(No Model.) 5 Sheets—Sheet 1.

# L. W. TURNER & G. J. CAPEWELL.

## STOVE.

No. 306,878. Patented Oct. 21, 1884.

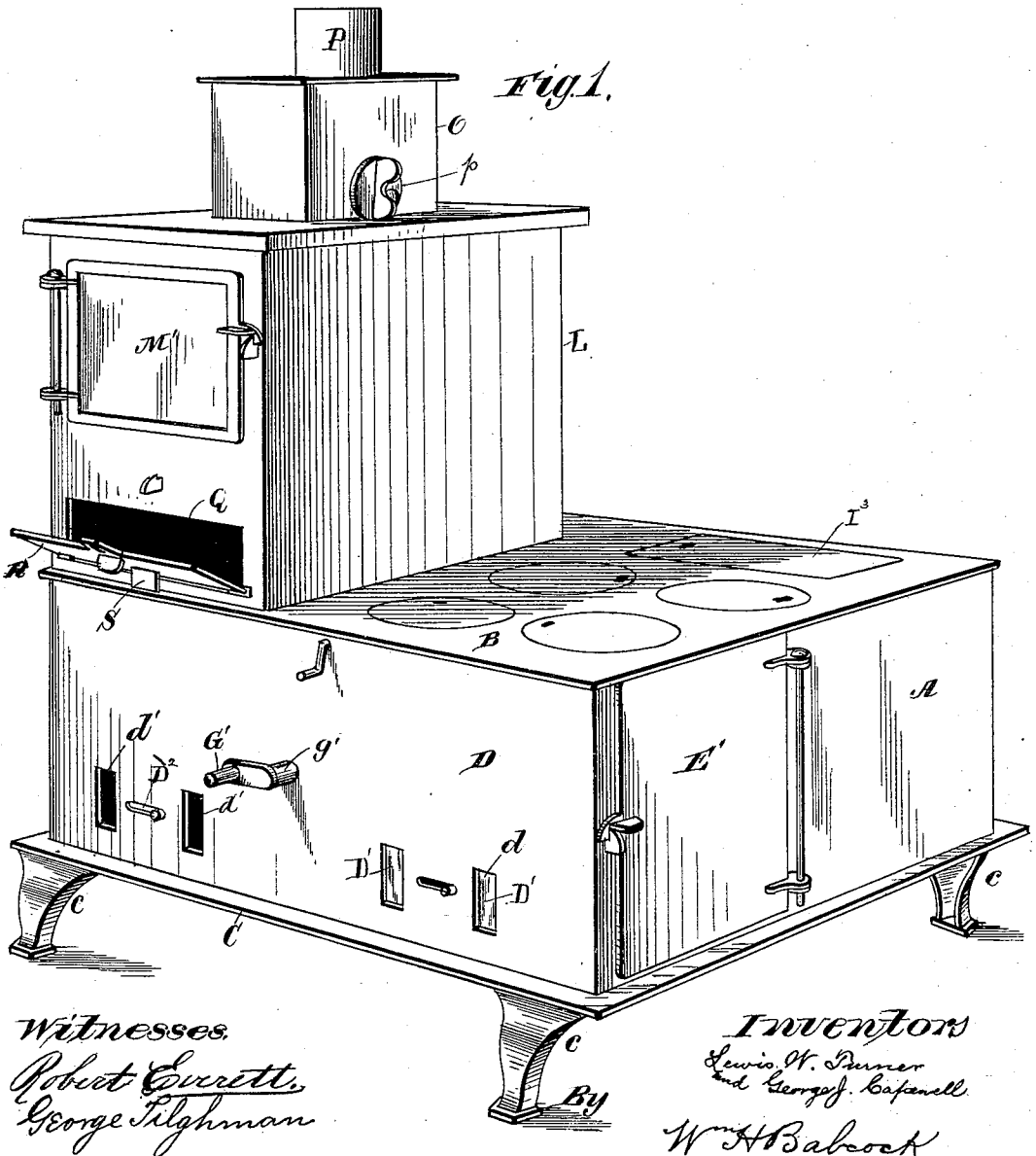



Fig. 1.

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George Tilghman

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## STOVE.

