

## **Specification of Jeremiah Driver : smoke-consuming furnaces.**

### **Contributors**

Driver, Jeremiah.

### **Publication/Creation**

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A.D. 1868, 14th MAY. N<sup>o</sup>. 1577.

SPECIFICATION

OF

JEREMIAH DRIVER.

SMOKE-CONSUMING FURNACES.

LONDON:

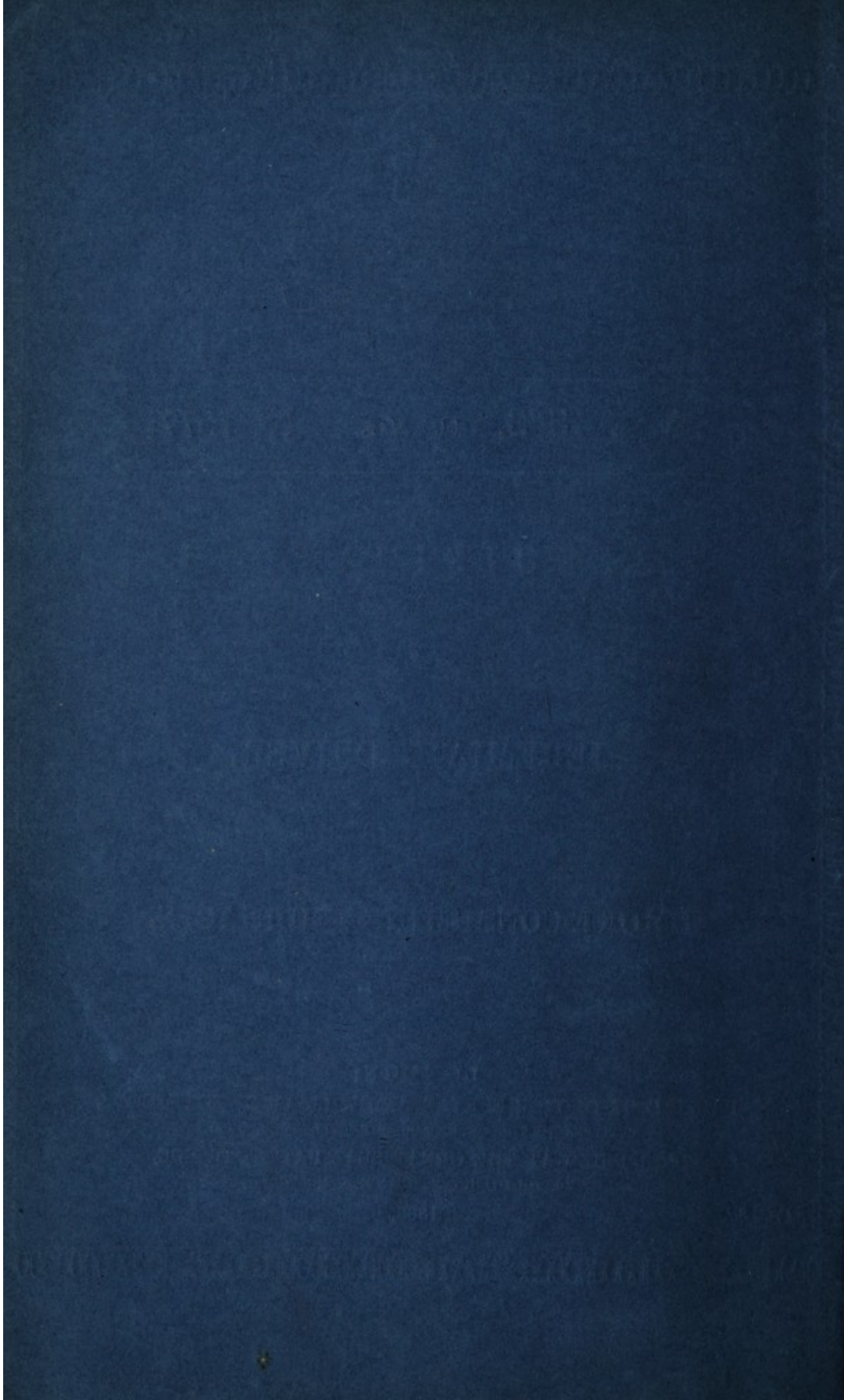
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1868.







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A.D. 1868, 14<sup>th</sup> MAY. N° 1577.

