

No. 781,901.

PATENTED FEB. 7, 1905.

M. T. J. OCHS.
BOILER SETTING.
APPLICATION FILED JUNE 4, 1904.

2 SHEETS—SHEET 1.

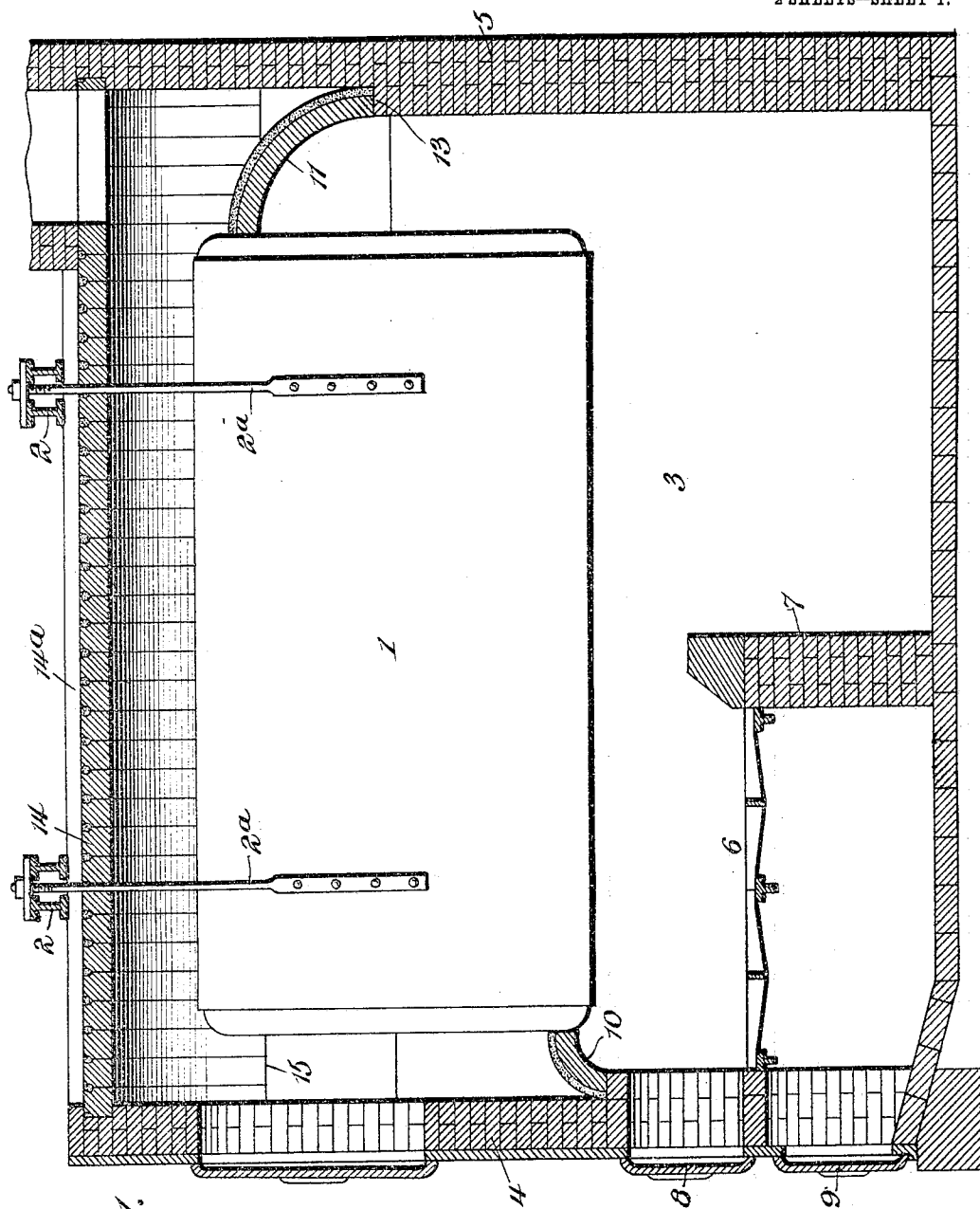


Fig. 1.

