

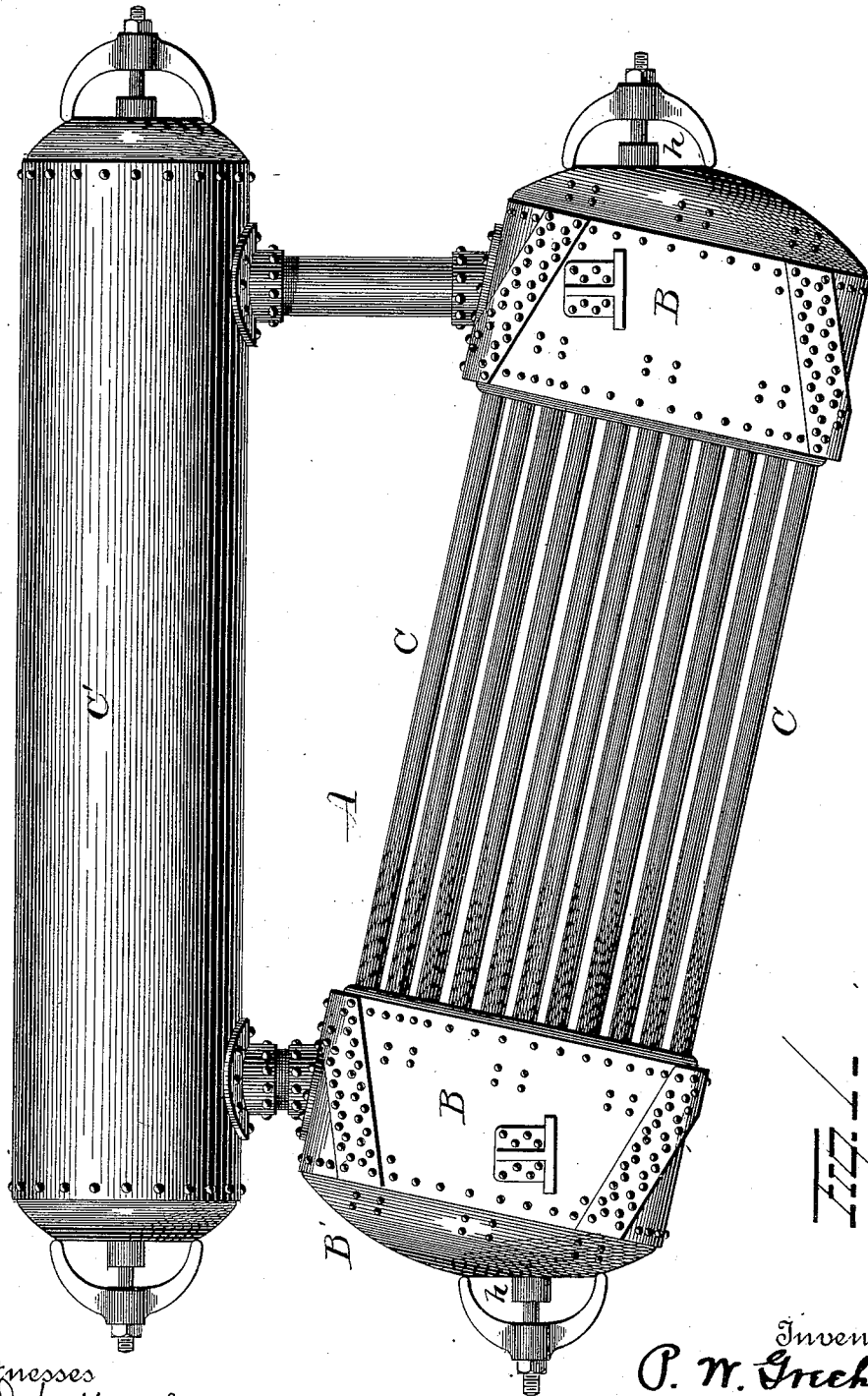
(No Model.)

2 Sheets—Sheet 1.

P. W. GREEHY.
WATER TUBE BOILER.

No. 538,253.

Patented Apr. 30, 1895.



Witnesses
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Attorney

(No Model.)

