Specification of William Smith and Thomas Phillips : apparatus for heating, ventilating, and cooking by gas.

Contributors

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Phillips, Thomas.

Publication/Creation

London : Great Seal Patent Office, 1857 (London : George E. Eyre and William Spottiswoode)

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A.D. 1851 . . . . . N° 13,599.

SPECIFICATION

OF

WILLIAM SMITH AND THOMAS PHILLIPS.

APPARATUS FOR HEATING, VENTILATING, AND COOKING BY GAS.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:
PUBLISHED AT THE GREAT SEAL PATENT OFFICE,
25, SOUTHAMPTON BUILDINGS, HOLBORN.

Price 1*s.* 1*d.* 1857.

A.D. 1851 . . . . . N° 13,599.

Apparatus for Heating, Ventilating, and Cooking by Gas.

SMITH AND PHILLIPS' SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, we, WILLIAM SMITH, of 66, Snow Hill, in the City of London, Gas Meter Maker, and THOMAS PHILLIPS, of Brighton, in the County of Sussex, Gasfitter, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, under the Great Seal of Great Britain, bearing date at Westminster, the Twenty-fourth day of April, in the fourteenth year of Her reign, did give and grant unto us, the said William Smith, and Thomas Phillips, our exors, admors, and assigns, Her special license, full power, sole privilege and authority, that we, the said William Smith and Thomas Phillips, our exors, admors, and assigns, should at any time agree with, and no others, from time to time, and at all times thereafter, during the term of years therein mentioned, should, and lawfully might make, use, exercise, and vend, within that part of the United Kingdom of Great Britain and Ireland called England, Wales, and the Town of Berwick-upon-Tweed, and in the Islands of Jersey, Guernsey, Alderney, Sark, and Man, and in all Her Majesty's Colonies and Plantations abroad, our Invention of "IMPROVEMENTS IN APPARATUS FOR HEATING, VENTILATING, AND COOKING BY GAS;" in which said Letters Patent there is contained a proviso, that we, the said William Smith and Thomas Phillips, shall particularly describe and ascertain the nature of our said Invention, and in what manner the same is to be performed, by an instrument in writing

under our hands and seals, to be enrolled in Her said Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said in part recited Letters Patent, as reference being thereunto had will more fully and at large appear.

NOW KNOW YE, that in compliance with the said proviso, we, the said William Smith and Thomas Phillips, do hereby declare the nature of our Invention, and the manner in which the same is to be performed, is particularly described and ascertained in and by the following instrument in writing, (reference being to the letters and figures therein contained, and to the Drawings thereunto annexed. The same letter in each Sheet refers to different views of the same part without any reference to the other Sheet connected with this Patent.

The first part of this Invention relates to the construction of an apparatus for increasing the temperature of rooms and other places.

Figure 1, Sheet A, represents the elevation of a stove used for such purposes; Figure 2, a transverse verticle section of the same, shewing the construction of the cylinders and their arrangements so as to constitute the hot and cold air chambers; Figure 3 is a horizontal section taken through the line 1 and 2, Figure 2; Figure 4 represents the horizontal section through the line 3, 4, Figure 2. As the outside casing *a*, *a*, can be constructed after any design (whether plain or ornamental) it will be requisite for us to describe the principle only of the Invention.

b, *b*, are two cylinders made of iron, or any other suitable material; they are placed one within the other so as to form the circular cavity *c*, *c*. The lower ends of these cylinders *b*, *b*, are closed, as seen at Figure 2, but on the lower portion of the outside cylinder is cut out some open fretwork or air holes in order to allow the cold air to enter. *d*, *d*, are two other cylinders placed one within the other, and afterwards placed inside the two cylinders *b*, *b*. The lower edges of these cylinders *d*, *d*, are also closed in a similar manner to the other two cylinders, but the inner or smaller one *d* is also furnished with ornamental fretwork or holes to admit of cold air passing into the circular cavity E, E, formed between cylinders *d*, *d*. The circular cavity or space *f*, *f*, formed by the placement of the inner cylinder *b* and the outer cylinder *d*, is the hot-air passage communicating at the top through the outside of the cold air passage by the four outlets *g*, *g*, *g*, *g*, more clearly understood by refering to Figure 3. *h* is a perforated plate fixed to the inner cylinder *d* for allowing the air to escape, and which becomes heated during its progress up the cylinder or main air passage *i*. Figure 5 represents a plan view of the plate *h*. As the

