

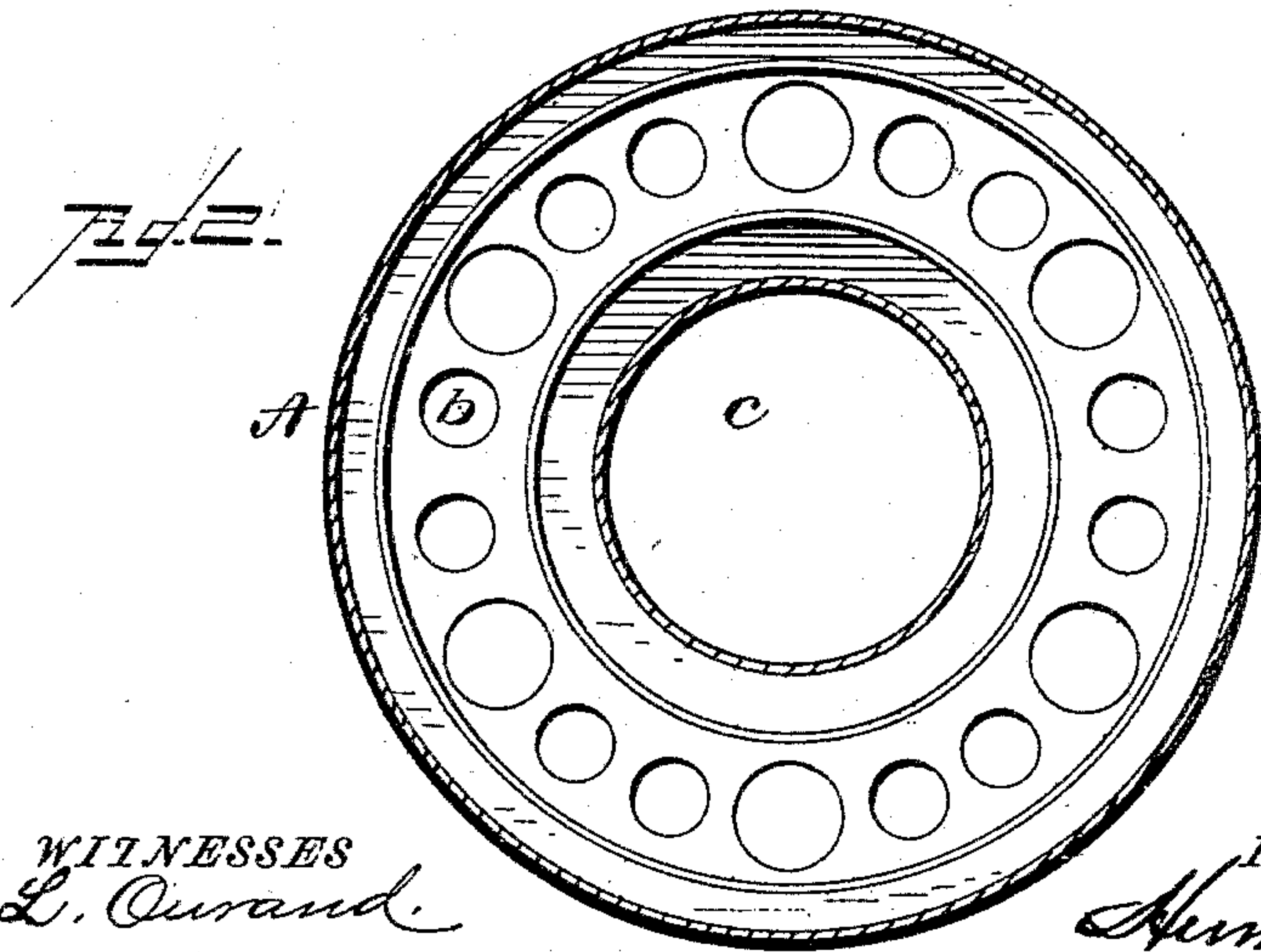
