3 Sheets—Sheet 1.

S. GROOM.

Heating Stove.

No. 35,574. Patented June 10, 1862.

Fig 1.

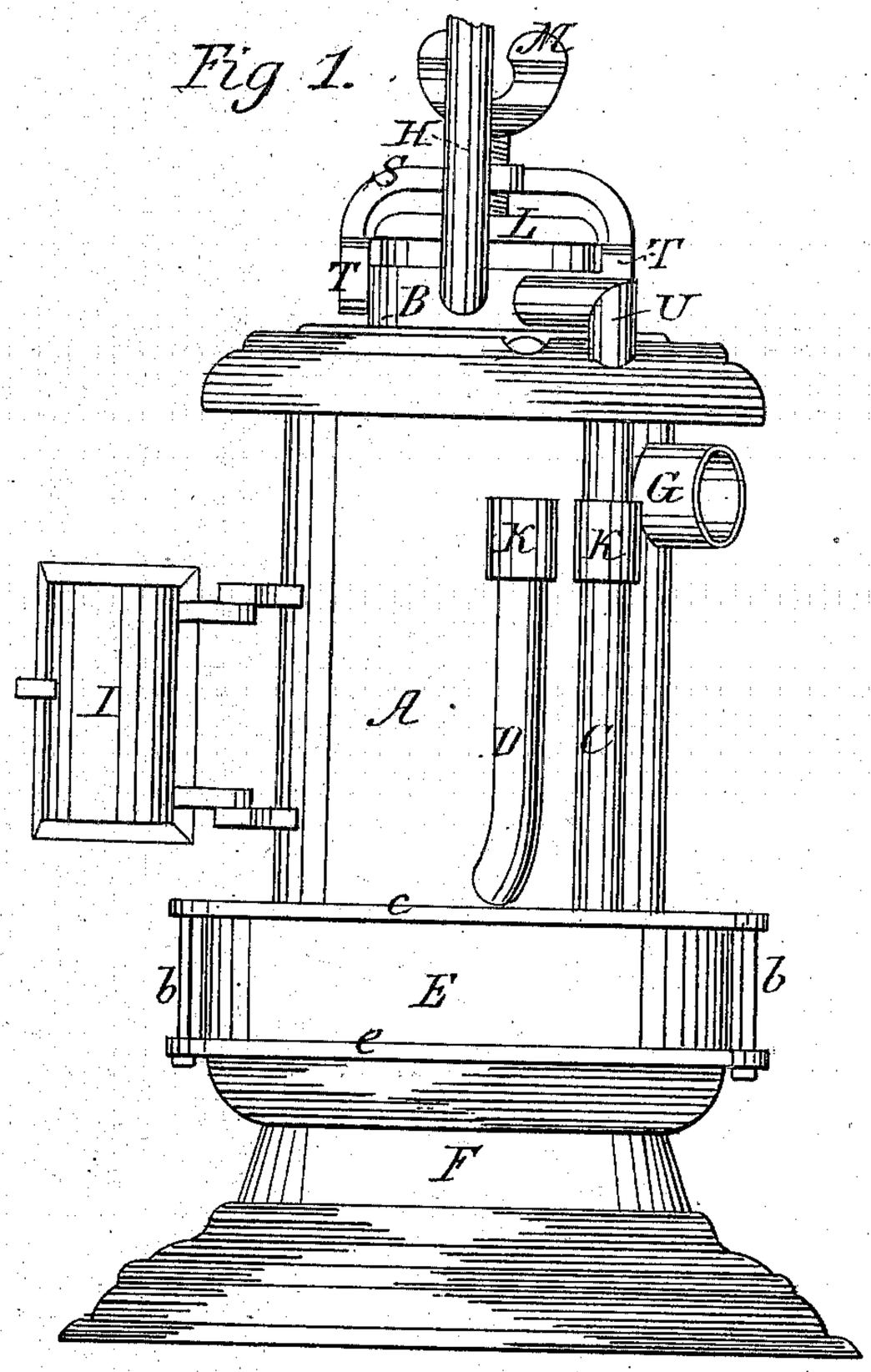
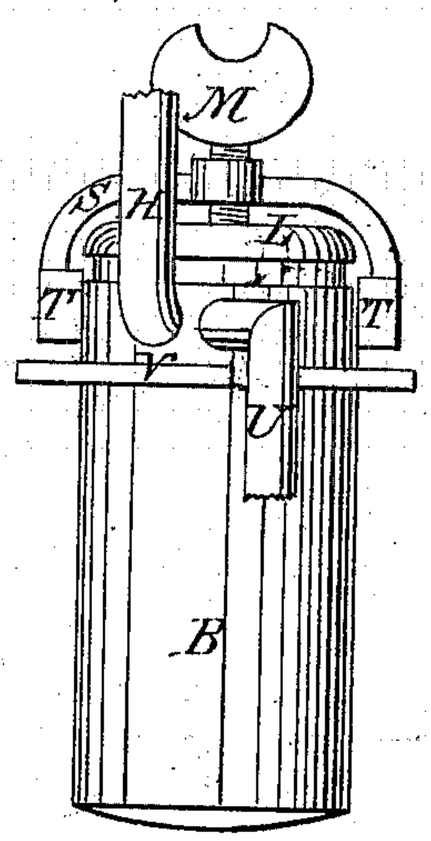


