

Specification of Joseph Ange Fonzi : Fire-places.

Contributors

Fonzi, Joseph Ange.

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A.D. 1829 N° 5841.

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

OF

JOSEPH ANGE FONZI.

FIRE-PLACES.

LONDON:

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Fire-places.

FONZI'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOSEPH ANGE FONZI, of Upper Marylebone Street, in the County of Middlesex, Esquire, send greeting.

WHEREAS His present most Excellent Majesty King George the Fourth, 5 by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Ninth day of September, in the tenth year of His reign, did, for Himself, His heirs and successors, give and grant unto me, the said Joseph Ange Fonzi, His special licence that I, the said Joseph Ange Fonzi, my executors, administrators, and assigns, or such others as I, the said Joseph 10 Ange Fonzi, 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 "**CERTAIN IMPROVEMENTS ON OR ADDITION TO FIRE-PLACES;**" in 15 which said Letters Patent is contained a proviso obliging me, the said Joseph Ange Fonzi, by an instrument in writing under my hand and seal, particularly to describe and ascertain the nature of my said Invention, and in what manner the same is to be performed, and to cause the same to be enrolled in His said Majesty's High Court of Chancery within six months next and imme- 20 diately after the date of the said recited recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.

Fonzi's Improvements in Fire-places.

NOW KNOW YE, that in compliance with the said proviso, I, the said Joseph Ange Fonzi, do hereby declare that my said Invention is described and ascertained in manner following (that is to say):—

My improvements on or additions to fire-places consist in giving to fire-places the form or forms herein-after described, and also represented in the large Sheet of Drawings hereunto annexed, in order that fire-places constructed according to my improvements may be adapted to burn coals by a downwards current of air and flame, so as to avoid the escape of smoke or vapour into the apartment in which such fire-places are placed.

Description of the Apparatus for burning of coals made of iron or any other suitable substance.—I name it a Fonzienne; the form and dimensions may be varied at the discretion of the workmen who is to construct the same. I have adopted the following form and dimensions, from which I have made the large Sheet of Drawings hereunto annexed on a scale of one inch to a foot, or one-twelfth of the real size. The fire is contained within a cast-iron box without a lid or a bottom; it is fifteen inches square in the inside, thirteen inches heigh, and the metal two-thirds of an inch thick. See (N° 1.) At the lower part of the front side of the box is an opening for the purpose of introducing a shovel to take out the ashes. This opening might be dispensed with; but it would then be necessary to take out the ashes at the top, which would be much less convenient. This opening is to be shut by a small door during all the time that the fire is burning. (See N° 2.) At the back part of the box is a circular opening, six inches diameter, its centre being five inches above the lower edge of the box; to this opening the pipe or flue is joined to carry away the flame and smoke into the chimney. This box is placed on a pavement composed of square cast-iron plates, two-thirds of an inch thick, which forms its basis or foundation, and supply the place of the bottom to the box: those iron plates may be dispensed with, it being possible to place the said box upon the chimney hearth. On a pavement of bricks or stone work within the interior of the box I adapt a frame of cast iron, with four short legs resting on the bottom plates or pavement; the outside of the frame touches all the interior sides of the box. On this frame rests the horizontal grate, which is of the same size as the frame, and fills the box; the grate must be one inch in thickness or more, (see N° 3,) representing the frame, and N° 4, the grate resting on the frame. The top of the grate is five inches above the basis, but it may be placed higher in the box, the height of the frame which supports the grate being made accordingly. On this horizontal grate another grate of the same thickness is placed nearly vertically within the box, so as to stand sloping against the inside of the box, being joined to the

