2 Sheets—Sheet 1.

W. H. JOHNSON.

Reservoir Cooking Stove.

No. 91,851. Patented June 29, 1869.

Fig. 5

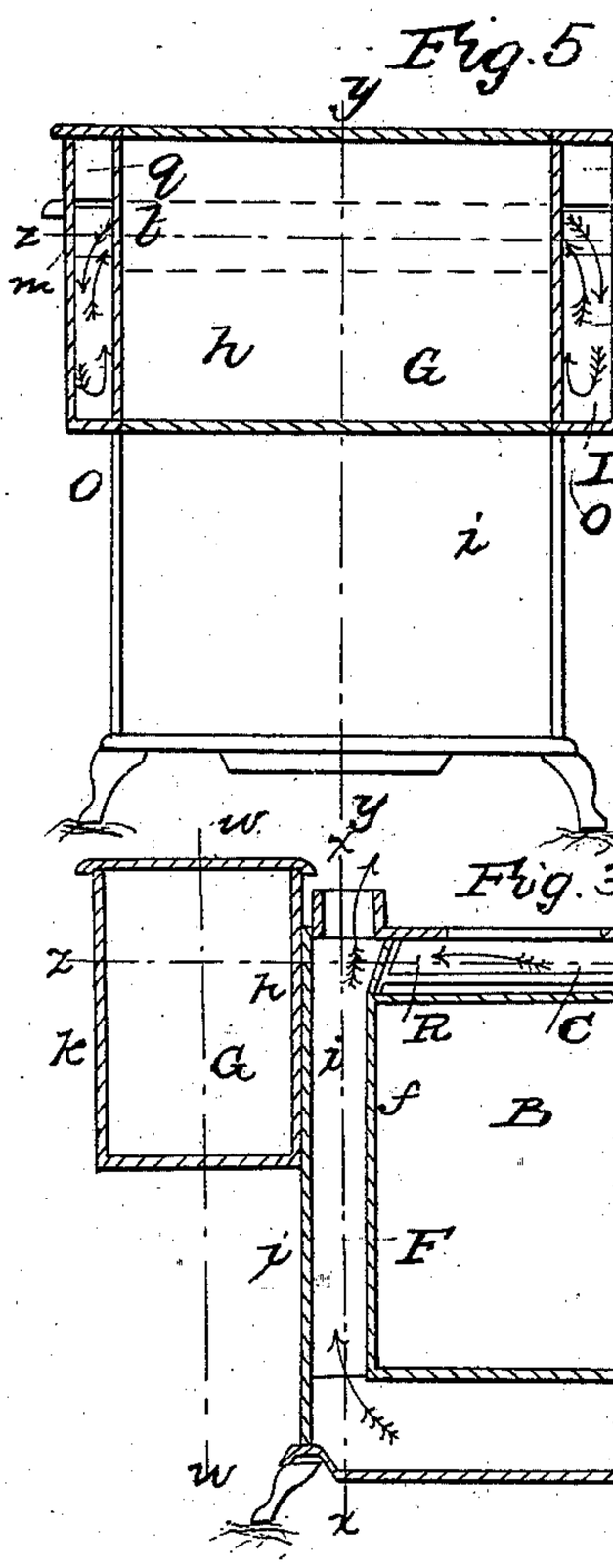


Fig. 1

