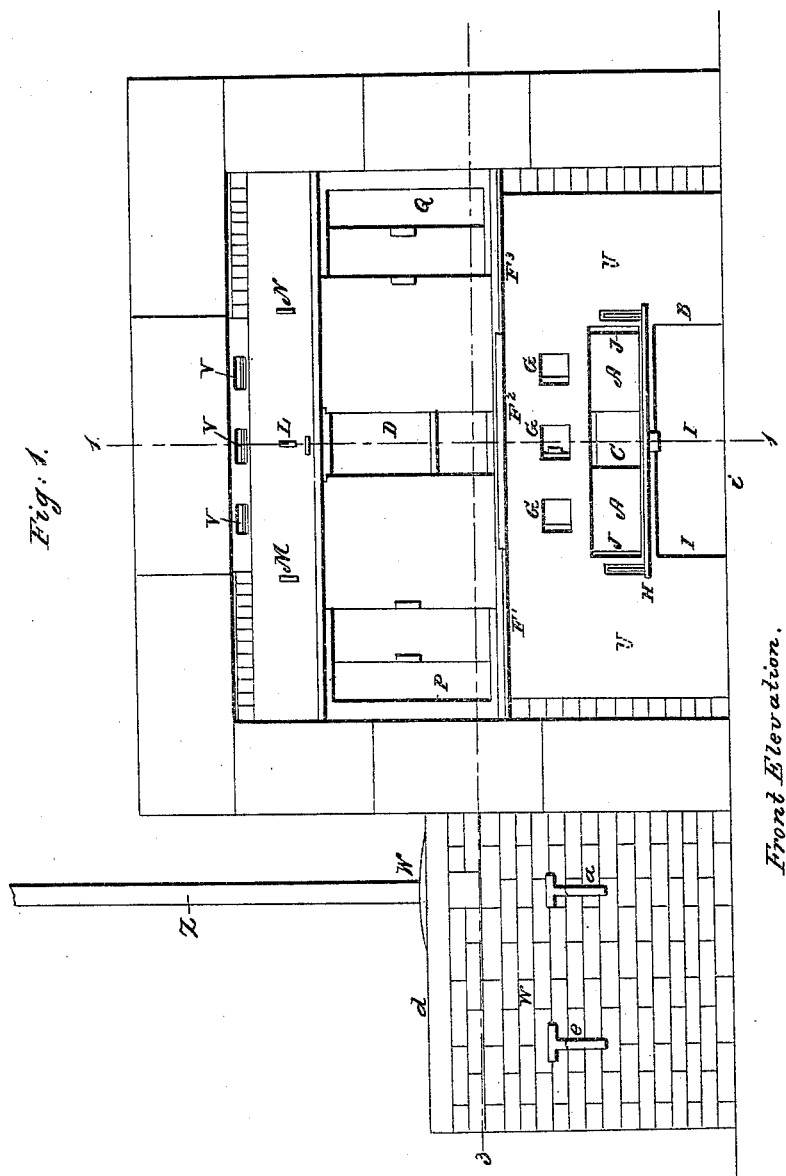


A. SPAULDING.

Cooking Range.

No. 2,354.

Patented Nov. 12, 1841.