Witnesses

Howard W. Orr.
Ruijs Gulikn

M. T. J. Ochs, Inventor,

By

E. J. Siggers.

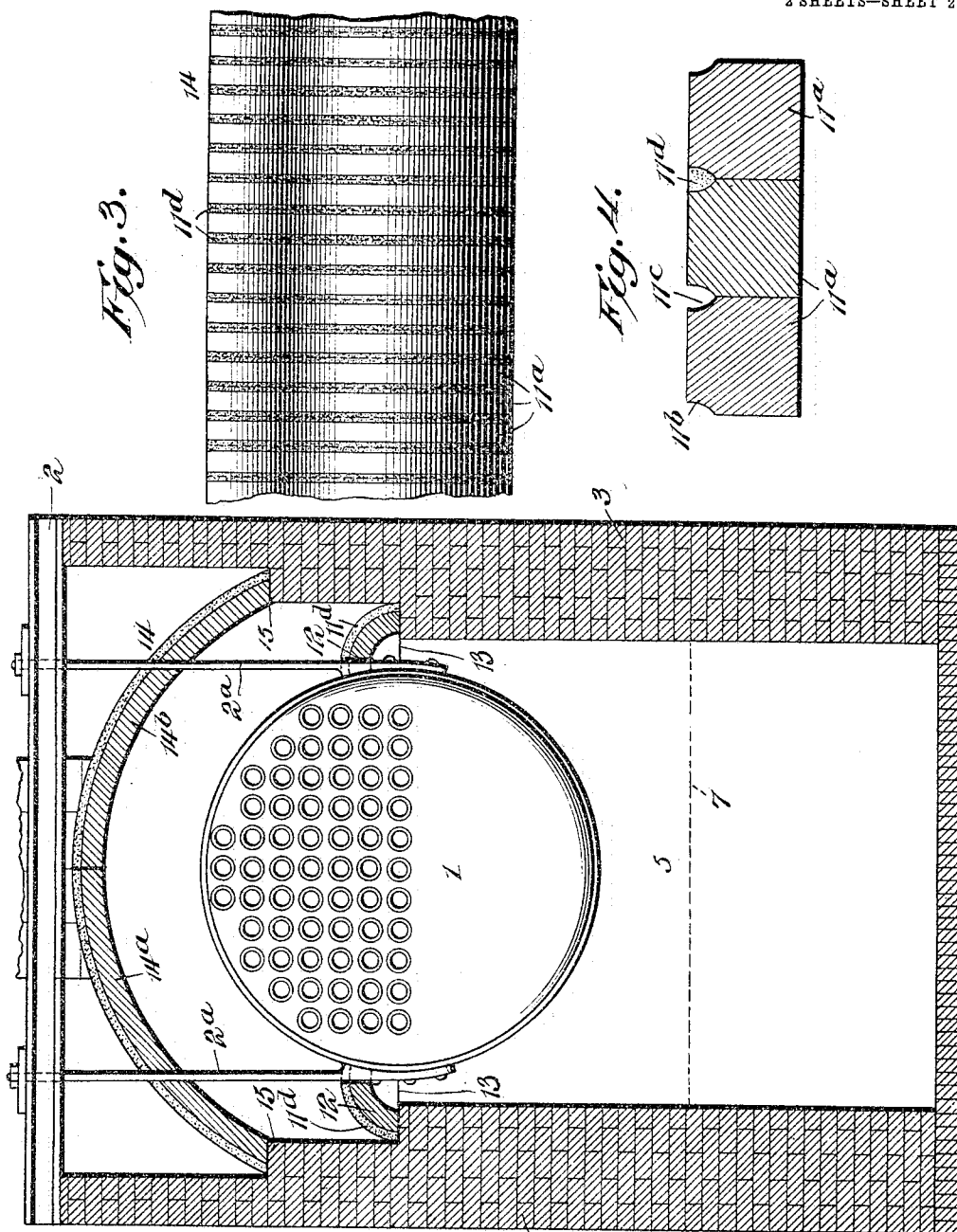
Attorney

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Witnesses
Howard W. Orr.
Louis G. Julihn

M. T. J. Ochs, Inventor,
By *E. J. Figgers*
Attorney

UNITED STATES PATENT OFFICE.

MILTON TILGHMAN JACOB OCHS, OF ALLENTOWN, PENNSYLVANIA.

BOILER-SETTING.

SPECIFICATION forming part of Letters Patent No. 781,901, dated February 7, 1905.

Application filed June 4, 1904. Serial No. 211,151.

To all whom it may concern:

Be it known that I, MILTON TILGHMAN JACOB OCHS, a citizen of the United States, residing at Allentown, in the county of Lehigh and State of Pennsylvania, have invented a new and useful Boiler-Setting, of which the following is a specification.

