

(No Model.)

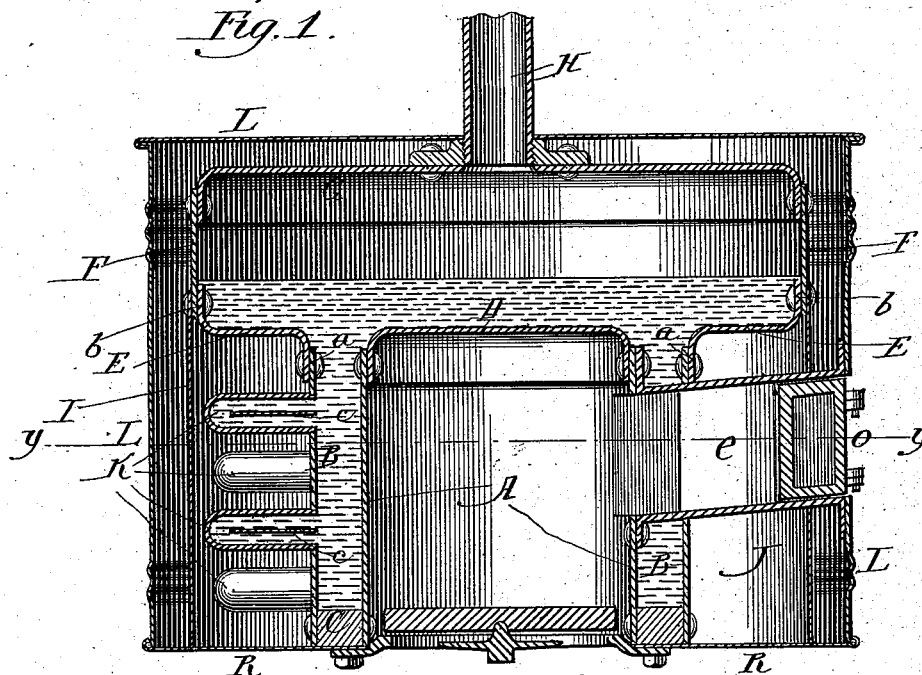
W. E. HAXTUN.

BOILER.

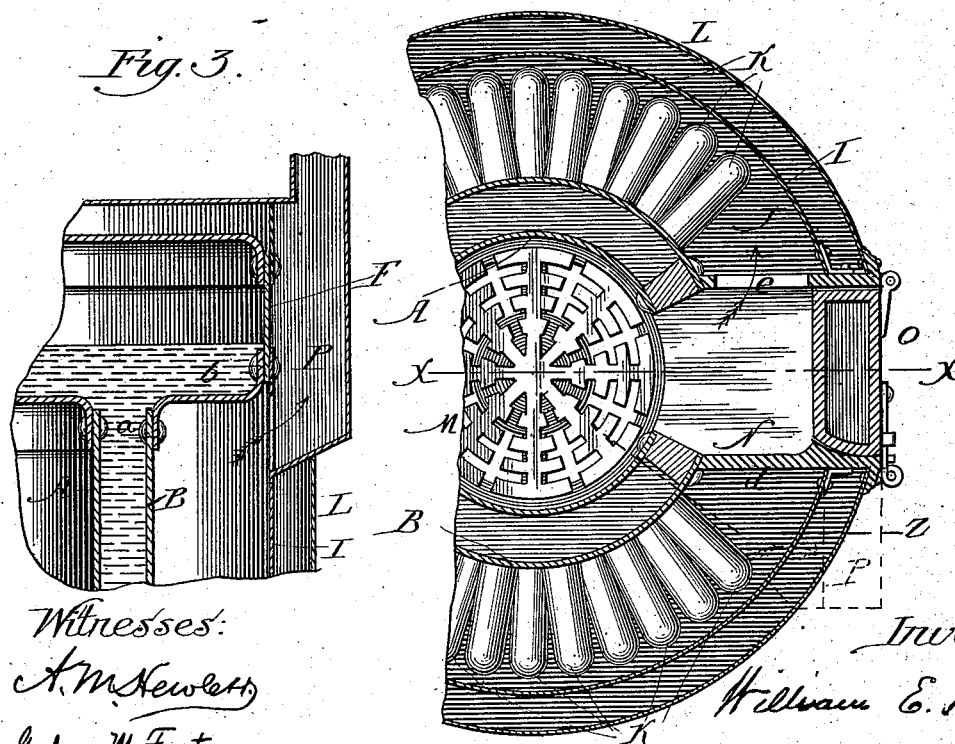
No. 381,240.

Patented Apr. 17, 1888.

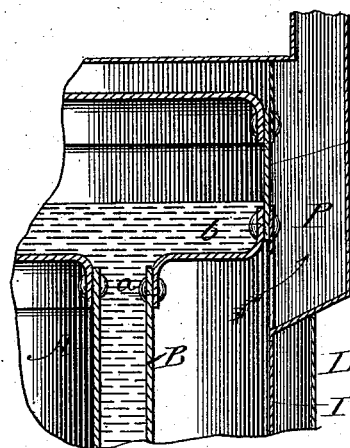
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:  
*A. M. Newell*  
*Graham M. Foote*

Inventor:  
*William E. Haxtun*

# UNITED STATES PATENT OFFICE.

WILLIAM E. HAXTUN, OF KEWANEE, ILLINOIS, ASSIGNOR TO THE HAXTUN  
STEAM HEATER COMPANY, OF SAME PLACE.

