Specification of William Smith and Donald Bethune : chimneys and furnaces.

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A.D. 1856 . . . . . N° 3063.

SPECIFICATION

OF

WILLIAM SMITH AND DONALD BETHUNE.

CHIMNEYS AND FURNACES.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
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1857.

A.D. 1856 . . . . . N° 3063.

Chimneys and Furnaces.

(*This Invention did not proceed to the Great Seal.*)

PROVISIONAL SPECIFICATION left by William Smith and Donald Bethune at the Office of the Commissioners of Patents, with their Petition, on the 26th December 1856.

We, WILLIAM SMITH, of Number Eighty-five, Margaret Street, Cavendish Square, London, Engineer, and DONALD BETHUNE, of Cambridge Terrace, Hyde Park, London, Esquire, do hereby declare the nature of the said Invention for "CONSUMING OR PREVENTING SMOKE IN CHIMNIES AND FURNACES," to be as follows:—

Our said Invention consists in improvements in the construction of stoves or grates and the flues leading therefrom to the flue of the chimney, and in the construction of doors of furnaces, by which improvements the smoke that ordinarily arises from fires in stoves, grates, and furnaces is consumed or prevented. And we consume the smoke or prevent it from rising by the admission of air in certain parts of the flues and doors, or near thereto. By one of the plans we adopt, we close the opening from the grate or stove into the flue of the chimney, as now generally in use, and we make the draught (by means of proper openings for that purpose) to pass back of the grate into the flue of the chimney, and air is admitted through a plate placed opposite to and at a little distance from that part of the grate through which the draught passes into the flue of the chimney, so that such air comes in contact with the gases arising from the fuel in the grate, and causes such gases to ignite, and are thus consumed. By another plan, the draught is made to pass under the

grate and into the flue of the chimney, and air is admitted through a plate placed at or near the bottom of the flue which passes into the chimney, so that such air comes in contact with the gases arising from the fuel in the grate, and ignition takes place. The air may be admitted higher up the flue if necessary. By another mode, we alter the size of the opening above the grate or stove now in common use, and alter its shape; and we also in some instances alter the shape and angle of such opening, and we place what may be termed a hood at or near the opening of the grate or stove into the flue of the chimney, which hood we perforate with holes or openings, so as to admit the passage of air into the opening, and which air comes in contact with the gases arising from the fire in the grate, and causes such gases to ignite. We also use a damper in this as well as in the other places mentioned, and blowers may be used when the fires are first lighted. And we do not confine ourselves to the details herein mentioned.

For the consumption of smoke in furnaces we employ what may be termed a double door with a space of about an inch, more or less, between the two doors, and we make an opening or openings for the admission of air near the top and bottom of the outside door, nearly the whole length of the door, and about an inch wide, more or less, according to the size of the door, and we place bars or ribs between the doors about half an inch in depth, so as to break the current of air and to cause the air to pass over them, and thus become heated, and then enter the furnace about the centre of the inner door through openings made for that purpose nearly the whole length of the inner door, and of a width corresponding with the size of the openings in the outer door, allowing for the expansion of air on its becoming heated in its passage between the doors to the furnace. Valves may be fitted to the openings of the outer door for regulating the supply of air; and we do not confine ourselves to the details herein mentioned.

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1857.