J. P. HAYES.

Domestic Oven.

No. 13,375. Patented July 31, 1855.

Fig. 1

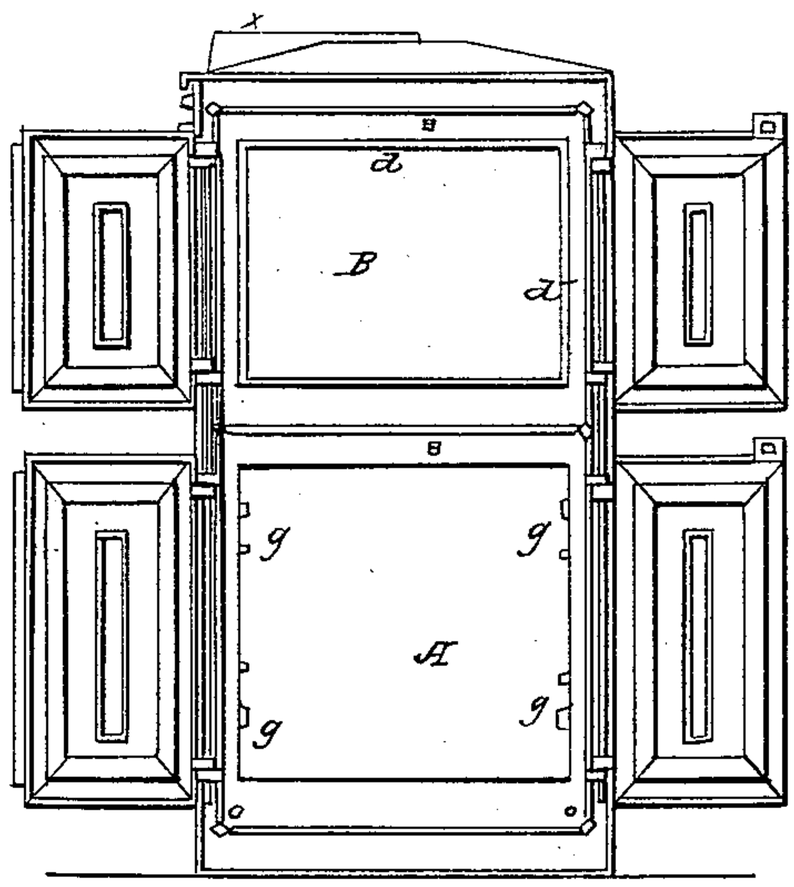


Fig. 2

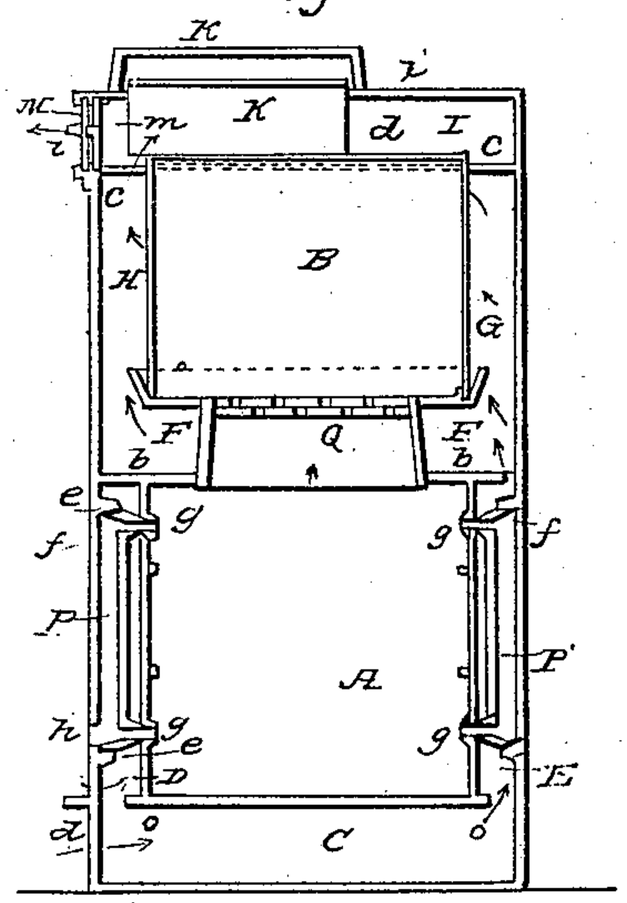


Fig. 3

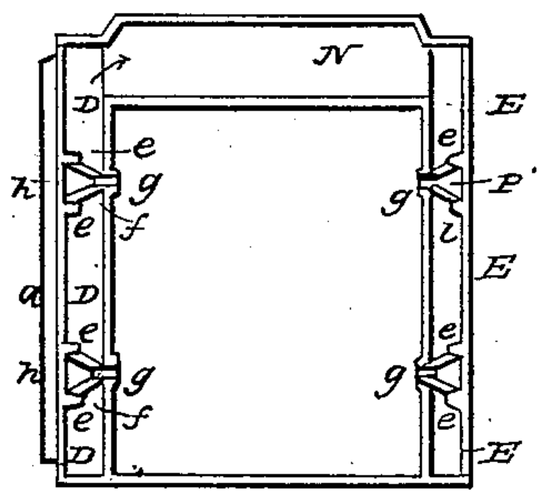


Fig. 4

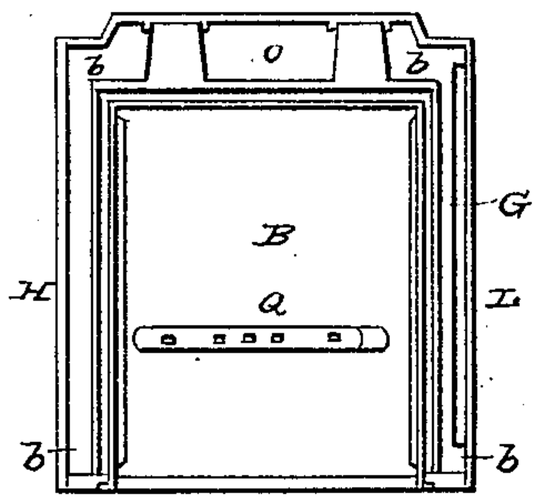
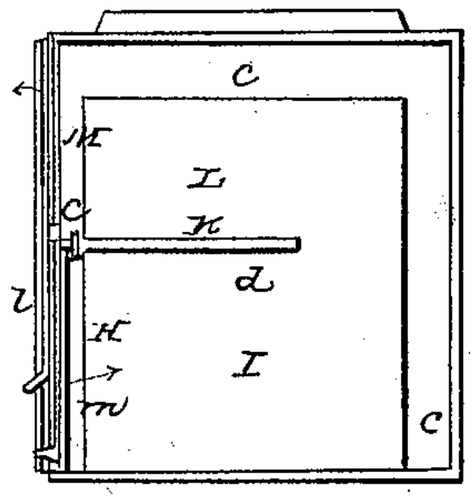


Fig. 5



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JOHN P. HAYES, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN OVENS.

Specification forming part of Letters Patent No. **13,375,** dated July 31, 1855.

To all whom it may concern:

Be it known that I, JOHN P. HAYES, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Elevated Ovens, usually connected with a side range; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a front view of the double oven, the side range and its mode of connection being well known is not shown therein. Fig. 2 is a vertical longitudinal section of the same through the communicating-flue; Fig. 3, a transverse section of the same a short distance above the bottom of the lower oven; Fig. 4, a like section above the bottom of the upper oven, and Fig. 5 a like section above the top plate or lining of the same oven.

Like letters indicate the same parts when on the different figures.

The nature of my invention consists in constructing, arranging, and combining in a peculiar manner certain ventilating and circulating hot-air flues with an oven, so as more perfectly to effect the ventilation and circulation of the hot air therein, and in a peculiar arrangement for adapting the plate which usually produces a returned flue over the top of an oven, so as to be loose or movable up and down, and thus yielding readily, so as to allow a convenient introduction or withdrawal of the movable lining which is now generally used in cast-iron ovens, as affording more convenient access for cleaning the flue-spaces around the same.

Referring to the drawings, A is the lower oven, B the upper one, and C the bottom flue beneath the lower oven. It connects with the fire through an opening at *a* in the usual manner.

D is a dumb-flue on the fire side of the oven. It communicates with the bottom flue C, and, reaching up to the top plate of said oven, passes around the back thereof and opens near the bottom of the oven into the direct flue E. The direct flue E is continued on the opposite side of the oven A, and communicating with the bottom flue C as described, leads to the horizontal flue F, which passes between the said lower oven A and the upper one B, the said side flue E extending also directly upward, as shown at G, to the top flange *c* of the upper oven and around the back of the same, as shown at O, to the space H, so as to form a heating-space around the oven, as shown in the drawings. On the fire side of the upper oven the horizontal flue F, uniting with the spaces around the oven, opens on the said side H into the front half I of the space above the upper oven, which space, being in part divided by a vertical movable plate or partition K, forms both a direct flue I and a returned flue L, the latter of which opens through the side plate at M into the side of the chimney, as shown in the drawings.

