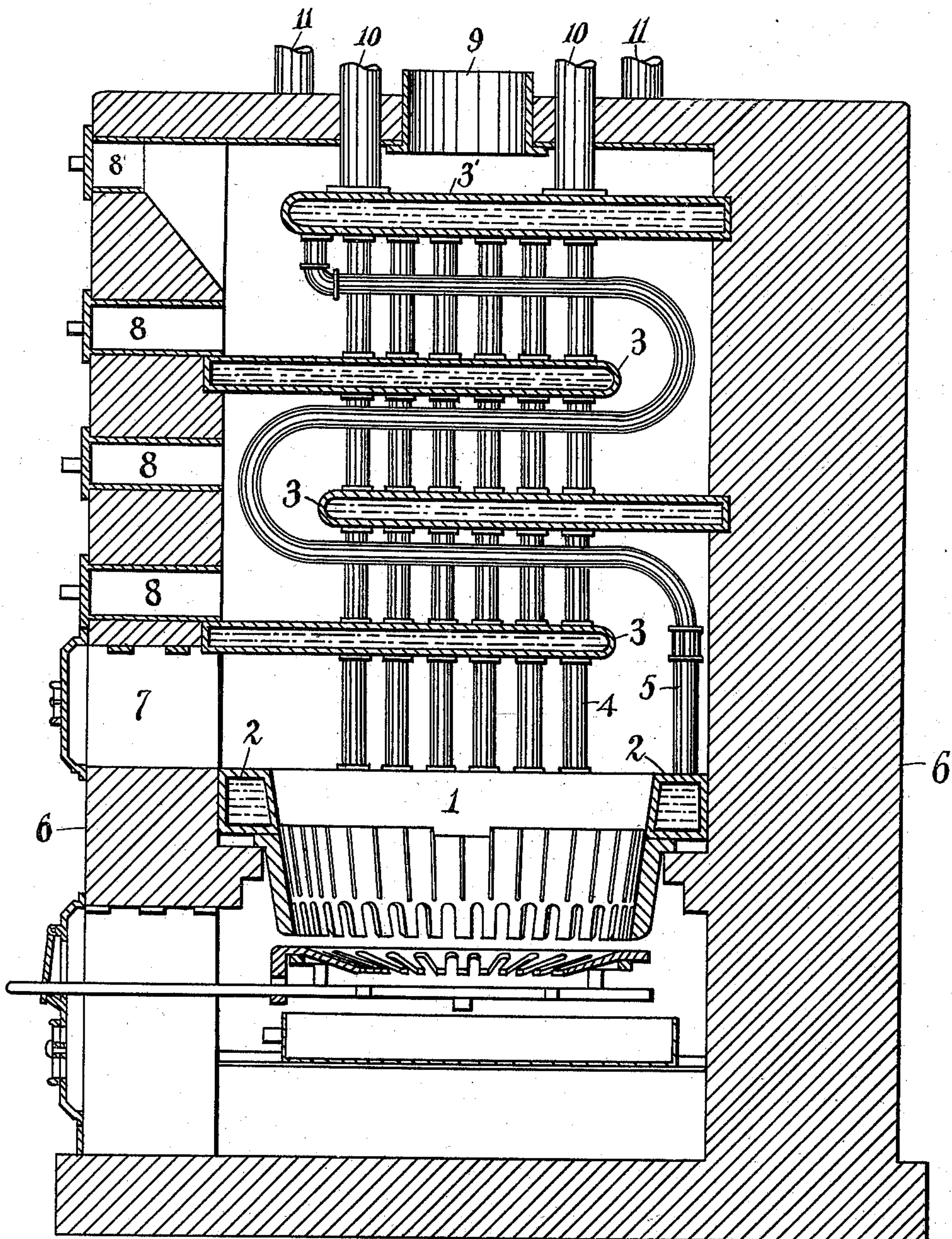


(No Model.)

A. W. ACHARD.
WATER HEATER.

No. 603,867.

Patented May 10, 1898.



WITNESSES:

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INVENTOR

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UNITED STATES PATENT OFFICE.

ANTON W. ACHARD, OF SAGINAW, MICHIGAN.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 603,867, dated May 10, 1898.

