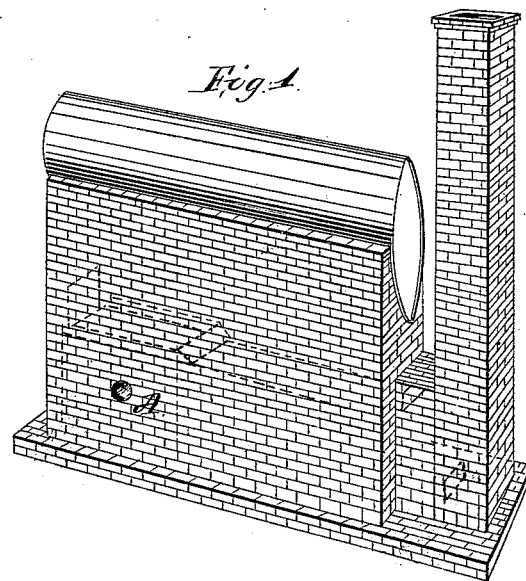
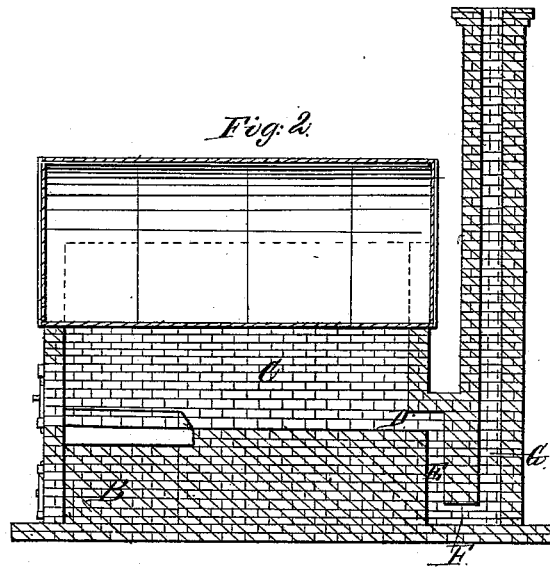


*Clute & Seabury,*  
*Steam-Boiler Furnace.*  
*N<sup>o</sup> 2,875.                      Patented Dec. 5, 1842.*



# UNITED STATES PATENT OFFICE.

JERE. CLUTE AND J. SEABURY, OF COHOES, NEW YORK.

## FURNACE.

Specification of Letters Patent No. 2,875, dated December 5, 1842.

*To all whom it may concern:*

Be it known that we, JEREMIAH CLUTE and JACOB SEABURY, of Cohoes, in the county of Albany and State of New York, have invented a new and useful Improvement in the Manner of Constructing the Flues of Furnaces of Various Descriptions; and we do hereby declare that the following is a full and exact description thereof.

10 Our improvement consists in the employment of a descending flue, or flues, down which the draft is made to pass after it leaves the fuel in the chamber of combustion, or that part of the furnace which contains the fuel. Our purpose in the employment of these descending flues, is to form an obstruction to the passage of the gaseous products of combustion into the ascending flue; and we, therefore, not only cause the  
20 gases to descend, but we, in general, confine our flues within narrower limits than is usually done; this latter effect may, however, be attained by means of valves, or dampers, of the ordinary construction. In furnaces  
25 constructed on our plan, the supply of air is to be given by means of any suitable blowing apparatus; and by the obstructing of the draft by the descending flues, and the forcing in of air by the blowing apparatus,  
30 a degree of pressure is produced in the interior of the furnace, which has been found highly favorable in economizing the heat, which is the more readily communicated to the article to be acted upon, such as metal to  
35 be melted, or water contained in a boiler.

We have, in the accompanying drawing, represented a steam boiler, and its furnace; but our object in so doing is to give a general exemplification of the manner in which  
40 we cause the flues to descend, as the gases leave the fire chamber, and not to limit our invention to a furnace for any particular purpose, as it will be found applicable to the melting of metals, to calcining, and to  
45 a great number of mechanical and chemical processes.

Figure 1, in the accompanying drawing, shows the exterior of a steam engine furnace and boiler, with its chimney; and Fig.  
50 2, a vertical section thereof from front to back.

A, represents an opening into the ash-pit B, through which air may be introduced from any blowing apparatus. The ash-pit  
55 is, of course, to be closed, in order to attain the desired effect from the air.

C, is the body of the furnace within which the fuel is contained, and D, is the throat of the flue, leading into the descending flue E. The opening D, is represented as situated  
60 close to the floor, or bottom, of the fire chamber, but it may be situated at any height between the floor and the top of the furnace, which the nature of the work may require, or which the operator may prefer. Instead  
65 of one opening, or throat, there may be several distributed over the width of the back of the furnace.

F, is a short, horizontal leading into the vertical flue, or chimney G; but as this chimney is not designed to promote the draft,  
70 it may be of little elevation, or the heated air may be conducted off horizontally, or otherwise, for warming apartments, or for any other purpose to which it may be found  
75 applicable.

We are well aware that descending flues have been in common use in stoves, or other calorific apparatus where it was desired to conduct the heat downward, for the heating  
80 of the lower parts of ovens, or for other purposes to which it was desired to conduct the heat downward for the heating of the lower parts of ovens, or for other purposes to which it was desired so to apply the heat;  
85 but, in this case, the air has been admitted by a natural draft, and it has been desirable to carry as large a portion of heat downward as possible; while it is the intention and effect of our arrangement to lessen  
90 the quantity of heat that shall descend, and to confine its action within the limits of the fire chamber. And we have found that under this arrangement the heated air which finds its way into the escape flue is at a  
95 temperature many degrees below that which it would possess were it allowed to pass into it in the ordinary way.

Having thus, fully described the nature of our improvement in furnaces, what we claim  
100 therein as new, and desire to secure by Letters Patent, is—

The combining of the descending flues, with an artificial blast in furnaces, in the manner, and for the purpose, herein set  
105 forth.

Signed,

JEREMIAH CLUTE.  
JACOB SEABURY.

Witnesses:

SUPPLY F. WILSON,  
WILLIAM CULUP.