

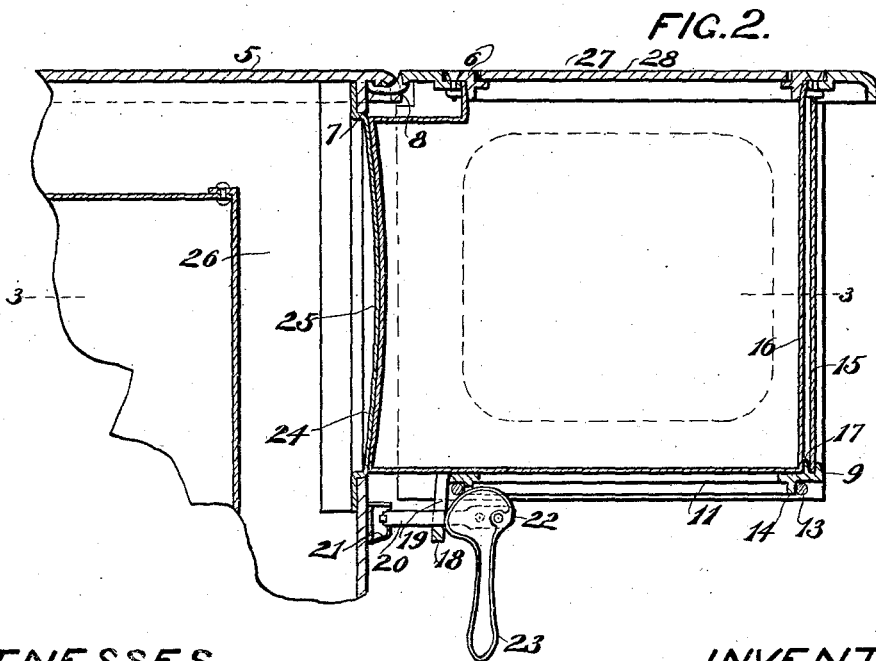
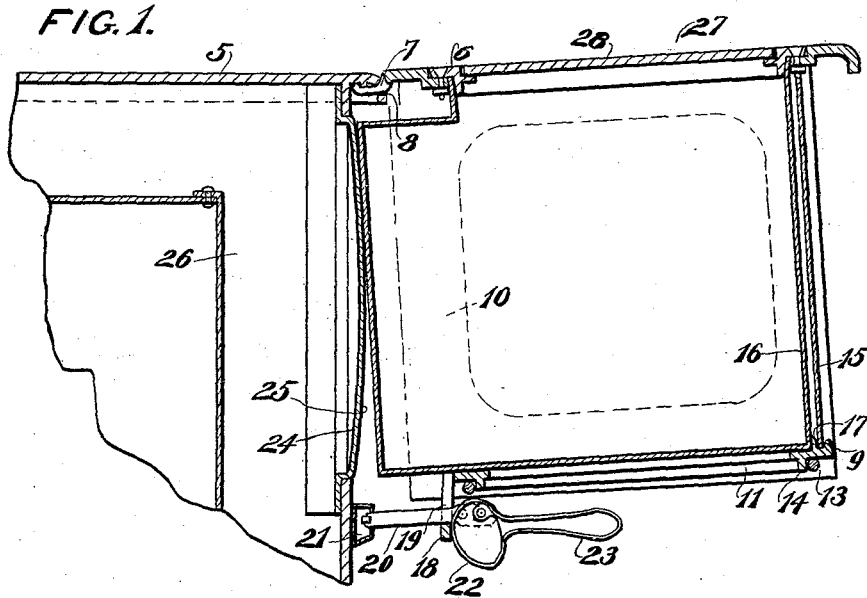
S. McCLURE.  
HEATER.

APPLICATION FILED JUNE 13, 1907.

929,103.

Patented July 27, 1909.

2 SHEETS—SHEET 1.



WITNESSES.

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HEATER.