No. 306,878. Patented Oct. 21, 1884.

Fig. 2.

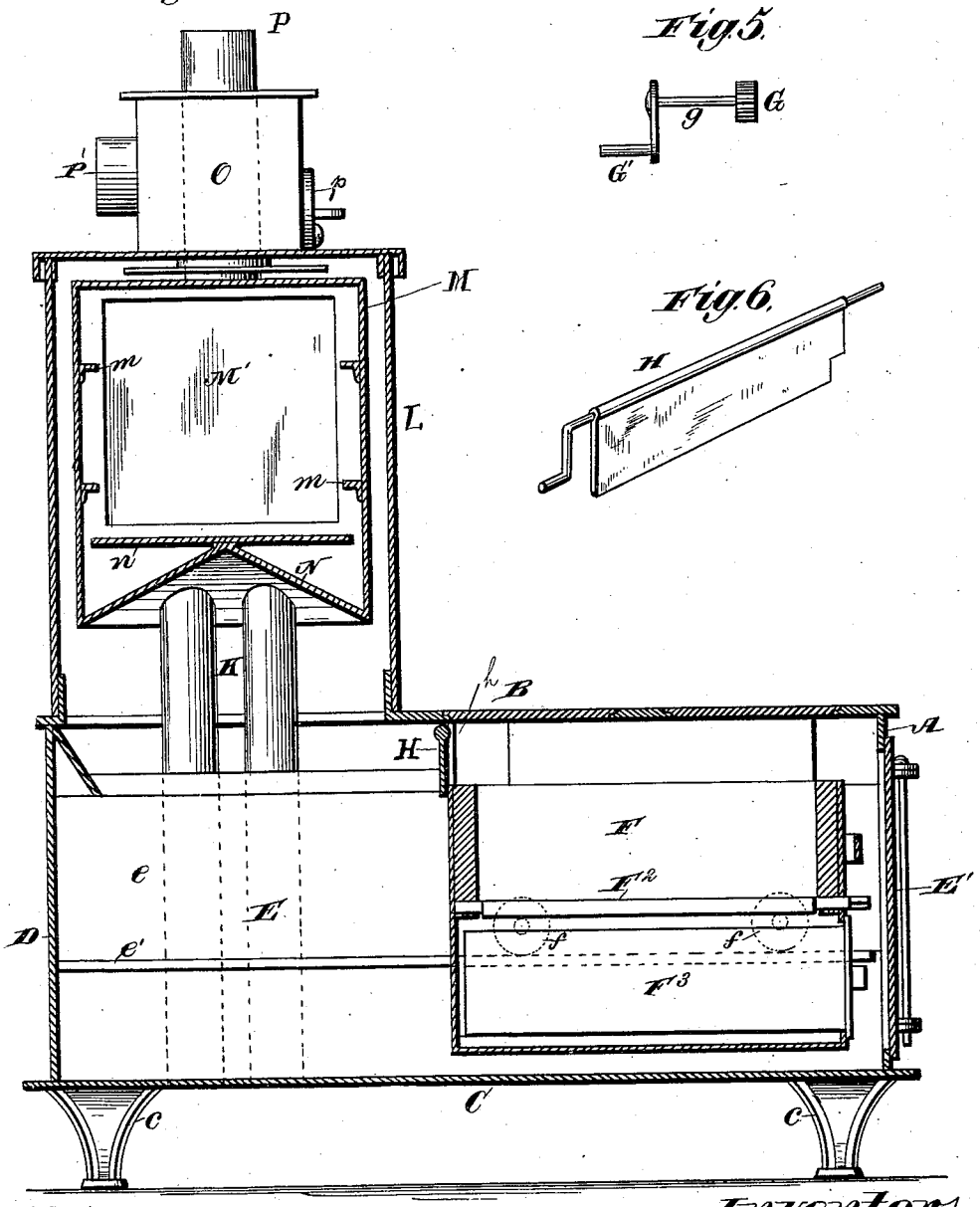



Fig. 5.




Fig. 6.




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## STOVE.

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Fig. 4.

