

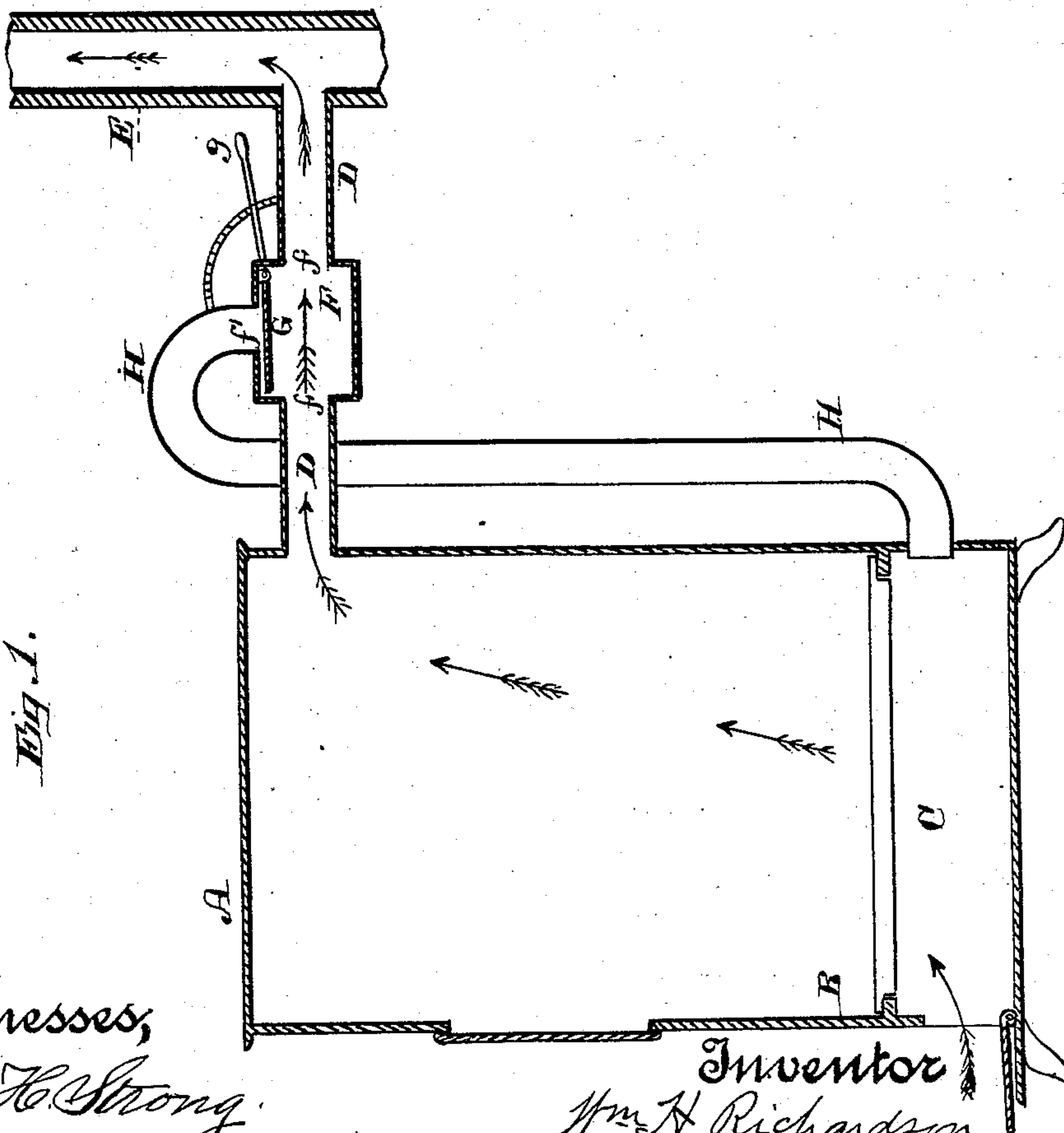
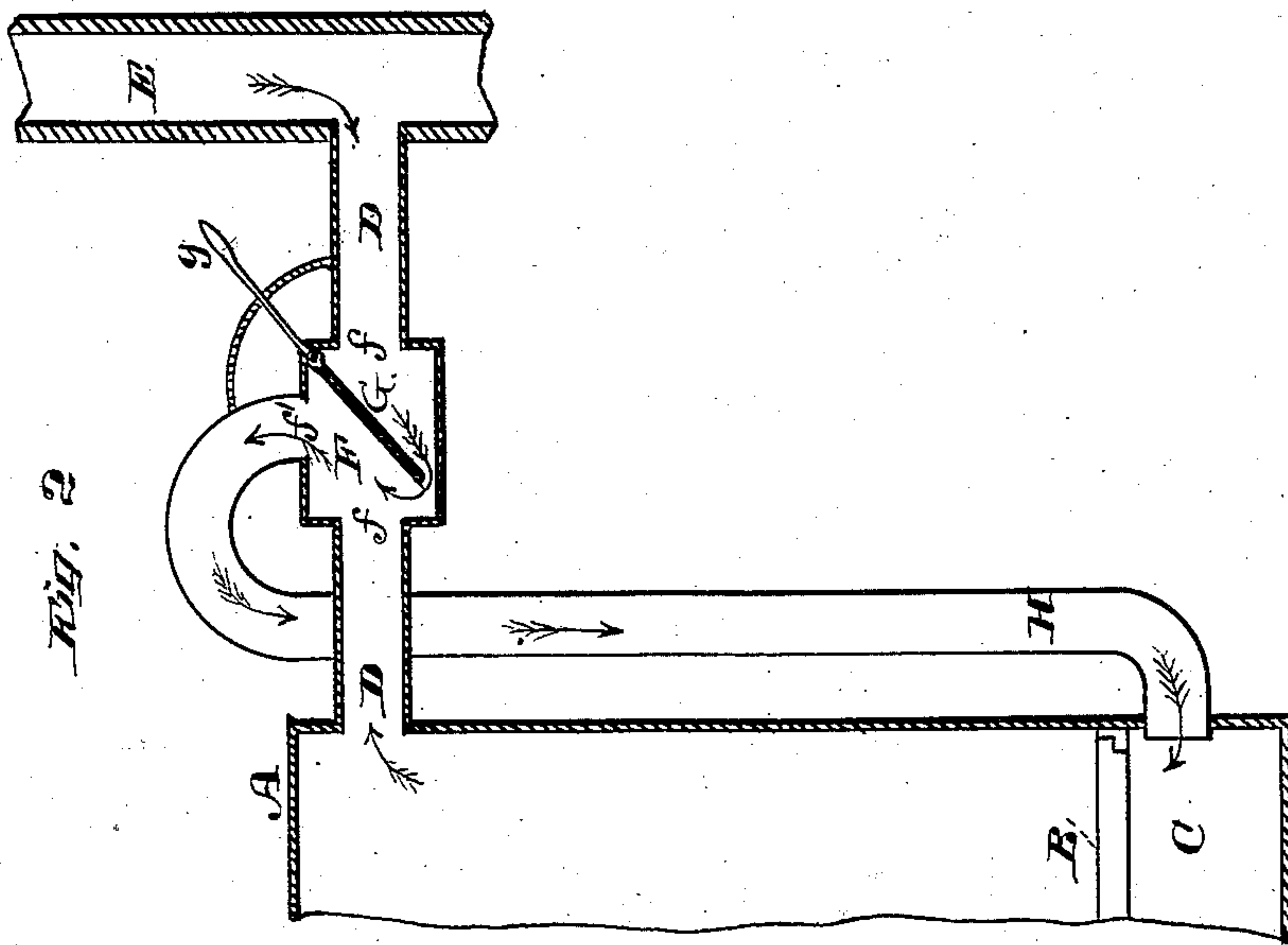
(No Model.)

