

C. W. RICE.
Hot Water Heating Apparatus.

No. 219,978.

Patented Sept. 23, 1879.

Fig. 1.

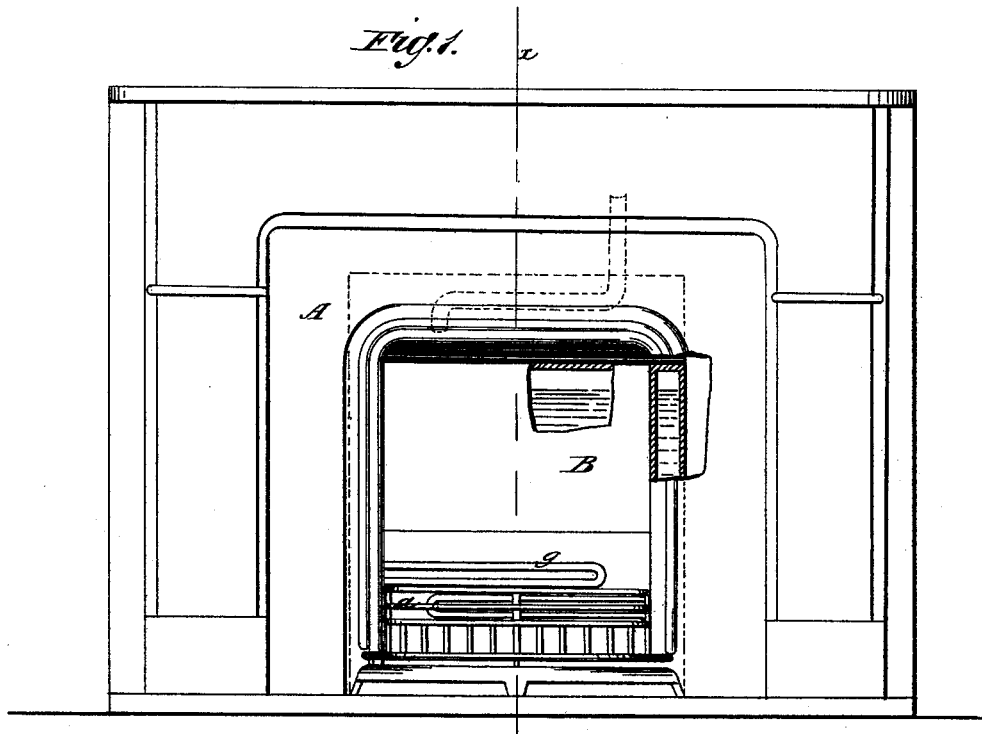
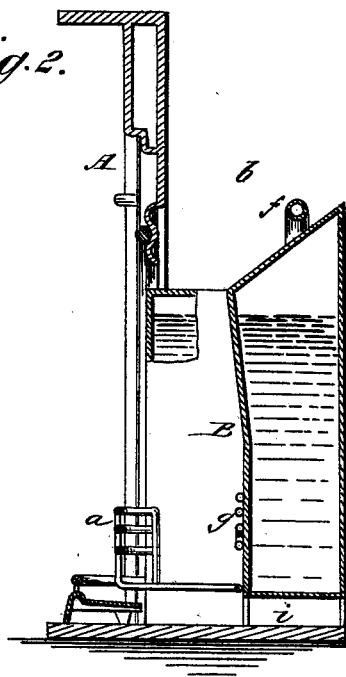


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN HOT-WATER HEATING APPARATUS.

Specification forming part of Letters Patent No. **219,978**, dated September 23, 1879; application filed March 11, 1879.

To all whom it may concern:

Be it known that I, CHARLES WM. RICE, of Columbus, in the county of Franklin and State of Ohio, have invented a new and useful Improvement in Hot-Water Heating Apparatus, of which the following is a specification.

The object of my invention is to utilize the waste heat from open fire-places in houses, for the purpose of heating other parts of the building.

The invention consists in a fire-place having grate, a water-box, a flue, and a coil of pipes, the box being connected with radiators by circulating pipes, as hereinafter described.

The construction and arrangement are shown in the accompanying drawings.

Figure 1 is a front view of an open fire-place and grate having the heating apparatus applied thereto. Fig. 2 is a vertical cross-section on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The open fire-place (shown at A) is of the usual character, *a* being the grate, and *b* the flue. In the flue *b*, at the back of the fire-place, is fitted a cast-iron box, B, which forms the back and sides of the fire-place. The box B is for containing the water to be heated, and connected to it are the circulation-pipes *f*, that pass to a radiator in the room to be heated. The rising pipe *f*, from the top of the box B, extends across the flue-space above B where it is in contact with the escaping products of combustion. At the front of box B are bent pipes *g*, communicating with the water-back, in which pipes the water will become rapidly heated.

The shape of the box B may be varied from that shown. It takes the place of the fire-brick usually employed, and the front next the fire-space conforms to the usual shape, so that while the grate is used in the usual way the waste heat is utilized to heat the water in the water-back.

Beneath box B is a dust-opening, *i*, that may be fitted with a damper, and communicates with flue *b*.

The apparatus may be arranged to use steam for heating instead of hot water. When used for the circulation of water alone the heat will be sufficient to maintain the circulation, and, if desired, the apparatus may be connected with street-mains to avail of the pressure.

The apparatus is simple, inexpensive, and safe, and is more convenient than ordinary hot-water heaters placed in cellars or other out of the way places.

The heater may be made to heat all the rooms in a house of ordinary size.

I am aware that a water-box, a heating-coil, and pipes connecting with radiators in the rooms to be heated, are old devices; but

What I claim is—

The combination, with fire-place A, having the grate *a*, of the coil *g*, water-box B, connected by circulating pipes with suitable radiators, and the flue *b*, all arranged as shown and described.

CHARLES WM. RICE.

Witnesses:

THOS. NEWELL,
JAMES E. HULL.