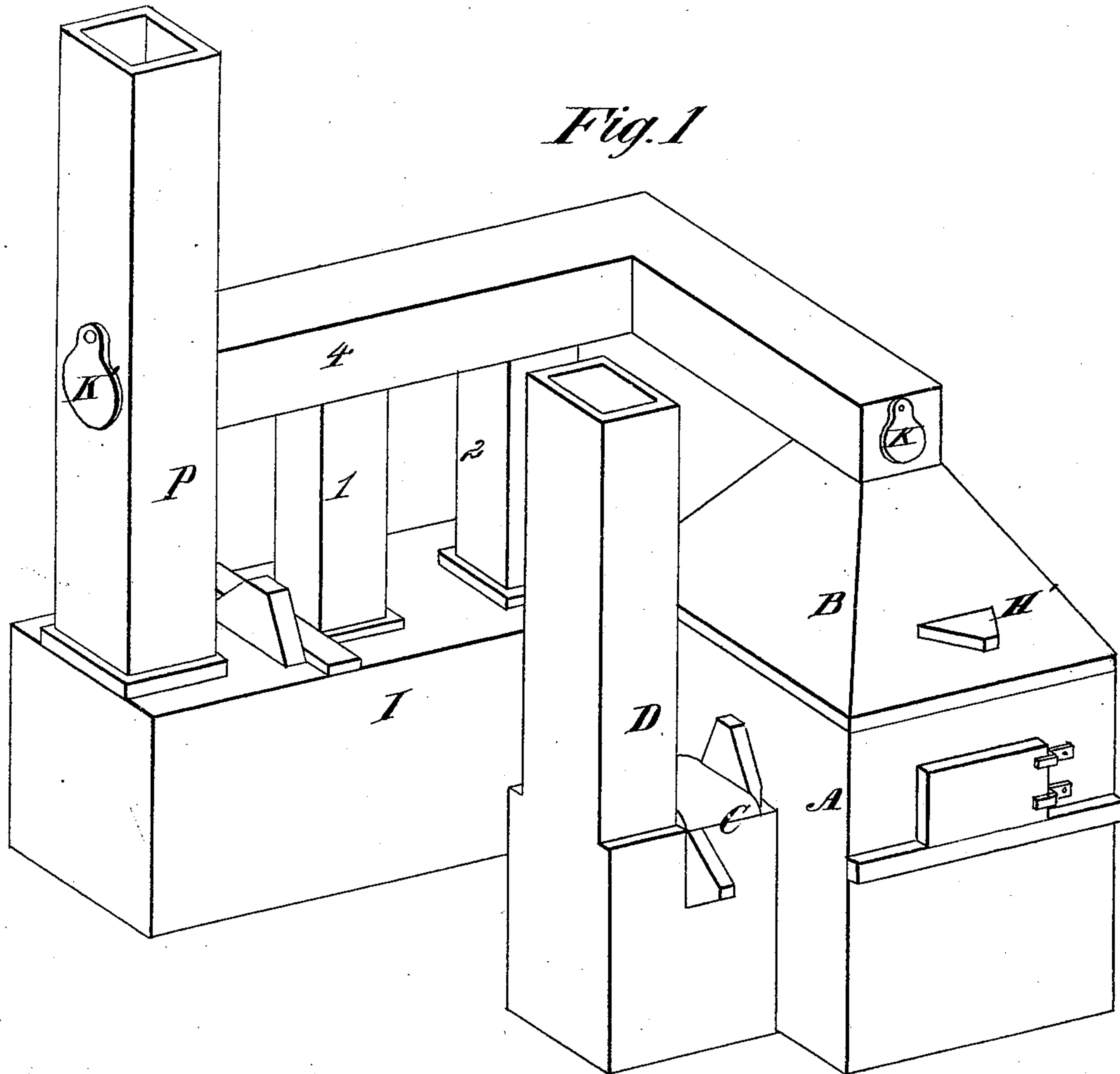


S. T. HUGHES.  
ZINC OXIDE FURNACE.

No. 184,381.