My present invention relates to a novel boiler-setting; and the primary object is to provide an arrangement whereby the front, rear, and side arches will accommodate the contraction and expansion of the boiler without liability of destruction or derangement.

As is well understood by those skilled in the art, the arches constituting elements of certain types of boiler-settings are built up of bricks, which constitute segments of the arch and which are bonded by mortar, cement, or the like. These arches extend from the setting-walls with which they are rigid to the boiler, and the expansion of the latter when hot necessarily tends to displace the arches and to leave the same partially or wholly unsupported at their inner side when the boiler contracts upon cooling. The result is that the weight of the arch being unequally distributed cracks appear, and in a comparatively short time the arch collapses or is so mutilated as to render it worthless.

In accordance with my invention, on the contrary, the boiler is supported independently of the walls and the latter are formed with ledges supporting the lower or outer edges of the arches, the upper inner edges of which rest against the boiler. The arches, whether front, rear, or side, are formed in a series of bonded sections, each of which extends the entire width of the arch—that is to say, from the upper to the lower edge thereof—so as to prevent the collapse of the arch by the crumbling of the bonding as in ordinary constructions. Not only are the arches formed by sections extending the entire width thereof, but each arch is movable independently of the walls, so that they may be moved back without injury when the boiler expands and will drop to their normal positions without endangering their integrity when the boiler contracts.

The invention further consists in certain

details of construction and arrangement to be hereinafter described, illustrated in the accompanying drawings, and succinctly defined in the appended claims.

In said drawings, Figure 1 is a sectional view of a boiler-setting, showing a boiler in elevation. Fig. 2 is a transverse section of the same subject-matter. Fig. 3 is a detail elevation of a portion of one of the arches and Fig. 4 is a detail sectional view of the same.

Like numerals are employed to designate corresponding parts in the several views.

1 indicates a boiler suspended from I-beams 2 by hangers 2^a and inclosed by a boiler-setting, including side walls 3 and front and rear end walls 4 and 5.

6 is the usual grate, 7 the bridge-wall, and 8 and 9 the fuel and ash doors, respectively.

The boiler 1 is separated from the several walls by considerable intervals, which are spanned by the front and rear arches 10 and 11 and the side arches 12. Each of these arches is of identical construction except as to dimensions, and each is mounted and acts or operates in the same way. I will therefore describe in detail the construction and mounting of the rear arch 11, which will be understood to apply with equal force to the arches 10 and 12.

The arch 11 is in the form of a quadrant—that is to say, it extends through an arc of ninety degrees—and instead of being built up in the usual manner is composed of a series of sections 11^a, arranged side by side and each extending continuously from side to side of the arch—that is to say, from the lower or outer edge of the arch to the upper inner edge thereof. These arch-sections may be constructed from a variety of materials—as, for instance, concrete, burned clay, &c.; but the clay is perhaps preferable. The arch-sections 11^a are square in cross-section, and their outer longitudinal corners are cut away, as indicated at 11^b, so that when two sections are brought together these cut-away corners will form a channel 11^c for a suitable cement bonding 11^d, extending continuously from side to side of the arch to unite the sections thereof and exposed at the outer face only of the arch. The bonding of the arch-sections, while

desirable, is not absolutely necessary, and even where bonding is employed it is not essential that it be arranged in the particular manner specified.

5 The arch, constructed as described, is disposed with its lower edge loosely supported by a ledge 13, extending from the wall 5, and the upper edge of the arch rests loosely against the boiler, as shown. The ledge 13 is preferably
10 formed by reducing the thickness of the wall 5 above the same, so that when the boiler expands the arch 11 may rock back. This bodily yielding of the arch to accommodate the expansion of the boiler serves to eliminate
15 the strains to which the arch is ordinarily subjected and which endanger its integrity. Furthermore, the arch, instead of being left unsupported when the boiler contracts, simply rocks back by its own weight to its normal position, being thus constantly supported
20 at both sides by the ledge 13 and the boiler, respectively.

