

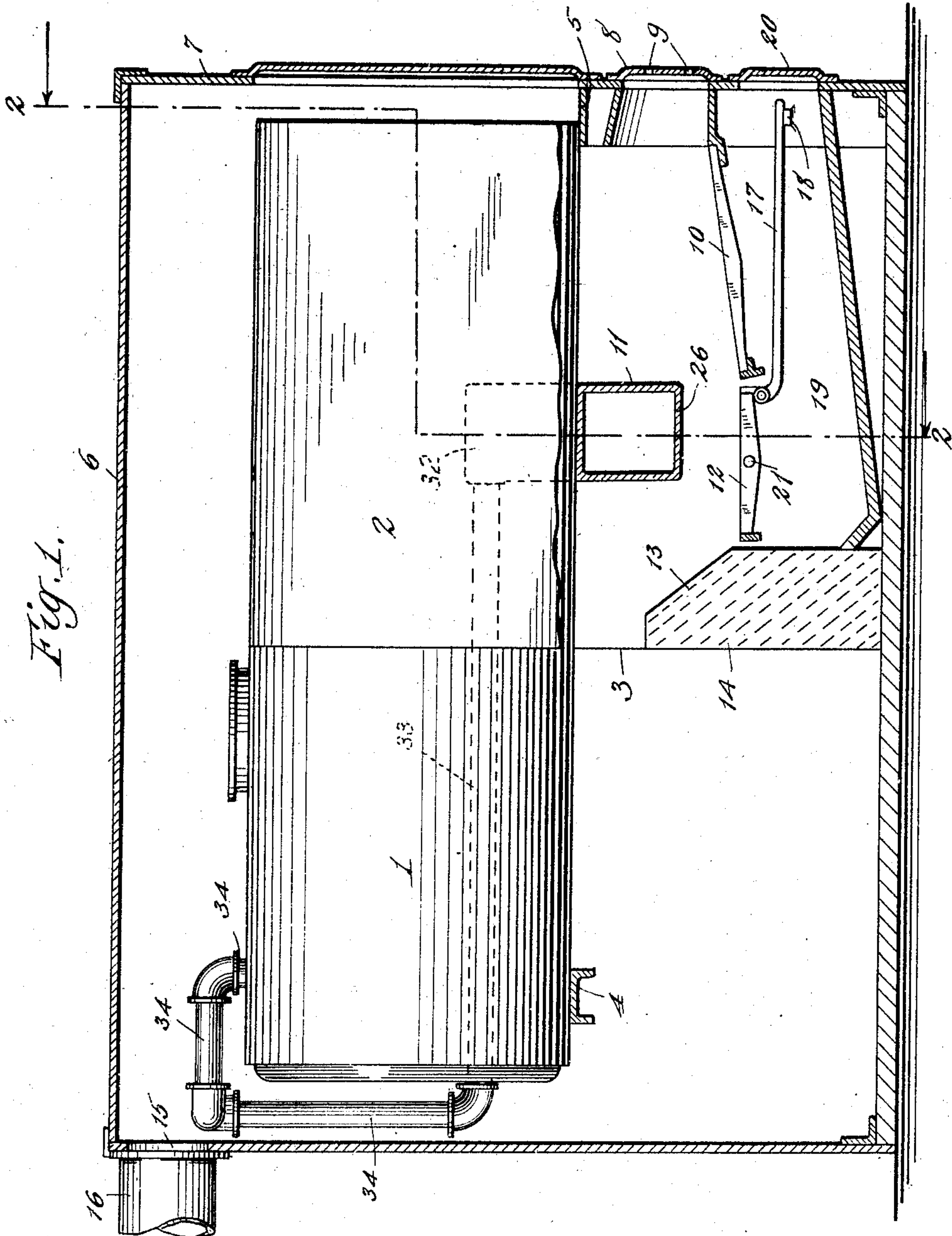
R. L. WALKER.
FURNACE.

APPLICATION FILED AUG. 28, 1907.

908,913.

Patented Jan. 5, 1909.

