

S. M. VAUCLAIN.

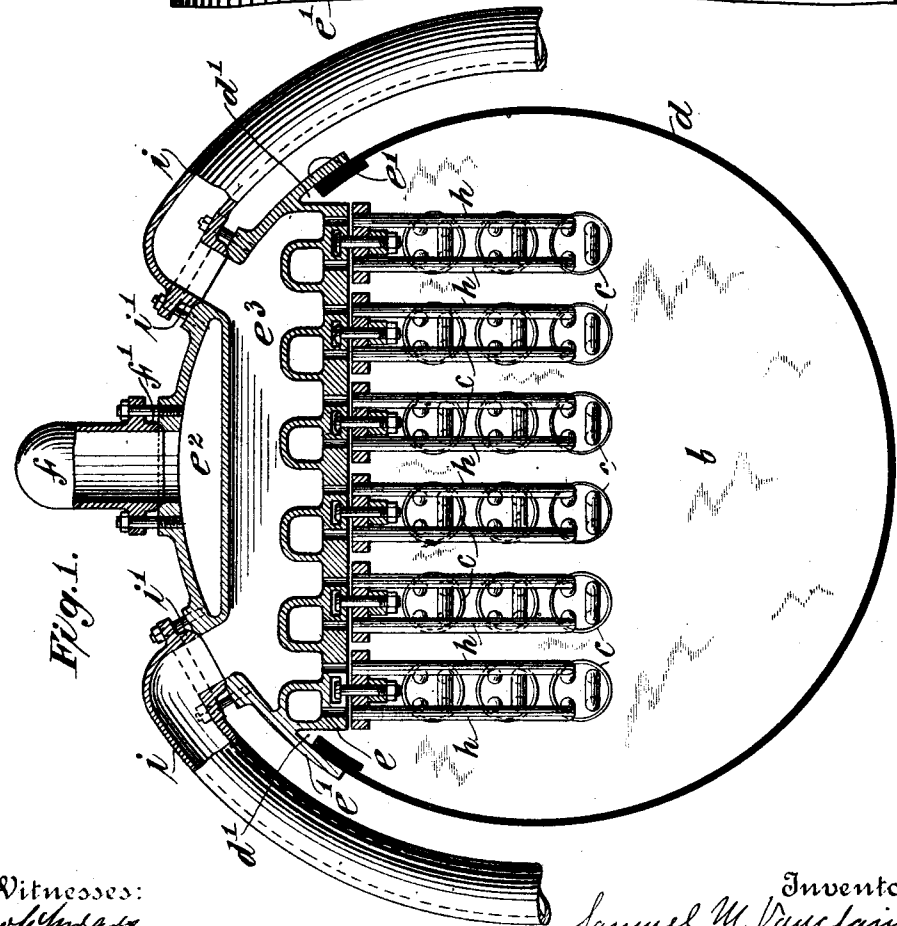
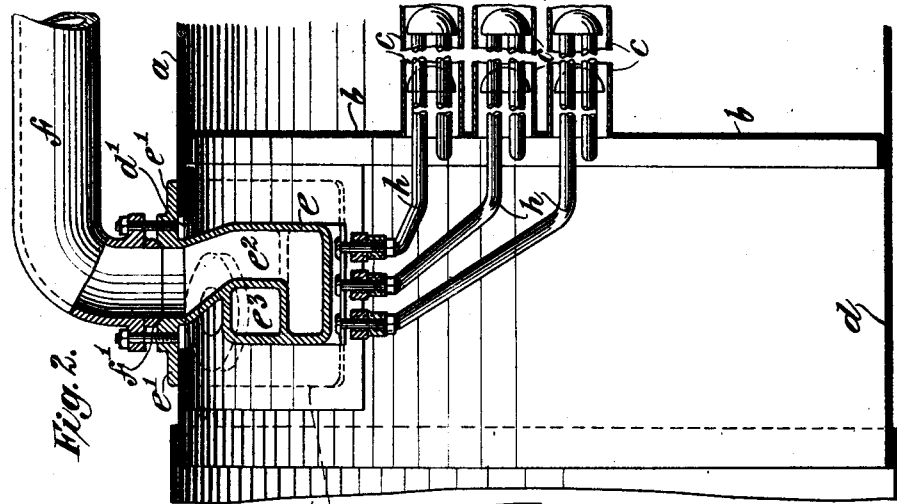
SUPERHEATER.

APPLICATION FILED DEC. 30, 1911.

Patented Apr. 1, 1913

2 SHEETS—SHEET 1.

1,057,692.



Witnesses:  
Geoffrey M. Atz.  
H. Wächter.

