(No Model.)

D. F. MORGAN.

HEATING BOILER CASE.

No. 536,733. Patented Apr. 2, 1895.

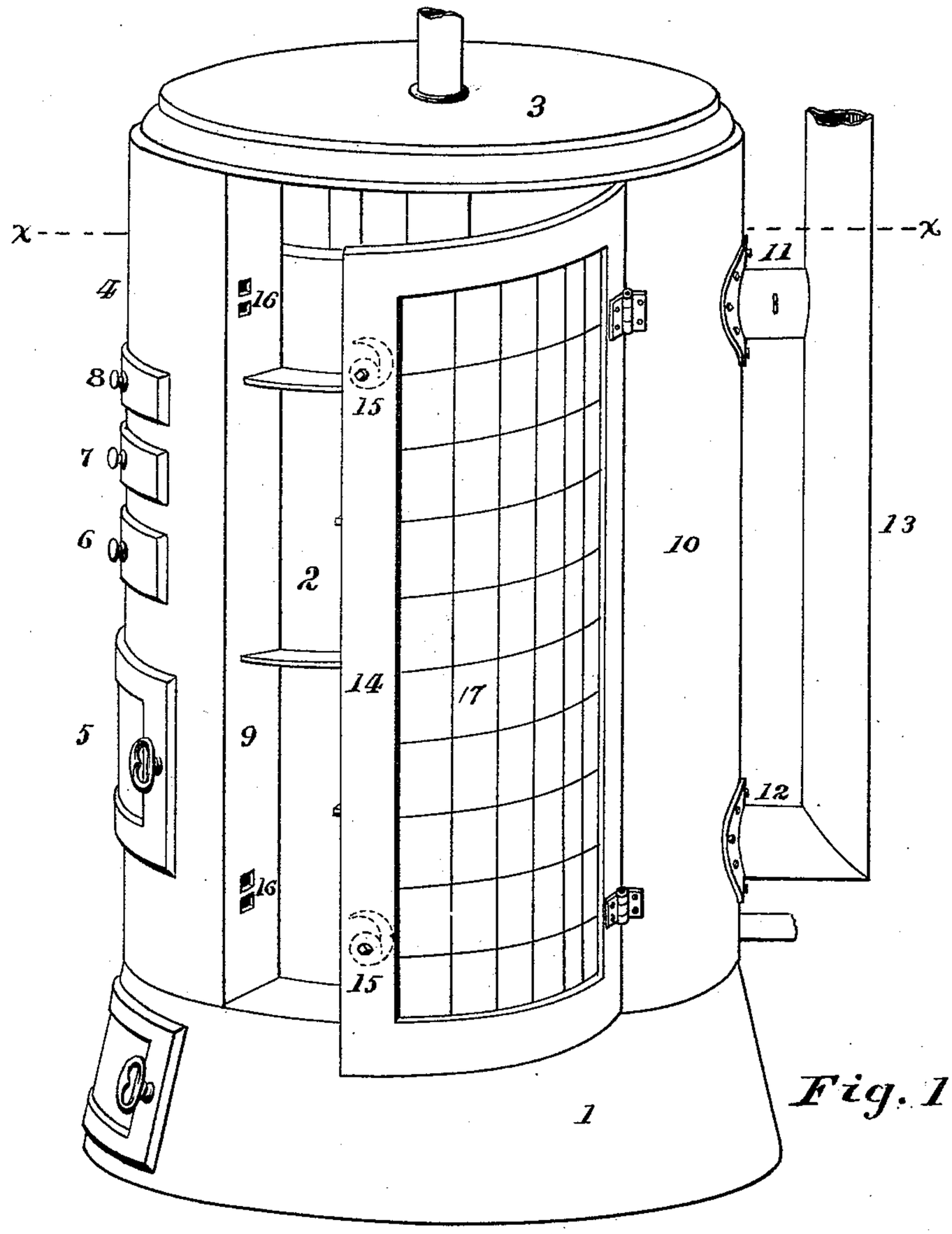

Fig. 1.

