

(No Model.)

J. HAAG.

STEAM AND HOT WATER RADIATOR.

No. 287,122.

Patented Oct. 23, 1883.

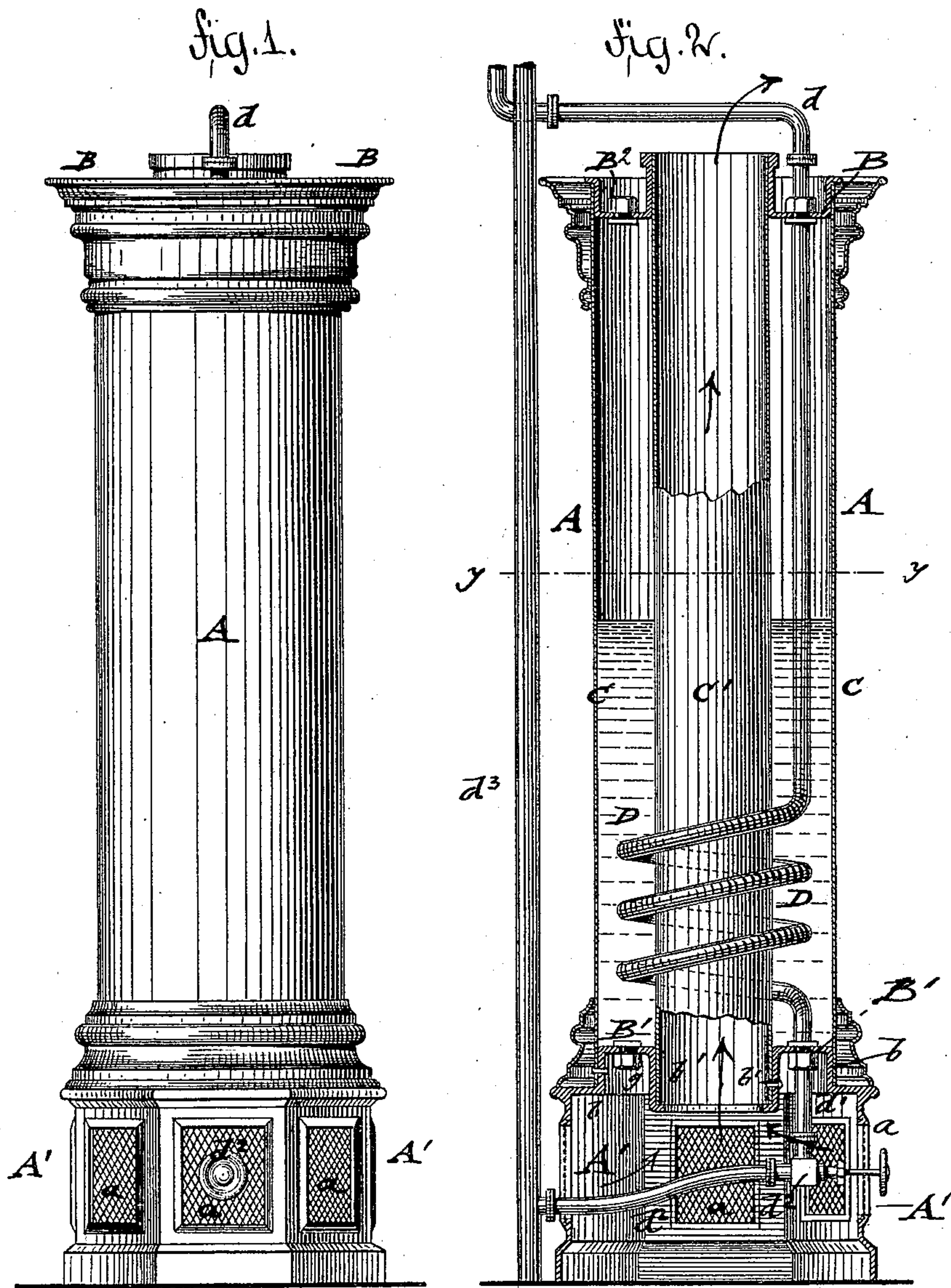
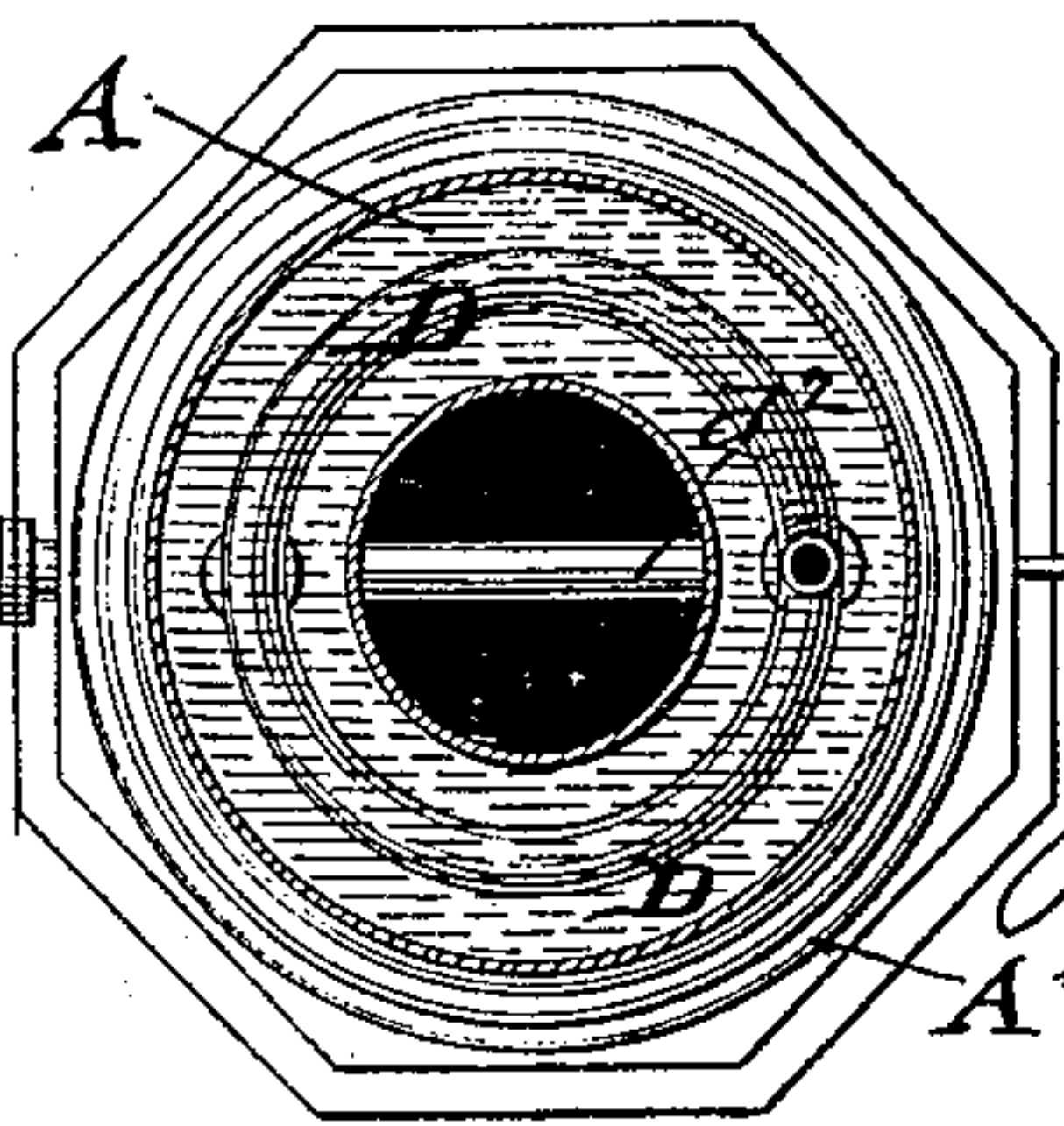