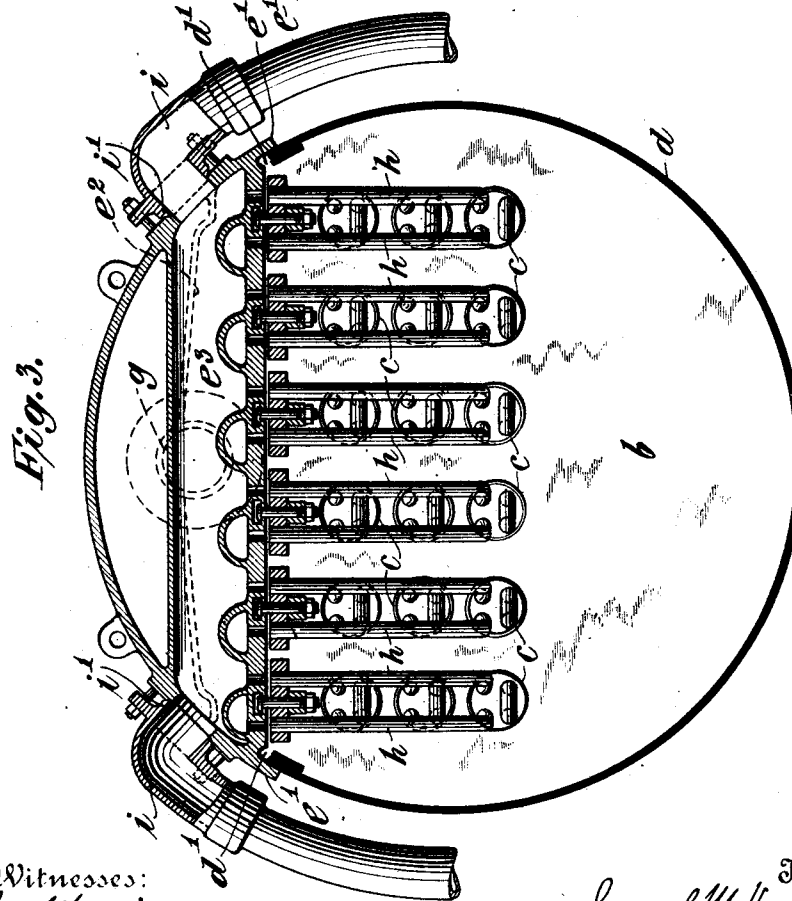
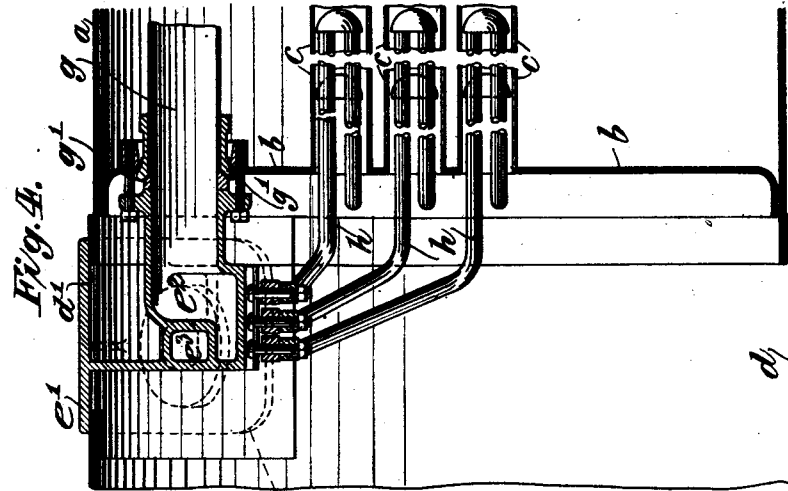
Inventor  
Samuel M. Vaclain  
By his Attorneys  
Redding, Grell, & Austin

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 SUPERHEATER.  
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

SAMUEL M. VAUCLAIN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO LOCOMOTIVE SUPERHEATER COMPANY, A CORPORATION OF NEW JERSEY.

## SUPERHEATER.

1,057,692.

Specification of Letters Patent.

Patented Apr. 1, 1913.

Application filed December 30, 1911. Serial No. 663,786.

*To all whom it may concern:*

Be it known that I, SAMUEL M. VAUCLAIN, a citizen of the United States, residing in Philadelphia, Philadelphia county, State of Pennsylvania, have invented certain new and useful Improvements in Superheaters, of which the following is a specification, reference being had to the accompanying drawings, which form a part hereof.

This invention relates generally to superheaters for locomotive and like boilers in which the superheater pipes are located in the fire tubes of the boiler.

The object of the invention is to facilitate the application and removal of the superheater as a whole to and from the boiler and in accordance with the invention the smoke-box of the boiler and the header of the superheater are so constructed and related as to permit the header to be put in place from the top of the smoke-box, the header itself preferably forming part of the smoke-box.

The supply pipe through which steam is delivered to the superheater, may be arranged either within or without the shell of the boiler, but the delivery pipes, through which the steam is conducted from the header to the cylinders, are external to the smoke-box to further facilitate the application and removal of the header.

