

Specification of William Morgan : apparatus for heating and ventilating public and other buildings.

Contributors

Morgan, William.

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A.D. 1834 N° 6544.

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

OF

WILLIAM MORGAN.

APPARATUS FOR HEATING AND VENTI-
LATING PUBLIC AND OTHER
BUILDINGS.

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,

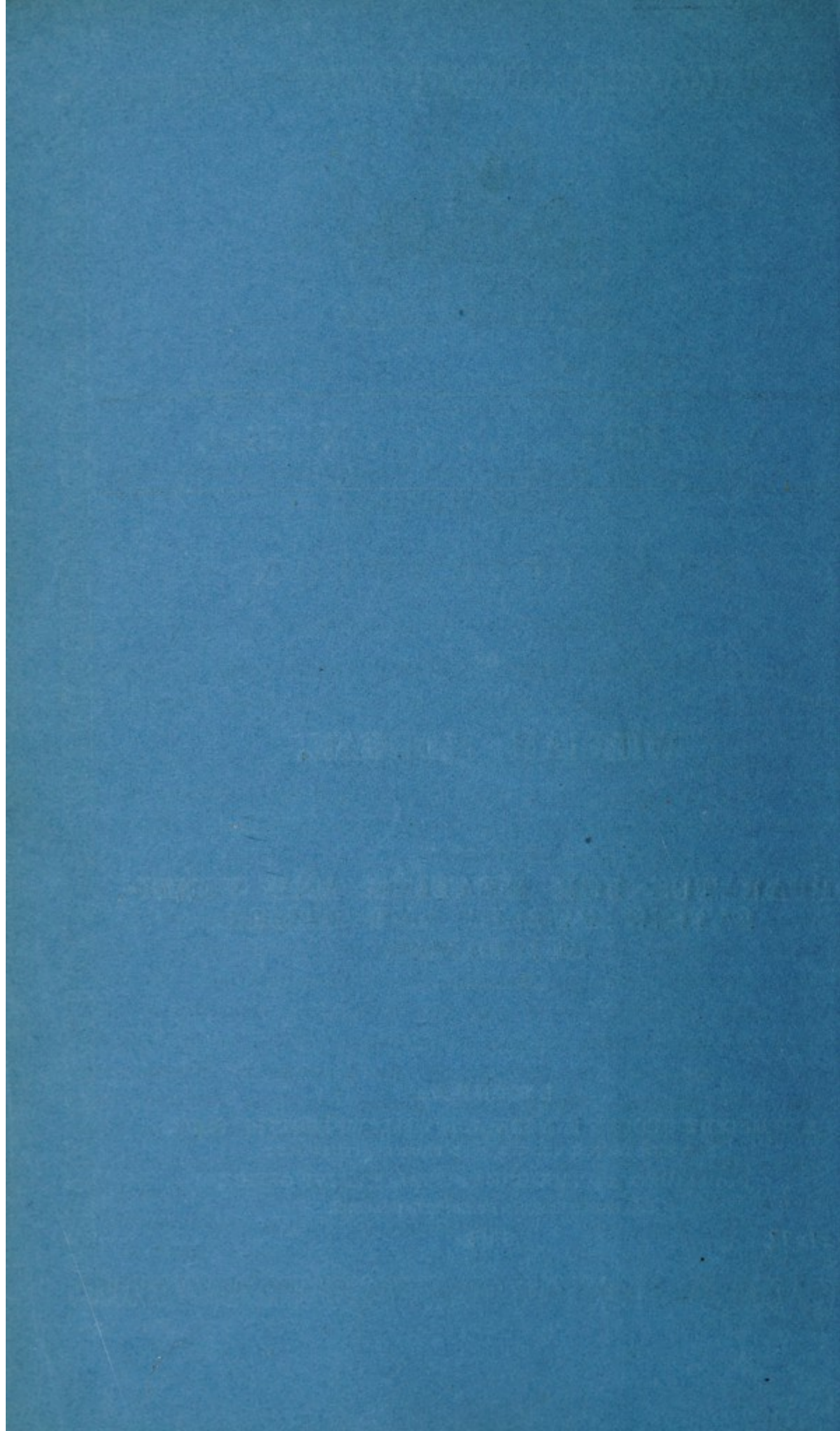
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY :

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,

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1854.





A.D. 1834 N^o 6544.

