearers under the action of varying heat the bearer ends will slide on the box-bottoms, thereby not disturbing the masonry below the bearer ends, and that the ends of the bearers will not come in contact with the side walls of the furnace to bulge them outward. This construction also enables the bearers to be easily inserted and removed without disturbing any of the masonry when the bearers are to be replaced by new ones.

As is well known, the side walls of the furnace of a boiler are lined with fire-brick, which has to be renewed from time to time as it burns out. With the usual construction of the side walls of a boiler-setting the removal of the fire-brick lining of the furnace has to be conducted with considerable care in order that the masonry overlying the part removed shall not fall or be displaced.

One of the features of my invention consists in so constructing the side walls as to enable the furnace-lining to be removed without danger of any displacement of the masonry above. This is accomplished by building a flat arch *H* (or a curved one) into each side wall at the proper height above the grate-bars, which arch will support the overlying masonry while that below the arch is removed, thereby rendering unnecessary the care which has had to be exercised heretofore to prevent damage to the upper masonry during such removal.

What I claim, and desire to secure by Letters Patent, is—

1. In settings for steam-boilers, the side walls furnished with recesses to receive the

ends of the transverse walls or beams, a space being left between the ends of such transverse parts and the side walls, whereby the said parts can expand longitudinally without forcing out the side walls, substantially as set forth.

2. In settings for steam-boilers, the side walls provided with plates to receive the ends of the beam for supporting the hanging bridge-wall, and furnished with recesses above said plates to receive the ends of said bridge wall and beam, a space being left between the ends of said wall and beam and the side-walls, substantially as and for the purposes specified.

3. The combination, with the side walls, of boxes located in said walls, and grate-bar bearers projecting beyond the inner faces of the walls into said boxes and resting thereon, whereby provision is made for the free longitudinal expansion of the bearers, substantially as set forth.

4. The combination with the side walls, of slotted boxes for receiving the grate-bar bearers and allowing a free longitudinal expansion thereof, and grate-bar bearers provided with lugs which confine the bearer-ends within said boxes, substantially as set forth.

5. The combination, with the side walls and the grate-bar bearers, of boxes located in said walls for receiving and allowing a free longitudinal expansion of said bearers, each end of a box being provided with projections for retaining the bearers in lateral position, whereby the boxes may be reversed in position when one end burns out, substantially as set forth.

6. In a boiler-setting, the side walls having arches built therein above the furnace-lining, whereby said lining may be removed without danger of disturbing the overlying masonry, substantially as set forth.

NAT W. PRATT.

Witnesses:

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CHAS. EDGAR MILLS.