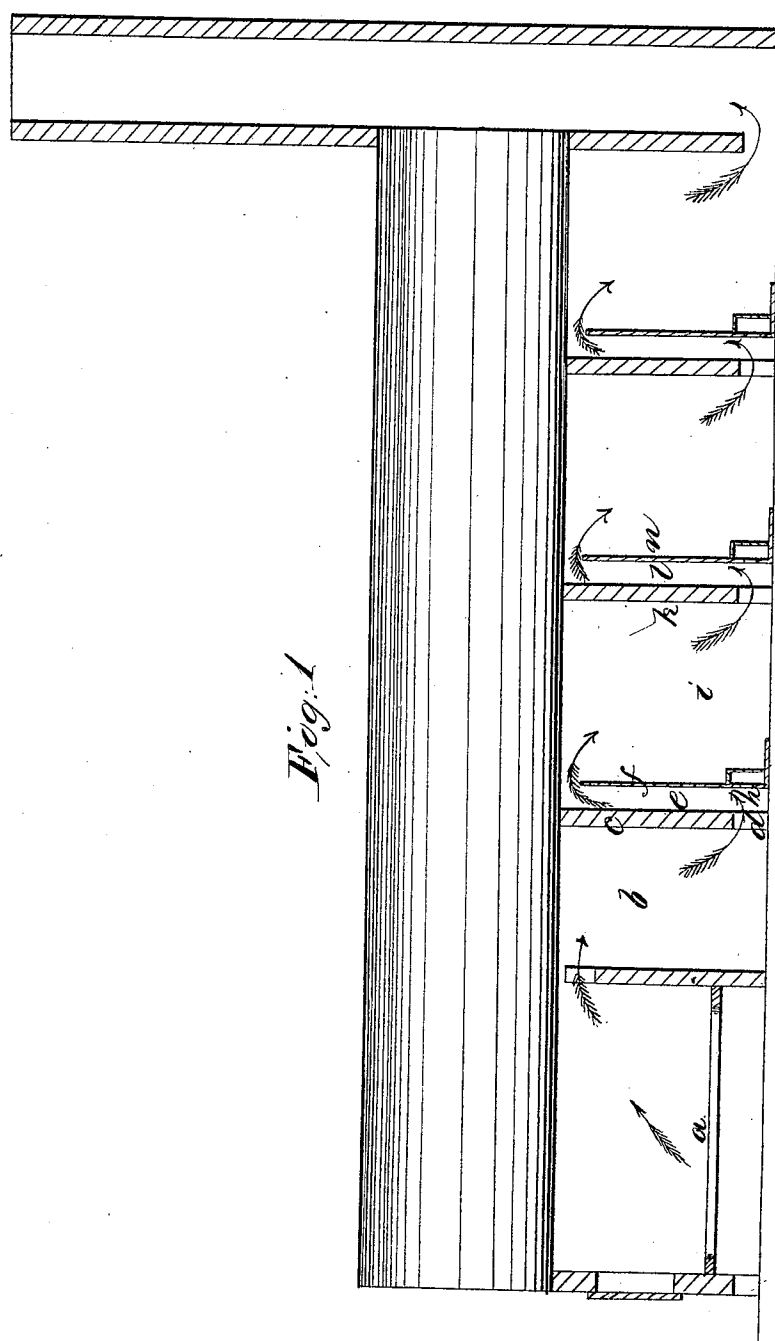


*D. Carpenter,*  
*Steam-Boiler Furnace.*  
*N<sup>o</sup> 5621.      Patented June 6, 1848.*



*Fig. 1*

# UNITED STATES PATENT OFFICE.

DANIEL CARPENTER, OF COHOES, NEW YORK.

## FURNACE FOR STEAM-BOILERS.

Specification of Letters Patent No. 5,621, dated June 6, 1848.

*To all whom it may concern:*

Be it known that I, DANIEL CARPENTER, of Cohoes, in the county of Albany and State of New York, have invented a new and useful Improvement in Setting Steam-Boilers, and that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical longitudinal section through the flues of the setting, the boiler itself being drawn entire.

The attempts heretofore made to form flues under steam boilers, where the products from the fire are caused to revolve and mix with atmospheric air to aid in their more perfect combustion, have been only partially successful, in consequence of their not causing the flame to impinge directly on the boiler; by my arrangement I effect this object and entirely overcome the difficulty before existing.

The construction is as follows: I place the fire grate (*a*) in the usual position under the front end of the boiler, and from thence pass the smoke &c. back into a chamber (*b*) at the back of which a wall or partition (*c*) is built up close against the bottom of the boiler so as to prevent the passage of any gas between them; there is an opening (*d*) at the bottom of this partition under which the smoke passes, and then ascends a vertical flue (*e*) formed between the above

named partition (*c*) and another (*f*) directly behind it, which latter partition extends down to the floor of the furnace; there it is made hollow at (*h*) with a set of holes opening into the flue through which atmospheric air is forced that meets the heated gases as they pass under the partition, mingles with them, and aids in their combustion. The flame caused thereby ascends vertically and impinges directly against the boiler, by which its heat is imparted, and thence it passes into a second chamber (*i*) having a similar partition (*l*) to the one (*c*) already described, and behind it a flue (*l*) and partition (*m*) from the bottom of which latter a second injection of air is made to mingle with the vertically ascending current, a still further consumption of the combustible matter is affected, and the body of the flame is made to impinge directly on the boiler. This may be continued through a succession of any number of chambers and flues the whole length of the boiler.

What I claim as my invention and desire to secure by Letters Patent is—

The series of upright flues and chambers, in which the gases revolve and are consumed, the partitions between said chambers and the upright or ascending flues being built up in contact with the bottom of the boiler, so that no gas can pass between them.

DANIEL CARPENTER.

Witnesses:

HEZEKIAH HOWE,  
JOHN P. STEINBERGH.