No. 631,184. Patented Aug. 15, 1899.

H. R. SHEPPARD.

WATER HEATING APPARATUS FOR RANGES.

(Application filed Aug. 27, 1898.)

(No Model.)

FIG. 1.

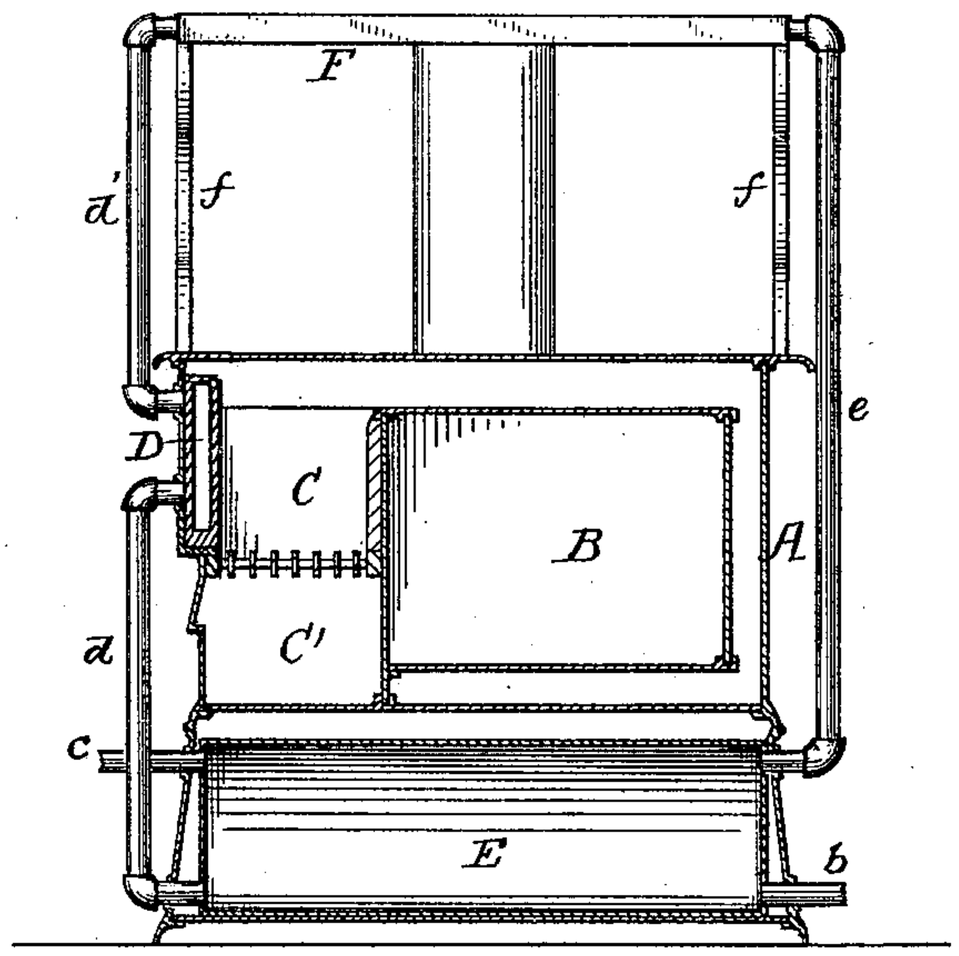


FIG. 5.

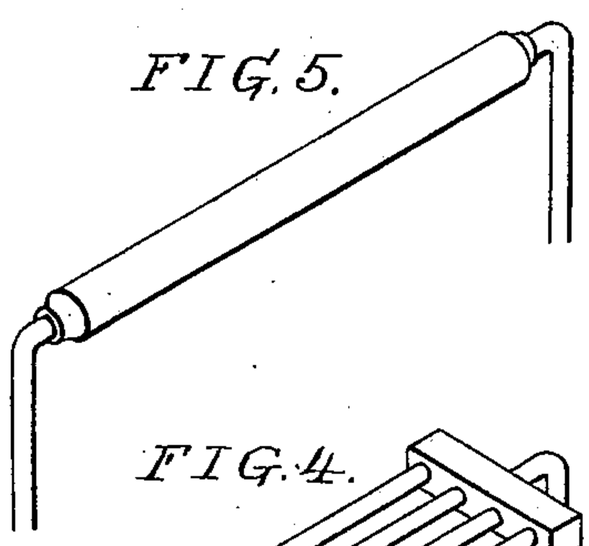


FIG. 4.