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superior edge of the posterior side or back of the box, in which side is the opening of the flue through which the smoke and flame are to pass away; the superior edge of this grate must join closely to the superior edge of the back of the box; but the inferior edge of the grate is kept about two inches
5 and a half distant from the back of the box by means of two short legs which project out behind the grate, and touch the back so as to make this interstice, (see N^o 5,) indicating the said grate, which stands nearly vertical, or instead of that grate a plate of cast iron of the same thickness and size may be substituted, being placed within the box in the same manner as above
10 described (see N^o 6); and other grates of the same construction may be adapted to stand in sloping positions against the four inward sides of the box (see N^o 7). The said plate of iron which may be used in lieu of the back grate, and the number of the sloping grates which may be so applied withinside of this box, serve to vary at pleasure or as need may be the quick-
15 ness and intensity of the combustion of the coals contained within the box which forms the fire-place. The most active fire may be obtained by using the plate of iron at the posterior side of the box as aforesaid. If instead of this plate of iron a grate is used, then the consumption of the coals is less active, and it will be still more moderate if a second sloping grate is applied
20 against the front internal side of the box above the opening for removing the ashes, but the smallest fire is made by using all the four sloping grates hereinbefore mentioned against the four internal sides of the box, or the sloping plate of iron may be applied against the posterior internal side of the box, in which is the opening for the smoke pipe (or flue), whilst three other sloping grates
25 are applied in the other sides; in this case the plate of iron must be formed as represented by N^o 8. By these means any required degree of heat may be produced either for a large or a small kitchen, or for a large or small apartment. The draft or current of air which causes the fire to burn draws downwards through the burning fuel (and through the bottom grate upon which it
30 rests) into the space beneath that grate, from whence it passes away by the smoke pipe or flue which is joined to the opening at the back of the box, and which conducts the smoke into the chimney. To obtain every possible advantage from this fire-place it will be necessary to make the following additions to the said apparatus, viz^t:—To the four superior edges of the box is adapted
35 a square border plate of cast iron extending out around the fire-place nine inches broad or more on every side; the border plate is fastened on the edges of the box by screws, and it serves to support all the culinary utensils, pots, saucepans, &c., which had been previously placed on the burning fire for boiling or stewing; when situated on this border plate they will still continue to boil.

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(N° 9) represents the border plate; a suitable frame like a stool with legs must be placed behind the box at the back where the smoke-conducting pipe is joined to it; this frame must be of the same height as the box, and must touch the posterior edge of the border plate; this frame is to support a reservoir or boiler to contain water; the boiler may be made of copper, or any 5 other metal, fourteen inches or more wide, one foot eleven inches high, and two feet long. A pipe of copper, five or six inches in diameter, open both at the top and bottom, passes vertically through the boiler, and is soldered to the middle of the top and bottom plates of the boiler, where it passes through them; the top of the pipe rises up ten inches above the top of the boiler. At 10 the lower part of this boiler is a cock to draw off the contained water, and at the top a hole to pour in fresh water. The lower end of the vertical pipe through the boiler joins by an elbow turn to the opening at the back of the box where the smoke escapes, and the heat which is in consequence conveyed through the pipe is communicated to the surrounding water. The superior 15 extremity of the said vertical pipe where it rises above the top of the boiler enters into an oven composed of copper or iron plates about two feet square and one foot high. This oven contains another smaller oven withinside of it, in the manner of a drawer, leaving between them an interstice of two inches on all sides except the front where the door opens into the oven. In the 20 centre of the upper part of the exterior oven is a hole five or six inches in diameter, to which is adapted the conducting pipe for conveying the smoke away to the chimney. The flame, smoke, and heated gas emanating from the burning coals contained in the fire-place pass through the elbow turn at the back of the box into the vertical pipe through the center of the boiler, making 25 the water within it boiling hot; then the smoke passes into the interstice around the interior of the two above-mentioned ovens, and from thence through the superior conducting pipe into the chimney. (See N° 10, representing the boiler or reservoir; N° 11, the cock; N° 12, the opening by which the boiler is filled; N° 13, the vertical pipe which passes through the boiler; N° 14, the oven; 30 Number 15, the conducting pipe for the smoke.) The fire-place may be elevated to a more suitable height, so as to save the trouble of stooping, by placing the whole apparatus on a basement of brickwork, or supporting it on a suitable frame; in that case the part 13 of the vertical pipe which is between the boiler and the oven may be removed, and the oven placed on the boiler, 35 that the oven may not be too high from the ground. The apparatus may be constructed in a different manner, as follows:—The box to contain the fire may be made one foot and a half long, one foot wide, and one foot high, the metal two-thirds of an inch in thickness; a frame and horizontal grate is fitted into

