No. 659,540. Patented Oct. 9, 1900.

T. G. LOVEGROVE.

SEDIMENT COLLECTOR FOR BOILERS.

(No Model.) (Application filed Dec. 11, 1899.)

2 Sheets—Sheet 1.

Fig. 1.

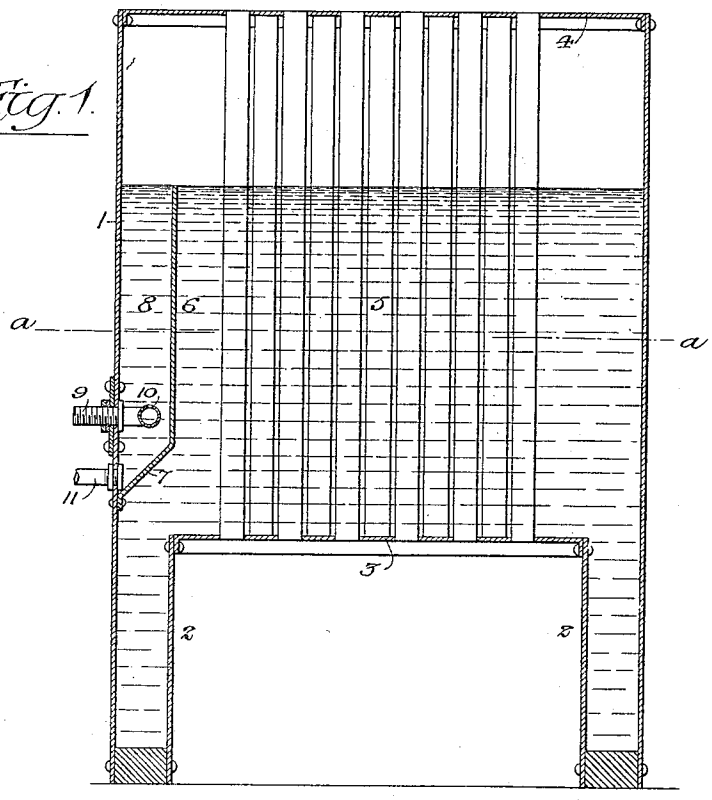

Fig. 2.

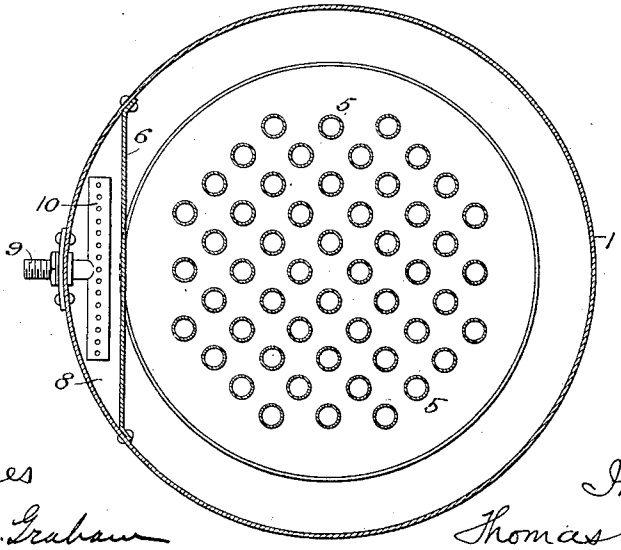

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Fig. 4.