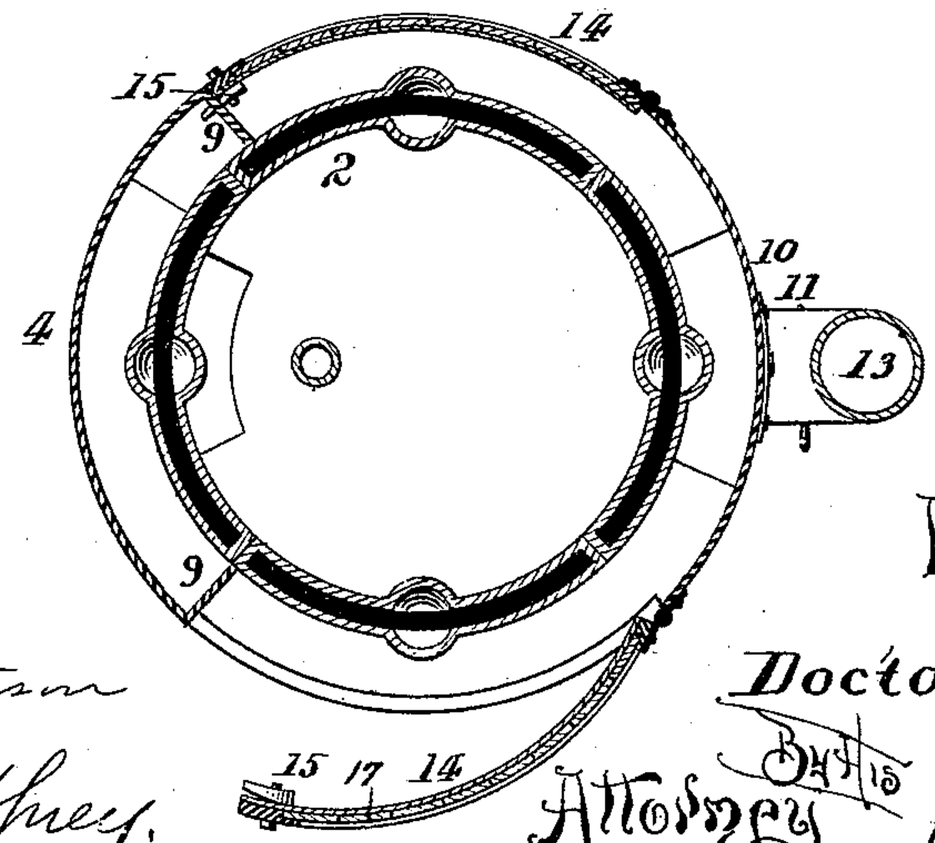

Fig. 2.

Witnesses
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By his
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UNITED STATES PATENT OFFICE.

DOCTOR F. MORGAN, OF AKRON, OHIO.

HEATING-BOILER CASE.

SPECIFICATION forming part of Letters Patent No. 536,733, dated April 2, 1895.

Application filed April 14, 1892. Serial No. 429,168. (No model.)

To all whom it may concern:

Be it known that I, DOCTOR F. MORGAN, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Heating-Boiler Cases, of which the following is a specification.

My invention relates generally to improvements in cases for heating boilers adapted for either steam or hot-water systems, which boilers have an internal fire-box and internal flues to convey the products of combustion up against the upper cap or dome, whence they pass laterally outward, and with reference to which the case surrounds and is situated a short distance from the outer shell of the boiler, forming with said outer shell an open space constituting a down-draft flue down which the products of combustion pass to the uptake flue; and it has especial reference to that class of boilers which consist of annular hollow cast iron water sections piled upon each other; or curved hollow water sections standing on end as illustrated in the application for which I was granted a patent May 1, 1894, No. 519,133.

The object of my invention is to provide a new and improved case for that class of boilers mentioned, and for other analogous apparatus, wherein the outer shell or case shall constitute the outer part of the down-draft flue, and which shall be a non-conductor of heat, so that the heat shall not be radiated therefrom to the outer air, nor the products of combustion chilled by cold from without in their descent; and which case shall be mainly composed of doors reaching from the dome to the base of the boiler, properly hinged and readily opened to permit the cleaning of the spaces between the boiler and case; and the baffle-plates if used; and it further consists in improved locking devices for said doors which shall simultaneously raise the doors into position and lock them.

