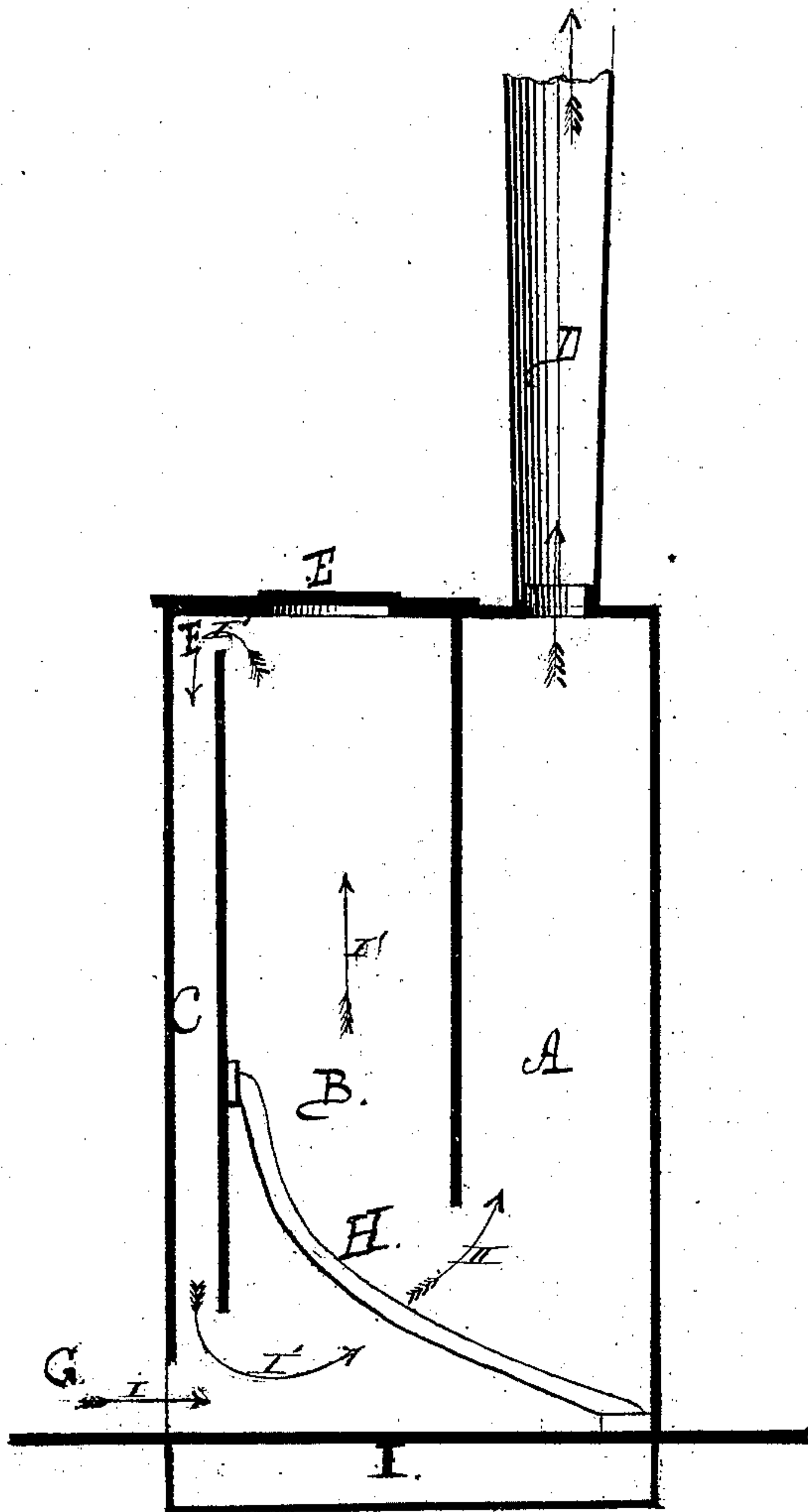


F. A. WOODSON.

Magazine Stove.

No. 86,620.

Patented Feb. 2. 1869.



Witnesses
Jacob S. Henry
Phil. J. Lister

Inventor
F. A. Woodson
by Diederiksen &
Attys

UNITED STATES PATENT OFFICE.

FREDERICK A. WOODSON, OF ANNA, ILLINOIS.

SMOKE-BURNING FURNACE.

Specification forming part of Letters Patent No. **86,620**, dated February 2, 1869.

To all whom it may concern:

Be it known that I, FREDERICK A. WOODSON, of Anna, in the county of Union and State of Illinois, have made a certain new and useful Smoke-Burning Furnace; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand and use the same, reference being had to the accompanying drawings, making part of this specification, in which the figure is a central vertical longitudinal section of the furnace, illustrating my invention.

My invention is designed as a process for separating the volatile from the ponderable constituents of wood or coal, and reuniting them in conjunction with a fresh supply of air at the point of greatest heat, and there exhausting all the combustible elements of the fuel.

In the drawings, A is the fire-chamber; B, the fuel-chamber; C, the smoke-chamber; D, the chimney; E, opening for feeding fuel; F, opening for smoke and gas to pass down; G, opening for fresh supply of air; H, the grate; I, the ash-box.

The furnace is divided into three principal chambers: first, chamber A, used as a fire-box, and also for radiation and escape of heat; second, chamber B, the middle of which is used as a fuel-magazine, the upper part a reservoir for smoke and gas, and the lower part for the double purpose of mixing the atoms of oxygen with the atoms of hydrocarbon, and also for heating the mixture before combustion; third, chamber C is a smoke-passage communicating with both the upper and lower part of B.

The vent-hole G is the whole width of the furnace, and is so located relatively to the chambers A B C that the current of air cuts under them in its direct draft to the place of greatest heat at the base of A. The ash-box is I. The movable cover is E. The slanting grate H is placed far enough from the partition between A and B to admit the descending fuel.

The operation is as follows: A fire is made in base of A. Afterward B is filled with fuel. All the smoke and gases evolved from the body of the fuel in B (except that directly under the fire-chamber H) rise by rarefaction to the top of B, and the ponderable parts descend by gravity to the bottom of A. The current of air entering G creates a the lower part of C, and draws the smoke and gases from the top of B to the vacant space at the bottom of B, when the oxygen and hydrocarbon are mixed, and also heated, to some extent, in their passage to the base of A, when a union is made with the ponderable parts of the fuel and combustion takes place, thence an exit through chimney.

I do not claim the process of burning smoke, nor of producing a smokeless stove; but

I do claim—

A furnace by which the volatile matters are separated from the ponderable constituents of fuel, and reunited with a fresh supply of air at the point of greatest heat, substantially as and for the purpose described.

The above signed by me this 31st day of December, 1868.

FREDERICK A. WOODSON.

Witnesses:

JOHN A. WIEDERSHEIM,
JACOB F. HENRY.