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this box in the same manner as in that before described ; also the door in front to remove the ashes, but there is no opening at the back for the smoke pipe ; the back plate, which has been before called the sloping plate (or the grate which is to be used in lieu thereof), is to be placed vertically at a distance of 5 six inches from the posterior side of the box, leaving a space of one foot square to receive the burning fuel, and a space of six inches by one foot behind the plate or grate for the flame and smoke to ascend in after having passed down through the burning fuel and the bottom grate ; over this latter space is placed a box one foot long and six inches wide, the height at pleasure ; it is open at the 10 bottom but closed at top, and receives the smoke and flame within it ; to the posterior part of this box is adapted a conducting pipe ; N° 16 represents the box ; N° 17, the space between the vertical grate and the posterior side of the box or fire-place ; N° 18, the upper box ; N° 19, the opening to join to ; N° 20, the conducting pipe for the smoke ; N° 21, the whole apparatus put together.

15 Another construction for the same apparatus :—Instead of covering the posterior part of the apparatus with the upper box, it may be covered with the border plate, which will extend itself around all the superior edges of the box, and cover over the space of six inches intended for the smoke to ascend in ; over the middle of this space of six inches a vertical column five or six inches in 20 diameter and three feet high, is placed on the border plate, and conveys the smoke upwards. On the top of the column the oven is placed as before described ; the heat will pass up through the column into the instertice between the two ovens, and from thence will escape by the upper conducting pipe into the chimney. (See N° 22.) Another manner of constructing the appa- 25 ratus :—If two of these apparatus are required to burn at once, they may be placed one by the side of the other in contact ; and instead of placing an upper box on each, one upper box, two feet long, may be placed across over both (see N° 23) to receive the flame and smoke arising from both ; and from that long upper box it may pass through a single conducting pipe joined 30 to the middle of the posterior part of the upper box ; or the two apparatus which are so placed side by side instead of an upper box may have two vertical columns placed on their border plate over the spaces in which the smoke rises. In this case, the oven must have two holes to receive both columns. (See N° 24.) If the two apparatus so placed side by side are 35 required to have a boiler behind them, that boiler may be about double the breadth of the boiler herein-before mentioned or larger ; and it must have in its inside two vertical pipes, which will enter in the two holes made in the oven instead of the columns. (See N° 25.) The said apparatus, whether single or united, must always be surrounded by the border plate on the top edge and

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the sloping or vertical plate of iron; or the sloping or vertical grates, like those in the first-mentioned apparatus, are to be used to procure all the required degrees of heat. To make use of the said apparatus, fill the interior of the box with coals, and cover over the upper part either with a cover plate divided into two, or else with two kettles of water, which, when set side by side on the coals, 5 will cover over the upper part of the box; leave uncovered a small part of the coals between the two parts of the cover or the two kettles, and in that opening put a shovel full of burning charcoal or of lighted wood, which will set the coals beneath it on fire; as they kindle push aside the divided cover, or the two kettles from each other, and when the whole of the coals are on fire, take away 10 the covers or the kettles, and the fire continues without occasioning the least smell or smoke; because the current of air is drawn downwards through the whole mass of burning fuel, and after passing down through the bottom grate rises up again in the space left behind the sloping plate or sloping grate, and from thence the smoke passes away through the conducting pipe to the boiler and the 15 oven, and ultimately to the chimney. (See N° 26) showing the covers; N° 27, the kettle. After having tried experiments with the said apparatus, I have found the following alterations adviseable to adapt it to different purposes. For the simple warming of rooms the apparatus represented in N° 21 may be made sixteen inches high at the posterior part, and only nine inches high in the front part, 20 so as to make the top edges of the two sides of the box with a slope towards the front side. The sloping must begin at a distance of six inches along the lateral edges from the back of the box, in order that so much of the said edges as are to be covered by the upper box 18 may remain in a horizontal plane; and all the rest which is left open for the fuel is inclined, so that the burning fuel will lie higher 25 at the back than at the front. This apparatus, like the others before described with the upper edges horizontal, is open at bottom, and is intended to be placed on the floor; but it must have a bottom plate of the same size as the bottom of the box, and one-third or one-half an inch larger all round for a raised border, into which the lower edges of the box are fitted. This bottom plate is to be of the 30 same thickness as the box or a little more; the raised border must be interrupted in the front part before the door, at which the ashes are to be withdrawn in order that the door may be put in and taken out easily; the edge of the bottom plate must advance at least one inch forward in front of the opening of the door. This bottom plate may be raised from the floor by means of legs or any other 35 method, so that the air in circulating under the bottom plate will prevent the fire from overheating the pavement or plates of iron under the box, or from communicating fire to any beam or wood work which may be underneath that pavement. The divided cover plate for the apparatus to enclose the coals when