W. H. RICHARDSON.

SMOKE BURNING ATTACHMENT FOR STOVES, &c.

No. 281,399.

Patented July 17, 1883.



Witnesses,  
Geo. H. Strong  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. RICHARDSON, OF SAN FRANCISCO, CALIFORNIA.

## SMOKE-BURNING ATTACHMENT FOR STOVES, &c.

SPECIFICATION forming part of Letters Patent No. 281,399, dated July 17, 1883.

Application filed September 25, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HENRY RICHARDSON, of the city and county of San Francisco, State of California, have invented an Improved Smoke-Burning Attachment for Stoves, Furnaces, &c.; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an attachment to stoves, furnaces, and radiators; and it consists of a chamber formed in the pipe, between the furnace and the chimney, and a supplemental pipe leading therefrom to a point below the grate, and, in connection with these, of a damper or valve, whereby the products of combustion are returned to the body of stove, furnace, or radiators through the space below the grate-bars, to be exposed to the action of the fire again before finally escaping to the chimney, as will be more fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of the furnace and pipes, with the valve closing the supplemental pipe. Fig. 2 is a section of a furnace, showing the supplemental pipe open.

Let A represent a stove or furnace constructed in the usual manner, with fire-place B, ash-pit C, and having pipe D, connecting with chimney E.

At any point in the length of the pipe D, between the furnace A and chimney E, I form a chamber, F, having openings *f f* at each end of it, connecting it with pipe D. This chamber contains a damper or valve, G, hinged at one end to the upper part of chamber F, and controlled by a toothed rack-bar or handle, *g*, for holding it in any desired position.

H is a supplemental pipe, one end of which connects directly with the top of the chamber F by an opening, *f'*, and the other end connects with the stove or furnace below the grate-bars, so that there will be a free communication between the ash-pit C and the chamber F.

The operation of my apparatus will be as follows: The fire being started in the stove or furnace, the damper or valve G in the chamber F, is raised so as to close the opening *f'* at top of the chamber F, leaving a free communication through the pipe D, between the furnace A and the chimney E. The ash-

pit door is opened, giving such draft as may be needed. After the fire is well kindled, the damper G is lowered, leaving a small space between the bottom of the chamber F and the lower edge of damper G, as shown in Fig. 2. The ash-pit door being closed, the smoke and products of combustion will be directed into the pipe H from the position of the valve G, and the cold air from the chimney, which meets it at this point, will cause it to return through the pipe H into the ash-pit C, below the grate-bars, and from this point the unconsumed gases and products of combustion will pass up through the incandescent fuel, together with a fresh supply of air from the chimney E. This air is drawn down to the space below the grate-bars to promote combustion by reason of the closing of all inlet-passages through which air might enter the ash-pit directly. A double current is thus produced within the chimney, one being an upward current of the heated products of combustion from the furnace, and the other a downward current of cold air, which enters the chamber F and passes through the pipe H to the space below the grate-bars, and those parts of smoke and gases that were not consumed in the first action will be again exposed to the action of the fire, thereby causing a saving of fuel.

I am aware it is not broadly new, in stoves and furnaces, to check products of combustion direct from the fire-pot in a chamber or otherwise, and return them beneath the fire-pot alone or mingled with air, and therefore I make no broad claim thereto, but confine myself to my invention as claimed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a heating apparatus, the furnace A and chimney E, in combination with the connecting-pipe D, intermediate chamber, F, having openings, *f f*, damper G, and pipe H, connecting the top of the chamber F with the ash-pit, as set forth.

In witness whereof I hereunto set my hand.

WILLIAM HENRY RICHARDSON.

Witnesses:

DEAN CLARKE,

OL. B. DE LIPTAY.