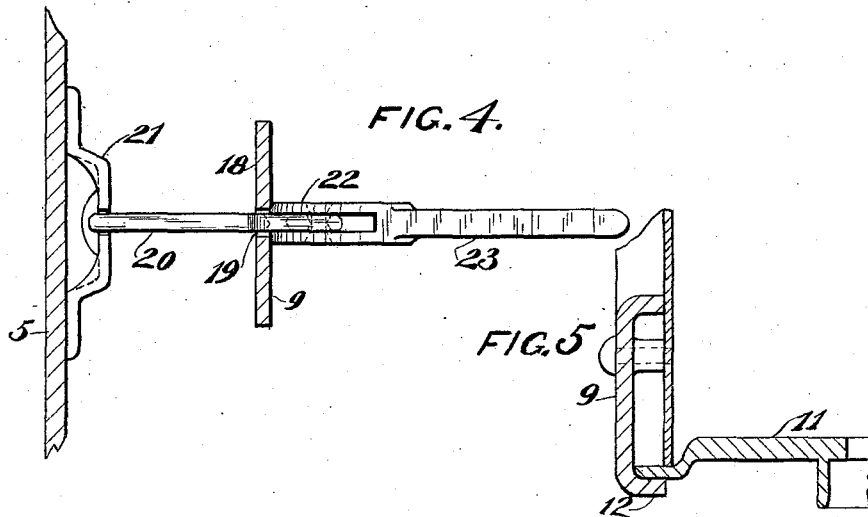
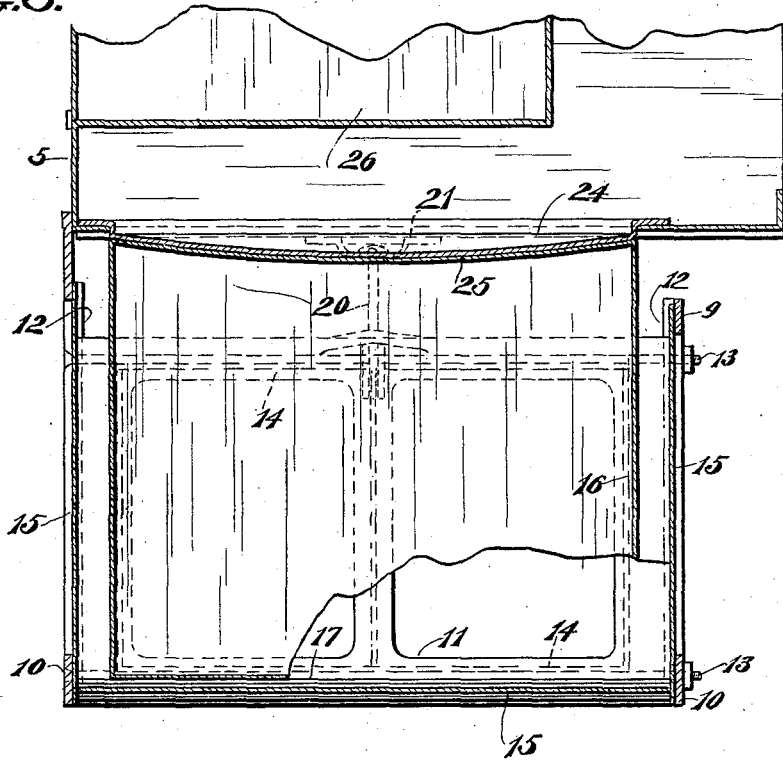
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2 SHEETS—SHEET 2.

FIG. 3.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

SILAS McCLURE, OF BEAVER DAM, WISCONSIN, ASSIGNOR TO MALLEABLE IRON RANGE COMPANY, OF BEAVER DAM, WISCONSIN, A CORPORATION OF WISCONSIN.

## HEATER.

No. 929,103.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed June 13, 1907. Serial No. 378,698.

*To all whom it may concern:*

Be it known that I, SILAS McCLURE, residing in Beaver Dam, in the county of Dodge and State of Wisconsin, have invented new and useful Improvements in Heaters, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in heating reservoirs for ranges and stoves, and particularly to the type of reservoir in which water is heated by radiation of heat from an end of the range against which the reservoir is adjacent, the reservoir usually bearing against a plate fitted in the end of the range and which plate is exposed to and adapted to be heated by the products of combustion flowing from the fire box around the oven to the smoke flue.

