(No Model.)

G. T. BREWER.

HOT WATER APPARATUS FOR COOKING RANGES.

No. 456,757. Patented July 28, 1891.

Fig. 1.

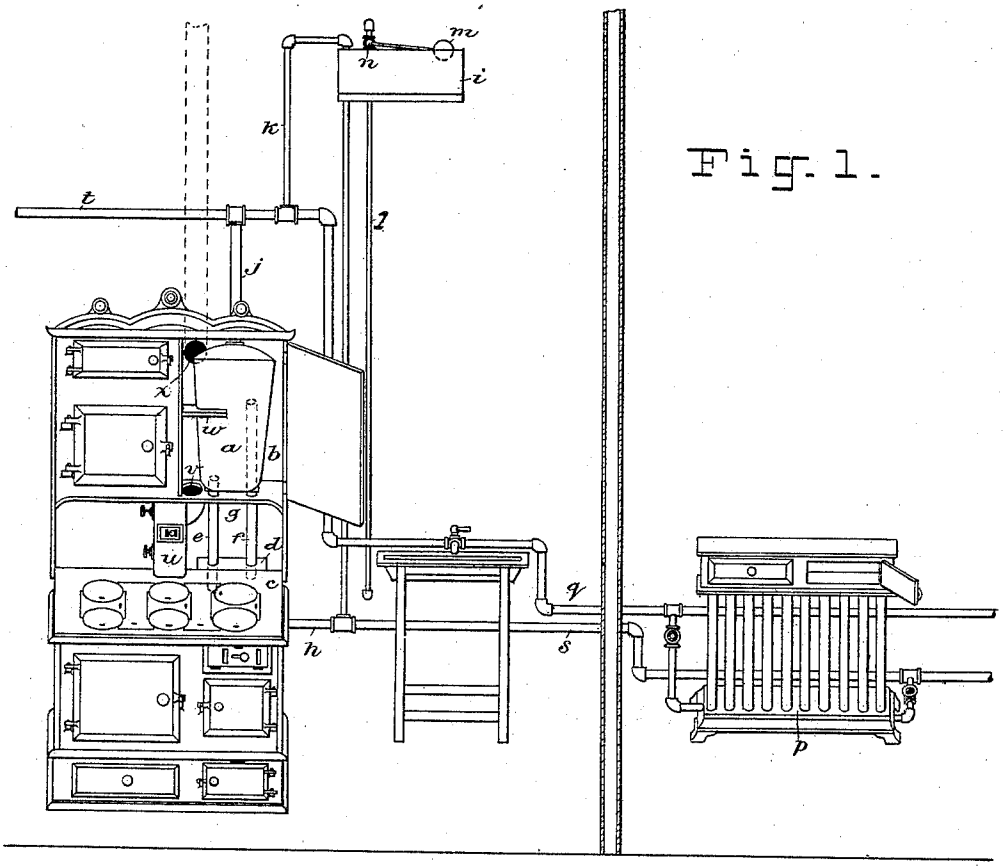
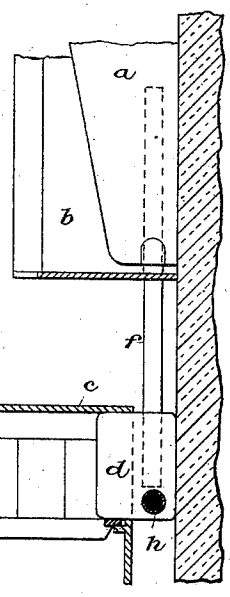


Fig. 2.



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HOT-WATER APPARATUS FOR COOKING-RANGES.

SPECIFICATION forming part of Letters Patent No. 456,757, dated July 28, 1891.

Application filed May 13, 1889. Renewed June 4, 1890. Serial No. 354,191. (No model.)

To all whom it may concern:

Be it known that I, GILBERT T. BREWER, a citizen of the United States, residing at Hoboken, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Hot-Water Apparatus for Cooking-Ranges, of which the following is a specification.

My invention consists in improvements in the hot-water apparatus of cooking-ranges, whereby through the contrivance of such heaters suitably for utilizing in them the principles of the somewhat similar improvements in heating-stoves, for which a patent was granted to me March 4, 1890, No. 422,496, a larger supply of hot water is provided with smaller and simpler range-boilers and with less heat, space is economized in the room, and the heating of the room in hot weather, as by the boiler of the present arrangement, is avoided, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 represents a range with my improved hot-water apparatus partly in front elevation and partly as seen looking obliquely downward from an elevated position in front of the same, and Fig. 2 is a detail in section on an enlarged scale.

I employ a much shorter and smaller boiler *a* than the common range-boiler and locate it in a hot closet *b*, occupying the position of the elevated oven or warming-closet sometimes used, directly over and a short distance above and leaving a clear space so as not to obstruct the use of the cooking top plate *c* of the range, and directly over the water-back *d*, said water-back being extended backward a little beyond the range-top and having the circulating-pipes *e* and *f*, connected with its top back of said range-top and extended directly upward through the bottom plate *g* of the hot closet into the bottom of the boiler with the supply-pipe *h*, connected into one side of the water-back, as usual, but having an elevated tank *i* for its source of supply instead of the usual connection with the high-pressure street-main, and the outflow-pipe *j* is connected with the top of the boiler and extended upward to a point a little below the supply-tank, and has a vent-branch *k*, extending upward and opening into the tank to avoid steam-pressure in the boiler, so that the pressure therein is never higher than is due to the height of the tank above the boiler. The boiler is therefore enabled to be made in cast metal, which is much cheaper than the common sheet-metal boilers, and is strong and safe for such pressure, even when made thin and light, especially when the water supply from the boiler is only for the kitchen and other rooms on the same level, as in flats, for which the invention is more particularly intended, the tank being in such case at the top of the same story or thereabout in which the range is located.

