(No Model.)

E. KÖRTING.

WATER OR STEAM BOILER.

No. 469,152. Patented Feb. 16, 1892.

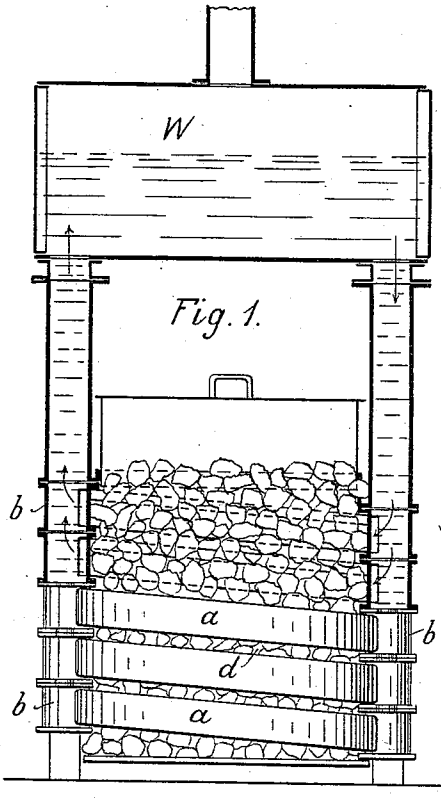

Fig. 1.

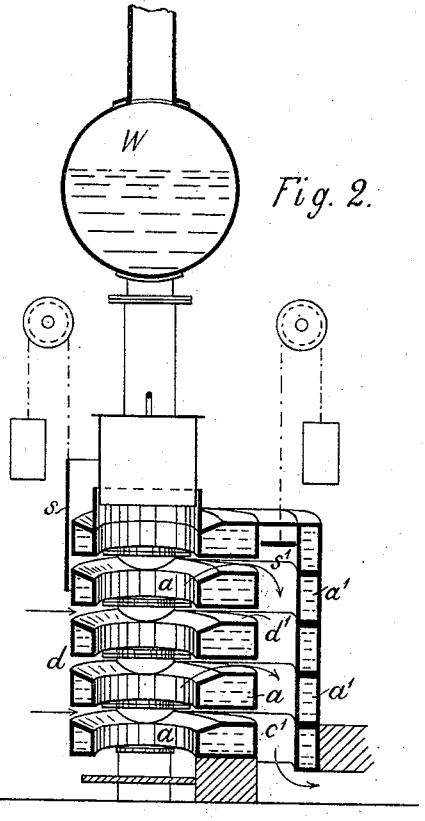

Fig. 2.

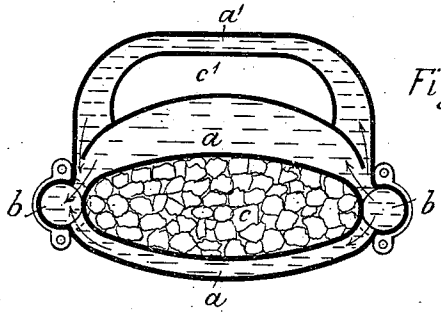

Fig. 3.

Witnesses:
George E. Quest
Walter E. Allen.

Inventor:
Ernst Körting.
By Knight Bros.
Attorneys.

UNITED STATES PATENT OFFICE.

ERNST KÖRTING, OF HANOVER, GERMANY.

WATER OR STEAM BOILER.

SPECIFICATION forming part of Letters Patent No. 469,152, dated February 16, 1892.

Application filed September 2, 1891. Serial No. 404,564. (No model.) Patented in Switzerland April 6, 1891, No. 3,427, and in Italy June 30, 1891, LVIII, 155.

To all whom it may concern:

Be it known that I, ERNST KÖRTING, a subject of the King of Prussia, and residing at Hanover, Kingdom of Prussia, Germany, have invented new and useful Improvements in Water or Steam Boilers, (for which I have obtained patents in Switzerland April 6, 1891, No. 3,427, and in Italy June 30, 1891, No. 155, Vol. LVIII,) of which the following is a specification.

