

Specification of James Bristow. And Henry Attwood : consuming smoke.

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A.D. 1853. N° 1049.

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

OF

JAMES BRISTOW.
AND HENRY ATTWOOD.

CONSUMING SMOKE.

L O N D O N :

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY :

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NEAR FLEET STREET.

Price 6½d.

1853.





A.D. 1853 N° 1049.

Consuming Smoke.

LETTERS PATENT to James Bristow, of Bouverie Street, in the City of London, Miller, and Henry Attwood, of Holland Street, Blackfriars Road, in the County of Surrey, Engineer, for the Invention of "**IMPROVEMENTS IN THE MEANS OF CONSUMING SMOKE.**"

Sealed the 29th September 1853, and dated the 29th April 1853.

PROVISIONAL SPECIFICATION left by the said James Bristow and Henry Attwood at the Office of the Commissioners of Patents, with their Petition, on the 29th April 1853.

We, JAMES BRISTOW and HENRY ATTWOOD, do hereby declare the
5 nature of the said Invention for "**IMPROVEMENTS IN THE MEANS OF CONSUMING SMOKE**" to be as follows:—

This Invention relates to a mode of constructing or arranging the
flues of adjacent furnaces or fireplaces so that the smoke or gases of
combustion arising from one fireplace or furnace may be conducted
10 over the bright fire of another fireplace, and be thereby consumed.
This object is effected by bringing the several adjacent furnaces into
communication with a flue or flues provided with dampers. When

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fresh fuel is thrown on to one of the fires, the damper in the exit flue of that furnace being closed, the smoke and gases generated may be diverted into the flue which connects with all the furnaces, and be thereby conducted into a furnace having a bright fire, to be there consumed. When no more smoke is given off from the recently charged 5 fireplace, the damper in the exit flue is opened, and communication with the smoke-conducting flue is cut off. Any number of fireplaces or furnaces can be thus connected together, so as to admit of the smoke and gasses from any one fireplace of the series being conducted to any 10 other fireplace, to be consumed.

The flues may be constructed of iron tubing, or they may be built up in the brickwork, and dampers should be provided for all the furnaces, to admit of each being readily thrown into and out of communication with the smoke-conducting flue.

SPECIFICATION in pursuance of the conditions of the Letters Patent, 15
filed by the said James Bristow and Henry Attwood in the Great
Seal Patent Office, on the 29th October 1853.

TO ALL TO WHOM THESE PRESENTS SHALL COME, we,
JAMES BRISTOW, of Bouverie Street, in the City of London, Miller, and
HENRY ATTWOOD, of Holland Street, Blackfriars Road, in the County 20
of Surrey, Engineer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by
Her Letters Patent, bearing date the Twenty-ninth day of April, in the
year of our Lord One thousand eight hundred and fifty-three, in the
sixteenth year of Her reign, did, for Herself, Her heirs and successors, 25
give and grant unto us, the said James Bristow and Henry Attwood,
Her special licence, that we, the said James Bristow and Henry
Attwood, our executors, administrators, and assigns, or such others as
we, the said James Bristow and Henry Attwood, our executors, ad-
ministrators, and assigns, should at any time agree with, and no others, 30
from time to time and at all times thereafter during the term therein
expressed, should and lawfully might make, use, exercise, and vend,

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within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN THE MEANS OF CONSUMING SMOKE,**" upon the condition (amongst others) that we, the said James Bristow and Henry Attwood, by an instrument
5 in writing under our hands and seals, or under the hand and seal of one of us, 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
10 Letters Patent.

NOW KNOW YE, that we, the said James Bristow and Henry Attwood, do hereby declare the nature of our said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, refer-
15 ence being had to the Drawing hereunto annexed, and to the letters and figures marked thereon (that is to say):

Our Invention relates to a mode of constructing or arranging the flues of steam boiler and other furnaces, when two or more are set side by side, or brought into connection with each other, so that the smoke
20 or gases of combustion given off from one furnace may be conducted over the bright fire of another furnace, and be thereby consumed. This object we effect by bringing the several adjacent furnaces into communication with a common flue, provided with dampers, which will permit of a temporary connection being set up between any two fur-
25 naces in the range. Thus, when fresh fuel is thrown on to one of the furnace fires, by diverting the course of the gases generated in that furnace, and causing them to enter the common flue (which diversion may be effected by closing the damper in the exit flue of the smoking furnace), the smoke and gases may be conducted into a furnace having
30 a bright fire, and be there consumed. When smoke ceases to be given off from the recently charged fireplace, we then turn the gases of combustion into their proper channel, and allow them to escape into the chimney.