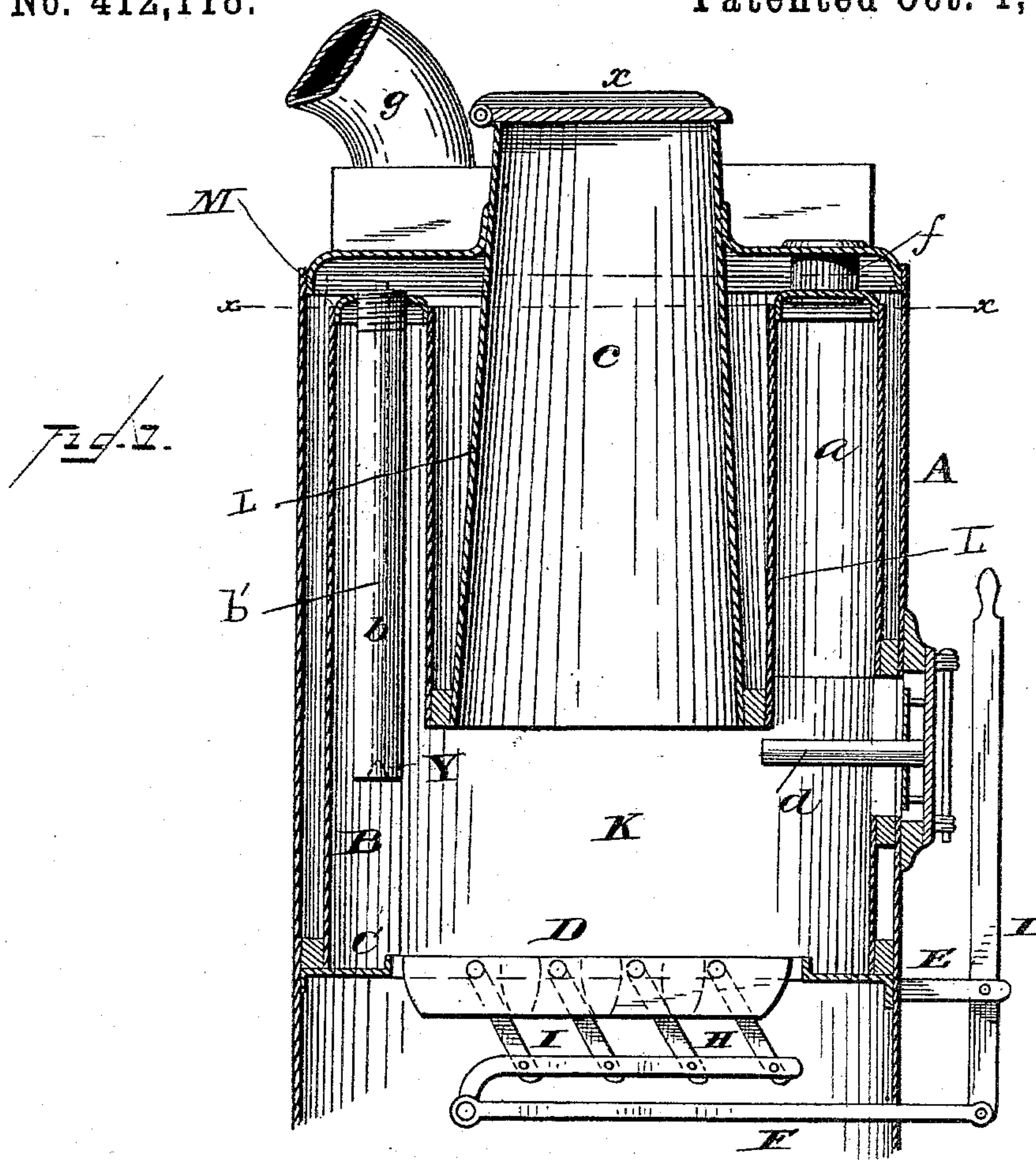
(No Model.)