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the fire is first lighted may be made in various forms, more or less ornamental. The superior edges of the said apparatus may be surrounded by a border plate, of a square or an oval shape, of the same size internally as the interior of the box or fire-place (see N° 28), and to the external part of this border plate, and also
5 to the sides of the box, lugs or projections may be added to fasten plates of iron or copper to, by screws, the size of such plates being according to the dimensions of the chimney, which may be ornamented by such plates in any style of elegance or taste required. The border plate itself may be of iron or of brass gilt or varnished, not being subject to be blackened by the smoke or coal
10 dust, which can never affect it. To procure suitable intensity of combustion and of heat in the last-mentioned apparatus, a sloping grate of the kind hereinbefore described may be inserted into the posterior part of the box resting upon the horizontal grate, and joining to the superior edge of the back of the box, but detached from that back at the bottom part of the sloping grate, like the other
15 sloping grates already described. Likewise two other sloping grates may be placed in the sides of the box, joining at the top to the edges of the box, and at the bottom to the bottom grate; the latter sloping grates must not extend the whole length of the inside of the box; it is enough that these grates are half or two-thirds of that length. To make the most of the heat which radiates
20 around all the apparatus described, a frame one foot high or more must be constructed, and a wide and thick platform put upon the frame; the box or fire-place must be placed in the center of the platform, and then the other bottom plate to the box may be dispensed with. The box must have its border plate fixed around its superior edges, as before described. The apparatus thus placed on
25 a platform is at a suitable height for all domestic purposes. The boiler may be placed on the posterior surface of the border plate, making the conducting pipe for the smoke and flame pass through the border plate and fit into the vertical pipe within the boiler; that pipe rises a little above the boiler that it may also fit into the iron case containing the oven, which may rest on the
30 boiler. The height of the frame for supporting the apparatus, and of the frame for the boiler, and the oven at the top of the boiler, must be such that the cook may perform the various operations with ease. If it is desired to keep the whole of the border plate disengaged, a large frame must be placed on the floor at the posterior part of the apparatus, the frame
35 being of the same height as the posterior edge of the border plate. The boiler is to be placed on this frame, and on the boiler the oven is to be placed. The oven that is applied to each apparatus must be of a size in proportion to the quantity of fuel contained in the apparatus; the instertice between the iron case and the oven that is included within the case must be

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two inches wide, or a little more. If it is required to keep the oven always hot, even when the fire has decreased, then the interstice must be more than two inches wide, and the case must be lined with tiles or brickwork within-side; these refractory and slow conducting materials will keep in the heat a long time, and the fire being kept up, though not so strong as at first, will maintain more than sufficient heat in the oven for baking pastry or roasting meat. When two apparatus are to be joined side by side under one large border plate, the boiler may be placed thereon, that boiler having in the inside of it two vertical conducting pipes; or it is still better to place the boiler on a large frame at the posterior edge of the border plate, as before stated, for a single apparatus; or if the boiler has only one vertical pipe through it, the apertures for the smoke and flame at the posterior side of each apparatus must be adapted to the two branches of a forked pipe running into one pipe, the top end of which fits into the bottom of the vertical pipe of the boiler. The boxes or fire-places of the apparatus may be constructed in any form or size, besides those herein-before stated; but the capacity to contain coals must have its limits, for if excessive, the grates and the iron plates and the internal frames may be injured by excess of heat. The box must not be too small, or it will be unsuitable, for it should contain a sufficient quantity of coals to continue burning a long time. If the capacity is too small the fire will go out when it becomes abated by too early a consumption of the coals. The horizontal grate N° 4, before mentioned as being placed inside the box or fire-place N° 1, near to the bottom thereof, as well as the frame N° 3, to support the horizontal grate, may be dispensed with by making horizontal rows of holes about one inch and a half diameter through two opposite sides of the box, at three inches and a half above its base thereof, and at such distances apart as to leave spaces of about one third or half an inch of solid metal between the holes, and inserting into those holes cylindrical bars of wrought or cast iron of the same diameter as the holes, and extending horizontally across the inside of the box, in order to sustain the burning fuel in lieu of the bars of the horizontal grate, which, as before mentioned, is laid aside. These bars will resist the action of the heat for a long time, and when after much use they become damaged at the part withinside the fire-place where the heat is most considerable, they may be removed, and others applied in their stead. It is not absolutely necessary to make holes through the sides of the box in order to insert such cylindrical bars, for they may be lodged on two supports, N° 29, at the bottom part of the lateral sides of the interior of the box; or instead of solid cylindrical bars I make use of hollow cylindrical tubes of cast or wrought iron, through which the exterior air may pass in a current, which