Experience has demonstrated that the best results are obtainable by making the end heating surface, or the end plate, as the case may be, outwardly convexed, as thereby a closer fit of the reservoir against the plate or heating surface is possible, and consequently more perfect heating of the water thereby secured. The convexity, in the early development of the idea was secured either by hammering out the plate into convex form, or by casting a malleable iron plate in convex form.

One of the primary objects of my invention, is to make the convex surface in the form of a plate of sheet steel pressed into convex form by means of dies, in lieu of providing a heating plate composed of malleable iron hammered or cast into convex form. Also in devices of this character as now constructed the reservoir is hung at its top edge to the top of the range or stove, and the flexible inner side of the tank is drawn into engagement with the convex surface by means of suitable clamping devices. This construction has not been attended with entirely satisfactory results, owing to the fact that the very best adjustable contact has not been obtained by existing clamping means. Furthermore, it has not heretofore been possible to provide for adjusting or regulating the degree of contact from the outside of the range.

It is therefore a further important object of my invention to provide an adjustable clamping means which will effectually over-

come the difficulties heretofore existing and as above pointed out.

With the above, and other incidental objects in view, the invention consists of the devices and parts, or their equivalents, as hereinafter set forth.

In the accompanying drawings, Figure 1 is a vertical, central section of the heater connected to a fragment of a range, the clamping handle being in its upper position and the reservoir contacting with but a small portion of the upper part of the convex heating plate of the range; Fig. 2 is a sectional view similar to Fig. 1 but with the clamping handle moved to its lowest position and the reservoir in full contact with the convex heating plate of the range; Fig. 3 is a section taken on line 3—3 of Fig. 2, a part broken away to show the construction of frame below the reservoir; Fig. 4 is a plan view of the clamp and fragment of the range and the reservoir supporting frame; and Fig. 5 is a detail of the reservoir supporting frame.

Referring to the drawings the numeral 5 indicates a fragment of a range, and 6 an extension top connected thereto by hook members 7 (one only being shown) passing through apertures 8 in the flange portion of the range top thereby forming a hinge connection between the extension top and the range. This hinge connection will allow a limited swing of the extension top with relation to the range, and also the removal of the extension top when inclined a sufficient height above the range.

A reservoir supporting frame 9 is disposed beneath the extension top and rigidly secured thereto by bolts or rivets. The supporting frame consists of vertical front and rear rectangular members 10, 10 and a rectangular bottom frame 11 having its front and rear edges disposed upon flanges 12, 12, on the inner lower edges of the vertical rectangular members 10. The lower portions of the vertical members are connected together by means of long stove bolts 13, 13 provided with nuts which tightly clamp the rectangular bottom frame to the vertical members.

The vertical members being connected to the extension top plate by bolts or rivets as before explained, a rigid reservoir supporting construction is secured which is simply

and cheaply manufactured, and easily assembled. The rectangular bottom frame 11 is strengthened by means of a central rib which connects the side portions thereof together. This central rib also aids in supporting the bottom of the reservoir and prevents its bulging downwardly with the weight of the water contained therein. The bottom rectangular frame 11 is prevented from sliding edgewise by means of the stove bolts 13 which are disposed against the outer sides of a strengthening rib 14 depending below the plane of the stove bolts 13.

The open spaces of the vertical rectangular frames and also the space at the side of the reservoir farthest removed from the range are covered with sheet metal plates 15, 15. The sheet metal plates of the vertical members are connected thereto by rivets and the side plate is held in position by means of grooves in the under side of the extension top and in the upper side of the rectangular bottom frame 11.

A reservoir 16 disposed within the supporting frame 9 and resting upon the rectangular frame 11 is securely connected to the extension top by clamping means and thereby rigidly held in position within the supporting frame 9. A rib 17 forming part of the rectangular bottom frame 11 is adapted to brace the lower portion of the reservoir when put under strain by means of a clamping device to be hereinafter described.

