

(No Model.)

J. M. DUNN & W. E. SIDNELL.

FEED WATER HEATER.

No. 361,054.

Patented Apr. 12, 1887.

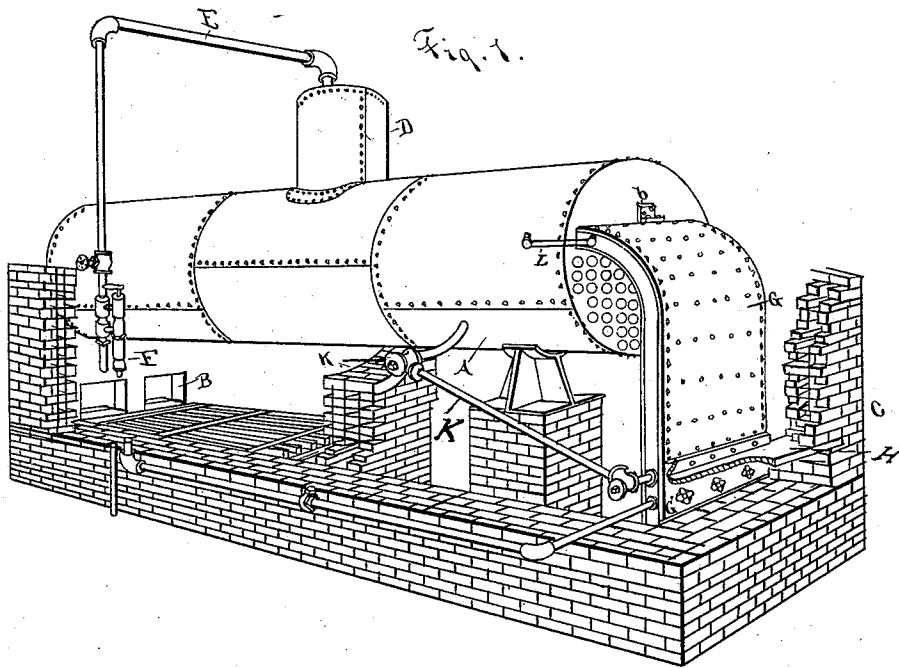


Fig 2

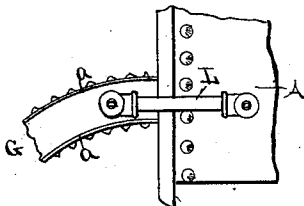
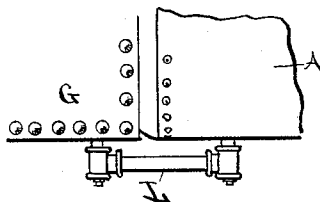


Fig 3



Witnesses  
Louis A. Clark,  
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John M. Dunn &  
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By their Attorneys  
H. A. Brown & Co.

# UNITED STATES PATENT OFFICE.

JOHN M. DUNN AND WILLIAM E. SIDNELL, OF NORWALK, OHIO.

## FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 361,054, dated April 12, 1887.

Application filed June 12, 1886. Serial No. 204,948. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN M. DUNN and WILLIAM E. SIDNELL, citizens of the United States, residing at Norwalk, in the county of Huron, State of Ohio, have invented certain new and useful Improvements in Feed-Water Heaters for Steam-Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to an improvement in feed-water heaters for stationary, portable, and locomotive boilers.

The object of the invention is to provide a feed-water heater which will be simple in construction and effective in all its operations.

To the accomplishment of the above, it consists of certain novel devices and combination of devices, as will be described and claimed.

Reference will be made to the accompanying drawings, in which Figure 1 is a view in perspective of a boiler with the improvements applied, and Figs. 2 and 3 detail views of parts.

When the invention is applied to a locomotive-boiler, the feed-water heater is situated in the smoke-box; but when used in connection with a stationary boiler, as shown in the accompanying drawings, it is situated in the arch at the rear end of the boiler.

A represents the boiler; B, the fire-box; C, the brick-work or masonry, and D the dome of the boiler. Leading from dome D is a pipe, E, which connects with a branch, F, the latter forming the feed-water pipe and communicating with the heater, as will now be described.

This heater, which is marked G in the drawings, consists of two plates or sheets of metal riveted at their side edges to suitable rings, a, inserted between them, as shown in Fig. 2. The heater for a suitable distance from the top is curved, as shown, and for the rest of the distance is formed straight, being parallel with the end of the boiler, ending at its lower end in a mud-drum, to be hereinafter referred to. At its upper end heater G is connected with the rear end of the boiler at a point above the uppermost line of flues. At a point near the lower end of the heater, or just above that portion which forms the mud-drum, there is secured an angle-plate, H, upon which the rear wall of the furnace is built, this arrangement causing a space to be left all around the

heater, in which the hot air is allowed to circulate, thus providing for a thorough and complete heating of the same. By this arrangement there is also provided ready means of access to the hand-hole plates c, which communicate with the mud-drum G'. 55

K is a pipe, which communicates with the interior of the boiler at a point near the bottom of the same, and also with the heater, just above the line of the mud-drum, so that the circulation of the water will not disturb the sediments deposited in said drum. 60

L is a pipe, which communicates with the interior of the boiler, near its top, and with the heater, also near its top. There may be one of these pipes on each side, if desired. 65

By means of the curved shape of the top of the heater all smoke, &c., will be readily conducted to the flues; by the arrangement of the circulation-pipes the deposits in the mud-drum are not disturbed; by the provision of the hot-air space around the heater the same is thoroughly heated at all points, and by this arrangement of the angle-plate ready access may be obtained to the mud-drum. 75

Suitable doors may be provided for access to the hot-air chamber surrounding the heater, and in certain cases the mud-drum may be enlarged. 80

What we claim is—

1. The combination, with a boiler and a feed-water heater entirely surrounded by the hot products of combustion, of an angle-plate supporting the heater, and the supply and circulating pipes, substantially as described and shown. 85

2. The combination, with a boiler and a feed-water heater entirely surrounded by the hot products of combustion, of the lug and the angle-plate for supporting the same, that portion of the heater just below the angle-plate forming a mud-drum, and the supply and circulating pipes, substantially as described and shown. 95

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN M. DUNN.  
WILLIAM E. SIDNELL.

Witnesses:

T. H. KELLOGG,  
ROMAN ZIPFEL.