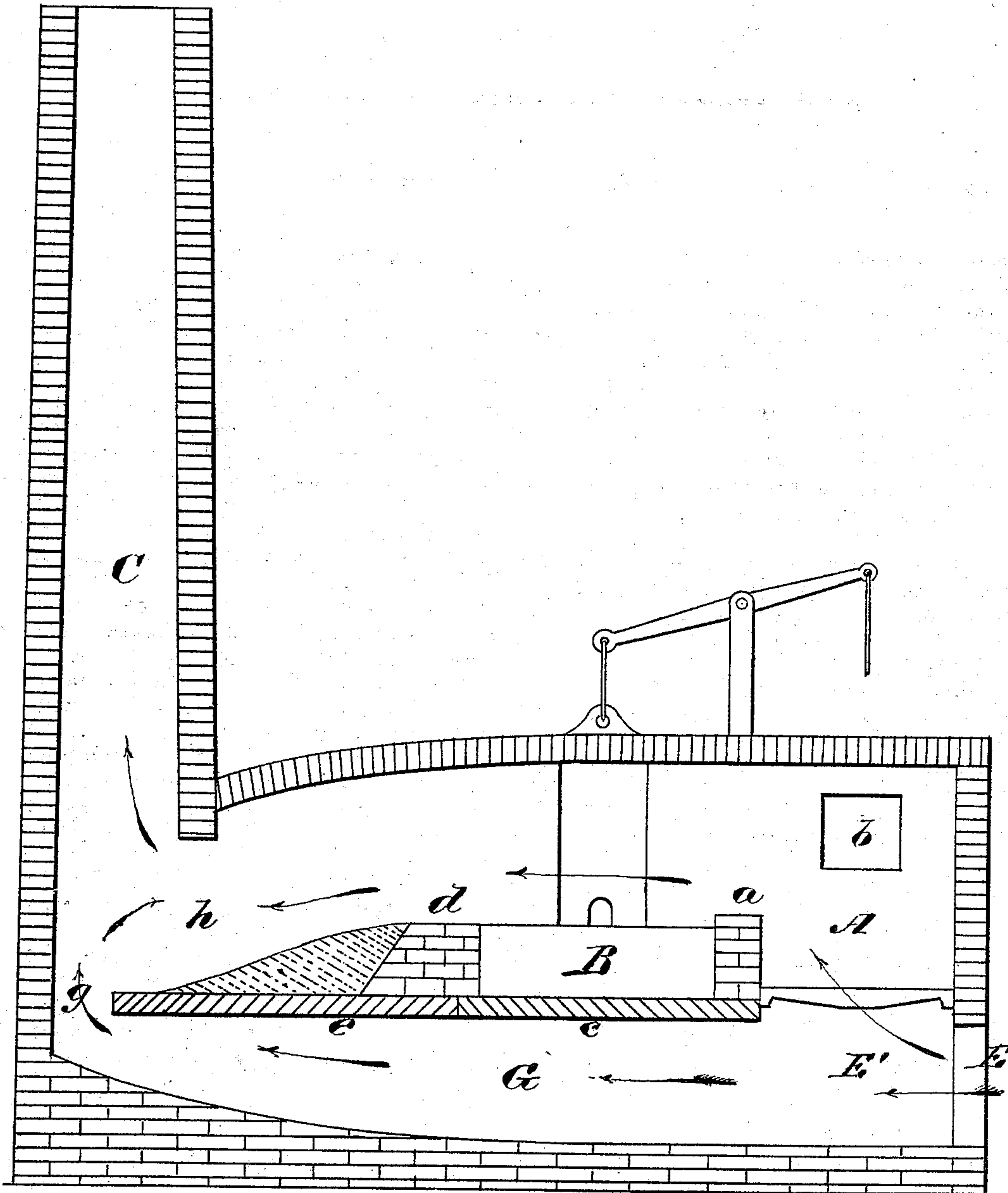


E. LLOYD.  
Puddling-Furnaces.

No. 135,650.

Patented Feb. 11, 1873.



Witnesses.  
R. Campbell,  
J. N. Campbell.

Inventor  
Evan Lloyd  
by  
Marion Penick & Son.

# UNITED STATES PATENT OFFICE.

EVAN LLOYD, OF PITTSBURG, PENNSYLVANIA.

## IMPROVEMENT IN PUDDLING-FURNACES.

Specification forming part of Letters Patent No. 135,650, dated February 11, 1873.

*To all whom it may concern:*

Be it known that I, EVAN LLOYD, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented an Improvement in Furnaces for Boiling, Heating, and Puddling Iron; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, which is a section taken longitudinally and vertically through the center of my improved furnace.

This invention relates to an improvement on furnaces for boiling, heating, and puddling iron, the object of which is to prevent the hearth-plate and the base of the chimney or stack from rapidly burning out, and also to greatly facilitate combustion of the inflammable gases in the furnace by supplying air thereto, thereby utilizing fuel and preventing largely the escape of smoke, as will be hereinafter explained.

The following description of my improvement will enable others skilled in the art to understand it.

In the accompanying drawing, A represents the fire-chamber, which is supplied with fuel through a feed-opening, *b*. E' represents the ash-pit below the grate-bars of the fire-chamber A, and E represents an opening leading into the ash-pit, which opening will in practice be provided with a door, to which a register may be applied for regulating the admission of air. B represents the hearth, and *c* its bottom plate, which is between two transverse bridges, *a d*, *a* being the fire-bridge and *d* the flue-bridge. Beneath the hearth-plate *c*

and a plate, *e*, is an air-conduit, G, which extends from the ash-pit opening E to the back wall of the stack C, and communicates with this stack at its base by means of an opening, *g*. This will allow a current of air induced by the draft of the stack C to enter the stack at its junction with the flue *h*, the effect of which will be to violently turn back the flames rushing through the flue *h*, and greatly retard the escape of inflammable gases; at the same time the air, which is more or less heated in its passage through the conduit G, will mix with the gases and allow them to be consumed in the furnace. The air which is conducted through the conduit G will absorb a large amount of heat from the hearth-plate *c* and the plate *e*, and thus, by keeping down their temperature, prevent them from rapidly burning out, and as the air impinges on the walls of the chimney at its base these walls will be protected from the intense heat to which they are subjected in other puddling-furnaces.

In all other respects the furnace may be constructed and prepared for work like puddling-furnaces of the well-known kind.

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

The air-conduit G, arranged beneath the hearth and communicating with the chimney or stack at the base thereof, for the purposes and in the manner substantially as described.

EVAN LLOYD.

Witnesses:

J. N. CAMPBELL,  
EDM. F. BROWN.