Fig. 6.



Witnesses.

Franklin Scott

Marcus P. Norton

Inventor:

Smith Groom

3 Sheets—Sheet 2.

S. GROOM.

Heating Stove.

No. 35,574. Patented June 10, 1862.

Fig. 2.

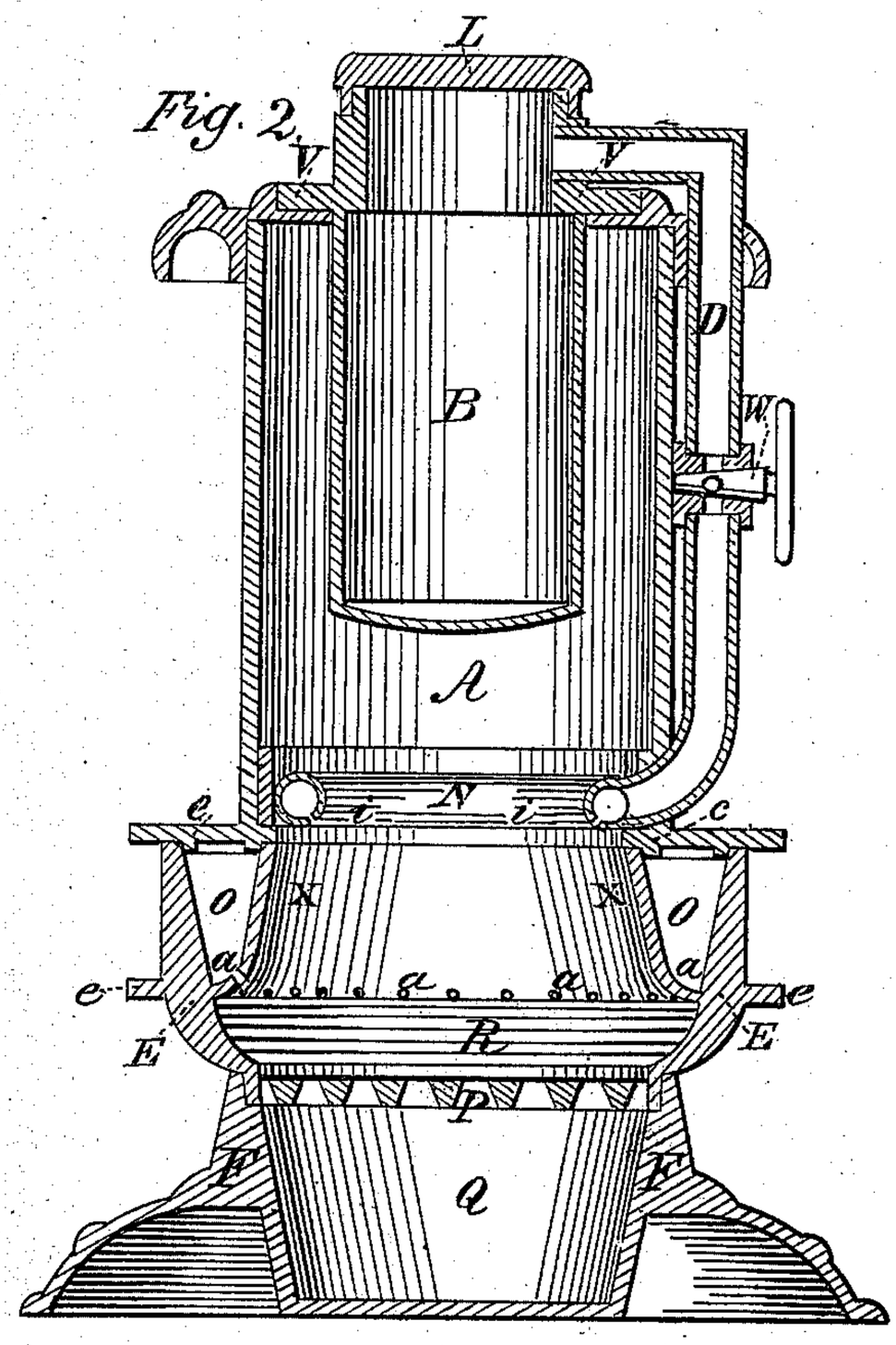
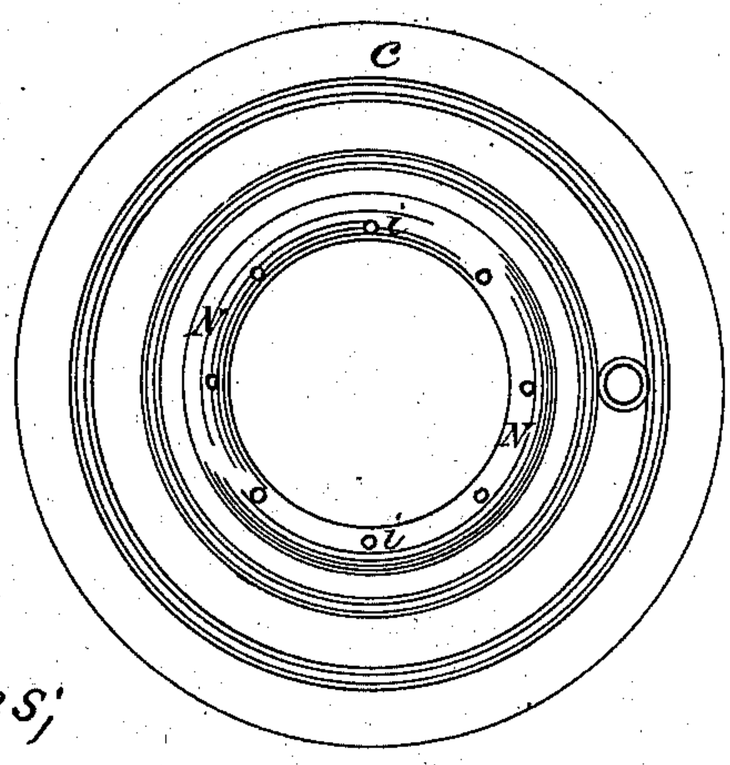


