2 Sheets—Sheet 1.

# P. W. MACKENZIE.

## Cooking and Heating Range.

No. 45,418. Patented Dec. 13, 1864.

Fig. 1.

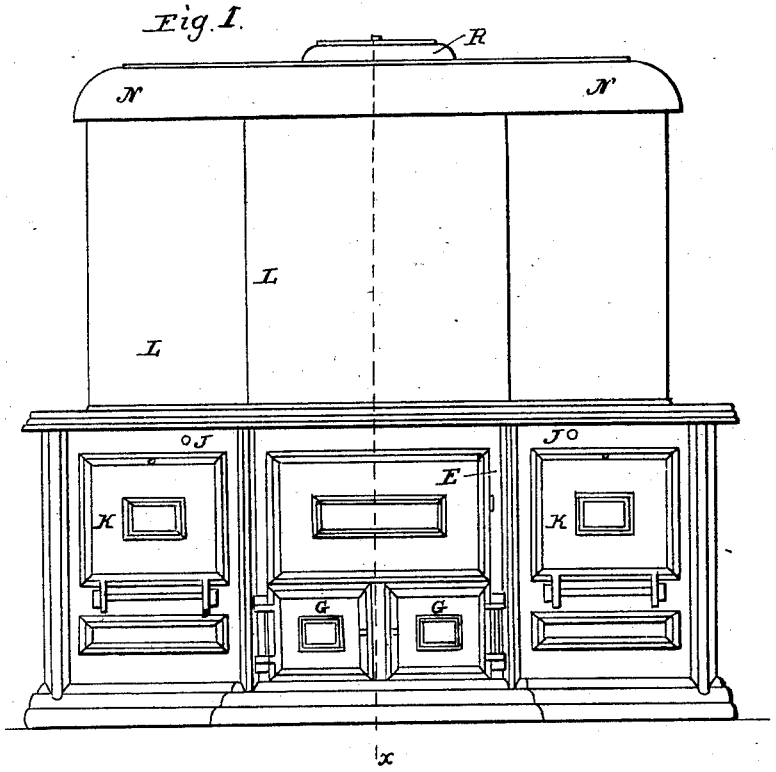
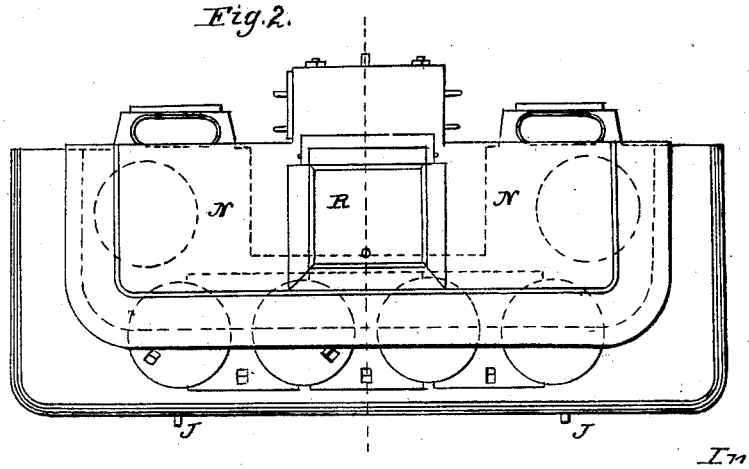



Fig. 2.




Witnesses:
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James T. Graham.

Inventor:
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By Thos. P. Howe
Atty

2 Sheets—Sheet 2.

# P. W. MACKENZIE

## Cooking and Heating Range.

No. 45,418. Patented Dec. 13, 1864.

Fig. 3.

