

C. R. ELLIS.

Boiler for Hot-Water Heating Apparatus.

No. 129,542.

Patented July 16, 1872.

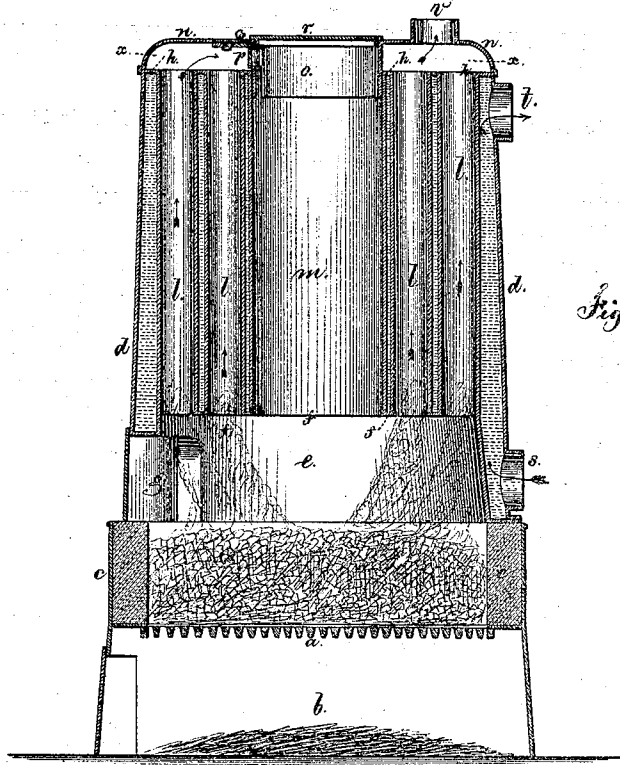


Fig. 1.

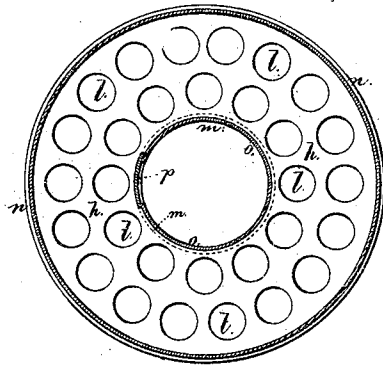


Fig. 2.

Chas. A. Smith
Geo. V. McKinney **Witnesses.**

INVENTOR
Charles R. Ellis
Per. Lemuel W. Serrell **ATTY.**

UNITED STATES PATENT OFFICE.

CHARLES R. ELLIS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN BOILERS FOR HOT-WATER HEATING APPARATUS.

Specification forming part of Letters Patent No. 129,542, dated July 16, 1872.

Specification of Boiler for Hot-Water Heating Apparatus, invented by CHARLES R. ELLIS, of Brooklyn, Kings county, State of New York.

Steam-boilers have been made with vertical ranges of tubes over the fire, and boilers for hot-water apparatus have been made with vertical flues and water spaces.

My invention relates to a vertical water-circulating boiler, with ranges of flues around a central magazine or flue, and a regulating-damper, by means of which the products of combustion can be partially directed through this vertical flue or entirely excluded from the same, according to whether the boiler is filled with fuel and the fire burning at the base, or whether the central portion is employed as a heating-flue, in which case the damper will be opened; but, when used as a magazine, said damper will be closed; thereby this boiler is adapted to the various circumstances where it will be used, and there is in it a very large area of heating-surface.

In the drawing, Figure 1 is a vertical section of said boiler, and Fig. 2 is a sectional plan at the line *x x*.

The grate *a* is above the ash-pit *b* and below the fire-box *c*, which may either be of fire-brick within a metal casing, or it may be made hollow to contain water, and lined or not with fire-brick. My improved boiler is made of a cylindrical or conical case, *d*, with an inner casing, *e*, united by a flange at the bottom to the exterior case *d*, and extending up to the diaphragm *f*. The necessary opening is provided at *g* for a fire-door. At the upper end of the case *d* is a second diaphragm or head, *h*, and between these diaphragms *f* and *h* are circular ranges of vertical tubes *l l*, forming

flues that pass through the water-spaces of the boiler. The vertical tube *m* over the center of the fire-chamber is of a size sufficient to act as a magazine to supply the fuel when used as a base-burner, or when fuel is not introduced in such tube the heating-surface of the boiler is increased thereby. The jacket *n* is provided with an escape-flue, *v*, and the edge of the jacket is connected to the upper edge of the case *d*. Between the upper end of the tube *m* and the jacket *n* is a tight casing, *o*, with a valve or damper *p*; and *r* is a cover fitting tightly upon the opening in the jacket *n* that is above said tube *m*. When the damper *p* is open the products of combustion will pass up through the tube *m*, as well as through the tubes *l*, and escape by the flue *v*; but when this damper *p* is closed there will not be any circulation of the heat through the tube *m*, and hence this tube is admirably adapted to use as a fuel-magazine, because the water surrounding said tube *m* is not confined, and is only about 212° Fahrenheit, and hence the fuel in the magazine will be kept at a low temperature. The cooler water enters at *s*, and circulates up through the boiler, and passes away by the pipe *t* to the heating-coil.

I claim as my invention—

The boiler for hot-water heating apparatus, made with vertical flues surrounding the central tube *m*, in combination with the casing *o* and damper *p*, as and for the purposes set forth.

Signed by me this 26th day of June, A. D. 1872.

CHAS. R. ELLIS.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.