Fig. 5.



Witnesses;

Franklin Scott

Marcus P. Norton

Inventor;

Smith Groom

3 Sheets—Sheet 3.

S. GROOM.

Heating Stove.

No. 35,574.

Patented June 10, 1862.

Fig. 3.

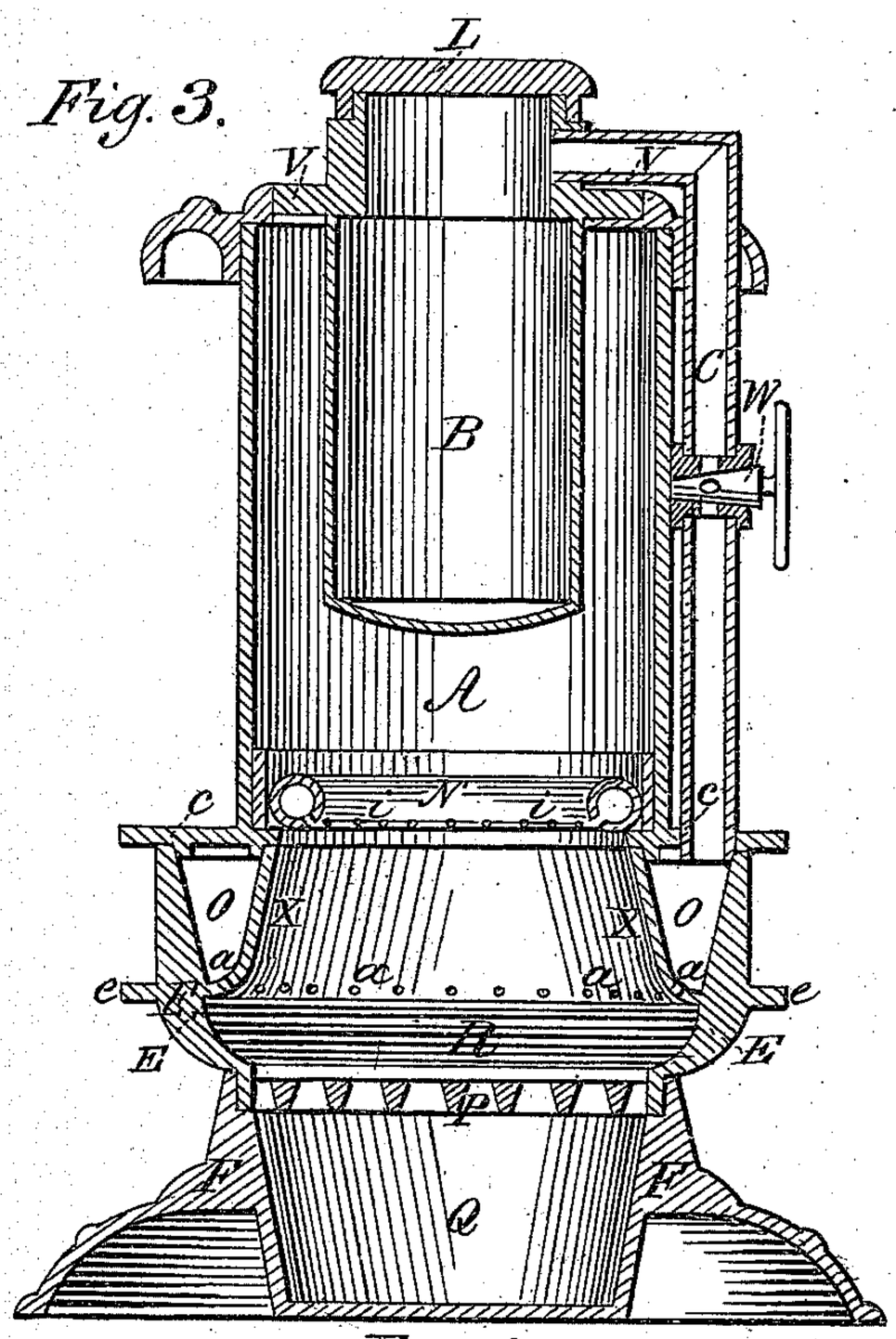
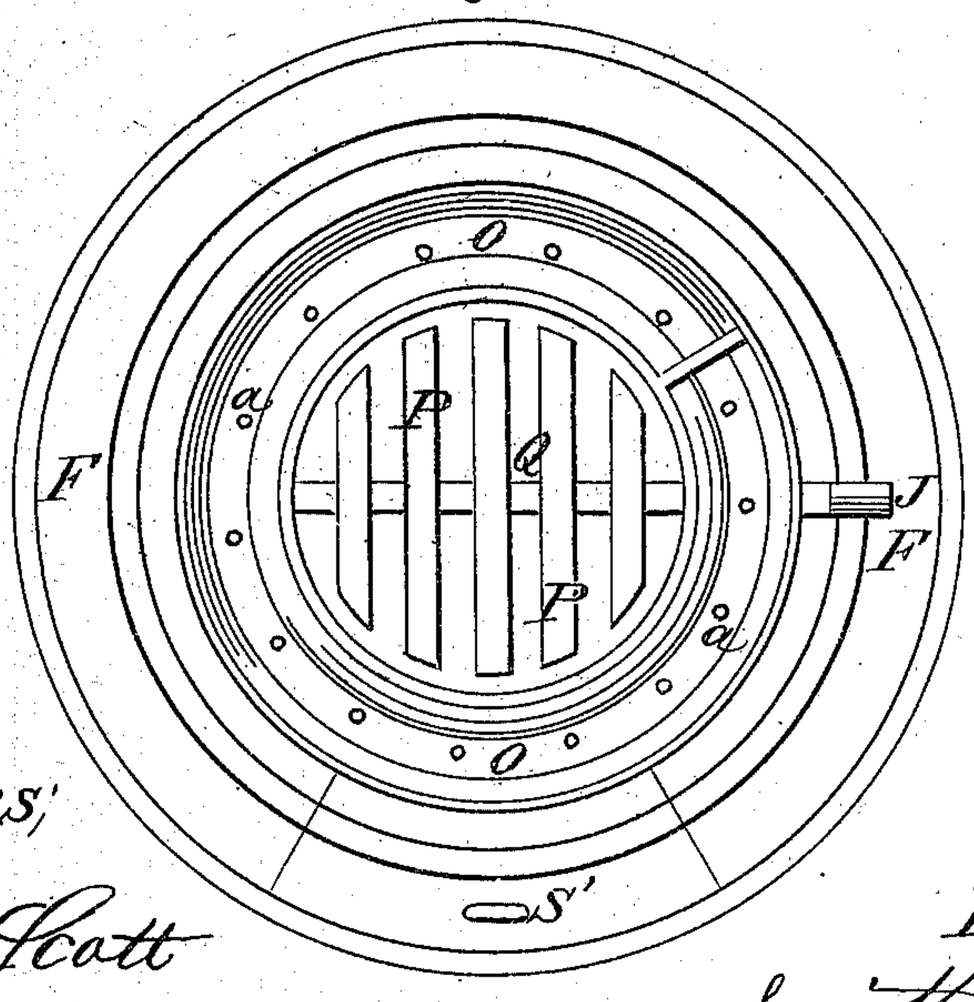


Fig. 4.



