S. L. Wiegand,

Steam-Boiler Water-Tube.

No. 81,566. Patented Aug. 25, 1868.

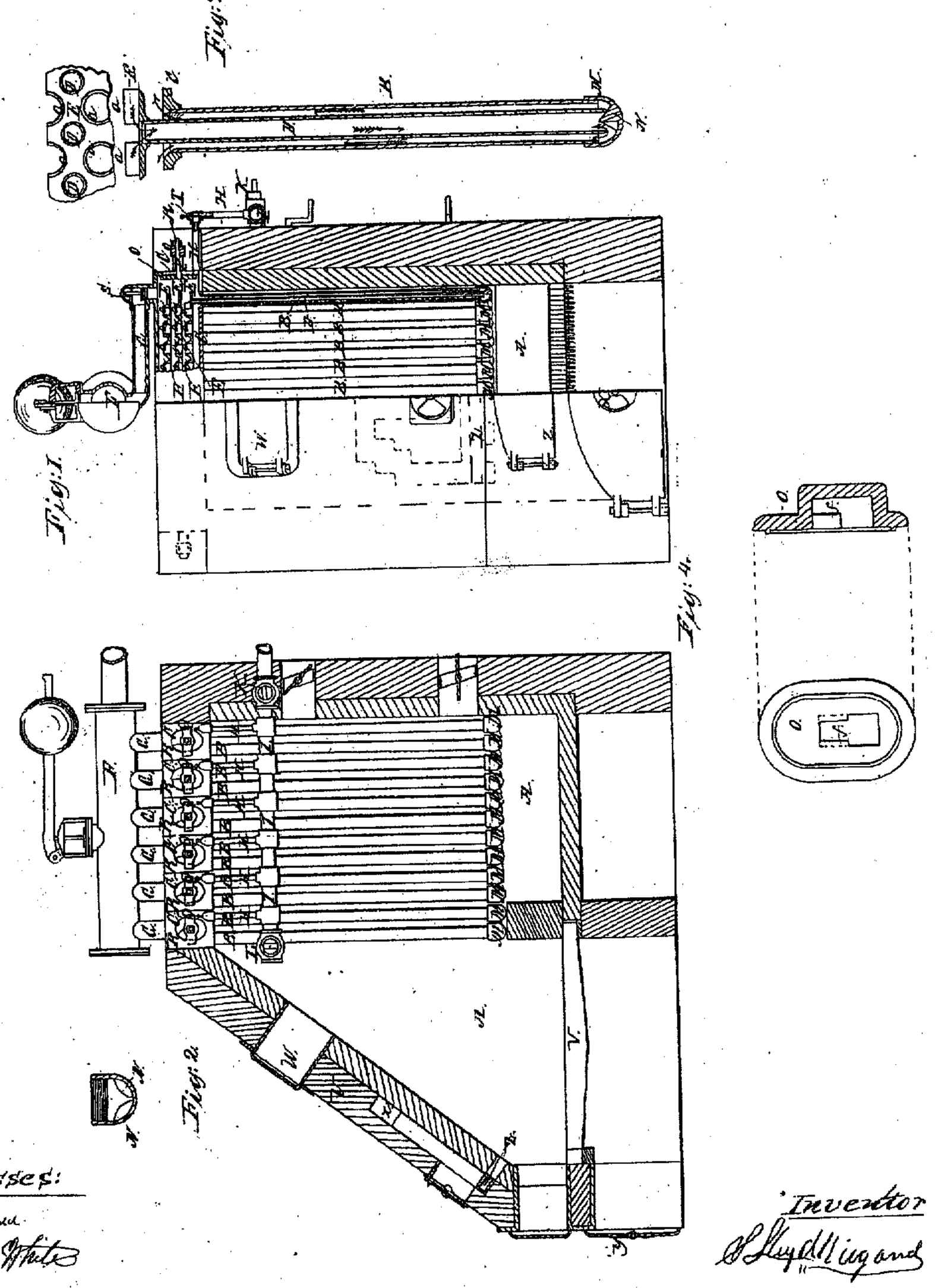

Fig: 1.

Fig: 2.

Fig: 4.

Witnesses:

Jno. F. Biddle

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S. LLOYD WIEGAND, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WALTER J. BUDD, OF SAME PLACE.