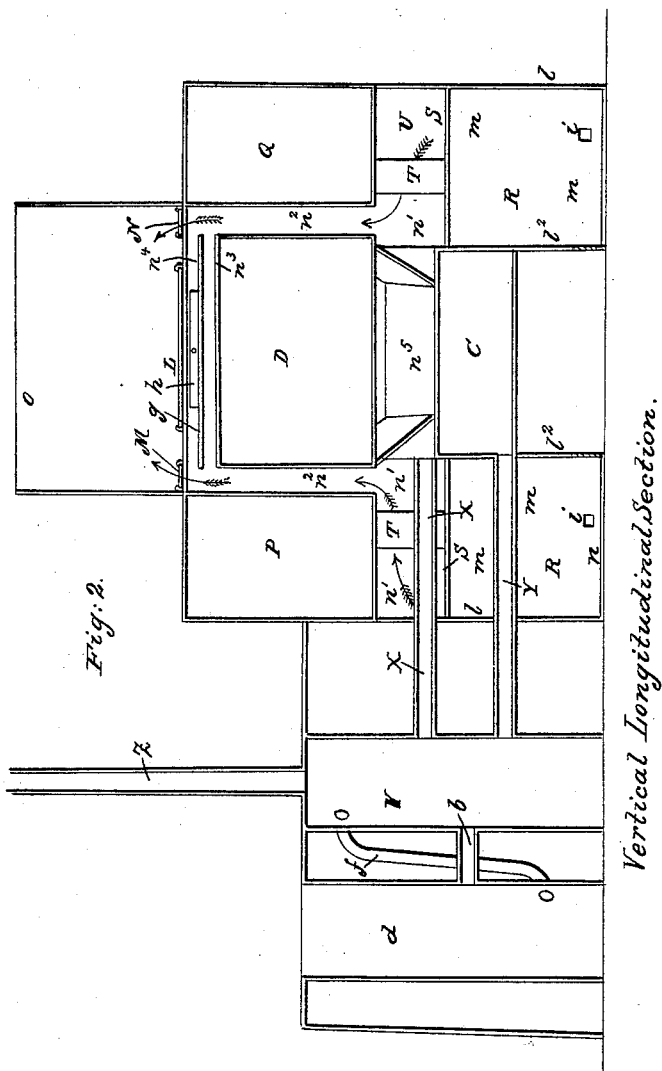


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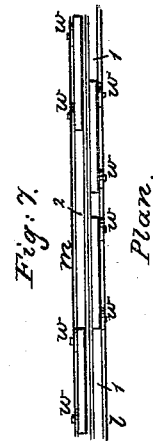
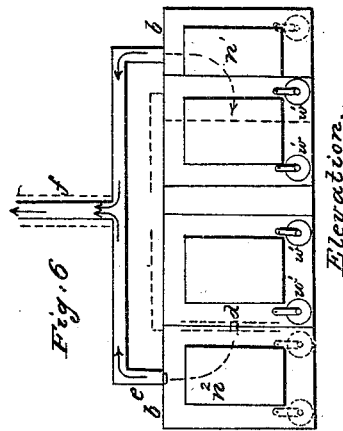
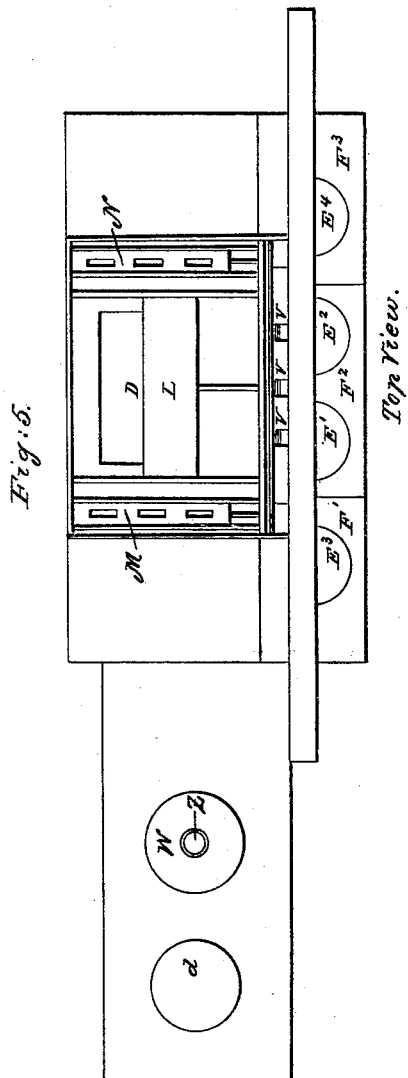
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UNITED STATES PATENT OFFICE.

ABIRAM SPAULDING, OF NEW YORK, N. Y.

CONSTRUCTION OF COOKING-RANGES.

Specification of Letters Patent No. 2,354, dated November 12, 1841.

To all whom it may concern:

Be it known that I, ABIRAM SPAULDING, of the city, county, and State of New York, have invented a new and useful Improvement in the Kitchen-Range for Cooking Food and for Warming Apartments, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

- 10 Figure 1 is a front elevation of the range. Fig. 2 is a vertical longitudinal section of the range on the dotted line 2, 2 of Fig. 3. Fig. 3 is a transverse vertical section of the range on the dotted line 1, 1, of Fig. 1. Fig. 15 4 is a horizontal section of the range on the dotted line 3, 3, of Fig. 1. Fig. 5, is a top view of the ovens, dampers, &c. Fig. 6 is a sectional view showing the hot air tubes. Fig. 7 section showing the wheels and ways. 20 Similar letters refer to corresponding parts.

- This range consists of two cylindrical cast iron furnaces, A, A, having grates in the bottom thereof to hold the coal, placed near 25 the front plate B of the range and raised a few inches from the floor, being placed as far apart as to admit between them the small end of a large irregularly shaped water boiler C and in contact therewith for 30 carrying off the heat from said furnaces and preventing them from burning out rapidly, which heat is imparted to the boiler. The ends and sides of the boiler are vertical. The top is inclined upward from near the 35 front to the rear at an angle of about 13 degrees, over which the smoke passes to the rear of a center oven D, placed over said boiler, said upward inclination of the top of the boiler being for the purpose of forming, with the bottom of the oven, a contracted flue; said inclination also serving to 40 discharge the soot &c.

