H. E. WOODS.

FIRE-BOX FOR LOCOMOTIVE-ENGINES.

No. 193,586. Patented July 24, 1877.

Fig. 1.

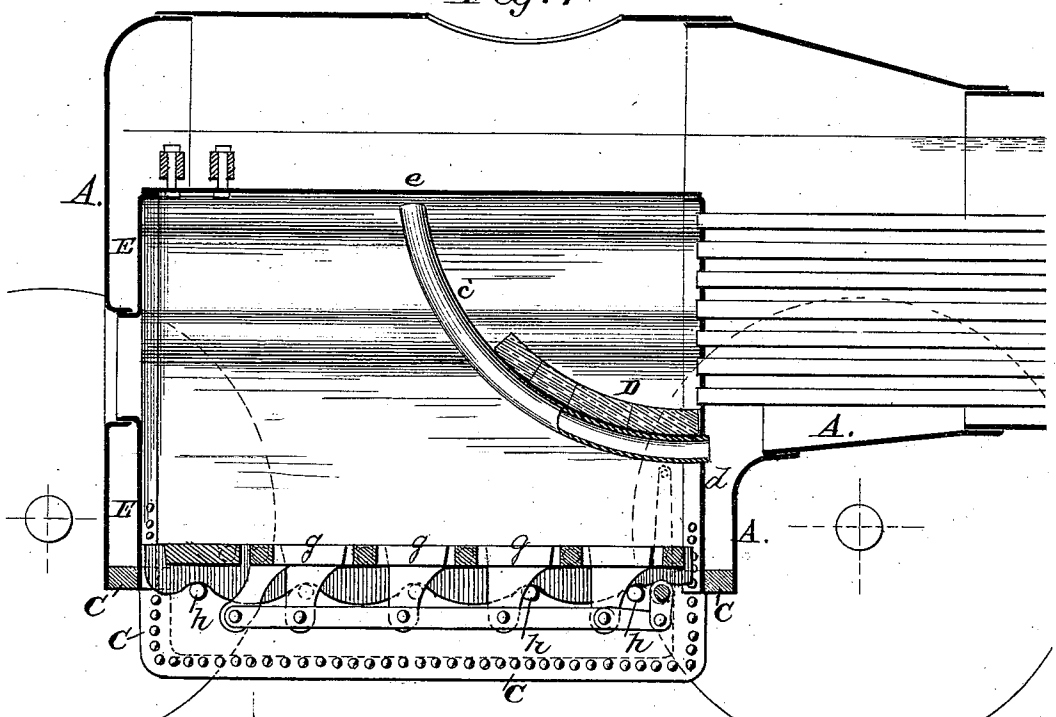


Fig. 2.

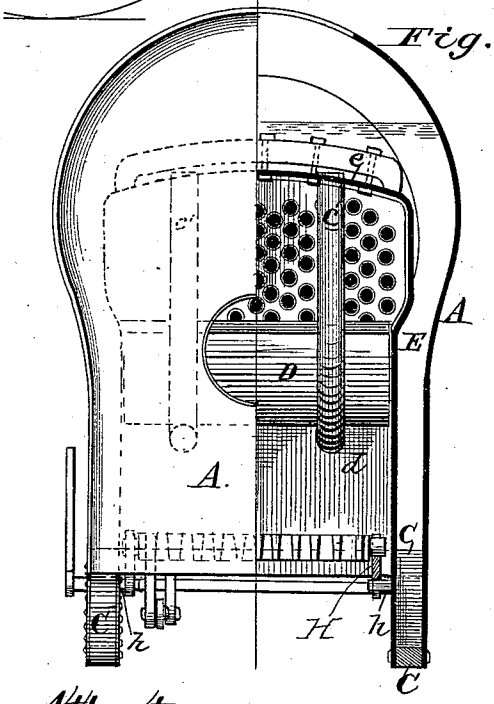


Fig. 4.

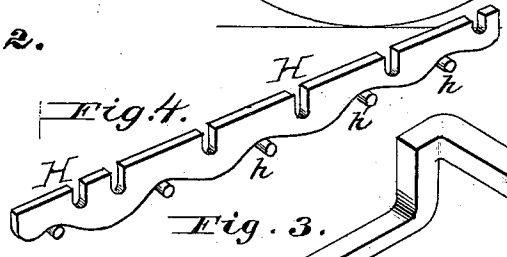


Fig. 3.