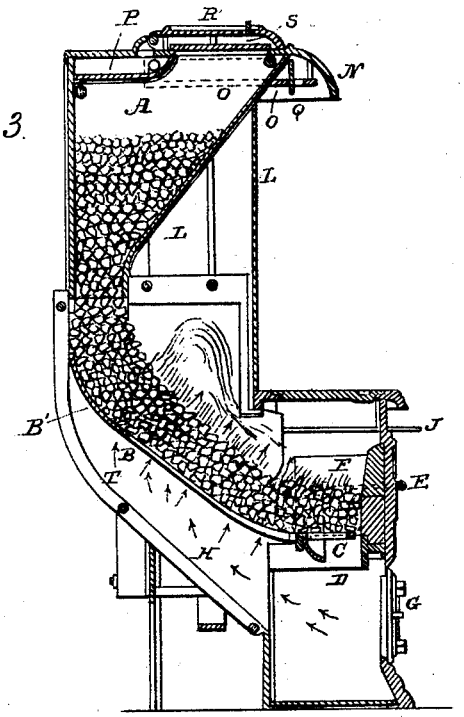
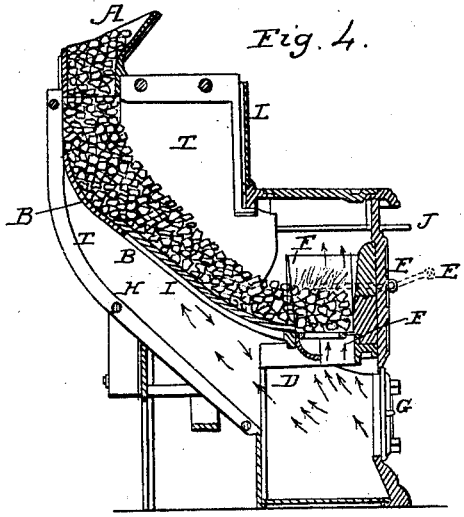



Fig. 4.




Witnesses:
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Inventor:
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By Stetson & Sons
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# UNITED STATES PATENT OFFICE.

PHILIP W. MACKENZIE, OF JERSEY CITY, NEW JERSEY.

## IMPROVED RANGE FOR COOKING AND HEATING.

Specification forming part of Letters Patent No. **45,418**, dated December 13, 1864.

*To all whom it may concern:*

Be it known that I, PHILIP W. MACKENZIE, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain Improvements in Cooking and Heating Ranges, of which the following is a specification.

My invention relates to the construction and arrangement in a cooking and heating range of a reservoir and grates, to enable the range to be used for heating purposes and to secure a constant supply of fuel to the fire; to the construction of the fire-pot; to the construction of a neutralizing-cover; to prevent the escape of gas from and the ingress of air into the reservoir, and to the construction of a bonnet for receiving and conducting away the steam and odors which are developed during the operation of cooking.

In the drawings, Figure 1 is a front view of range. Fig. 2 is a top view of the same. Fig. 3 is a vertical cross-section through the line *x x*, showing the grates and fire as arranged for winter use. Fig. 4 is the same view showing the grates and fire as arranged for summer use.

A is the coal-reservoir, which is hopper-shaped, narrowing as it descends to about the breadth of the required thickness of the bed of coal on the grates. This reservoir may be filled with coal, and need not again be opened nor the coal replenished until all or nearly all of the amount put in is consumed. The coal, descending by its own gravity, feeds the fire at right angles with the line of combustion, thus never deadening the fire, but always supplying the place of the consumed coal with fresh, and carrying the cinders, slate, and incombustible ingredients forward to be removed without disturbing the fire, as hereinafter described.

B B′ is the large grate, which is slightly curved, and extends from the back part of the fire-chamber, immediately beneath the reservoir, to the shield of the shield or dumping-grate C, being inclined at an angle of about forty degrees. The back part of the grate should be made solid to about the point where a vertical line from forward part of the discharging-orifice of the reservoir A would strike the grate; or the said grate may be made in two pieces, the part B′ being solid and the part B being an ordinary grate.

C is the shield or dumping-grate, which is made with a shield on its back or rear edge, said shield being in the form of a section of a hollow cylinder, having for its axis the imaginary line which passes through the pivoting-points of the said grate. When the grate C is in a horizontal position, said shield extends below the grates into the ash or draft chamber D; but when the grate is dumped for the discharge of cinders, slate, &c., the shield rises with the rise of the rear edge of the grate and prevents the forward movement of the coal until the grate is returned to its normal position, when the coal at once moves forward and takes the place of the cinders, slate, &c., which have been discharged, and the action of the fire is not at all disturbed.

E is a handle connected with an arm, F, which arm is attached to the end of the grate at one of its pivoting-points, by means of which said handle E the grate is dumped when desired.

D is the ash-chamber, access to which for the removal of ashes, cinders, &c., is obtained by the doors G, through which said ash-chamber and through the chamber H the air passes, to support the combustion of the coal. Through or beneath said doors apertures may be made, provided with slide-dampers for regulating the draft of the fire. The arrows show the line of combustion or the direction of the air when passing into and through the fire.