Patented Nov. 14, 1876.



Witnesses

Jos. P. Connolly  
W. Connolly

Saml. T. Hughes  
Connolly & Co.

Inventor

Attorneys

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Fig 3

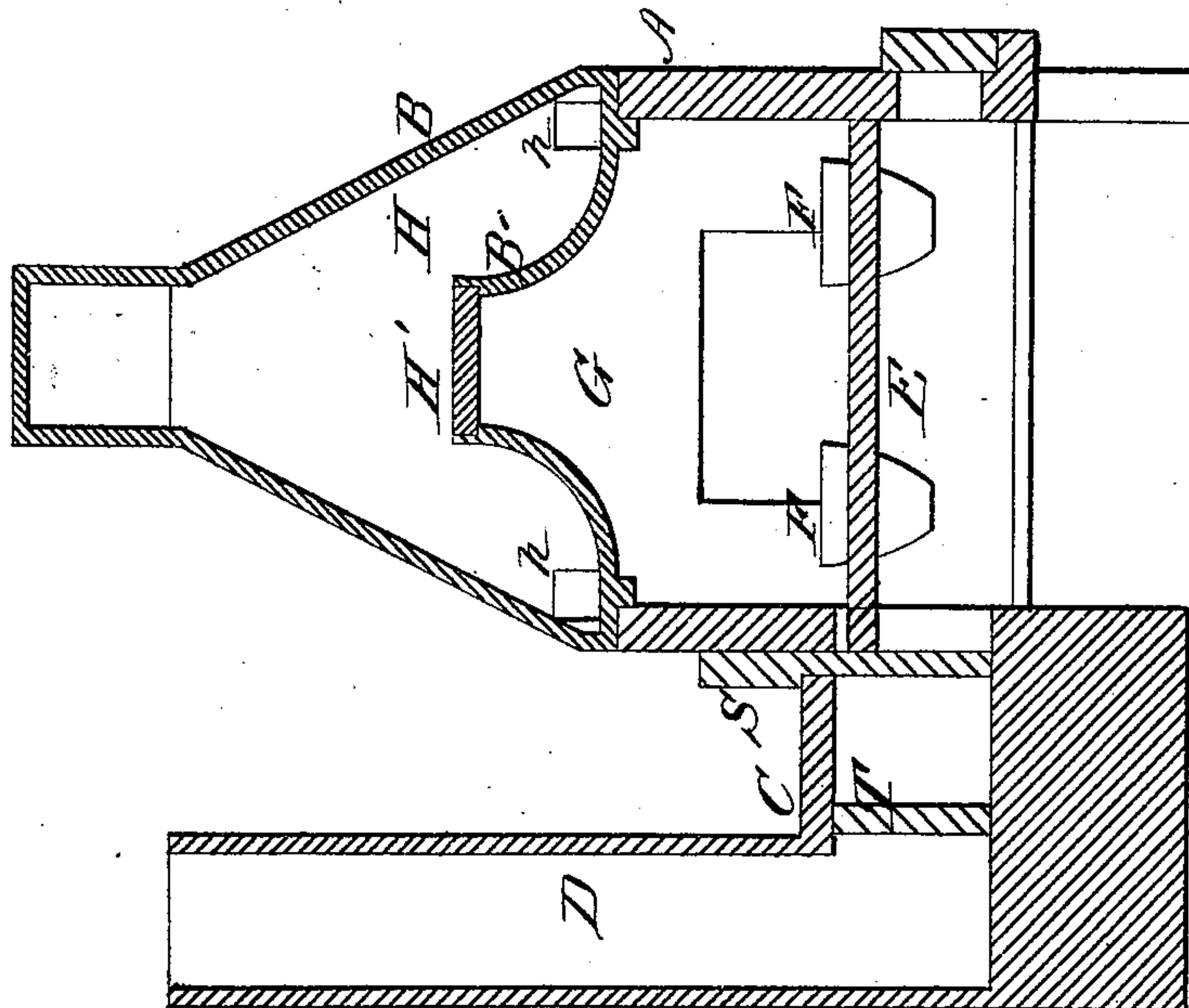
