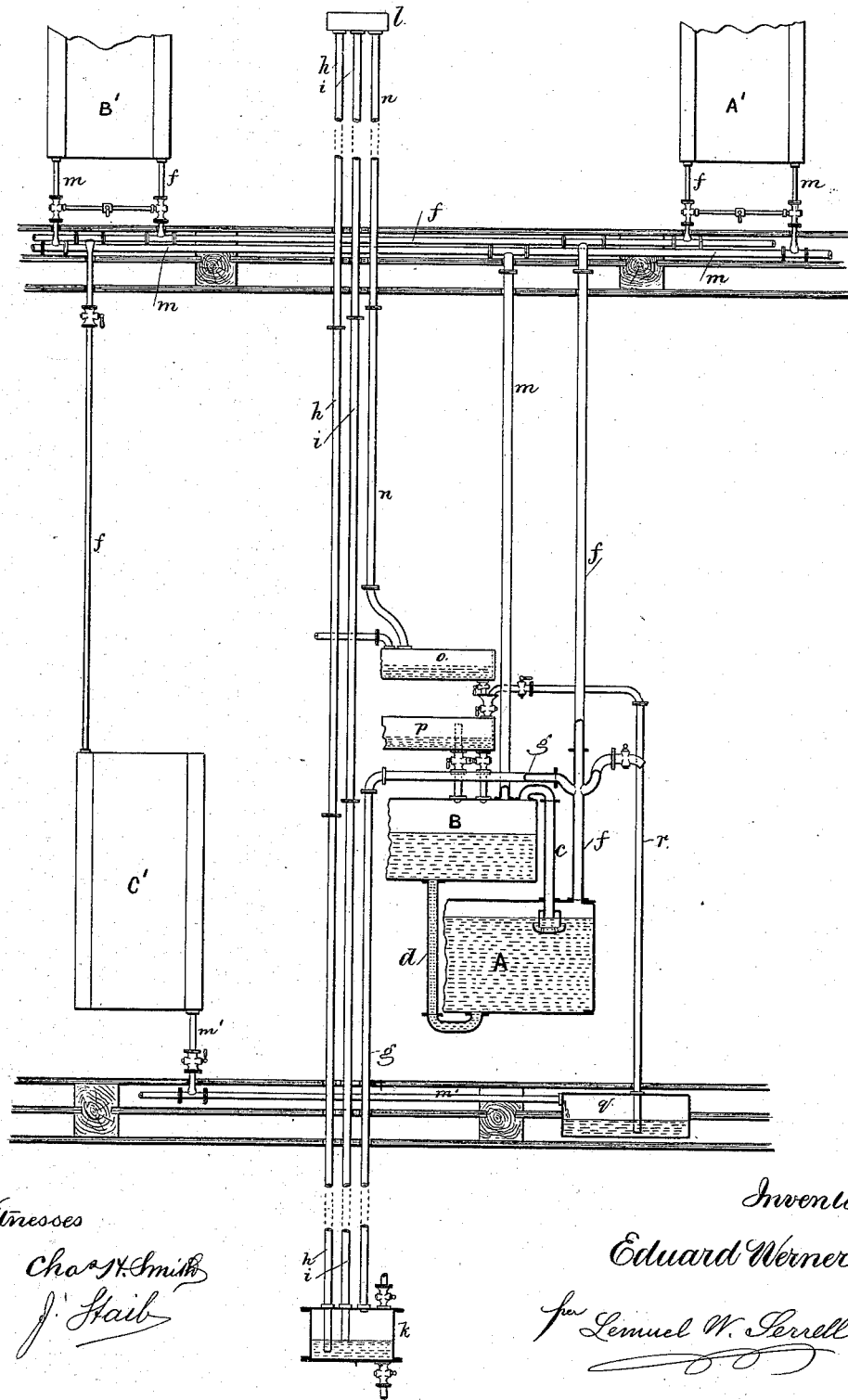


(No Model.)

E. WERNER.
STEAM HEATING APPARATUS.

No. 263,739.