2 SHEETS—SHEET 1.



WITNESSES
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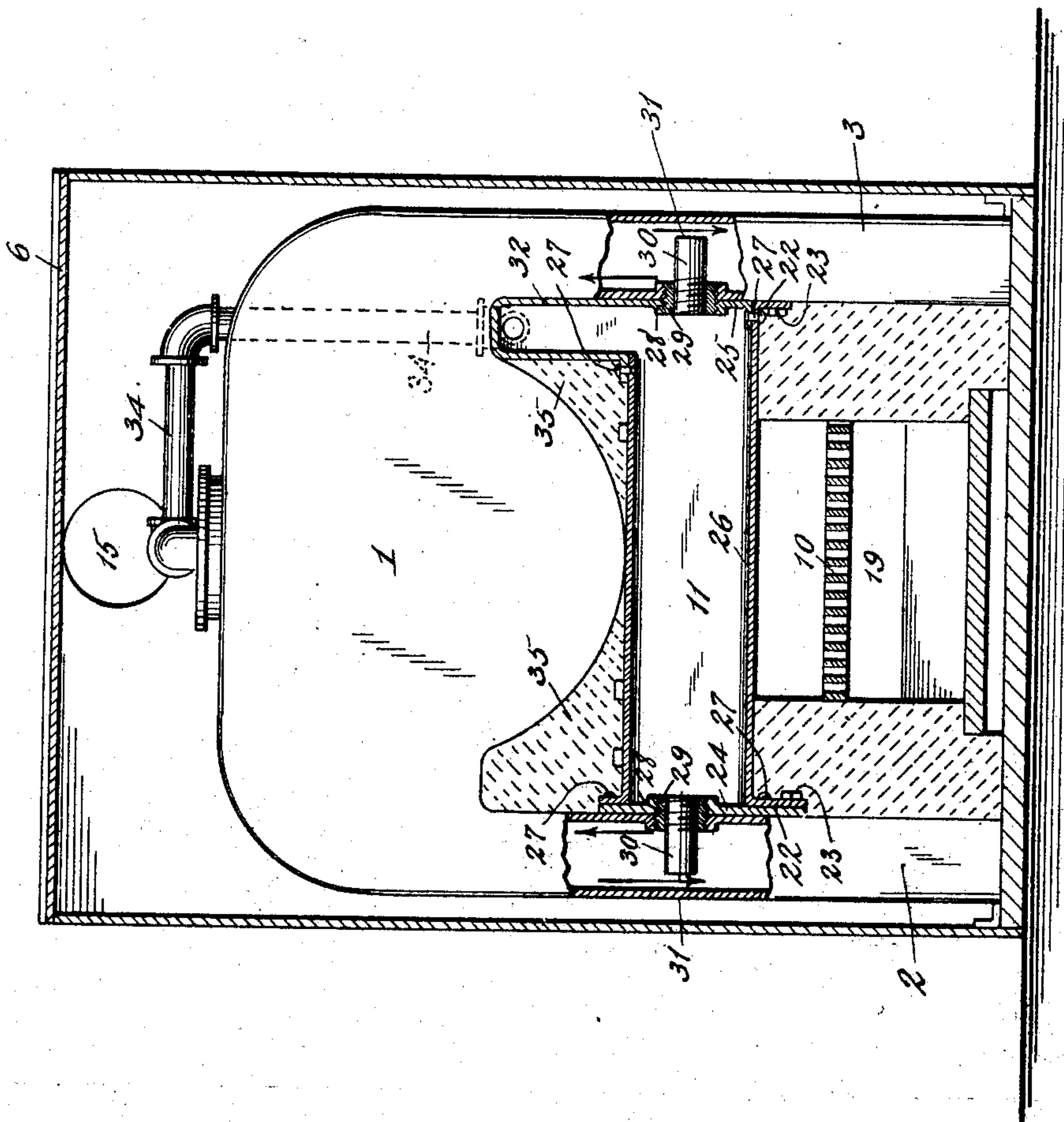
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2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

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FURNACE.

No. 908,913.

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To all whom it may concern:

Be it known that I, ROBERT L. WALKER, a citizen of the United States, and residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Furnaces, of which the following is a specification, taken in connection with the accompanying drawings.

This invention relates to furnaces which are adapted for general application used, more particularly, however, in connection with stationary and marine boilers.

In the accompanying drawings showing illustrative embodiments of this invention, Figure 1 is a longitudinal vertical section taken through the furnace equipped with my improvement. Fig. 2 is a transverse vertical section on the line 2—2 of Fig. 1, looking in the direction of the arrows.

