

## **Specification of Walter Kendrick and Job Wooldridge : preventing smoke in furnaces.**

### **Contributors**

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### **Publication/Creation**

London : Great Seal Patent Office, 1868 (London : George E. Eyre and William Spottiswoode)

### **Persistent URL**

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A.D. 1867, 30th DECEMBER. N° 3700.

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S P E C I F I C A T I O N

OF

WALTER KENDRICK  
AND  
JOB WOOLDRIDGE.

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PREVENTING SMOKE IN FURNACES.

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LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,

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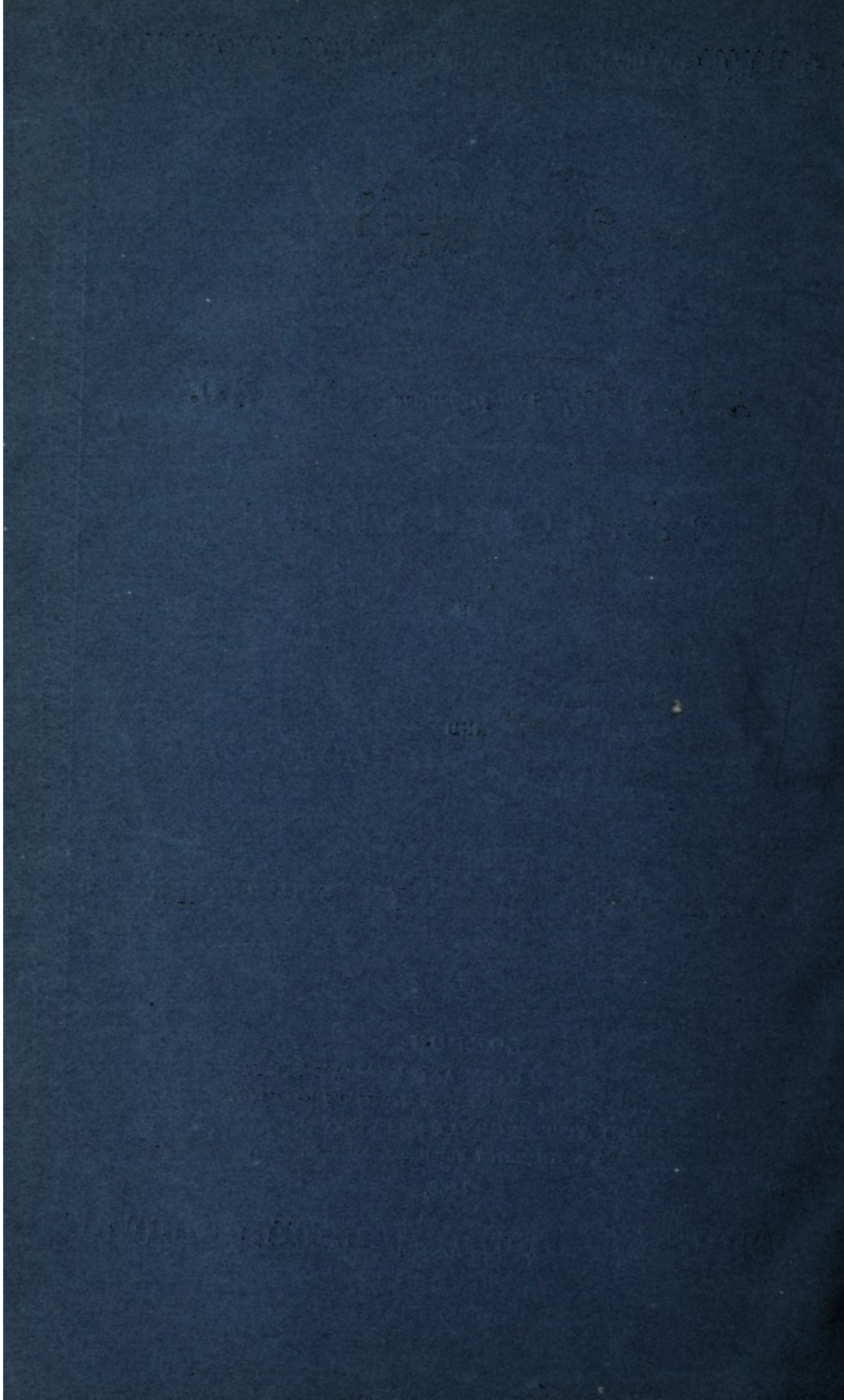
PUBLISHED AT THE GREAT SEAL PATENT OFFICE,

