

(No Model.)

D. RENSHAW.  
SUPERHEATER.

No. 260,238.

Patented June 27, 1882.

FIG. 1.

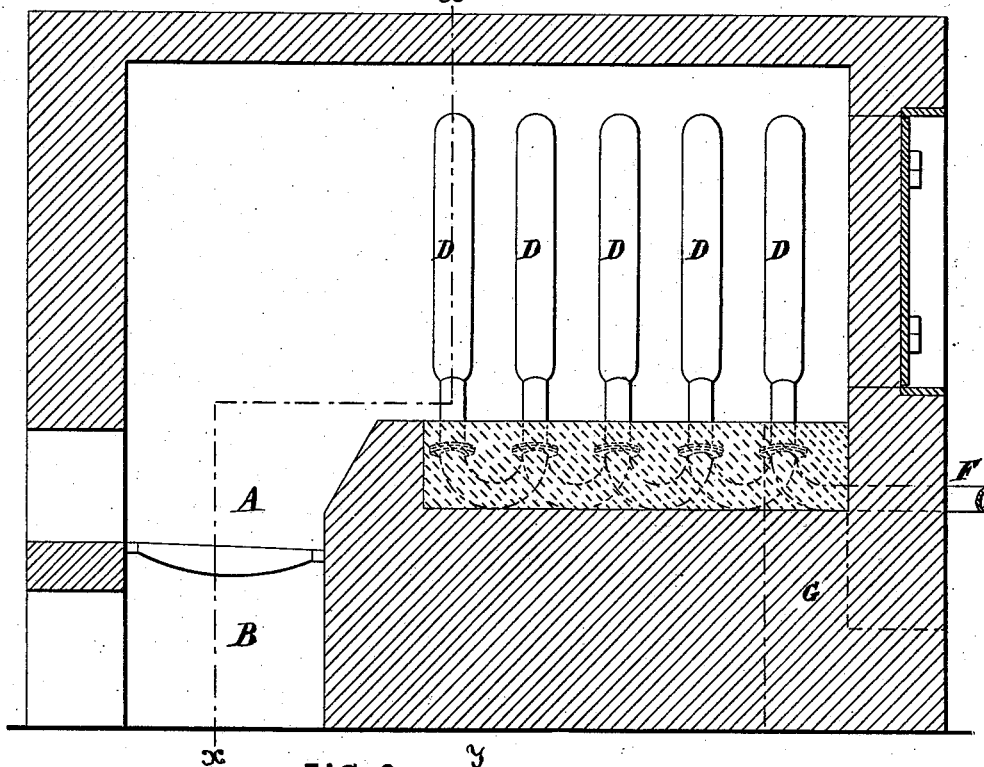


FIG. 2.

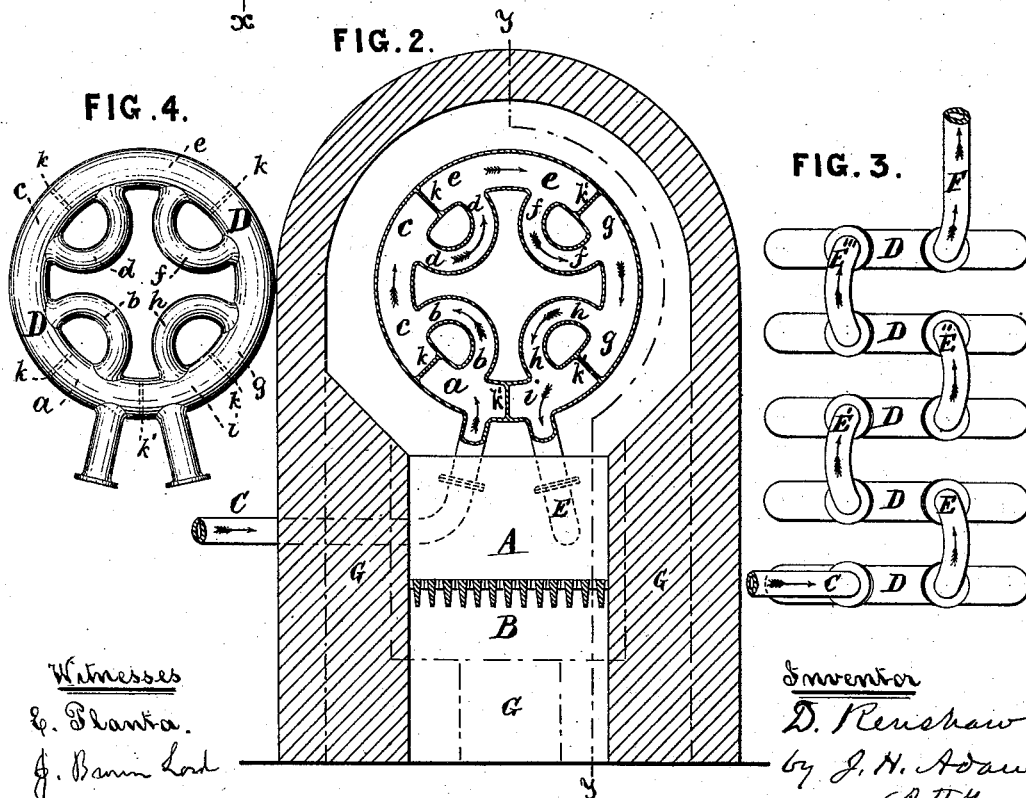


FIG. 4.