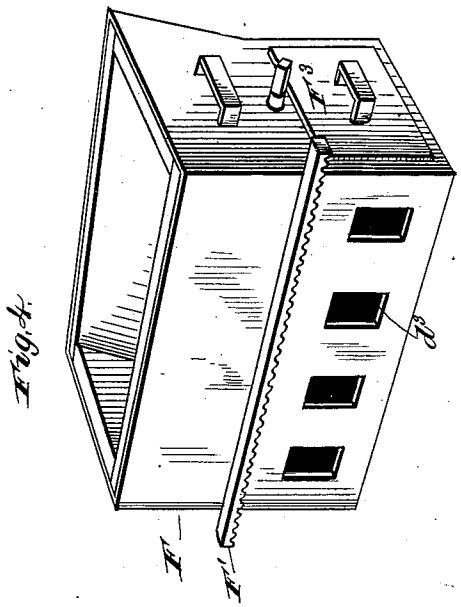



Fig. 3.

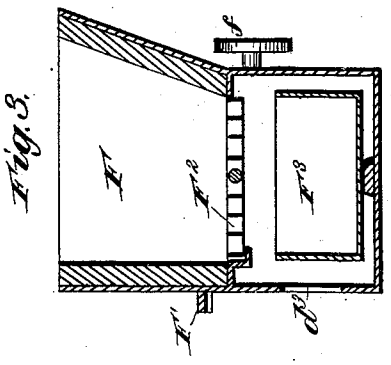
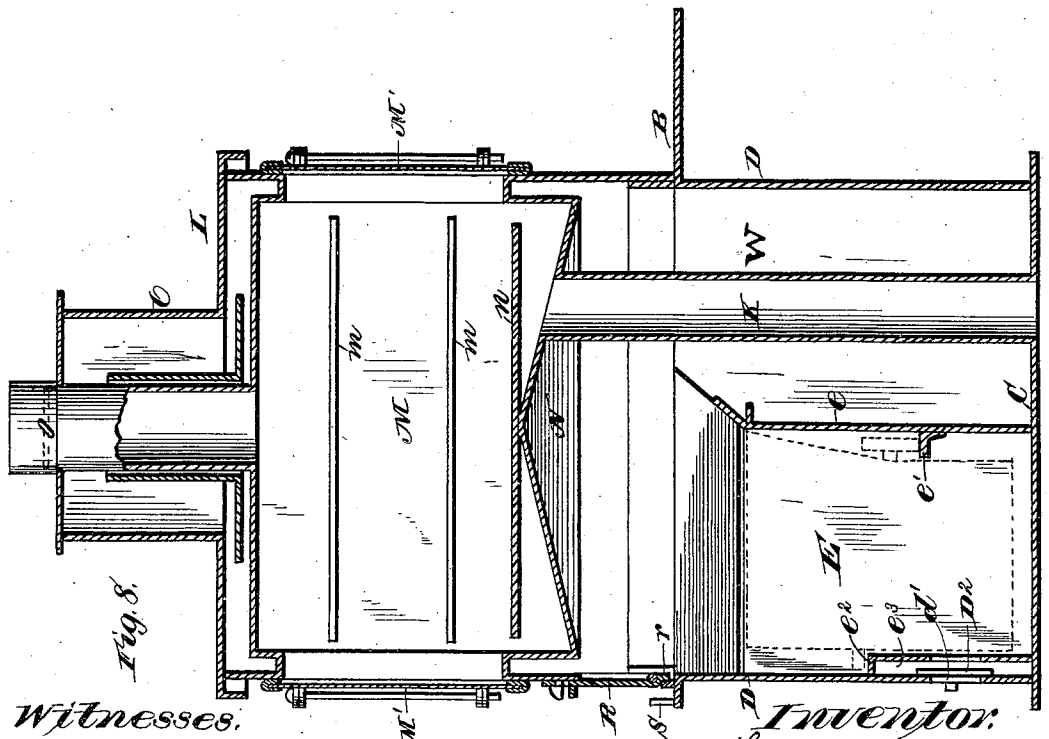



Fig. 5.




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## STOVE.

No. 306,878. Patented Oct. 21, 1884.

Fig. 7.