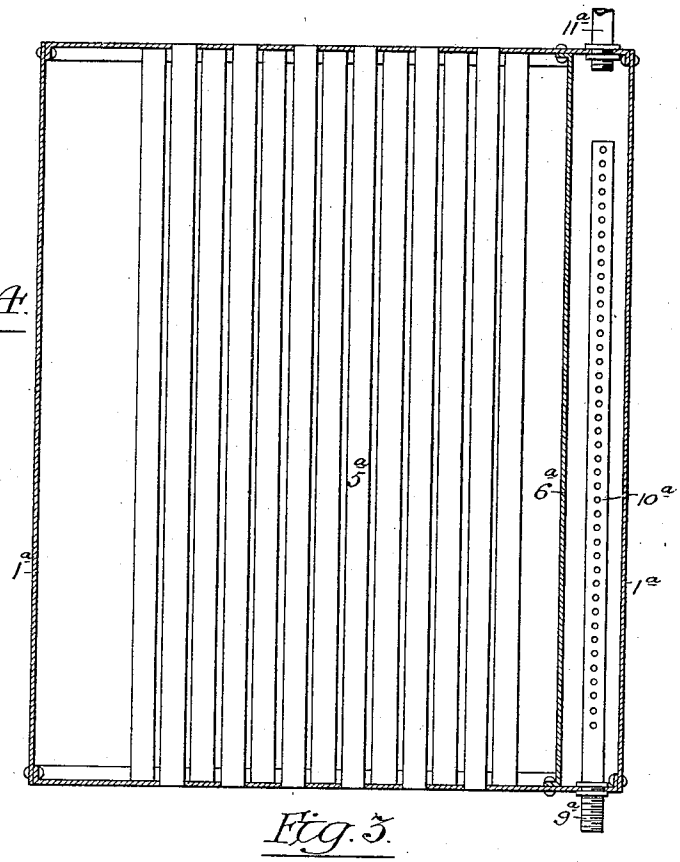
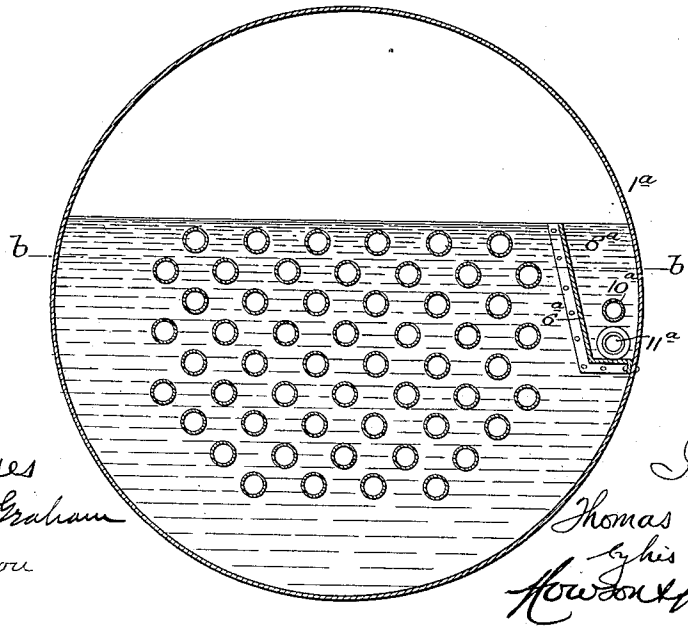


Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS G. LOVEGROVE, OF PHILADELPHIA, PENNSYLVANIA.

SEDIMENT-COLLECTOR FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 659,540, dated October 9, 1900.

Application filed December 11, 1899. Serial No. 739,946. (No model.)

To all whom it may concern:

Be it known that I, THOMAS G. LOVEGROVE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Feed-Water Heaters and Sediment-Collectors for Steam-Boilers, of which the following is a specification.

The object of my invention is to so construct a feed-water heater and sediment-collector for steam-boilers that the same can be cheaply constructed and applied and will afford a maximum capacity for feed-water in proportion to the amount of space occupied by it in the boiler. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a vertical boiler with feed-water heater and sediment-collector constructed in accordance with my invention. Fig. 2 is a sectional plan view of the same on the line *a a*, Fig. 1. Fig. 3 is a transverse section of a horizontal boiler, showing the application of my improved feed-water heater and sediment-collector thereto; and Fig. 4 is a sectional plan view on the line *b b*, Fig. 3.

Referring first to Figs. 1 and 2, the upright cylindrical shell of the boiler is represented at 1, the fire-box casing at 2, the lower tube-sheet or crown-plate of the fire-box at 3, the upper tube-sheet at 4, and the vertical tubes at 5. All of these parts may be constructed in the manner common in vertical boilers, my invention having no relation to this portion of the structure.

