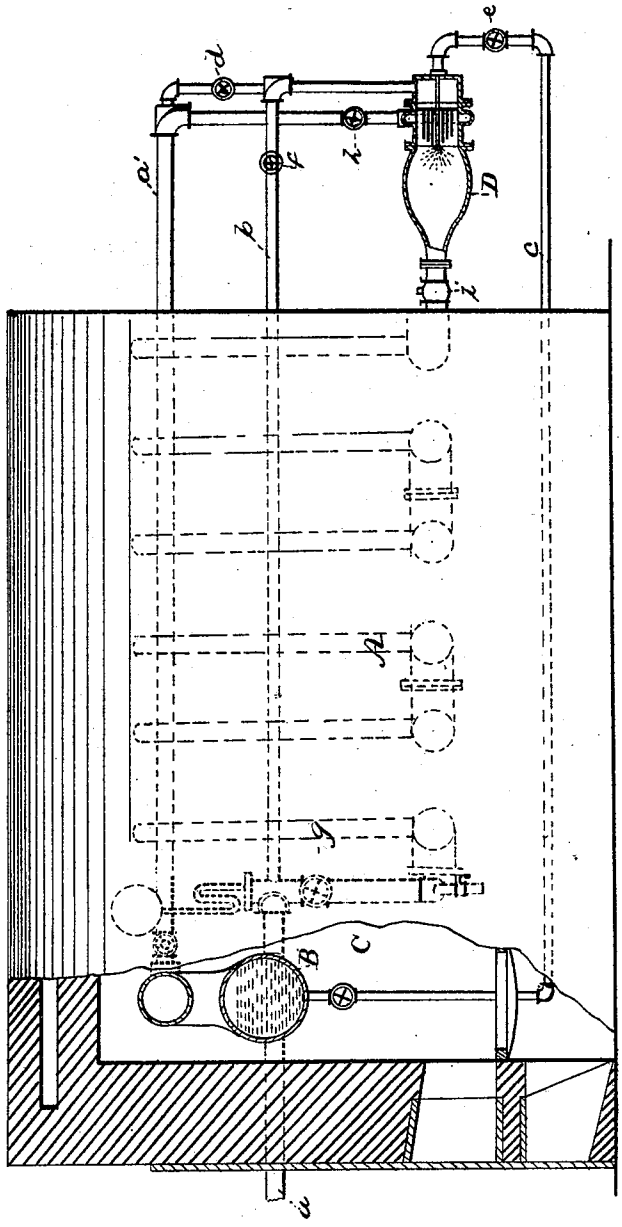
(No Model.)

D. RENSHAW.

MAINTAINING PRESSURE IN SUPERHEATERS.

No. 282,774. Patented Aug. 7, 1883.



WITNESSES
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MAINTAINING PRESSURE IN SUPERHEATERS.

SPECIFICATION forming part of Letters Patent No. 282,774, dated August 7, 1883.

Application filed December 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, DAVID RENSHAW, of Braintree, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Maintaining Pressure in Superheaters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form part of this specification.

This invention has for its object to maintain a higher degree of pressure in a superheater than is maintained in or at its source of supply.

To this end it consists in the process of introducing a jet of superheated steam from a superheater, and a jet or jets of water from a boiler under pressure, both being forced into and through the superheater from which the superheated steam was taken, the jets of steam and water being continuously and simultaneously introduced through an aperture common to both at the rear, and the portion of the steam taken off for working purposes being taken from the front of the superheater, thus creating and maintaining a constant current from one end of the superheater to the other.

Referring to the accompanying drawing, which shows one means of accomplishing the objects stated, the figure shows a side elevation, partly in section, in which—

A is the casing inclosing the superheater, which may be of any well-known construction, and B a section of a sectional boiler having steam-space.

C is the stand-pipe, from which the working-steam is taken through pipe *a*.

At the rear of the apparatus I locate an injector, D, of peculiar construction, which will form the subject-matter of a separate application, and through which the superheated-steam jet and the jet of water from the boiler are introduced.

a' is the live-steam pipe, communicating with the steam-space of the boiler and with the injector. *b* is the superheated-steam pipe, leading from the front of the superheater (it being the hottest) also to the injector, and *c* the water-pipe from the water-space of the boiler to the injector, and *i* the check-valve. The water-pipe *c* is continued through the injecting-nozzle, terminating in a rose or spray head, although a plain jet will answer all practical purposes. Thus it will be seen that a live-steam pipe, a superheated-steam pipe, and a water-pipe enter the injector, all operating together and simultaneously, and all operating under pressure.

The operation is as follows: Steam being raised in the boiler, cocks *d* and *e* of the live-steam and water pipes are opened at the same time, which admit the steam and water to the injector and into the superheater at its rear end, rapidly increasing the pressure and temperature in the superheater over that of the boiler, the valve *a* now being closed and valve *f* being opened, and also the working-steam valve *g*, when the circulation is at once established by withdrawing a portion of the steam from the end of the superheater opposite to where the steam and water is introduced. Should it so happen that more steam is needed than the water and steam from pipes *b* and *c* can make in the superheater, I then open valve *h* and let in an additional supply from the steam-space of the boiler. The apparatus may be placed within an ordinary furnace made of brick or other material.

Having thus described my invention, what I claim as new is—

1. The process herein described of maintaining in superheaters a pressure greater than that of the source of supply by continuously and simultaneously injecting a jet of superheated steam and a jet of water from the boiler into the superheater, as described.

2. The combination, in an apparatus for maintaining pressure in a superheater greater than the source of supply, consisting of the boiler, the superheater, and the injector, with their intermediate connections, substantially as shown and described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

DAVID RENSHAW.

Witnesses:

B. F. MORSELL,

EUGENE D. CARUSI.