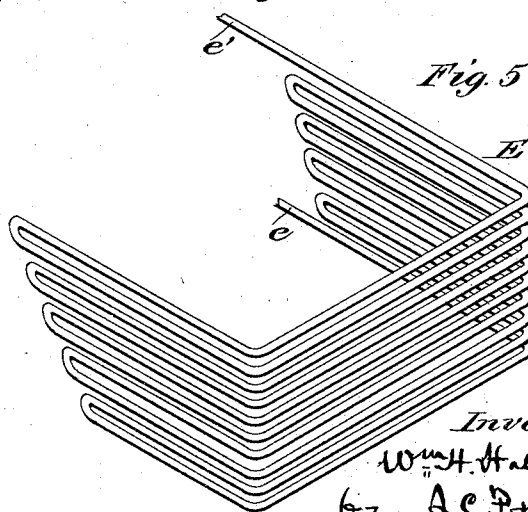
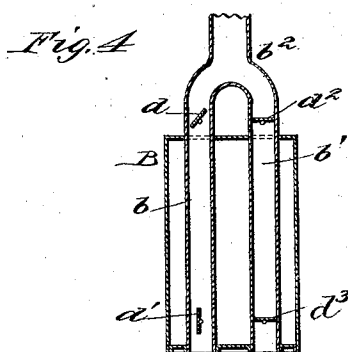
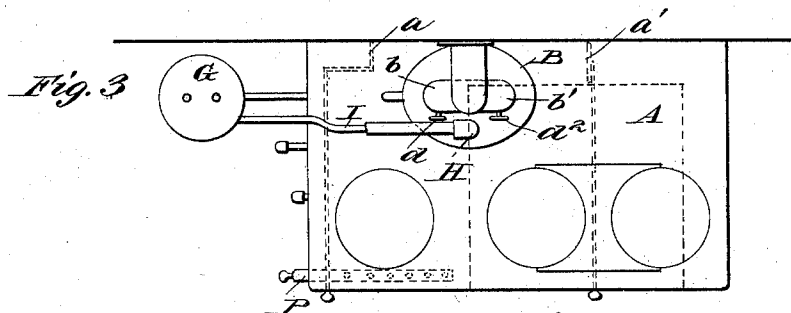
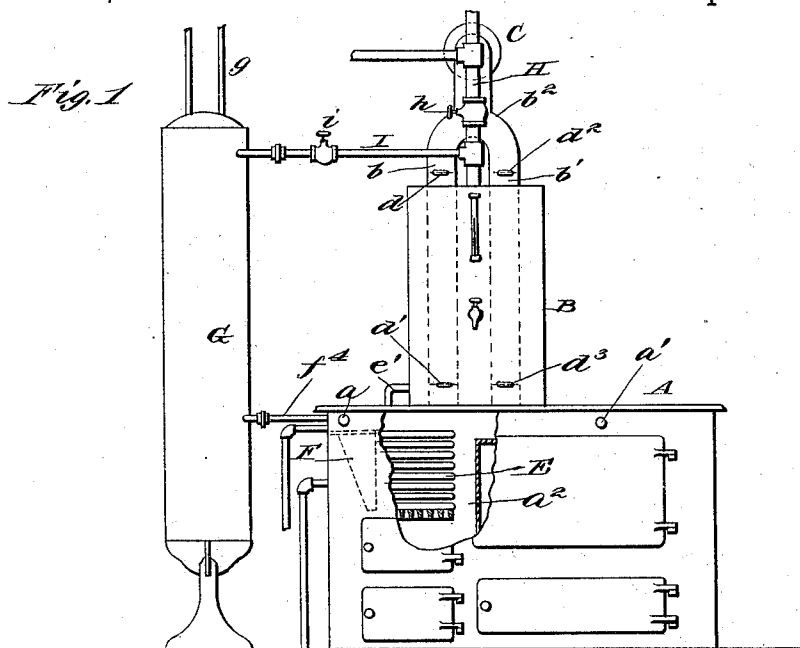


W. H. HALLOWELL.
HOT WATER HEATING SYSTEM.

No. 567,593.

Patented Sept. 15, 1896.



Witnesses.

