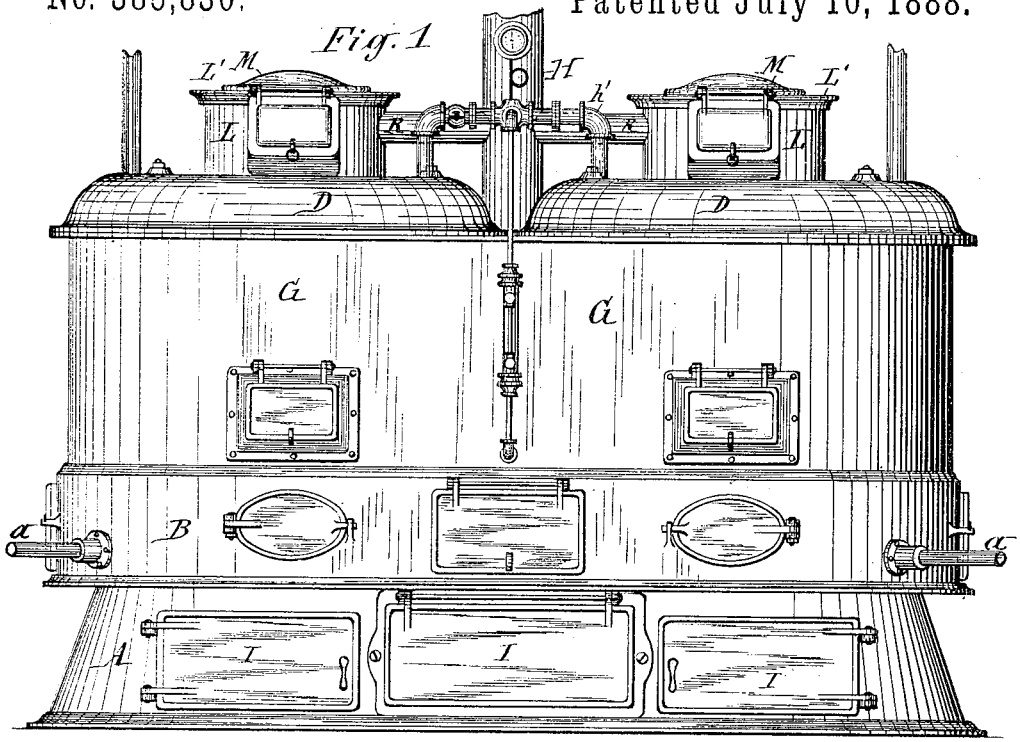
(No Model.) 3 Sheets—Sheet 1.

C. WHEAT.

BOILER.

No. 385,830. Patented July 10, 1888.

Fig. 1



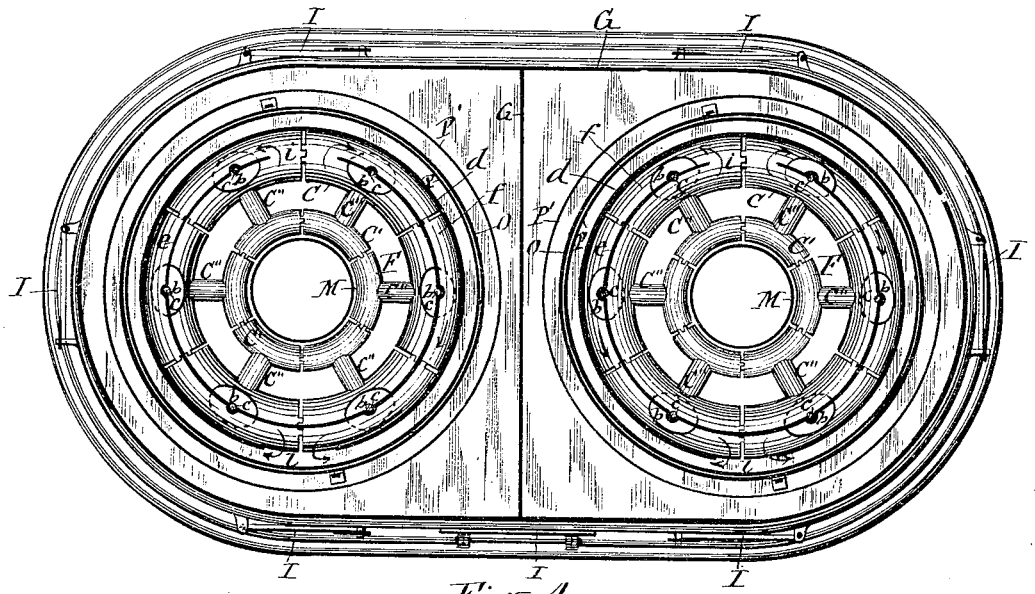


Fig. 4

WITNESSES:

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H. R. Denison.