Witnesses,

Franklin Scott

Marcus P. Norton

Inventor,

Smith Groom

UNITED STATES PATENT OFFICE.

SMITH GROOM, OF TROY, NEW YORK.

IMPROVEMENT IN STOVES.

Specification forming part of Letters Patent No. **35,574**, dated June 10, 1862.

To all whom it may concern:

Be it known that I, SMITH GROOM, of the city of Troy, county of Rensselaer, State of New York, have invented new and useful Improvements in and for the Consumption of Fuel and the Products of Combustion in Stoves, Furnaces, Boiler and Locomotive Engines, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Like letters refer to and represent corresponding parts.

The nature of my improvements described in this specification consists in the introduction of steam into annular retort-chambers, where, by the intense heat of said chambers, said steam is decomposed into hydrogen, which is admitted from such chambers at or near the lower part of the fire, and also over the fire in the same fire chamber; or the steam may be admitted directly to the fire by enlarging the apertures, hereinafter described, in said annular chambers and raising the steam to a higher pressure in said chambers or their equivalents, to accelerate combustion and economize in the use of fuel, &c.

In the accompanying drawings, B, Figures 1, 2, 3, and 6, is the boiler, containing water for the purpose of generating steam to supply the annular steam and retort chamber O, also to supply the annular steam and retort pipe N, Figs. 2 and 3, or any pipe or chamber being an equivalent for one or both of said annular chambers, with steam, which are connected with the said boiler by the respective pipes D C. The said annular steam and retort chamber O has apertures *a*, Figs. 2, 3, and 4, through which the hydrogen or the steam aforsaid is admitted to the lower part of the fire. The wall or partition *x* between the said annular chamber and fire-chamber is highly heated by the fire in said fire-chamber, and thus and thereby highly heats said annular chamber, whereby the steam therein coming in contact with the same heated red-hot becomes highly heated itself, and is decomposed into hydrogen, which is then admitted to the lower part of the said fire-chamber, as aforesaid; or the steam may be admitted directly to this part of the fire, as hereinbefore provided, when the same will be decomposed into hydrogen by passing up into or through the said fire, and thus coming in contact therewith.

The steam in the annular steam and retort pipe N, Figs. 2, 3, and 5, becomes highly heated while therein by reason of the heat or fire below arising and coming in contact with the same, thereby heating the said annular pipe red-hot, whereby the said steam therein is decomposed into hydrogen, which is then admitted through apertures *i* in the lower side of said annular pipe N, Figs. 2, 3, and 5, to the products of combustion above the fire. The hydrogen thus admitted to the lower part of the fire unites with the carbon produced from the fuel in said fire-chamber, the heat of which passes up through the same and unites with the hydrogen admitted to the products of combustion over the said fire through the aforesaid annular steam and retort pipe, and thus and thereby creates an intense heat with a small consumption of fuel. The said fire-chamber is supplied with fuel through the door I, Fig. 1, which door is then closed perfectly air-tight. The boiler B is supplied with water through the supply-pipe H, Figs. 1 and 6, which pipe may be connected with a reservoir for water.

No air is admitted to the fire or any part thereof. The entire structure is constructed air-tight, so that air is only admitted to start the fire and generation of steam, which, when done, is then shut out. Any kind of combustible material may be used in the said fire-chamber, and will be required only in small quantities after the steam shall have been admitted to said annular steam and retort chamber and pipe, or to the equivalents of either or both of said annular steam and retort chamber and steam-pipe, as aforesaid. The quantity of steam required for use in the said chamber and pipe is regulated by the "stop-cock" W in the respective pipes D and C, Figs. 2 and 3.

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

The introduction of highly-heated steam into

the fire-chamber by means of annular chambers or pipes surrounding the said fire-chamber on the inside thereof, and having therein apertures through which such steam or hydrogen is admitted into the fire around the outside thereof, whereby combustion is greatly aided and the fuel economized, substantially as herein described and set forth.

In testimony whereof I have, on this 17th day of February, 1862, hereunto set my hand.

SMITH GROOM.

Witnesses:
FRANKLIN SCOTT,
MARCUS P. NORTON.