Specification of Alexandre Blampoil : smoke-consuming apparatus.

Contributors

Blampoil, Alexandre.

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A.D. 1864, 6th DECEMBER. N° 3032.

SPECIFICATION

OF

ALEXANDRE BLAMPOIL.

SMOKE-CONSUMING APPARATUS.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
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1865.

A.D. 1864, 6th DECEMBER. N° 3032.

Smoke-consuming Apparatus.

LETTERS PATENT to Alexandre Blampoil, of No. 15, Passage des Petites Ecuries, Paris, France, Mechanical Engineer, for the Invention of "IMPROVED SMOKE-CONSUMING APPARATUS APPLICABLE TO THE BOILERS OF LOCOMOTIVES AND STATIONARY ENGINES."

Sealed the 30th May 1865, and dated the 6th December 1864.

PROVISIONAL SPECIFICATION left by the said Alexandre Blampoil at the Office of the Commissioners of Patents, with his Petition, on the 6th December 1864.

I, ALEXANDRE BLAMPOIL, of No. 15, Passage des Petites Ecuries, Paris, France, Mechanical Engineer, do hereby declare the nature of the said Invention for "IMPROVED SMOKE-CONSUMING APPARATUS APPLICABLE TO THE BOILERS OF LOCOMOTIVES AND STATIONARY ENGINES," to be as follows :—

The constitutive principle of my Invention rests on the physical combination of vertical and horizontal draughts, the result of which obtained by my apparatus is to render the smoke incandescent in the midst of the flame.

My apparatus is composed of two boiler tubes one above the other below, the first breaks the direct draught of the horizontal flame, and the lower one serves to recall or distribute the vertical draught; also of two gratings or arrangements of fire-bars, the first vertical and moveable serves to increase the admission of air and to throw off the scoria, and the second which is inclined serves to receive the fuel. The vertical draught in connexion with the vertical grating, and the upper part of the inclined grating, by the current of flame which separates the lower boiler tube from the upper one, draws the flame of the fuel which covers this space, which finding itself purified gives for

result the burning of the smoke from the fuel which covers the upper part of the inclined grating.

The direct horizontal draught being virtually suppressed by the upper boiler tube, the little smoke which it carries off by the space reserved at its upper part for the current of the flame, gives for result a continual whirl in the upper part of the furnace, which destroys itself at last in the flame of the vertical draught, so that all the smoke is consumed within the fire-place.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Alexandre Blampoil in the Great Seal Patent Office on the 5th June 1865

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ALEXANDRE BLAMPOIL, of No. 15, Passage des Petites Ecuries, Paris, France, Mechanical Engineer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Sixth day of December, in the year of our Lord One thousand eight hundred and sixty-four, in the twenty-eighth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Alexandre Blampoil, Her special licence that I, the said Alexandre Blampoil, my executors, administrators, and assigns, or such others as I, the Alexandre Blampoil, 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 United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVED SMOKE-CONSUMING APPARATUS APPLICABLE TO THE BOILERS OF LOCOMOTIVES AND STATIONARY ENGINES," upon the condition (amongst others) that I, the said Alexandre Blampoil, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in 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.

NOW KNOW YE, that I, the said Alexandre Blampoil, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the accompanying Sheet of Drawing, and to the figures and letters of reference marked thereon.

Blampoil's Improved Smoke-consuming Apparatus.

Figure 1 shewing the application of my improved smoke-consuming apparatus to a locomotive engine, and Figure 2 its application to a stationary engine.

At Figure 1, A indicates an upper boiler tube which breaks the direct horizontal draught; B, a lower boiler tube serving to intercept and divert the vertical draught; C^1, current of flame reserved to return to direct horizontal draught for the passage of the smoke to the upper part of the fire-place; C, tubular passages and current of flame; D, bottom vertical moveable grating serving to increase the combustion as air hole, and for throwing off scoria; E, fixed inclined grating serving to receive the fuel, it is inclined at an angle of 35°/₀; F, moveable door of fire-place; X, supports of the grating or fire-bars; M, moveable damper to close the air inlet of the vertical grating; L, ash-pit and fire-guard; K, boiler and steam reservoir; Y, upper part of furnace.

The result obtained by this apparatus is the physical combination of the vertical and horizontal draughts, with the object of rendering the smoke incandescent with the flame.