INVENTOR.

Corydon Wheat.

BY

Dull, Laass & Dull.

ATTORNEYS.

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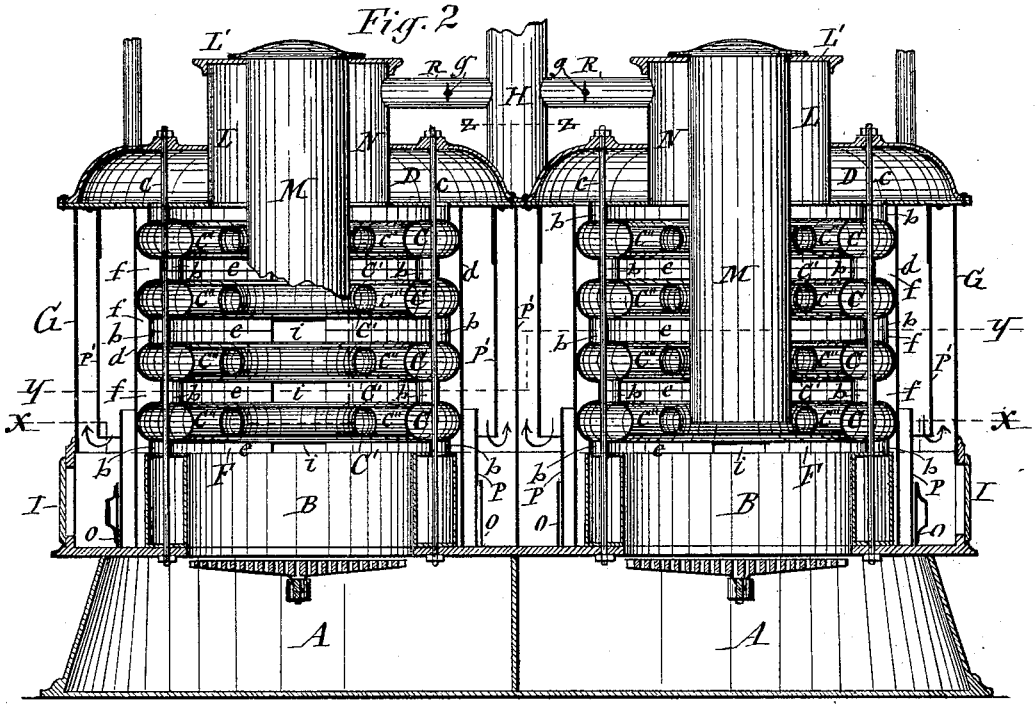
C. WHEAT.

BOILER.

No. 385,830. Patented July 10, 1888.

Fig. 2



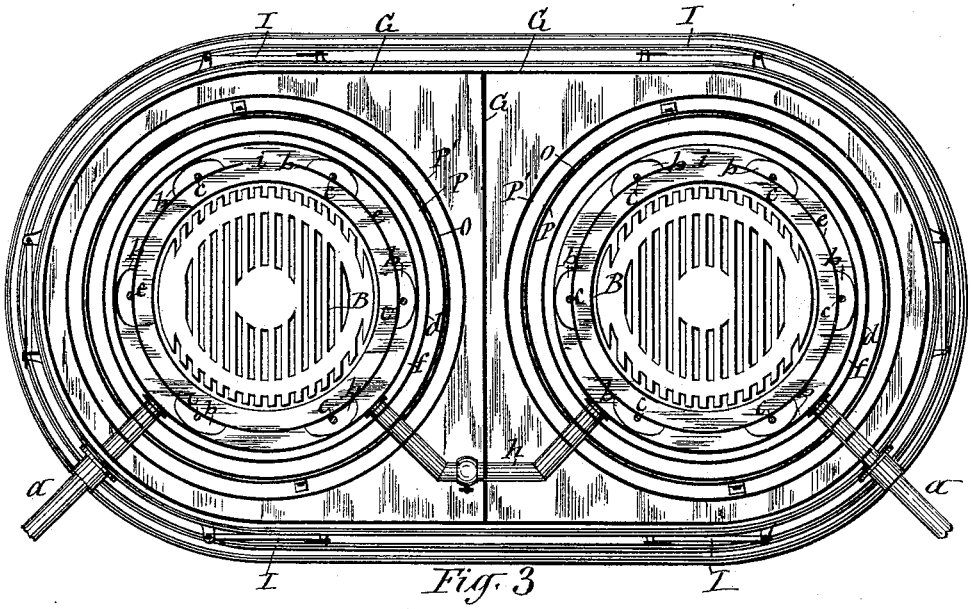


Fig. 3

WITNESSES:

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N. P. Denison

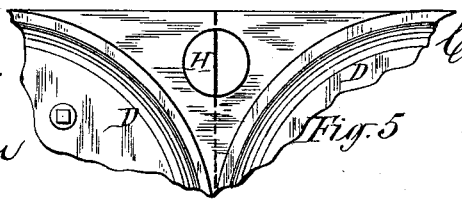

Fig. 5

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C. WHEAT.