In the illustrative embodiment of this invention shown in the drawings, 1 is a suitable boiler having water legs 2 and 3, the forward portion of the boiler being supported by any suitable means, such as an angle iron 4 and the rear portion supported by the legs 2 and 3 and by a ledge 5 upon which it rests. The boiler is suitably incased by a casing 6 which may be of metal, though any other suitable material may be used. In the front 7 of the casing 6, I arrange any suitable firing door as 8 having air holes 9, 9, and through this door I feed the fuel upon the stationary grate 10 where it is permitted to coke, the products of distillation being deflected by the deflector 11 down upon the grate 12 upon which a bed of live coals is always maintained, while the furnace is in use. The products of combustion after passing over the fuel upon the grate 12 are deflected upward by means of the inclined surface 13 of the bridge wall 14 and caused to circulate around the boiler 1 before they pass out through an opening 15 in the casing 6 which connects with any suitable pipe 16 which in turn is connected with a stack, not shown. After the fresh fuel has been fed upon the stationary grate 10 and has been partially coked and distilled, it is pushed back upon the rocking grate 12 which is pivoted at 21 and in turn becomes a part of the bed of live coals. This rocking grate 12 is shaken and dumped by any suitable means, such as the link 17, the handle of which rests upon a support 18 holding the rocking grate 12 in operative position. The ashes from this rocking grate fall into the ash-pit 19 and

are withdrawn in any suitable manner through the ash door 20.

In actual practice it is found that the furnace, such as described, which effectually consumes all smoke from the fuel, preventing its waste and exit through the stack, will rapidly wear out the deflector which is used to insure the smoke and products of distillation passing over the bed of live coals upon the rocking grate as noted. I have therefore formed my deflector 11 of some suitable heat-resisting material as metal and form it in one hollow body, preferably connecting it to the respective water legs 2 and 3 by any suitable means, such as flanges 22 and bolts 23. The ends 24 and 25 are secured to the body portion 26 of the deflector 11 in any suitable manner, such as rivets 27, 27, and each end 24 and 25 has a screw-threaded opening 28 within which fits a screw-threaded bushing 29 which in turn receives a short screw threaded pipe 30, the other end 31 of the pipe being extended somewhat past the middle of the water legs 2 and 3 into the path of the downwardly descending comparatively cold water.

At the end 25 of the deflector 11 I arrange a hollow extension or pocket 32 which at the upper end connects with the pipe 33 (Fig. 1) and which in turn connects with the pipe 34 leading back to the boiler 1, as clearly shown in Fig. 1.

To prevent the products of distillation and the gases from the coal upon the fixed grate 10 from passing between the top of the deflector 11 and the bottom of the boiler 1, I preferably place some suitable heat-resisting substance, as fire-brick or equivalent on top of the deflector 11, as clearly shown in Fig. 1.

By the use of my invention the deflector 11 is automatically cooled by means of the comparatively cold water in the boiler 1 passing down the different legs 2 and 3, respectively, where some of the cold water is intercepted by the pipes 30, 30 which are extended a sufficient distance into the water legs to be in the path of the comparatively cold water and are then made to flow through the hollow preferably metallic deflector 11 back to the boiler by means of the extension 32 and pipes 33 and 34. By my arrangement I not only increase the longevity of the deflector, but also materially add to the radiating surface of the boiler.

To prevent any steam collecting in the deflector 11 and causing a back pressure and consequently preventing the ready circulation of comparatively cold water through it, I use a pocket or extension 32 which is so arranged in relation to the main portion 26 of the deflector 11 that all the steam will readily collect in that portion of the deflector and as it is connected by the pipe which leads back to the boiler steam is prevented from accumulating in the deflector. It is also to be understood, of course, that in some cases I may use only one pipe 30, the other opening in the other water leg being omitted or closed.

Having described this invention in connection with several illustrative embodiments thereof, to the details of which I do not desire to be limited, what is claimed as new and what is desired to secure by Letters Patent is set forth in the appended claims:

1. In boiler furnaces, a fire box provided with comparatively thick masonry side walls, a boiler, water legs extending downward therefrom adjacent the outer surface of the side walls of said fire box to allow the water

circulating in said water legs to cool, a plurality of grates, a hollow metallic deflector mounted above said grates and supported by said masonry side walls, a pipe mounted in the end of said deflector and extending into one of said water legs into close proximity with the outer wall thereof to be in the path of the comparatively cold water, a socket forming a part of the deflector and a connection between said socket and the boiler.

2. In boiler furnaces, a fire box having masonry side walls, a boiler, water legs extending downward therefrom adjacent the outer surface of the side walls of said fire box to allow the water circulating in said water legs to cool, a grate, a hollow deflector mounted above said grate, means extending from said deflector into the water leg to allow the comparatively cold water within the water leg to flow into the deflector, and a connection between said deflector and said boiler.

ROBERT L. WALKER.

Witnesses:

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