Horizontal grate

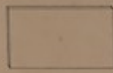


N° 4

N° 5



N° 6



Frame for the grate to stand on

N° 3



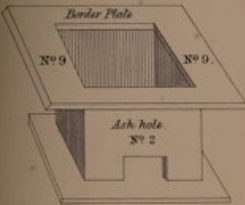
N° 7



N° 8



Border Plate



N° 9

N° 9

Fire Box

Ash hole

N° 2

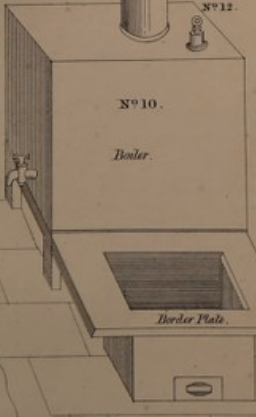


N° 14

Oven

N° 15

N° 12



N° 10

Boiler

Border Plate

N° 11

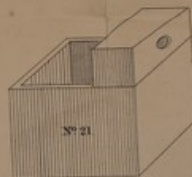


N° 18

N° 20



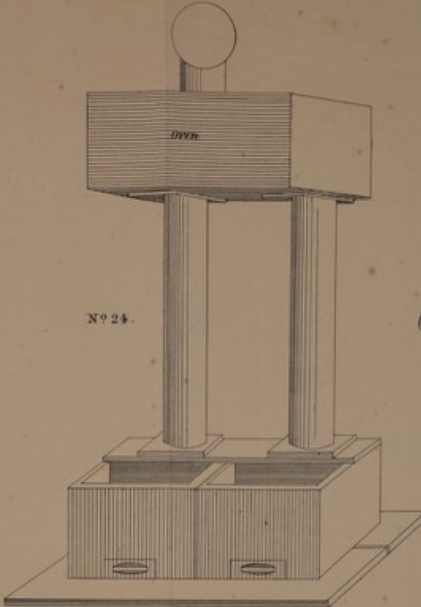
N° 16



N° 21



N° 23



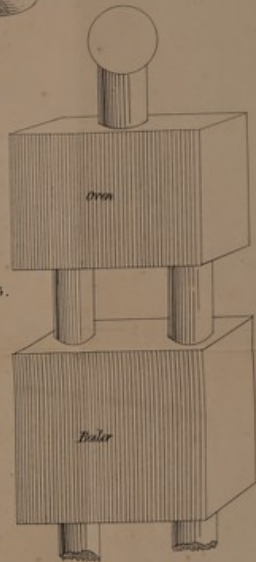
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N° 26