The ordinary range-boiler is much larger than my boiler, and is located so as to be exposed to the atmosphere of the room, and loses much heat by radiation, the water heating very slowly and seldom getting very hot. It is purposely made thus large and so exposed to radiation, because when connected with the high-pressure street-mains there is no practical circulation from the boiler back into the main, and it is dangerous to allow the water to become so heated as to generate steam-pressure above that of the water, the steam being liable to drive the water from the water-back into the main and expose the water-back thus unprotected to injury by heat. So much heat wasted by radiation and the large volume used for protection against steam-pressure so lessens the power of the apparatus for hot water that very hot water cannot be had, except at intervals after excessive firing for a considerable length of time, and the radiated heat is very objectionable in warm weather. The circulation of the water between the water-back and boiler is not so active when subject to the pressure of the water-service main as at atmospheric pressure or only slightly above, which is the condition in my boiler, and the circulation is much more active when the boiler is located directly over the water-back and connected with straight pipes, as I have arranged it, than when located as commonly placed, which, together with the protection from loss by radiation, which I have provided for by inclosing the tank, enables much hotter water to be furnished in my apparatus with less

expenditure of fuel, and although the quantity contained in the boiler to draw from is not so great, yet it will furnish as much or more hot water in a given time, because it heats so much quicker between drawings. If steam is generated at times when not much water is drawn, it merely passes up into the supply-tank through the vent-pipe and condenses there, and returns again as warm water to the boiler, and in a condition to be heated more quickly than before. The tank is supplied from the street-main through the pipe *l*. The supply is automatically regulated by the float *m*, connected with the arm of the cock *n*, said tank being open to the atmosphere.

The heating power of the boiler thus arranged is so great and the circulation so active that with a small boiler such as can be conveniently placed in a hot closet such as it is practicable to have on a range of uniform size, a hot-water-heating system of considerable capacity, as for the whole suite of a flat of moderate size, may be successfully operated, besides furnishing the needed supplies of hot water for all the purposes of family use, the ordinary radiators, as *p*, being distributed throughout the rooms and connected as usual for the outflow of the hot water and return of the cold, the outflow being in this case an extension *q* of the hot-water pipe, and S the return-pipe connected with pipe *h*, through which the water-back is supplied from the tank. *t* indicates another hot-water pipe that may be extended in another direction, if desired.

The smoke-pipe *u* discharges into the hot closet at *v*, and the heated currents are deflected around the boiler by the deflector *w*, and escape through the upper section *x* of the smoke-pipe.

In my improvement in heating-stoves on which the before-mentioned patent was granted the boiler is suspended in the stove itself directly over the fire-space, which is an arrangement only adapted for heating-stoves, but entirely inapplicable to cooking-stoves, the top of which must be clear of any such attachment for cooking purposes, which would be obstructed thereby. It is to be noted that in this case the cooking-top of the stove and the hot closet located above and leaving said cooking-top free, as for ordinary use, are elements of novelty and utility distinguishing this invention from the other.

I claim as my invention—

1. In a hot-water cooking apparatus for stoves, the combination, with the stove having the usual cooking-top, of the water-back, the elevated hot closet above an open space between it and said cooking-top, the boiler inclosed in the hot closet subject to the heat of the waste products from the fire, and two circulating-pipes connecting the water-back and boiler, substantially as described.

2. In a hot-water apparatus for cooking-stoves, the combination, with the stove having the usual cooking-top, of the water-back, the elevated hot closet above an open space between it and said cooking-top, the boiler inclosed in the hot closet subject to the heat of the waste products from the fire, two circulating-pipes connecting the water-back and the boiler, and the feed-pipe connected with the water-back.

3. In hot-water apparatus for cooking-stoves, the combination, with the stove having the usual cooking-top, of the water-back, the elevated hot closet above an open space between it and said cooking-top, the boiler inclosed in the hot closet subject to the waste products from the fire, two circulating-pipes connecting the water-back and boiler, the outflow-pipe connected with the boiler, and the return-pipe connected with the water-back, substantially as described.

4. In a hot-water apparatus for cooking-stoves, the combination, with the stove, of the water-back, the elevated hot closet located over and the usual distance of the elevated oven above the stove, the boiler inclosed in the part of said closet over the water-back, the vertical circulating-pipes connecting the boiler and water-back, the supply-pipe connected with the water-back, the overflow stand-pipe connected with the top of the boiler, the circulating-pipes connected with the stand-pipe above the boiler, the supply-tank located above the circulating-pipes, and the vent-pipe connected to the circulating-pipe and discharging above the surface of the water in said tank, all substantially as described.

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Witnesses:
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