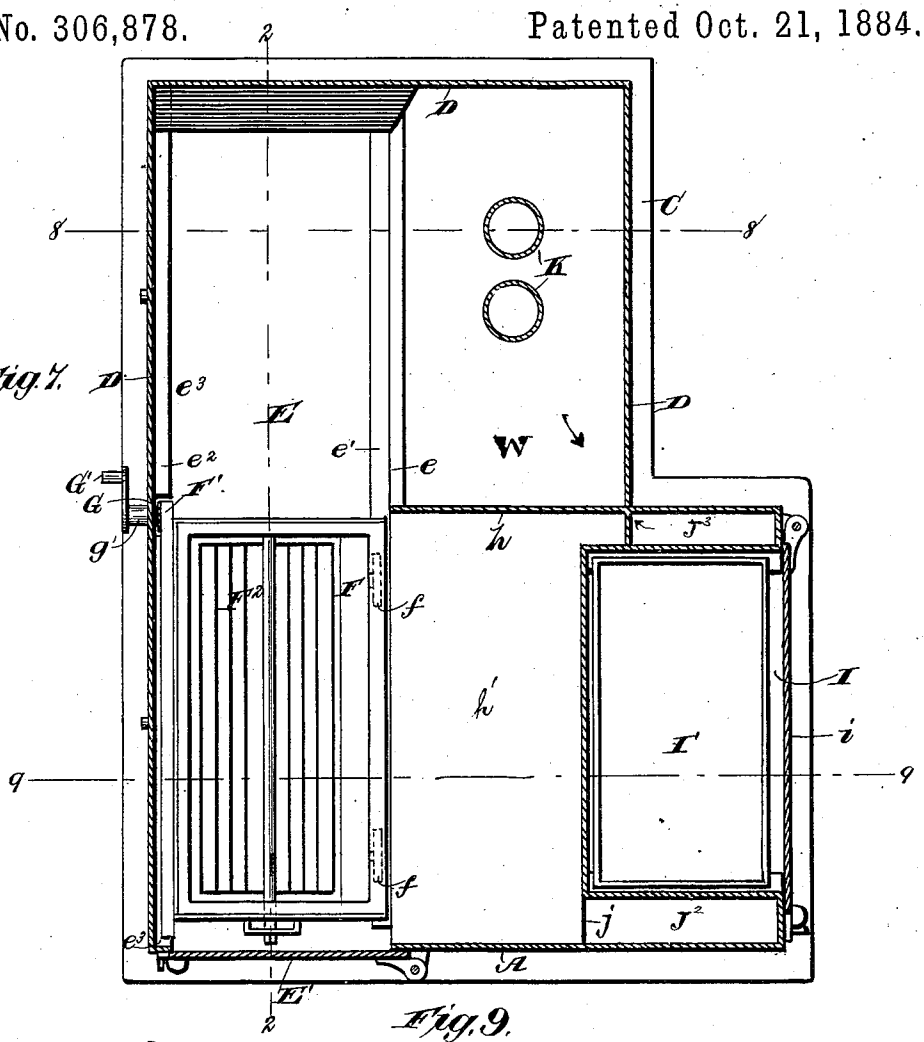
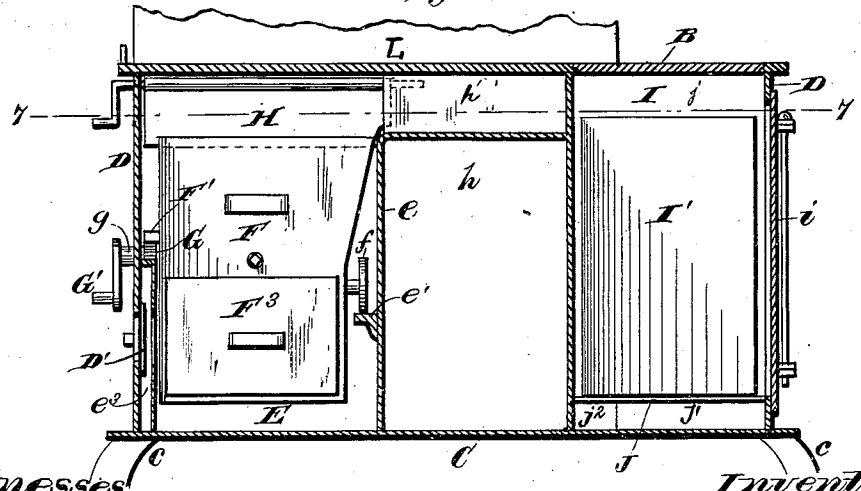



Fig. 9.