It will be seen that in its broader aspect the invention comprehends the employment in a
25 boiler-setting of a loosely-supported arch—that is to say, an arch which has no rigid connection with the wall or boiler, so that it may move freely to accommodate both the contraction and expansion of the boiler. Viewed
30 as a freely-movable arch the invention embraces within its scope an arch of any construction, since this capability of free movement would obviously prolong the life of an arch constructed of several courses of bricks
35 in the usual manner; but by supplementing this free movement with a construction comprehending arch members extending continuously from side to side of the arch a maximum of durability is attained and the possibility of a collapse is entirely eliminated.
40 Furthermore, it will be noted that by uniting the arch-sections by lines of bonding extending continuously between the opposite side edges of the arch the latter will not collapse even though one or more of the arch-sections should become broken, since the
45 broken sections would be retained more or less securely by the bonding at opposite sides thereof.

50 As has been stated, the front and side arches of the setting are constructed and arranged like the arch 11; but it should be understood that instead of having the arches of arcuate form, as shown, any or all of them may be
55 straight—that is to say, the arch-sections may be straight longitudinally instead of curved, as with such an arrangement the advantages of the free movement and of the continuity of the arch-sections and bonding would still
60 be secured. As a matter of fact, this straight form of arch is desirable where the arches are of slight width, as at the front and sides of the boiler; but where the arch is comparatively wide it is preferable to give it the
65 arcuate form shown in the drawings.

While particularly advantageous in connection with those arches which directly contact with the boiler, my invention is also applicable to the construction of the top arch
70 14. This arch, as shown, is composed of two arcuate arch members 14^a and 14^b, meeting at the middle of the arch and resting at their outer lower edges upon ledges 15. This top arch may either constitute the upper outer
75 wall of a return-flue, or in that type of boilers wherein it is desired to confine the heat as much as possible the top arch may be imposed very close to the boiler, and, in fact, may even rest thereon. Preferably, however, the
80 top arch would in any event be slightly separated from the boiler, so as to define an intermediate air-space, which is very desirable and which is not possible ordinarily—that is to say, when boilers are covered with several
85 courses of brick or with asbestos.

It is thought that from the foregoing the construction of my boiler-setting and the many advantages flowing therefrom will be clearly understood; but while the present embodiment of the invention appears at this time
90 to be preferable I desire to reserve the right to effect such changes, modifications, and variations of the illustrated structure as may come fairly within the scope of the protection
95 prayed.

What I claim is—

1. A boiler-setting, including an arch adapted to be tilted by the expansion of the boiler and capable of swinging back to its normal position when the boiler contracts.

2. The combination with a wall having a ledge, of a boiler, and an arch having its opposite edges supported by the ledge and boiler, respectively, and capable of tilting movement with its ledge-supported edge as an axis, to
105 accommodate the expansion and contraction of the boiler.

3. A boiler-setting, including an arch arranged to be moved vertically by the expansion of the boiler and freely movable back to its normal position when the boiler contracts.

4. The combination with a wall having a ledge; of a boiler, and a detached arch loosely supported by the ledge and resting against the boiler and otherwise unsupported, where-
115 by said arch will move bodily to accommodate the expansion of the boiler and will drop back to its normal position as the boiler contracts.

5. A boiler-setting, including an unbacked arch member composed exclusively of contacting sections extending continuously across the same and terminating at its supported edges, and bonding uniting said sections at one face
120 only of the arch.

6. A boiler-setting, including an unbacked arch member composed of parallel contacting sections of arcuate form extending continuously across the same and bonded at the outer face only thereof.

7. A boiler-setting, including an arch movable to accommodate the contraction and expansion of the boiler and composed of non-metallic members extending continuously across the arch and terminating at the supported edges thereof, whereby each member is individually supported at its opposite ends.

8. The combination with a boiler and a setting therefor, including a wall; of a detached unbacked arch having its opposite edges supported by but detached from the boiler and wall respectively, and otherwise unsupported, said arch being composed exclusively of parallel contacting sections extending continuously across the arch.

9. A boiler-setting, including an arch composed of contacting non-metallic sections extending continuously across the arch from one supporting edge to the other and bonded at one face only of the arch.

10. A boiler-setting, including an arch movable to accommodate the expansion and

contraction of the boiler, and composed of non-metallic contacting sections of longitudinally-arcuate form extending continuously across the arch and bonded at the outer face only thereof.

11. A boiler-setting, including an arch composed of parallel longitudinally-arcuate members arranged side by side in contact and of substantially square cross-sectional contour, with the adjacent outer corners of the sections recessed to form channels, and each section extending continuously across the arch from one supported edge thereof to the other, and bonding located in the channels.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MILTON TILGHMAN JACOB OCHS.

Witnesses:

R. L. SCHIFFERT,
GEO. L. SMITH.