## BOILER.

SPECIFICATION forming part of Letters Patent No. 381,240, dated April 17, 1888.

Application filed July 19, 1887. Serial No. 244,725. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. HAXTUN, residing at Kewanee, in the county of Henry and State of Illinois, a citizen of the United States, have invented a new and useful Improvement in Boilers for Heating by Steam or Hot Water, of which the following is a specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a vertical section at line *x* of Fig. 2, the entire boiler being shown in Fig. 1 and a portion being cut away in Fig. 2. Fig. 2 is a horizontal section at line *y* of Fig. 1, a part of the boiler being removed in this figure.  
15 Fig. 3 is a detail, being a vertical section at line *z* of Fig. 2.

My improved boiler is primarily designed to be used in heating railway-cars, and, as shown in the drawings, is adapted to be placed  
20 beneath the car.

The objects of my invention are to so construct the boiler that the products of combustion will be taken out through the opening through which the coal is fed to the fire-chamber, and thence around the boiler through a  
25 flue-space, and also to provide such flue-space with water-tubes, which I accomplish as illustrated in the drawings and hereinafter described. Those things which I claim as new  
30 will be set forth in the claims.

In the drawings, A is a sheet of metal formed into a cylinder.

B is a second sheet of metal formed into a cylinder somewhat larger than the cylinder A.

35 C is a metal ring located between the two cylinders A B and at the bottom thereof, to which ring these two cylinders are riveted.

D is a flanged head, which is riveted to the upper end of the cylinder A.

40 E is a head which has two flanges, *a b*. The flange *a* is riveted to the upper end of the cylinder B.

F is another short cylinder, to the lower end of which the flange *b* of the head E is riveted.

45 G is a flanged head riveted to the upper end of the short cylinder F. This cylinder F and the head G together form a steam-dome.

H is a pipe for the passage of steam from the steam-dome.

I is a sheet-iron cylinder, the upper end of 50 which is riveted to the lower end of the short cylinder F. The space between the cylinders B and I forms a fire-space or flue space, J, and it is closed at the bottom by means of an iron sheet, R, of suitable form.

55 K are horizontal tubes, the outer ends of which are closed, and their inner ends are inserted in suitable openings which are drilled and tapped in the cylinder B. Each of these tubes is, as shown, provided with a diaphragm, 60 *c*, to aid the circulation. As shown, there are four rows of these tubes; but the number is not essential. The space between the cylinders A B is a water-space, from which the water flows into the tubes K.

65 Around and over the boiler, as described, is placed a casing, L, which may be made of galvanized iron, and may be about two and a half inches from the outer shell of the boiler, forming an air-space to protect the boiler 70 from the cold and prevent the radiation of heat. The bottom of this air-space is closed by an iron sheet or ring.

M is a circular grate of any suitable construction. The several cylinders A B I and 75 the casing L are each provided with an opening to receive a chute, N, through which coal is introduced to the fire-chamber. This chute is made of heavy cast-iron, riveted to the boiler proper and to the cylinder I, and also to the 80 iron casing L. This chute is closed on one side, as indicated at *d*. On the other side there is an opening, *e*, through which the products of combustion can pass from the fire-pot into the flue-space J.

85 O is a door at the outer end of the chute N.

P is an outlet-passage for the smoke, which may be carried up, (directly through the car,) as indicated in Fig. 3, or it might be carried 90 first horizontally along under the car to a point near the end thereof and then up through the car, or it may be carried up outside the car.

As represented, the boiler is only about twenty-four inches in height and may be suspended under a railroad-car. The height of 95 the boiler may, of course, vary somewhat, according to the space beneath the car which can be occupied by the boiler.

The operation is as follows: Fuel can be fed to the fire-pot through the chute N when the door O is open. When the door is closed, the smoke and products of combustion will pass out through the same opening through which the coal was fed to the fire-pot, and will pass through the opening *e* in the side of the chute into the flue-space J, and will pass through the flue-space around to the opposite side of the boiler and out through the smoke-passage P, as indicated by arrows. A large amount of heating-surface is provided, the water being in the space between the cylinders A B, also passing into the tubes K, and also extending over the heads D and E.

I have shown in the drawings a pipe, H, for the conveyance of steam from the boiler into the car.

The boiler is well adapted to be used as a hot-water heater instead of steam-heater, if desired, the circulating water-pipes being arranged in any well-known manner.

Boilers containing my invention may be used for purposes other than for heating railway-cars.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a boiler, the combination of a fire-pot, a water-space outside of such fire-pot, a smoke-flue around such water-space, a chute or passage through which fuel can be fed to the fire-pot, which chute passes through the water-space around the fire-pot and is entirely closed on the bottom, top, and one side, but has an opening in one side which communicates with the smoke-flue which surrounds the water-space, substantially as and for the purposes specified.

2. In a boiler, the combination of a fire-pot, a water-space outside of such fire-pot, a smoke-flue around such water-space, water-tubes communicating with such water-space and extending into the smoke-flue, a chute or passage through which fuel can be fed to the fire-pot, and a passage through one wall of the chute and communicating with the smoke-flue around the water-space, substantially as and for the purposes specified.

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Witnesses:

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