

I. RICHARDSON.

Lime Kiln.

No. 1,496.

Patented Feb. 21, 1840.

Fig. 2

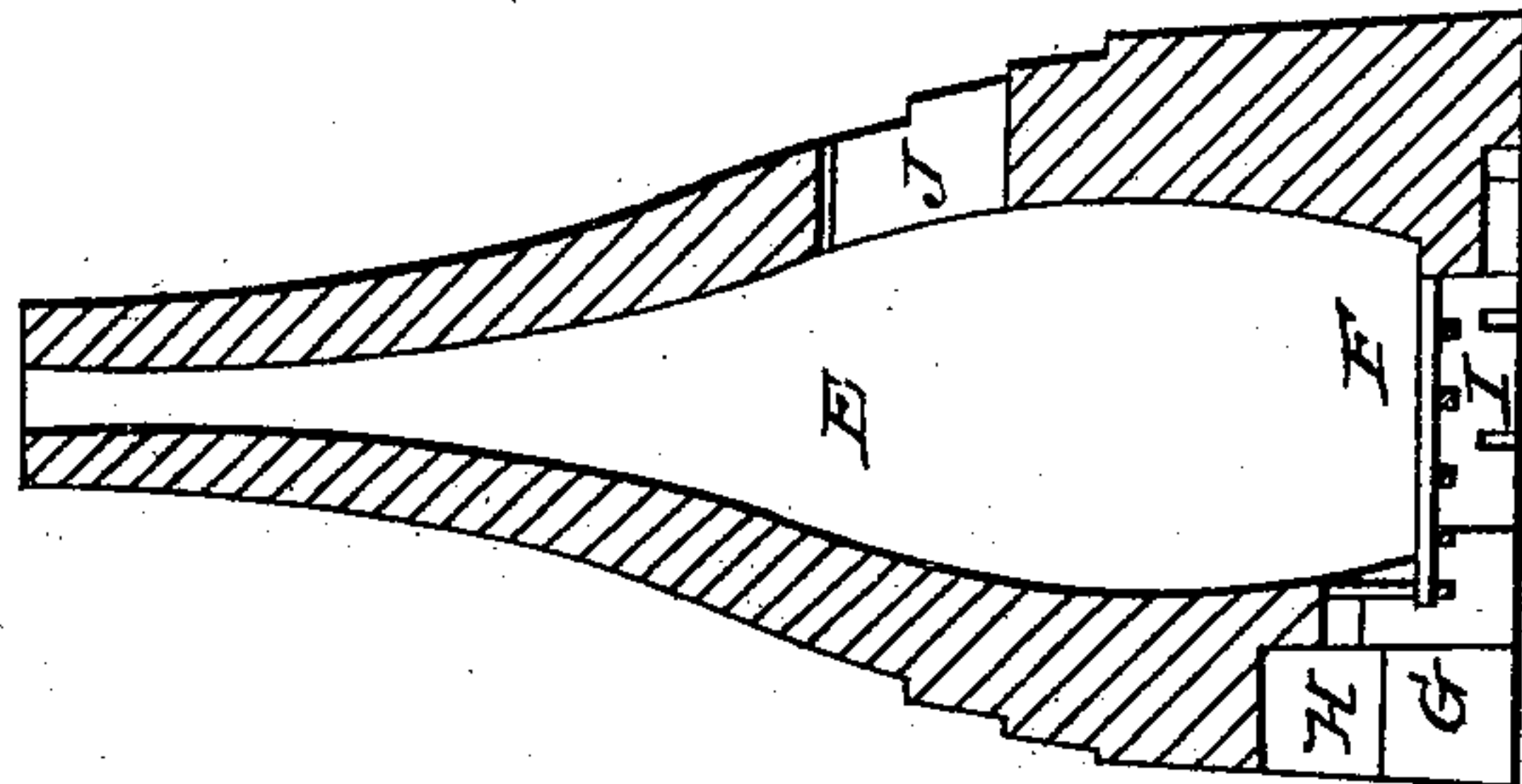