2 Sheets—Sheet 2.

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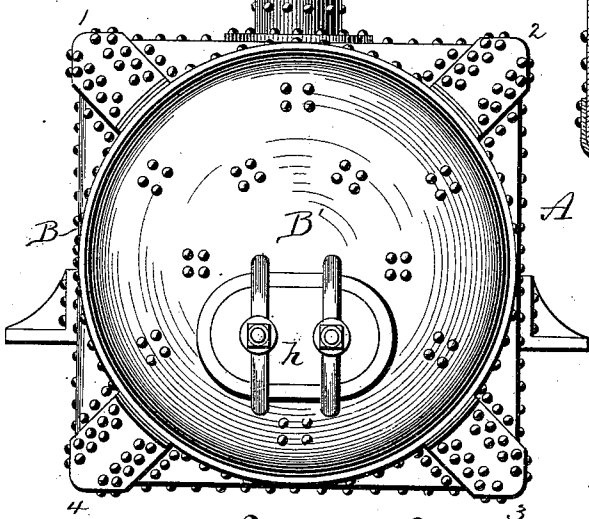
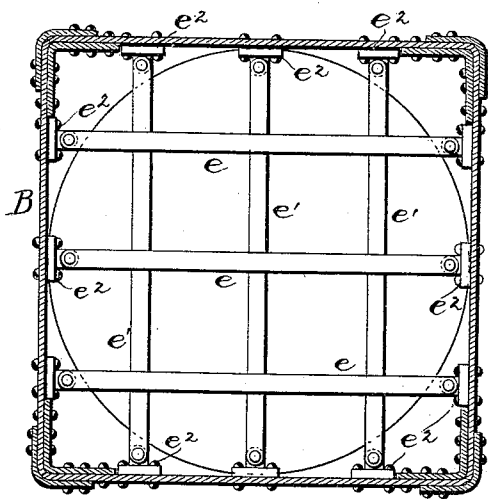
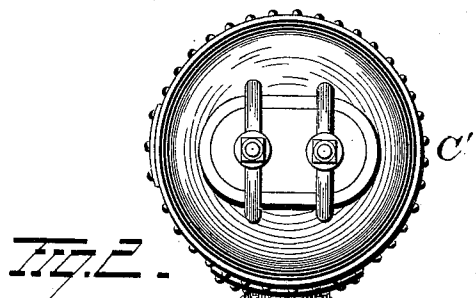


FIG. 4.
FIG. 3.

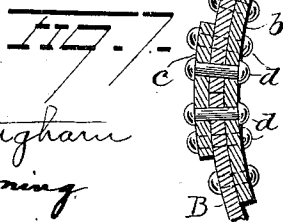
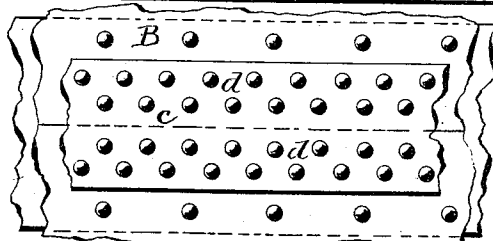
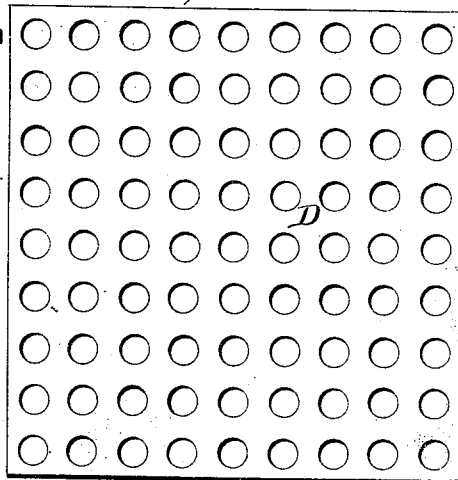
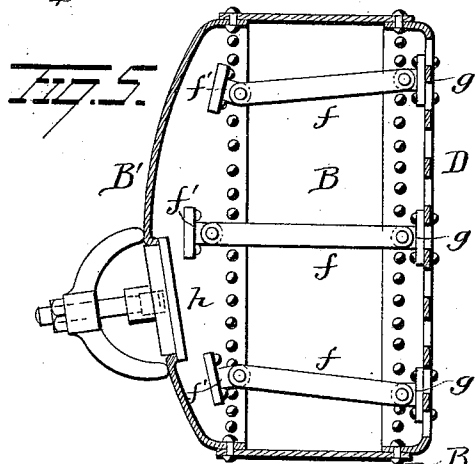


FIG. 5.
FIG. 6.
FIG. 7.
FIG. 8.

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UNITED STATES PATENT OFFICE.

PATRICK WILLIAM GREEHY, OF BURLINGTON, IOWA.

WATER-TUBE BOILER.

SPECIFICATION forming part of Letters Patent No. 538,253, dated April 30, 1895.