Extending across the boiler, adjacent to one side of the same, is a chord-plate 6, which is riveted or otherwise secured to the boiler-shell at each end and is bent outwardly toward the boiler-shell at the bottom, as shown at 7, this lower portion being likewise riveted or otherwise secured to the boiler-shell, so that said chord-plate forms, in combination with that arc of the boiler-shell of which it constitutes the chord, a chamber 8, closed at the bottom and open at the top.

Passing through the shell of the boiler at a point some distance above the bottom of the chamber 8 is a feed-water pipe 9, which is suitably secured to the boiler-shell and communicates within the chamber 8 with a perforated distributer 10, said distributer consisting, in the present instance, of a section of perforated pipe, which preferably extends throughout as much of the width of the chamber 8 as possible, whereby the feed-water will be delivered into said chamber 8 in a series of fine streams distributed throughout the area of the chamber. At a point as close as possible to the bottom of the chamber 8 the shell of the boiler is provided with a blow-off pipe 11, which is secured to said boiler-shell in any appropriate manner. The open top of the chamber 8 is preferably located at or about the normal water-line of the boiler, so that the feed-water entering the chamber 8 through the perforated distributer 10 rises slowly in said chamber and becomes heated before issuing from the open top of the chamber and mingling with the water in the boiler, the aim being to produce a chamber 8 of such capacity in proportion to the rate of feed that a considerable time will elapse before the cold water entering the lower portion of the chamber rises to and escapes from the top of the same.

The tapering form imparted to the bottom 7 of the feed-water chamber serves to concentrate the sediment at the mouth of the blow-off pipe 11, so that the chamber can be practically cleared of sediment when said blow-off pipe is opened.

By employing the shell of the boiler to form one of the boundaries of the water-heating chamber the latter can be readily and cheaply formed by the use of a single plate 6, and the capacity of the chamber is the maximum, considering the amount of space within the boiler which it occupies, the plate 6, moreover, presenting an extended area in contact with the hot water of the boiler, so as to provide for the effective heating of the feed-water as it rises in said chamber 8.

In applying my invention to a horizontal boiler I prefer to adopt the construction shown in Figs. 3 and 4, a plate 6^a in this case extending from head to head of the boiler at one side of the same, so as to form, in combination with the boiler-shell 1^a, a feed-water-heating chamber 8^a, closed at the bottom and open at the top, said chamber having the feed-water pipe 9^a, with perforated distributer 10^a and blow-off pipe 11^a. In the present

instance the feed-water pipe enters the chamber 8^a from one end of the boiler and the blow-off pipe communicates with said chamber at the opposite end, but both pipes may enter the chamber at the same end, if desired.

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

1. The combination of the shell of a boiler, with a chord-plate disposed substantially at right angles to the water-line of the boiler and connected directly to the shell and forming with said shell a feed-water-heating chamber within the boiler, substantially as specified.

2. The combination of the shell of the boiler, with a chord-plate disposed substantially at right angles to the water-line of the boiler and connected directly to the shell and forming with said shell a feed-water-heating chamber within the boiler, and feed-supply and blow-off pipes communicating with said chamber, substantially as specified.

3. The combination of the shell of the boiler, a chord-plate forming with said shell a feed-water-heating chamber within the boiler, said chamber being open at the top, and a feed-water pipe communicating with said chamber and having within the same a perforated distributer, substantially as specified.

4. The combination of the shell of the boiler, with a chord-plate forming with said shell a feed-water-heating chamber within the boiler, said chord-plate being disposed substantially at right angles to the water-line of the boiler and connected directly to the shell and having an inclined bottom tapering toward the shell, a feed-water-heating pipe communicating with said chamber, and a blow-off pipe at the base of the tapering lower portion of the chamber, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS G. LOVEGROVE.

Witnesses:
JOS. H. KLEIN,
F. E. BECHTOLD.