In the accompanying Drawing, Fig. 1, shews in front elevation,
35 Fig. 2, in sectional elevation, and Fig. 3, in sectional plan, the manner

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of connecting together a series of steam boiler furnaces according to our Invention. *a, a,* are the boilers, which are severally set in brick-work, which forms a flue *b*, around them of the ordinary kind. Into this flue the flame and heated gases from the fireplace *c*, pass by a flue *d*, which runs under the boiler, and the gases having circulated 5 through the flue *b*, escape into a common flue *e*, at the back of the furnaces, and finally make their exit at the chimney *f*. Immediately over the fireplace *c*, in each furnace, is an opening which leads to a flue *g*, formed in the brickwork, and running from end to end of the series of furnaces.

These several openings are commanded by a sliding door or damper *h*, which, when closed, cuts off the communication between the several furnaces and the flue *g*. The flues *b*, near that end which connects with the common flue *e*, at the back of the furnaces, are likewise severally provided with a damper *i*, for cutting off the communication between their 15 respective furnaces and the flue *e*. These dampers *i*, are each suspended by a chain *k*, which passes over carrier pullies, and is thereby brought to the front of the furnace, to enable the attendant to raise and lower the dampers with facility.

Supposing, now, a bright fire to be burning in the furnace No. 1, and 20 a fresh charge of coals to be required in the furnace No. 2, the attendant will, prior to throwing on the coals, close the damper *i*, of the latter furnace, and open the damper *h*, of both furnaces, whereby the smoke arising from the fresh charge will be diverted from its usual course towards the chimney, and thrown back to the front of the furnace. A 25 communication being now established between the furnaces Nos. 1, and 2, the smoke will pass from the latter into the fireplace *c*, of the former, which contains, we have said, a bright fire, and it will be there consumed. When smoke is no longer given off by the fire in the furnace No. 2, the damper *i*, of that furnace is to be opened; and sup- 30 posing the fire to be now burning brightly in this furnace, and a fresh supply of coals to be required for furnace No. 3, the damper *i*, of the latter furnace is to be closed, and a communication established (in like manner to that just described) between the furnaces Nos. 2, and 3; the damper *h*, of furnace No. 1, being closed to cut off the connection 35

