

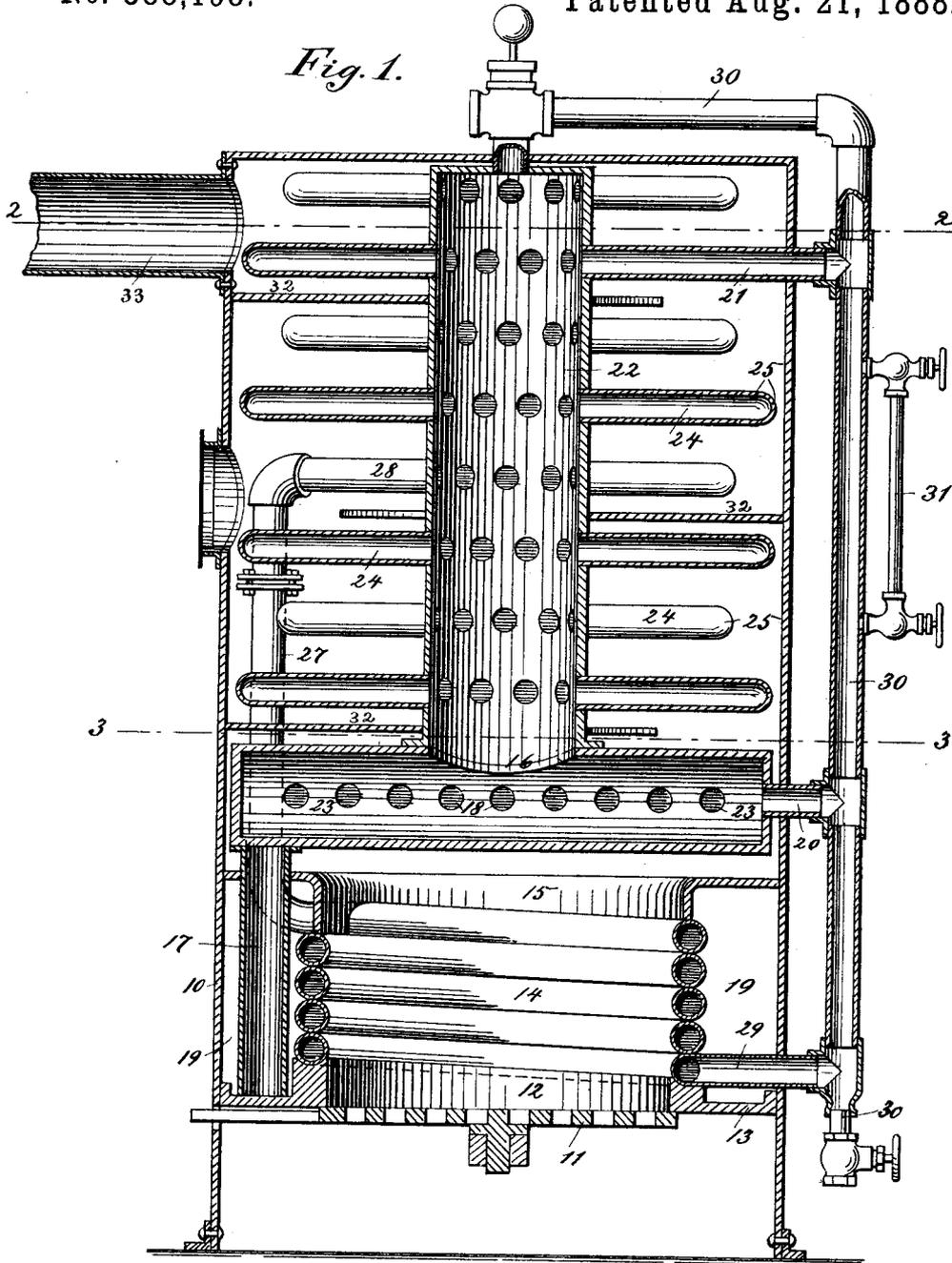
(No Model.)

2 Sheets—Sheet 1.

S. P. HEDGES.
STEAM BOILER.

No. 388,198.

Patented Aug. 21, 1888.



WITNESSES:
D. C. Reusch
C. Sedgwick

INVENTOR:
S. P. Hedges
BY *Munn & Co*
ATTORNEYS.

(No Model.)