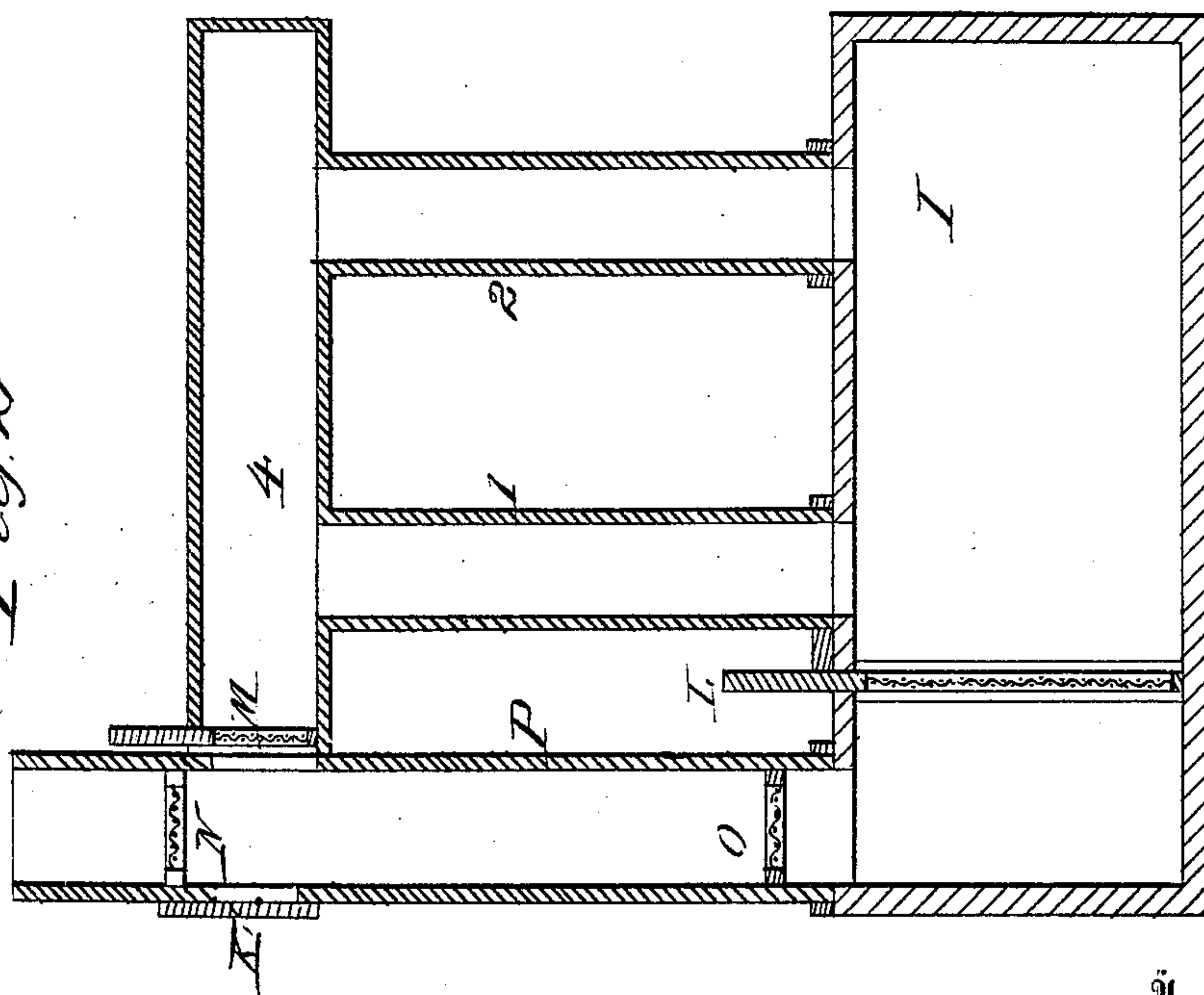


Fig 2



Witnesses

Jas B. Connolly  
W. Connolly

Inventor

Samuel T. Hughes  
Connolly Bros

Attorneys



# UNITED STATES PATENT OFFICE.

SAMUEL T. HUGHES, OF NEWBURG, OHIO.

