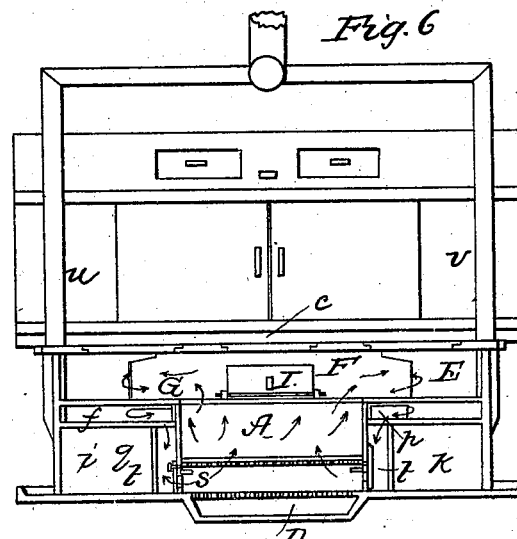
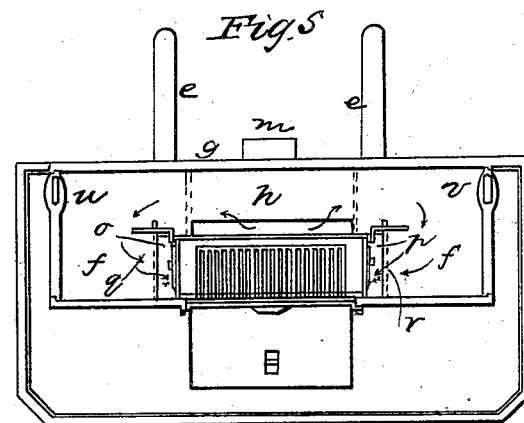
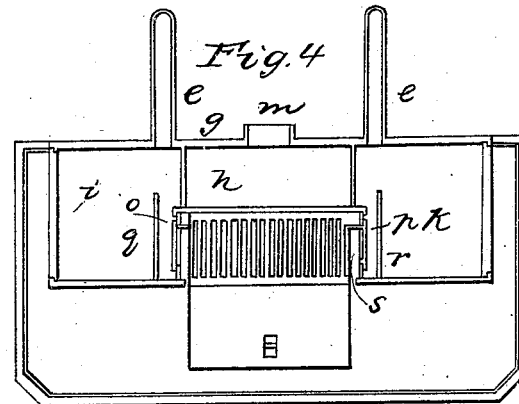
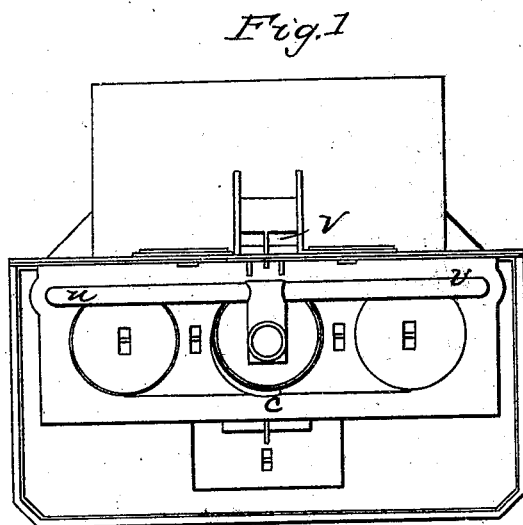
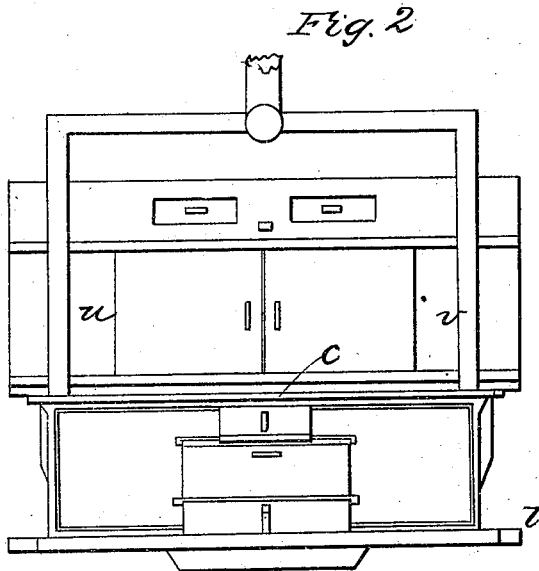