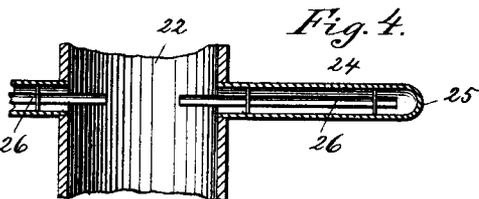
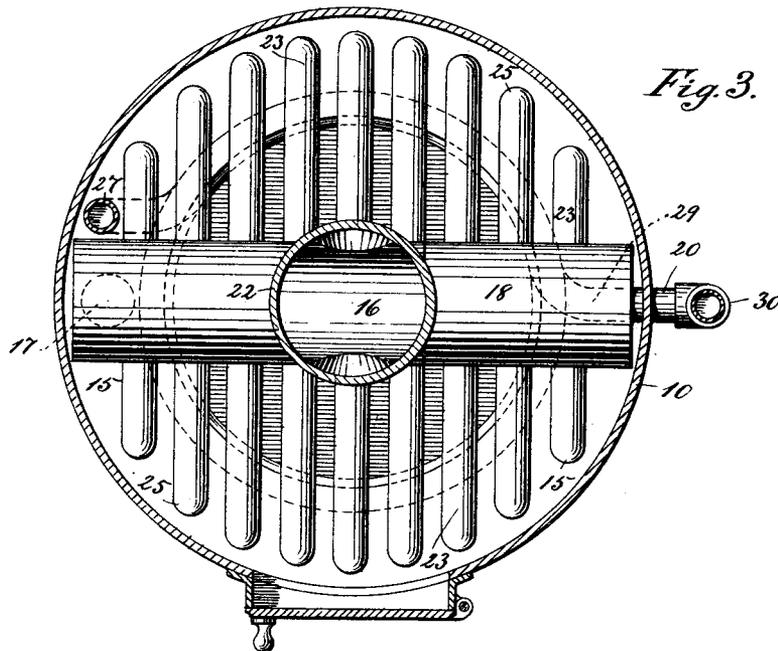
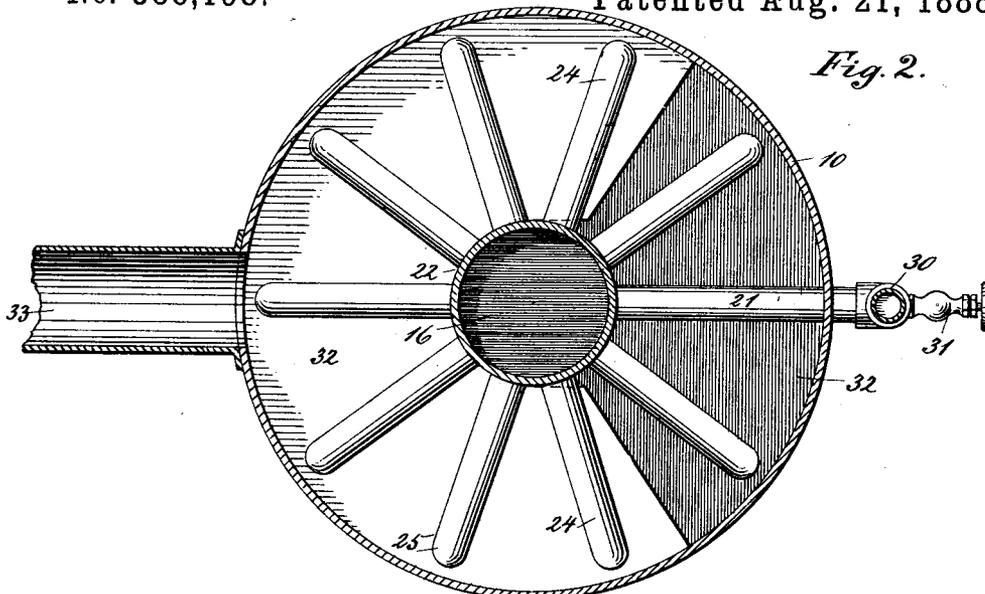
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UNITED STATES PATENT OFFICE.

SAMUEL P. HEDGES, OF GREENPORT, NEW YORK.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 388,198, dated August 21, 1888.

Application filed January 27, 1888. Serial No. 262,113. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL P. HEDGES, of Greenport, in the county of Suffolk and State of New York, have invented a new and Improved Steam-Boiler, of which the following is a full, clear, and exact description.

My invention relates to steam-boilers, and has for its object to improve the construction set forth in Letters Patent granted to myself July 8, 1884, No. 301,590, and April 21, 1885, No. 316,144, whereby a more perfect circulation will be obtained and the products of combustion be utilized to a maximum extent.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a vertical central section through the boiler. Fig. 2 is a transverse section on line 2 2 of Fig. 1, and Fig. 3 is a similar section on line 3 3. Fig. 4 is a detail view.

In carrying out the invention within the cylindrical casing 10, at or near the base, a suitable shaking and dumping grate, 11, is horizontally supported in any approved manner. Above the grate the fire-box 12 is constructed, consisting of an interiorly-flanged ring, 13, a coil of pipe, 14, resting upon said flange of the ring a distance from the casing, and a cap-plate, 15, supported upon the upper end of the coil attached or independent of the casing, as in practice may be found desirable. The interior of the fire-box or the inner face of the coil 14 is preferably provided with a proper lining to prevent the said coil from burning.

