

No. 791,561.

PATENTED JUNE 6, 1905.

T. B. LANIER.
STEAM BOILER.

APPLICATION FILED MAY 11, 1904.

2 SHEETS—SHEET 1.

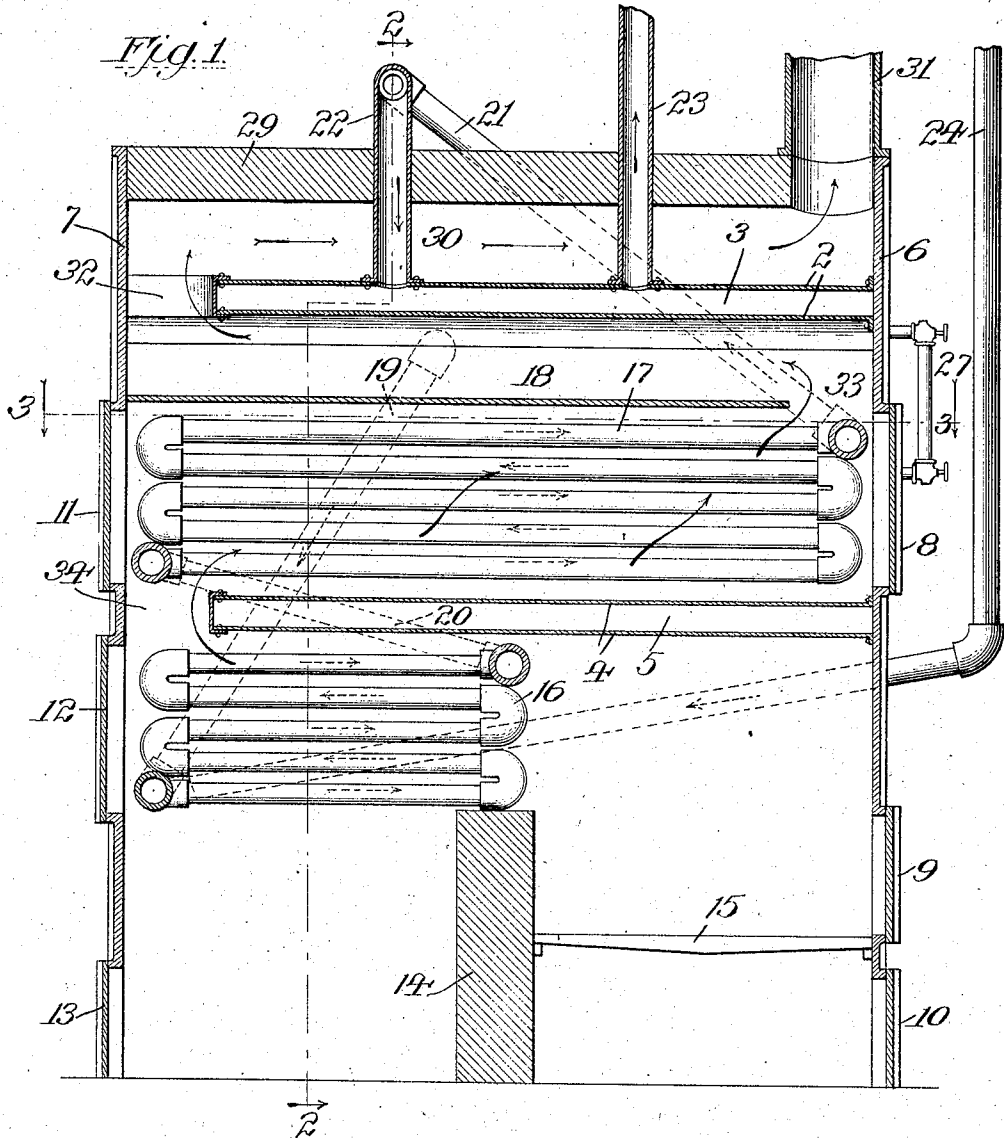
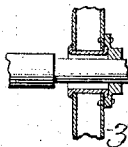


Fig. 2



Witnesses:

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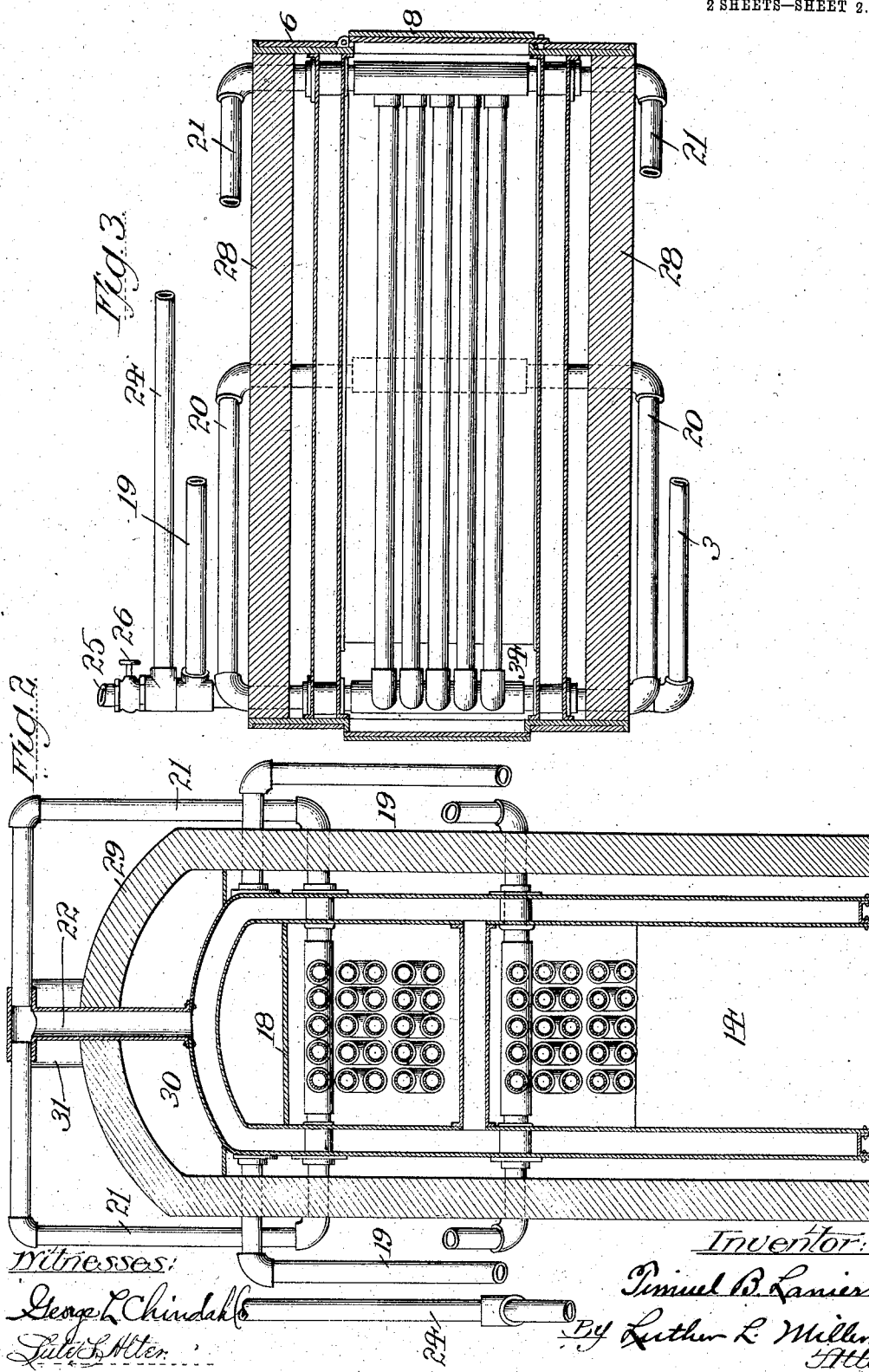
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UNITED STATES PATENT OFFICE.

TIMUEL B. LANIER, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
WILLIAM GOOLDEN, OF CHICAGO, ILLINOIS.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 791,561, dated June 6, 1905.

Application filed May 11, 1904. Serial No. 207,431.

To all whom it may concern:

Be it known that I, TIMUEL B. LANIER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a specification.

The object of this invention is the production of an improved steam-boiler.

In the accompanying drawings, Figure 1 is a longitudinal vertical central section taken through a steam-boiler embodying the features of this invention. Fig. 2 is a transverse vertical section on dotted line 2 2 of Fig. 1.

Fig. 3 is a horizontal section on dotted line 3 3 of Fig. 1. Fig. 4 is a detail sectional view showing the means for passing the steam-pipes through the water-jacket. This joint is shown in side elevation in Figs. 2 and 3.

In the construction of this boiler I provide a metallic body portion 1, comprising the double side and top walls 2, forming a water-jacket 3 at the sides and top of the body portion, also the double connecting-walls 4, extending horizontally between the side walls 2, and providing a water-arch 5, communicating with the two sides of the water-jacket 3. The forward and rear ends of the body portion 1 are closed by metallic walls 6 and 7, the front end having a door 8, closing a cleaning-opening, a door 9, closing a fuel-opening, and a door 10 to close the opening to the ash-pit. The rear wall 7 is provided with cleaning-openings closed by suitable doors 11, 12, and 13.