Application filed February 14, 1895. Serial No. 538,378. (No model.)

To all whom it may concern:

Be it known that I, PATRICK WILLIAM GREEHY, a resident of Burlington, in the county of Des Moines and State of Iowa, have
5 invented certain new and useful Improvements in Water-Tube Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as
10 it appertains to make and use the same.

My invention relates to an improvement in water tube boilers the object of the invention being to so construct a water tube boiler that the flues or tubes shall be so arranged and of
15 such number that the economical use of heat from the furnace will be effected without reducing the strength of the boiler heads.

A further object is to produce a water tube boiler having heads adapted to accommodate
20 a square flue sheet at one end and round or round and dished at the other end and to provide simple and efficient means for bracing said heads.

With these objects in view the invention
25 consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is
30 an elevation of a steam boiler embodying my invention. Fig. 2 is an end view. Fig. 3 is a view of the flue sheet. Fig. 4 is a cross section of one of the heads of the boiler. Fig. 5
35 is a sectional view of one of the boiler heads taken at right angles to Fig. 4 and omitting the transverse braces. Figs. 6 and 7 are detail views.

A represents the boiler comprising heads
40 B, B, and flues C, the respective heads being adapted to communicate with the respective ends of a drum C' of any preferred form of construction.

The two heads B, B, of the boiler being the same in construction, a specific description
45 of one will suffice for both.

The tubes C are arranged in angular form, that is to say, they are arranged in a form, preferably square in cross section, and at their respective ends communicate with square flue
50 sheets D, said sheets constituting one end of

the respective heads B, B, one end of each head B thus being square. In order not to detract from the strength of the heads as would likely be the case if they be made angular from end to end, I make the free ex-
55 tremities of said heads round and dished or convex as clearly shown in Fig. 2. Thus it will be seen that one end of each head is made square for the accommodation of the square flue sheet and the other end is made round
60 and convex or dished to lend strength to the heads. Each flue sheet is made with flanges *a* which enter the head and are riveted to the latter. The round end B' of the head is of a
65 diameter equal to the vertical and horizontal diameters of the square end and the four corners 1, 2, 3, 4, are drawn down to the round end B' and riveted to the latter as shown in Fig. 5. The joints produced at the four
70 corners will be tightly closed by means of plates *b, c* which overlap said joints on the inside and outside of the wall of the head and said plates are secured by a number of rivets *d*
75 passing through them and through the wall of the head. Thus it will be seen that at each corner a three-ply is made.

The walls of the head are braced by means of a series of transverse bars *e, e'*, each bar being preferably bifurcated at its ends for
80 the reception of a lug *e''* secured to the inner faces of the head, and said bars and lugs are perforated for the reception of securing pins.

The end B' of the head is connected with the flue plate by means of a series of bars *f*,
85 one end of each bar being secured to a lug *f'* secured to the end B' of the head and the other end of each bar being secured to a lug *g* secured to the flue plate.

Each head is made with a man-hole or door
90 *h*, preferably elliptical in form. The man-hole in the forward head is below and the man-hole in the rear head is above the center, thus giving increased space for access to the several flues.

My improvements are exceedingly simple
95 in construction, result in a great economy of heat and the vaporization of a large quantity of water by the use of a given amount of heat, and are effectual, in all respects, in the performance of their functions.

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

- 5 1. A head for a water tube boiler, angular at one end and round at the other, substantially as set forth.
2. A head for a water tube boiler, angular at one end and round and convex or dished at the other end, substantially as set forth.
- 10 3. In a water tube boiler, the combination with a square flue plate, of a head adapted at one end to conform to the shape of said flue plate and round at the other end, substantially as set forth.
- 15 4. In a water tube boiler, the combination with a series of flues arranged in angular form, of an angular flue plate communicating with said flues, a head made angular at one end and secured to said flue plate, said head
20 being made round at its free end, substantially as set forth.
5. A head for a water tube boiler made square at one end and round at the other end, and plates at the corners of said head parallel

with the inner and outer faces thereof, and 25 rivets passing through said plates and heads, substantially as set forth.

6. The combination with a head for a water tube boiler made square at one end and round at the other, of transverse braces secured to 30 the sides of said head within the latter, substantially as set forth.

7. The combination with an angular flue plate for a water tube boiler, of a head made square at one end and secured to said flue 35 plate, said head being made round at the other end, and bars within said head connected at their respective ends to said round end and the flue plate, substantially as set forth. 40

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

PATRICK WILLIAM GREEHY.

Witnesses:

JOHN J. SEEDEY,
MAY FAWCETT.