J. F. Coleman
R. A. Morrison

Inventor
Wm. H. Hallowell
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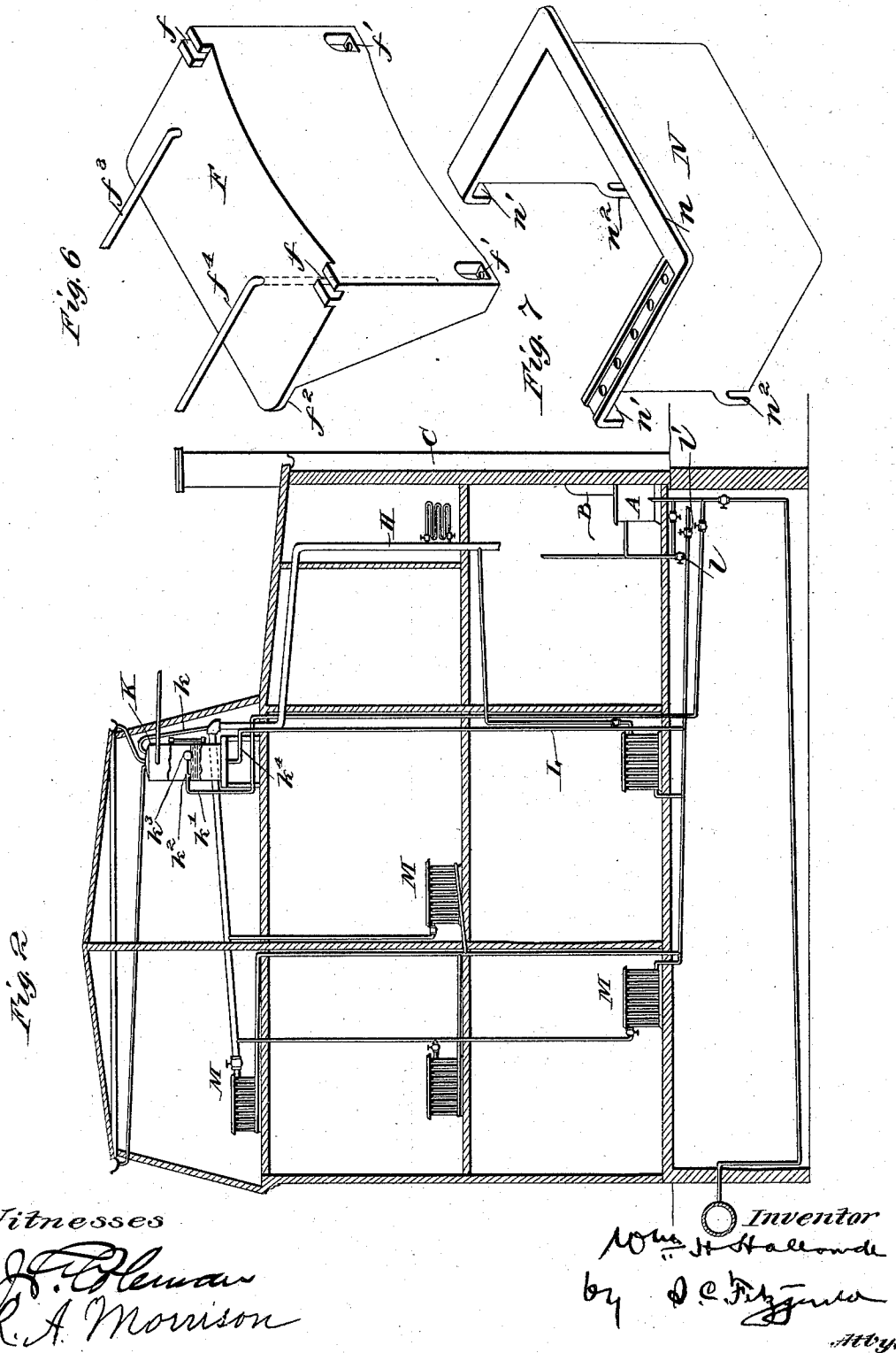
(No Model.)

3 Sheets—Sheet 2.

W. H. HALLOWELL.
HOT WATER HEATING SYSTEM.

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Patented Sept. 15, 1896.



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(No Model.)

3 Sheets—Sheet 3.

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Fig. 8.

