

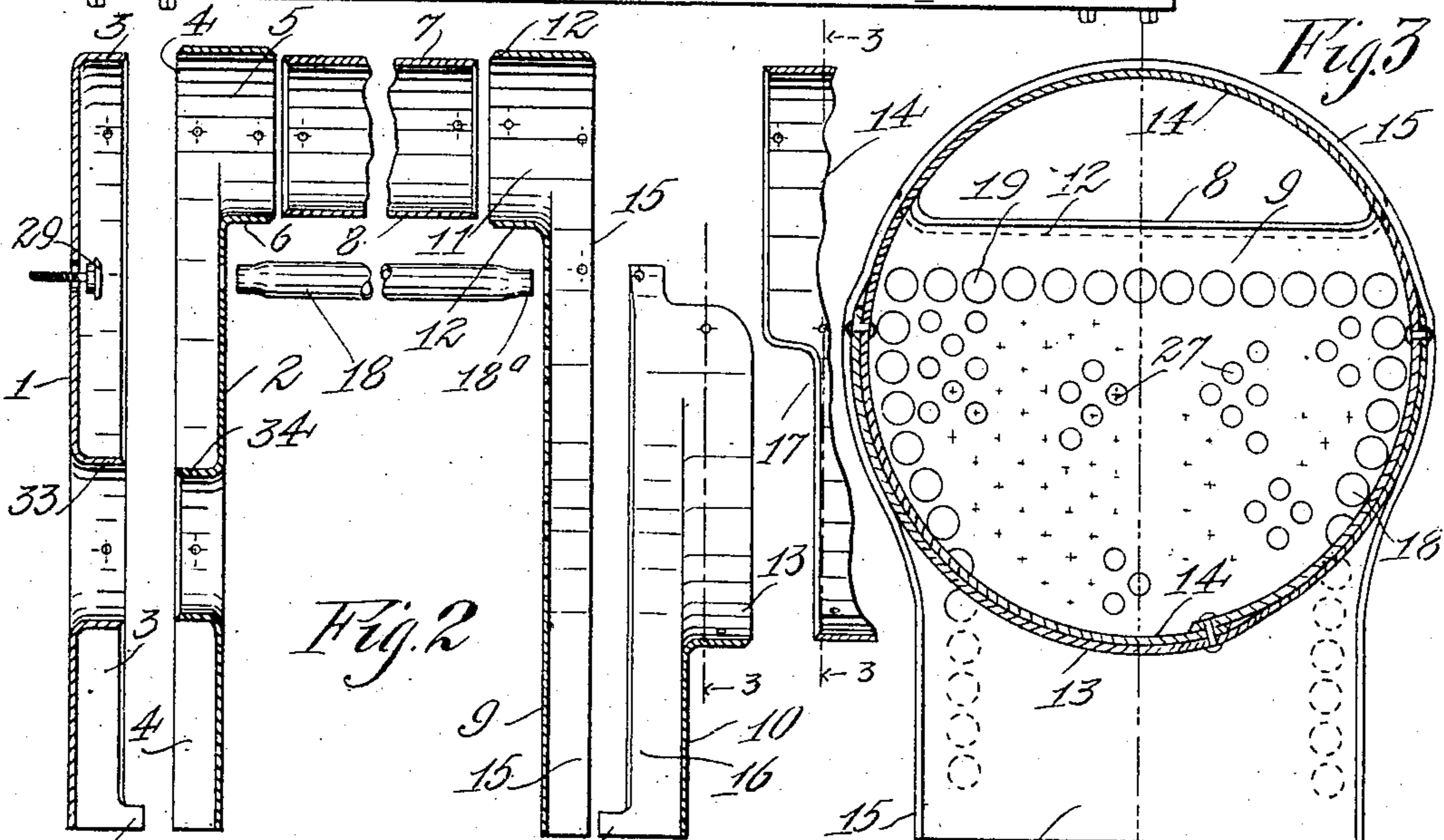