The invention will be more fully explained hereinafter with reference to the accompanying drawings in which it is illustrated and in which—

Figure 1 is a view in transverse section through the smoke-box and superheater header of a locomotive boiler, the supply pipe being shown as external to the boiler shell and partly in section while the delivery pipes, also external to the smoke-box are shown partly in section. Fig. 2 is a view of the same in vertical longitudinal section. Fig. 3 is a view similar to Fig. 1 but showing the steam supply pipe as located within the boiler shell. Fig. 4 is a view in longitudinal vertical section of the construction shown in Fig. 3.

The invention is illustrated in the drawings as applied to a locomotive boiler of ordinary construction, the shell *a*, the front tube sheet *b* and the fire tubes *c* being all constructed and arranged in any usual or suitable manner. The smoke-box *d* is also constructed substantially as usual except that it is cut out or provided with an open-

ing *d*<sup>1</sup> at its top to permit the superheater header *e* to be placed in the smoke-box from the top, whereby the handling of the header is greatly facilitated. The header may be secured to the smoke-box in any convenient manner, but is preferably provided with a flanged top *e*<sup>1</sup> comprising a cylindrical segment forming a continuation of the boiler shell, which overlaps the opening in the top of the smoke-box so that the header is directly supported upon the smoke-box.

The steam supply pipe, through which steam is delivered from the boiler to the header, may be connected to the receiving chamber *e*<sup>2</sup> of the header in any convenient manner. As shown in Figs. 1 and 2 the supply pipe *f* is external to the boiler and is connected through a suitable joint *f*<sup>1</sup> to the top of the header, the receiving chamber *e*<sup>2</sup> being carried over the top to receive it. In Figs. 3 and 4, however, the delivery pipe *g* is shown as located within the shell of the boiler and as connected through a suitable joint *g*<sup>1</sup> with the receiving chamber *e*<sup>2</sup> through the rear wall of the header. The superheater pipes *h* may be arranged in the fire tubes *c* in any usual or suitable manner and may be connected to the receiving chamber *e*<sup>2</sup> and delivered to chamber *e*<sup>3</sup> of the header in any usual or convenient manner. The delivery pipes *i*, by which the steam is delivered from the superheater to the cylinders, instead of being arranged within the smoke-box as usual, are external to the smoke-box and are connected with the delivery chamber *e*<sup>3</sup> of the header by suitable joints *i*<sup>1</sup> which are readily accessible so that the delivery pipes can be disconnected readily whenever it becomes necessary to disconnect them.

The invention is illustrated herein as applied to a boiler and superheater of usual type but it will be understood that it may be applied to boilers and superheaters of other types and that the features of construction may be varied to suit the requirements of different uses. The invention, therefore, is not limited to the precise details of construction and arrangement shown.

I claim as my invention:—

1. In a boiler, the combination of a smoke box having a top opening, and a superheater header adapted to pass through said opening, the top of said header being shaped to rest upon the boiler and completely close

said opening so as to support the header in the top of the smoke box and having openings therethrough for steam delivery pipes.

2. In a boiler, the combination of a smoke box having a top opening, a superheater header supported in said opening and closing the same, and external steam delivery pipes connected to said header and opening directly into the top thereof.

3. In a boiler, the combination of a smoke box having a top opening, a superheater header adapted to pass through said opening and having a top comprising a cylindrical segment forming a continuation of the boiler shell which rests upon said shell and completely closes the opening, and external steam delivery pipes which open directly into said header top.

4. In a boiler, the combination of a smoke box having a top opening, a superheater header adapted to pass through said opening and having a flanged cylindrical top of substantially the same curvature as the boiler shell which overlaps the edges of said opening so as to completely close the same and form a continuation of the boiler shell, and steam delivery pipes external to the boiler and directly connected to openings through said cylindrical top.

5. In a boiler, the combination of a smoke box having a top opening, a one-piece superheater header adapted to pass through said opening and having a flanged cylindrical

top of substantially the same curvature as the boiler shell which overlaps the edges of said opening so as to completely close the same and form a continuation of the boiler shell while supporting the header in the upper part of the smoke box, said flanged top being further provided with radial delivery openings, and external steam delivery pipes bent to conform to the shape of the boiler, said pipes having lateral openings at their ends for connection to the radial delivery openings.

6. In a smoke tube boiler, the combination of a smoke box having a top opening, a one-piece superheater header comprising a plate of substantially the same curvature as the boiler shell said plate being adapted to completely close said top opening and carrying beneath it a pair of header chambers adapted to be passed in and out through said openings, said plate being further provided with steam delivery openings, superheater pipes in some of the smoke tubes and connected between said chambers, and steam delivery pipes external to the boiler and directly connected to said steam delivery openings.

This specification signed and witnessed this 14th day of October A. D., 1911.

SAMUEL M. VAUCLAIN.

Signed in the presence of—

JACQUES L. VAUCLAIN,  
FRANKLIN ABBOTT.