Depending from the inner portion of the rectangular bottom frame is a lug 18 provided with a slot 19 adapted to receive there-through a T-headed link 20, the head of which engages a slotted member 21 attached to the range 5. The other end of the T-headed link is pivotally connected to an involute cam member 22 provided with an operating handle 23. The cam faces of the involute cam member bear against the outer surface of the depending slotted lug 18 of the rectangular bottom frame 11.

A plate 24 of sheet steel has a part thereof pressed out so as to form a portion of a convex spherical surface 25. This plate is connected to and forms a portion of the side of the range adjacent to the reservoir 16 and has its convex surface extending outwardly from the range. The inner surface of this plate acts as a portion of a wall forming a flue 26 leading from the fire box around the oven to the smoke flue. This plate made from thin sheet steel will allow a greater degree of radiation of heat from the flue, than would be the case if the plate was made from a thick casting or malleable iron hammered into convex form. The surface of the reservoir nearest to the range rests against said plate and is adapted to receive therefrom the heat radiated from the flue. The extension top of the range is provided with an opening 27 and a cover 28 so that the reser-

voir may be filled and heated water removed therefrom.

In connecting the extension top and reservoir to the range the hook members are inserted through the apertures provided therefor in the flange of the range top thus forming a hinge connection between the two parts. The upper part of the inner wall of the reservoir will rest against the upper portion of the convex plate. Pressure is now exerted downwardly on the extension top and the T-headed portion of the T-headed link is connected to the slotted member by dropping the same through the open top of said member so that the T-portion will engage the inner surface of the wall of the member upon each side of the slot. The extension top and reservoir will now be in the position illustrated in Fig. 1 of the drawings, and in this position the reservoir will receive the minimum amount of heat radiated by the convex plate, because only a small portion of the reservoir touches the convex plate, and consequently the water contained within the reservoir will become but slightly warm. Now, if it is desired to heat the water to a greater degree, the handle of the involute cam member is moved downwardly, which movement will swing the frame and reservoir closer to the range and place the wall of the reservoir under tension and prevent the sheet metal of the reservoir from buckling under heat and thereby separate from the convex plate and form air chambers between the plate and the reservoir and tend to prevent the heat radiated from said plate from being communicated to the reservoir efficiently. When the handle of the involute cam member is moved to the position shown in Fig. 2 the top of the extension top will be in a horizontal position and the inner side wall of the reservoir will contact with the convex plate the entire area of its convexity and the maximum degree of heat will be communicated to the reservoir. By turning the handle to positions intermediate of the position mentioned more or less contact will be made between the convex plate and the reservoir and different degrees of heat, between the minimum and the maximum degree, will be communicated to the reservoir, thereby providing means for regulating the heating of the water within the reservoir by merely turning the handle of the involute cam member, and by making the convex plate of thin sheet steel, a strong, simple and inexpensive construction is provided for and the greatest amount of heat possible will be radiated from the flue of the range on account of the thinness of the radiating medium, and the best possible contact will be made with the reservoir on account of the convexity of the plate and the great force which may be exerted by means of the convolute cam, to bring the reservoir into close contact with the convex plate.

What I claim as my invention is:

1. In a range or stove, the combination of a radiating surface, a reservoir, and means for adjustably regulating the area of contact between the reservoir and the radiating surface by tilting said reservoir to regulate the degree of heat communicated to the contents of said reservoir.

2. In a range or stove, the combination of a convex plate, a reservoir having a yielding portion, and means for adjustably regulating the area of contact between the reservoir and the convex plate by tilting said reservoir to regulate the degree of heat communicated to the contents of said reservoir.

3. In a range or stove, the combination of a sheet metal convex plate, a reservoir having a yielding portion, and means for adjustably regulating the area of contact between the reservoir and the convex plate by tilting said reservoir to regulate the degree of heat communicated to the contents of said reservoir.

4. In a range or stove, the combination of a radiating surface, a hinged reservoir, and means for adjustably regulating the area of contact between the radiating surface and the hinged reservoir by tilting said reservoir to regulate the degree of heat communicated to the contents of said reservoir.