**Apparatus for Heating and Ventilating Public and
other Buildings.**

MORGAN'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM MORGAN, of Penton Row, Walworth, in the County of Surrey, Plumber and Glazier, send greeting.

WHEREAS His present most Excellent Majesty King William the Fourth,
5 by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Eighteenth day of January, in the fourth year of His reign, did, for Himself, His heirs and successors, give and grant unto me, the said William Morgan, His especial licence, full power, sole privilege and authority, that I, the said William Morgan, my executors, administrators, and assigns,
10 or such others as I, the said William Morgan, my executors, administrators, or assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein expressed, should and lawfully might make, use, exercise, and vend, within England, Wales, and the Town of Berwick upon Tweed, my Invention of "**AN APPARATUS FOR HEATING AND**
15 **VENTILATING CHURCHES, CONSERVATORIES, HOUSES, AND OTHER BUILDINGS AND PLACES;**" in which said Letters Patent is contained a proviso that I, the said William Morgan, shall cause a particular description of the nature of my said Invention, and in what manner the same is to be performed, to be inrolled in His Majesty's High Court of Chancery within six calendar months next and
20 immediately after the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.

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NOW KNOW YE, that in compliance with the said proviso, I, the said William Morgan, do hereby declare that the nature of my said Invention, and the manner in which the same is to be performed, are particularly described and ascertained in and by the following description thereof, reference being had to the Drawings hereunto annexed, and to the figures and letters 5 marked thereon, that is to say:—

My apparatus for Heating and Ventilating Churches, Conservatories, Houses, and other Buildings and Places, consists of an inclosed fire-place, stove, or grate, with apparatus connected thereto for feeding the same with a sufficient quantity of fuel at proper intervals, without requiring the attendance of any person 10 during the time that the apparatus continues charged; this feeding apparatus is brought into operation at the required periods by a piece of clockwork or other mechanism which causes a certain quantity of fuel to be discharged from the apparatus on to the fire at the times required. To the stove or enclosed fire-place is also connected proper boilers, chambers, pipes, tubes, valves, and 15 cocks to form an apparatus capable of heating water or air, or generating steam, and afterwards distributing such heated air, water, or steam through rooms or buildings or other places as required. And as many different plans for heating and ventilating buildings with hot air, water, and steam, have before been invented, and carried into effect, I wish it to be understood that I do 20 not mean or intend to claim as my Invention the heating of buildings or places with steam, hot water, or air; nor do I claim separately any of the boilers, pipes, tubes, valves, or other parts, which must necessarily be used in common in all apparatus of this kind; but I do claim as my Invention the apparatus herein-after particularly described for feeding the stove or fire-place with fuel 25 at the required periods, as this apparatus, when connected with a stove or fire-place and its other appendages, forms an essential part of an apparatus for heating or ventilating. The accompanying Drawings exhibit several views of my apparatus for heating and ventilating. Fig. 1 is a transverse section, taken vertically through the fire-place, feeding apparatus, and boiler; Fig. 2 is a 30 longitudinal section, taken through the feeding apparatus, the front part of the stove being removed, the better to shew the parts; Fig. 3 is another longitudinal section, taken through the boiler and fire-place behind Fig. 2, shewing the arrangement of the hot water tubes or passages connected thereto; *a, a, a*, is the outer casing of the inclosed fire-place and feeding apparatus; *b, b, b*, are 35 a series of boxes to contain the coal or other fuel for supplying the fire. The arrangement of these boxes are best shewn in Fig. 4, which is a top view of the feeding apparatus, the covers or upper part of the outer casing being removed. The bottoms *c, c, c*, of each of these boxes are formed as flaps or