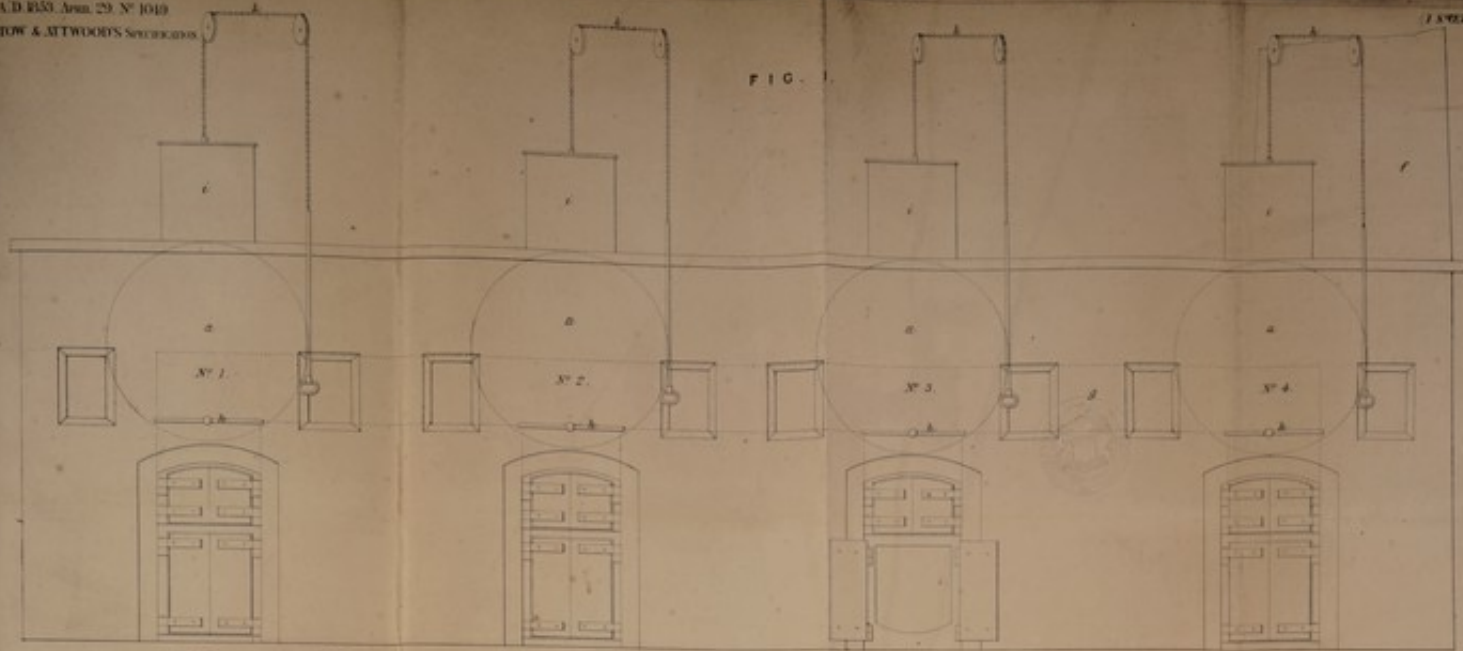


FIG. 3.

