

JOHN WOOD, Jr.

Improvement in Locomotive Boiler Furnaces.

No. 123,069.

FIG. 1.

Patented Jan. 23, 1872.

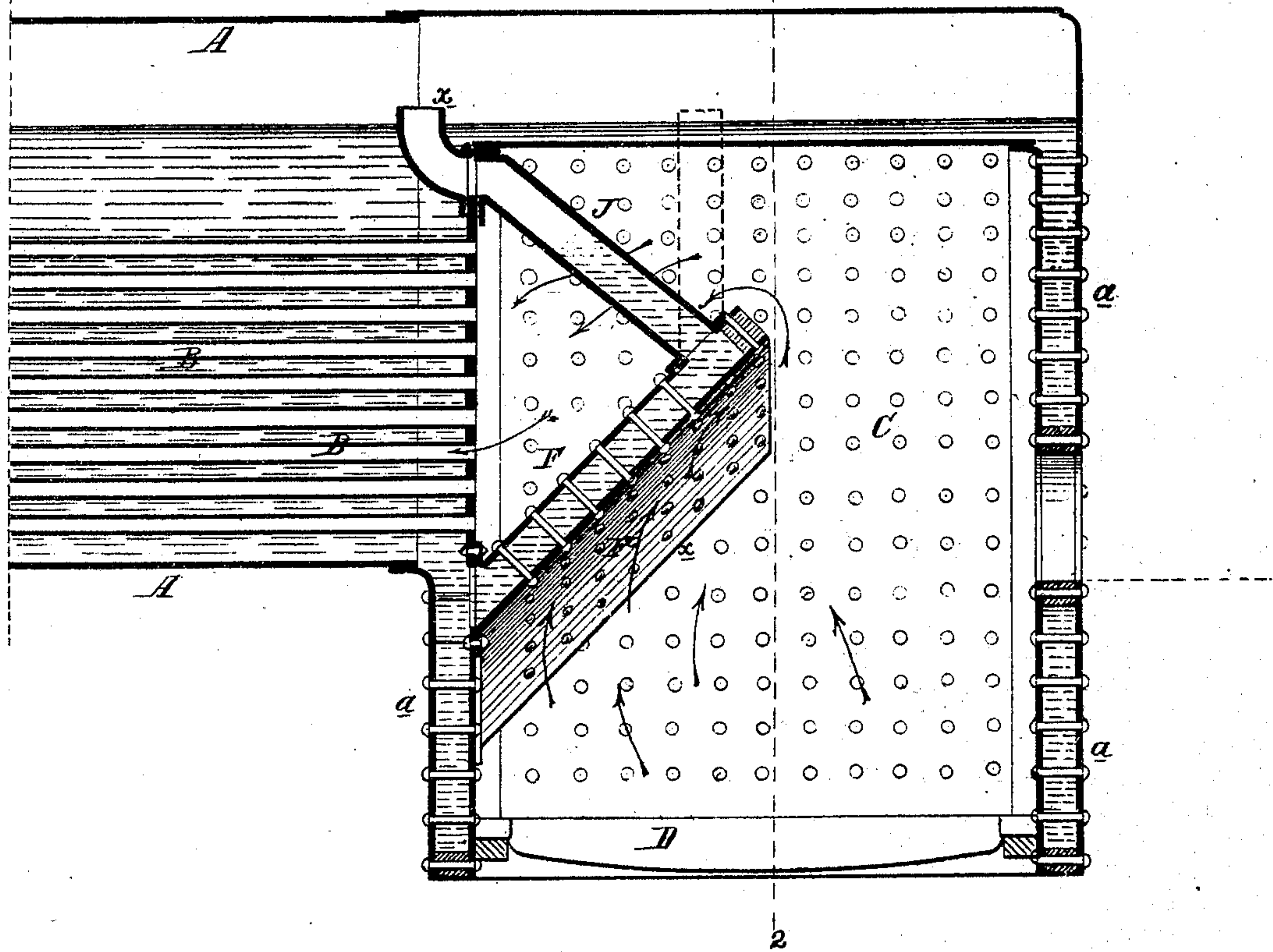
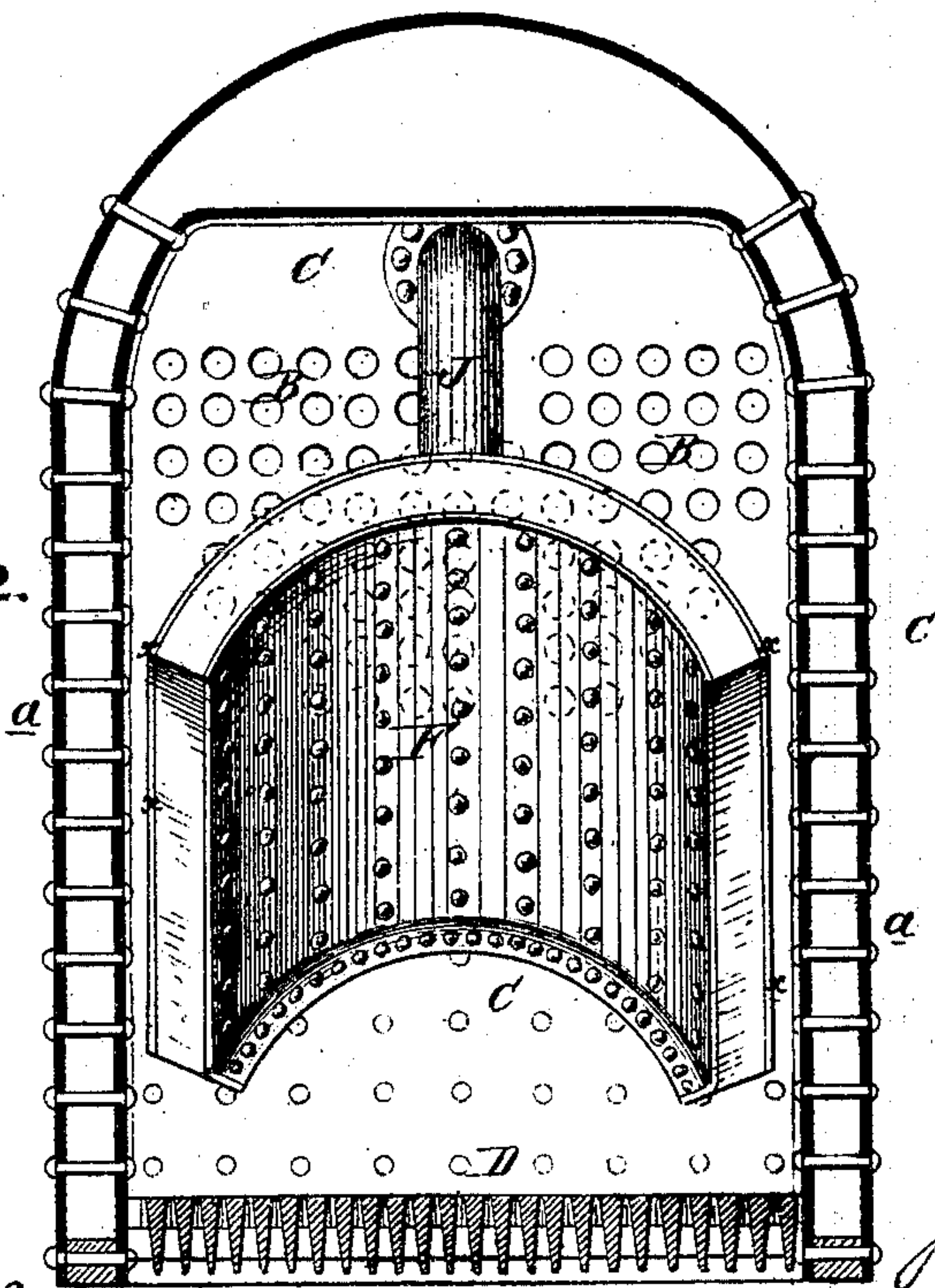