Fig. 1

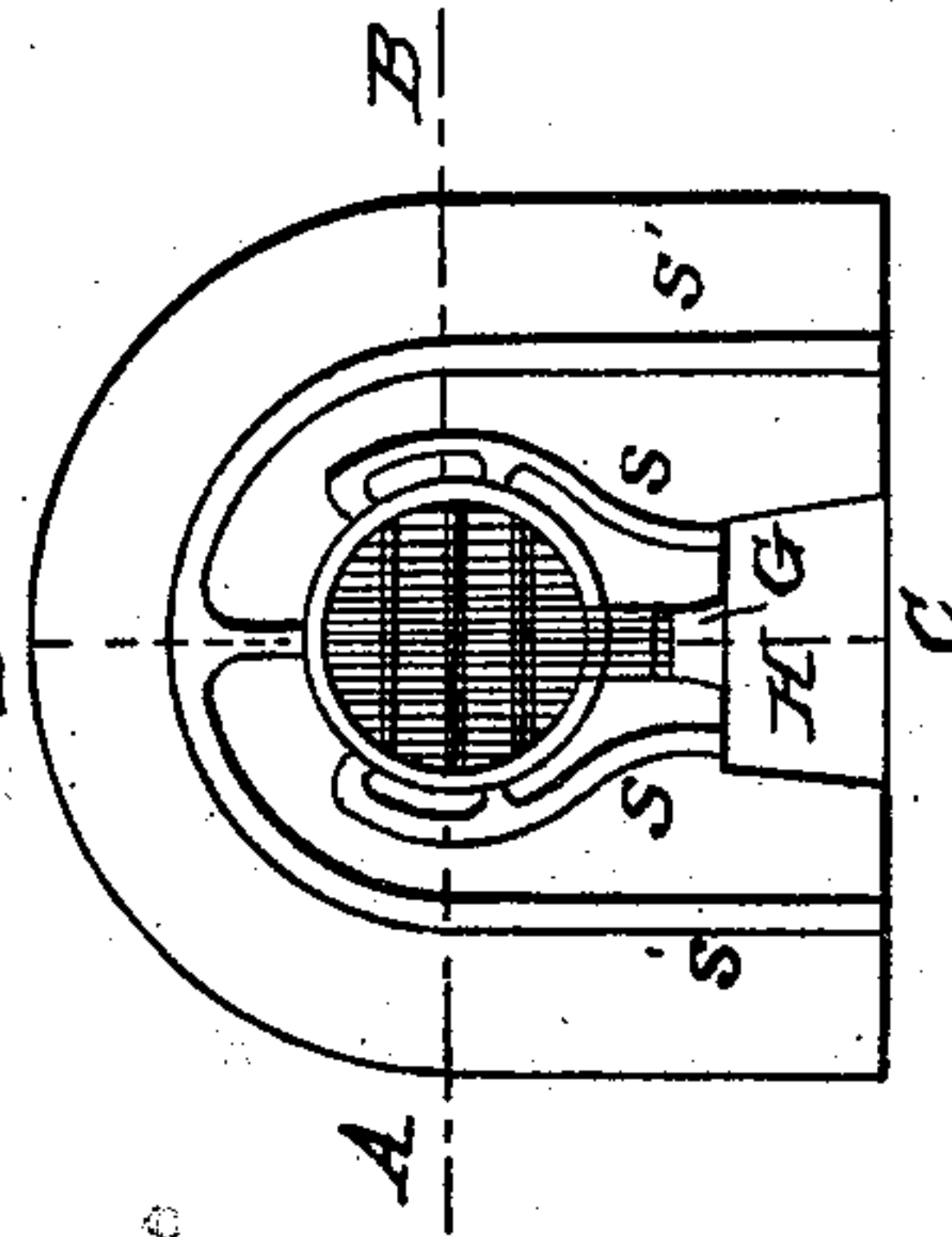
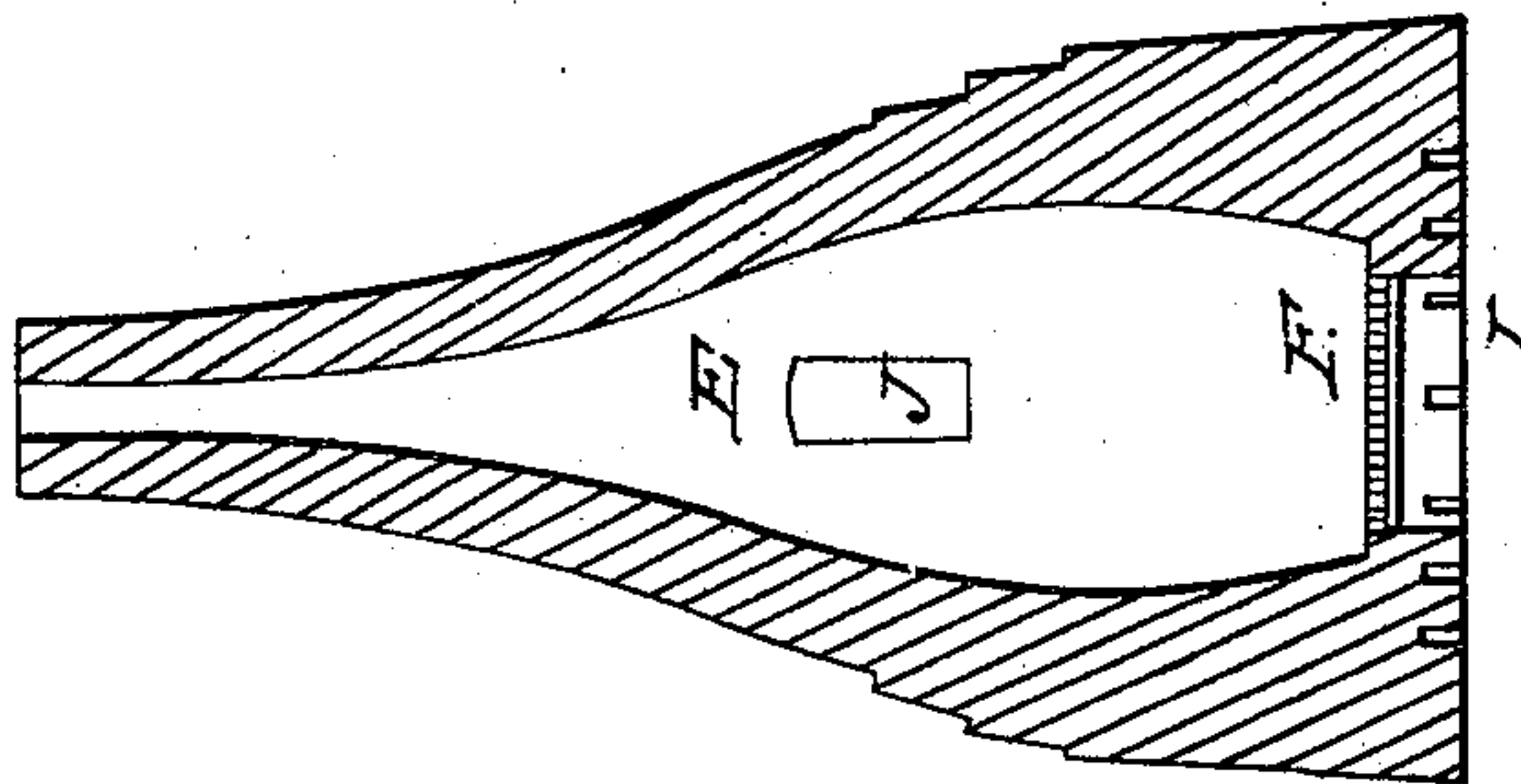