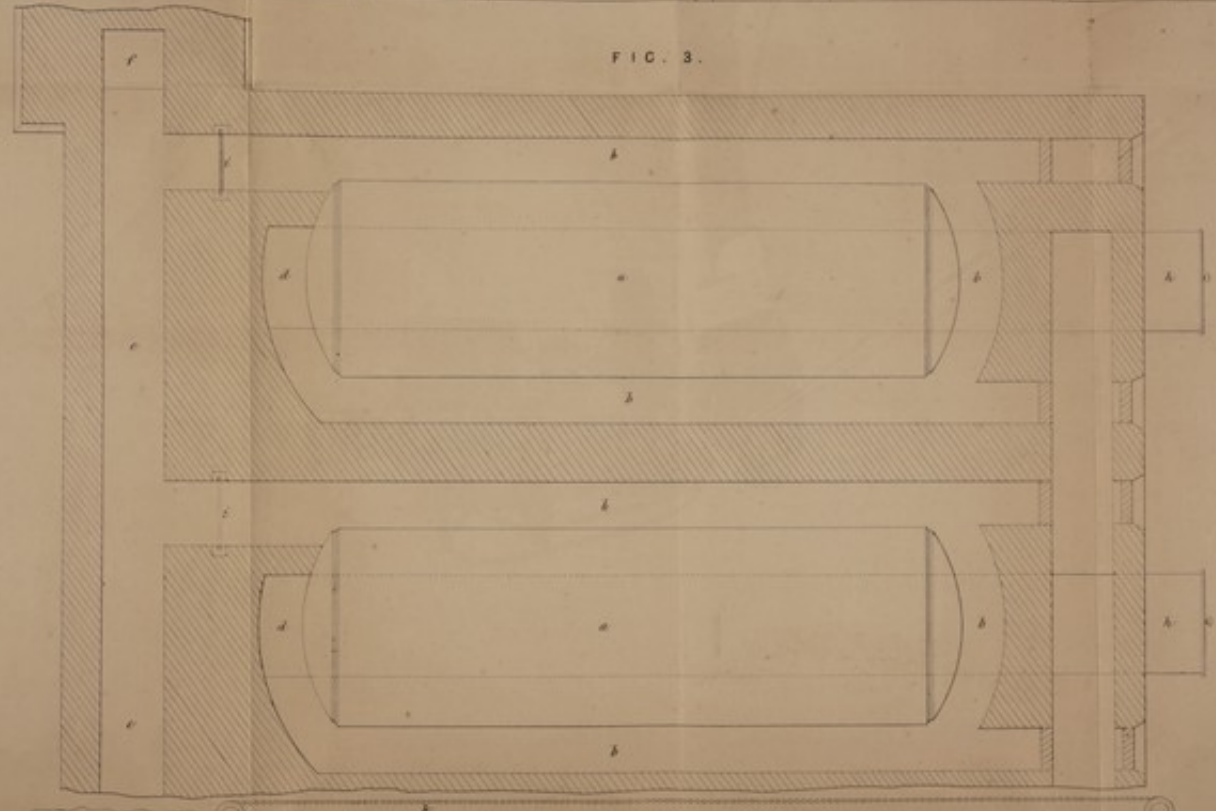
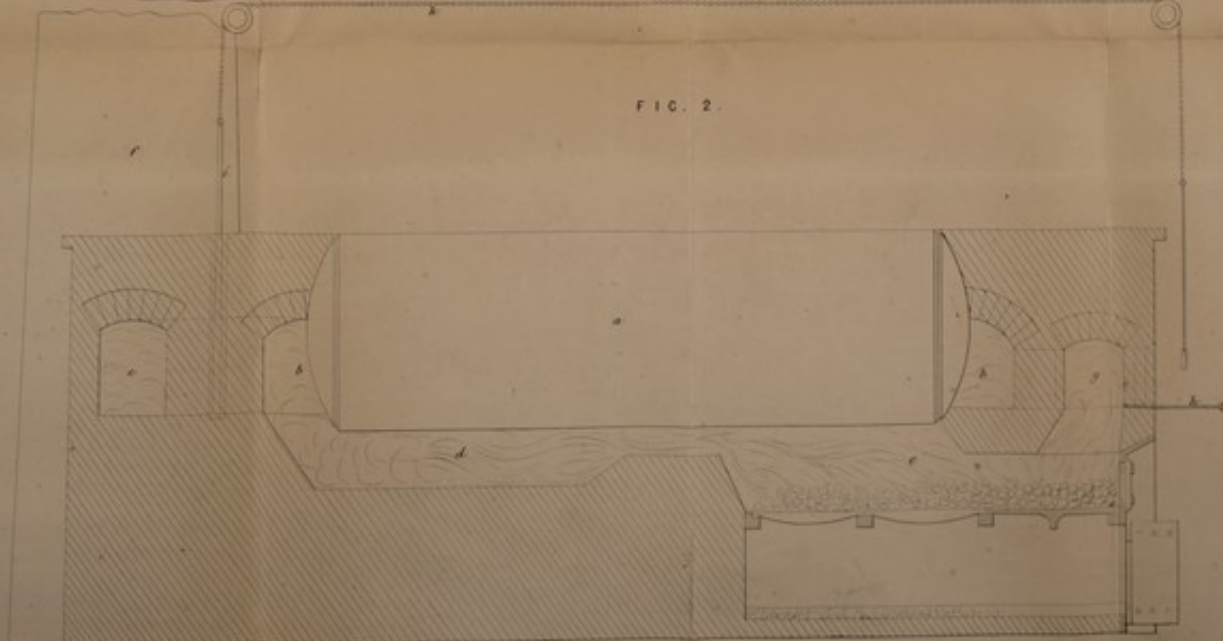
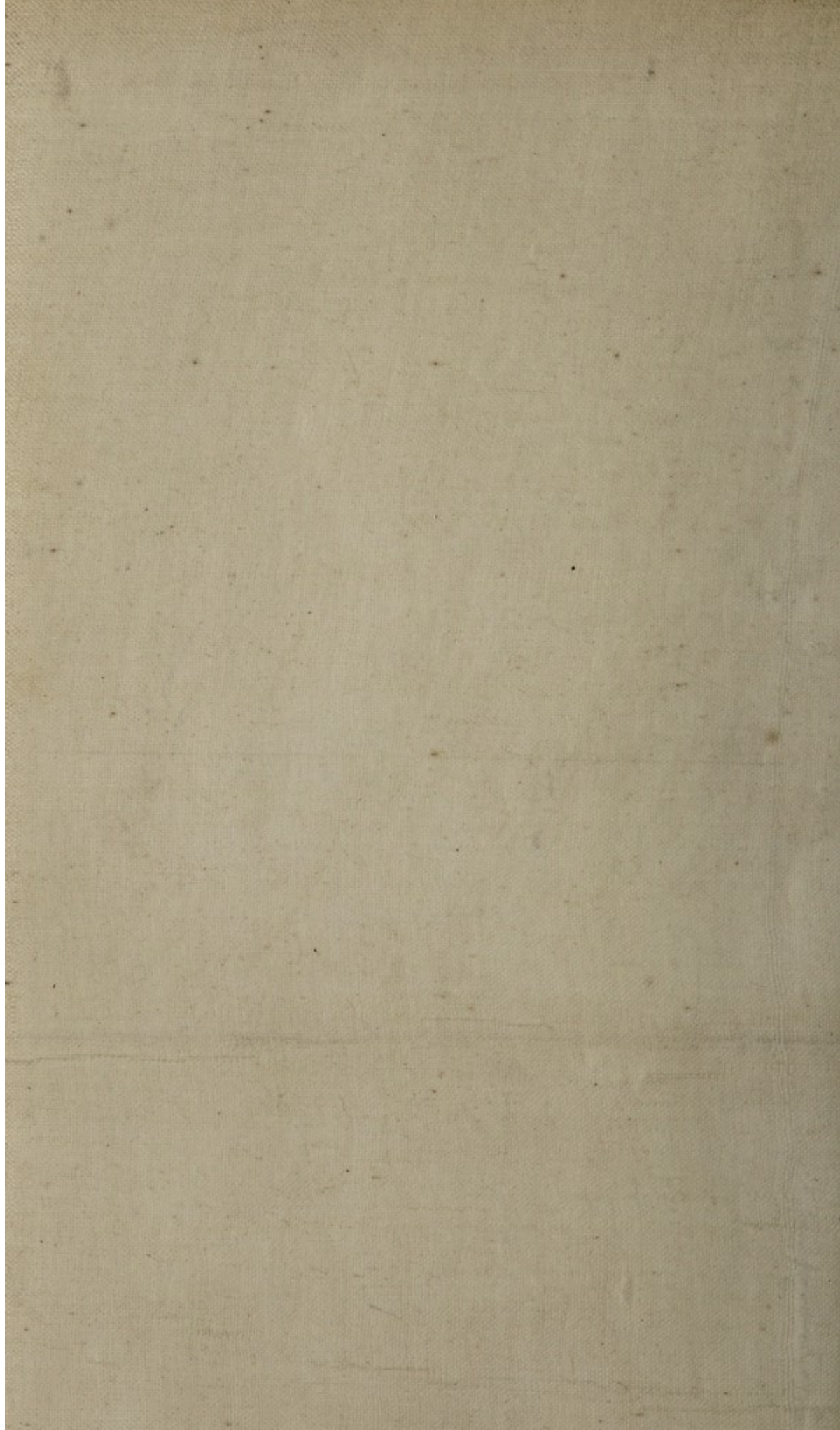


