

No. 788,460.

PATENTED FEB. 28, 1905.

E. PIELOCK.
SUPERHEATER.

APPLICATION FILED NOV. 25, 1903.

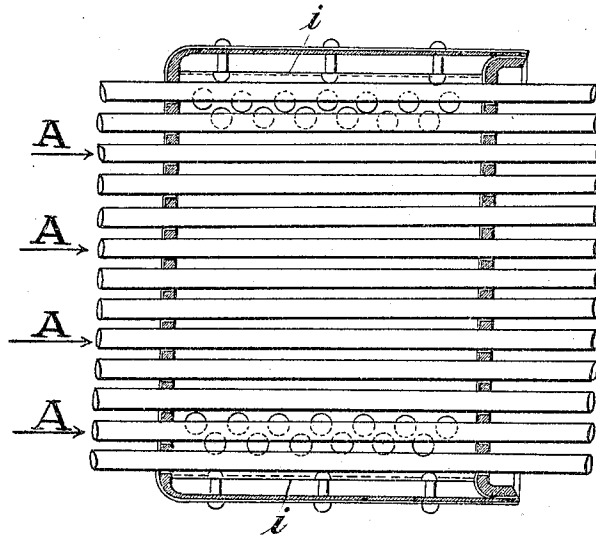


Fig. 1.

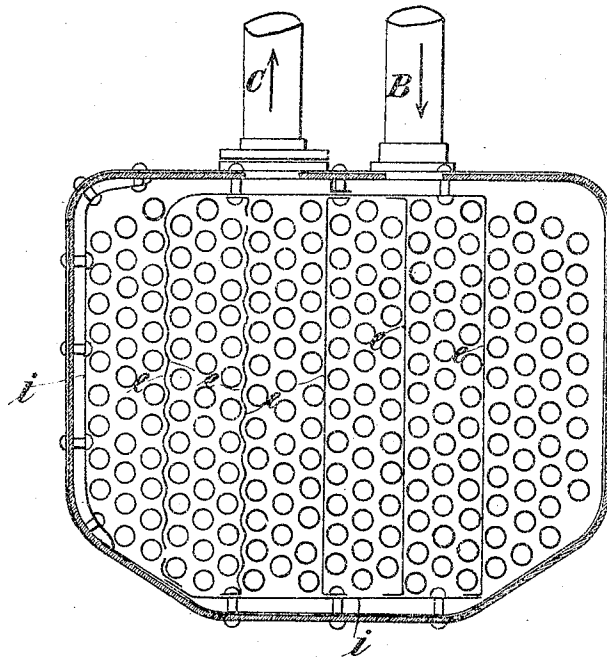


Fig. 2.

Witnesses:

Wilhelm Rottig
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UNITED STATES PATENT OFFICE.

EDUARD PIELOCK, OF BERLIN, GERMANY.*

SUPERHEATER.

SPECIFICATION forming part of Letters Patent No. 783,460, dated February 28, 1905.

Application filed November 25, 1903. Serial No. 182,671.

To all whom it may concern:

Be it known that I, EDUARD PIELOCK, civil engineer, a subject of the German Emperor, residing at 31 Uhlandstrasse, in the city of Berlin, Kingdom of Prussia, German Empire, have invented a certain new and useful Superheater, of which the following is a specification.

This invention has reference to improvements in steam-superheaters of the kind described in my application for United States Letters Patent, Serial No. 123,299, of September 13, 1902. In the application referred to the course of the steam to be superheated is guided by partition-walls arranged at right angles to the heating-tubes. In this arrangement of parts the heating-tubes have to be secured to the partition-walls.

The present invention is intended to avoid this additional work and to reduce the costs of manufacture of the superheater.

This result, as appears from the drawings, which represents a superheater embodying my invention, in Figure 1 in vertical longitudinal section and in Fig. 2 in vertical transverse section, respectively, is accomplished by providing partition-walls which are arranged parallel to the heating-tubes.