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# L. W. TURNER & G. J. CAPEWELL.

## STOVE.

No. 306,878. Patented Oct. 21, 1884.

Fig. 10.

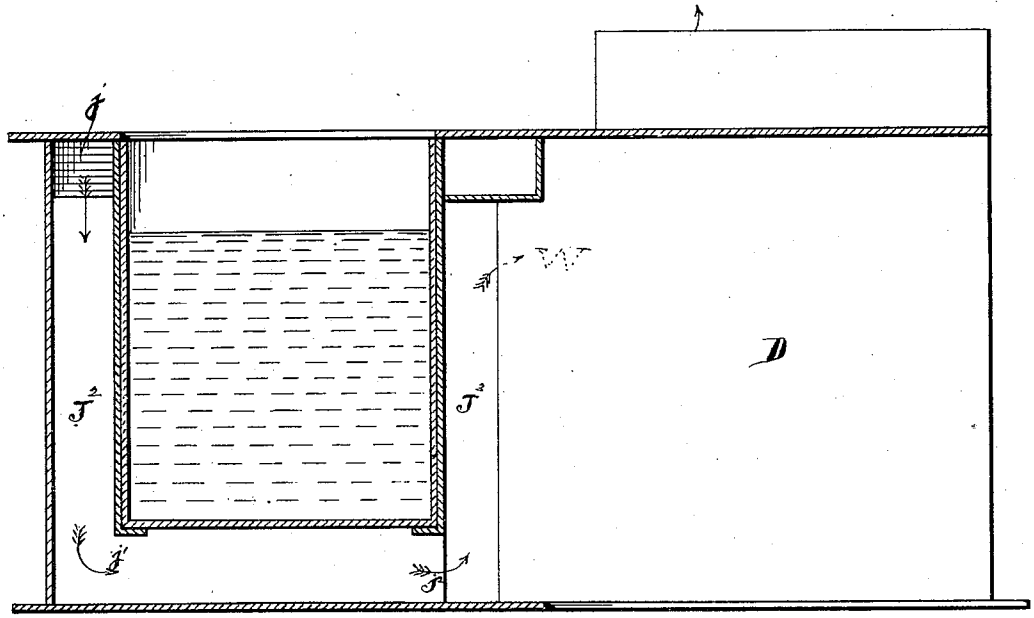
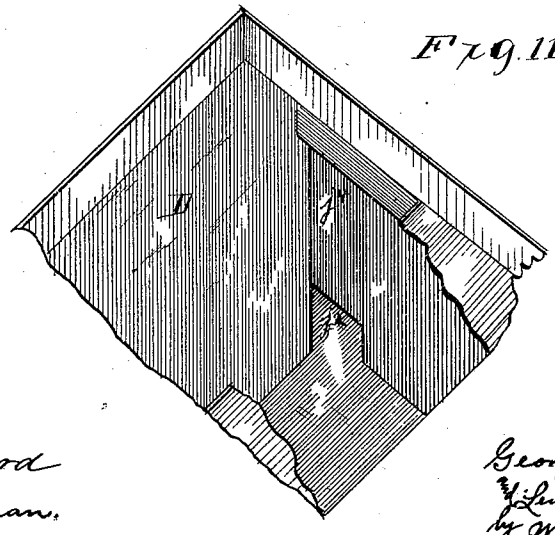



Fig. 11.




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# UNITED STATES PATENT OFFICE.

LEWIS W. TURNER, OF YALESVILLE, AND GEORGE J. CAPEWELL, OF CHESHIRE, CONNECTICUT.

## STOVE.

SPECIFICATION forming part of Letters Patent No. 306,878, dated October 21, 1884.

