

R. C. STEVENS.
STEAM SUPERHEATER.
APPLICATION FILED FEB. 10, 1913.

Patented Mar. 16, 1915.

2 SHEETS—SHEET 1.

1,132,225.

Fig. 1.

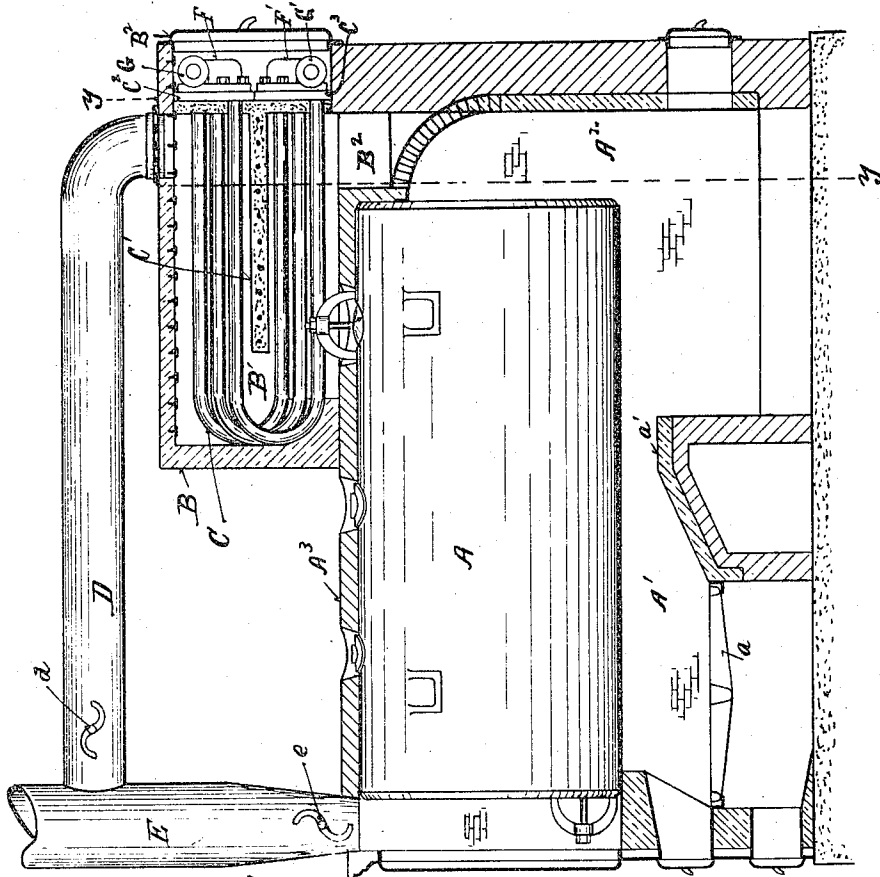
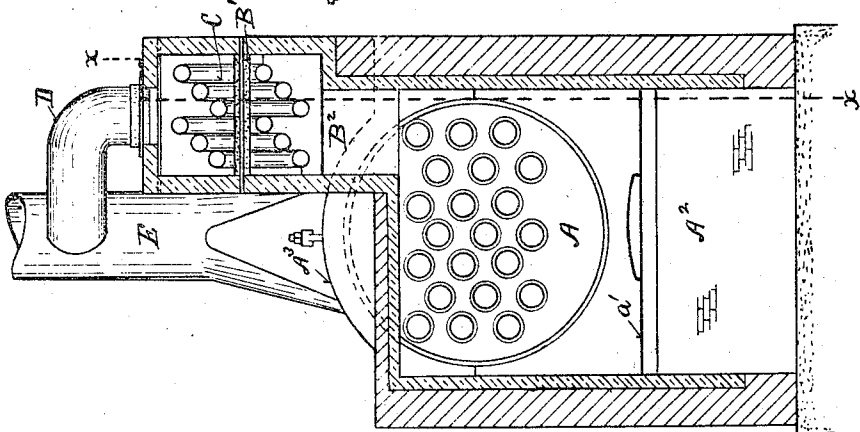


Fig. 2.



Witnesses.