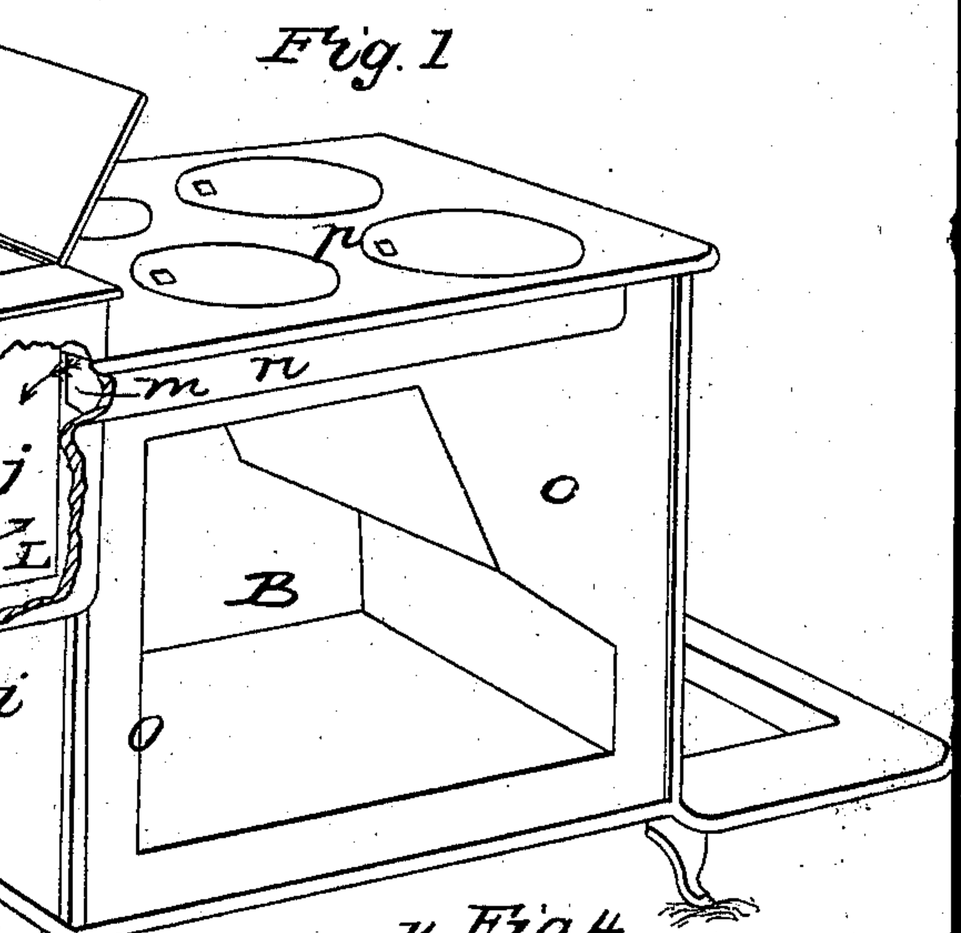


Fig. 3

Fig. 4

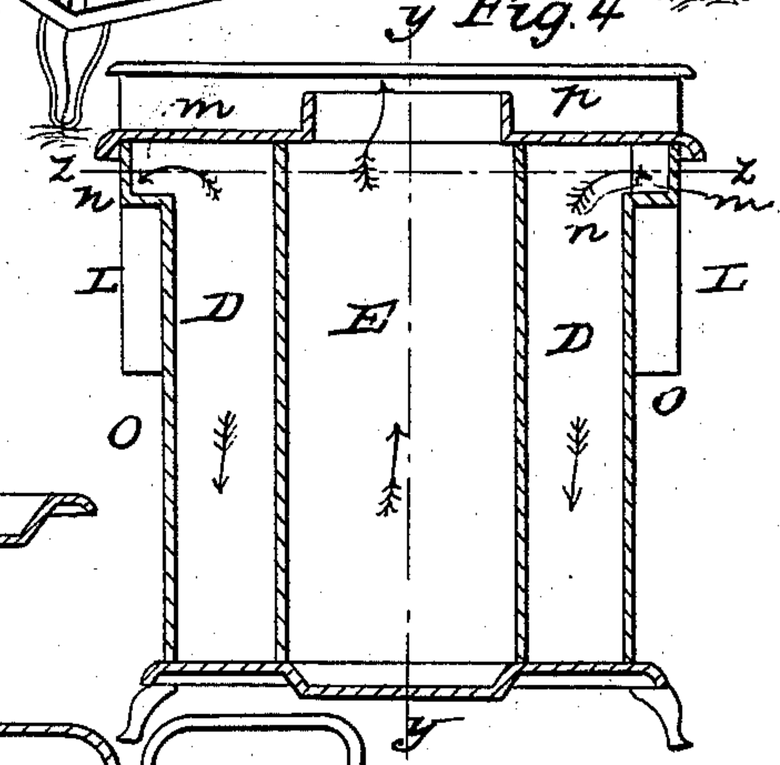
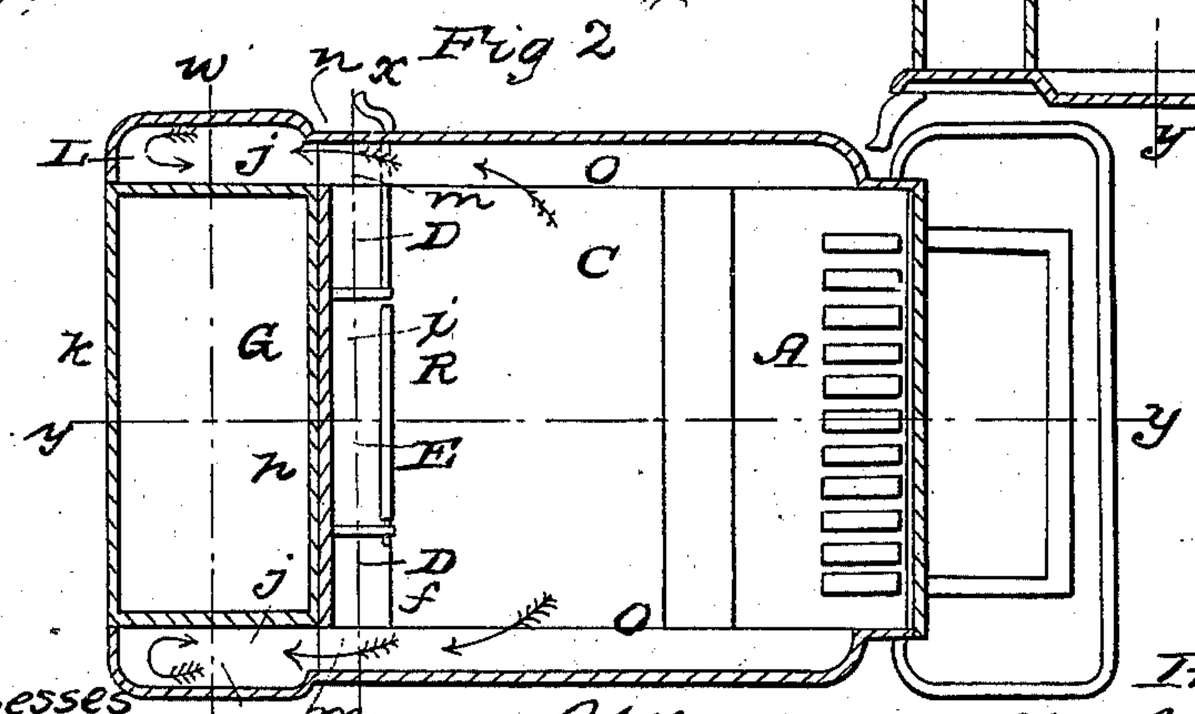


Fig 2



Witnesses
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Austin F. Park

Inventor
William H. Johnson

2 Sheets—Sheet 2.

W. H. JOHNSON.

Reservoir Cooking Stove.