Application filed September 20, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, LEWIS W. TURNER and GEORGE J. CAPEWELL, citizens of the United States, the former residing at Yalesville and the latter at Cheshire, both in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Stoves; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to stoves especially intended for cooking purposes and adapted thereto; and it consists, first, in a cooking-stove having a front part and a rear part adapted to be independently heated, and provided with an oven which is elevated above one of said parts, and is supplied with air which is introduced into said oven by pipes that pass up through the stove; secondly, in the combination of said front and rear parts of the stove with a traveling fire-box and means for shifting the latter from one part to the other, so that either part of the stove may be heated at will; thirdly, in the combination of suitable valves with the two parts of the stove before mentioned and the movable fire-box, whereby the draft may be cut off from one part of the stove and directed through the other as the fire-box is moved forward or backward; and, finally, in certain details of construction and combination hereinafter particularly set forth.

In the accompanying drawings, Figure 1 represents a perspective view of a cooking-stove embodying my invention. Fig. 2 represents a vertical longitudinal section taken through the same on the central longitudinal line of the fire-box. Fig. 3 represents a vertical transverse section through the fire-box, ash-box, and their casing. Fig. 4 represents an exterior perspective view of the fire-box and its casing and the rack-bar attached thereto. Fig. 5 represents a detail view of the crank and pinion for operating on said rack-bar to move said fire-box longitudinally. Fig. 6 represents a detail view of the valve hung in the upper part of the passage in which the fire-box is movable horizontally from the front to the back of the stove. Fig. 7 represents a horizontal sectional view of the stove, the top thereof and the upper casing being removed and the tube shown in cross-section. Fig. 8 represents a vertical transverse section through the stove on the middle line of the oven. Fig. 9 represents a vertical transverse section through the forward part of the stove, taken in front of the tank and fire-box. Fig. 10 represents a vertical section through the tank and surrounding double-walled compartment, taken at right angles to the section shown in Fig. 9, the direction of the heated air through the passages being indicated by arrows. Fig. 11 represents a detail perspective view of the parts in proximity to the passage from the compartment which contains the water-tank to the space under the oven, said view being taken from the point of view indicated by the arrow in space W, Fig. 1.

In said drawings, A designates the front of a cook-stove; B, the top thereof; C, the bottom, supported on legs *c*, and D the side walls. These, with the back wall, constitute the casing or shell of the body of the stove. In one side of the stove, and next to the side wall, is a long passage or gallery, E, (shown clearly in Figs. 2, 7, and 8,) extending from the back wall of the stove to the front thereof. At the latter end it is closed by a door, E′. This passage is formed by the exterior side wall aforesaid, and by a parallel partition-wall, *e*, and is provided on its sides with guideways $e'$ $e^2$. The guideway $e'$ is simply a longitudinal horizontal flange forming part of or attached to the face of said partition-wall, while the guideway $e^2$ is formed by the tops of two shallow casings, $e^3$, Fig. 8, which are attached to the inner face of the side wall, D. These guideways are shown as arranged a little below the middle of said passage; but of course their location, as well as their construction, may be considerably varied without departing from the spirit of our invention. These flanges serve to allow or facilitate the forward and backward travel of a fire-box, F, which is provided at or a little below the middle of its casing with rollers *f*, which run on guideway $e'$. On the opposite side of said casing a straight rack-bar, F′, Fig. 4, with downwardly-extending teeth, is rigidly attached thereto. This rack-bar is ar-

