

W. S. BRIDGES.
 AUXILIARY INNER FIRE TUBE FOR STEAM BOILERS.
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1,216,408.

Patented Feb. 20, 1917.

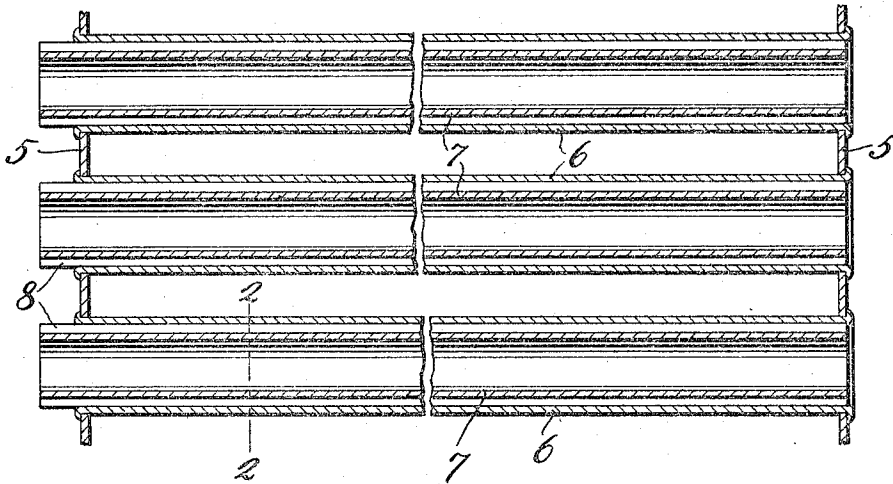


Fig. 1.

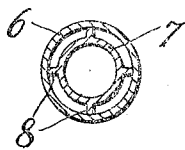


Fig. 2.

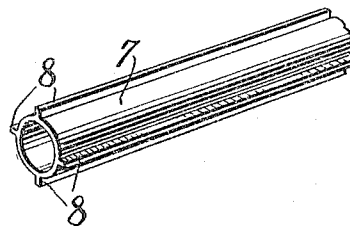


Fig. 3.

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AUXILIARY INNER FIRE-TUBE FOR STEAM-BOILERS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALTER S. BRIDGES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Auxiliary Inner Fire-Tubes for Steam-Boilers, of which the following is a specification.

This invention relates to tubular steam boilers, and its object is to provide the fire tubes thereof with auxiliary inner tubes spaced from the water-backed wall of the fire tubes and designed to promote combustion in a manner to be hereinafter described.

The invention also has for its object to provide an auxiliary tube which is constructed and arranged so that it may serve as a scraper for the main fire tube or flue in which it is mounted.

In order that the invention may be better understood, reference is had to the accompanying drawings, in which—

Figure 1 is a longitudinal section showing the application of the invention;

Fig. 2 is a cross-section on the line 2—2 of Fig. 1, and

Fig. 3 is a perspective view of a fragment of one of the auxiliary inner tubes.

Referring specifically to the drawing, 5 denotes the flue sheets which support, in the ordinary manner, the fire tubes or flues 6 of the boiler. In each fire tube is mounted an auxiliary tube 7 which extends the full length thereof and projects at one end from the rear flue sheet so as to extend for a short distance into the fire-box of the boiler. The tube 7 is held in place in the tube 6, and spaced from the inner surface of the latter by radial flanges or fins 8 extending lengthwise throughout the entire length of said tube 7.

As the auxiliary inner tube 7 is spaced from the water-backed wall of the fire tube 6, this inner tube will attain a much higher temperature than the water-backed wall, and thus promote the combustion of the fuel products passing through the tubes.

The outer edges of the flanges 8 are in contact with the inner surface of the tube 6, in view of which they may also be used for cleaning said surface. A few turns of the inner tube 7 will scrape the inner surface of the tube 6 and remove the accumulated soot, ashes, etc., and the same will pass off in the draft. Any suitable tool may be provided to obtain a hold on the tube 7 for placing, turning and adjusting the same in the tube 6.

With the improved combustion there will be less occasion for cleaning the tubes 6 as an accumulation of soot, etc., is evidence of incomplete combustion.

For convenience in ordinary use and manufacture, the tubes 7 may be cast in sections as close connections are not material.

The invention is very simple and it can be readily applied to the boiler without any change or modification in the structure thereof.

I claim:

1. An auxiliary inner tube for boiler fire tubes extending throughout the entire length of the latter, and rotatably mounted therein, said inner tube having outstanding flanges extending throughout its entire length, and being in contact with the inner surface of the fire tube, whereby the inner tube is spaced from said surface.

2. An auxiliary inner tube for boiler fire tubes extending throughout the entire length of the latter, said inner tube having outstanding flanges extending throughout its entire length, whereby the inner tube is spaced from the inner surface of the fire tube, the inner tube being rotatable in the fire tube and the outer edges of the flanges being in contact throughout their entire length with the inner surface of the fire tube to serve as scrapers.

In testimony whereof I affix my signature.

WALTER S. BRIDGES.