FIG. 2.



WITNESSES,  
*Geo. B. Harding.*  
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*John Wood Jr.*  
*by his Attor.*  
*Stowson and*



# UNITED STATES PATENT OFFICE.

JOHN WOOD, JR., OF CONSHOHOCKEN, PENNSYLVANIA.

## IMPROVEMENT IN LOCOMOTIVE-BOILER FURNACES.

Specification forming part of Letters Patent No. 123,069, dated January 23, 1872.

Specification describing an Improvement in Locomotives, invented by JOHN WOOD, Jr., of Conshohocken, county of Montgomery, State of Pennsylvania.

### *Improvement in Locomotives.*

My invention relates to improvements in deflectors constructed and arranged within the fire-box of a locomotive-boiler, in the manner fully described hereafter, for the purpose of deflecting particles of coal, &c., and causing them to return to the fire instead of passing into the flues.

In the accompanying drawing, Figure 1 is a longitudinal section of part of a locomotive boiler and fire-box with my improvement, and Fig. 2, a transverse section of the same on the line 1 2, Fig. 1.

A represents part of the body of a locomotive-boiler; B, the tube; C, the fire-box, surrounded by the usual water-spaces *a a a*; and D, the ordinary grate. Within the fire-box, and secured to the rear of the same, at a point beneath the tubes B, is an inclined deflector, F, which projects upward and outward into the said fire-box at an angle of forty-five degrees or thereabout. The object of this deflector is to prevent the choking of the tubes of the boiler by cinders, particles of coal, &c., drawn into the said tubes, by the blast, such particles striking the under side of the deflector and being thrown back onto the fire, while the heated gases and other products of combustion pass around and over the top of the said deflector, and thence to the tubes, in the course indicated by the arrows in Fig. 1. The deflector, if made of solid iron, would, owing to its exposed situation, soon become burnt out and useless. I therefore construct it with double walls of plate iron, so as to form a water-chamber, communicating freely with the

water-space of the boiler, as shown in the drawing, and connected at its upper end by a pipe or pipes, J, with the steam-space of the said boiler. A constant circulation of water and steam is thus maintained through the deflector, which is thereby protected from the injurious effects of heat, and which at the same time serves as an additional steam-generator and as a shield for preventing the choking and injuring of the tubes. The pipe J braces and aids in supporting the outer end of the deflector, and the said pipe may either be inclined and connected to the back of the fire-box, as shown in the drawing, or it may be carried vertically upward through the crown-sheet, as indicated by dotted lines. For the purpose of preventing the accumulation of cinders upon the top of the deflector, the latter is rounded from the top downward toward its opposite edges *x x*, as shown in Fig. 2, the said edges being disconnected from the sides of the fire-box, so that no lodgment may be afforded for cinders, the latter, when shaken from the top of the deflector, falling at once into the fire. The same result might be attained by making the deflector of an inverted  $\Lambda$ -shape, with inclined sides, but I prefer the arched form illustrated and described above.

I claim as my invention—

The deflector F, secured to a fire-box, disconnected from the sides of the latter, and arched or inclined downward from the top toward its opposite edges, all substantially as and for the purpose described.

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

JOHN WOOD, JR.

Witnesses:

WM. H. MORRIS,  
WM. HAYWOOD.