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**Smoke-consuming Furnaces.**

**LETTERS PATENT** to Jeremiah Driver, of Keighley, in the County of York, for the Invention of "IMPROVEMENTS IN EFFECTING THE CONSUMPTION OF SMOKE AND ECONOMY OF FUEL IN STEAM BOILER AND OTHER FURNACES."

Sealed the 6th November 1868, and dated the 14th May 1868.

**PROVISIONAL SPECIFICATION** left by the said Jeremiah Driver at the Office of the Commissioners of Patents, with his Petition, on the 14th May 1868.

I, JEREMIAH DRIVER, of Keighley, in the County of York, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN EFFECTING THE CONSUMPTION OF SMOKE AND ECONOMY OF FUEL IN STEAM BOILER AND OTHER FURNACES," to be as follows:—

The object of the improvements is the consumption of smoke produced and economy of fuel used in steam boiler and other furnaces. For



*Driver's Improvements in Smoke-consuming Furnaces.*

this purpose air to support combustion of the fuel is forced into the ash-pit or chamber under the furnace bars from a fan or blower; there is also a passage from the flue or chimney by which smoke or heated products from the fire with air heated by passing through the fire may pass into the fan or blower and with fresh air be again forced to the 5 ash-pit or chamber under the furnace bars. By these means a stream of smoke and hot air will be continuously flowing through the fire and the fan or blower. The fan or blower may operate for several furnaces regulated by valves, and the amount of smoke diverted to the fan or blower may also be regulated by valves or dampers. 10

**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said Jeremiah Driver in the Great Seal Patent Office on the 13th November 1868.

**TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JEREMIAH DRIVER,** of Keighley, in the County of York, send greeting. 15

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fourteenth day of May, in the year of our Lord One thousand eight hundred and sixty-eight, in the thirty-first year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Jeremiah Driver, Her special licence that I, the 20 said Jeremiah Driver, my executors, administrators, and assigns, or such others as I, the said Jeremiah Driver, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the 25 United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN EFFECTING THE CONSUMPTION OF SMOKE AND ECONOMY OF FUEL IN STEAM BOILER AND OTHER FURNACES,**" upon the condition (amongst others) that I, the said Jeremiah Driver, my executors or administrators, by an instrument in writing under 30 my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in



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*Driver's Improvements in Smoke-consuming Furnaces.*

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what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

- 5    **NOW KNOW YE**, that I, the said Jeremiah Driver, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say :—

10    The object of the improvements is the consumption of the smoke produced and economy of the fuel used in steam boiler and other furnaces.

But that the Invention may be fully understood I will, aided by the accompanying Drawing, proceed to describe means pursued by me in carrying the same into effect.

- 15    In carrying out my Invention, the ash-pit under the furnace is capable of being closed by a door, and the air to the ash-pit or chamber under the furnace bars to aid the combustion of the fuel is forced into such ash-pit or chamber by means of a fan or blower, and there is a passage from the flue by preference at a point beyond where the heated products  
20    from the fire have passed through the flues from the fire-place to the stack or chimney by which such smoke and heated products from the fire may pass to the centre or feed portion of the fan or blower employed, and I prefer that the fan employed be such that the opening for the smoke and heated products from the flue to such fan or blower occupy  
25    about one-third of the inlet passage to such fan or blower, leaving the other two-thirds or thereabouts of such opening to the fan or blower for the admission of atmospheric air, when the smoke and heated products from the fire or furnace will mix with the atmospheric air, and together in a combined form they will be condensed and forced forward from the  
30    fan or blower to the ash-pit or chamber under the fire-bars.

The Figures of the Drawing show the front end of an ordinary self-contained furnace and single flue or furnace box boiler with parts arranged to aid my improvements.

- Figure 1 shows a front view of such front end, and Figures 2 and 3,  
35    front and transverse sections of such front part, *a* in each case being the