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shutters, turning upon hinge joints, and when closed are fastened by pins or bolts *d, d, d*, passed through staples on the bottoms and sides of the boxes. These pins or bolts *d, d*, are each connected to chains or cords *e, e, e, e*, passed over small guide rolls, and fastened to a drum or roller *f*, which drum is again
5 connected by the chain *g* to the barrel *h*, mounted on a shaft, one end of which turns in a bearing on the top part of the feeding apparatus, the other end being connected to the clock or jack escapement, or other retarding mechanism, contained in the case at *i*. The apparatus is put in action by winding up the weight and cord *k, k*, which is coiled round the drum *f*; at the same time the cords or
10 chains *e, e*, will be uncoiled, and hang loose, as shewn in Fig. 2. These cords or chains *e, e, e, e*, are each of different lengths, and this difference of length in the cords or chains determines the different spaces of time between each operation of feeding, for as the weight *k* descends gradually (it being governed by the escapement *i*) it causes the drum *f* to revolve, and coil on to it the
15 several cords or chains *e, e, e*, and thereby to draw out of the staples the pins or bolts *d* at different periods, and release the bottoms or flaps *c, c*, of the boxes, when they will immediately open, and the coal or other fuel fall down through the guide hopper *l* into the second hopper *m*, which has a pair of self-acting shutters or flaps *n, n*, with counterbalance weights connected to them, for the
20 purpose of keeping the flaps closed at all times excepting when the coal is in the act of falling through them, at which time the superior weight of the coal forces the flaps *n, n*, open; but they immediately close after the fuel has passed through. The coal, in its further progress to the fire, falls upon the inclined plane *o*, which conducts it into the fire-place *p*. The boiler *q, q*, sur-
25 rounds the fire-place without brick or mortar, and is divided into two compartments by the partition across the middle, the lower compartment *p* being occupied as the fire-place, and the upper one *r* as a hot air chamber, through which the smoke and vapour pass in the direction of the arrows to the chimney *s*. There is another compartment or chamber *t*, shewn connected to the
30 boiler by the neck *u*. This compartment is for the purpose of receiving the steam. When hot water is used as the medium of heating, the supply of water can be received into this compartment by the ball-cock *v*, or in any other convenient way. There also must be guage cocks placed in the boiler to shew the height of water. When using my apparatus for heating and ventilating
35 buildings with hot water, I connect the distributing pipes or chambers to the boiler as at *w*, Fig. 3; and as the greater extent of surface in these distributing pipes produces an increased effect, I prefer making them as represented at *x, x*, that is, flat and narrow; but round or other shaped pipes or tubes may be used, if thought desirable. The hot water passes first through the upper range of

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pipes or tubes, and returns to the boiler by the lower range, after parting with a portion of its heat to the surrounding atmosphere, thereby keeping up a constant circulation of hot water. The distributing pipes should be furnished with proper valves and cocks to regulate the supply of hot water to the degree of heat required in the building, and which may also be in a great measure 5 regulated by the quantity of fuel supplied to the fire at the different feedings, and also by the longer or shorter time which is allowed to elapse between each feeding. When using steam as the heating medium, the distributing pipes *x, x*, as shewn in the Drawing, for hot water, are dispensed with, and the steam taken direct from the upper part of the boiler by the pipe *y*, and distributed over the 10 building, as circumstances may dictate, in pipes or tubes furnished with proper safety valves, cocks, and exit pipes for the condensed steam. When hot air is the heating medium employed, the space occupied by the boilers may be filled with hot air chambers and tubes where the air can be heated, and afterwards distributed through the building by rotatory fan or other blowing apparatus, 15 which will cause a circulation; but which it will not be necessary for me to describe, as there are various ways of carrying it into effect, and the arrangement of the same must depend upon the circumstances under which it is applied.

Having now described my apparatus for heating and ventilating buildings, 20 I need only remark, that I consider the second hopper, with its self-closing shutters, an essential part of this apparatus, as it prevents any downward draught of cold air having access into the upper part of the fire; and sometimes I find it convenient, when the extreme regularity of feeding is not required, to construct an apparatus without the fuel boxes *b, b*; in such case I fill the part 25 occupied by them, and also the fire and second hopper with fuel, and allow it to be gradually consumed by the fire below, and when the fuel has all passed through the shutters *k*, they will close, and prevent the cold air getting to the fire. I would further remark, that this apparatus may be fixed or made portable, as may be required; and that the clock escapement may be actuated by 30 a spring, instead of the cord and weight *k, k*, as described above. And, further, that I prefer closing the mouth of the fire-place with double doors, as shewn at *z, z*, in Fig. 1, and that the covers of the fuel boxes be as nearly air-tight as possible, and that the air to support combustion in the fire-place be admitted 35 at the under part of the grating or fire bars.

In witness whereof, I, the said William Morgan, have hereunto set my hand and seal, this Eighteenth day of July, in the year of our Lord One thousand eight hundred and thirty-four.

WILLIAM (L.S.) MORGAN.