P P′ are the circulating and ventilating hot-air flues, constructed and arranged in combination with the cast projections *e e* on the inside of the outside plates, so as to form within the gas-flues D and E vertical hot-air flues communicating at each end with the interior of the oven next the range by means of the tubular projections *f f* on the same, which fit into the holes *g g* in the oven-plates, near the tops and bottoms of the same, so that they may form open flues, communicating with the upper and lower portions of the oven and allowing the circulation of the hot air of the same through them. On the side next the range an opening *h* is made through the plate opposite the lower tubular projection *f* of each of the two flues P, so that fresh air may also pass through the same and the flues P to the interior of the oven, the flues P P′ all being so formed and placed within the flues D and E as to be heated by the hot gases, &c., rising in or passing through the same.

Q is the communicating flue, fitted with a valve and arranged and connected with the top plate of the lower oven and the bottom plate of the upper oven, and passing vertically through the horizontal flue F, so as to afford an adjustable opening between the upper and lower ovens for the purpose of admitting the hot air of the lower oven directly into the upper one when occasion may require it. The loose plate or partition K fits in a slot made through the outside plate *i*, so as to be held in a vertical position and rest with its lower edge upon the top of the movable lining-box *d* of an oven having such movable lining, and be capable of being raised so as to

allow a ready admission or withdrawal of the said lining-box as occasion may require, there being a small projection on the upper edge of the said plate to prevent its dropping out on withdrawing the said lining-box, and the said slot and plate covered by a close-fitting cap *k*, adapted for allowing the free upward movement of the plate without permitting the escape of any of the gas or smoke from the flues, substantially as shown in the drawings. The escape-flue opening at M, besides being made in the side of the oven, as shown in the drawings, is also fitted with a damper-valve *l* for governing the draft, and an adjustable opening *m*, also fitted with a valve, is made, so as to afford convenient access for cleaning out the flues I and L as occasion may require.

The operation of my invention is as follows: The hot products of combustion arising from the range below pass through the opening *a* in the side plate and directly beneath the bottom of the adjoining oven, through the flue C, and also up the dumb-flue D, and around behind the oven through the space N to the flue E, thence upward through the said flue E, the horizontal flue F, and on both sides and behind the upper oven, and thence through the flue I and around behind the partition K, through the returned flue L, and finally through the opening or escape flue in the side plate at M to the chimney, as shown by the arrows, and thus together heat the ovens in a rapid and perfect manner; and during the operation, as described, there is also a continual circulation of the air, as it becomes heated in the oven next the range, going on through the hot-air flues P P, tending to equalizing the same, while fresh hot air is at the same time passing through the openings *h h* of the flues P to the interior of the oven, causing the ventilation required in the same. And when it is required to combine the heat in the lower oven with the heat in the upper one, so as to make a "quick oven" of the upper one, as is often desirable, the valve connected with the short flue Q is opened and the desired increase of heat in the upper oven is immediately effected; and as these ovens are often "built in" while the house is being built, much trouble is avoided by preventing the falling mortar and brick-bats, &c., entering the flues of the oven by constructing and arranging the outlet of the flues so as to open laterally into the chimney, as described and shown in the drawings.

I do not claim arranging or combining two ovens together, the one over the other, nor a movable box fitting within the same and forming the inner lining of an oven, as these have been known and used before. Nor do I claim causing the hot air of one oven to pass into the other, nor the application of a partition-plate, so as to divide the space above the movable lining-box into a direct and returned flues, nor the combination of direct and dumb flues for heating the ovens, nor ventilating and producing a circulation of hot air within an oven irrespective of the peculiar construction, arrangements, or combinations of the several devices, as hereinafter specified and pointed out; but

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

1. The pipes or hot-air flues P P, extending up one or more of the heating-flues of an oven, the same opening into the oven near both the top and bottom of the same so as to form a communication between the upper and lower strata of air in the said oven through the gas flue or flues in which they are located, and the said flues P P, opening also near the bottom of the same to the outside of the said oven for the purpose of admitting fresh air into the said oven, substantially in the manner as described and set forth.

2. Making the partition-plate K so as to move or yield upward, substantially as described and set forth, when the same is used in combination with the movable box or lining *d* of an oven for the purpose of allowing the ready admission or withdrawal of the said movable box as occasion may require.

JOHN P. HAYES.

Witnesses:
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