description of stove or heating apparatus is applicable to gas only, it will be necessary in order to secure its perfect operation to preserve the strict relation between the burner and the hot and cold air cylinders or passages *c*, *e*, *f*, and *i*, as herein-after described. J, Figure 2 and 4, represents the jointed gas burner, moving on a swivel joint K, and constructed in such a manner as to admit of its being drawn out from the inside of the stove, as seen at J 1, Figure 4, for the convenience of lighting. By refering to Figure 2 it will be seen that the gas burner J does not exceed the diameter of the hot-air passage *f*, and in fact, to carry out the principle correctly, it ought to be placed in such a manner as to be immediately under the centre of the hot-air passage *f*, so as to allow the heat arising from the combustion of the gas from the burner, to ascend vertically up the passage *f*. Figure 6 represents a view of the top part of Figure 1. The action of the stove is as follows:—When the gas issuing from the burner J is in a state of combustion and placed as seen at Figure 2, and above described, it will necessarily heat the air contained in the cavity *f*, which when hot will escape through the channels *g*, *g*, *g*, *g*, and the ornamental openings in the case *a*, *a*. By following the course of the arrows in Figure 2, much help may be obtained in following the action). Now the cold air rushing up the passages *e*, *e*, and *i*, through the opening or fretwork at the bottom, will naturally become heated during its progress upwards, by reason of its contact with the hot-air passage *f*, and will escape in a highly rarified state, through the top, as soon by the direction of the arrows at Figure 2, and so long as the gas remains in a state of combustion, and the burner *j* be placed as seen in the Drawing, so long will the apparatus be emitting pure and highly rarified air, the temperature of which may be regulated by allowing either a greater or smaller quantity of gas to escape through the perforation of the burner *j*. Although only a circular stove has been shown in the Drawings, the same beneficial results would be derived from an apparatus on the same principle, constructed in a different form. Figures 7, 8, and 9 represent views of a telescopic burner, which is a different arrangement for drawing out the burner from inside of the stove from that above described. *l*, the burner which is attached to a small metallic tube *m*, sliding in another tube *n*, which is furnished with a stuffing box O, to prevent the gas from escaping. Figure 7 shews the burner *l*, when pushed back inside of the stove. Figure 8 shews the same drawn out for the purpose of lighting, and Figure 9 shews the plan of Figure 7.

The second part of our Invention relates to the construction of apparatus for heating water or other liquids for baths, tanks, or reservoirs. Figure 1, Sheet B, represents the vertical longitudinal section of the apparatus fixed to

a bath; Figure 2, the side elevation of the same, and Figure 3 a plan view, with the burner drawn from under the boiler for the convenience of lighting. *a*, *a*, represents a boiler, which may be made of copper or other suitable material. The shape, construction, and principle of this boiler is peculiar, and we find it to be the best adapted for carrying out this part of our Invention. It will readily be seen by consulting Figure 1 that the boiler *b*, *b*, is cylindrical, formed by the outside casing a^1 and the inner casing *c*, and that the circular cavity or space communicates with another small reservoir or auxiliary boiler *d* by the small bent tube E, E, E, E, and passage *f*; *g* and *h* are two pipes or tubes, one communicating from the top reservoir or auxiliary boiler *d* to the bath *i*, *i*, and the other from the cylindrical boiler *a* to the bath also; *j*, *j*, are two union joints for fixing or securing the boiler to the bath; K, K, is a flue for carrying away the heated air created by the combustion of the gas from the burner *l*, which burner needs no description here as it is in all respects similar to the one described in reference to the first part of the Invention. The boiler is filled through the bath *i*, *i*, and when full, and the gas issuing from the burner *l* ignited, and turned under the boiler (as seen at Figure 1), the water, from the peculiar construction of the boiler, will become instantly heated, & rise from the cylindrical boiler *a* to the upper reservoir or auxiliary boiler *a*, and make its egress into the the bath *i*, *i*, through the tube *g*. The same quantity of heated water that shall have passed away from the boiler *a* will then be immediately replaced by an equal quantity of cold water from the bath through the pipe N, and will continue to circulate from the boiler to the bath in the direction of the arrows' flight so long as the gas issuing from the burner *l* underneath the boiler will be allowed to remain in a state of combustion. The bath should not be filled beyond the outlet *g*.