Fig. 3.



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STEAM AND HOT-WATER RADIATOR.

SPECIFICATION forming part of Letters Patent No. 287,122, dated October 23, 1883.

Application filed July 18, 1883. (No model.) Patented in Germany October 17, 1877, No. 2,898.

To all whom it may concern:

Be it known that I, JOHANNES HAAG, of Augsburg, in the Kingdom of Bavaria and Empire of Germany, have invented certain
5 new and useful Improvements in Steam and Hot-Water Radiators, of which the following is a specification.

This invention has reference to an improved steam and hot-water radiator, which combines to some extent the advantages of heating by steam and hot water in one system; and the invention consists of a closed hot-water reservoir having a central longitudinal opening communicating with air-openings in
10 the base of the reservoir, a steam-coil located in the hot-water reservoir and connected with a steam-supply pipe, and with a valved pipe for drawing off the water of condensation.

In the accompanying drawings, Figure 1 represents a front elevation of my improved steam and hot-water radiator. Fig. 2 is a vertical central section of the same on line $x x$, Fig. 3; and Fig. 3 is a horizontal section on line $y y$, Fig. 2.

25 Similar letters of reference indicate corresponding parts.

In the drawings, A represents a closed hot-water reservoir, which is preferably of cylindrical shape, and supported on a base, A',
30 having screened openings $a a$, for the admission of air. The base A' is preferably made of cast-iron and riveted to the bottom B' of the reservoir A. The bottom B' is made of cast-iron, with concentric flanges $b b'$ cast integral therewith. The reservoir A has a central open
35 tube, c' , that extends longitudinally through the same, for the passage of air. The outer wall, C, of the reservoir A is tightly secured to the outer flange, b , of the bottom B, and the
40 interior wall, C', is attached to the flange b' of the same. Between the outer and inner walls C C' is formed an annular space, that is closed at the top by a ring-shaped top plate, B, to which the walls C C' of the reservoir are
45 applied in the same manner as to the bottom B'. The space between the two cylinders C C' is filled to about half its height with water through an opening in the top plate, B, said opening being closed by a screw-plug, B².

Through this opening water is supplied from 50 time to time to the reservoir, as required, to compensate for small losses by evaporation. Whenever it is desirable to remove the water, it can be done through an opening, g , arranged in the bottom B'. This opening is also closed 55 by a screw-plug. The water in the reservoir A is heated by a steam-coil, D, which is located in the lower part of the reservoir, and connected to a steam-supply pipe, d , at its upper end, which passes through an opening 60 in the top plate. The lower end of the coil D is connected, by a pipe, d' , that passes through an opening in the bottom B', to a valved pipe, d'' , which is again connected with a vertical pipe, d^3 , through which the water of conden- 65 sation is conducted off. As the shape of the worm gives sufficient elasticity to the metal to provide for expansion and contraction, a stuffing-box is not needed at the points where the steam-pipes enter and leave the reservoir. 70 The steam, as it passes through the coil D, heats the surrounding water and raises it to the boiling-point, thus filling the space in the upper part of the reservoir with low-pressure steam, while the steam in the coil D is partly 75 condensed and conducted off.

The heating of the air in the room which is supplied with a radiator of this construction takes place in two ways: first, by radiation from the outer surface of the reservoir, 80 and by convection, as the cold air enters through the screened openings in the base A', becomes heated in contact with the interior surface of the reservoir, and passes out at the top, thereby keeping up a regular circulation 85 of air through the center of the reservoir, as indicated by arrows in Fig. 2. Whenever it is desirable to diminish the heat, it is only necessary to close partly or entirely the valve of pipe d'' , whereby the coil D is partly or 90 entirely filled with water produced by the condensation of the steam, so that the heating action of the same on the water in the reservoir is partly or entirely interrupted. By opening the valved pipe d'' , the heating action of 95 the radiator is resumed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A combined steam and hot-water radiator,
consisting of a hot-water reservoir having a
central opening, a supporting-base having air-
supply openings, a steam-coil located in the
5 reservoir, a pipe to supply steam to the coil,
and a pipe to conduct off the water of con-
densation, substantially as set forth.

In testimony that I claim the foregoing as
my invention I have signed my name in pres-
ence of two subscribing witnesses.

JOHS. HAAG.

Witnesses:

JAKOB AHBHUNDT,
PAUL HERBERGER.