E. B. Myers

G. J. Maud

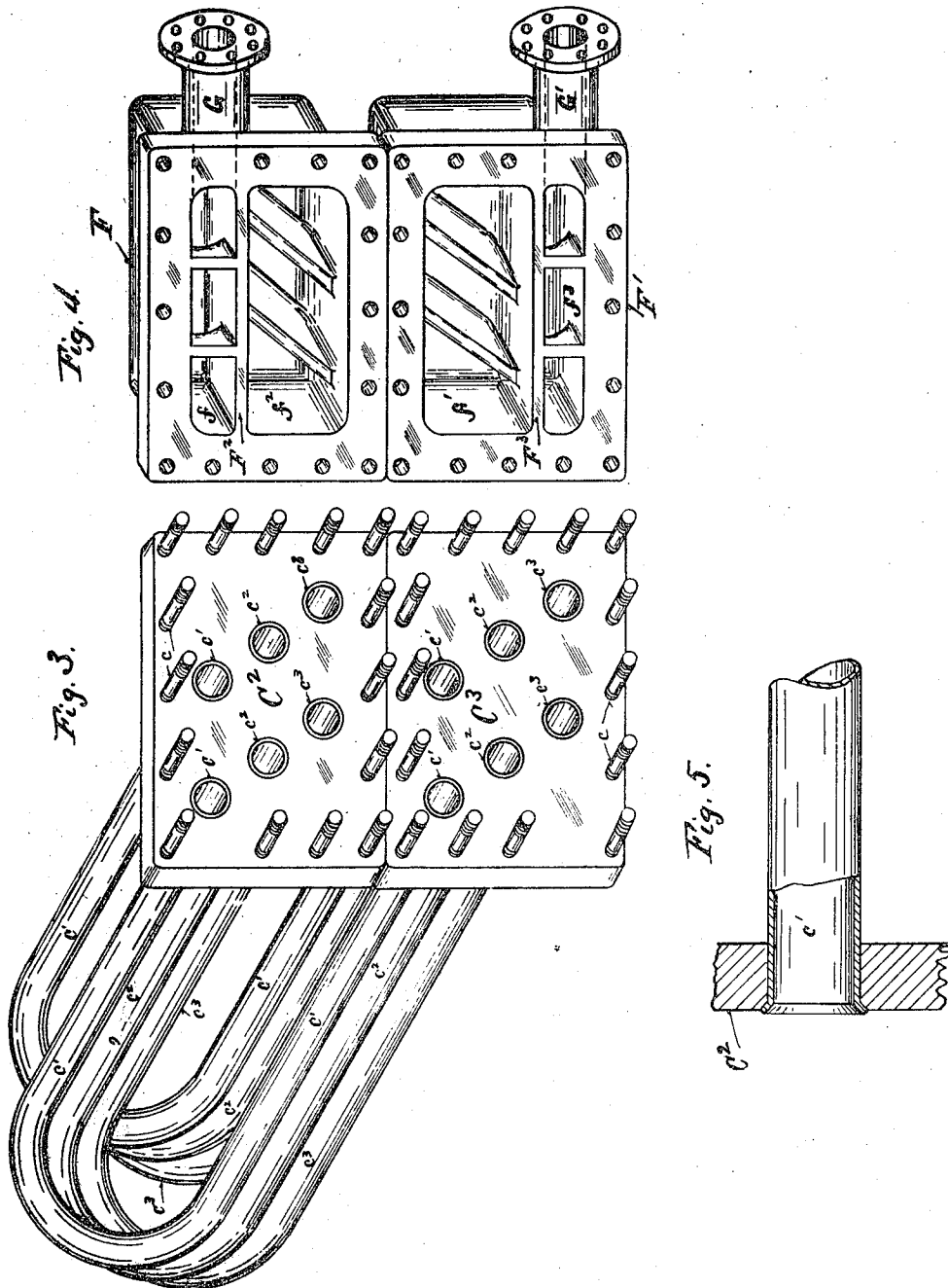
Inventor.
Robert C. Stevens
By J. C. M. Sturgeson
Att'y

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G. J. Munn

Inventor.
Robert C. Stevens
By J. C. Sturgeson
Attorney

UNITED STATES PATENT OFFICE.

ROBERT C. STEVENS, OF ERIE, PENNSYLVANIA, ASSIGNOR TO SKINNER ENGINE COMPANY, OF ERIE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

STEAM-SUPERHEATER.

1,132,225.

Specification of Letters Patent.

Patented Mar. 16, 1915.

Application filed February 10, 1913. Serial No. 747,369.