J. P. HAYES.
Cooking Range.

2 Sheets—Sheet 1.

No. 4,720.

Patented Aug. 26, 1846.



J. P. HAYES.
Cooking Range.

No. 4,720.

Patented Aug. 26, 1846.

Fig. 7

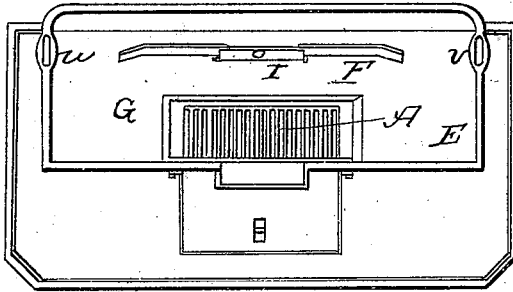


Fig. 8

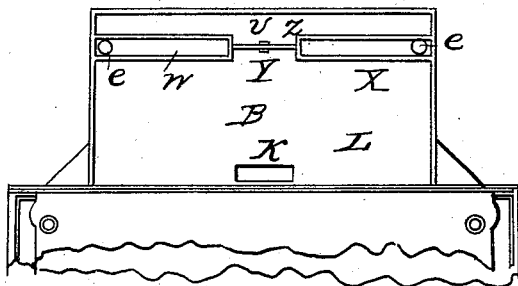


Fig. 9

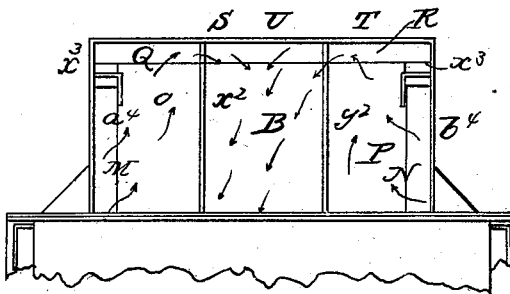


Fig. 10

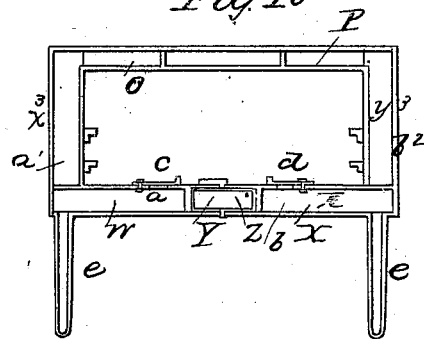
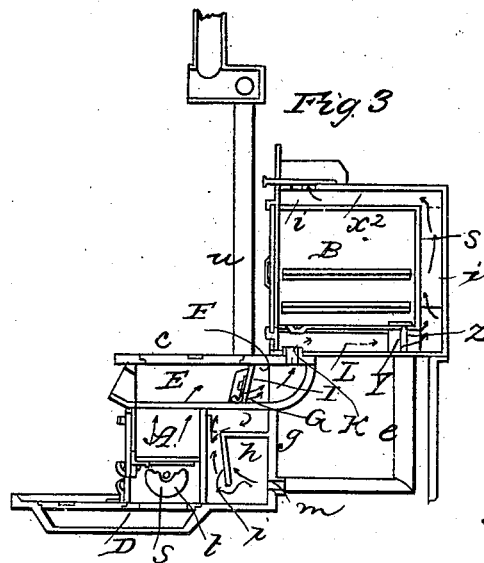


Fig. 3



UNITED STATES PATENT OFFICE.

