

*Wood & Winans,
Steam-Boiler Furnace,*

No 19,601

Patented Mar. 9, 1858.

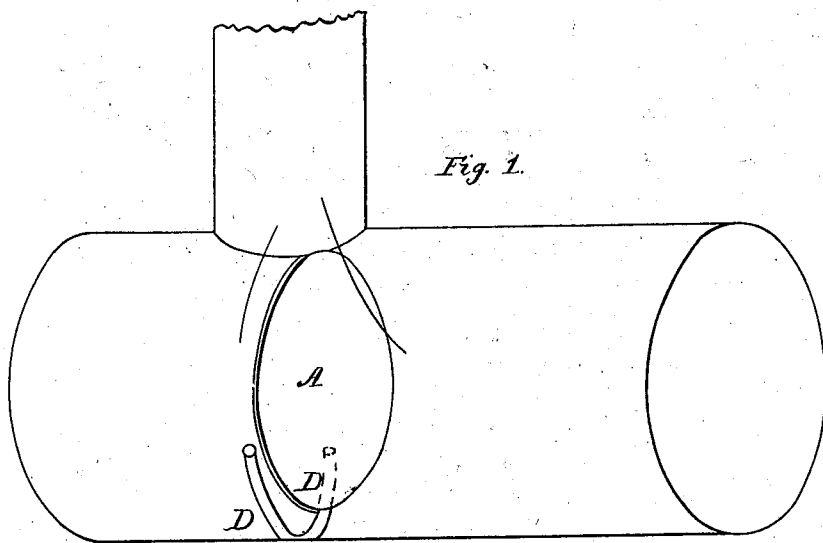


Fig. 1.

Fig. 2.

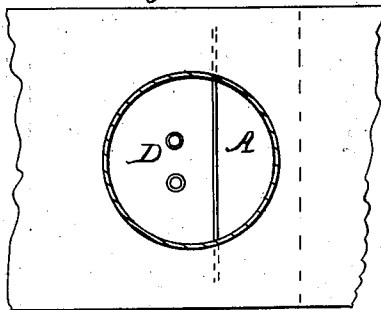


Fig. 4.

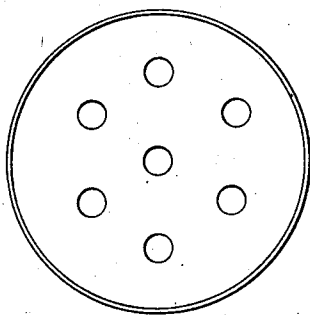


Fig. 5.

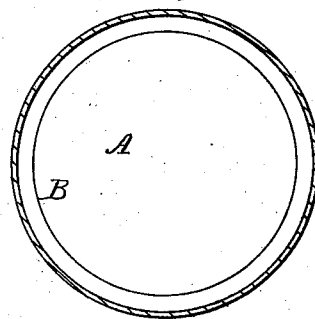
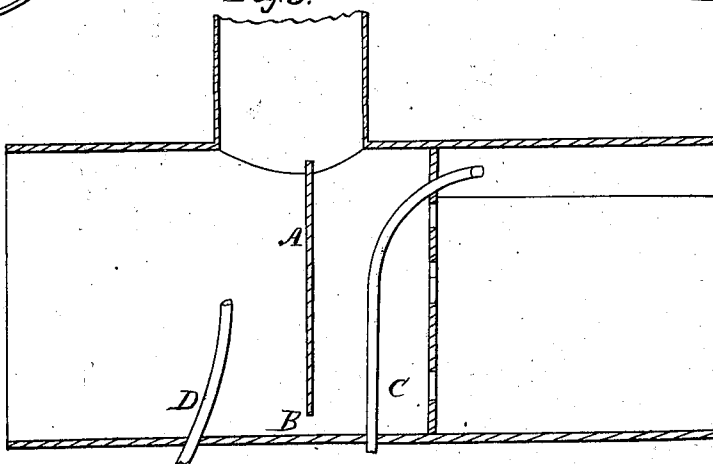


Fig. 3.



UNITED STATES PATENT OFFICE.

JOSEPH WOOD AND H. N. WINANS, OF JERSEY CITY, NEW JERSEY.

STEAM-BOILER.

Specification of Letters Patent No. 19,601, dated March 9, 1858.

To all whom it may concern:

Be it known that we, JOSEPH WOOD and H. N. WINANS, of Jersey City, Hudson county, in the State of New Jersey, have invented a new and useful Improvement in Steam-Boilers; and we hereby declare that the following is a full and exact description thereof.

The nature of our invention consists in interposing a diaphragm reflector between the fire as it issues from the furnace into the smoke box and the exhaust steam, to save caloric and for other useful purposes.

To enable others to make and use our invention we proceed to describe its construction and operation, reference being had to one sheet of drawings hereunto annexed and making part of this specification.

Figure 1 is a transparent perspective of a boiler showing the position of the diaphragm reflector. Fig. 2, part of the boiler at top looking down the smoke flue. Fig. 3, longitudinal and vertical section of the boiler. Fig. 4, the flues of the boiler from which the fire issues against the reflector. Fig. 5, transverse section of the boiler, showing within it the diaphragm A, and the space, B, around it.

The same letters refer to the same things in all the drafts.

A is the diaphragm reflector; B, the space left open for the smoke to pass; C, the steam pipe; D, the exhaust pipes.

To construct our diaphragm reflector for any ordinary boiler, say, that of a locomotive, we make a plate of iron, A, of the form of the boiler, a few inches less in diameter, so that there will be a free space (B, Fig. 3) all around it and this constitutes the diaphragm. We place it in the smoke box where the flame and smoke issuing from the flues of the furnace shall impinge upon it, so that the heat shall be reflected back

against the boiler. The steam pipes, C, are brought down in this space between the diaphragm and the boiler and are thus kept hot.

The smoke issuing from the furnace passes directly up into the smoke stack, or it passes through the space, B, Fig. 5, to the other side of the diaphragm before entering the smoke stack. The exhaust pipes, D, are placed as usual, so that the exhaust steam will issue with the smoke, but as they are on the other side of the diaphragm they do not quench the flame that would otherwise at times mingle with the exhaust steam, nor absorb the heat, as is usually the case.

The exhaust steam passes out of the smoke box up into the smoke stack, meeting the smoke from the furnace at the throat of the smoke pipe (see Fig. 2) and thus aiding the draft, after the smoke and flame have had much of their caloric reflected back against the boiler. The draft being broken off from the exhaust, there is a more free and regular action of the draft.

The diaphragm is made a flat disk—or it is made as desired.

We are aware that a slotted plate has been used in the smoke box but it does not prevent the draft interfering with the exhaust.

What we claim as our invention and desire to secure by Letters Patent is—

The interposition of the diaphragm reflector, A, between the flues and the exhaust for the purpose of protecting the exhaust from the draft and for reflecting the heat back to the head the whole constructed and arranged substantially as above described.

JOSEPH WOOD.
H. N. WINANS.

Witnesses:

OWEN G. WARREN,
JOHN D. STIRTEVANT.