The superheater itself consists of a box of smaller sectional area than the boiler itself and secured at some convenient place at the inside of the boiler. A steam-entrance pipe B and a steam-exit pipe C project through the top of the boiler and are secured to suitable openings in the upper part of the said superheater-box. The longitudinally or axially arranged fire-tubes or heating-tubes A of the boiler extend through the said closed superheating-box and are securely welded water and steam tight into the side walls of the superheating-box. Partition-walls *e* are vertically and horizontally arranged between the bundles of heating-tubes and parallel to the same at the inside of the superheating-box and are alternately provided with openings near their upper and near their lower ends, respectively, so as to impart a kind of zigzag way to the steam within the superheater. In order to protect those of the heating or fire

tubes situated near the walls of the superheater from loss of heat from radiation and from the cooling effect of the water, I provide heat protecting or insulating false walls *z* at the interior of the superheating-box and at a slight distance from the outer walls of the same. The superheating is effected by allowing the heating-gases to enter at A, while the steam which is to be subjected to the superheating operation is introduced into the superheater at B. The steam surrounds the heating-surface on its way, which is controlled by the partition-walls *e*, and then escapes at C. By this means the steam which is to be superheated is caused to come in intimate contact with the entire heating-surface of the superheater without the necessity of the heating-tubes being secured to the partition-walls. The said partition-walls *e* are secured to the superheating-box by riveting their upper and lower ends to the top and bottom of the box or to the false walls *z*, as shown in the drawings, or in any other suitable manner.

I am aware that it is old to employ the fire-tubes of the boiler itself for the purpose of producing the superheating of the steam and to divide the said fire-tubes into bundles by partition-walls having intercommunicating passages; but as heretofore constructed the said partition walls were horizontally arranged and not vertically, as in my invention, and the steam entered the superheater from the bottom, while in my invention it enters and leaves the superheater from the top, whereby a more efficient drying is obtained than in the old construction referred to where the horizontal partition-walls acted as baffle-plates on which the water contained in the steam would deposit and then drop down on the fire-tubes and cool the same, and my invention also avoids the drawback of the former construction where the steam was carried through the superheater-box downward, so as to open out at the bottom, whereby the steam was cooled down and partly condensed on its passage through the steam-conducting tube before it could enter the superheater proper. It is obvious, therefore, that a great improvement over the prior construction and

a more efficient drying and superheating of the steam and a reduction in wear of the parts is effected in my invention.

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

1. Steam-superheater comprising the combination with a closed box and a suitable number of axially-arranged fire-tubes or heating-tubes extending through said box and fitted
10 tightly into the side walls of said box, of substantially parallel, vertically and axially arranged partition-walls at a suitable distance from each other between the several bundles of tubes and provided with openings for the
15 passage of steam, pipes for the admission and discharge of steam fitted into the top of the said box, substantially as described.

2. In a steam-superheater the combination with a fire-tube or heating-tube boiler, of a
20 closed box of smaller sectional area than the boiler and of smaller axial extent than the boiler and arranged inside of the said boiler, the fire-tubes or heating-tubes extending steam-tight through the side walls of the said
25 box; steam admission and discharge pipes in

the top of the said box and communicating with the steam-spaces of the boiler, axially and vertically arranged, substantially parallel partition-plates at the inside of the said box
30 between the several bundles of tubes and provided with alternately-arranged communicating openings near the upper and lower parts of the partition-walls.

3. Steam-superheater, comprising in combination a closed box, steam inlet and outlet
35 pipes in the top of said box, axially-arranged fire-tubes fitted steam-tight into the side walls of the box, false walls at a suitable slight distance from the walls of the box at the inside of the same and between the walls and the
40 fire-tubes, and vertically and axially arranged intercommunicating partition-walls within the box between the several bundles of fire-tubes, substantially as described.

In witness whereof I have hereunto set my
45 hand in the presence of two witnesses.

EDUARD PIELOCK.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.