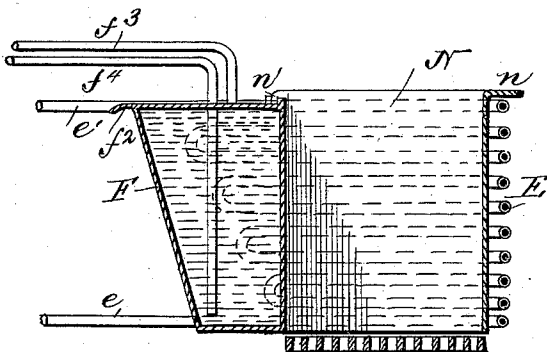
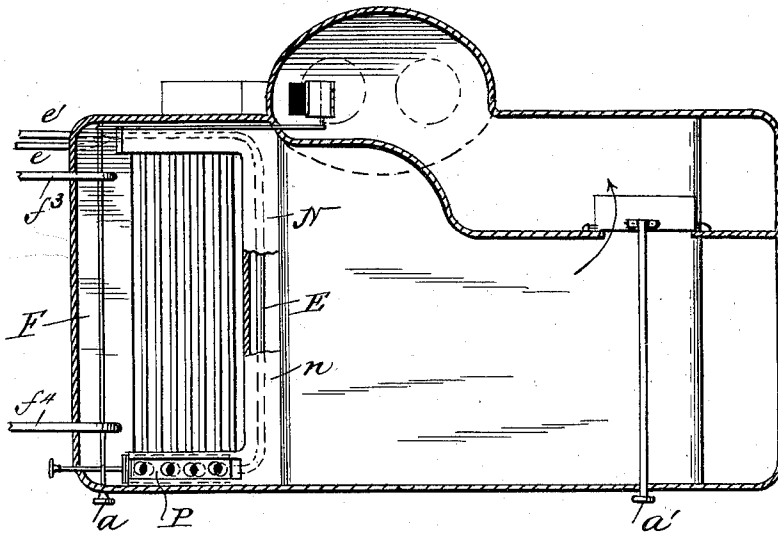


Fig. 9.

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UNITED STATES PATENT OFFICE.

WILLIAM H. HALLÓWELL, OF NORRISTOWN, PENNSYLVANIA.

HOT-WATER HEATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 567,593, dated September 15, 1896.

Application filed January 21, 1896. Serial No. 576,268. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HALLOWELL, a citizen of the United States, residing at Norristown, in the county of Montgomery, State of Pennsylvania, have invented certain new and useful Improvements in Hot-Water Heating Systems; and I 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.

My invention relates to improvements in hot-water heating systems, and particularly to a system used in connection with a kitchen-range.

The invention will first be described in connection with the accompanying drawings and then particularly pointed out in the claims.

In the drawings, Figure 1 is a front elevation of a range with my improvements attached set ready for use. Fig. 2 is a sectional view of a house, with my improved system of pipe and radiator connection shown in elevation. Fig. 3 is a plan view of the range and attachments. Fig. 4 is a longitudinal section of the supply-boiler and flues located therein. Figs. 5, 6, and 7 are perspective views of the coil fire-pot, water-back, and summer fire-pot, respectively. Fig. 8 is a horizontal sectional view of the range with the top plate removed, the location of boiler and tubes shown in dotted lines, also showing the connection of the dust-flues and oven-flues with the boiler tubes or flues, the arrangement of the coil fire-pot, and damper on summer fire-pot. Fig. 9 is a vertical section of water-back, summer fire-pot, and coil.

Referring to the drawings, A is a range, on top of which is secured a supply-boiler B, having two tubes or flues $b\ b'$, which form the connections between the dust-flue and oven-flue of the range, respectively, and the chimney C, the said flues converging at their top ends and uniting in a Y b^2 , which enters the chimney. Each flue is provided with two dampers, one at each end, as shown at d, d', d^2 , and d^3 . The range is provided with two dampers, one, a , which controls the dust-flue, and the other, a' , which controls the oven-flue. When damper a is open, the draft from the fire-chamber is straight up the dust-flue of the supply-boiler, while when the said damper is closed and the

damper a' is open the draft is over the top of the oven and through the oven-flue in the supply-boiler. When, however, the latter flue a' is closed, the draft is over the oven-top, down and around the oven, and thence through said oven-flue in the supply-boiler.

The fire-pot of the range is formed of a coil E of pipe, and has an inlet e at the bottom and an outlet e' at the top, which outlet enters the bottom of the supply-boiler B. The coil E is made from three sides of a rectangle, the open side being closed by a water-back F, triangular in vertical cross-section and having a pair of lugs or ears f at each end of its upper inner edge and a recess provided with a central aperture near each end of the lower edge of the back. The inner or back portion of the water-back is slightly curved or concaved, as shown in Fig. 6.