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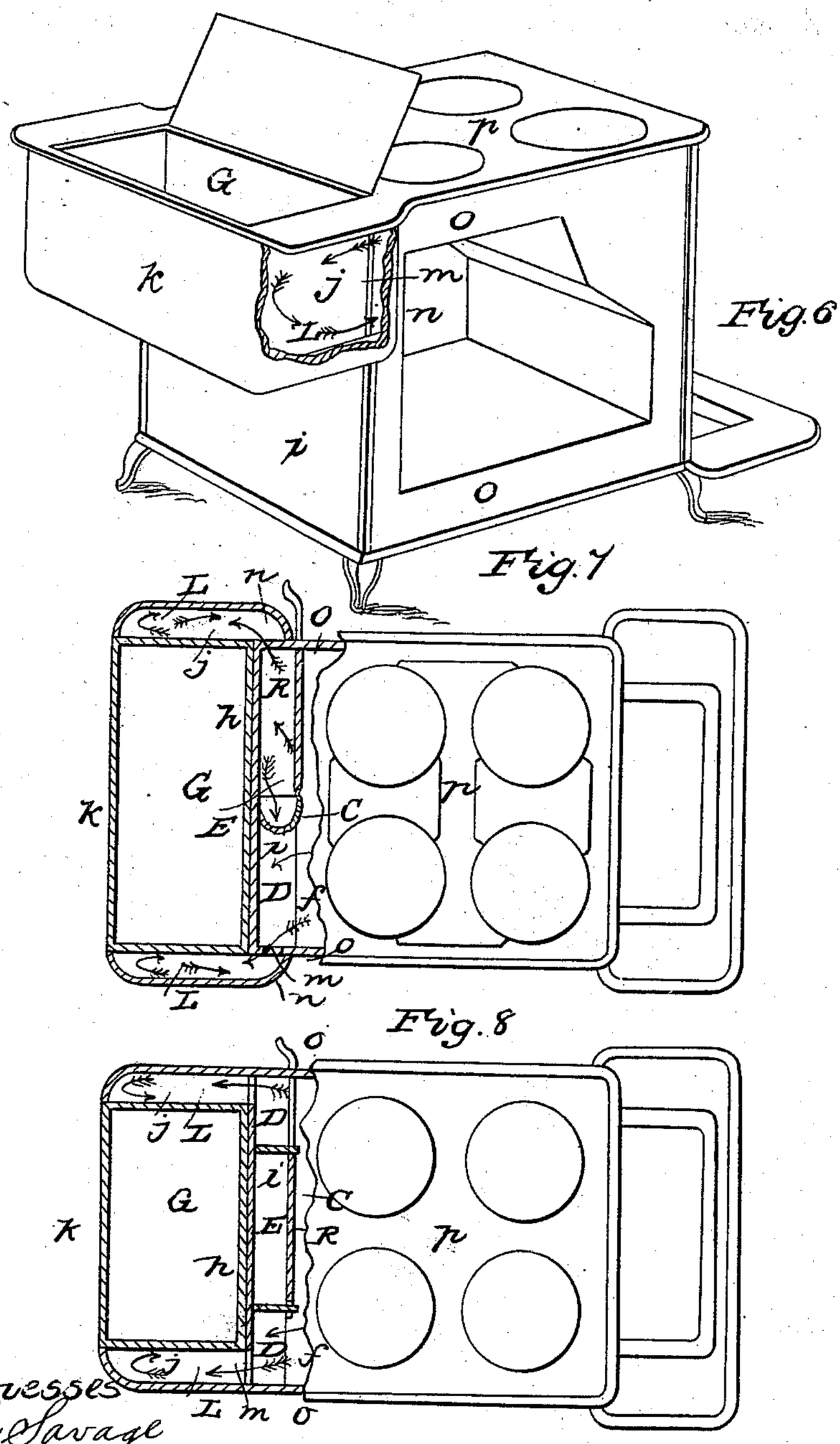

Fig. 6

Fig. 7

Fig. 8

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WILLIAM H. JOHNSON, OF TROY, NEW YORK.

Letters Patent No. 91,851, *dated June* 29, 1869.

IMPROVEMENT IN RESERVOIR COOKING-STOVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM H. JOHNSON, of the city of Troy, in the county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Cooking-Stoves having Water-Heating Reservoirs, of which the following is a full and exact description, reference being had to the accompanying drawings, in which, on sheet A—

Figure 1 is a perspective view;

Figure 2, a horizontal section at the line *z z*, in figs. 3, 4, and 5;

Figure 3, a vertical section at the line *y y*, in figs. 2, 4, and 5;

Figure 4, a front elevation of a section at the line *x x*, in figs. 2 and 3; and

Figure 5, a vertical section at, and elevation of some parts in front of, the line *w w*, in figs. 2 and 3; all of a cooking-stove in which the distinguishing features of my invention are embodied.

On sheet B—

Figure 6 is a perspective view, and

Figure 7, a plan and partial horizontal section just under the top-plate, of another cooking-stove which embodies the distinguishing features of my invention; and

Figure 8 is a plan and partial horizontal section just below the top-plate, of another reservoir cooking-stove, in which a portion of my invention is embodied.

Like parts are marked by the same letters in the different figures; and the arrows therein indicate the course of the hot gases of combustion through the stove.

Cooking-stoves have been commonly made with a fire-box, A, (see the aforesaid drawings,) at one end; an oven, B, in rear of the fire-box; a fire-flue, C, leading from the fire-box along the top of the oven; and descending and ascending flues D E, along the upright rear side *f*, of the oven, and in communication with the top-flue C, and forward and return-flues under the oven, essentially as shown in the drawings.

In some such cooking-stoves, a water-reservoir, G, has been arranged with its front side *h* directly against a rear upright-plate, *i*, forming the rear casing of the descending and ascending fire-flues in rear of the oven, while the ends *j j*, and back side *k*, of the reservoir were naked; so that the reservoir was heated merely by the front side of the reservoir being against the back-plate of the stove; and consequently the water in the reservoir was not heated as quick, nor as hot, as is generally required.

