(No Model.)

A. PATZELT & A. SCHÖCHE.

VERTICAL BOILER.

No. 564,640. Patented July 28, 1896.

Fig. 1.

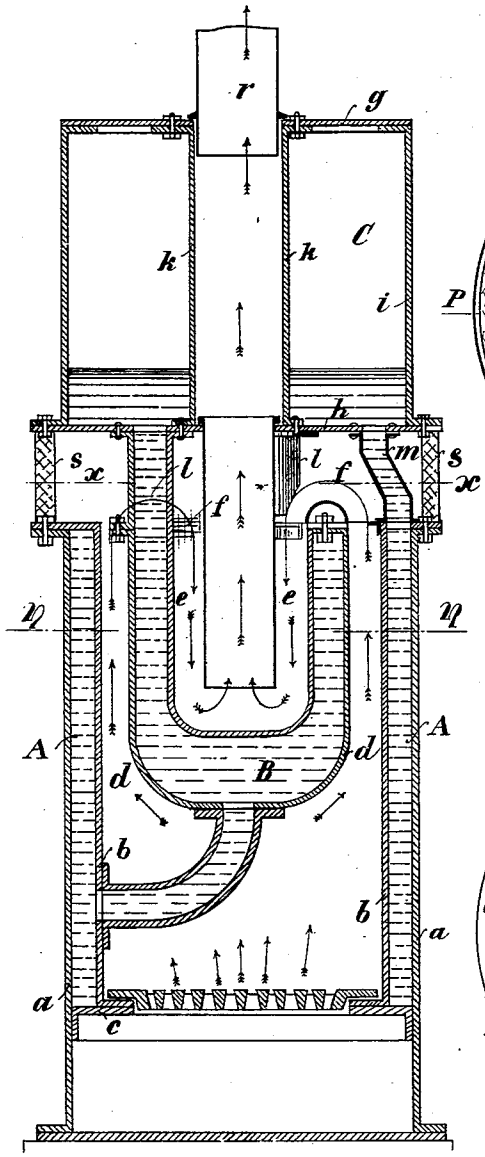


Fig. 2.

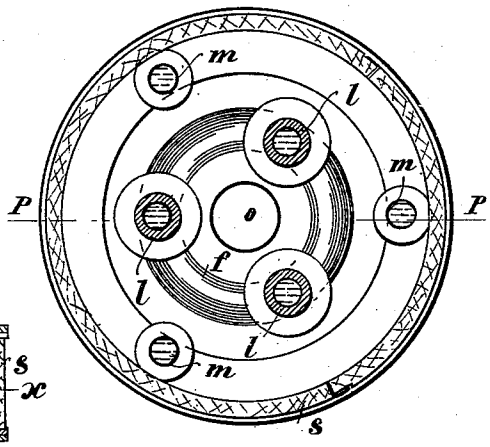
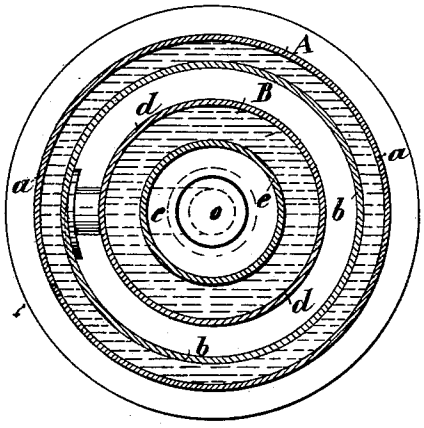


Fig. 3.



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UNITED STATES PATENT OFFICE.

ANTON PATZELT AND ADOLF SCHÖCHE, OF DRESDEN, GERMANY.

VERTICAL BOILER.

SPECIFICATION forming part of Letters Patent No. 564,640, dated July 28, 1896.

Application filed November 25, 1893. Serial No. 492,019. (No model.)

To all whom it may concern:

Be it known that we, ANTON PATZELT and ADOLF SCHÖCHE, manufacturers, of Dresden, in the Kingdom of Saxony, Empire of Germany, have invented new and useful Improvements in Vertical Boilers, of which the following is a specification.