To the aforesaid objects my invention consists in the peculiar and novel construction, arrangement and combination of parts hereinafter described and then specifically pointed out in the claims, reference being had to the accompanying drawings which constitute a part of this specification.

In the accompanying drawings in which similar reference numerals indicate like parts in both views, Figure 1 is a perspective view of a boiler of the class designated which is here adopted for the purpose of illustration, provided with my improved case; and Fig. 2, a horizontal section of the same at the line x, x, of Fig. 1.

Referring to the drawings, 1, is a cast iron base which forms the ash-pit, and is provided with a projecting rim to sustain the outer case and a door as shown; and upon this base is mounted the boiler 2, consisting of hollow vertical curved shells, with interposed horizontal shells as illustrated in the application hereinbefore referred to, which however are not shown in this application, except in plan in Fig. 2, as they are not essential to an understanding of this device.

On top of and extending laterally beyond the boiler is a hollow dome 3, from the top center of which issues the flow-pipe for steam or water.

Interposed between the rims of the dome 3 and base 1 is a curved plate 4, concentric with the boiler, which constitutes the front section of the case, and contains one large and three smaller openings 5, 6, 7, 8, respectively, which connect by spouts, as illustrated in the patent hereinbefore referred to, with similar openings through the boiler or between its sections to the fire-box, and the central flue, and are closed by doors, as shown, the lower and larger constituting the firing door, and the smaller ones, openings through which to clean the inner parts from soot and ashes. From each edge of this plate, 4, partitions, 9, project radially inward and against the exterior of the boiler, 2, thus forming a hollow box between the boiler, front-plate, partitions, dome and base.

Diametrically opposite the plate, 4, is a curved plate, 10, similarly located between the rims of the dome, 3, and base, 1, and from the outer edges of which radial partitions, similar to the partitions 9, project inwardly to and against the exterior of the boiler, thus

forming a similar box at the back of the boiler. From this box from the plate, 10, extend two pipes, 11, 12, which unite with an uptake flue, 13; the pipe, 11, being provided with a damper.

Below the pipe 12 is a feed or return pipe which, passing through the outer case, enters the boiler.

The spaces between the front plate, 4, and back plate, 10, on each side of the boiler are closed by curved doors, 14, concentric with and practically continuations of said plates, each hinged to the back plate, 10, and locked against the plate 4, by two cam hooks, 15, which engage short bars, 16, across recesses in the partitions 9. These hooks, shown in Fig. 2, and in dotted lines in Fig. 1, are made eccentric to their pivots and have beveled points, so that when turned into the recesses in the partitions, 9, and engaging the bars, 16, they raise the door to place and draw it snugly inward.

Each door is composed of an inner plate and a flanged frame about its edges, like the reverse of a picture frame, and in the space thus formed is placed a filling, 17, of non-conducting material, preferably as shown, of thin blocks of earthenware, specially made to conform to the shape of the door.

Between the doors and boiler may be located baffle-plates to divert the down-draft alternately to the front and back of the annular space between these parts. By this arrangement, the outside of the boiler, and the baffle-plates are readily reached to be cleaned of soot and ashes, so that the efficiency of the former may be maintained; while the non-conducting character of the doors prevents the radiation of heat from, and the communication of cold to, the products of combustion descending through the down-draft flue.

This case may be profitably used with hot-air furnaces and other analogous apparatus, but is peculiarly adapted to hot-water and steam heating-boilers.

I claim as my invention—

1. The combination with the front plate having one or more entrances to the fire box and back plate having one or more exits for the products of combustion, and their radial partitions, the side partitions of the front plate having recesses with cross-bars, and the curved doors hinged to the back plate and constituting the outer walls of the down-take flue, of cam hooks having beveled points, pivotally mounted in said doors and arranged to be turned into said recesses and engage said cross-bars substantially as shown and for the purpose specified.

2. The combination with the boiler sections and the projecting dome and base, of the front curved plate having a firing door, and a back curved plate having upper and lower pipes connecting with the uptake flue, of curved doors arranged to close the spaces between said curved plates and constitute the exterior of a down-draft flue substantially as shown and described.

In testimony that I claim the above I hereunto set my hand.

DOCTOR F. MORGAN.

In presence of—
C. A. DEXTER,
C. P. HUMPHREY.