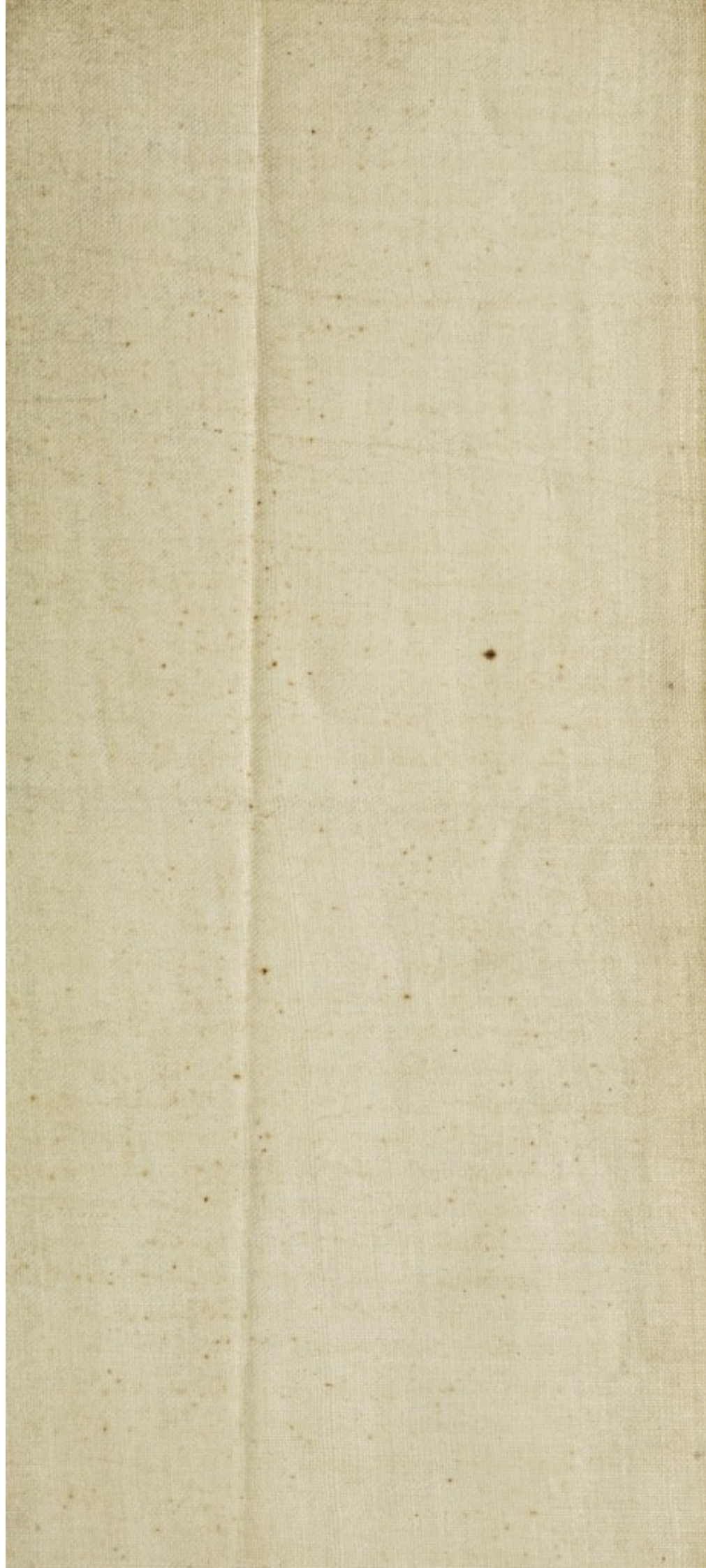


FIG. 1.