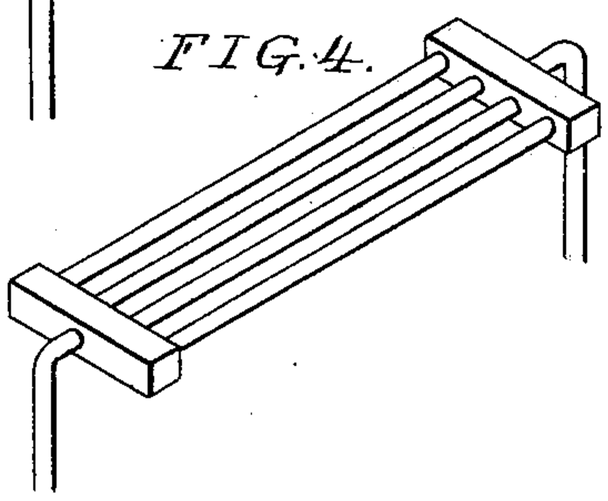


FIG. 2.

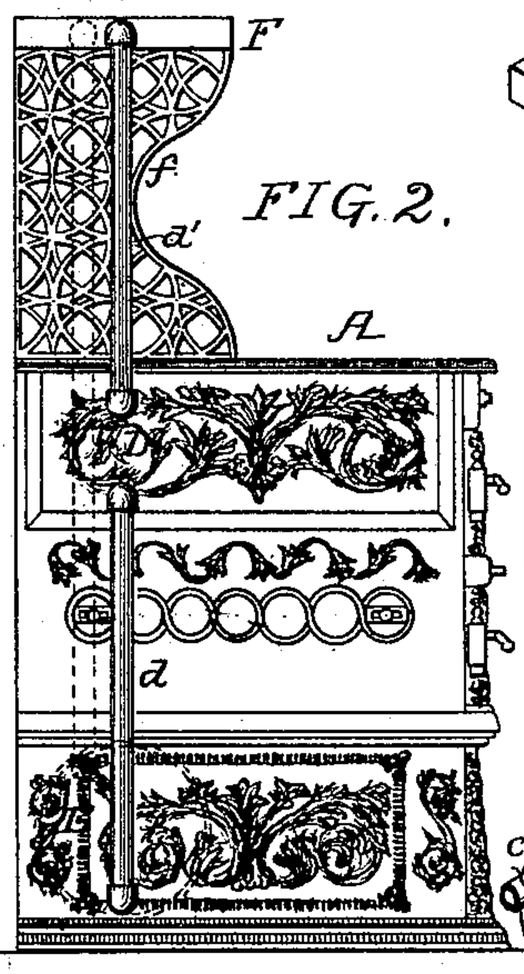
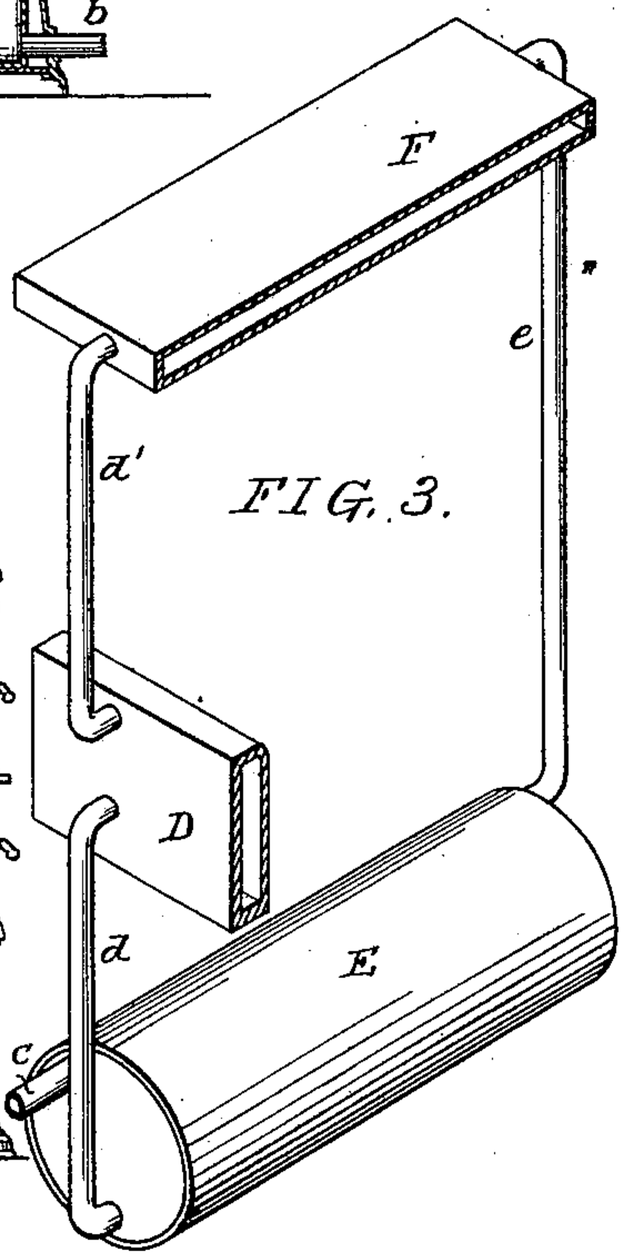


FIG. 3.