25, SOUTHAMPTON BUILDINGS, HOLBORN.

Price 4d.

1868.









A.D. 1867, 30th DECEMBER. N° 3700.

### Preventing Smoke in Furnaces.

(*This Invention received Provisional Protection only.*)

**PROVISIONAL SPECIFICATION** left by Walter Kendrick and Job Wooldridge at the Office of the Commissioners of Patents, with their Petition, on the 30th December 1867.

We, **WALTER KENDRICK** and **JOB WOOLDRIDGE**, of West Bromwich, in the County of Stafford, Ironfounders, do hereby declare the nature of the said Invention for "**IMPROVEMENTS IN APPARATUS FOR CONSUMING OR PREVENTING THE FORMATION OF SMOKE IN STEAM BOILER AND OTHER FURNACES,**" to be as follows:—

Our Invention consists of the improvements herein-after described in apparatus to be applied to furnaces for the purpose of preventing or diminishing the smoke which is usually evolved after firing or charging the furnace with fuel.

Our Invention is especially applicable to the furnaces of steam boilers, but may also be applied to other furnaces. We make the furnace door of a box or chamber open at front and back, and by preference wider at front than at back. In the said box or chamber we fix vertically a series of corrugated or zig-zag plates, made preferably of cast iron, the said plates extending from front to back. By means of projections on the tops and bottoms of the said plates they are kept at a small distance from one another. The said box or chamber is filled with these vertical corrugated plates. In front of the said box or chamber constituting the furnace door we fix a frame of horizontal or nearly horizontal bars or narrow plates, and in front of these is a flap or thin door turning upon a hinge, so as to be capable of rising and falling, and



*Kendrick & Wooldridge's Improvements in Preventing Smoke in Furnaces.*

thereby either exposing or covering the said frame of bars or plates. When the said flap or thin door is depressed no air enters through the chamber or box into the furnace, but when the said flap or thin door is raised upon its hinge more or less a greater or less quantity of air passes through the frame of horizontal bars and between the vertical corrugated plates into the furnace. 5  
Connected with the said flap or thin door is a collapsible vessel somewhat similar to a circular bellows, the said flap and collapsible vessel being connected together by means of a cord or chain passing over pulleys. When the said collapsible vessel is filled with air the flap or thin door is raised into a nearly horizontal position, and as the said vessel empties itself of air through a small 10 aperture made for that purpose the flap or thin door gradually falls and covers the frame of bars described.

In using the apparatus the stoker after firing and closing the furnace door fills the collapsible vessel with air, thereby raising the flap or thin door described; a large quantity of atmospheric air is thereby permitted to pass 15 through the frame of bars and between the vertical corrugated plates, which air is heated by the said plates and combines with or burns the gases and volatile matter driven off from the fuel when it is first thrown upon the fire. By the gradual fall of the flap or thin door the supply of air is gradually cut off, and the formation of smoke after firing thereby wholly or in part 20 prevented.

In order more effectually to prevent the formation of smoke we prefer to use in combination with the apparatus described a hollow bridge, through which jets of air are admitted to the furnace.

The arrangement of corrugated plates described may also be applied to the 25 hollow bridge, so that the air supplied at the bridge may pass between and become heated by the said plates.

The arrangement we have described applied to the door of the furnace may be applied to other parts of the furnace with the same or nearly the same effect. 30

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Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,  
Printers to the Queen's most Excellent Majesty. 1868.