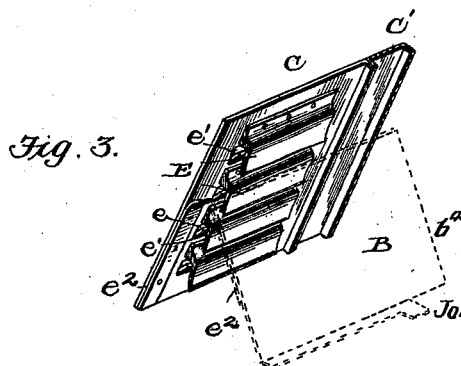
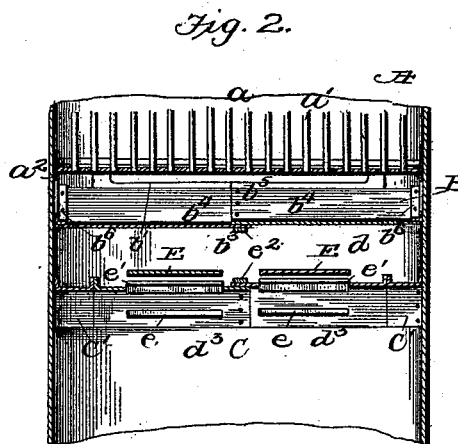
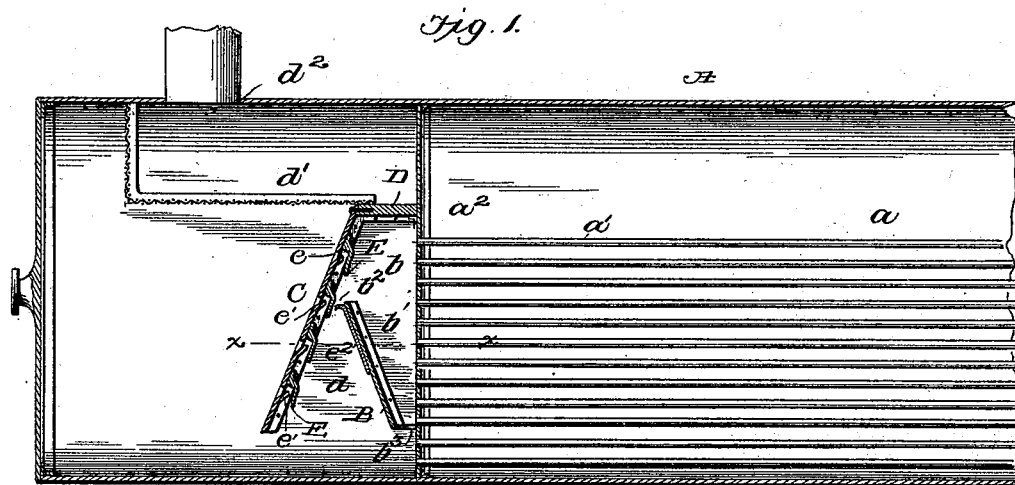


(No Model.)

J. J. H. THEILING.  
LOCOMOTIVE BOILER ATTACHMENT.

No. 516,950.

Patented Mar. 20, 1894.



Witnesses  
John Omerie  
J. S. Hedger.

Inventor  
John J. H. Theiling.  
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# UNITED STATES PATENT OFFICE.

JOHN J. H. THEILING, OF CHARLESTON, SOUTH CAROLINA.

## LOCOMOTIVE-BOILER ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 516,950, dated March 20, 1894.

Application filed October 6, 1893. Serial No. 487,339. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. H. THEILING, of Charleston, in the county of Charleston and State of South Carolina, have invented certain new and useful Improvements in Locomotive-Boiler Attachments; 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.

This invention relates to locomotives and it has for its object the production of simple and efficient means for utilizing to the fullest extent the heat that passes through the boiler flues whereby a great saving in flues is effected and a maximum amount of steam is obtained.

The invention further consists of two deflectors, one of which is located in front of or over the forward ends of the boiler flues, having upper and lower spaces or passage-ways, and the other deflector at a reverse angle to said former deflector and extending up over the upper edge of the latter, leaving an intervening space or opening, whereby the products of combustion passing through the boiler flues are arrested in their passage to the smokestack or outlet.

The invention also comprises the details of construction, combination and arrangement of parts, substantially as hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings:—Figure 1 is a vertical longitudinal sectional view of a portion of a locomotive, constructed with my improvements. Fig. 2 is a horizontal sectional view on the line  $x-x$ , Fig. 1. Fig. 3 is a detail.

Referring to the drawings, A designates a portion of a locomotive cylinder;  $a$  the boiler thereof;  $a'$  the flues extending horizontally through the boiler; and  $a^2$  the forward crown-sheet in openings in which the forward ends of said flues are secured.

