2 Sheets—Sheet 1.

J. H. KITE.

Ranges.

No. 196,123. **Patented Oct. 16, 1877.**

Fig. 1.

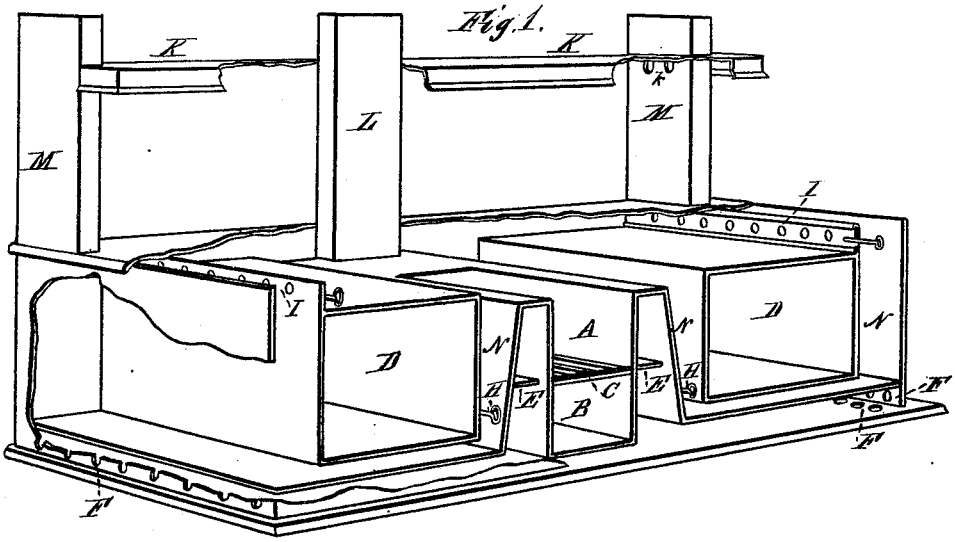


Fig. 2.

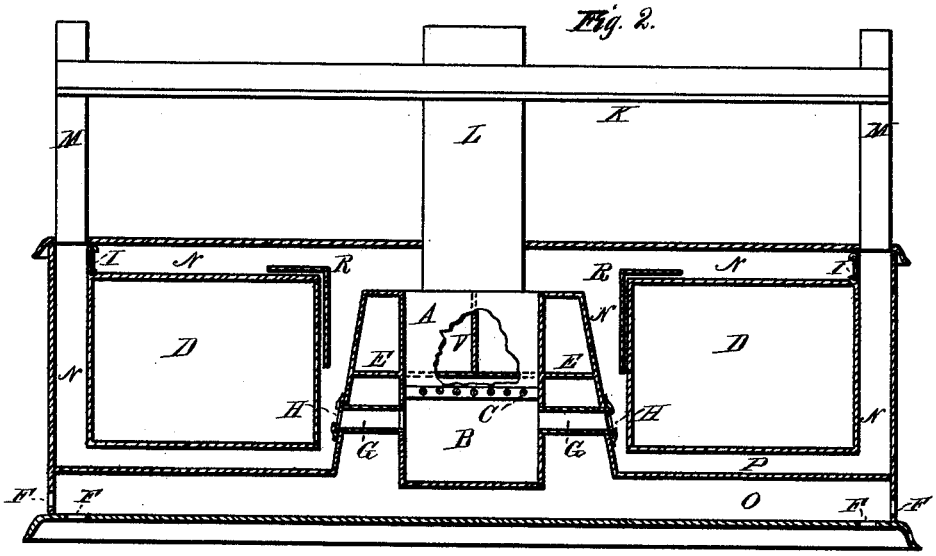
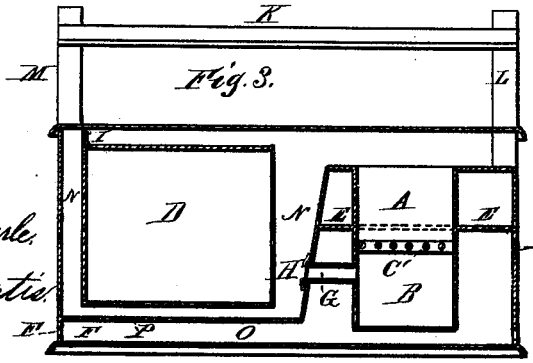


Fig. 3.