ranged to engage with and be operated by a pinion, G, which is located in the space between the tops of the two casings $e^3$, Fig. 8. The spindle $g$ of said pinion (which turns therewith) extends laterally through a tubular bearing, $g'$, attached to said side wall, D, and has at its outer end a crank-handle, G'. By turning said handle in one direction or the other said fire-box may be caused to travel to the front or the rear of the stove at will. In said side wall, D, of the stove are openings $d$ near the forward end and openings $d'$ near the rear end thereof, the former being closed by a slide-valve, D', and the latter by a slide-valve, $D^2$. Each of these sliding valves or dampers D' $D^2$ is provided with a laterally-protruding stem, whereby it is operated at will, and they move respectively within the casings $e^3$, already referred to. These casings serve as shields for them, but have central openings sufficient to allow free ingress of air to the stove when either of said valves is open. The location of said valves or dampers corresponds to the two positions of the fire-box. When the latter is in its forward position, the forward damper, D', is opened. When in its rearward position, the rearward damper, $D^2$, is opened. In either case the external air is admitted to the side of the fire-box casing at points below the level of the grate. Under this grate (marked $F^2$) is the ash-box $F^3$, in the usual form of a drawer. This is arranged to be pulled out or pushed in, at will, in a space somewhat larger than itself, formed by a downwardly-extending compartment of said fire-box casing, as shown in Fig. 3. In the outer side of the latter are openings $d^3$, which register with openings $d$ or $d'$ aforesaid, according to the position of the fire-box. The draft is through these openings, then around and above the ash drawer or box, then up through the grate and fire-box. On the other side of partition $e$ a transverse partition, $h$, Figs. 7 and 9, divides the interior of the body of the stove into a forward part and a rear part. When the fire-box is in its forward position, it heats the former part; when in its rearward position, the latter part. To insure accuracy of action in this respect a flap-valve, H, Figs. 2 and 6, is hung across the top of gallery E in line with partition $h$. This drops against the rear upper edge of fire-box F when the latter is moved into its forward position, and prevents the draft taking the direction of the rear of the stove. When said fire-box is run to the rear part of the gallery E, it opens the valve H in its passage.

In the front part of the stove, on the side opposite to the fire-box, is a compartment, I, provided with a door, $i$, and adapted to contain a water-tank, I', which is introduced and removed through said door. In the top of the stove, just above said tank, is a reversible piece or cover, $I^3$, which is of such size that its temporary removal will allow the clothes to be conveniently introduced into said tank I' when the latter is to be used as a wash-boiler. The side walls of this compartment are double and hollow, as shown in Figs. 7 and 10, and open on one side at the top, at $j$, to communicate with the usual space under and around the pot-holes, and at bottom, at $j'$, to communicate with the interior of said compartment. As the tank I' rests on flanges J, attached to said side walls above said opening $j'$, the products of combustion not only act on the contents of said tank from the sides as they are drawn through the hollow spaces therein, but also, entering the space below the bottom of the tank, are enabled to act directly on the same.

The course of the products of combustion is as follows when directed so as to act on said tank: They first pass from the fire-box into the space $h'$, which is immediately under the top of the front part of the stove and the pot-holes therein. From this space $h'$ they pass through opening $j$ into the space $J^2$, formed by the double walls on one side of the compartment I; thence through opening $j'$ into that part of said space which is below the tank I'; thence through opening $j^2$ into the space $J^3$ between the double walls on the other side of compartment I; thence through an outlet, $j^4$, behind the outer wall of the stove into the space W below the oven, said outlet $j^4$ extending nearly the whole height of said compartment I, as shown in Fig. 11; thence up to and around the same to the drum P, as stated.

In the rear part of the body of the stove there is only a single compartment, up through which extend two air-tubes, K, which communicate at the bottom with the external air. These tubes rise considerably above the top of the main body of the stove. The air from them is heated (when the fire-box is in its rearward position) after passing into the oven or air chamber by the products of combustion, which pass over partition $e$ into the space around said pipes.

L, Figs. 1, 2, and 8, designates a supplemental casing or upper story of the stove, which is supported on the rear part of the main body thereof. It contains an oven, M, Figs. 2 and 8, which is provided at the sides with horizontal flanges $m$ (for supporting shelves or trays) and at the ends with glass doors M', through which the articles to be baked are introduced and withdrawn. The bottom of this chamber or oven is a pyramidal (or it may be a conoidal) plate, N, the edges of which are attached to the inner shells of the double walls whereby this oven is inclosed. The bottom of casing L is open, so that the products of combustion rise through it until they come in contact with plate N, whereby they are caused to converge to the central and highest point thereof. Thence they eddy down to the edges of said plate and pass up through the hollow walls to the hollow roof of said oven, whence they escape to a drum, O, erected on top of the same, and finally out through flue P', Fig. 2. A suitable valve governed by an external eccentric, $p$, controls their admission to said drum. These

devices are so fully described in another application filed by us, August 8, 1883, No. 105,135, and now pending before the Patent Office, that it is not necessary to be more explicit here. The tubes K extend up through openings in plate N and discharge their heated air into the lower part of said oven below a flat plate, *n*, (as in said former application,) which serves to shield the articles in the interior of the oven from the heat radiated by plate N, and also to disperse, detain, and render more efficacious the supply of air from tubes K and to secure the thorough heating thereof by radiation from pyramidal bottom plate, N. After heating said oven, the air passes up through the top of the same and outlet tube or flue P'.

