

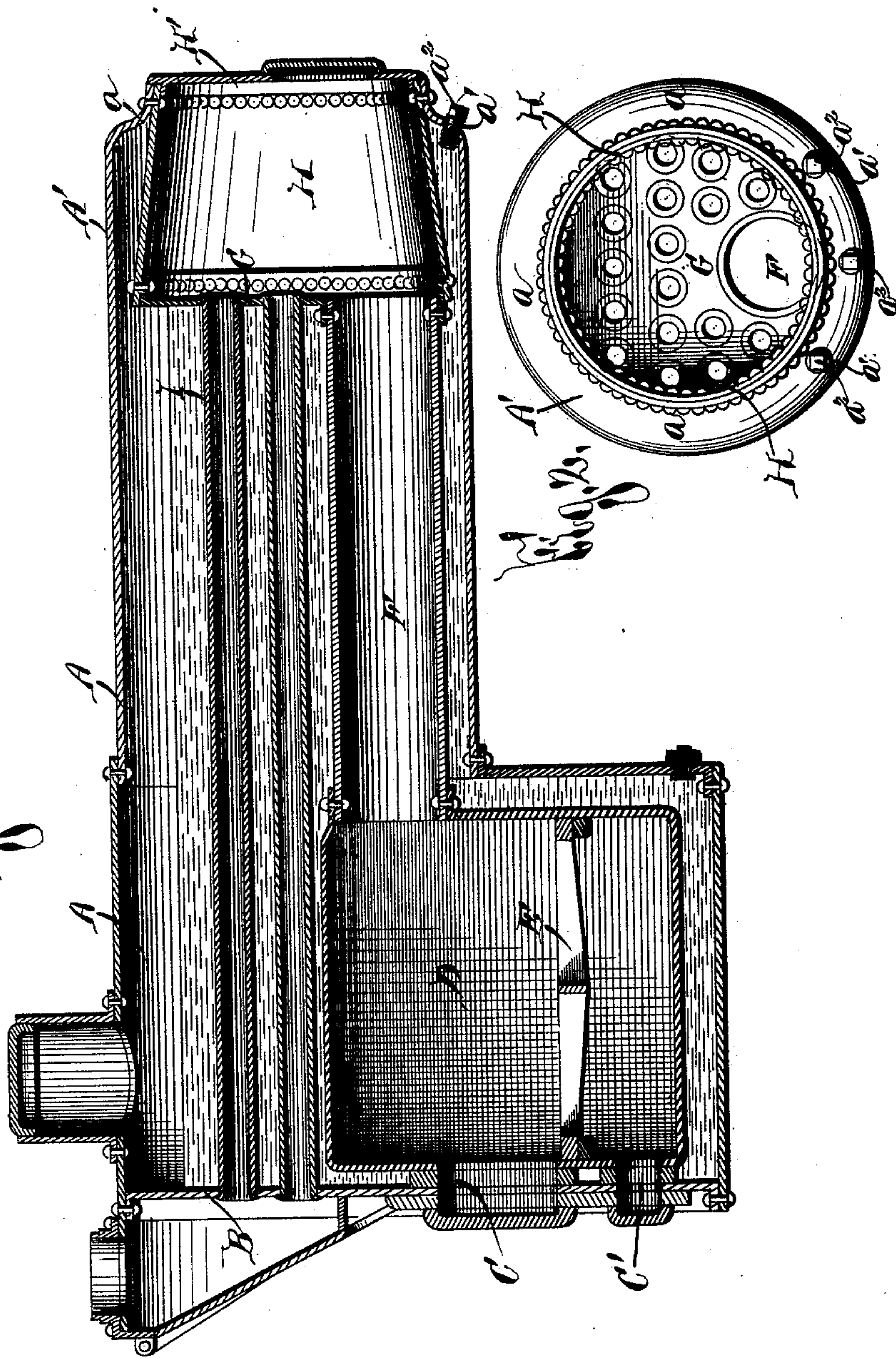
(No Model.)

W. J. RANTON.

BOILER.

No. 414,167.

Patented Oct. 29, 1889.



WITNESSES :

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A. E. Somlinson.

INVENTOR

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UNITED STATES PATENT OFFICE.

WILLIAM J. RANTON, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE PORTER MANUFACTURING COMPANY, (LIMITED,) OF SAME PLACE.

BOILER.

SPECIFICATION forming part of Letters Patent No. 414,167, dated October 29, 1889.

Application filed July 3, 1889. Serial No. 316,433. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. RANTON, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Boilers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improved boiler, and has for its object the production of a simple and effective construction which is more durable, effective, and readily assembled than those previously devised.

To this end it consists, essentially, in an outer casing or shell having a forward extension provided with a contracted opening, and in a novel construction of the interior parts of the boiler, enabling them to be secured together before their placing in position within the outer shell.

It also consists in forming cleaning-openings in the forward extremity of the boiler-shell for the purpose of cleaning the water-space around the smoke-box; and it furthermore consists in the detailed construction and arrangement of its parts, all as hereinafter more particularly described, and pointed out in the claim.

In describing my invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in both the views.

Figure 1 is a longitudinal vertical section of my improved boiler, and Fig. 2 is an end elevation thereof.