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2 Sheets—Sheet 2.

J. H. KITE.

Ranges.

No. 196,123. Patented Oct. 16, 1877.

Fig. 4.

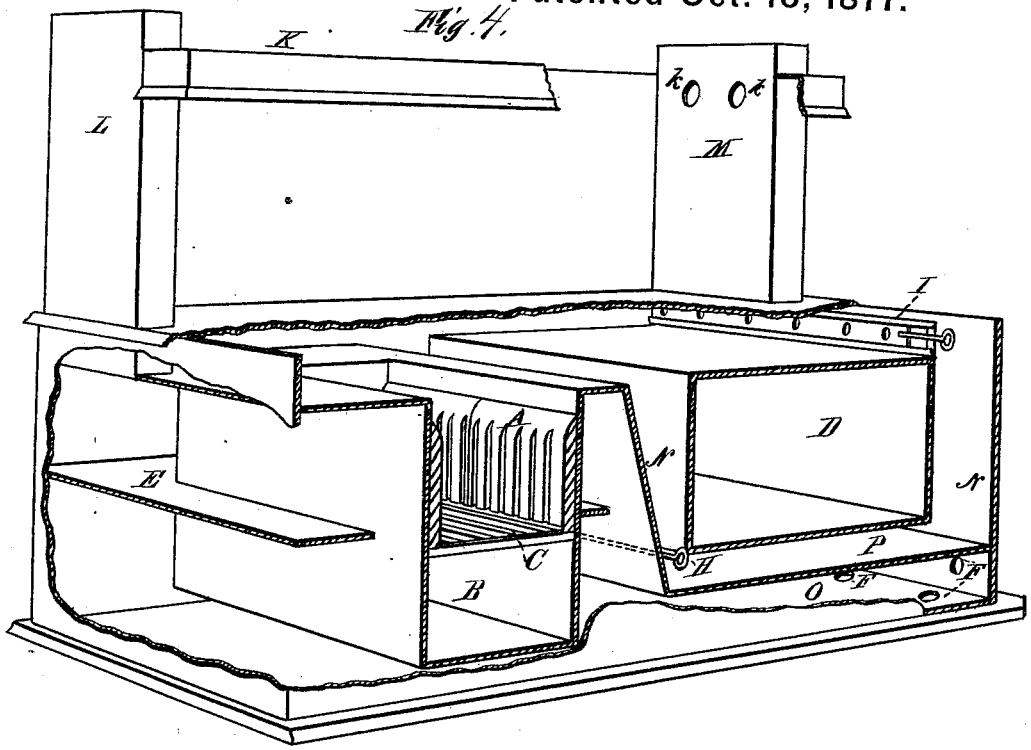
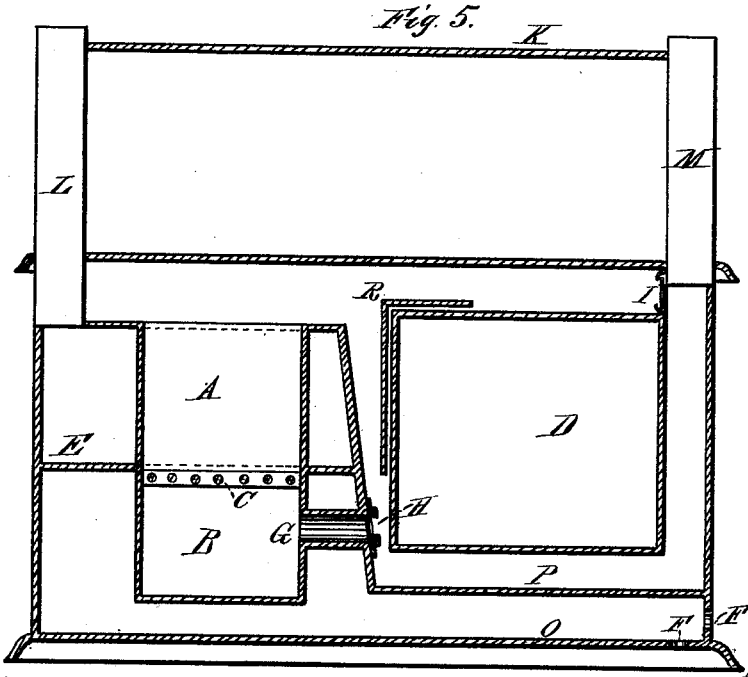