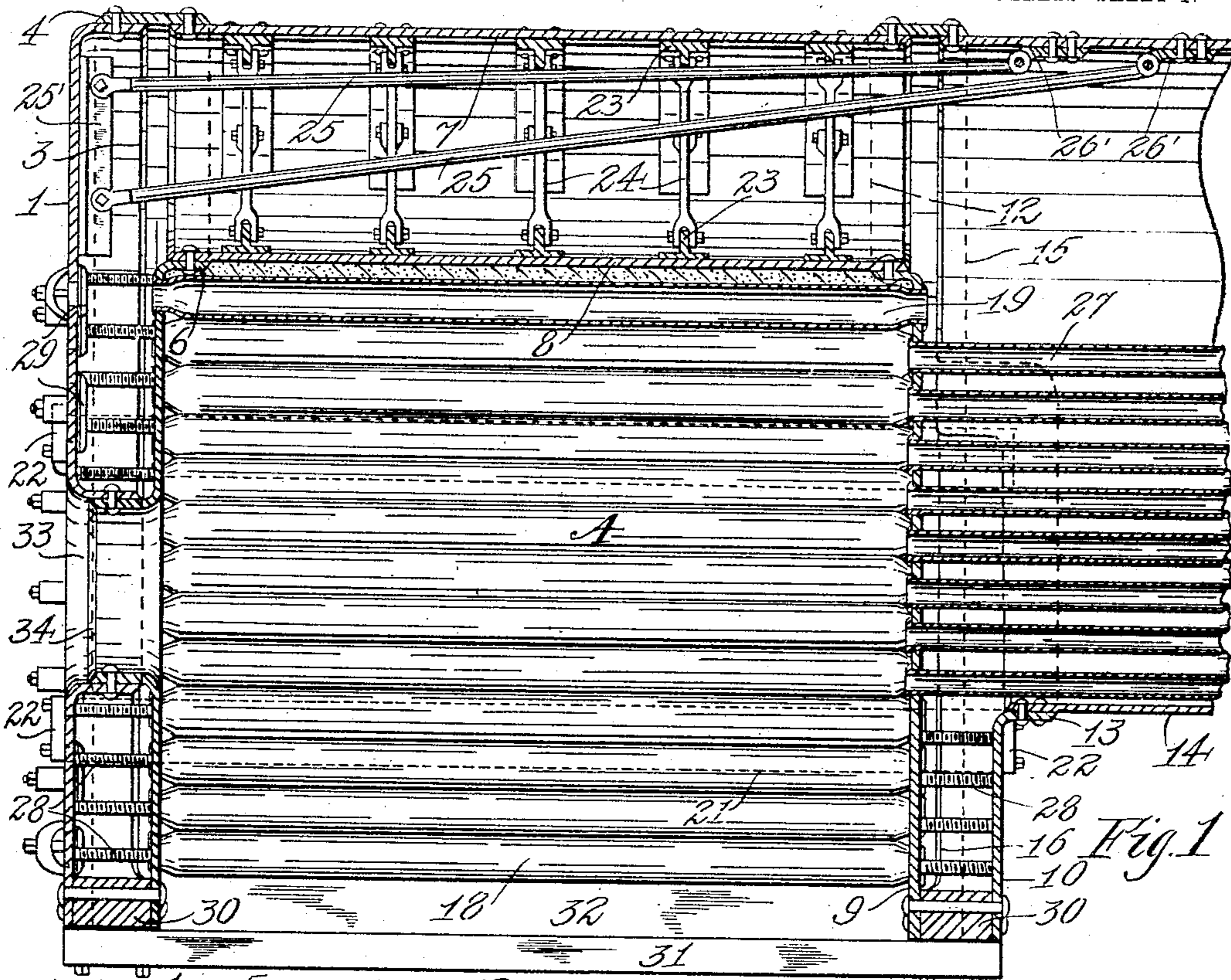
No. 777,753.