My invention consists in a water or steam boiler formed of hollow cast-iron sections or vessels, which are flat or substantially flat and provided with an internal opening and vertical cylinders at either extremity, so that when the said sections are arranged one above the other and the flanges of the cylinders or upright tubes are tightly connected together the internal opening will form a vertical fire-place to receive the fuel, and the said cylinders or tubes will form a continued pipe, permitting the circulation of the water and the escape of the steam from the different parts of the above-mentioned sections or vessels. Owing to the flanges of the upright tubes, the vessels or sections will not bear closely upon each other, so that there are slots between the several vessels or sections, which allow the direct supply of air from the outside to the fuel in the fire-place and the escape of the products of combustion into the flue.

In the annexed drawings, Figure 1 is an elevation of a boiler constructed according to my invention, partly in section. Fig. 2 is a sectional elevation at a right angle. Fig. 3 is a cross-section through one of the hollow sections or vessels.

a a are the sections, which are shown in Fig. 3 as oval rings with internal openings *c*, forming in the superposed position of the sections the fire-place. The sections *a* have at either extremity a short upright tube or vertical cylinder *b*, provided with flanges by which the said sections are connected with each other. The cylinders or tubes when connected will form continued pipes communicating with the interior of each section and permitting the circulation of the water through and the escape of the steam or vapor from the different parts or sections of the boiler, as indicated by arrows in Fig. 1. The slots *d*, provided on the front part and also on the part directed toward the flue between the sections or vessels of the boiler, allow the air to enter from the outside into the fire-place, which, having passed the fuel in the fire-place, will pass through the opposite slots *d'* and carry the products of combustion into the flue. The shape of the sections or vessels can be varied. In order, however, to prevent undue pressure, it is preferable to make the same round or oval.

When the boiler is required to be used for the purpose of generating steam, it is advisable to give the separate sections or vessels an inclined position, as shown in Fig. 1, in order that the steam as it is generated may readily escape and to arrange above the top vessel a water separator or vessel W, Figs. 1 and 2, similar to those used with water-tube boilers, which upper vessel can be subjected, either partly or completely, to the action of the fire or of the products of combustion.

The shape or form of the hollow sections or vessels *a* in vertical cross-section may vary, although the design illustrated in the drawings, in which the top and bottom faces incline toward the internal opening *c*—*i. e.*, the fire-place—is to be preferred, as in this form the deposit of fuel in the spaces or slots *d* and *d'* between the vessels *a* is avoided.

In order to secure the greatest possible amount of useful effect from the fuel and from the products of combustion, the separate sections or vessels *a* of the boiler can be provided with a second hollow ring-shaped part *a'*, communicating with the vessel *a* and being of such a shape that the said parts *a'* when in superposed position will bear closely upon another, forming a channel-shaped flue *c'* for conducting the fire-gases to the chimney. Moreover, the surface in contact with the fire may, according to any of the well-known methods, be enlarged by making the same corrugated or by forming ribs thereon. The regulation of heat in such a boiler is effected within certain limits by arranging on the outside of the sections *a* in the front, or, better still, at the back of the same, dampers *s s'*, fitting as tightly as possible, so that by raising or lowering the same a larger or smaller num-

ber of the said sections are shut against the entrance of the air or the flow of the gases of combustion.

What I claim, and desire to secure by Letters Patent in the United States, is—

1. A boiler composed of hollow ring-shaped sections arranged one above the other and attached to each other by means of flanged cylindrical connecting-pieces open at both ends and having air-supply slots between the sections at the front and slots for the escape of the products of combustion at the rear, substantially as described.

2. In combination with the hollow ring-shaped sections arranged one above the other and attached to each other by means of flanged cylindrical connecting-pieces open at both ends and having slots at the front and at the rear, the hollow ring-shaped parts a', which in the superposed position of the sections form the flue, substantially as described.

3. In combination with the boiler composed of hollow ring-shaped sections arranged one above the other and attached to each other by means of flanged cylindrical connecting-pieces open at both ends and having slots at the front and at the rear, and the dampers $s\ s'$, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ERNST KÖRTING.

Witnesses:
A. WOLFE,
WM. CARINS.