

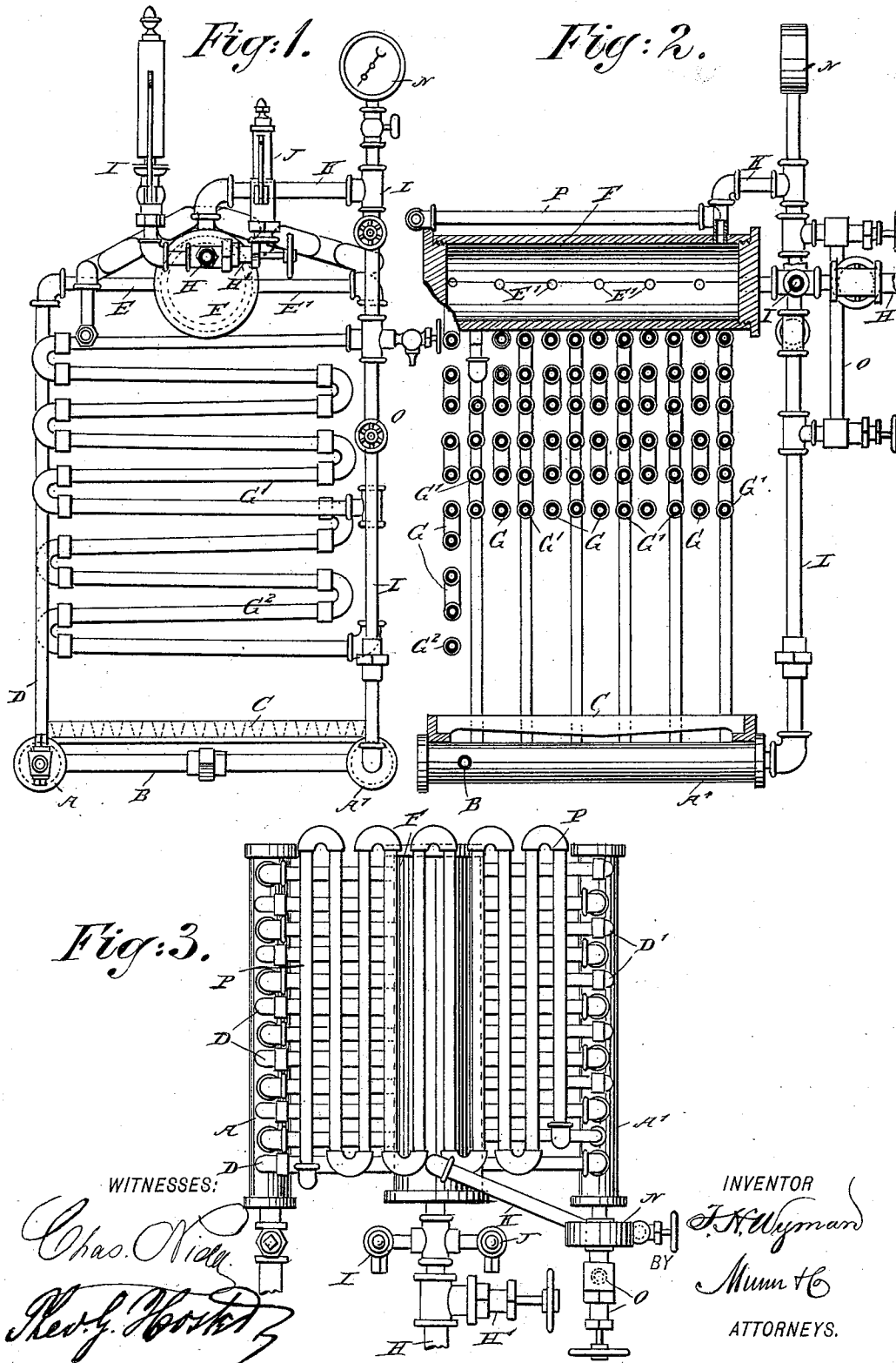
(No Model.)

2 Sheets—Sheet 1.

T. H. WYMAN.
SECTIONAL BOILER.

No. 544,554.

Patented Aug. 13, 1895.



(No Model.)

2 Sheets—Sheet 2.

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Fig: 4.

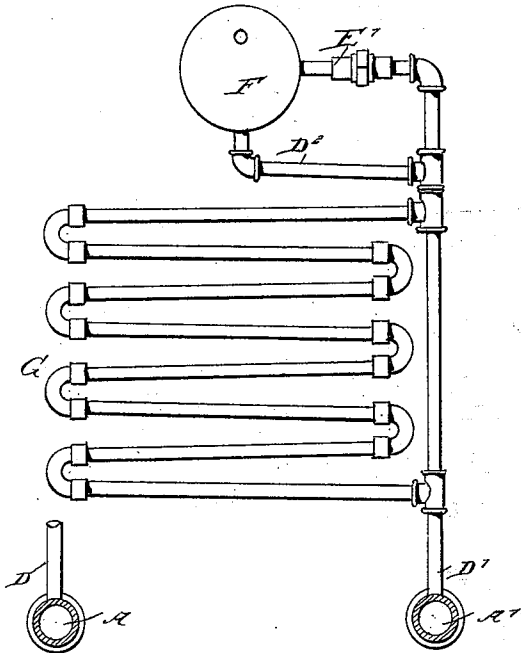


Fig: 5.