I is an apron designed to be placed over the grate B in summer to restrict the fire to the front part of the range. The yellow lines in Fig. 3 show the extent of the fire in winter, when the draft passes through both grates and the range is used as a heater, and in Fig. 4 its extent in summer, when the grate B is covered by the apron I and the heating arrangement is not required.

J J are dampers.

K K are doors opening into the ovens, about the construction of which there is nothing new.

T is the fire-pot, which is cast-iron, with projecting flanges, so as to present a large radiating-surface both above and below the grate, and enables the range to be most successfully used for heating purposes when the draft is allowed to pass through both grates.

L is a sheet-iron screen inclosing the fireplace and cutting off all communication be-

tween the kitchen and the hot air used for heating purposes, the supply of cold air for that purpose being obtained through an opening in the hearth.

N is the offense-bonnet, which covers the reservoir A and extends over the cooking-surface. Said bonnet is formed of two plates. The upper plate, marked N, is made with its front and end edges depressed or curved, as represented in the drawings. The other plate, marked O, is made with an opening around its front and sides, and also with flanges on its rear edge, to tightly close the back part of the chamber between the said plates N and O. The plate O is of such size at to be hung by means of rods and nuts, or in any other suitable way, beneath the plate N, within the depressed edges of said plate, so as to leave an opening all around between the two plates; or the two plates may be made so that there may be an opening between them only in front. In the upper and back part of the reservoir is constructed a shallow chamber, P, from which a flue leads to the main flue or chimney, and into which said chamber the chamber between the plates N and O of the bonnet leads.

Q is the handle of the damper, by which the opening between the bonnet-chamber and the chamber P is opened and closed when desired.

R is the neutralizing-cover, which is formed of two plates. The lower plate, marked S, covers the entire opening through the plate N into the reservoir A, and is hung from the upper plate, marked R, by rods and nuts, or otherwise, so as to leave a chamber between the two plates, and an open space leading into said chamber all around the edges of the plate S. The upper plate, R, is made with depressed or curved edges on the front and ends, and with a projection on the rear edge by which it may be hinged to a projection made on the bonnet-plate N, so as to form a close joint when said cover is shut down. Beneath the projecting hinge there is an opening into the chamber P, and thence into the chimney. This cover is designed to perform a double office—first, to prevent the escape of the coal-gas from the reservoir A into the room, for if any gas should find its way between the plate N and the plate O it immediately rises into the chamber between the plates S and R, passes through the opening into the chamber P, and thence into the chimney; and, second, to prevent the passage of air from the room into the reservoir for if any air should find its way between the depressed edges of the plate R and the plate N it immediately rises into the chamber between the said plates R and S, passes into the chamber P, and thence into the chimney, thus effectually guarding against any escape of gas into the room, and any passage of air into the reservoir to support or encourage combustion therein, and hence I call this cover a "neutralizing-cover."

The object of the offense-bonnet is to receive and conduct away any offensive or unpleasant steam, odor, or gas which may be produced during the operation of cooking. Said gases, being received within the depressed edges of the plate N, pass through the opening into the chamber between the plates N and O, thence into the chamber P, and thence into the chimney.

By these combinations and arrangements I am able to furnish a range which, in addition to doing the cooking for the family, prevents any gases from the coal or any odors from the cooking from being diffused through the house, and effectually guards against any liability of combustion taking place within the reservoir, and at the same time, with the same range and the same fire, I furnish a heater equal or superior to a first-class furnace for warming the whole or any part of the house.

I claim—

1. The combination, in a cooking or heating range, of the reservoir A, with the inclined grate B B′, substantially as and to the effect set forth.

2. The combination of the shield or dumping-grate C with the grate B, substantially as and for the purpose set forth.

3. The combination of the apron or plate I with the inclined grate B, for increasing or diminishing the size of the fire, substantially as described.

4. The combination, with the inclined grate B B′ and cooking and heating range, of the fire-pot T, constructed as described, whereby the heat is radiated from all parts of said pot, both above and below the plane of the grate, substantially as described.

5. The offense-bonnet N, constructed substantially as described, and for the purpose set forth.

6. The neutralizing-cover, in combination with the reservoir A, substantially as and for the purpose set forth.

P. W. MACKENZIE.

Witnesses:
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JAMES T. GRAHAM.