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN H. KITE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN RANGES.

Specification forming part of Letters Patent No. **196,123,** dated October 16, 1877; application filed August 2, 1877.

To all whom it may concern:

Be it known that I, JOHN H. KITE, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Ranges, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a perspective view of a range constructed in accordance with my invention, showing the same as it appears when two ovens are used, the greater part of the top, front, and one end being broken out, the better to illustrate the interior arrangements. Fig. 2 is a sectional view of the range shown in Fig. 1, being taken upon a plane at right angles to the fire-pot, and passing through the dust-passage or opening from the ash-pit to the smoke-flue. Fig. 3 is a similar section of a single-oven range, the oven thereof being located upon the left-hand side of the fire-pot. Fig. 4 is a perspective view of a single right-hand oven-range, and Fig. 5 is a vertical section of the same.

Like letters in all the figures refer to corresponding parts.

My invention has relation to that class of devices known as "low-down-oven" ranges, its object being to simplify and improve the general construction, the better to adapt the range to the purposes of cooking, and of supplying heated air to a room or rooms above.

To accomplish this it (the invention) consists in certain novel assemblages or combinations of parts, as will be hereinafter fully described, and then pointed out in the claims.

Previous to my invention great difficulty has been experienced in producing a range which would operate satisfactorily in supplying heated air to the rooms above without detracting from its quality as a cooker; or if a good cooking contrivance has been produced, then it most usually happens that it is not an efficient heater. These objections I believe to have been successfully overcome by means of the following very simple arrangement:

The fire-pot A extends from the front of the range nearly to the back thereof, leaving sufficient room in the rear for the hot-air flue.

Any suitable fire-brick or other lining may be employed within the fire-pot.

The grate C and ash-pit B are, of course, equally extensive.

The ovens, whether one or two be employed, reach from the front to the rear plates, and are surrounded at top, bottom, and sides by the smoke-flue N.

Upon the upper edge of each oven D is a damper, I, and this is placed upon that edge which is most remote from the fire-pot, thus serving to control the exit of smoke, or to permit the direct or indirect draft, accordingly as it is opened or closed. If it be opened, as when it is desired to kindle the fire, then the smoke and products of combustion pass directly from the fire-pot over the top of the oven, and out at the smoke-flue or uptake M. If it be closed these products will pass down the flue between the oven and fire-pot, under the bottom, and up at the other side of the oven; and by reason of the remote position of damper I from the fire-pot, it will be observed that even when said damper is closed the products of combustion expand into the flue above the oven, and thus it (the oven) is always surrounded, except at its ends, by the heated smoke, &c.

A plate, P, of sheet or cast iron, is located about midway between the bottom of the oven and bottom of the range, and it is extended up in a slightly-inclined position between the oven and fire-pot, to which it is joined by a short or narrow horizontal plate. This plate P extends from front to rear of the range, and serves to separate the air-flue from the smoke-flue.

A flue or chamber surrounds the fire-pot, except as to its top and front end, and in this chamber is a horizontal plate, E, leading out on each side to a point a little removed from the front plate.

Cold air enters at the perforations F F, &c., which may connect with a flue from the exterior of the building or directly with the room in which the range is placed. These inlets or perforations being located at the end most remote from the fire-pot, (in the case of the single-oven range,) the cold air is compelled to pass along beneath the heated plate P, thence up and around the fire-pot, some of it, of course,

taking the most direct route to the hot-air pipe L, and some being compelled to pass around beneath the plate E, and then back again to the top of the hot-air chamber, from whence the pipe L leads.