Our next improvement relates to another construction of apparatus for heating baths, tanks, or reservoirs, and although we have only shewn two views of the same, Figs. 1^a & 3^a, still we claim the right to alter and change the form so long as we do not depart from the principle. *a*, *a*, is a double cylinder, made of copper or other materials; *b*, *b*, is another double cylinder fixed in the inside of the outer cylinder *a*, *a*. This cylinder *b*, *b*, is furnished with outlets or hot-air passages *c*, *c*, *c*, *c*, in a similar manner as that shewn at Figure 3, Sheet A. In the inside of these two cylinders *a* and *b* is contained water, and the spaces *d* and *e* are hot-air chambers, up which the heat arising from the combustion of the gas issuing from the double-ring burner *f* passes; *g* represents the flue for the hot air. We do not limit ourselves to a greater or less number of water or air cylinders to constitute our heating

apparatus, but we wish it to be understood that we claim the principle of the same.

The third part of our Invention relates to the construction of an apparatus or fire pot for heating by gas tools used in certain manufactures or trades, for example, soldering irons, plumbers' irons, bookbinder's rollers, in fact, any description of tools or instruments requiring to be heated. Figure 4 represents a side view; Figure 5 the front view; Figure 6 a vertical section; and Figure 7 a section through the line 1, 2, Figures 4, 5, and 6. *m* is the body, which may be of either cast or wrought iron; *n*, the flue or chimney which is made moveable for the sake of convenience, and also for allowing the trivet, shewn at Figure 8 to be placed on the upper edges of the body M for cooking and other purposes; O, O, is a gas burner constructed of perforated tubes, and is fixed or placed in the bottom of the body; the shape of the burner may be round or square, but we prefer making it the shape of the body *m*, whether such body be made round, square, or oval. *q* is a rest for supporting the tools, and should not be higher than the bracket lip *p* which is attached to the opening *r*, Figure 5, for inserting the tools; S is the gas pipe attached to the burner for supplying the gas thereto.

The fourth part of our Invention relates to the mode of ventilating dwelling houses and other buildings by gas, and is at once understood by referring to Fig. 9, Sheet B, which represents a section of a building with the apparatus attached. A is a stove or heating apparatus similar to that referred to in the first part of our description, and which may be placed in any convenient situation to answer the purpose of ventilating as well as that of heating; *b*, *b*, is a pipe or shaft attached to the top part of the stove in connection with the top n^2, Figure 1 and 2, Sheet A, and passing up the building into the chimney stack; *c*, *c*, *c*, are small tubes placed between the flooring and ceiling, one end of which tubes communicates into the upright shaft *b*, and the other end penetrates the ceiling, and may be furnished with a funnel-shaped mouthpiece *d*. The heat arising from the stove when the gas is in a state of combustion will naturally ascend with considerable force up the shaft *b*, and draw with it the vitiated air which may be floating about the upper part of the room or building in the direction of the arrows' flight.

The fifth part of our Invention relates to the combination of improvements and additions to an apparatus for cooking by gas, but as they will be better understood by a reference to the Drawing, we shall at once proceed to describe the different parts (shewn in Sheet C. Figure 1 represents the front elevation of a range or stove for cooking with gas; Figure 2, a vertical section through the

line 1 & 2, Figure 1. The chief novelty of this apparatus is the combination of parts in such a manner as to constitute a perfect kitchen in one apparatus. *a*, *a*, Figures 1 and 2, represents a cavity for placing a gridiron; and *b*, the gas-burner under the grid iron, which is not shewn in the sectional view, as the same is made moveable for the sake of convenience; *d* is a boiler, the water in which is heated by the swing or telescopic burner *e* of a similar character to those described in reference to the first part of our Invention, the hinged door for allowing the burner *e* to be withdrawn for the purpose of lighting. The boiler *d* is supplied by a cistern or tank *g* and the supply pipe *h*; *i* is a stop cock to cut off the supply of cold water from the cistern when a good force of steam is required to be raised in the boiler for the purpose of cooking by steam, for by preventing the constant flow of cold water into the boiler to replace that quantity of hot which may have wasted in evaporation, no check can possibly take place in the boiler; *j* is a cock for drawing off the water from the boiler *d*; j^1, the safety valve; and j^2, the steam pipe communicating with the steam kettles, of which Figure 4 shews a view; K is the hot closet driving its heat from the contiguous burner *l*, and roasting chamber M. By referring to Figure 3 the interior construction of the roasting chamber M will be at once understood; N is the burner, which is of the shape of the roasting chamber M; O, O, are hooks for suspending the meat to be cooked; *p* is a rod on which the hooks O, O, slide; *q* is the dripping pan; and *r* is the flue situate at the back of the back plate r^1 for carrying away the steam arising from the operation of cooking and the superfluous heat. S, Figure 1, represents the front of a cavity for boiling or broiling, also furnished with a burner in a similar manner to the gridiron. It is necessary here to remark that when the cavity is large the burner is constructed of separate and distinct parts, each part having a tap to itself, for it may be found that only a small portion of the burner will be needed for certain purposes, an improvement which obviates a useless consumption of gas when but a small quantity is required. *t* shows the front of the oven, which is furnished with a jacket or surrounding space for the circulation of the heat from the gas burner, which is fixed in the cavity *u*, so that the circulation of the gas takes place in a separate chamber altogether. *v*, *v*, *v*, *v*, represents the taps for turning the gas off or from the different burners. We shall now describe the peculiar construction of burners which we have found by experience to answer best for cooking and other purposes. Figure 5 represents a section of the burner, showing the shape of the perforated tube and the positions or places of the perforations; for, instead of the tubes W, W, being drilled on the top or side or sides, as is the usual practice in the con-