The vertical draught in connection with the vertical grating and the lower part of the inclined grating by the current of flame C, which separates the boiler tubes B, A, draws the flame of the fuel which covers this space, and finds itself in combustion and consequently purified, the result is, that when the smoke of the fuel which covers the upper part of the grating is slanted and attracted by the vertical draught to the current of flame C, it is entirely destroyed by the flame of the fuel which covers the lower part of the inclined grating and of the vertical one. The direct horizontal draught being virtually suppressed by the tube A, the little smoke which it draws through the space reserved at its upper part for the current of the smoke C^1, gives for result a continuous eddy in the upper part Y of the furnace, and again comes to destruction in the flame of the vertical draught.

The application of this apparatus presents the following advantages:—

Firstly, the manual labor of withdrawing the coal cinders is rendered very easy by the grating D, which is worked from the platform.

Secondly, of giving to the boiler by the effect of the vertical draught the generation of the production of the steam in the parts sensible to heat by means of direct flame at the tubing.

Thirdly, easy inspection of and stopping of tubes, and lowering of steam pipes avoided in the replacing of the tubing, as the space between the boiler tubes B, A, leaves room for the passage of a workman in placing the tubes.

Fourthly, avoiding the obstruction of the four lower rows of tubes by cinders.

At Figure 2 which, as aforesaid, shews the application of my improved apparatus to a stationary engine A, indicates the upper break or reverberator intercepting the direct horizontal draught and serving for the return of the smoke. In a fire-place of, say 39 inches, it should have a breadth of 12 inches, and be set in the lateral sides of the fire-place; it is of cast iron of rather less than an inch thick; B, the lower boiler tube or reverberator serving to turn the flame, it is inclined at an angle of 50°/₀ in a fire-place of 39 inches; it may have a breadth of 16 inches, with a thickness of 8 inches, and its extremities will be let into the masonry or brickwork of the sides of the fire-place. Its elbow pipe is 6 inches in diameter, length at back 6½ inches, forward 4 inches, taken between the two bolted or riveted collars. C, current of flame; D, vertical grating serving for air inlet, its extreme height is 9¾ inches, division of air between the bars rather less than ½ an inch; E, grating inclined at an angle of 40°/₀, division of air between the bars rather less than ½ an inch; F, door of fire-place; J, space reserved for the return of the smoke, 4 inches from the side of the door of the upper part of fire-place; P, recess for supplying air; X, supports of gratings; R, ash-pit; M, masonry or brickwork; L, flues and current of flame; H, boiler tube; I, boiler.

The dimensions of the apparatus vary with the size of the fire-place. The application of the boiler tube is not indispensable in stationary engines, and it may be replaced by a brick break or reverberator, but I recommend it as economical and for the generation of steam, further its installation is cheap and easy.

Result obtained by my Improved Smoke-consuming Apparatus.

Experiments made with a boiler of 8 horse-power supplying an engine of 6 horse-power :—

Comparison without smoke-consuming apparatus. Average expence for 10 hours work deduced from an experiment extending over 30 days.	With smoke-consuming apparatus. Average expence for 10 hours work. Experiment extending from 27th March to 7th April 1865.
Coal from different localities 616 lbs.	Coal from different localities 455½ lbs.
Coal cinders - - - 16 lbs.	Coal cinders - - - None.
Slag or scoria - - - 59 lbs.	Slag or scoria - - - 37½ lbs.
Pressure, 4 atmospheres, varying about ½ an atmosphere.	Pressure very progressive.
Fed constantly with condensed water.	Set at work in the ordinary way.

PHYSICAL SUMMARY OF THE SMOKE-CONSUMING APPARATUS.

The vertical draught in connection with the grating D by the current of flame C which separates the breaks or reverberators A, B, draws the flame from the fuel which covers the lower part of the grating E, which combustible being incandescent the result is, that when the smoke from the fresh fuel which covers the upper part of the grating E in the passage at C is driven back by the effect of the air entering by the vertical grating D, which forces it to return to the upper part of the break A, it escapes by J and comes back to be burnt at C, an incontestible proof of the almost total use of all the gases. The supply of superheated air in the recess P gives for result a combustion which reduces the coal to the state of coke from the quantity of oxygen employed, the aim of which is to raise the caloric to a very high temperature, a result rendered evident by the waste scoria which is reduced to a state of crystallization.