JOHN P. HAYES, OF BOSTON, MASSACHUSETTS.

COOKING-RANGE.

Specification of Letters Patent No. 4,720, dated August 26, 1846.

To all whom it may concern:

Be it known that I, JOHN P. HAYES, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Cooking-Ranges; and I do hereby declare that the nature of the same and the manner in which it is constructed are fully set forth in the following specification, accompanying drawings, letters, figures, and references thereof.

Of the aforementioned drawings Figure 1 represents a top view of my improved cooking range. Fig. 2 is a front elevation. Fig. 3 is a central vertical and transverse section. Fig. 4 is a horizontal section taken through the center of the cold air induction pipe at the back of the range. Fig. 5 is a horizontal section taken between the horizontal partition which is situated directly over the cold air induction pipe, and the horizontal plate immediately over said partition. Fig. 6 is a vertical and longitudinal section taken through the center of the fire place. Fig. 7 is a horizontal section taken midway between the plate on which the boilers rest, and the plate immediately below it. Fig. 8 is a horizontal section taken between the bottom plate of the oven and the horizontal casing beneath. Fig. 9 is a horizontal section taken between the top plate of the oven, and the horizontal plate or casing over it. Fig. 10 is a vertical and longitudinal section of the back part of the oven, taken so as to pass through the boxes or ducts for the admission of hot air into the oven.

In such of the aforesaid figures as the same are seen, A denotes the fire place or chamber for the combustion of the coal and B is the oven.

C is the top plate upon which the boiling vessels are arranged and supported.

D is the ash box.

The chamber of combustion opens directly into a long flue space or chamber E situated over it and between it and the plate C. At the rear part of the chamber E is a long vertical or inclined partition F which extends between the top plate C and the plate G directly below it, and also between the back part of the fire place and the rear side of the chamber E as seen in the drawings. There is a passage made through the center of the partition F which has a flue valve I applied to it for the purpose of closing it when necessary. The partition

is not so long as the chamber E but terminates at some distance from each end of it as seen in the drawings. The object of the said partition is to enable a person to direct the smoke and heat which escape from the fire place under all the boiling vessels the same being effected by closing the flue valve I. The smoke then courses around the ends of the partition and after passing in rear of it, escapes through the opening K (Figs. 3, and 8,) into a flue space L extending along underneath the oven B.

Flues M, N (Fig. 9 formed by vertical plates x^3 , y^3 , a^4 , b^4) extend from the flue space L (Figs. 3, and 8,) upward and along the ends of the oven, and terminate and open respectively in flue spaces O, P, made (by vertical partitions x^2 , y^2) over portions of its top as seen in Fig. 9. From and opening out of the said spaces O, P other vertical flues Q, R extend downward in rear of and against the back of the oven and open through the lower parts of vertical partitions S, T, into a central vertical flue U situated between the flues Q, R and passing upward in contact with the back part of the oven and over the central part of its top, or between the flues O, P, as seen in Figs. 3, and 9 of the drawings. A passage V (Fig. 3) leads out of the front part of the top of the smoke space U, and into the chimney flue, by which the smoke is discharged into the atmosphere. From the above it will be seen that the smoke after having entered the space L, extending entirely beneath the oven, passes into and up the flues M, N, thence into the flues O, P, thence downward through the flues Q, R, thence into the central flue U, thence upward and over the oven and finally escapes through the opening V (the whole being denoted by the red arrows in Figs. 3 and 9) in its passage imparting heat to the bottom, ends, top and rear side of the oven.

At the rear part of the smoke space beneath the oven, two small chambers or pipes W, X, are placed, and at a short distance apart from each other, so as to create a passage Y, between their adjacent ends, for the smoke to pass from the space beneath the oven into the vertical part of the central flue U, whenever it may be desirable to cause it to take such a direction, instead of going around the ends of the oven. A small damper Z is properly fitted in the

passage Y, so as to close it when necessary. Each of the chambers W, X, communicates with the interior of the oven by an opening *a* or *b* leading into it, each of the said passages having a closing valve *c*, or *d*, applied to it.