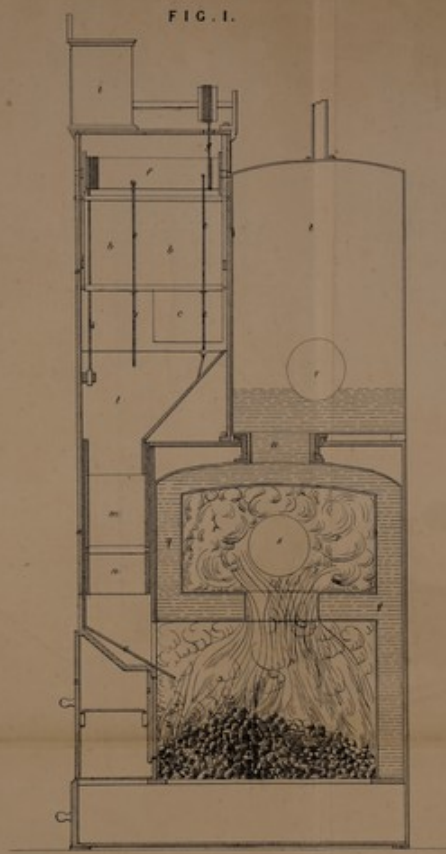
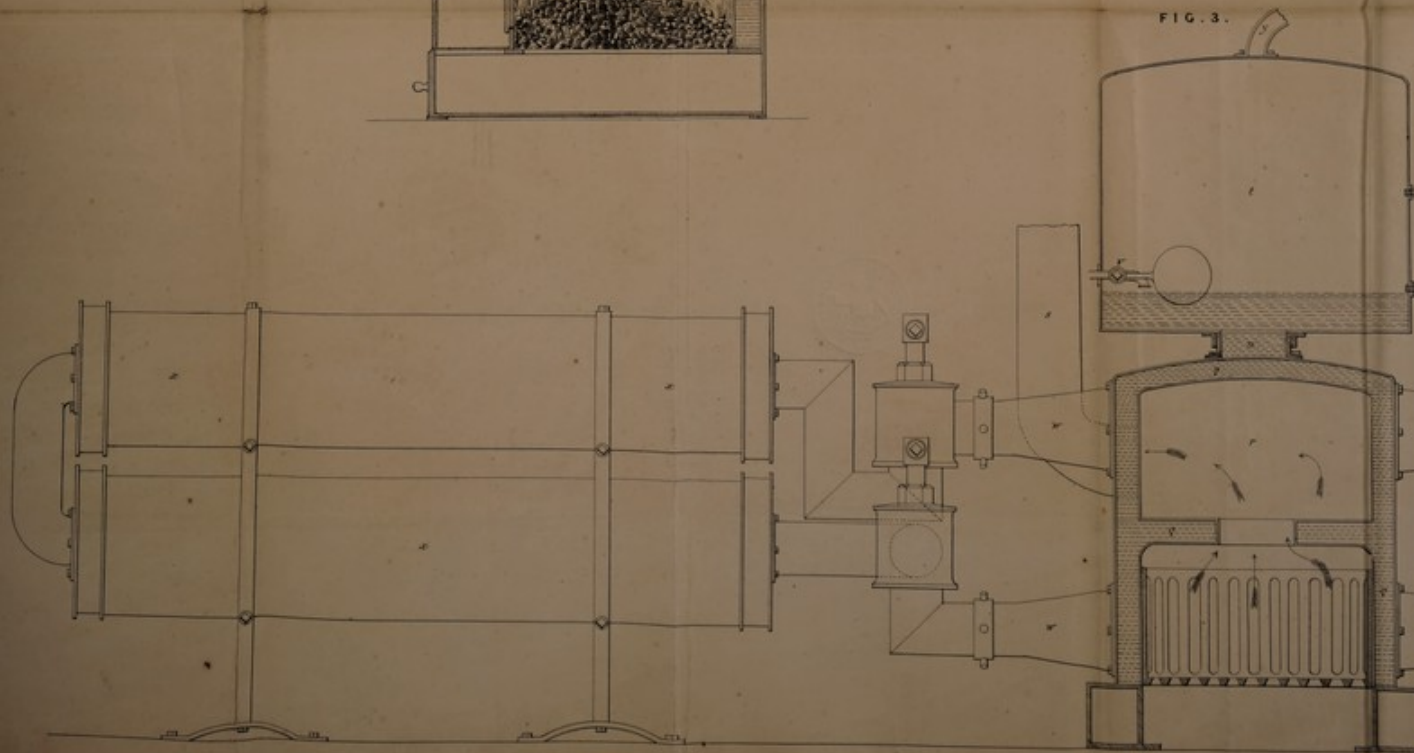


FIG. 4.



FIG. 3.



The dotted drawing is partly referred.



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AND BE IT REMEMBERED, that on the Eighteenth day of July, in the fifth year of the reign of His Majesty King William the Fourth, the said William Morgan came before our said Lord the King, in His Chancery, and acknowledged the instrument aforesaid, and all and every thing therein contained and specified, in form above written. And also the instrument aforesaid was stamped according to the tenor of the Statute made in the fifty-fifth year of the reign of His late Majesty King George the Third.

TOWER.

Inrolled the Eighteenth day of July, One thousand eight hundred and thirty-four.

LONDON:

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Printers to the Queen's most Excellent Majesty. 1854.