Cooking-stoves having the above-described arrangement of fire-box, oven, and fire-flues, have also been made with a water-reservoir, G, arranged so that the front side *h*, of the reservoir itself formed a large portion of the rear side of the descending and ascending fire-flues in rear of the oven; so that all the hot gases of combustion had to pass down directly along or in contact with the front side of the water-reservoir, before passing under the oven. Consequently, in such a stove, the hot gases lost heat so rapidly, by giving it out directly to the reservoir before passing under the oven, that it was impossible or very difficult to heat the oven, so as to bake good, when the reservoir was filled with cold or moderately warm water.

Cooking-stoves having the oven, fire-box, and fire-flues, arranged substantially as above described, have also been made with a water-reservoir arranged in rear of the fire-flues, back of the oven, and a flue-space or heating-chambers extended along the front side *h*, ends *j j*, and rear side *k*, of the reservoir all at once, and in communication with the rear fire-flues of the stove. But a heating-chamber along the rear side, or the front side of the reservoir, in addition to heating-chambers along the ends thereof, and the descending and ascending fire-flues in front, is unnecessary to properly heat the water in the reservoir, and renders the stove more expensive, and makes it necessary either to have the reservoir much narrower in the rearward direction, and, consequently, smaller than is generally demanded, or to have the upper portion of the stove extended too far rearward.

The principal object of my invention is to avoid the aforesaid defects in water-reservoir cooking-stoves, having descending and ascending fire-flues between the oven and the water-reservoir, in rear of the oven; and the distinguishing feature of one part of my invention in such cooking-stoves is, the arrangement of heating pockets, or chambers L L, along the two upright ends *j j* of the reservoir, with apertures, or passages *m m*, leading directly into the rear or top fire-flue, or fire-flues of the stove, when the rear upright side *k* of the reservoir is naked; so that, while the reservoir shall be heated sufficiently by the hot gases of combustion in the descending and ascending flues D E and chambers, or pockets L L, I obviate all necessity for reducing the size and width of the reservoir in a rearward direction, and avoid the expense of having a heating-flue, or chamber along the rear side of the reservoir.

As regards this part of my invention, it is not necessary that the front side of the reservoir should be close against a vertical plate, or casing, in rear of the fire-flues, in front of the reservoir; nor that there should be any plate between the front side of the reservoir and the descending and ascending flues, in rear of the oven.

The distinguishing feature of another part of my invention in cooking-stoves having descending and ascending fire-flues D E, along the rear side of the oven, and in communication with a fire-flue, or fire-flues, over and under the oven B, substantially as shown by the drawings, is, a water-reservoir, G, having its front

side *h* arranged directly against a plate, or casing, *i*, which forms the rear side of the descending and ascending fire-flues, in rear of the oven, in combination or connection with pockets, or chambers L L, extended along the ends *j j* of the water-reservoir, and having communication with the fire-flues of the stove by passages *m m*, so that while the front side of the reservoir shall be moderately heated by being against the rear casing *i* of the fire-flues, in rear of the oven, the ends *j j* of the reservoir shall also be gently heated, by a portion of the hot gases of combustion filling and circulating within the chambers L L, and therein coming in direct contact with the upright ends of the reservoir. Consequently, with this improved construction, the water in the reservoir will be heated considerably faster and hotter than if the ends *j j* of the reservoir were naked, while the front side of the reservoir rested against the rear plate *i* of the stove; and the reservoir will not abstract heat so rapidly from the hot gases of combustion, as the latter descend in the flue, or flues D or D D, to pass under the oven, and therefore, will not lessen the baking capability of the oven as much when the reservoir is full of cold or moderately-warm water, as would be the case if the front side *h* of the reservoir itself served as a portion of the rear casing of the descending fire-flue, or fire-flues.

As regards the last-aforesaid part of my invention, the rear side of the reservoir need not be naked.

The distinguishing feature of another part of my invention in cooking-stoves is, a water-reservoir, G, having one upright side, *h*, arranged directly against a plate, or casing, *i*, forming the back side of descending and ascending fire-flues D E, in rear of the oven, with pockets, or chambers L L, extended along the upright ends *j j* of the reservoir, and in communication, by apertures, or passages *m m*, with the fire-flue, or fire-flues in front of the reservoir, when the rear side *k* of the reservoir is naked; so that while the front side and ends of the reservoir are moderately, but sufficiently heated without materially lessening the baking capability of the oven, all necessity and expense of having a heating-chamber, or fire-flue extended along the rear side of the reservoir, or between the front side of the reservoir and the casing *i* of the fire-flues, is avoided, and the reservoir can be of the greatest practicable width and capacity in the rearward direction, with the least rearward extension of the upper part of the stove.