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fire-place, and *b* the ash-pit or chamber under the fire-bars. The smoke and heated products condensed together with the atmospheric air drawn and forced forward by the fan or blower employed are thence conducted by a suitable channel to the passage *c*, which at its upper part is formed with the passages *c*<sup>1</sup>, *c*<sup>2</sup>, and *c*<sup>3</sup>. The opening *c*<sup>1</sup> opens by the passage *c*<sup>3</sup> 5 into the ash-pit or chamber under the fire-bars, the passage *c*<sup>2</sup> opens by the passage *c*<sup>4</sup> into a chamber *d* formed in the mouth-piece *e* of the fire-place or furnace, and thence by the passage *d*<sup>1</sup> to the front end of the fire-place over the dead plate; the passage *c*<sup>3</sup> opens into a channel *c*<sup>6</sup> separated from the ash-pit and leading back to the flue behind the fire 10 bridge. There is also a damper in the passage leading to the chamber *c* which may be closed when it may be desired to admit of the smoke and heated products from the fire-place or furnace passing in the ordinary way direct to the chimney or stack without their being controlled to pass through the fan. The chamber *c* is provided with a valve *f* by which either 15 of the passages *c*<sup>1</sup> or *c*<sup>2</sup> may be closed as indicated, such valve being capable of turning on its axis *f*<sup>1</sup> when moved by means of the handle *f*<sup>2</sup>. When supplying fresh fuel to the fire-place or furnace I turn the valve *f* so as to close the passage *c*<sup>1</sup>, and simultaneously I open the passage *c*<sup>3</sup> by means of a valve *c*<sup>7</sup>, when the smoke and heated products forced 20 forward by the fan or blower will be directed to pass partly by the passages *c*<sup>2</sup>, *d*, and *d*<sup>1</sup>, to the fire-place or furnace, and partly by the passages *c*<sup>5</sup> and *c*<sup>6</sup> to the flue beyond the fire-bridge. When the feed of fuel for the time is complete and the fire-door is closed I turn the valves *f* and *c*<sup>7</sup> so as to close those passages *c*<sup>2</sup> and *c*<sup>3</sup> and open the passage *c*<sup>1</sup>, 25 and then the smoke and heated products from the fire together with the atmospheric air will pass by the passage *c*<sup>1</sup> to the ash-pit or chamber under the fire-bars, and thence through the fire-bars and the fire, and so on.

Having thus described my Invention and means which I adopt in 30 carrying my improvements into effect, I would have it understood that variations may be made in the arrangement of the parts adapted to the character of the furnace to which the improvements are to be applied, and the fan or blower may operate on several furnaces so as to cause them to be operated on in succession, valves or dampers being employed 35 to regulate the passages; but what I claim is, the adaptation or combination of means by which the smoke and heated products from



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*Driver's Improvements in Smoke-consuming Furnaces.*

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the fire may be caused to combine with atmospheric air, and be condensed and carried forward to the fire in manner substantially as described.

5        In witness whereof, I, the said Jeremiah Driver, have hereunto set my hand and seal, this Tenth day of November, in the year of our Lord One thousand eight hundred and sixty-eight.

The mark of

×

JEREMIAH DRIVER. (L.S.)

Witness,

10        WILLIAM THOMPSON,  
            Northworth Shed,  
            Keighley.

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LONDON:

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



the fire may be caused to emanate with atmospheric air and be  
 contained and carried forward to the fire in manner substantially as  
 described. In witness whereof, the said Jeremiah Driver hereunto set  
 my hand and seal, this Tenth day of November, in the year of  
 our Lord One thousand eight hundred and sixty-eight.