My boiler is particularly an improvement upon that previously patented to George A. Porter, dated December 22, 1885, No. 332,828; and it consists, especially, in the novel construction of the smoke-box and boiler-extension, whereby the smoke-box is adapted to be inserted from the rear of the boiler, effect a tight joint with the boiler-extension, and insuring very quick heating by reason of the number of flues which may be inserted into the crown-sheet at the rearward enlarged end of said conical smoke-box.

A represents the outer boiler shell or casing, formed of suitable size or material and provided with the forward extension A', which

is preferably of circular form. The rear opening of the shell A is closed by the end sheet B, having the opening C for the entrance of fuel and an opening C' for the removal of ashes, &c. The fire-box D is of any suitable size or shape and is provided with a desirable grate E. Opening from the fire-box D is the fire flue or passage F, which is secured to the forward flue-sheet G and opens into the smoke-box H. Opening into the smoke-box H, and having one extremity secured in the flue-sheet G and the other in the rear plate B, are the flues I, of suitable number to insure the desired generation of heat. The smoke-box H is preferably riveted to the forward extremity of the forward extension A' of the shell or casing A.

This invention is an improvement upon Patent No. 325,967, issued September 8, 1885, to G. A. Porter. In boilers of this class the fire-flue F is necessarily very close to the outer shell of the extension A', and as the contraction of the water-space renders it difficult to have access thereto for the purpose of cleaning, hand-holes or other apertures are formed in the smoke-box.

In this class of boilers heretofore constructed it is necessary to first rivet the flue-sheet to the smoke-box and then to rivet the smoke-box to the forward extremity of the extension A'. The back plate, fire-box, and fire-flue are then secured together and inserted from the rear opening in the casing or shell A. It is then necessary to secure together the end of the fire-flue to the flue-sheet G, and as it is impossible to rivet these parts the only way to secure them together is by means of bolts. This bolting is a feature of great disadvantage, since it is extremely difficult to obtain as tight a joint by means of bolts as by rivets, as the rivets upon contracting tightly draw the parts together. Moreover, the bolting requires considerable time, and a consequent expense for labor.

By my invention the rear plate B, fire-box D, fire-flue F, flue-sheet G, and smoke-box H are all secured or riveted together before being secured in operative position on the interior of the shell A and the extension A'. As these parts are all secured together before their placing within the shell A, they are

preferably riveted by an ordinary riveting-machine in order to still further cheapen and quicken the production of the boiler.

By securing the fire-flue F to the flue-sheet before they are placed within the boiler-shell I am enabled to calk the flue F from the outside, thus effecting an absolutely tight joint with the flue-sheet. In the boiler before mentioned of G. A. Porter it was impossible to calk the fire-flue, and consequently there has always been more or less leaking at its joint with the flue-sheet.

The placing of the interior parts of the boiler within the outer shell or casing is a very simple matter, since the smoke-box by reason of its peculiar construction is of less diameter than the extension A', and is also of less diameter at its forward end than at its rearward end. The shell is sustained in the desired position and the interior parts of the boiler are grasped by a crane or other suitable elevating device, and when raised to the right height are forced inward.

The forward extremity of the smoke-box is readily forced to the desired position in the contracted opening of the boiler by reason of the tapering or conical shape of said box and opening, and when forced to the desired position the parts are then riveted together and preferably by a riveting-machine.

The metal forming the contracted opening of the boiler preferably inclines rearwardly therefrom, in order to effect a tighter joint with the conical-shaped box, and it will be understood that by using a conical-shaped smoke-box with its small end at the front the entrance thereof is very readily accomplished, even though, as illustrated, the rearward end is of slightly less diameter than the interior of said boiler-extension.

To further cheapen the cost of production of the boiler and lessen the time and skill required in constructing the same, I frequently prefer to secure the flues in their position before the securing of the interior parts within the boiler shell or casing.

It will be evident that a boiler constructed according to my invention is cheaply and readily put together, and that the same is also more effective in use. It will also be seen that the smoke-box of my improved boiler requires no bending, and that the same is thus very strong, and there are thus no thin spots to burn out.

In the flange *a* of the boiler-extension A', I provide openings *a'*, which, while they may be of any suitable form or construction, are here shown as ordinary round openings, closed with a plug *a''*. These openings enable the attendant to insert a brush or other cleaning-tool in the water-space of the boiler and thoroughly clean the same. It will be understood that more of these openings may be used than are illustrated, and it will also be understood that by forming these openings in the said flange *a* it is not necessary, in order to open these cleaning-apertures, to remove the cover H', which closes the forward extremity of the smoke-box H.

The operation of my invention will be readily perceived from the foregoing, and it will be understood that I do not claim a smoke-box having one portion thereof conical-shaped and the other portion circular-shaped, since I am aware that smoke-boxes of this construction have been previously illustrated and described.

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

In a boiler, the combination of a boiler-extension A', having the material of its outer extremity bent inward and forming a contracted opening, with the adjacent metal thereof conically inclined rearwardly therefrom, and a conical smoke-box adapted to be inserted from the rear of said boiler and formed with its rearward end of slightly less diameter than the interior of the boiler, whereby a great number of flues may be connected therewith, and formed with its smaller end at the front, whereby its insertion is greatly aided, said forward end of the smoke-box inclining in substantially the same angle as the metal of said contracted opening, whereby a tight joint is effected, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 18th day of June, 1889.

WILLIAM J. RANTON.

Witnesses:

CLARK H. NORTON,
A. E. PARSONS.