## IMPROVEMENT IN ZINC-OXIDE FURNACES.

Specification forming part of Letters Patent No. **184,381**, dated November 14, 1876; application filed June 21, 1876.

*To all whom it may concern :*

Be it known that I, SAMUEL T. HUGHES, of Newburg, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Furnace and Apparatus for Oxidizing Zinc; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a perspective view of the apparatus. Fig. 2 is a vertical longitudinal section through receiver. Fig. 3 is a vertical central section through oxidizing-furnace.

This invention relates to the arrangement of certain parts of a zinc-white furnace, and of the arresting flues or chambers connected therewith, the nature of which will more fully appear on referring to the following specification and the accompanying drawings.

In the accompanying drawings, illustrating a furnace and apparatus embodying my improvements, A designates the furnace, surmounted by a double-walled conical dome, B B', and communicating, through a horizontal flue, C, with an upright smoke-stack, D. E is the fire-place, adapted to contain the melting pots or pans F. G is the converting-chamber, above the fire-place. H is the oxidizing-chamber, formed between the two walls B B'. H' is a damper, controlling the communication between the vaporizing-chamber and oxidizing-chamber. *h h* are flues or holes at the bottom of the oxidizing-chamber, for use in cleaning the oxide from the vaporizing-chamber, as well as to admit air for oxidation. I represents the receiver, located at a distance from the furnace, and communicating therewith through the vertical receiving-pipes 1 2, &c., and horizontal receiving-pipe 4. K is a valve at the end of pipe 4, to regulate the admission of oxygen. K' is a similar valve in drafting-flues opposite the pipe 4. L M N O are perforated traps, the last two being located in the drafting-flue P, which rises from the extreme end of the receiver, and communicates also directly with the receiving-pipe 4. The traps are all attached to slides. S T are dampers in the flue C, which opens into both the fire-space and vaporizing-chamber.

The operation is as follows: The metal to be oxidized is placed in the pots F and heated until it becomes volatile, and passes up from the vaporizing-chamber to the oxidizing-chamber. All that does not oxidize in H is carried upward with the gases to the pipe 4. The valve K may be opened, admitting oxygen to the pipe 4, and there oxidizing the metal which, in the form of oxide, falls through the pipes 1 2, &c., into the receiver. The traps prevent the escape of oxide into the drafting-flue, allowing only the gas from the receiver and flues to enter. When access to the pots is desired, the damper S is opened sufficiently to allow the gas to escape to the chimney. The valve H' is then closed to prevent the gases from rising into the oxidizing chamber and flues. The dampers T and S being opened, the gases are drawn into the smoke-flue with the products of combustion, and escape with them at the outlet of the chimney.

Having fully described my invention, I claim—

1. In combination with the oxidizing-furnace, receiver, and receiving-flues, the drafting-flue P, containing screens, and communicating at separate points with the receiver I and conduit 4, substantially as described.
2. The damper S, in combination with the fire-chamber E, vaporizing-chamber G, and smoke-stack D, said damper being arranged at the contiguous inlet-openings to the flue C, from the fire-chamber E, and vaporizing chamber or converter G, so that either or both said openings may be opened or closed, substantially as described.
3. The improved oxidizing apparatus, comprising the furnace A, containing the fire-space E, vaporizing-chamber G, and oxidizing-chamber H, the receiving-pipes 1 2 4, &c., the receiver I, and drafting-flue P, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of June, 1876.

SAMUEL T. HUGHES.

Witnesses:

A. HUTCHISON,  
JOHN WALLACE.