5. In a range or stove, the combination of a radiating surface, a hinged reservoir, and means disposed near that portion of the reservoir opposite the hinged connection for adjustably regulating the area of contact between the radiating surface and the hinged reservoir by tilting said reservoir to regulate the degree of heat communicated to the contents of said reservoir.

6. In a range or stove, the combination of a convex radiating surface, a top portion, a reservoir hinged to the top portion, and means beneath the reservoir for adjustably regulating the area of contact between the convex radiating surface and the hinged reservoir by tilting said reservoir to regulate the degree of heat communicated to the contents of the reservoir.

7. In a range or stove, the combination of a convex radiating surface formed of sheet metal, a top portion, an extension hinged to said top portion, a reservoir connected to said extension, and means beneath the reservoir for adjustably regulating the area of contact between the convex radiating surface and the hinged reservoir to regulate the degree of heat communicated to the contents of the reservoir.

8. In a range or stove, the combination of a convex radiating surface formed of sheet metal, a top portion, an extension top hinged to said top portion, a rectangular frame connected to said extension top, a reservoir carried by said frame, and means for adjustably regulating the area of contact between

the convex radiating surface and the reservoir by regulating the distance apart of the rectangular frame from the range or stove to regulate the degree of heat communicated to the contents of the reservoir.

9. In a range or stove, the combination of a convex radiating surface formed of sheet metal, a top portion, an extension top hinged to said top portion, a rectangular frame connected to said extension top, a reservoir carried by said frame, and a cam member operatively connected to the range or stove and to the rectangular frame for adjustably regulating the area of contact between the convex radiating surface and the reservoir by regulating the distance apart of the rectangular frame from the range or stove to regulate the degree of heat communicated to the contents of the reservoir.

10. In a range or stove, the combination of a convex radiating surface formed of sheet metal, a top portion, an extension top hinged to said top portion, a rectangular frame connected to said extension top, a reservoir carried by said frame, a lug on said frame, a slotted member connected to the range or stove, a link adapted to engage said slotted member, and a cam member connected to said link and adapted to bear against said lug for adjustably regulating the area of contact between the convex radiating surface and the reservoir by regulating the distance apart of the rectangular frame from the range or stove to regulate the degree of heat communicated to the contents of the reservoir.

11. In a range or stove, the combination of a convex radiating surface formed of sheet metal, a top portion, an extension top hinged to said top portion, rectangular frames connected to said extension top, a reservoir carried by said frames, a slotted lug on one of said frames, a slotted member connected to the range or stove, a link adapted to releasably engage said slotted member, and a cam member connected to said link and adapted to bear against said lug for adjustably regulating the area of contact between the convex radiating surface and the reservoir by regulating the distance apart of the rectangular frame from the range or stove to regulate the degree of heat communicated to the contents of the reservoir.

12. In a range or stove, the combination of a convex radiating surface formed of sheet metal, a top portion, an extension top hinged to said top portion, rectangular vertical frames connected to said extension top, a horizontal rectangular frame connecting the lower portions of the vertical rectangular frames together, bolts for clamping the vertical frames to the horizontal frame, a reservoir carried by said frames, and means for regulating the distance apart of the

rectangular frames and the reservoir from the convex radiating surface to regulate the degree of heat communicated to the contents of the reservoir.

13. In a range or stove, the combination of a convex radiating surface formed of sheet metal, a top portion, an extension top hinged to said top portion and provided with an opening and a door thereto, rectangular vertical frames connected to said extension top, a horizontal rectangular frame connecting the lower portions of the vertical rectangular frames together, bolts for clamping the vertical frames to the hori-

zontal frame, a reservoir carried by said frames, a rib on said horizontal frame above the plane of the bottom of said reservoir, and means for regulating the distance apart of the rectangular frames and the reservoir from the convex radiating surface to regulate the degree of heat communicated to the contents of the reservoir.

In testimony whereof, I affix my signature, in presence of two witnesses.

SILAS McCLURE.

Witnesses:

C. W. STEWART,  
J. W. BAKER.