About midway of the length of the boiler and extending transversely across it is a bridge-wall 14. Supported upon the forward side of said bridge-wall and upon the inner side of said front wall is a fire-grate 15. Within the body portion are two horizontally-extending box-coils 16 and 17, the former being only about one-half the length of the latter and at its forward end resting upon and extending rearwardly from the bridge-wall 14. The upper coil 17 is supported above the water-arch 5, the lower coil 16 lying below said water-arch. A baffle-plate 18, secured to the rear end wall 7 and the inner side walls 2, lies in a horizontal plane directly above the upper coil

17. The lower header of the lower box-coil 16 is connected at its opposite ends with the interior of the body portion 1 by means of pipes 19, the upper ends of which pipes communicate with the water-jacket 3. The upper header of the lower box-coil 16 and the lower header of the upper coil 17 are connected at their opposite ends by means of pipes 20. Pipes 21 connect the upper header of the upper coil with a steam-pipe 22, the lower end of which pipe communicates with the upper part of the water-jacket 3, which in practice is the steam-dome of the boiler. The steam-dome is also connected, by means of the supply-pipe 23, with the heating system. Condensation from the system returns through the condensation-pipe 24 to the lower header of the lower coil. A supply-pipe 25 connects the lower header of the lower coil with the city water-supply or any other suitable water-supply, and a valve 26 in said pipe regulates said supply. A water-glass 27 of ordinary construction communicates with the interior of the water-jacket 3.

The body portion 1 is incased at its sides by means of the brick walls 28, joined by means of the arch 29.

This arch lies somewhat above the top of the body portion 1, providing a smoke-flue 30 between said body portion and said arch, and the ends of said arched structure are closed by the end walls 6 and 7. Near the forward part of the boiler a smoke-stack 31 is attached, which smoke-stack communicates with the smoke-flue 30. An opening 32 is provided at the rear end of the boiler in the upper side of the water-jacket. The forward end of the baffle-plate 18 falls short of the front wall 6, and the water-arch 5 is shortened at its rear end to provide draft-openings 33 and 34. Smoke passes from the fire-box above the grate 15 between the pipes of the lower box-coil 16, through the opening 34 at the end of the water-arch 5, between the pipes of the upper coil 17, forwardly under the baffle-plate 18, through the opening 33, rearwardly under the top of the water-jacket 3 to the opening 32 therein, thence forward through the flue 30 and into the smoke-stack

31. The course taken by the smoke through the boiler is indicated in Fig. 1 by the full-line arrows and the circulation of water in the coils by the dotted-line arrows. The pipes 5 23 and 24 extend to and from the heating or other system with which the boiler is connected.

Access to the interior of the boiler to clean or remove the coils is had by means of the 10 doors 8, 11, and 12, and to clean and remove soot from beneath the coils the door 13 is provided.

My invention is not restricted to the precise construction and arrangement of parts herein 15 shown and described, as such construction and arrangement may be varied without departing from the spirit and scope of my invention.

I claim as my invention—

20 1. In a steam-boiler, in combination, a water-jacket comprising two sides connected at their upper ends by an arch portion; a lower coil and an upper coil supported in said water-jacket, the upper part of said jacket forming 25 a steam-space; a water-arch extending from side to side of the water-jacket between said coils and establishing communication between the two sides of the water-jacket; means of communication between said coils; and means 30 of communication between said upper coils and the upper part of said water-jacket.

2. In a steam-boiler, in combination, a water-jacket comprising two sides connected at their upper ends by an arch portion; a bridge-wall in said water-jacket; a lower box-coil 35 extending rearwardly from said bridge-wall, the forward end of said box-coil being substantially aligned with said bridge-wall; a water-arch extending across said water-jacket and 40 establishing communication between the two sides thereof, said water-arch extending above said lower box-coil; an upper box-coil extending substantially from end to end of said water-jacket above said water-arch; means of 45 communication between said box-coils; and means of communication between said upper box-coil and the upper part of said water-jacket.

3. In a steam-boiler, in combination, a water-jacket; a lower box-coil and an upper box-coil supported in said water-jacket, each of 50 said coils having an upper header at one side and a lower header at its other side; a pipe connecting the upper header of the lower box-coil with the lower header of the upper box-coil; and a pipe connecting the upper header 55 of the upper box-coil with said water-jacket.

4. In a steam-boiler, in combination, a water-jacket; a lower box-coil and an upper box-coil supported in said water-jacket; a water- 60 arch located between said box-coils and communicating with said water-jacket; a pipe connecting the upper header of the lower box-coil with the lower header of the upper box-coil; and means of communication between 65 said upper box-coil and said water-jacket.

5. In a steam-boiler, in combination, a water-jacket; an inclosing casing; a lower box-coil and an upper box-coil supported in said 70 water-jacket; means of communication between said box-coils; means of communication between said upper box-coil and said water-jacket; and a baffle-plate extending horizontally above the upper box-coil and between it 75 and the water-jacket, said jacket being cut away to provide an opening between the interior of the jacket and the interior of the inclosing casing.

6. In a steam-boiler, in combination, a water-jacket comprising two sides and a top; a 80 lower box-coil and an upper box-coil supported in said water-jacket; a water-arch located between said box-coils and communicating with said water-jacket, said jacket being cut away at its rear end to provide an open- 85 ing for the passage of the products of combustion; a baffle-plate extending horizontally between the upper box-coil and the top of the water-jacket; means of communication between said box-coils; and means of communi- 90 cation between said upper box-coil and said water-jacket.

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Witnesses:

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