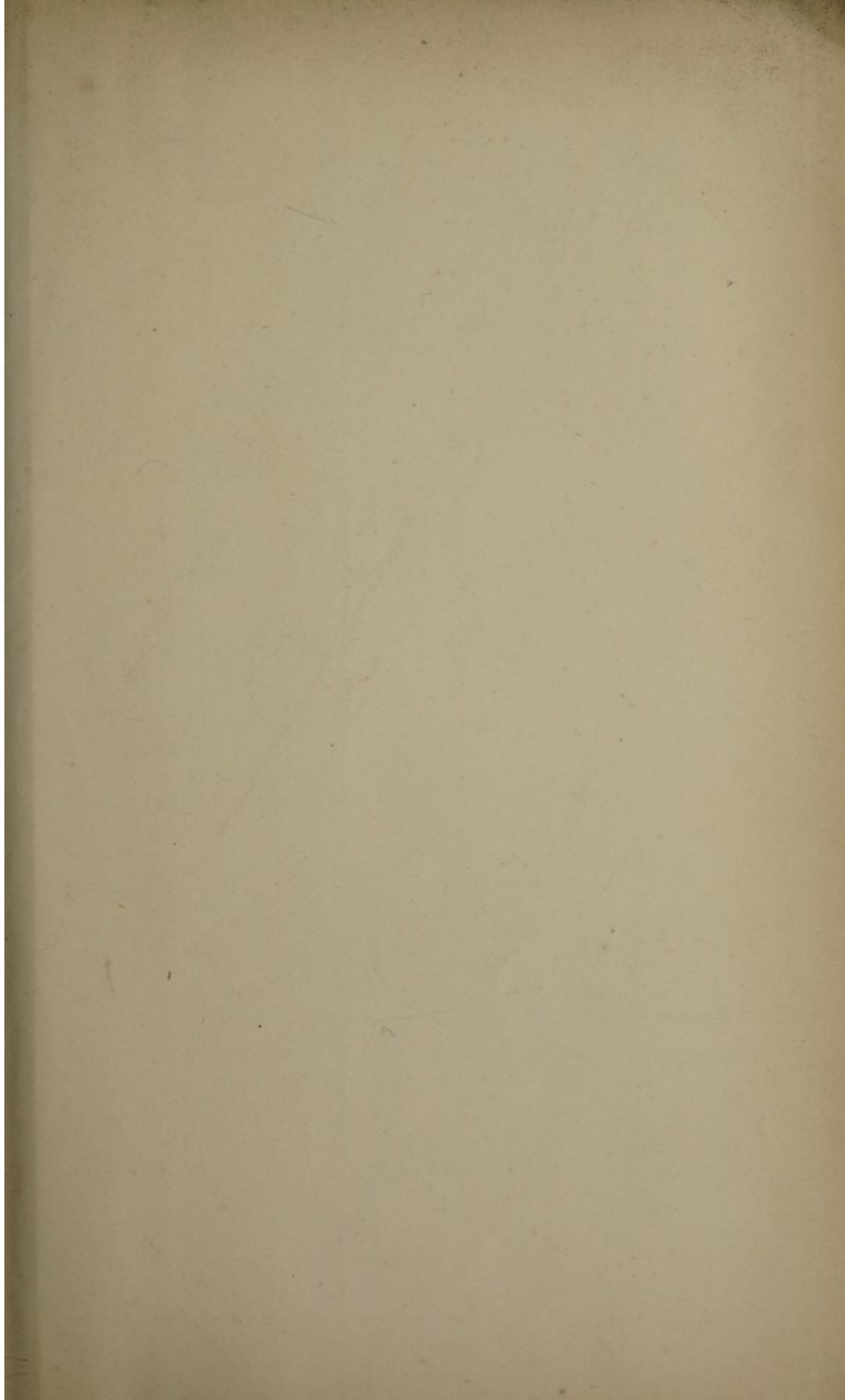
The mark of

JEREMIAH DRIVER. (L.S.)