PATENTED DEC. 20, 1904.

R. SCHELIGA.
FIRE BOX FOR BOILERS.
APPLICATION FILED JULY 2, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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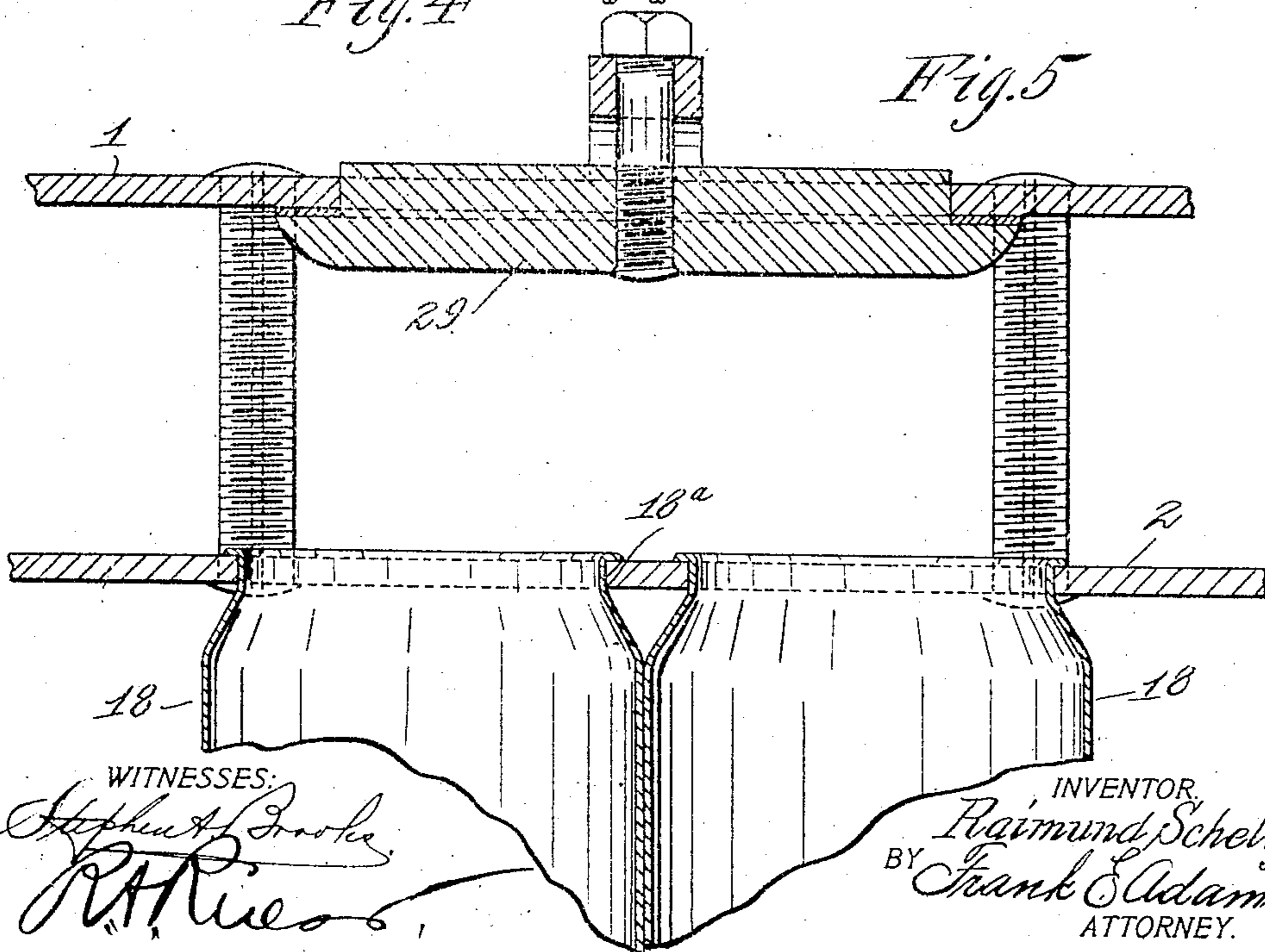
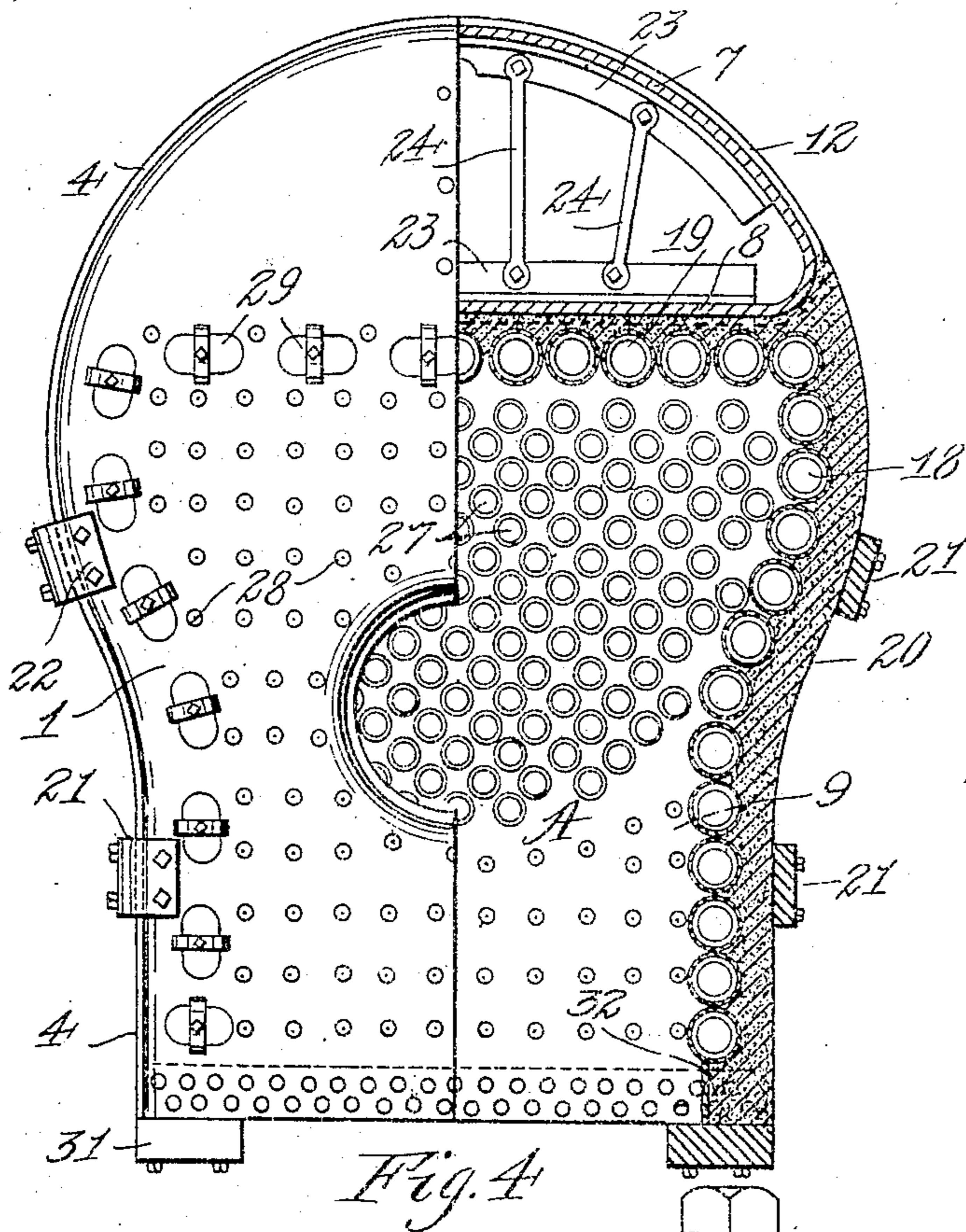
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WITNESSES:

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UNITED STATES PATENT OFFICE.

RAIMUND SCHELIGA, OF MARSHALL, TEXAS, ASSIGNOR OF TWO-THIRDS
TO R. A. REID AND T. W. REID, OF BELLINGHAM, WASHINGTON.

FIRE-BOX FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 777,753, dated December 20, 1904.

Application filed July 2, 1904. Serial No. 215,154.

To all whom it may concern:

Be it known that I, RAIMUND SCHELIGA, a citizen of the United States of America, residing at 502 Railroad avenue, Marshall, in the county of Harrison and State of Texas, have invented certain new and useful Improvements in Fire-Boxes for Boilers, of which the following is a specification.

My invention relates to improvements in steam-boilers, and has special reference to fire-boxes therefor; and the primary object thereof is to provide a construction wherein the water-heating surface is materially increased over the ordinary construction of fire-box, thereby greatly facilitating the heating of the water, with a reduction in the consumption of fuel.

A further object is to provide effective means for compensating for the expansion and contraction of the walls of the fire-box, thereby obviating to a great degree the breaking of rivets which unite the same.

Further, the invention consists in providing a strong and durable fire-box which is of comparatively simple and inexpensive construction.

Further objects and advantages will be set forth in the following description, and those features of construction upon which I desire protection will be defined in the appended claims.

In the accompanying drawings, forming a part of this specification, and wherein like characters of reference indicate like parts throughout the several views, Figure 1 is a fragmentary view, in longitudinal section, of my improvement. Fig. 2 is a similar view thereof, with the several parts disassembled and the water-tubes, flues, and braces removed. Fig. 3 is a view in vertical cross-section on the line 3-3 of Fig. 2 with the boiler-shell resting on and secured to the outwardly-projecting flange of the forward plate of the forward or inner water-leg of the fire-box. Fig. 4 is a sectional rear elevation of my improvement, one half of the figure being in elevation and the other half in section; and Fig. 5

is a fragmentary sectional view illustrating the particular arrangement and formation of the end portions of the water-tubes and the adjacent hand-holes.

The fire-box is referred to in a general way by A, and I form the end walls thereof of spaced-apart plates, the rear wall of the fire-box embodying plates 1 and 2, which are formed with oppositely-disposed edge flanges 3 and 4, respectively, the latter of which telescopes the former and is riveted thereto, as clearly shown in Fig. 1 of the drawings. The plate 2 in its upper portion is formed with an opening 5, and said flange 4 encircles the end and top portions thereof on one side of the plate. On the opposite or forward face of the plate this opening is entirely encircled by a forwardly-projecting flange 6, which at its top and side portions forms a mere continuation of the adjacent portion of said flange 4. The top wall is formed by an open hollow shell, the upper portion or boiler crown-sheet 7 of which is outwardly curved and has its lower edges merging in a straight horizontally-disposed inner wall or fire-box crown-sheet 8, and the rear end of this shell or top wall is received within the flange 6 and riveted thereto, a slight space being provided between this end of said shell and the adjacent portion of the flange 3 of the rear wall to allow for expansion. The forward end wall is composed of plates 9 and 10, plate 9 having an opening 11 and an encircling flange 12 therefor, which corresponds to the arrangement of the opening 5 and flange 6 of the plate 2 of the rear fire-box wall, and within this flange 12 is received and riveted the forward end of the shell or top wall. The plate 10 is of less height than its companion plate 9 and has its upper portion formed with a semicircular cut-out portion, from the edge of which projects a forwardly-extending flange 13, the same forming a seat for the horizontal cylindrical locomotive-boiler shell 14, which is preferably riveted thereto. Edge flanges, as 15 and 16, are provided on the contiguous faces of the plates 9 and 10, respectively, the flange 16 being re-

ceived within the flange 15, and, as will be observed in Fig. 2 of the drawings, this flange 15 is similar in construction and arrangement to the flange 4, the same extending entirely
5 around the side and top edges of the plate 9.

In my improved construction I desire to have the shell 14 secured also to the flange 15, and in order that it shall not obstruct the passage of the water into the water-space of the
10 front wall of the boiler I cut away the lower portion of its rear end, as at 17.

Thus far I have merely described the top and end walls of my improvement, and with reference to the side walls (see Figs. 4 and 5)
15 it is to be noted that they are formed of vertical rows of horizontally-disposed water-tubes 18, arranged in contacting relation one with another, and in order to further increase the water-heating surface I extend a row, as 19,
20 of these tubes across the interior of the boiler, the same forming the top wall of the fire-box. The ends of the tubes are preferably contracted, as at 18^a, and are secured, as by swaging, to the plates 2 and 9, respectively, of the
25 front and rear walls of the fire-box. (See Fig. 5.) Asbestos or other heat-retaining material, as 20, is placed while in a plastic condition on the exterior of the tubes 18 and also between the row of tubes 19 and the fire-box
30 crown-sheet, and when this material assumes its normal hardened condition effective heat-retaining-walls are formed, and thus the waste of heat is reduced to a minimum. Ties, as 21, are arranged to the exterior of the side walls
35 and are secured in any suitable manner, as at 22, to the boiler end walls.