The range is so constructed that an airspace a^2 is left between the side of the coil E and the side of the oven, whereby all danger of the oven being chilled by the water in the coil is avoided. The water-back also has a projecting lip f^2 , which rests upon the inner lining of the range, and is further provided with an inlet-pipe f^4 and an outlet-pipe f^3 .

G is a kitchen-boiler of the usual construction, connected to the inlet f^4 and provided with a suitable distributing pipe or pipes g , leading to the baths or the sinks in the usual manner.

To the top of the supply-boiler B is connected a supply-main H, leading to the radiators, the said main having a valve h just above the supply-boiler B, and is connected by a pipe I to the kitchen-boiler G, the pipe I having a valve i .

Above the highest point attained by the main H is located an expansion-tank K, which is connected at its top to the highest point of the said main H by a relief-pipe k . The expansion-tank is provided with an inlet k' , automatically opened and closed by a float-valve k^2 , operated by a ball-float k^3 in the expansion-tank. The tank is also connected by a pipe k^4 to a return-pipe L, leading from the radiators M and connected to the inlet e of the coil fire-pot E, the said pipe being provided with a check-valve l , as shown, to prevent the water from the expansion-tank flowing back along the return-main L. The re-

turn-main is also provided with a cock at *U'*, by means of which it may be drained.

In the construction thus far described the cold water enters the expansion-tank and from there fills the entire heating system. When a fire is made within the coil fire-pot, the water becomes heated and rises in the supply-boiler, where it is still more heated by the heat escaping through the flues. From the supply-boiler the water ascends to the radiators, the relief-pipe at the top of the main H permitting the proper circulation. In the radiators M the water is cooled and returns by the return-pipe L to the bottom of the coil fire-pot at *e* to be again heated.

The water in the kitchen-boiler is heated by the water-back, or may be also heated by opening the valve *i*, which permits the supply-boiler to assist in such heating.

For summer use I have provided a summer fire-pot N, having one open side, the said fire-pot N being of such size as to fit within the coil fire-pot E and having an open side which is closed by the inner surface of the water-back. The pot N also has a rim *n*, perforated at one end, as shown, which rim rests on the inner walls of the stove, the holes serving to permit a circulation of air between the front of the summer fire-pot and the front of the coil E, whereby the latter is kept comparatively cool. The outward or forward ends of the rim are extended beyond the edge of the end portions of the summer fire-pot and are curved downward by forming lips or hooks *n' n'*, that engage the lugs or ears *f f* on the water-back, and near the bottom of the edge of the end portions are also formed lugs or hooks *n² n²*, that engage with the apertures in the recesses *f' f'* of the water-back. In order, however, to compel all the air entering the range to pass through the summer fire-pot, as may be required in forcing the fire to its utmost, I provide a damper P, which slides in a recess in the top surface of the perforated end of the rim and can be moved in or out by a handle *p*, projecting through the side of the stove, the damper having a series of holes

which can be brought into or out of register with the perforations in the rim *n*.

Having thus fully described my invention, what I claim is—

1. In a heating system, the combination, with a fire-pot formed of a coil of pipe in the shape of a rectangle having one open side, of a water-back filling the said open side and provided with a forwardly-projecting flange at its upper end, and a summer fire-pot insertible within the coil fire-pot and having a perforated ledge resting on the inner wall of the stove, and having one side open toward the water-back, substantially as described.

2. In a heating system, the combination, with a fire-pot formed of a coil, a water-back adjacent to the coil provided with a pair of lugs at each end of its upper inner edge and having a concaved back provided with a perforated recess near each lower end of the back, of a removable summer fire-pot insertible within the coil and provided with lips at its forward upper end and lugs at its forward lower end for engagement with the lugs and recesses on the water-back, substantially as described.

3. In a heating system, the combination, with a coil fire-pot and a summer fire-pot arranged to fit within said coil fire-pot and having a perforated rim, of a damper arranged to close the perforations in the rim, substantially as described.

4. In a heating system, the combination, with a coil fire-pot and a summer fire-pot arranged to fit within said coil fire-pot and having a rim provided with a recess on its upper surface and a series of holes opening into the recess, of a damper sliding in said recess and provided with holes arranged to be moved into register with the holes in the rim, substantially as described.

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

WM. H. HALLOWELL.

Witnesses:

JNO. CUNNINGHAM, Jr.,
LILLIAN M. HOBLIT.