In witness whereof, I, the said Alexandre Blampoil, have hereunto set my hand and seal, this Third day of June, in the year our Lord One thousand eight hundred and sixty-five.

A. BLAMPOIL. (L.S.)

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1865.

A.D. 1864 Dec. 6, N°3032.
BLAMPOIL'S Specification.

(2 SHEET)

FIG. 1.

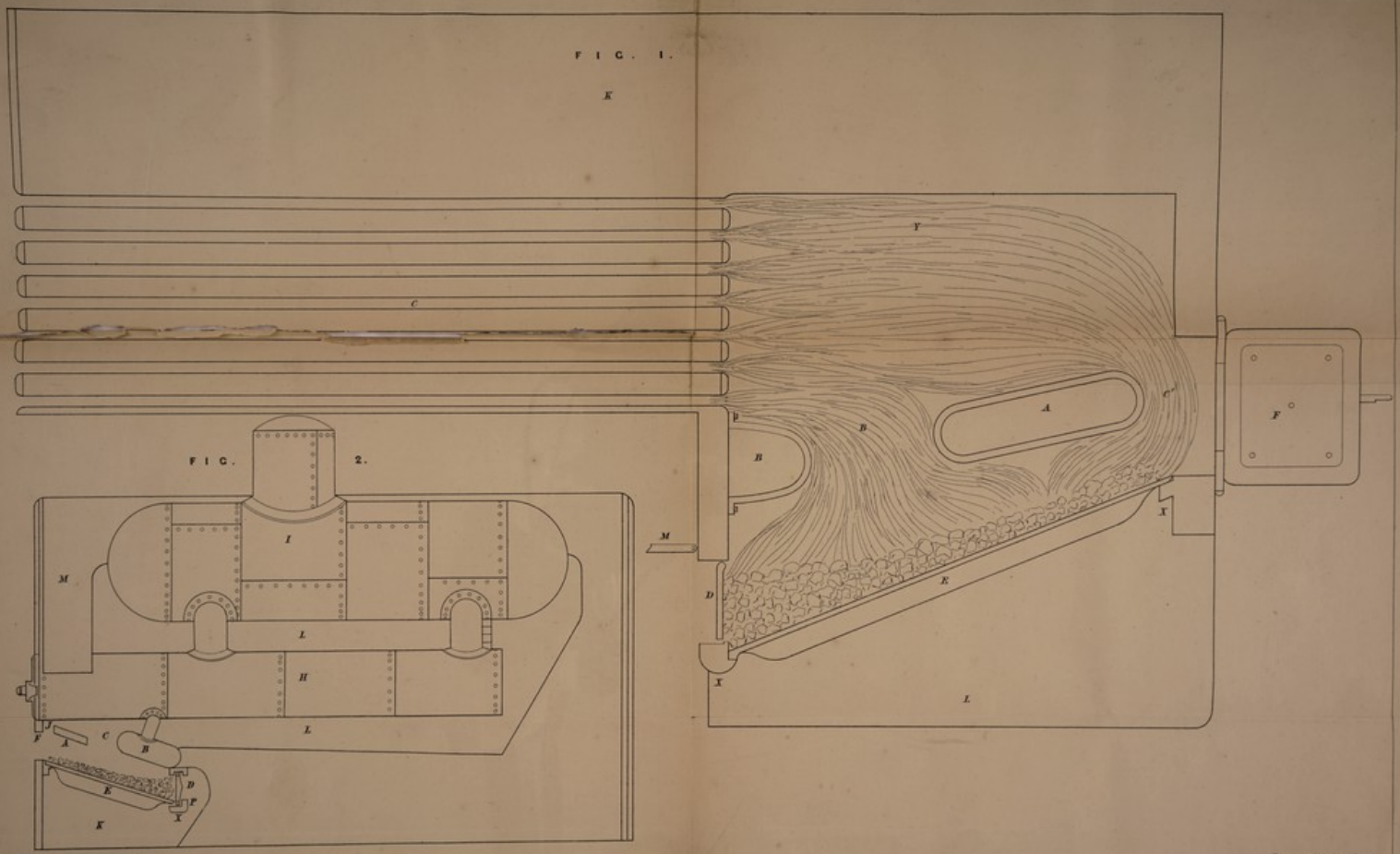

FIG. 2.

The Red drawing is not colored.

Drawn on Stone by McDyk & Sons.

London: Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty. 1865.