BOILER.

No. 385,830. Patented July 10, 1888.

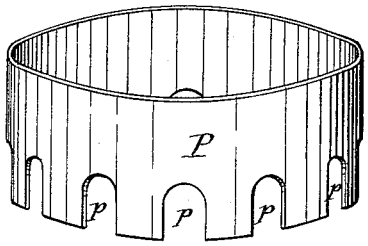

Fig. 7.

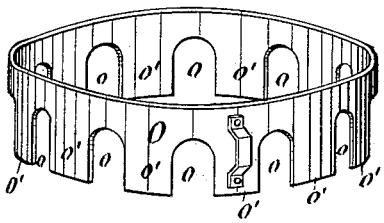

Fig. 8

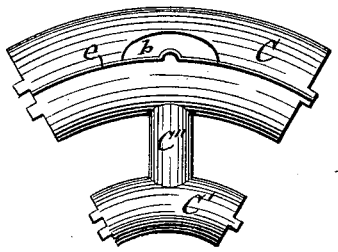

Fig. 6

WITNESSES:

C. L. Bendixon.

H. C. Denison.

INVENTOR.

Corydon Wheat.

BY

Hull, Laass & Hull

ATTORNEYS

UNITED STATES PATENT OFFICE.

CORYDON WHEAT, OF GENEVA, NEW YORK.

BOILER.

SPECIFICATION forming part of Letters Patent No. 385,830, dated July 10, 1888.

Application filed December 15, 1887. Serial No. 257,932. (No model.)

To all whom it may concern:

Be it known that I, CORYDON WHEAT, of Geneva, in the county of Ontario, in the State of New York, have invented new and useful Improvements in Hot-Water and Steam Boilers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates in some respects to the class of boilers which are composed of annular water-pipes arranged one above the other, and communicating with each other and with a water-wall constituting the fire-pot wall, and a dome mounted on the aforesaid pipes and communicating with the same.

The invention consists in an improved construction and combination of the component parts of the boiler and auxiliary devices connected therewith, whereby the efficiency of the boiler is increased.

In the annexed drawings, Figure 1 is a front elevation of my improved double boiler. Fig. 2 is a vertical longitudinal section of the same. Figs. 3 and 4 are horizontal transverse sections respectively on lines *x x* and *y y*, Fig. 2. Fig. 5 is a horizontal section on line *z z*, Fig. 2, showing the arrangement of the exit-pipe in relation to the boiler. Fig. 6 is an enlarged detached plan view of one of the sections of the water-pipes which constitute a portion of the boiler proper. Fig. 7 is a detached perspective view of the improved baffle-plate, and Fig. 8 is a detached perspective view of the damper employed in connection with the aforesaid baffle-plate.

Similar letters of reference indicate corresponding parts.

A represents the ash-pit, which constitutes the base of the boiler; and B, the fire-pot mounted on said ash-pit, and provided with a suitable grate upon which to support the fuel in the fire-pot. The fire-pot wall is a hollow annular iron casting constituting a part of the water-space of the boiler, the feed-water pipe or return water-pipe *a* being connected to said fire-pot wall.

C C denote annular water-pipes arranged one over the other and over the fire-pot wall, and C′ C′ are annular water-pipes of smaller circumference than the pipes C C, and arranged with their greater circumference concentric with the smaller circumference of said pipes and connected thereto by radial pipes C″ C″. Each of the pipes C C′, I form of segments which are closed at their ends, and are provided at the top and bottom with ports *b b*, by which they communicate with the segments of the superposed pipe and subjacent pipe. A hollow dome or cap, D, is arranged above the aforesaid pipes and communicates with the ports *b b* of the subjacent large pipe C. Rods *e e*, passing vertically through the dome and through the pipes C C at the ports thereof and through the fire-pot wall, tie said parts together. The aforesaid pipes and dome are supported at their requisite distances apart by flanges *e e* on their adjacent sides, and by the interposition of said flanges between the aforesaid parts a combustion-chamber, F, is formed over the fire-pot. A shell, *d*, surrounding the exterior of the pipes C C and fire-pot wall and set closely to said pipes, forms annular flues *f f* between the outer portions of the pipes C C, which flues communicate with the combustion-chamber F by ports *i i* in the flanges *e e* at the rear of the combustion-chamber. The shell *d* is provided with ports *l l* at the front of the boiler, and thus the products of combustion are caused to circulate from the ports *i i* in opposite directions through the flues *f f* and out through the ports *l l*, as indicated by arrows in Fig. 4 of the drawings. G represents the usual casing, which incloses the fire pot and superposed water-pipes and forms a smoke-box around the same, the exit H being connected to said smoke-box, preferably to the top thereof, to carry off the smoke.