To the crown-sheet of the fire-box and the crown-sheet of the boiler, respectively, I secure the T-bars 23, and the web portions
40 thereof are pivotally united by brace-links 24, thus permitting motion of the upper portion of the shell to the crown-sheet of the fire-box, and, further, to obviate the defects incident to the longitudinal thrust from the rear wall,
45 due to expansion, I unite by stay-rods 25 the shell 14 to said rear wall of the fire-box, said rods having their rear ends pivoted to a T-bar 25, secured to the plates 1 of the rear wall, and their forward ends pivoted to brackets
50 26', secured to the inner face of the boiler 14.

The component plates of the front and rear walls of the boiler are spaced apart by lugs 26, formed on the lower extremities of the flanges 3 and 16, respectively.

55 The usual flues 27, tie-bolts 28 for the fire-box walls, and hand-holes and closures 29 therefor are employed in my construction, and at the lower ends of the front and rear fire-box walls, between the component plates thereof,
60 I mount the usual mudsills 30.

In view of the foregoing description it will be apparent that by constructing the front and rear walls of the boiler hollow water-legs sus-

ceptible to direct action of the heat are provided, and, further, the side walls being likewise situated and communicating with the first-named water-legs, that a perfect circulation can be maintained with a maximum heating-surface exposed to the flames.

At convenient points openings in the plates 70 1 and 2 are provided, and in order to provide a suitable feed-opening I surround the plate-openings with flanges 33 and 34, which are secured together in a telescoped condition.

In mounting my improvement in position 75 any desirable foundation can be employed. In the present illustration, however, I illustrate for the sake of convenience beams, as 31, for this purpose, and resting on these beams and secured in any desired manner are plates 80 32, which close the open space between the lowermost pipes of the vertical rows and the supporting-beams, thereby preventing the asbestos from running into the fire-box when yet in a plastic condition. 85

In the foregoing description I have illustrated a construction capable of carrying out the various functions assigned thereto; but it will be obvious that various changes may be made without departing from the spirit of my 90 invention, and I therefore reserve the right to make such alterations and changes as fall within the scope of the appended claims.

Having thus fully described my invention, what I claim as new, and desire to secure by 95 Letters Patent, is—

1. In a steam-boiler, a fire-box having front and rear walls formed of spaced-apart flanged plates, the flanges of one plate of one wall projecting between the flanges of its companion 100 plate and secured thereto, the outer plate of the forward wall having its upper end cut out and encircled by a flange, the inner plates of the respective walls being formed with openings surrounded by flanges, and tubes forming the side walls of the fire-box having their 105 ends secured in said end walls, in combination with the boiler secured to the last-named flange of the outer plate of the said front wall.

2. In a steam-boiler, a fire-box having end 110 walls each of which is formed of a pair of spaced-apart plates, each pair of plates having edge flanges, the flanges of one of the plates lying between and secured to the flanges of the other companion plate, the outer plate 115 of the front wall being formed with an opening, a flange surrounding the same, the inner plates of the end walls being formed with openings, flanges encircling the same, a hollow shell having its ends secured to the last-named 120 flanges, the rear end of said shell being spaced from the flange of the outer plate of the rear end wall, and side walls in communication with said end walls, in combination with a locomotive-boiler having its rear 125 end secured to the last-named flange of the

outer plate of said front wall, said boiler being cut away at a point within the front wall of the fire-box.

3. In combination with the end walls and
5 the top wall of fire-box, and the locomotive-boiler secured to the forward end wall and having its rear end spaced from the adjacent end of the top wall, said top wall being in the form of a hollow shell, tie-bolts pivotally con-

nected to the boiler and the rear end wall, and 10
brace-links pivoted to the top and bottom of said hollow top wall.

In testimony whereof I affix my signature in presence of two witnesses.

RAIMUND SCHELIGA.

Witnesses:

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J. D. MALLETT.