Above the fire-box 12 an inverted-T-shaped stand-pipe, 16, is supported by means of a leg or legs, 17, projected downward from the under surface of the horizontal member 18 through the space 19 intervening the fire-pot and casing to a bearing upon the base-ring 13, as best illustrated in Fig. 1. The said stand-pipe is further supported by intersecting horizontal outlet-pipes 20 and 21, which project outward through the casing, the pipe 20 being connected with the horizontal member 18

and the pipe 21 with the vertical member 22 at or near the upper end. This pipe 21 forms the steam exit or delivery pipe.

From the sides of the horizontal member of the stand-pipe a series of tubes, 23, are horizontally and outwardly projected, and similar tubes, 24, are made to radiate from the entire circumference of the vertical member. The extremities of these tubes 23 and 24 are welded to inclose the same with a rounding surface, as illustrated at 25, whereby the tubes at that point are enabled to better resist the heat and remain tight than when closed with an inserted head or cap.

As illustrated in Fig. 4, a smaller circulating-tube, 26, may be introduced concentrically within the horizontal projecting tubes, if found desirable, and I contemplate the use of such to draw in the cooler water as the water which has been heated passes off.

The upper end of the coil 14 is carried upward at one side of the member 18, as shown at 27, of the stand-pipe, connecting with an L-branch, 28, which branch is entered the vertical member of the stand-pipe at the water-line, as best illustrated in Fig. 1. The lower end, 29, of the coil is carried horizontally through the space 19 outside the casing, and the said end 29, together with the outlet-pipes 20 and 21, are united with a perpendicular supply-pipe, 30, provided with the usual gage, 31, the lower end of said pipe being adapted to admit water to the coil, and the upper end, having a safety-valve attached, being adapted to supply steam.

In order that the products of combustion will not pass upward upon one side of the stand-pipe more than upon the other, I have provided a series of segmental baffle-plates, 32, which plates are horizontally and alternately arranged upon each side of the stand-pipe above the horizontal member, each baffle-plate being fitted to the cylindrical surface of the vertical member, and likewise to the inner contour of the casing, as illustrated in Fig. 2. By means of these baffle-plates the products of combustion are compelled to pass upward in a circuitous course to find an exit through the off-take flue 33.

In operation the water being heated in the fire-box rises with the steam generated, and,

passing up the pipe 27 through the pipe 28, enters the stand-pipe and its radial projections, the steam finding an exit through branch pipe 21 into the supply-pipe 30. The water meanwhile, passing down the vertical member of the stand-pipe, enters the horizontal member, from whence, through the outlet 20, it is delivered to the lower end of the supply-pipe 30 and again enters the coil through the pipe 29.

It will then be observed that a constant and perfect circulation is effected and that the construction and arrangement of the entire boiler is simple, economical, and safe.

It will also be observed, as heretofore stated, that the products of combustion are utilized to the greatest extent as deflected by the segmental plates, the heat is brought in uniform contact with all parts of the boiler, and that the tubes upon one side are heated at all times and under all conditions equally with those upon the other sides.

The boiler is provided with the usual draft and furnace door, and in the side convenient to the deflecting-plates a capped man-hole or man-holes are provided, preferably so positioned as that the edge of the opposite plate will be in approximate alignment with the center of the opening. By means of the man-holes the plates may be readily freed from any accumulation of dust or ashes.

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

1. The combination, with an inverted-T-shaped stand-pipe provided with a series of horizontally-projecting tubes, of a coil encircling the fire-box, connected with said stand-pipe, and an outer delivery pipe connected with said stand-pipe and the coil, substantially as shown and described, whereby a constant and thorough circulation is obtained, as set forth.

2. The combination, with an inverted-T-

shaped stand-pipe provided with radiating horizontal capped tubes, of a coil encircling the fire-box and connected with the vertical member of the stand-pipe, and a delivery-pipe connected with the stand-pipe above the coil-connection, substantially as shown and described.

3. The combination, with an inverted-T-shaped stand-pipe and a series of horizontal tubes radiating therefrom, having their ends closed, of a coil encircling the fire-box, connected with the vertical member of the stand-pipe, an outer delivery-pipe connected to the vertical member of the stand-pipe above the coil-connection, and a tubular connection between the horizontal member of the stand-pipe, the coil, and delivery-pipe, all combined to operate substantially in the manner set forth.

4. The combination, with an inverted-T-shaped stand-pipe provided with a series of horizontally-projecting tubes, a coil encircling the fire-box connected with the stand-pipe, and a steam-delivery pipe connected with the stand-pipe above the coil-connection, of a series of segmental baffle-plates alternately arranged above the horizontal member of the stand-pipe and top of the boiler, substantially as shown and described.

5. The combination, with an inverted-T-shaped stand-pipe, a series of horizontal tubes projecting from the same, a coil encircling the fire-box and connected with the stand-pipe about centrally thereof, and a supply-pipe connected to the vertical member of said stand-pipe near the top and to the horizontal member and coil, of a series of spaced segmental baffle-plates alternately arranged above the horizontal member of the stand-pipe and top of the boiler-casing, substantially as shown and described.

SAMUEL P. HEDGES.

Witnesses:

WILLIAM B. REEVE,
CARRIE M. REEVE.