FIG. 2.



The steel drawing is partly colored.



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between that furnace and the common flue *g*. It will thus be understood that any two furnaces of a series can be connected together at pleasure, for the purpose of diverting the smoke generated in one furnace on to the bed of bright coals in an adjacent furnace, and thereby effecting the
5 combustion of the smoke. Instead of employing a flue built up in the brickwork, for producing a passage of communication between the fireplaces of several furnaces, iron or other tubing, having short branch pipes leading to the several furnaces, may with advantage be used, especially when the Invention is required to be applied to furnaces
10 already constructed.

Having now described our Invention of Improvements in the Means of Consuming Smoke, we wish it to be understood that we lay no claim to the broad principle of diverting the smoke and heated gases generated in one furnace, and passing them under or over the bright fire in an
15 adjacent furnace; but what we desire to secure under the above in part recited Letters Patent is, the means herein-before described, by which any two of a series of furnaces may be readily brought into connection with each other, for the purpose of effecting the combustion of the smoke given off from the successive charges of coal supplied to such
20 furnaces.

In witness whereof, we, the said James Bristow and Henry Attwood, have hereunto set our hands and seals, the Twenty-seventh day of October, in the year of our Lord One thousand eight hundred and fifty-three.

25 JAMES BRISTOW, jun. (L.S.)
HENRY ATTWOOD. (L.S.)

Witness, J. W. MOFFATT,
66, Chancery Lane.

between the furnace and the engine. It will thus be understood that any two furnaces of a series can be connected together at pleasure for the purpose of diverting the smoke generated in one furnace on to the bed of bright-iron in an adjacent furnace, and thereby effecting the reduction of the smoke. Instead of employing a fine lattice in the network, for producing a passage of communication between the spaces of several furnaces, iron or other tubing having short branches leading to the several furnaces may with advantage be used, especially when the invention is required to be applied to furnaces of any construction.

Having now described our invention of improvement in the means of connecting furnaces, we wish it to be understood that we lay no claim to the broad principle of diverting the smoke and heated gases generated in one furnace, and passing them under or over the bright-iron in an adjacent furnace; but what we desire to secure under the above in part and without limitation is the means herein-before described by which two or a series of furnaces may be readily brought into connection with each other for the purpose of effecting the combustion of the fuel given off from the successive charges of coal supplied to such furnaces.

In witness whereof, we the said James Bristow and Henry Atwood have hereunto set our hands and seals the Twenty-seventh day of October, in the year of our Lord One thousand eight hundred and fifty-three.

JAMES BRISTOW, Jun. (1st.)
HENRY ATWOOD. (1st.)

Witness J. W. MORRIS,
Clerk of the Court.