

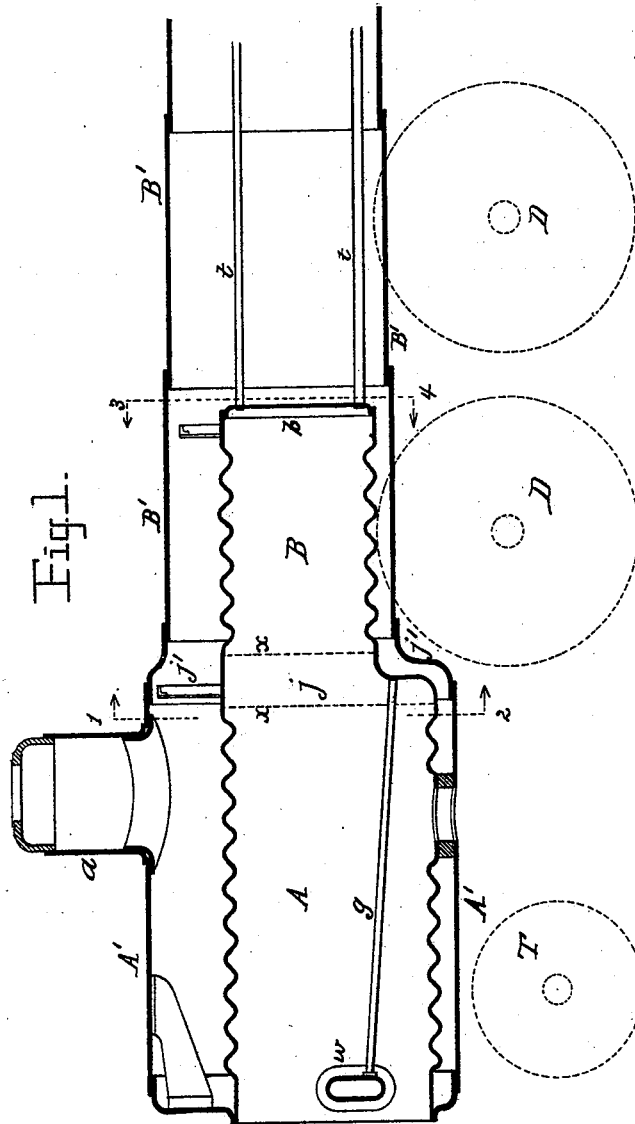
(No Model.)

2 Sheets—Sheet 1.

G. S. STRONG.  
LOCOMOTIVE BOILER.

No. 385,968.

Patented July 10, 1888.



Witnesses:

*E. J. Griswold*

*Geo. A. Cane*

Inventor

*George S. Strong*  
By his attorneys

*Horton and Horton*

(No Model.)

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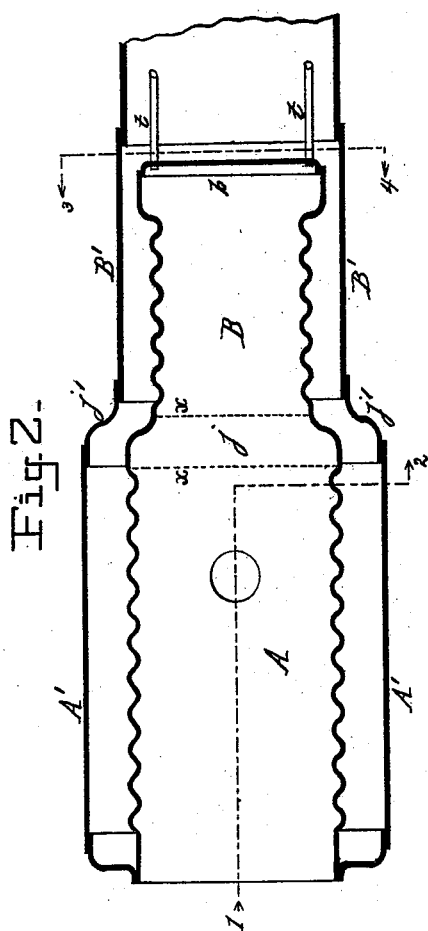


Fig 4-

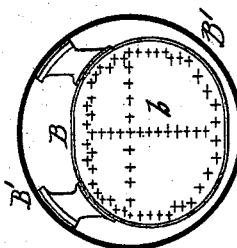
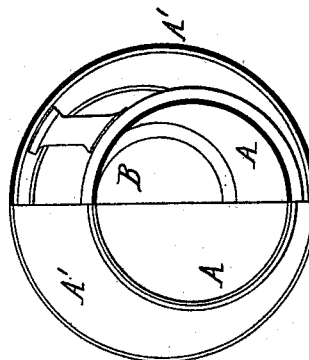


Fig 3-



Witnesses:

*E. J. Griswold.*

*Geo. A. Crane.*

Inventor:

*George S. Strong.*  
*By his attorneys*

*Howe and Howe*

# UNITED STATES PATENT OFFICE.

GEORGE S. STRONG, OF NEW YORK, N. Y.

## LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 385,968, dated July 10, 1888.

Application filed April 3, 1888. Serial No. 269,468. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE S. STRONG, a citizen of the United States, and a resident of New York city, New York, have invented an Improved Locomotive-Boiler, of which the following is a specification.

The object of my invention is to so construct a steam-boiler for locomotives that the largest amount of grate area may be obtained in the simplest and strongest form of construction with the fewest possible braces or struts. This object I attain by combining with a cylindrical barrel and cylindrical combustion-chamber a cylindrical fire-box shell and cylindrical fire-box larger in diameter than the barrel and combustion-chamber, respectively, and placed eccentric thereto.

In the accompanying drawings, Figure 1 is a longitudinal sectional diagram of the fire-box end of a locomotive-boiler constructed in accordance with my invention. Fig. 2 is a sectional plan. Fig. 3 is partly an end view and partly a section on the line 1 2, Figs. 1 and 2; and Fig. 4 is a transverse section on the line 3 4, Figs. 1 and 2.

A is the fire-box, and A' the fire-box shell having the usual steam-dome, *a*.

B' is the barrel, and B the combustion-chamber within the rear end of the barrel. From the tube-sheet *b* in the end of the combustion-chamber extend the tubes *t*, of which only a few are represented in the drawings.

By preference the fire-box and combustion-chamber are made circumferentially corrugated, as illustrated in previous patents granted to me, No. 304,973, September 9, 1884, and No. 315,974, April 14, 1885. My previously-patented boilers I have shown and described as provided with twin fire-boxes. In my present invention I employ only a single fire-box and shell, and in order to increase the size of the grate-surface without unduly increasing the height of the boiler or the diameter of the barrel I make the fire-box A of considerably larger diameter than the combustion-chamber B and the fire-box shell A' of correspondingly larger diameter than the barrel B'. At the same time I keep not only the barrel and com-

bustion-chamber cylindrical, but the fire-box and fire-box shell are also made cylindrical, as this shape is the strongest to resist strains and requires the fewest braces, supports, or struts.

The cylindrical fire-box and its shell are arranged eccentrically to the combustion-chamber and barrel, as will be seen on reference to the drawings, the lower edge of the fire-box and shell being depressed below the combustion-chamber and barrel, so that the driving-wheels D D may be placed on each side of the barrel in advance of the fire-box, while the latter is carried on a trailing-truck, T, as indicated by dotted lines in Fig. 1.

The top of the fire-box is on a level with the top of the combustion-chamber, so that there may be the same depth of water over both, while the shell of the fire-box is at its top above the level of the barrel, so as to give the locomotive the wagon-top form.

The fire-box is united to the combustion-chamber by a junction-piece, *j*, welded or riveted to the two parts at the dotted lines *x x*, and the fire-box shell is united to the barrel by a corresponding junction-piece, *j'*.

By preference I make the grate-bars of longitudinal tubes *g*, extending from a transverse water-box, *w*, to and through the lower part of the junction-piece *j*, as shown in Fig. 1, so that there can always be a circulation of water through the tubes and water-box.

I claim as my invention—

1. A locomotive-boiler having a cylindrical barrel and combustion-chamber with a cylindrical fire-box and cylindrical fire-box shell of larger diameters than the combustion-chamber and barrel, respectively, and placed eccentrically to the latter, substantially as described.

2. A locomotive-boiler having a cylindrical barrel and combustion-chamber with a cylindrical fire-box and cylindrical fire-box shell of larger diameters than the combustion-chamber and barrel, respectively, and the top of the fire-box being on a level with the top of the combustion-chamber, substantially as described.

3. The combination of the combustion-chamber and barrel with the enlarged fire-box and shell, junction-pieces, a transverse water-box across the front of the fire-box, and tubular  
5 grate-bars extending from the water-box to the lower part of the inner junction-piece, substantially as set forth.

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

GEO. S. STRONG.

Witnesses:

W. F. DIXON,  
J. W. BEACH.