Attest:
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UNITED STATES PATENT OFFICE.

HORACE E. WOODS, OF ROCK ISLAND, ILLINOIS.

IMPROVEMENT IN FIRE-BOXES FOR LOCOMOTIVE-ENGINES.

Specification forming part of Letters Patent No. **193,586**, dated July 24, 1877; application filed July 12, 1877.

To all whom it may concern:

Be it known that I, HORACE E. WOODS, of Rock Island, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Fire-Box for Locomotive-Engines, of which the following is a specification:

This invention relates to certain improvements in the construction of locomotive-boilers, its object being to provide, at a comparatively small expense, a receptacle below the heating-line of the fire-box for the collection and reception of the sedimentary matters of the water, in order to prevent the same from collecting on the heating-surfaces of the boiler, which results in injury to the boiler and interferes with the effective transmission of heat to the water, causing a waste of fuel.

My invention further has for its object to provide for the better collection of the sediment into said receptacles, and insure a more perfect circulation of water in the boiler, as more fully hereinafter set forth.

The walls of the boiler of a locomotive are generally extended down around the fire-box or furnace, terminating a short distance below the fire-grate therein, being bolted to a ring of iron interposed between the walls, and extending entirely around the fire-box or lower part of the furnace.

As thus constructed, the mud-chamber lies in close proximity to the fire in the fire-box, and the sediment collecting in the lower part of the boiler between the walls forms a deposit immediately adjoining the most effective heating-surface of the boiler, which is objectionable on various accounts.

My invention is designed to overcome these objections; and to this end my invention consists in extending the sides of the mud-chamber and boiler downwardly, so as to form a receptacle of considerable depth on each side of the fire-box below the heating-surfaces of the same for the deposition of the sediment, whereby I am enabled to collect such sediment at a point where it will not interfere with the effective heating of the water and result in injury to the boiler, as heretofore.

The invention also consists of certain other improvements, which will be fully hereinafter described.

In the drawings, Figure 1 represents a longitudinal vertical section of the fire-box of a locomotive constructed according to my invention; Fig. 2, a front view of the fire-box with my improvement applied, and Fig. 3 a detached perspective view of my improved brace-ring.

The letter A represents the outer shell or wall of a locomotive-boiler, and E the inner shell or wall of the same, forming the walls of the fire-box or furnace of the locomotive.

The letter C represents the brace-ring, constructed of brass or other non-corrosive metal, the sides of which, *c*, are dropped or extended downwardly, as shown. The walls of the boiler A E at each side of the fire-box are extended downwardly to correspond with the drop in the brace-ring, after which the ring is placed between the walls, as usual, and the whole properly riveted together.

The letter C′ represents a series of two or more tubes, extending from the tube-sheet *d* of the fire-box to the crown-sheet *e*, and establishing communication between the upper and lower parts of the boiler. These tubes support a fire-wall or partition, D, located immediately to the rear of the tube-sheet, the object of said wall being to deflect the heat directly up against the crown-sheet before escaping through the tubes, in order to obtain its greatest effect in heating the water; but such forms no part of my invention.

The crown-sheet is constructed of a curved shape, in order to shed any deposit thereon into the mud-receptacles at each side.

The grate may be of any approved pattern; but I prefer to construct it in sections *g*, supported at each side of the fire-box by means of the loose side bars H, secured to the walls of said fire-box by means of studs *h*, the sections being suitably connected and operated by means of a lever from the outside.

By the above-described construction I am enabled, at a trifling expense and in very little more space than occupied by an ordinary boiler, to obtain at least three thousand cubic inches of space for the collection of sediment entirely below the heating-line of the fire, where the sediment cannot interfere with the heating of the water or result in injury to the boiler; and by dropping or extending the sides

of the mud-chamber downward at the sides below the sides of the fire, and leaving the ends of the same open, the air has free access to the fire.

The construction of grate with the peculiar side bars for supporting the same will form the subject of separate application for Letters Patent.

What I claim, and desire to secure by Letters Patent, is—

1. A mud-chamber for a locomotive-boiler, having the sides dropped or extended downwardly below the front and rear ends, substantially as and for the purposes set forth.

2. In combination with the mud-chambers dropped or extended downward below the ends of a locomotive-boiler, the curved crown-sheet of the fire-box, for shedding deposits in said chambers, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

HORACE E. WOODS.

Witnesses:
CHARLES W. WILCOX,
R. A. MASON.