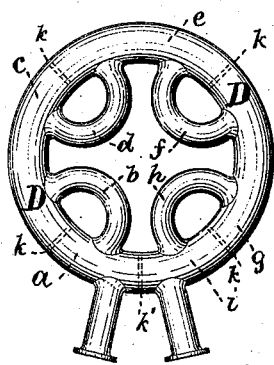
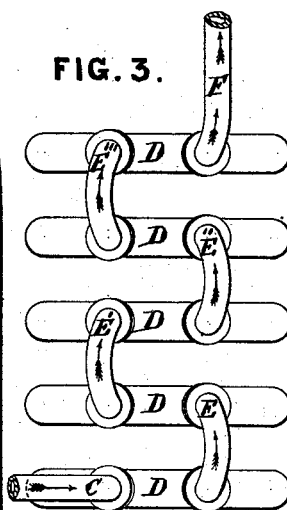


FIG. 3.



Witnesses  
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by J. H. Adams  
Att'y.

# UNITED STATES PATENT OFFICE.

DAVID RENSHAW, OF COHASSET, ASSIGNOR OF ONE-HALF TO HARVEY T. LITCHFIELD, OF HULL, MASSACHUSETTS.

## SUPERHEATER.

SPECIFICATION forming part of Letters Patent No. 260,238, dated June 27, 1882.

Application filed September 15, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID RENSHAW, of Cohasset, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Superheaters, of which the following is a specification.

The object of my invention is the production of a superheater whereby steam can be highly superheated; and the invention consists in so arranging said superheater that the steam shall have a long and circuitous passage through the sections of which it is composed, and at the same time the sections shall be so constructed as to best withstand the effects of the expansion and contraction of the metal.

In the accompanying drawings, Figure 1 is a longitudinal vertical section, taken on line *y y* of Fig. 2, of a superheater constructed according to my invention. Fig. 2 is a transverse vertical section taken on line *x x*, Fig. 1. Fig. 3 is an under side view of the sections, showing their method of communicating with one another. Fig. 4 is a front view of one of the sections.

A is the grate; B, the ash-pit; C, the steam-supply pipe to the sections D, which sections communicate from one to another by means of the pipes E E' E'' E''', and finally to the delivery-pipe F. Each of these sections D, I prefer to cast in one piece, the outer ring being divided into chambers *a, c, e, g,* and *i* by the partitions *k k'*, which chambers communicate one with another by segments which form passages *b, d, f,* and *h*. On each side of the partition *k'* is cast a short pipe, with flange, to which are secured the connecting-pipes. G is the flue. (Shown in dotted lines in Figs. 1 and 2.) The bottoms of the pipes C, E, E', E'', E''', and F rest on brick-work, and they are covered for some distance above the flange with sand or other suitable material, so as to protect the joints from undue heat.

The operation is as follows: The fire being lighted, and the chamber in which the superheater is located being sufficiently heated, steam

is admitted, at first slowly, then gradually, the supply-valve being opened wider and wider until the full head is on. The steam is admitted by the pipe C to the first of the series of sections, and enters the chamber *a* and circulates in the direction of the arrows, passing by the passage *b* to the chamber *c*, thence by passage *d* to the chamber *e*, then by passage *f* to chamber *g*, and then by passage *h* to chamber *i*, from whence it passes to the next section by the pipe E. After circulating in the second section in the reverse direction to that of the first section it passes to the third section by the pipe E', where it circulates in the same direction as in the first section, and so on from one section to another until it has passed through the last, when it passes off to its work by the pipe F.

Although I have shown five sections in the drawings, it will be understood that any desired number of such sections may be used, as circumstances may require; and I would also have it understood that I do not confine myself to the arrangement of the sections as shown. For example, they might be placed horizontally one above another, and in some cases it might be advisable to have two or more series side by side.

What I claim as my invention is—

A superheater composed of one or more sections, D, each section being composed of a hollow ring having plates and flanges *k k'*, dividing such ring into compartments, the latter being connected together by semicircular pipes *b, d, f,* and *h*, and the several sections being connected together by pipes E E', &c., as shown.

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

DAVID RENSHAW.

Witnesses:

JOS. H. ADAMS,  
E. PLANTA.