In order to retain the heat around the boiler as much as possible without unduly choking the draft through the fire-pot, I arrange between the casing G and shell *d* cylindrical baffle-plates P and P′, the plate P being nearest to the shell *d* and rising from the bottom of the aforesaid smoke-box part way the height thereof, and the plate P′ being between the plate P and casing G and suspended from the top of the smoke-box, and terminating some distance below the top of the plate P, as illustrated in Fig. 2 of the drawings, the arrangement of the aforesaid parts being similar to that shown in my pending application for patent, Serial No. 244,247, filed July 14, 1887.

My present improvement, in regard to the

boiler thus far described, consists in the construction of the baffle-plate P, which I provide with ports *p p* through its sides, as shown in Fig. 7 of the drawings, and around the exterior of said plate I fit a cylindrical damper, O, of the form shown in Fig. 8 of the drawings, which damper is adapted to be turned around on the baffle-plate, and is provided with ports *o o*, adapted to register with the ports *p p*, the solid portions *o' o'* between the ports *o o* being adapted to close the ports *p p*. By opening the ports *p p* ready access is obtained to the space inside of the baffle-plate P to remove the soot and dust therefrom when required.

The base of the casing G is composed of cast-iron and provided with doors I I, through which to remove the soot and dust from the base of the smoke-box inside of the casing.

Vertically through the center of the dome D is extended a cylinder, L, which has secured to its upper end an annular cap, L', from which is suspended the fuel-magazine M. The latter, being smaller in diameter than the cylinder L, forms between them an annular flue, N, which communicates with the combustion-chamber F. A pipe, R, is extended from the flue N to the exit-pipe H, and thus a direct draft is obtained from the combustion-chamber to the exit-pipe.

The pipe R is provided with a damper, *g*, which can be closed after the fire in the fire-pot is fairly under way, and then the products of combustion are compelled to take the more circuitous passages through the ports *i i*, flues *f f*, ports *l l*, down at the inside of the baffle-plate P', and up at the outside of the same to the exit-pipe H, and during this passage the boiler is allowed to absorb the heat from the products of combustion.

It frequently occurs that, owing to enlargement of the building in excess to the size originally contemplated to be heated by the boiler, the latter is found inadequate. To meet this emergency I have devised to connect two boilers, each constructed as aforesaid and arranged side by side, and connected with each other at their water and steam spaces or at their bases and tops, respectively, by the water-pipe *h* and water or steam pipe *h'*. Said boilers I inclose each in a separate casing, G, so as to allow the two boilers to be operated separately when desired. The two casings I preferably form of two cylindrical end plates surrounding one-half of each boiler, and straight or tangential front and rear plates connecting the aforesaid end plates, and a partition-plate extending from the front plate to the rear plate and between the boilers, as shown in Fig. 3 of the drawings.

The two boilers are each provided with a separate feed-door, a separate feed-water pipe, and separate hot-water or steam pipes leading to different parts of the building to be heated, and consequently either boiler can be operated independent of the other, and by operating one or both boilers either a portion of the building or the entire building can be heated, as may be desired.

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

1. In combination with the boiler and smoke-box surrounding the same, the baffle-plate P', suspended from the top of the smoke-box, baffle-plate P, of cylindrical form, rising from the base of the smoke-box and provided with ports *p p*, and a cylindrical damper, O, sliding on the latter baffle-plate and provided with ports *o o*, adapted to register with the ports *p p*, substantially as described and shown.

2. In a sectional boiler, the water-pipes C C, composed of segments closed at their ends and provided with ports communicating with the segments of the superposed pipe and subjacent pipe, substantially as set forth and shown.

3. In a sectional boiler, the pipes C C', arranged annularly one inside of the other, and each of said pipes composed of segments closed at their ends, and the outer segments provided with ports at the top and bottom communicating with the segments of the superposed pipe and subjacent pipe, and radial pipes C'', connecting the outer with the inner segments, substantially as described and shown.

In testimony whereof I have hereunto signed my name, in the presence of two witnesses, at Geneva, in the county of Ontario, in the State of New York, this 7th day of December, 1887.

CORYDON WHEAT. [L. S.]

Witnesses:

PHINEHAS PURDY,

W. H. VROOMAN.