Fig. 3



# UNITED STATES PATENT OFFICE.

ISAAC RICHARDSON, OF PAOLI, PENNSYLVANIA.

MODE OF REGULATING THE DRAFT OF LIMEKILNS.

Specification of Letters Patent No. 1,496, dated February 21, 1840.

*To all whom it may concern:*

Be it known that I, ISAAC RICHARDSON, of Paoli, in the county of Chester and State of Pennsylvania, have invented an Improvement in the Manner of Constructing Kilns for the Burning of Lime by Means of Anthracite Coal as fuel; and I do hereby declare that the following is a full and exact description thereof.

10 In the use of anthracite for the burning of lime, as it has heretofore been employed, the coal has been either mixed with the lime, or, where this is not done and the coal has been burned by placing the anthracite in a  
15 furnace, or fire chamber, below the lime, it has been found necessary to use a blowing apparatus to assist the draft and diffuse the heat regularly through the mass.

Under my arrangement I do not mix the  
20 coal with the lime, nor do I blow air into the furnace, but I so construct the latter, and the flue as to give a perfect command of the draft and to cause it to enter the ash pit or spare under the grate bars, either in  
25 front, laterally, or at the back part, at pleasure.

In the accompanying drawing Figure 1 is a ground plan of my kiln showing the arrangement of the flues; Fig. 2, a vertical  
30 section thereof from front to back, and Fig. 3, a similar section from side to side.

H, is the arch in front of the furnace, built in the ordinary manner.

F, are the grate bars upon which the anthracite is to be burned. There is an opening at G for the supply of fuel, which opening is furnished with a close fitting door, or stopper, to prevent air being admitted above the fuel. The ash pit I, is also furnished with a door or stopper, in front, by  
40 which it may be wholly or partially closed at pleasure. Into this ash pit I make other openings by means of flues, leading not only to the sides, but also to the back of the furnace. These flues are shown at s, s, s, in

the respective figures, that marked s', s', leading into the back of the ash pit. The openings, in front of the kiln, are furnished with stoppers by means of which the draft may be perfectly governed, so that it may  
50 be admitted at front, laterally, or at the back in any required degree.

I elevate the flue or chimney E of my furnace to such height as to insure a good draft. In practice I have found an elevation of  
55 fifty feet sufficient.

In using this kiln the lime stone to be burned is first built up upon the edges of the furnace so as to form an arch above the grate bars for the admission of the fuel, in  
60 the same way with that which is frequently adapted in kilns where wood is employed as fuel. After the formation of this arch the lime stone is to be piled upon it, through the feed hole J, as in many other kilns.  
65 This feed hole is then to be stopped in the usual way.

Having practically assayed a kiln of this description it has been found to produce lime of a quality very superior to that obtained by mixing the anthracite with the lime, and equal, fully, to that produced by the artificial blast, either hot or cold, applied to anthracite or in lime kilns, while its cost and liability to get out of repair are greatly  
75 reduced.

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

The manner in which I have constructed and combined the flues below the ash pit, so  
80 as to admit the air at the back as well as at the front and sides, in a lime kiln for burning anthracite on grate bars, by natural draft, governed as herein set forth; the other parts of the kiln being constructed  
85 substantially as described.

ISAAC RICHARDSON.

Witnesses:

THOS. P. JONES,  
BENJAM. CUSHNA.