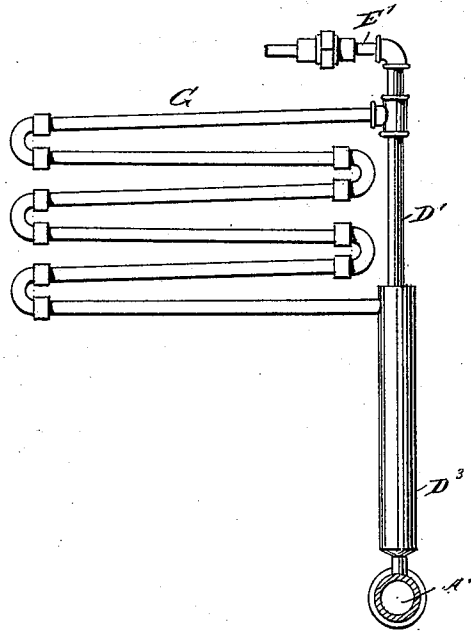


Fig: 6.

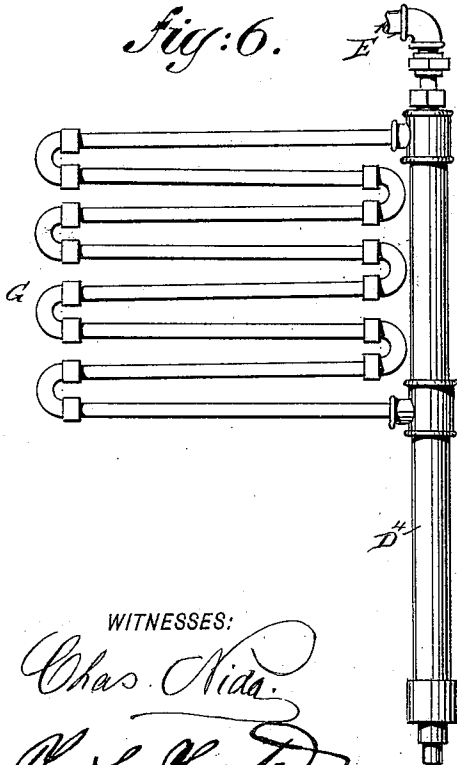
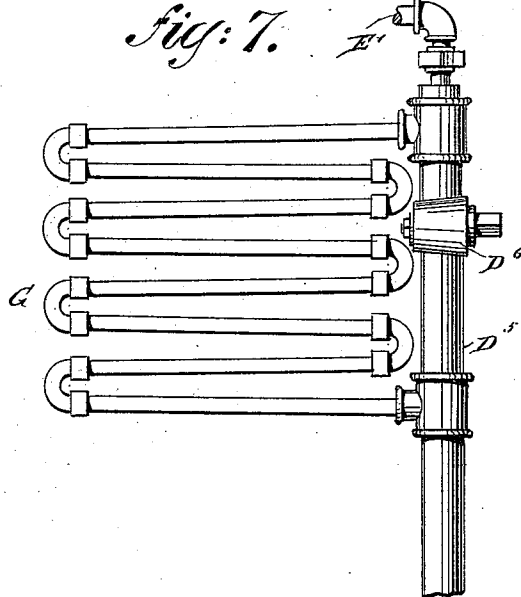


Fig: 7.



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UNITED STATES PATENT OFFICE.

THEODORE H. WYMAN, OF SEBEC, MAINE.

SECTIONAL BOILER.

SPECIFICATION forming part of Letters Patent No. 544,554, dated August 13, 1895.

Application filed May 22, 1895. Serial No. 550,217. (No model.)

To all whom it may concern:

Be it known that I, THEODORE H. WYMAN, of Sebec, in the county of Piscataquis and State of Maine, have invented a new and Improved Sectional Boiler, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved sectional steam and hot-water boiler, which is simple and durable in construction and arranged to utilize the fuel to the fullest advantage for the heating of the water and the generation of steam.

The invention consists, principally, of a mud-drum provided with a series of side pipes, having connection at their upper ends with the steam-drum, and circulating-coils disposed vertically and each connected at its upper and lower ends with a corresponding side pipe.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement. Fig. 2 is a sectional side elevation of the same. Fig. 3 is a plan view of the same. Fig. 4 is a front elevation of one of the side pipes, the steam-drum, and the mud-drums, the latter being in section. Fig. 5 is a side elevation of the same, showing a modified form of side pipe. Fig. 6 is a like view of the same, showing another modified form of side pipe, and Fig. 7 is a similar view of the same, showing still another modified form of side pipe.