B is an imperforate deflector located in cylinder A in the space  $b$  forward of the boiler. This deflector occupies a slanting or inclined position with the lower horizontal edge in close proximity to the crown-sheet  $a^2$ , forming a space  $b'$  and having upper and lower passage-ways  $b^2$ ,  $b^3$  over and beneath the hori-

zontal edges of the deflector. The imperforate deflector is preferably composed of two corresponding plates  $b^4$  bolted together at the center  $b^5$ . At its ends the deflector is bolted or riveted to an angle plate  $b^6$  secured to cylinder A. The lower edge of the deflector is held away from the crown sheet so as to provide an opening through which any dirt, cinders, and the like, passing through the flues can fall onto the bottom of the cylinder. The deflector does not cover the lowermost series of flues since the draft through the latter is such that no banking of the heat against the lower portion of the boiler is necessary, the desired result being obtained by banking against the upper portion of the crown sheet. While I have specified the imperforate deflector as being composed of two parts, yet it may be formed in one continuous plate.

C is a second deflector which also occupies a slanting or inclined position, but opposite to that of the deflector B, the two conjunctively forming an approximately inverted V-shape space  $d$ . This deflector C is secured at its upper horizontal edge to a plate or ledge D extending from crown-sheet  $a^2$  and its ends are also bolted or riveted to depending portions  $C'$  of said plate or ledge, which depending portions fill in the spaces between the ends of deflector C and sides of cylinder A. Like the deflector B, the lower edge of the deflector C does not extend down to the bottom of the cylinder, thus leaving a lower space, but no upper space or passage-way. To the plate or ledge D is also secured a screen  $d'$  which latter extends beneath the outlet or smoke stack opening  $d^2$ . The deflector C is also preferably made in two parts or sections  $d^3$  which are bolted or riveted together at the center, and in these parts or sections are two sets of transverse slots or openings  $e$  which extend from near the ends of the deflector to within a short distance of the center. These slots or openings  $e$  are formed by punching out or striking up strips of the metal, which latter extend inwardly and upwardly and form obstructing flanges  $e'$ , the upper horizontal edges of which are nearly on a line with the upper edges of the slots or openings. These slots or openings and their flange  $e'$  are covered by right-angular guards E, which are bolted to the deflector C just

above each slot, the lower portions of said guards overhanging said flanges and leaving narrow spaces therebetween. The deflector C is additionally held in position relative to the imperforate deflector B by a brace-bar  $a^2$  which is secured to the opposite faces of said deflector.

From what has been said it will be seen that the heat passing out through the boiler flues will strike against the imperforate deflector B and will be banked up against the crown-sheet until it gradually passes over the top of said deflector and down into the space between the same and the second deflector C when it will strike against the right-angular guards E and after being banked up in the inverted V-shape space will pass up beneath said right angular plates and over the flanges  $e'$  and out through the slots or openings  $e$ . The products of combustion then after having given off their full heat will pass out through the smoke-stack. Thus it will be seen that the deflectors, prevent the products of combustion from passing direct from the boiler flues to the smoke-stack, and that they cause the heat to be banked up against the end of the boiler and permit only the gradual escape through a tortuous course. In this way the full heating capacity is obtained, the result being that a great saving in fuel is effected and a maximum quantity of steam is had and this in very short time.

My improvements are extremely simple and inexpensive and not liable to readily get out of order or in any way be deranged.

I claim as my invention—

1. In a locomotive, a deflector located over the forward ends of the boiler-flues, said deflector consisting of an imperforate plate or plates set at an angle to said ends of the boiler flues with its lower edge nearer thereto, and a second deflector located at a reverse angle to said former deflector and extending

up over the upper edge of the latter, having an intervening space or opening, substantially as set forth.

2. In a locomotive, an imperforate deflector located over the forward ends of the boiler-flues and set at an angle thereto, with its lower edge nearer to said flues, and a second deflector located at a reverse angle to said former deflector and extending over the upper edge of the latter and provided with a series of slots or openings and deflectors over said slots or openings, substantially as set forth.

3. In a locomotive, a deflector located at an angle over the forward ends of the boiler flues, and consisting of a plate or plates having series of slots or openings formed therein, inclined flanges extending from the lower portions of said slots or openings to near the tops thereof, and right-angular guards secured to said plate or plates and overhanging said slots or openings and flanges, substantially as set forth.

4. In a locomotive, the combination of an imperforate deflector extended across the forward end of the boiler and arranged at an angle thereto, and having upper and lower passage-ways a second deflector inclined at an angle opposite to that of the imperforate deflector and provided with slots or openings, a ledge or plate to which said second deflector is secured, and right angular guards overhanging said slots or openings a lower passage way being provided beneath said second deflector, substantially as set forth.

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

JOHN J. H. THEILING.

Witnesses:

THOMAS B. DAPRAY,  
WM. S. HODGES.