- The front plate B of the range is vertical—in length equal to the opening of the 45 brick work, in which the range is placed, and in height nearly that of said opening in the brick work, the ends being projected in front of the jambs and extending back into the opening half its depth, having a horizontal top made in three sections F' F² F³ 50 Fig. 5 resting on shoulders on the inner side of the front vertical plate of the range and on a horizontal projection of the brick work behind the furnaces—the center section F² 55 being perforated with boiler holes E' E² one over each furnace. Each of the side sections

being also perforated with a boiler hole E³ E⁴ for a side boiler to be heated by changing the direction of the draft by means of vertical oblique plates *p q*, so as to cause the smoke and heat to circulate around the said 30 boilers. The front plate B is perforated with three small square openings G about on a level with the top of the furnaces through which openings the furnaces are supplied 55 with fuel when the boiler holes are occupied, said feeding openings being opened or closed at pleasure by sliding register plates. The front plate B is also provided with a long rectangular door H which closes, when 70 raised, a similar shaped opening made opposite the furnaces, which door is sustained in a horizontal position by quadrant or other hinges and when in that position it is used to sustain a tin kitchen and spit or other 75 cooking utensil for culinary operations. Under the door in the front plate B is another opening I to admit air to the grates.

An oven D is formed over the boiler C with sliding doors in front having a flue 30 behind and one at each side and one over the top, which flues are closed by horizontal sliding register plates or dampers L M N sliding on the top plate of the upper or horizontal flue—the handles of said dampers 85 projecting through the front plate of the upper part of the range. These flues communicate with a common funnel O formed over the said upper flue over the center oven. The bottom of said oven is raised a few 90 inches above the inclined top of the main boiler C to form a contracted flue *n*⁵ and cause a quick draft. There are two side ovens P, Q, one being formed on either side of the center oven D—the bottom of which 95 side ovens being on a level with the center oven, between which ovens the aforesaid vertical or side flues *n*² pass up and open into the funnel O having sliding dampers M N over the outlet at the funnel. The side 100 ovens are heated by the heat passing along under them through the flues *n*¹ and up the side flues *n*² and by heated air conveyed into them by pipes T from spaces R R formed below the ovens by the front plate 105 B back plates *m* end plates *l* and by the bottom plates *n*—the horizontal plates S being nearly on a level with the top of the furnace, the heated air being conducted into the said side ovens by the vertical pipes T which 110 pass through the horizontal plates S and through the bottom of the side ovens P Q.

The spaces n' between said horizontal plates S and the bottom of the side ovens form in part winding flues n' leading from the furnace in front of the side boilers to the side flues n^2 between the ovens—the other portion of said winding flues n^6 being formed by placing an oblique plate p under the plates $F' F^2$ and upon the plates S S, edge-wise, so as to fill the space between said plates F and S and extending from the inner angle of the side oven to the outer surface of the side boiler and from thence to the pipe T which turns the draft around the side of the boiler next the front plate B and around the pipe T under the side oven P to the side flue n^2 and thence to the funnel O. The arrows in Fig. 4 indicate the direction of the draft when the damper L closes the back flue.

The air in the spaces R is heated by the escape heat from the furnaces A A and boiler C. Over the furnaces and under the chimney breast is arranged an inclined perforated plate V inclining forward and upward over which slides a register, so as to open or close the perforations therein at pleasure. These openings lead into the funnel O. These openings are to admit whatever smoke, steam, or dirt may rise from the front of the range.

By the side of the oven P is placed a vessel W to receive the hot water and steam from the main boiler C with which it has a direct communication by means of two horizontal parallel tubes $x y$ one arranged over the other the lower one y for causing the hot water to rise to the level of the water in the main boiler and circulate, and the upper tube x for admitting the steam to pass from the main boiler into said vessel or receiver. This vessel has also a tube z leading from its head to apartments to be heated and a cock a in front to let off water or steam and a small horizontal tube b passing from its side into the side of a water boiler or cistern d standing parallel with the vessel w open at the upper end and kept nearly filled with water, having a cock e to draw it off when wanted, which water will be kept hot by the waste heat from the main boiler by means of the before described connection of tubes for keeping up the circulation. As the water in the main boiler evaporates it is supplied from the cistern d . A curved tube f extends from the upper end of the steam vessel w to the lower end of the open cistern d to carry off the steam, when all the cocks are closed, to prevent explosion.