Witnesses:-
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HOWARD R. SHEPPARD, OF PHILADELPHIA, PENNSYLVANIA.

WATER-HEATING APPARATUS FOR RANGES.

SPECIFICATION forming part of Letters Patent No. 631,184, dated August 15, 1899.

Application filed August 27, 1898. Serial No. 689,669. (No model.)

To all whom it may concern:

Be it known that I, HOWARD R. SHEPPARD, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Water-Heating Apparatus for Ranges, of which the following is a specification.

The object of my invention is to so construct a range that the boiler connected to the water-back will be situated under the lower part of the range, preferably directly under the oven and fire-pot, and at the same time provide for the perfect circulation of water through the boiler, as fully described hereinafter.

In the accompanying drawings, Figure 1 is a sectional elevation of a range, illustrating my improvements. Fig. 2 is an end view. Fig. 3 is a perspective view, partly in section, showing the boiler and connections detached; and Figs. 4 and 5 are views of modifications of my invention.

In placing circulating-boilers below the fire-chamber of a range it is difficult to provide for the perfect circulation of water between the water-back to the boiler, the circulation of water being entirely dependent upon the difference in specific gravity between the ascending column of heated water passing from the water-back and that of the descending column of somewhat cooler water to the boiler, for if the temperature of these two columns of water is exactly equal no circulation will take place.

By my invention I am enabled to cool the return-column, and thus increase the specific gravity of the column of water returning to the boiler, thereby insuring a perfect circulation.

Referring to the drawings, A is the framework of an ordinary range B being the oven, C the fire-pot, and C′ the ash-pit. At one side of the fire-pot is a water-back D, of usual construction, and mounted under the range is a boiler or water-tank E. The lower portion of this boiler is connected to the lower portion of the water-back by a pipe *d*.

Mounted, preferably, above the range is a shallow waterway F, and this waterway may be in the form of a flat hollow shelf, forming the mantel-shelf of the range, as shown in Fig. 1, or may be in the form of an enlarged pipe, as shown in Fig. 5, or may be in the form of a shelf made up of a series of small pipes connected to manifold heads, as shown in Fig. 4.

The waterway F is supported on standards or brackets *f f*, mounted on the range, and is connected at one end to the upper portion of the boiler E by a pipe *e*, and at the opposite end is connected to the upper portion of the water-back by a pipe *d′*, so that a circulation of water will be from the water-back up through the waterway F, down the pipe *e* to the boiler E, and then up through the pipe *d* to the water-back.

b is the water-supply pipe, entering the boiler preferably at the bottom, and *c* is the outlet-pipe, entering the boiler at the top.

It will thus be seen that by my construction I am enabled to mount the boiler under the body of the range, so as to be entirely out of the way, and connect it to the enlarged waterway in such a manner that the hot water as it passes from the water-back up to and through the waterway F will be cooled sufficiently so that the specific gravity of the water in the descending pipe *e* will be greater than that in the ascending pipes *d* and *d′*, thus forcing the water to circulate from the boiler to the water-back and through the waterway F.

I claim as my invention—

1. The combination in a range, of a water-back, a boiler mounted below the water-back and connected thereto, and an enlarged waterway mounted above the water-back and connected thereto and to the boiler, so that the hot water from the water-back will pass up into the waterway and from there circulate through the boiler, substantially as described.

2. The combination in a portable range, of a water-back, a boiler mounted below the range and within the casing of the same and connected to the water-back, and a waterway mounted above the water-back, said waterway having an enlarged radiating-surface and connected at one end to the water-back and at the opposite end to the boiler, such connection permitting the circulation of the hot water from the water-back up through the waterway and down through the boiler, substantially as described.

3. The combination in a range, of a water-

back located at one end of the same, an independent boiler located under the range and within the casing of the same, an enlarged flat waterway independently supported on the range, a pipe connecting one end of the waterway with the upper portion of the boiler, a pipe connecting the opposite end of the waterway with the upper portion of the water-back, and a pipe connecting the lower portion of the water-back with the lower portion of the boiler, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HOWARD R. SHEPPARD.

Witnesses:
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JOS. H. KLEIN.