J. H. ROSENTHAL.

SUPERHEAT REGULATOR FOR STEAM GENERATORS.

APPLICATION FILED APR. 10, 1914.

1,119,318. Patented Dec. 1, 1914.

Fig. 1.

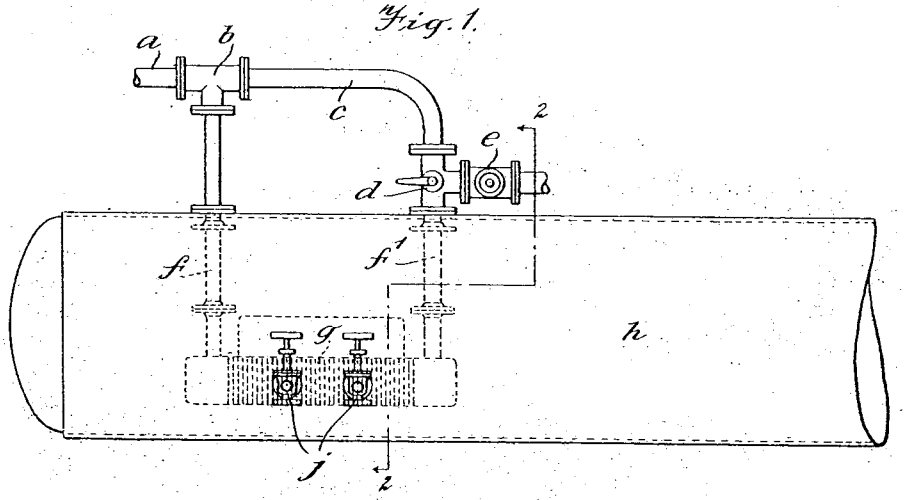


Fig. 2.

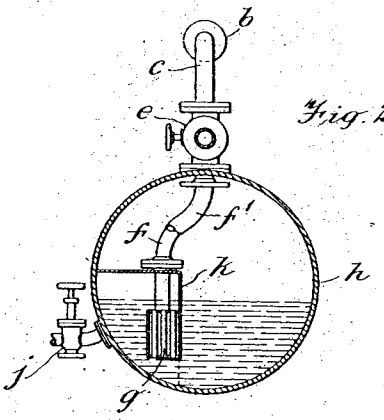
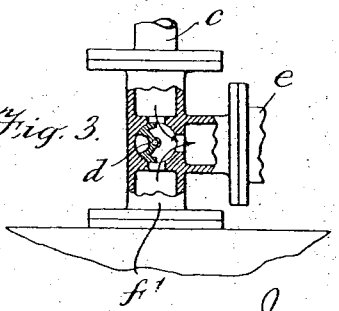


Fig. 3.



Witnesses:

Inventor

Attorneys

UNITED STATES PATENT OFFICE.

JAMES HERMANN ROSENTHAL, OF CHISELHURST, ENGLAND, ASSIGNOR TO THE BABCOCK & WILCOX COMPANY, OF BAYONNE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SUPERHEAT-REGULATOR FOR STEAM-GENERATORS.

1,119,318. Specification of Letters Patent. Patented Dec. 1, 1914.

Application filed April 10, 1914. Serial No. 830,888.

To all whom it may concern:

Be it known that I, JAMES H. ROSENTHAL, a subject of the King of Great Britain, residing at Kemnal Manor, Kemnal Road, Chiselhurst, Kent, England, have invented certain new and useful Improvements in Superheat-Regulators for Steam-Generators, of which the following is a specification.

The present invention is an improvement upon that of my Patent No. 1,096,128, dated May 12, 1914, and relates to means for effecting the regulation of the superheat of steam by diverting the superheated steam wholly or in part from its passage to the stop valve or main and leading the diverted steam through an attemperator fitted in the steam generator drum. With the arrangement described in the said prior patents the minimum limit of temperature to which the superheated steam could be brought was necessarily above that of saturated steam, as the temperature of the water or steam immediately surrounding the attemperator is not sufficiently low to provide the requisite thermal head for the transference of heat required to convert the superheated steam into saturated steam.

According to the present improvement or modification, in order to extend the range of reduction of the temperature of the superheated steam, so that the latter may, if desired, be reconverted into saturated steam, and to permit of reduction of the dimensions of the attemperator, etc., the attemperator is located in that part of the drum receiving and containing the feed water.

The invention will be understood by reference to the accompanying drawings in which—

Figure 1 is a side elevation of a steam and water drum showing the invention applied thereto; Fig. 2 a transverse section on the planes of the line 2—2; and Fig. 3 a sectional detail of one of the valves.

Similar reference numerals indicate similar parts in the several views.

Referring to the drawings, the connection *a* from the superheater diverges at *b* into two branches, one branch *c* leading directly to the mixing valve *d* and thence to the main stop valve *e* and the other branch leading to the mixing valve *d* by way of the attemperator *g* fitted within the boiler drum *h*. The attemperator *g* is represented as being of the form described in my prior Patent No. 1,096,128, being constituted by a long box to the ends of which are coupled the limbs *f*, *f'* of the second mentioned branch of the superheater connection. The said attemperator *g* is so positioned in relation to the feed water inlets *j* that inflowing feed-water will impinge thereon and is inclosed within a compartment formed by the wall of the drum and diaphragms or partitions *k*, whereby the feed water is cut off from the main body of feed-water and the temperature within the compartment may be maintained considerably lower than that in the rest of the interior of the drum. At the junction of the branches *c* and *f'* is fitted the mixing valve *d*, shown in section in Fig. 3, adapted to control the communication between the branches *c* and *f'* and the main stop valve *e*.

It will be understood that in the operation of the invention superheated steam is led by the connection *a* and according to the position of the mixing valve *d* the ratio of the volume of steam flowing through the branch *c* to that flowing through the branch *f*, *f'*, including the attemperator can be adjusted and thereby the degree of superheat regulated. In one extreme position of the mixing valve the entire volume of the superheated steam may be caused to flow through the branch *c* and thus to by-pass the attemperator; while in the other extreme position of the mixing valve the entire volume of steam from the superheater is passed through the attemperator.

As shown in Fig. 2 the compartment formed by the partitions *k* is opened at the lower part thereof to permit the escape of the feed water from the compartment into the drum.

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

1. The combination with a steam boiler drum, of means for regulating the temperature of superheated steam comprising an attemperator located in that part of the drum receiving and containing the feed water, the attemperator serving as a heat exchanger between the superheated steam and feed water.

2. The combination with a steam boiler drum, of a superheated steam attemperator therein, a partition forming a compartment

in which said attemperator is positioned, and a feed water inlet to said compartment.

3. The combination with a steam boiler drum, of a superheated steam attemperator located therein, steam inlet and outlet connections to said attemperator, and a directing valve adapted according to its position to cause the superheated steam to flow through said connection or partly or wholly to by-pass said connection, partitions forming a compartment in which said attemperator is positioned and cut off from the main body of feed water, and a feed water inlet to said compartment.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JAMES HERMANN ROSENTHAL.

Witnesses:
HENRY PELHAM SMITH,
HENRY ALBERT WELLING.