struction of burners, they are drilled on the underneath surface or surfaces in the direction of the arrows. By this mode of drilling or perforating the tubes W, W, it will prevent the holes ever getting clogged or filled up by the dripping of the fat or gravy from the meat which may be cooking over such burner.

Having now described the nature and best manner at present known to us of carrying out fully our Invention, it must be understood that we make no claim for heating, ventilating, or cooking by gas, except after the principle laid down in the foregoing description, nor do we confine ourselves to the exact size, shape, or arrangement shown in the Drawings, but we retain the right of altering the same, as we may deem requisite, so long as we do not depart from the principle.

We claim, first, the construction of stoves or apparatus to be heated by gas, with the arrangement of hot and cold air cylinders, and swing or telescopic burners, as above described; the same principle can be also applied to heating water.

We claim, secondly, the constructing of swing or telescopic gas burners to be used in conjunction with our heating apparatus and cooking range, as above described.

We claim, thirdly, the constructing of boilers for heating water by gas for baths and other purposes, as above described.

We claim, fourthly, the constructing of apparatus or fire-pot to be heated by gas from burners drilled underneath, for warming soldering irons and other tools, as above described.

We claim, fifthly, the application of the heating apparatus to the heating of dwelling houses and other places, as above described.

We claim, sixthly, the constructing, combining, and arranging the various parts in order to constitute a stove or apparatus for cooking by gas, with swing or telescopic burners drilled underneath, as above described.

We claim, lastly, the drilling or perforating of the tubes for constructing burners for the combustion of gas to be used for cooking and other purposes, as described in reference to Figure 5, Sheet D.

In witness whereof the said parties to these Presents have hereunto set their hands & seals, this Twenty-fourth day of October, One thousand eight hundred and fifty-one.

WILLIAM (L.S.) SMITH.
THOMAS (L.S.) PHILLIPS.

CROSBY.

AND BE IT REMEMBERED, that on the Twenty-fourth day of October, in the year of our Lord 1851, the aforesaid William Smith and Thomas Phillips came before our said Lady the Queen in Her Chancery, and acknowledged the Specification aforesaid, and all and every thing therein contained and specified, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute made for that purpose.

Enrolled the Twenty-fourth day of October, in the year of our Lord One thousand eight hundred and fifty-one.

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Printers to the Queen's most Excellent Majesty. 1857.

A.D. 1851 April 24. N° 13,599.
SMITH & PHILLPS' SPECIFICATION.

(3 SHEETS.)
SHEET 3.

FIG. 7.

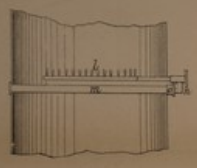

FIG. 8.

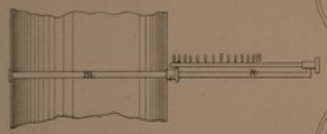

FIG. 9.

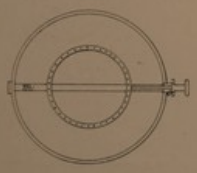

FIG. 3.

FIG. 4.

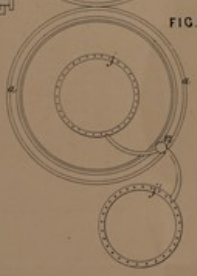

FIG. 1.

