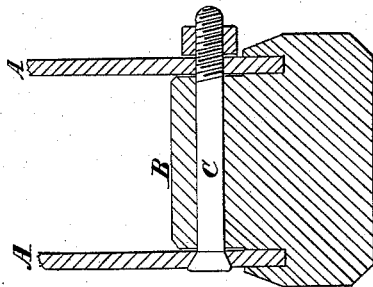


*S. Crawford,*  
*Steam-Boiler Fire-Box.*

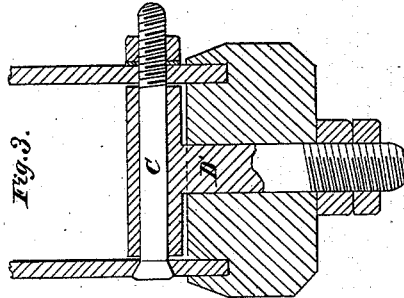
*No 49,236.*

*Patented Aug. 8, 1865.*

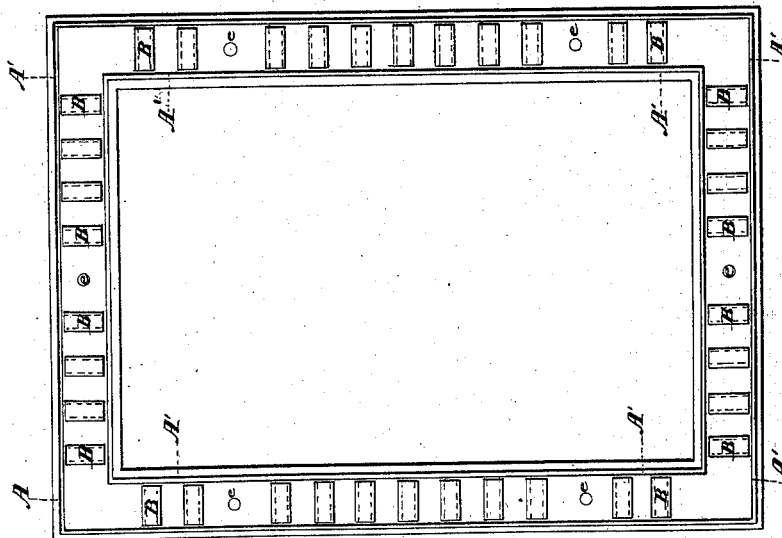
*Fig. 2.*



*Fig. 3.*



*Fig. 1.*



*Witnesses:*  
*Chas. B. Coffey*  
*Thos. Montetorn*

*Samuel Crawford*

# UNITED STATES PATENT OFFICE.

SAMUEL CRAWFORD, OF NEW YORK, N. Y.

## IMPROVEMENT IN LOCOMOTIVE-BOILERS.

Specification forming part of Letters Patent No. **49,236**, dated August 8, 1865.

### *To all whom it may concern:*

Be it known that I, SAMUEL CRAWFORD, of the city and State of New York, have invented certain new and useful improvements in the construction of the bottoms of the water-legs surrounding the fire-boxes of locomotives or other boilers of similar construction in this respect, of which the following is a specification.

The bottoms of the water-legs as now constructed are hermetically or fixedly closed. It is well known that the unavoidable (in most cases) deposit or scaling that takes place in these parts, owing to the limited circulation, &c., causes a deterioration of strength by corrosion or burning, or both, and the removal through the small apertures that can be provided of scale and deposit is always difficult and but partial. The same observation applies to repairing or patching such a boiler at these parts.

The main feature of my device is to close the space at the bottom, between the sheets composing the water-leg or hollow wall of the furnace, by a continuous frame that will be water and steam tight to all practical purposes at its junctions with the boiler proper, while at the same time it may readily be removed and replaced, when necessary, for a more thorough removal of deposit, examination, or repair.

I will now refer to the drawings accompanying this specification.

Figure I represents a plan view of a frame such as before referred to. Fig. II shows a cross-section on a larger scale of the same with a portion, A A, of the inner and outer walls of the furnace or water-leg in connection.

As will be understood by inspection of the drawings, the lower edges of the walls, as A A, of the furnace are received and confined each in a corresponding channel or groove, as A' A', Fig. I. This frame has also a series of projections, as B B, Figs. I, II, which are bored through transversely to the body of the frame, Fig. I, to receive removable stay-bolts, as C, Fig. II,

which, passing through the sheets A A and the frame, connect the latter with the boiler in a proper manner, these stay-bolts having a countersunk head at the inner side of the fire-box and a screw-nut at the outside.

To facilitate the drawing up of the frame to its place and the insertion of the stay-bolts, I have, at certain intervals, what I call "drawing-bolts," one of which is represented in section D, Fig. III. They are bolts that project vertically down through the frame, while the head of each is formed like one of the projections B B, and receives a corresponding stay-bolt, and the lower end having a screw-nut, the manner of tightening up the frame to its place will be understood. The best places for putting the holes through the frame for receiving these bolts are indicated by *e e*, Fig. I.

It will be readily understood that different kinds of packing may be inserted at the bottom of the grooves A' A', Fig. I, in the frame, which receive the edges of A A, Fig. II; or, in other words, the edges of the sheets constituting the inner and outer walls of the fire-box packing may also be inserted under the heads of the drawing-bolts. At its junction with these seams of the boiler the groove in the frame will have to be chipped out to fit, and the lower edges of A A should be properly dressed off, as will be understood.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

The plan of making the bottoms of the water-legs or hollow walls of the furnaces of steam-boilers of the character described—a removable but steam-tight frame—by the employment of the devices substantially such as described, and for the reasons and purposes explained.

SAMUEL CRAWFORD.

Witnesses:

JOSEPH E. COFFEE, Jr.,  
WM. MONT STORM.