To all whom it may concern:

Be it known that I, ROBERT C. STEVENS, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Superheaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to steam super-heaters and has for its object the arrangement of a super-heater apparatus in combination with a setting of a steam boiler, in such a manner that a portion of the gases of combustion may be deflected through the super-heating apparatus when desired.

The features of my invention are herein-after set forth and described and are illustrated in the accompanying drawing in which:—

Figure 1, is a longitudinal vertical section of a boiler setting and super-heating apparatus, on the line $x-x$, in Fig. 2, embodying my invention. Fig. 2, is a transverse section of the same on the line $y-y$, in Fig. 1. Fig. 3, is a perspective view of a portion of the super-heating apparatus removed from its setting. Fig. 4, is a view in perspective of the headers of my improved super-heater, disconnected therefrom. Fig. 5, is a fragmentary view showing the manner in which the tubes are secured in the header of my improved super-heater.

In these drawings A, indicates a tubular steam boiler, A', indicates a furnace chamber thereunder, A², indicates the combustion chamber, a , indicates the grate bars, a' , indicates the fire-wall at the back of the furnace chamber, and A³, indicates the covering arch over the boiler, all of which parts are of usual and ordinary construction. Upon the arch A³, preferably over the rear portion thereof, I erect a structure B, forming a chamber B', and I provide an opening B², between the combustion chamber A², and the chamber B', in the structure B, and within the chamber B', I place a super-heating apparatus C. Within the chamber B', I also construct a baffle wall C'. The cham-

ber B', is closed at the rear end by means of a door B². From the chamber B', a draft-flue D, leads to the smoke-stack E, and in this flue D, I provide a damper mechanism d , and in the smokestack E, I provide another damper mechanism e . The construction of the super-heating apparatus C, is illustrated in Figs. 3, 4 and 5, as follows, viz:—C, indicates U-shaped tubes, which are secured in plates C², and C³, in the usual manner, as shown in Fig. 5, said plates C², and C³, being provided with tap-bolts c , as shown in Fig. 3. Against the faces of the plates C², and C³, I secure, by means of said tap-bolts c , headers F, and F', which headers are provided with internal division walls F², and F³, which walls contact with the faces of the plates C², and C³, and when in place against said plates, said headers form two inclosed chambers, each. Steam is admitted through the pipe G, of the header F, into the upper chamber f , and thence into the upper tubes c' , in the plate C², and it passes through the tubes C' into the chamber f' , in the header F', from which chamber it passes into the tubes c'' , from which tubes c'' , the steam passes into the chamber f'' , in the header F, and thence into the tubes c'' , and into the chamber f'' , in the header F', and thence out through the pipe G'.

In operation, when it is desired to super-heat steam, the damper d , in the draft-flue D, is opened; and a portion of the gases of combustion are thereby drawn from the combustion chamber A², through the opening B², and around the baffle-wall C', in the chamber B', and out through the smoke-flue D; the volume of said heated gas being regulated by the opening or closing of the damper d .

From the foregoing description, the construction and operation of my improved super-heater will be obvious, and further description thereof is deemed unnecessary.

Therefore having fully described my invention so as to enable others to construct and operate the same, what I claim as new and desire to secure by Letters-Patent is:—

1. The combination of a horizontal tubular boiler, a combustion chamber at the rear end thereof, a super-heater chamber above said boiler and combustion chamber, a by-pass from said combustion chamber into said super-heater chamber, a header-box closing the rear end of said super-heater

chamber, tubes extending therefrom into said super-heater chamber, an opening in the upper wall of said super-heater chamber, a flue leading therefrom, a horizontal
5 baffle wall in said super-heater chamber between said by-pass and said opening in the upper wall of said super-heater chamber, and a damper adapted to control the flow of heated gas through said super-heater chamber,
10 ber, substantially as set forth.

2. The combination in an apparatus of the character described, of a plurality of header plates having tube receiving openings therethrough, return-bend tubes se-
15 cured in said openings, hollow headers se-

cured on said plates covering said openings, pipe connections on said headers for conveying steam to and from said headers and division walls within said headers having one edge thereof contacting with said header 20 plates adapted to cause steam to flow successively through some of said tubes, substantially as set forth.

In testimony whereof I affix my signature, in presence of two witnesses.

ROBERT C. STEVENS.

Witnesses:

H. M. STURGEON,
E. E. MYERS.