The distinguishing feature of another part of my invention in a cooking-stove having a water-reservoir, G, arranged in rear of descending and ascending fire-flues D E, back of the oven B of the stove is, heating-pockets, or chambers L L, arranged along the upright ends *j j* of the reservoir, when such pockets, or chambers bag out or project laterally beyond the sides of the oven, and have communication with the fire-flues of the stove by passages *m m*, formed through or in laterally-projecting parts *n n* of the side-plates *o o* of the stove, essentially as shown by figs. 1, 2, 4, 5, 6, and 7, and not through apertures in any back-plate *i* of the stove, as shown in fig. 8.

By this improvement, the reservoir G can be extended entirely across and heated directly by the whole rear side of the descending and ascending fire-flues, in rear of the oven, as shown in figs. 2 and 7, and the reservoir can, therefore, be considerably longer in a lateral direction, and, consequently, of greater capacity for holding and heating water, without being any deeper, nor any wider, in the rearward direction, than when the pockets, or chambers L L, do not project, or bag out laterally beyond the sides of the oven, and have communication with the fire-flues of the stove, by apertures in the back casing *i*, as shown in fig. 8.

In carrying out my invention, I make the stove either with one descending flue, D, and one ascending flue, E, in rear of the oven, as shown in fig. 7, or with two descending flues, D, and one ascending one, E, as in figs. 2, 4, and 8; and I have the reservoir either wholly below the top plate *p* of the stove, as in fig. 6, or mainly below and partly above the top plate, as in figs. 1, 3, and 4.

In case a part of the reservoir shall be above the top plate, I sometimes have a part of the upper portion of the reservoir extend over and form the tops of the chambers L L, as indicated by red lines, at *q q*, in fig. 5.

I make the water-reservoir of any suitable known materials, but generally prefer to have the reservoir and the plates of the stove all of cast-iron, and fastened together by lugs, flanges, and "stove-bolts," in the usual manner, the reservoir being enamelled on its inner surface, or "galvanized," or coated with zinc, or an alloy of tin and zinc, or other suitable known covering, to keep the inner surface of the reservoir from rusting.

R is the common damper.

Having thus fully described my invention, I would state that I do not claim a reservoir having a single plate at the rear of the boiler, with pockets, or chambers at the ends, which, by suitable contrivances, make a continuation of the usual circulation of three-flue cooking-stoves, but without first passing under the oven; but

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

A cooking-stove, having a water-reservoir, G, in rear of descending and ascending fire-flues D E, back of the oven, when the rear side *k* of the reservoir is naked, and heating-chambers L L extend along the ends *j j* of the reservoir, and have communication with the fire-flues of the stove by apertures *m m*, substantially as shown and described.

Also, in a cooking-stove, a water-reservoir, arranged with its front side *h* directly against the rear casing *i*, of descending and ascending fire-flues, along the upright rear side *f* of the oven, when heating-pockets, or chambers L L, having communication, by passages *m m*, with the fire-flues of the stove, extend along the ends of the reservoir, as herein shown and described.

Also, in a cooking-stove, a water-reservoir, arranged with its front side against the rear casing *i* of descending and ascending fire-flues, along the rear side of the oven, when the back side *k* of the reservoir is naked, and heating-pockets, or chambers L L, having communication with the fire-flue, or fire-flues of the stove, extend along the ends *j j* of the reservoir, as herein set forth.

Also, in a cooking-stove, having a water-reservoir arranged back of descending and ascending fire-flues, along the rear side of the oven, the heating-pockets, or chambers L L, extending along the ends of the reservoir, and bagging out or projecting laterally beyond the sides of the oven, and having communication with the fire-flues of the stove, by passages through or in laterally-projecting parts *n n* of the side-plates *o o* of the stove, substantially as herein described and shown by figs. 1, 2, 4, 6, and 7.

In testimony whereof, I hereunto subscribe my name, this 16th day of March, 1869.

WILLIAM H. JOHNSON.

Witnesses:

HARRISON MAMBERT,

JOEL B. HAYDN.