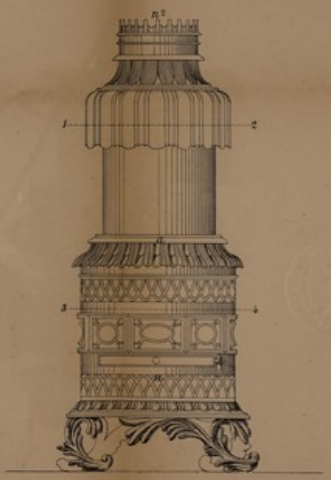

FIG. 2.

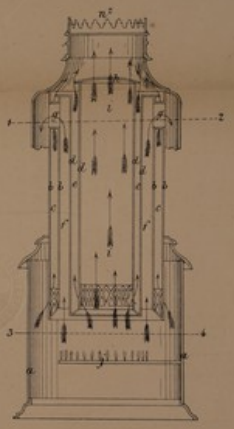

FIG. 5.

FIG. 6.

The enrolled drawing is partly altered.

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A.D. 1851. April 24. N° 13,599.
SMITH & PHILLIPS' Specification.

(3 SHEETS)
SHEET B.

FIG. 1.

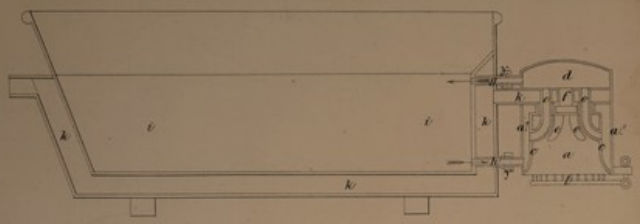


FIG. 1ª

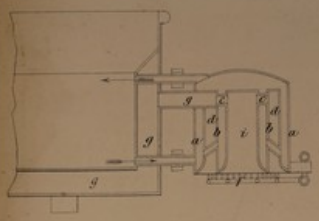


FIG. 9.

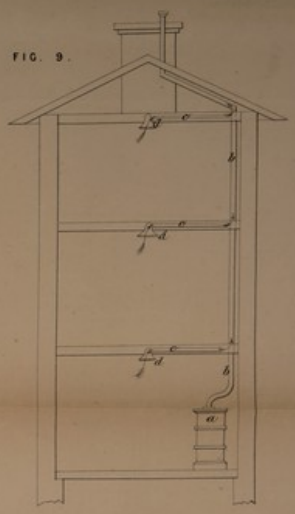


FIG. 2.

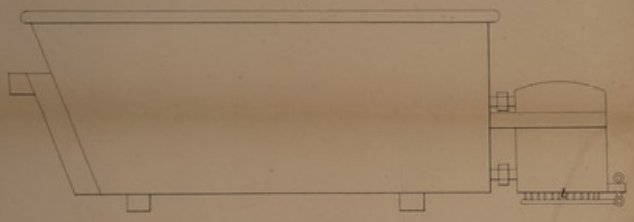


FIG. 3ª.

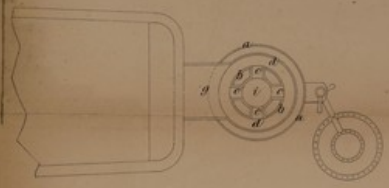


FIG. 3.

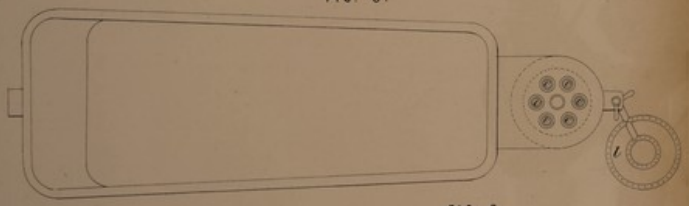


FIG. 4.

FIG. 5.

FIG. 6.

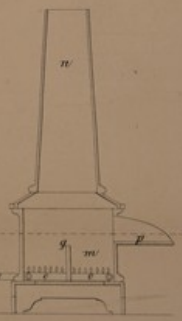


FIG. 7.

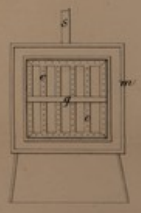
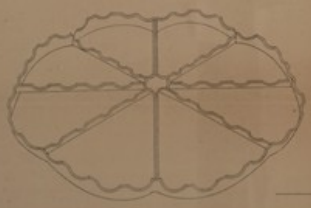


FIG. 8.