The improved sectional boiler is provided with two mud-drums A and A', placed parallel one to the other and a suitable distance apart, the rear ends of the said mud-drums being connected with each other by a pipe B. The grate C for the fire-box and ash-pit is supported on the top of the drums A and A', as plainly illustrated in Figs. 1 and 2.

From the mud-drums A and A' extend upwardly the side pipes D and D', respectively, connected at their upper ends by pipes E and E', respectively, with the sides of a longitudinally-extending steam-drum F, as is plainly

shown in the drawings. The side pipes D and D' are provided with the coils G and G', respectively, extending vertically and from one side to the other, with the coils G arranged alternately with the coils G' coming from the opposite side. (See Fig. 2.) Both the upper and lower ends of the coils G and G' are connected with their respective side pipes D or D', as is plainly illustrated in Fig. 4, the lower runs of the said coils G and G' forming the top of the box, while the side pipes D and D' form the sides of the fire-box.

From the front and rear ends of the steam-drum F and from the bottom thereof lead the drain-pipes D², one of which connects with one side pipe D and the other with one of the side pipes D'. By this arrangement any water of condensation accumulating in the drum F or carried thereto by the steam readily passes through the said pipes D² back into the side pipes D and D', so that the steam-drum F is at all times properly drained of any water contained therein.

In the front end of the drum F is arranged a steam pipe H for carrying off the steam from the drum to the machinery to be driven. This pipe H is provided with a valve H', connected with a safety-valve I, and a whistle of usual construction. From the top of the drum F, and from near the end thereof, leads a pipe K, connected with a vertically-disposed pipe L, connecting at its lower end with the mud-drum A', at the forward end thereof. On the top of this pipe L is arranged a steam-gage N, and the said pipe is also provided with a water-gage O, as plainly illustrated in Fig. 2.

The feed-water for the boiler is heated previous to passing into the boiler by passing the said feed-water through a coil of pipe P, arranged on the top of the boiler, and extending over the drum F and to opposite sides thereof, over the pipes E and E'.

The rearmost coil G², for the end side pipe D is extended a considerable distance below the other coils G and G', as plainly illustrated in Fig. 2, so as to form a back for the fire-box. The size of the pipes may be made the same diameter as their coils G and G', as illustrated in Figs. 1, 2, and 4; but, if desired, the lower portion of each side pipe may be enlarged, as at D³. (Illustrated in Fig. 5.)

The entire side-pipe D⁴, as illustrated in Fig. 6, may be increased considerably in diameter relative to the corresponding coils G and G', and in case the device is to be used for heating water in a hot-water system, I provide each side pipe D⁵ with a valve D⁶ between the ends of each coil G and G'.

Now it will be seen that by the arrangement described the fuel burned on the grate C heats the water circulating through the side pipes as well as the water circulating from each side pipe through the corresponding coil G and G'. The steam thus generated rises in the said side pipes D and D', to pass from the upper end thereof by the pipes E and E' into the steam-drum F. As the latter is constantly drained by having the drain-pipes D³, steam of a dry quality is produced. It will further be seen that as the heat rises in the boiler it comes in contact with the feed-water coil P, so that the water is heated before passing into the boiler at one of the mud-drums A or A'.

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

1. A sectional boiler, comprising a mud drum, a series of side pipes rising from the said mud drum, and forming the sides of the fire box a steam drum connected with the upper ends of the said side pipes, and circulating coils disposed vertically and connected at their ends with a corresponding side pipe, the coils being arranged alternately and forming the top of the fire box substantially as shown and described.

2. A sectional boiler, comprising a steam drum, two mud drums, side pipes rising from the said mud drums and connected at their

upper ends with the said steam drum, and forming the sides of the fire box and circulating coil for each side pipe, forming top and back of fire box the said coils being arranged alternately and disposed vertically, reaching from one side to the other, each coil being connected with the corresponding side pipe, the rearmost coil of end pipe being extended below the other coils substantially as shown and described.

3. A sectional boiler, comprising a mud drum, a series of side pipes rising from the said mud drum, a steam drum connected with the upper ends of the said side pipes, a circulating coil disposed vertically and connected at its ends with a corresponding side pipe, and a valve in each side pipe, and located between the entrance ends of the corresponding circulating coil into the side pipe, to permit of changing the boiler from a steam generator to a hot-water heater, and vice versa, substantially as shown and described.

4. A sectional boiler, comprising a steam drum, two mud drums, side pipes rising from the said mud drums and connected at their upper ends with the said steam drum, a circulating coil for each side pipe, the said coil being arranged alternately and disposed vertically, reaching from one side to the other, each coil being connected with the corresponding side pipe, and drain pipes leading from the bottom of the said steam drum, to connect with corresponding side pipes, substantially as shown and described.

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Witnesses:

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