Application filed July 19, 1897. Serial No. 645,194. (No model.)

To all whom it may concern:

Be it known that I, ANTON W. ACHARD, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Water-Heaters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the figures of reference marked thereon, which forms a part of this specification.

My invention is an improvement in steam and water heaters; and it consists in novel features of construction, combination, and arrangement of the parts of the device whereby certain important advantages are obtained, viz: first, a better conductor of the heat, the parts being made of wrought-iron or steel; second, the concentration and distribution of the heat, whereby the water-coils and partitions will receive a good portion of the heat; third, the use of less water, and consequently less fuel, on account of the correlation of the several parts of the device.

In the drawing the figure illustrated is a vertical section through the center of the heater.

1 is the fire-pot, and 2 the boiler surrounding the fire-pot and having extending therefrom the vertical pipes 4 and the coiled pipes 5. The fireplace and boiler and pipes are incased in a brick wall, or it may be in an iron casing of suitable size and form.

7 is the opening into the fire-pot for the fuel.

3 3 are partitions extending from opposite sides of the interior of the heater part way across the interior, and are supported on the vertical water-pipes 4. These partitions 3 are made of iron and are hollow and are connected to the vertical water-pipes 4. The first partition, it will be observed, extends from the front of the heater inward nearly across the interior. The next partition extends from the back frontward, and so on, alternating up the interior of the heating-chamber, each partition being connected in like manner to the vertical heating-pipes 4, which, as previously stated, are connected to the boiler, the water from the boiler circulating through the pipes 4 and the hollow par-

titions 3, and terminate in the top partition 3', in which also terminates the coiled pipes 5, which extend upward from the boiler and zigzag through the heating-chamber between and around the ends of the partitions. It will thus be seen that the water is not only heated in the boiler 2, but as the heat arises from the fireplace it strikes against the pipes 4 and 5 and also the lower partition 3, and is by this partition directed around the end of the partition and directly against the coiled pipes 5 and circulates between the first and second partitions, following the coil of the pipes 5 to the top of the heater and heating the lower and upper surfaces of the partitions 3, the pipes all terminating, as previously stated, in the hollow top partition 3', from which extend the pipes 10, carrying the hot water or steam to the rooms containing the radiators, to be again returned to the boiler through the pipes 11.

9 is the smoke-flue at the top of the heating-chamber leading to the chimney.

8 8 are openings through the casing of the heater through which the soot, &c., that will gather upon the top of the partitions 3 may be removed.

It will be observed that by this arrangement of the heating-pipes and the hollow partitions 3 great heating-surface is presented in the heater, and consequently the water will be more readily heated and less fuel required.

I do not wish to confine myself to the particular arrangement of the parts of the device herewith described and illustrated, as they may be modified without materially departing from the principle of my invention.

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

1. In a hot-water heater, the system of heating the water comprising the boiler, vertical pipes connected with the boiler and extending upward through the heating-chamber, a series of hollow partitions extending into the heating-chamber from opposite sides thereof and partly across the same, and connected to the vertical pipes extending from the boiler whereby the water will circulate through the boiler, pipes and partitions, and a series of coiled pipes connected to the boiler and extending upward zigzag through the heating-

chamber between and around the ends of the partitions and terminating in the upper hollow partition, and the pipes 10 extending from the upper partition, substantially as described.

5 2. In a hot-water heater, the combination with the fire-pot, a heating-chamber above the fire-pot having extending into it two or more hollow horizontal partitions, the partitions
10 extending from opposite sides and nearly across the chamber, whereby the heat will be deflected from one side of the chamber to the other through the flues between the partitions, a boiler surrounding the fire-pot, a series of
15 vertical pipes extending upward from the boiler and connected to the hollow partitions

whereby the water will circulate from the boiler through the pipes and partitions, and coiled pipes extending upward from the boiler around the inner ends of the partitions and
20 through the spaces between the partitions, back and forth through the heated chamber to the top thereof and connected to the upper partition, and the discharge-pipes extending from the upper partition, and the return-
25 pipes, substantially as specified.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

ANTON W. ACHARD.

Witnesses:

A. H. SWARTHOUT,
JAS. CONE.