The smallest drawing is partly altered.

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SMITH & PHILLIPS' SPECIFICATION.

(3 SHEETS.)
SHEET C.

FIG. 5.

FIG. 4.

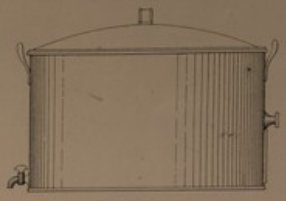


FIG. 1.

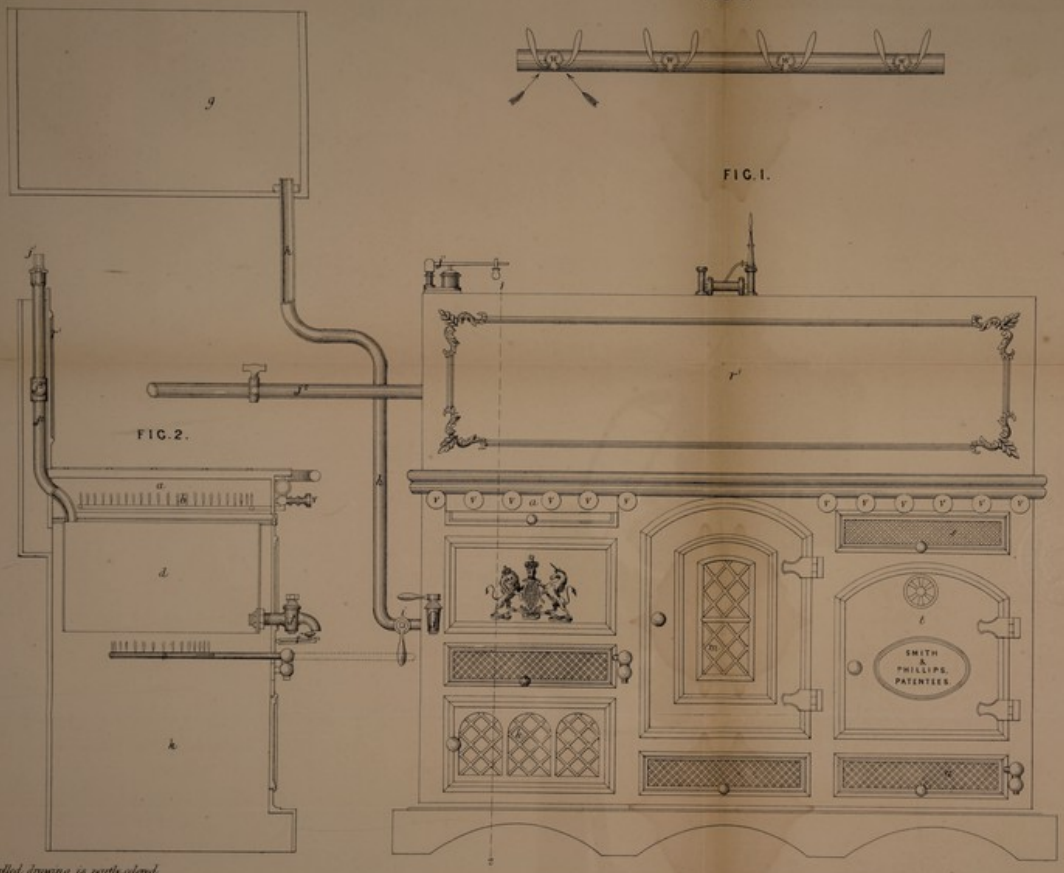
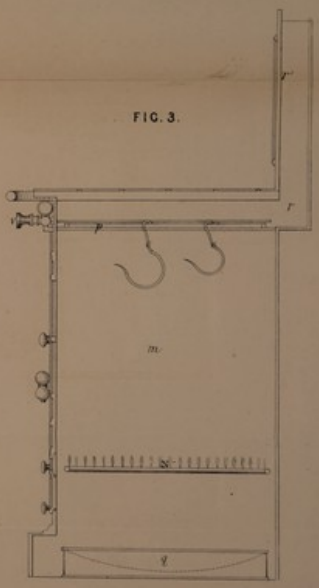


FIG. 2.

FIG. 3.



The omitted drawing is partly colored.

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