Patented Sept. 5, 1882.



Witnesses

Chas H. Smith

J. Haib

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att'y

UNITED STATES PATENT OFFICE.

EDUARD WERNER, OF GRIMMA, SAXONY, GERMANY.

STEAM HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 263,739, dated September 5, 1882.

Application filed June 30, 1882. (No model.) Patented in Germany June 29, 1881, No. 17,309.

To all whom it may concern:

Be it known that I, EDUARD WERNER, of Grimma, in the Kingdom of Saxony, German Empire, have invented an Improvement in Steam Heating Apparatus, of which the following is a specification. Letters Patent for this invention were granted to me in German Empire on June 29, 1881, No. 17,309.

This invention relates to steam heating apparatus for dwellings and buildings in which steam-generators of small capacity are used; and the object of the invention is to provide for the automatic feed of water to the boiler, in order that the apparatus shall be independent of the attention of servants in this respect, and to provide for regulating the steam-pressure without employing the ordinary weighted or spring safety-valves.

In the drawing the steam heating apparatus is shown by an elevation, partly in section.

A represents the boiler, which may be placed in the cellar or in any convenient part of the house. It may be connected with the stove or range in the kitchen.

B is the feed-water tank, placed above this boiler, and the size of this tank must be proportionate to the size of A, and should be adapted to contain water sufficient for twenty-four hours' working at least.

c and d are pipes connecting A and B, the pipe c passing from the top of B and into A to about the water-level, and d passing from the bottom of A to the bottom of B. The end of the pipe c in A is provided with a small cup, into which a short cylinder is inserted, and there is an opening between the lower part of the cylinder and cup, which permits the passage of steam and water to the pipe c.

The operation of the parts thus far described is that, upon steam being generated in A by the fire beneath it, water will be forced from A into B through the pipe d until the mouth of the pipe c in A is free. Then steam will pass by the pipe c into B, and water will run by gravity from B into A through the pipe d until the mouth of c in A is closed by the rising water, and so on, and the boiler A is thereby constantly supplied with water. If there are but slight variations in the steam-pressure, the water-level in A will be nearly constant on the line of the mouth of c in A.

f is a pipe for steam, extending from the upper part of the boiler A and passing to the various radiators in the house or building.

I have shown three radiators, two, A' B', represented as in an upper story, and one, C', as located upon the same floor as the boiler.

m are the return-pipes from A' B' for the water of condensation which passes to the tank B, and m' the return-pipe from C', which passes to the box g, from which it may be forced through the pipe r into a small tank, p, by steam-pressure, and from p it passes to B by a pipe and cock.

g is a branch from the steam-pipe f, and one end of g opens into a box, k, containing water. Extending upwardly from the box k are pipes h i, that end at the blow-off box l. The ends of the pipes h i in k are at different levels, and when the steam-pressure in A becomes excessive the steam passing by the pipe g will act upon the water in k and force it up into h and i until the mouth of i in k is free. Then the steam will escape through i to l, and will blow off into the atmosphere and relieve the pressure in A. As soon as such steam-pressure is relieved the column of water in h descends, raising the water-level in k and closing the mouth of i, and this operation will be repeated whenever the steam-pressure exceeds the maximum point.

The maximum steam-pressure of the apparatus is determined by the distance between the boxes k and l, and the consequent height of the water column raised by the steam. The water of condensation from l runs by the pipe n to the tank o, and the tanks o and p are connected by a pipe and cock to allow the water from o to run into p, and from the latter it passes to B and to the boiler A. This steam, instead of passing to radiators for heating purposes, might pass to engines for driving light machinery.

I claim as my invention—

The boiler A and tank B, connected by the pipes c and d, in combination with the steam-pipe f, return-pipe m, boxes k l, and pipes g, h, i, and n, substantially as and for the purposes specified.

This specification signed by me this 23d day of May, A. D. 1882.

EDUARD WERNER.

Witnesses:

MARTIN KÖRNER,
WILHELM WIESENHÜTTER.