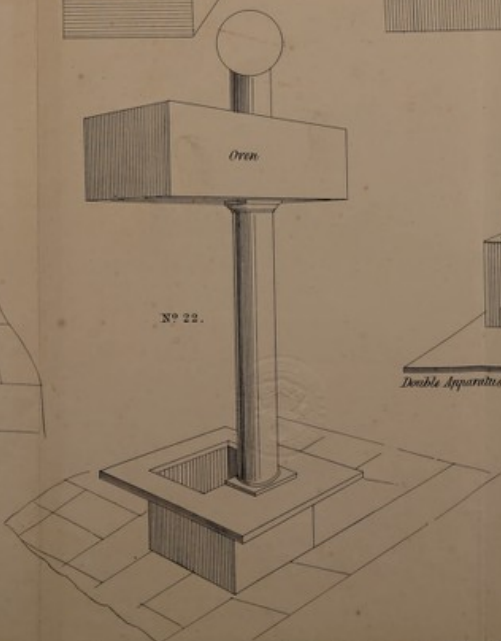
N° 27



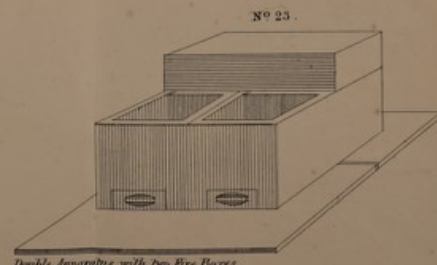
N° 25



N° 29



N° 22



N° 23

Double Apparatus with two Fire Boxes.

The enrolled drawing is not colored.

Milly & Sons, Ill.

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produces the double effect of cooling and carrying off the excess of heat caused by the combustion at the bottom of the box or fire-place, and consequently the slackening of the burning of the fuel therein contained. Also the heated air which issues from the open ends of those tubes will give heat to any articles
5 which are placed opposite thereto, and by rising up beneath the platform gives heat thereto, and to any of the vessels that may be placed thereon, in order to keep the contents thereof boiling, as before stated. To increase or diminish the temperature of apartments which are warmed by my apparatus, the ordinary chimney of the apartment, which is closed at bottom in order to cause a draft
10 or strong current of air through my apparatus, should have a valve or sliding damper or ventilator applied in it at the lower part of the chimney, where it is shut up, so as to open a passage for air, and to open more or less passage at pleasure, in order to draw the air from the apartment up the chimney, and thus change the air and diminish the temperature of that which remains.
15 In building new houses, where it is intended to use my apparatus, I recommend the following plan in lieu of the usual brick chimnies:—A niche or hollow place should be left in the wall withinside the house, and extending up through all the height thereof from the kitchen to the highest story; into this niche in the wall, which may be one foot and a half wide and six or nine inches deep,
20 a hollow rectangular tube or funnel of cast iron should be adapted so as to fill the niche, the said tube being made in convenient lengths, joined one to another, end to end, so as to make a continuous funnel up from my apparatus to the highest apartments, and the smoke pipe of my apparatus being joined into the said cast-iron funnels (instead of being joined into the ordinary
25 chimney, as before directed), the smoke, heated air, and flame from the fire will ascend through the said metal funnels, and heat will pass through the metal thereof, so as to give some warmth to the air contained in all the apartments that are situated above that where my apparatus is placed, without the necessity of making a separate fire in each one, and thus the danger of acci-
30 dents from fire will be avoided. In order to clean out the inside of these iron funnels, small doors must be made in the front at suitable distances one from the other; such iron funnels may also be substituted for the chimneys as now constructed.

Having now described my apparatus, and some of the variations that
35 may be advantageously made in the construction thereof to adapt it for different purposes, I do hereby declare that what I claim as my improvements on or additions to fire-places is the internal arrangement of the parts of my apparatus herein-before described. The object of that arrangement being for the purpose of applying the known principle of supplying the

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air which is to support the combustion of coals at the upper surface of the fuel with a descending current through the mass of burning fuel, by virtue of which internal arrangement I am enabled to regulate the degree and rapidity of the combustion of the fuel, and apply the heat evolved by the combustion so effected by the downward current to all domestic purposes, without allowing smoke or smell or dust to escape into the apartment in which the apparatus is placed.

In witness whereof, I, the said Joseph Ange Fonzi, have hereunto set my hand and seal, this Ninth day of March, in the the year of our Lord One thousand eight hundred and thirty.

10

JOSEPH ANGE (L.S.) FONZI.

Cox.

AND BE IT REMEMBERED, that on the Ninth day of March, in the year of our Lord 1830, the aforesaid Joseph Ange Fonzi (through the interpretation of John Farey, the said interpreter being first sworn that he had truly, distinctly, and audibly interpreted the contents of the Specification to the said Joseph Ange Fonzi, and that he would interpret the acknowledgment about to be made) came before our said Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and everything 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.

20

Inrolled the Ninth day of March, in the year of our Lord One thousand eight hundred and thirty.

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1854.

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