H. H. PRANGE.

BOILER.

No. 412,118.

Patented Oct. 1, 1889.



WITNESSES
F. L. Curand.
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UNITED STATES PATENT OFFICE.

HERMAN HENRY PRANGE, OF AKRON, OHIO, ASSIGNOR OF TWO-FIFTHS TO
G. C. McNEIL, OF SAME PLACE.

BOILER.

SPECIFICATION forming part of Letters Patent No. 412,118, dated October 1, 1889.

Application filed May 8, 1889. Serial No. 310,002. (No model.)

To all whom it may concern:

Be it known that I, HERMAN HENRY PRANGE, a citizen of the United States, and a resident of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Boilers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it ap-
10 pertains to make and use the same.

My invention relates to hot-water boilers; and it consists in the construction and novel combination of parts, as will be hereinafter fully described and claimed.

15 In the accompanying drawings, forming part of this specification, and in which like letters of reference indicate corresponding parts, Figure 1 is a vertical longitudinal sectional view of a hot-water boiler embodying the im-
20 provements of my invention, and Fig. 2 is a horizontal sectional view taken on the line *x x* in Fig. 1.

Referring by letter to the accompanying drawings, A designates the body of the boiler.

25 B is an inner circular wall which rests on an annular ledge C, projecting inwardly from the body of the boiler on about the same horizontal plane with the top of the shaking-grate D, which is operated by a hand-lever I, fulcrumed in a projecting bearing E at the
30 front of the boiler, and connected at its lower end with the lower end of the bar F, by which the depending arms H of the grate-bar I are connected, so as to operate simultaneously
35 when the grate is shaken by the lever I.

a designates the smoke tube or flue, which connects the fire-pot K with the smoke-bonnet *f* at the top of the body A.

40 *c* is the magazine, which is provided with a hinged cover *x*, through which the coal is fed to the magazine.

g is the outlet-pipe through which the products of combustion pass from the boiler to the chimney.

45 *b* are the drop water-tubes having closed bottoms, and located within the same are circulating-tubes *b'*, said tubes having both ends open, thus increasing the circulation of the water, causing the water to rise in the tubes.
50 Said tubes are provided with the usual in-

verted-V-shaped cut Y, to produce a circulation through the medium of the inner circulating-tubes.

d is an air-pipe, which is passed through the door to supply air to aid combustion when the grate becomes covered with ashes. 55

This boiler is designed for burning slack or refuse, so that no great expense will attend the running of the boiler.

It will be seen from the drawings that an 60 annular water-leg is formed between the outer casing A of the boiler and the inner circular wall B, the lower edge of said wall resting upon the annular ledge C. Surrounding the magazine, with an intervening space between, 65 is an annular wall L, which, together with the annular wall B, forms a smoke-flue. This flue is covered by a cap or dome M, provided at suitable intervals with circular openings through which the drop-tubes are inserted, as 70 well as the smoke-bonnets. Between the inner wall L of the smoke-flue and the magazine is also formed an annular water-leg, which communicates with the outer leg by an upper horizontal passage. The communicating wa- 75 ter-legs of course are provided with closed bottoms to prevent the escape of the water. As the products of combustion arise from the fire-pot K, the same circulates around the an-
80 nular smoke-flues, thus thoroughly heating the water within the water-legs, and having access to all portions thereof owing to the peculiar conformation of the boiler, this being further facilitated by the constant circulation of the water through the means here- 85 inbefore described.

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

The herein-described boiler, consisting of 90 the outer annular casing provided near its lower end with an inwardly-extending annular ledge, an annular wall supported by said ledge and extending to within a short distance of the top of the boiler, an inner annu- 95 lar wall concentric with said ledge-supported wall, the connecting cap or dome provided with a series of perforations, the alternating drop water-tubes and smoke-bonnets, said tubes provided with closed bottoms, the cir- 100

culating-tubes provided with open ends, and
a central magazine, the space between the
same and the inner annular wall forming a
water-leg communicating at its top with a
5 horizontal extension, and the space between
the outer ledge-supported wall and the outer
casing also forming a depending water-leg
communicating with the upper horizontal por-
tion and the space between the two annular

walls forming the smoke-flue, substantially as
as set forth.

In testimony that I claim the foregoing as
my own I have hereunto affixed my signature
in presence of two witnesses.

HERMAN HENRY PRANGE.

Witnesses:

GRANT C. MCNEIL,

CHARLES FERDINAND PLUM.