Letters Patent No. 81,566, *dated August* 25, 1868; *antedated August* 13, 1868.

IMPROVEMENT IN STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, S. LLOYD WIEGAND, of the city of Philadelphia, and State of Pennsylvania, have invented certain useful Improvements in the Construction of Steam-Generators, and the furnaces for heating the same; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon.

Figure 1 shows a front elevation, partly in section.

Figure 2 shows a side elevation, partly in section.

Figure 3 shows an enlarged section of one of the tubes and the adjacent parts.

The nature of my invention relates to a system of constructing and modifying the steam-generator, for which Letters Patent of the United States, No. 67,621 were granted to myself, by which means I am enabled to make a steam-generator conveniently portable for shipment, and more effectually to burn the fuel, and utilize the heat so produced, and the improvement of some of the minor details for promoting the safety and convenience of use of the apparatus.

This steam-generator consists of a series of tubes B, placed in rows, in connection with strong steam-tight vessels C, by screwing them on, or by any other known means of making a steam and water-tight joint, and closed at the lower ends by means of the caps M.

Inside of the tubes B are other tubes D, of smaller diameter, extending from the upper surface of the perforated plates E, in the tanks or vessels C, nearly to the bottoms of the caps M, from which they are supported and held centrally in position by projection N, which are most conveniently formed in the caps M, or they may be made in a separate piece, and placed in the cap.

In the pipes G, leading from the several sections, C, of the steam-generator to the main steam-pipe or steam-drum F, I place valves S, opening upwards or outwards from the tanks C, so that whilst steam can readily pass from the several sections C to the steam-drum F, it cannot return therefrom. I also insert in the several branches H of the water-supply pipe I, valves T, opening towards the several sections or tanks C, and arranged so that water cannot return from any of the tanks C to the water-supply pipe I.

The functions of the valves T are to admit the water to the several sections C, and of the valves S, to permit the steam to pass to the main steam-pipe F, and in the event of the rupture of any of the tubes B or cups M, to prevent the contents of any of the other sections than the one immediately connected with the broken part being discharged through the vent thus made.

Figure 4 shows an enlarged view of the hand-hole plate O, which is cast with a pocket, *f*, to receive the head of the bolt P, by means of which it is drawn by the nut R and yoke or bridge Q, to its bearing, and possesses this advantage over such plates as heretofore made for same purpose, that by reason of the bolt-head fitting easily in a socket, instead of being rigidly fastened to the plate, sufficient motion takes place between the head of the bolt P and the plate O, to permit the rim of the plate O to press equally against all parts of its seat.

The arrangement of the furnace A is another point of peculiar advantage in this invention. The oblique front wall U leaves between itself and the grates V, and the front row of tubes B, a space in which gases are formed from the fuel, and is in such a position as to radiate and reflect heat upon the tubes B of the generator, and the gases which pass into the combustion-chamber below the tubes, and by this means a thorough combustion of gases among all the tubes is effectually secured.

The front wall U may sometimes be advantageously made in a curved form, as shown by the dotted lines in the drawing, and provided with a door, W, to feed in fuel when burning shavings or saw-dust, &c.

The combustion of fuel placed upon the grates V, and the supply of gases to the combustion-chamber over the grate, and also below and among the tubes, are controlled and regulated by the register X admitting air to the ash-pit, which in other respects is air-tight.

Air is admitted above the fuel in regulatable quantities, and heated and distributed by passing through

Extending the whole length of the screen, inside of its wire covering, they answer the purpose of beaters, the grain falling from one to the other of them, as the screen revolves, and the dirt, &c., being thus thoroughly separated from it.

They, also, spreading from each other, serve as conveyers to carry the grain along towards the large end of the screen.

The sieve s' may vary in fineness from one end to the other, if desired, so as to separate the different species of impurities at different points.

The machine has been very thoroughly tested, and found to work in every respect in the most satisfactory manner.

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

1. The arrangement of the sieve I, with the hopper C, conveyer D, and screen B, substantially as described.

2. The arrangement of the hopper C, sieve I, screw-conveyer D, screen B, incline J, and spouts E and F, substantially as described.

To the above specification of my improvement I have signed my hand, this 24th day of February, 1868.

J. H. H. WISEHEART.

Witnesses:

H. C. BARGER,

R. M. FLOYD.