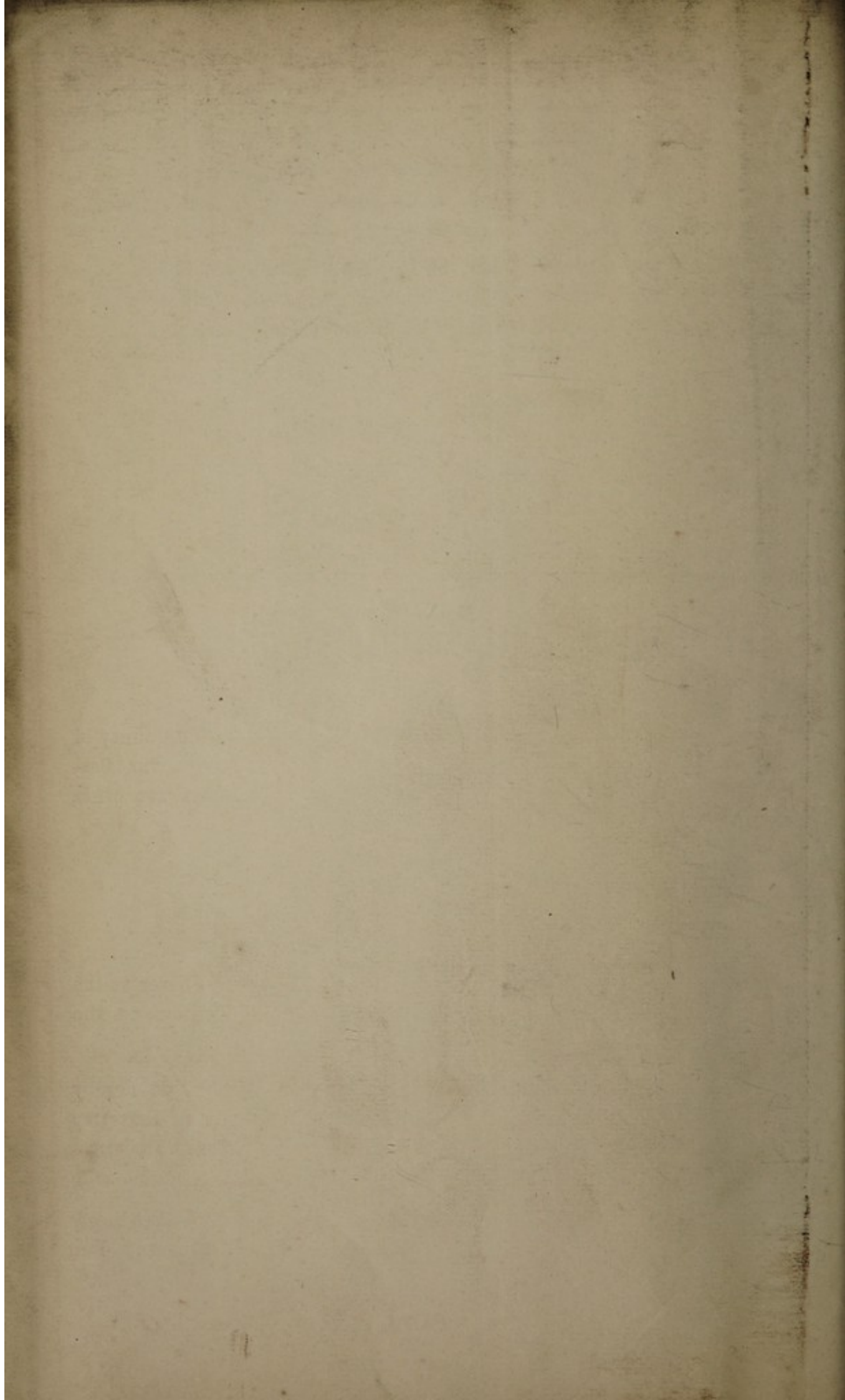
Witness  
 William Thompson,  
 Northwold Street,  
 Kedgey.

LONDON.  
 Printed by George Edward Fryer and William Spottiswoode,  
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A.D. 1868, MAY 14, N° 1577.  
DRIVERS' SPECIFICATION.

(1 SHEET)

FIG. 1.

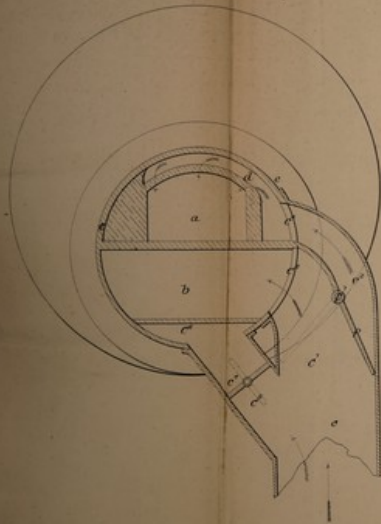


FIG. 3.

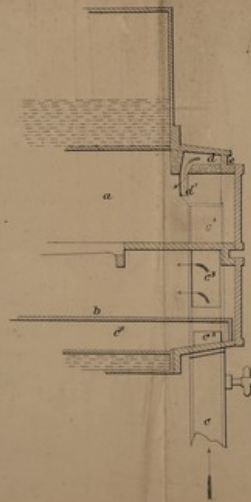
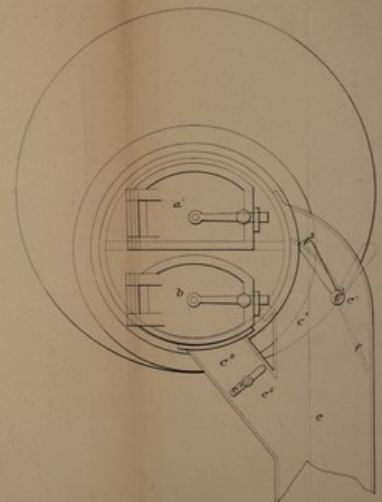


FIG. 2.



The filed drawing is partly colored.

Drawn on Stone by M. J. & Co.

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Printers to the Queen at the New Printing Office, No. 1, St. Martin's Lane.