The subject of the invention in question is a vertical boiler which may be used to produce steam as well as for the purpose of heating water. Owing to the peculiar construction of this new boiler, a quick and abundant development of steam, a rational use of the heating-gas, and very little consumption of fuel, combined with smokeless burning, is attained. Besides this, in consequence of the simple manner in which the single parts of the boiler can be taken asunder, it is always very easy to effect the cleaning and revision of the boiler.

Referring to the drawings, Figure 1 shows a longitudinal section of the boiler on the line P P of Fig. 2; Fig. 2, a cross-section on the line *x x* of Fig. 1; Fig. 3, a cross-section on the line *y y* of Fig. 1.

The construction is divided into three parts—a warming-boiler A, a seething-boiler B, and a steam-chest C.

The warming-boiler A is represented by the outer boiler-casing *a* and an inner casing *b*, running parallel to *a*, this inner casing *b* being connected by its under flange to the heating-surface *c*, which bears the grate, and by its upper flange to the flange of casing *a*, which can be disconnected by means of screws.

The seething-boiler B is hung centrally in the space formed by the boiler A, and consists of an outer casing *d*, closed toward the end by a concave bottom, and an inner casing *e*, which runs parallel to *d* and is connected with it by flanges, detachable by screws, which flanges at the same time form the upper end of the boiler. In order to prevent the screw-knobs being destroyed by the fire-gases, which come in contact with them, an appropriately-formed cap *f* can be fixed over the top of the boiler B.

The steam-chest C is placed above the two boilers A and B and the fire-passages. It consists of an outer casing *i* and an inner casing *k*. The former is closed at the top by a cover *g*, while the lower end is screwed fast to the bottom *h*, and the latter is connected by flanges to *g* and *h*, which may be unloosened by means of screws. The connection between the steam-chest C and the seething-boiler B is made by three tubes *l*, which are placed between the boiler-bottom *h* and the top of the boiler B. In the same manner the heating-boiler A is connected with a steam-chest C.

The heating-tube fixed at the bottom of the seething-boiler serves to connect the heating-boiler with the seething-boiler and makes it possible at the same time that the water circulates in all three boilers. Between the flanges of the boiler-bottom *h* and the top of heating-boiler A is fixed a casing-ring *s*, made inside of a fireproof material and outside of iron plate and which, in order to make its removal easy, may consist of three or more parts. The escape of the fire-gases is made possible in the space left by the inner boiler-casing in such a manner that a tube *o*, hung into the inner space of the boiler-casing *k* and reaching down to the space formed by the boiler-casing *e*, represents the beginning of the escape-pipe, the prolongation of which is at the same time the inner boiler-casing *k* of the steam-collector C and a tube *r*, inserted into the former. The fire-gases take the way marked out by the arrows, pass through the passage formed by the casings *b* and *d*, playing strongly round the boiler-casings and over the top of the seething-boiler, along the inner casing side, and from there into the escape-pipe. In this manner the fire comes in contact with the whole of the casing sides and bottom and top of the seething-boiler, the inner side of the heating-boiler with the connection tubes to the steam-chest, and with the bottom of this latter.

In order to facilitate cleaning and examination, the single boilers can be taken asunder by loosening the connection screws, and so each boiler, owing to the possibility of taking asunder the two casings which form the boiler, can easily be cleaned from within and freed from furs. The opening through the two casings of the warming-boiler for the fire-door is arranged in such a manner as not to prevent the taking out of the inner casing *b*. In order to sweep the fire-passages, it is only necessary to take away the two es-

cape-pipes *o* and *r* and the casing-ring *s*, after which the passages can be easily and conveniently cleaned.

Having now described our invention, what we claim, and desire to secure by Letters Patent, is—

A vertical circulation-boiler consisting of a heating-boiler A, of a circular cross-section, in the inner space of which is centrally hung a seething-boiler B, with boiler-casings shaped concave to the bottom while the steam-chest C is fixed above these two boilers and is connected with them by tubes *l* and *m* whereby the single interspaces between the three boilers A, B and C serve as draft-passages for the fire-gases, in which, in order to effect an easy and convenient cleaning or revision, the single boilers, their casings and the casing-ring *s* can be dismounted, substantially as herein described with reference to the drawings.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

ANTON PATZELT.
ADOLF SCHÖCHE.

Witnesses:
RICHARD HEÜFERT,
CARL BERNHARDT.