Each of the small chambers W, X, has a pipe *e* (see Figs. 3, 4, 5, and 8) extending from it and inserted in the vertical back plate *g*, and so as to open a communication (see Figs. 3, 4, 10) between the chambers W, X, and chambers *i*, *k*, situated on each side of the fire place, as seen in the drawings. Below the plate G, is another plate *f*, which is arranged parallel to it, and at a distance from it, as seen in the drawing. The said plate constitutes the top of the chambers *i*, *k*, as well as that of another chamber *h*, arranged in rear of the grate, and against the plate *g*.

The front plate *i'*, of the chamber *h*, is placed at a short distance from the back plate of the fireplace and extends nearly, but not quite down to the lower plate *l* of the stove. An opening *m*, (see Figs. 3, 4) is made through the back plate *g* into the chamber *h*, the said opening being for the admission of cold air into the chamber *h*. The said air after passing into the chamber *h*, impinges against the plate *i'*, thence passes downward underneath it, and upward between it and the back of the fire place, and thence enters the chambers or space between the plates G, and *f*, as denoted by the blue arrows in the drawings. Thence it is made to pass downward through passages *o*, *p*, and between vertical partitions *q*, *r*, (which extend down from the plate *f* to the bottom plate of the stove, and parallel to the end plates of the fire place), and the ends of the fire place and to pass through passages *s*, (formed through the respective ends of the ash pit), and thence into the ash pit, and from thence upward and through the fire, or chamber of combustion. Each of the passages *s*, has a small valve or door *t*, properly applied to it, for the purpose of closing it when required. As the cold air courses through the above described chambers, around the fire place, it becomes warmed or heated by contact with the fire place, and plates composing the boundaries of the chambers, and in such a heated state, it, by opening the doors *t* and closing up the front of the ash pit, may be caused to circulate a rush through the fire. When so applied to the fire, it affects a great economy of fuel or combustion.

When the doors *t*, *t*, are closed, the warm

air will pass from the chambers around the fire place, and into and through the pipes *e*, *e*, and boxes or chambers W, X. From thence, by opening the valves or registers *c*, *d*, it may be caused to pass into the oven. The introduction of hot air into the oven, to assist in the operations of baking therein, constitutes a very important feature of my invention. By means of the employment of fresh air heated and kept circulating in the oven, and still further heated by the smoke which passes around the exterior of the oven, I am enabled to bake to a much better advantage than in an oven wherein the air is confined in the ordinary manner.

The operation of baking meats or other articles in my improved range, renders them much more palatable than when cooked in the confined air of a close oven, as is the general custom.

Instead of employing the heated air to aid in facilitating combustion of the fuel, or baking in the oven, it may be taken from the chambers *i*, *k*, through pipes *u*, *v*, (made in any proper manner to lead therefrom), and by them conveyed into any apartment it may be desirable to warm.

I claim—

The peculiar arrangement or combination of smoke passages for heating the oven—that is to say I claim the combination of the flue space L, extending entirely underneath the bottom plate of the oven and made to receive its smoke through an opening K—flues M, N, extending in contact with the ends of the oven, and leading out of the space L—top flues O, P, communicating with the flues M, N and made to pass in contact with portions of the top plate of the oven—descending flues Q, R, made to receive smoke from the flues O, P, and to pass in contact with portions of the back plate of the oven, and an ascending discharging flue V, made to receive smoke from the flues Q, R, and to extend between them and the flues O, P, or against a portion of the back and top plates of the oven; the whole being arranged and operating in connection with the fire place and other parts as above specified.

In testimony that the foregoing is a true description of my said invention and improvements, I have hereto set my signature, this eleventh day of March in the year eighteen hundred and forty-six.

JOHN P. HAYES.

Witnesses:

R. H. EDDY,
S. W. WALDRON, Jr.