In the case of the double-oven range, as shown in Fig. 1, the same course is taken by the air to be heated, and the only difference in construction between the two styles, save the duplication of ovens, is the location of air-pipe L in the rear of the fire-pot, and the provision of a vertical division-strip, V, in the air-chamber. This strip extends only from the horizontal plate E up to the mouth of pipe L, and serves to prevent interference of the air-currents from opposite sides or ends of the range.

The perforations F F may be governed by suitable dampers, so that air may be admitted or excluded at pleasure; and the smoke-pipes M M should also be provided with dampers. These latter are not really necessary in the single-oven ranges; but in the double-oven case they will be found convenient in the event that it be desired to heat one oven only. By closing up one of the uptakes the draft is made to envelop the oven upon the opposite side, and the remaining oven is then only partially heated, and may be employed as a warming-closet simply. In case only one oven be employed in the double-oven range the air to be heated should be admitted at the side of that oven.

Instead of cutting off the plate E, as explained, the invention contemplates extending it out to the front plate, and perforating it suitably for the passage of the air, and these perforations may extend from front to rear of the plate, if found desirable.

At G is the dust-opening, which leads from the ash-pit B to the smoke-flue N through the air-flue O. This is controlled by a damper, H, and is opened when raking down the fire or shaking the grate.

K is the canopy usually located over the range, and at *k k* are openings into the smoke-flue, through which the fumes are carried off. These may be covered by a suitable damper, if desirable.

The corners of the ovens are protected by plates R R, extending downwardly upon the sides next to the fire-pots, for the purpose of preventing the too rapid burning out of the oven-plates, which is liable to occur if the fire be too hot.

It is intended to make the several plates of wrought or boiler iron, and to have them as thin as is consistent with the uses which they are intended to fulfill, though some of these plates may be advantageously replaced by cast-iron.

The right and left hand single-oven ranges, as represented, are similar in construction and arrangement, except the mere location of the oven; and any choice between the two will depend upon the convenience with which it may be located in the room.

When constructed and arranged in accordance with the foregoing description, the oven is thoroughly heated by the products passing through the surrounding flues, and the cold air is made to traverse the entire length of the structure, coming in contact at all times with thoroughly-heated plates. If dampers be placed upon the air-inlets, as is contemplated, air may be excluded from the air-heating chambers, and thus the range be employed solely for cooking purposes.

The several dampers are operated in and about the range in manner similar to those employed upon all heating contrivances, and for the purposes of regulating and directing the various currents, as usual.

The whole arrangement is quite simple and cheap, and is found in practice to be thoroughly efficient for the purposes intended.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an air-heating range of the character herein specified, (single or double oven,) a cold-air flue located beneath the sheet-flue under the oven, said air-flue occupying the entire bottom of the range, and adapted to conduct air from a point beneath the sheet-flue at one end of the oven, and most remote from the fire-pot, and thence to a chamber surrounding said fire-pot, from whence the heated air is carried by a suitable flue to a room or rooms above, substantially as shown and described.

2. In an air-heating range, (single or double oven,) the combination of a sheet-flue surrounding the oven, and adapted to conduct the products of combustion across the top, bottom, and sides thereof, an air-heating flue leading from a point beneath the vertical flue at the end of the oven most remote from the fire-pot to a chamber surrounding said fire-pot, and a single plate forming the division between the air and smoke flues, substantially as and for the purposes set forth.

3. The combination of a cold-air flue, O, leading along the entire bottom of the range, and having its inlet at a point most remote from the fire-pot, a hot-air chamber surrounding said fire-pot, and divided into two compartments by means of a plate, E, an air-pipe, L, leading to a room or rooms above, and the sheet-flue, which carries the products of combustion between the air-flue and the oven, for the purposes named.

4. The horizontal dust-flue G, controlled by a damper, H, and leading from the ash-pit B, through the hot-air flue, to the descending smoke-flue located between the oven and said air-flue, as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

JOHN H. KITE.

Witnesses:
E. D. McLOUGHLIN,
CHAS. R. SEARLE.