The operation has been already described in detail. When the stove is to be used for boiling or frying, the valve $D^2$ is closed, the valve D' is opened, and the crank-handle G is turned forward, thus transferring the fire-box to the forward part of the stove. Direct communication with the rear part is automatically cut off at the same time as stated, and the heat operates directly in the usual way on the usual utensils and passes around the water in the tank, as described, thus heating the latter for any household use. The products of combustion finally pass from the hollow walls of compartment I through an opening, $j^2$, into the rearward space below plate N. Thence they rise through the hollow walls of the oven to the drum and outlet-flue. When baking is desired, the crank is turned backward until the fire-box has been run into its rearward position, the valve $D^2$ is opened, the valve D' closed, and the operation on the contents of the oven proceeds, as before stated. Of course other means than a rack and pinion may be employed to move the fire-box back and forward, and other constructions of valves, partitions, &c., may be used without departing from the spirit of our invention.

Q designates an opening in the side of the stove, under the oven aforesaid. This opening allows the introduction of a gridiron or broiler for the purpose of broiling meat or other articles. It is ordinarily closed by means of a door, R, which is hinged at the lower edge of said opening. When this door is let down, it rests upon a fixed stop, S, as shown in Fig. 1, so arranged that said door inclines downward and inward. Said door is also provided with an inward extension, *r*, which overhangs the fire-box when the latter is in its rearward position. In consequence the drippings from the meat or other articles which may be broiling will drain from said lowered door or cover into the fire, instead of dripping down the front of the stove. By turning the damper in the outlet-pipe to confine partly the air in the oven, its temperature is raised and its efficacy for baking increased.

The automatic damper hereinbefore described for cutting off the draft from the front part of the store to the rear part thereof when the fire-box is in its forward position has a certain amount of endwise play.

We do not claim in this application the combination of the oven with its inlet-pipes, outlet-pipes, and damper for the latter, nor the construction of any of said parts, they being shown and claimed in our application No. 105,135, filed August 8, 1883.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A stove-body consisting of a front part and a rear part, either of which may be used independently of the other, and provided with a passage extending from front to rear, and means independent of said passage of communication between the said front and rear parts, in combination with a fire-box movable backward and forward in said passage, and a valve which cuts off the outlet above and behind the fire-box for the products of combustion when the fire-box is in its forward position, for the purpose of compelling them to first circulate through the front of the stove, and then escape to the rear through the additional means of communication referred to.

2. A stove-body provided with an independent passage from the fire-box across the front part of the stove, and thence back to the space under the oven, from front to rear, in combination with a fire-box movable backward and forward in said passage, and a depending valve which closes all direct outlet above and behind said fire-box when the latter is in its forward position, but is opened when said fire-box moves toward its rear position.

3. A movable fire-box, in combination with an oven arranged to be heated directly by said fire-box when the latter is in one position, and a tank arranged in a compartment with hollow walls to be heated when the fire-box is in another position, the stove being provided with independent draft-passages for these two positions and uses, substantially as set forth.

4. The combination of a fire-pot or fire-box at the front part of a stove and an outlet-flue at the back part thereof with a compartment adapted to contain a water-tank, and provided with double walls on two sides, the spaces between said double walls communicating at bottom with a space below the tank, and one of said spaces between the double walls receiving the products of combustion through an opening or passage from the space above the fire-box, while the other allows the said products to pass through another opening into the rear of the stove on their way to the outlet-flue.

In testimony whereof we affix our signatures in presence of two witnesses.

LEWIS W. TURNER.
GEORGE J. CAPEWELL.

Witnesses:
EDWARD A. CORNWALL,
EUNICE B. CORNWALL.