The foregoing parts form a complete circulating apparatus and when thus combined with the range enhance its usefulness and value to a high degree. The oven doors slide in grooves formed in the front plates of the same in the usual manner of such doors or with wheels or friction rollers, as will be

hereinafter described. A horizontal plate g is placed in the middle of the upper horizontal flue over the center oven D extending from the back nearly to the front so as to cause the heat and smoke to circulate over the top of the oven from rear to front and return over said plate to the center of the funnel o at which it escapes. In Fig. 3 the arrows indicate the direction of the draft when this flue is open and the two side flues are closed. This horizontal flue is provided with a scraper h of the usual form.

When the air in the chambers R, is to be raised to a higher degree of heat, the openings I J must be closed, except a small space at the bottom, to admit a sufficient quantity of fresh air. When these openings are closed a large chamber is formed around the furnaces, and boiler for containing heated air which may be used for other purposes, besides, that of heating the side ovens. This chamber may be divided by vertical transverse plates C^2 . When this is done, suitable openings should be made in one or more of the enclosing plates to admit fresh air. When the heated air is not wanted in the range for cooking purposes, it may be applied to heat the room in which the range is placed or any room above, which is effected as follows. An opening is made through each end of the middle oven, D, communicating into the two side ovens, by short tubes a through the vertical flues—which openings have sliding registers or dampers, which dampers are opened or shut by opening the sliding doors of the respective ovens; and an opening is also made through the top of each side oven, having dampers, the handles of which project through the front plate. Through these openings, the heated air passes from the middle and side ovens, into sheet iron or other pipes $e e$ fitted to said openings on the top of the side ovens, which pipes, rising to a sufficient height turn at right angles to a horizontal position, and meeting over the center of the middle oven, there connecting with a pipe f leading upward, but inclining forward sufficiently to bring it through the brick work above, where it may either open to the same room, or be continued to any room above. The passage of the heated air thus conveyed, may be accelerated greatly by opening the door at the bottom of the range, and also leaving a little opening, between the sliding door of the middle oven.

Fig. 6 shows the front doors of the ovens; and behind and above, by dotted lines and otherwise a sectional representation of the course of the heated air as it passes from the oven, and the pipes through which it passes above. The dotted lines n'' show the course by which said heated air passes from the end of the middle oven passing by short tubes as already stated through the vertical flues n^2

at the place marked *a*, in the left hand oven, (the other being hid by the sliding door) and thence up through the tops of the side ovens at *b* and the arrows show its course 3 through the pipes *f*.

To avoid the friction of the sliding doors of the oven, I add wheels or friction rollers, *w* as seen in Figs. 6, 7 *w'*. For this purpose I form two parallel grooves, as seen in Fig. 10 7 1—2 one for the two doors of the middle oven and the other for the doors of the side ovens, so that they can pass each other. The flange or ledge *b* which form the front side of the groove for the door of the middle 15 oven, forms also the track or rail on which the wheels of the mid-doors run (on the principle of the rail road) and the back side or inner ledge *m* is also the rail or track for the wheels of the side ovens. The wheels of 20 the middle oven are on the front side of the doors, and those of side ovens on the back or inside, and shown by dotted lines.

What I claim as my invention, and desire to secure by Letters Patent, is—

25 1. Forming flues *n*^o around the side boilers, by the arrangement of the plate *p* in combination with the horizontal flues *n'*, under the side oven and vertical flues *n*² between the center and side ovens, for changing the draft for heating the side boilers 30 and side ovens as described.

2. I also claim the form and arrangement of the main boiler *C*, as described for the purpose herein set forth, that is to say, making it sloping upward on the top, in order 35 to contract the flues *n*³ at the rear of the oven *D*, and thus form a free draft under

the oven, and in making said boiler concave in the two front corners next the furnaces, so as to make the front of a shape corresponding with the figure of the space 40 between the two furnaces in which it is placed with surfaces in contact with the surfaces of the furnaces, for carrying off the heat of the water in the boilers and thus prevent the 45 metal from burning out rapidly.

3. I likewise claim the manner in which I have combined the air chamber, *R* with the side ovens *P*, *Q*, furnaces *E'* *E*² and flue spaces *n'* *n*^o below the ovens and around the 50 side boilers, that is to say, I claim forming a space around the furnaces, communicating with the air chambers *R* *R*, so that when the door *H* is closed, it shall form a portion of said chambers, and combining with the 55 chamber thus arranged, the side ovens arranged above them, and the flues below said ovens by means of the tubes *T* *T*, which conduct the heated air to the said ovens, and by passing up through the flues *M*, allow of 60 the air being further heated by the draft passing through said flues *n*.

4. I also claim the method of uniting the middle and side ovens so as to form a common hot air chamber and heating the apart- 65 ment by the same, by means of the short tubes *a* *a* Fig. 6 in combination with the tubes *b* *b* the same tubes being provided with valves and arranged substantially.

ABIRAM SPAULDING.

Witnesses:

JAMES C. AKINS,
STEPHEN R. FRAZIER.