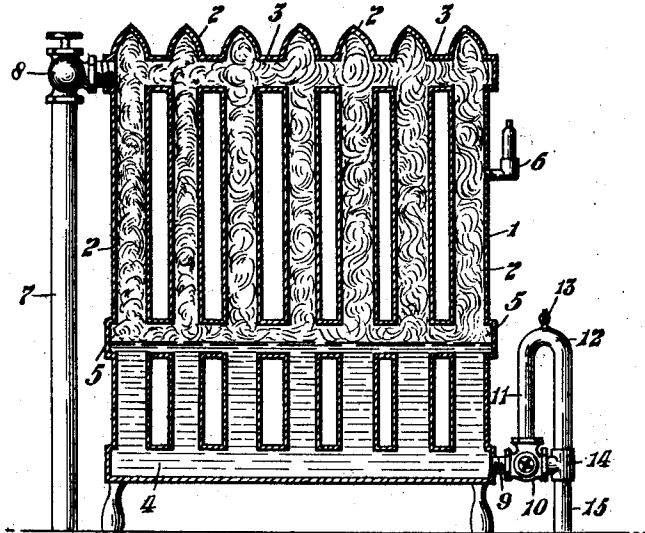


J. W. JONES.
HEATING APPARATUS.
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Inventor

Witnesses

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HEATING APPARATUS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH W. JONES, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Heating Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, and to the numerals and figures of reference marked thereon.

My invention relates to heating apparatus and has for its object to provide a new and improved heating apparatus in which steam and hot water heating is combined in a simple and effective manner.

A further object is to provide a heating apparatus in which steam and hot water are both utilized in such a manner as to obtain the greatest amount of heat from both the steam and the hot water.

A further object is to provide a steam radiator in which none of the steam is allowed to return to the central heating plant.

A further object is to provide a steam radiator in which the water of condensation is retained in the radiator until it has given up all of its heat.

The objects above indicated, together with other objects readily apparent to those skilled in the art, I attain by the construction illustrated in the accompanying drawings, in which—

The figure is a longitudinal section through a radiator showing the preferred form of my invention.

Referring to the drawings, 1 represents a radiator built up of sections 2, similar to the sections of radiators of the ordinary construction, having communicating openings between the sections at the top 3 and at the bottom 4 as in the ordinary construction and an additional series of openings 5 intermediate the top and bottom.

The numeral 6 denotes the automatic air valve of the ordinary construction.

The steam enters the radiator through the inlet pipe 7 which is provided with the inlet valve 8 of ordinary globe valve construction. At a point near the bottom of the radiator is attached the outlet pipe 9, to which is attached the two-way cock 10 of usual construction. Extending upwardly from the cock 10 is the pipe 11 which is curved to form a goose-neck as at 12. This goose-neck 12 is a means for forming a water seal

and in conjunction with the radiator forms a trap which prevents the escape of steam. It is hardly probable that there will be any tendency to siphon the contents of the radiator by this construction as the pipe 11 is not likely to be filled with water at any time, but a pet cock 13 is provided to be used in case of emergency to allow inlet of air and prevent any siphoning effect. The pipe 11 is continued down from the goose neck 12 and is connected to the upper end of the T 14, which T 14 is of the ordinary construction such as is commonly used in plumbing and heating fixtures and is well known to all those skilled in the plumbing and heating arts. The cock is connected to the horizontal arm of the T 14 and the outlet pipe 15 is connected to the lower extremity of said T.

The operation of the device is as follows: The steam enters the radiator in the ordinary manner, but it is not returned to the boiler as soon as it condenses, as in the ordinary radiator. As the steam enters the radiator under very slight pressure it is only a few degrees above the boiling point, probably about 216° F. and upon radiation, condensation takes place and the water of condensation is about 210° F. Ordinarily the water of condensation is immediately returned to the boiler without further giving up its heat. By the use of my invention the water of condensation is retained within the lower part of the coils until it reaches the level of the goose neck 12. As the outlet pipe is at the bottom of the radiator the coldest water is drawn off first, leaving that which is last condensed to further give up its heat before being returned to the boiler. The water of condensation which remains in the coils not only gives out its heat toward raising the temperature of the room, but it heats the coils so that the steam will not condense so rapidly. By this means a higher temperature can be maintained with the use of a smaller amount of fuel. The outlet pipe is provided with the two way cock to drain the water out of the coils for cleaning or other purposes. Such two-way cocks are quite commonly employed and as I do not claim the construction of such cock in detail I do not deem it necessary to fully set forth its construction, as such construction is so well known to those skilled in the art. It will be understood with reference to the figure, that the cock 10 may be turned in the direction to permit water from the radiator to pass through the outlet pipe 9 and the

cock 10 into the pipe 11, or may be turned when desired so as to cause the water to pass directly from the outlet pipe through the cock 10 into the T 14, and thus by a more
5 direct route into the return pipe 15.

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

1. A heating apparatus of the character described comprising a steam radiator having a steam inlet communicating with a steam supply, a steam chamber consisting of a series of vertical sections having intercommunicating openings at the top and bottom, a communicating hot water chamber comprising a series of vertical sections having intercommunicating openings at the top and bottom, means for maintaining the water level within the inter-communicating
10 openings at the bottom of said steam chamber and means for drawing the water off from the bottom of said water chamber.

2. A heating apparatus of the character described comprising a steam radiator having a steam inlet communicating with a steam supply, a steam chamber made up of a series of vertical sections having intercommunicating openings at the top and bottom, a communicating hot water chamber comprising a series of vertical sections having intercommunicating openings at the top and bottom, means for maintaining the water level within the inter-communicating openings at the bottom of said steam chamber, means for drawing the water off from the bottom of said water chamber, and means for draining said water chamber.

3. A heating apparatus of the character described comprising a steam radiator having a steam inlet communicating with a steam supply, a steam chamber made up of a series of vertical sections having intercommunicating openings at the top and bottom, a communicating hot water chamber comprising a series of vertical sections having intercommunicating openings at the top and bottom, means for maintaining the water level within the inter-communicating openings at the bottom of said steam chamber, said means communicating with a water outlet at the bottom of said water chamber, and a valve adjoining said water outlet whereby the water may be drained from said water chamber.

4. A heating apparatus of the character described comprising a steam radiator having a steam inlet communicating with a steam supply, a steam chamber comprising a series of vertical sections having intercommunicating openings at the top and bottom, a communicating hot water chamber comprising a series of vertical sections having intercommunicating openings at the top and bottom, a water outlet at the bottom
65 of said water chamber, a valve connecting

said water outlet to a means for forming a water seal communicating with the water outlet, said valve also communicating directly with the water return, said means for forming a water seal adapted to maintain
70 the level of the water in said water chamber within the inter-communicating openings at the bottom of said steam chamber.

5. A heating apparatus of the character described comprising a steam radiator having a steam inlet communicating with a steam supply, said radiator consisting of a series of vertical sections having intercommunicating openings at the top and bottom and a third series of intercommunicating
75 openings intermediate the top and bottom, that portion of the sections above the center of the intermediate openings constituting a steam chamber and that portion below the center thereof constituting a hot water
80 chamber, a water outlet at the bottom of said water chamber, and a means for forming a water seal communicating with said outlet and adapted to maintain the water level at the center of said intermediate
85 openings.

6. A device of the character described comprising a plurality of steam compartments, a plurality of water compartments located beneath said steam compartments, said water compartments adapted to receive the water of condensation from said steam compartments, intercommunicating openings located at the juncture of said steam and said water compartments and providing
90 inter-communication between the various steam compartments and between said steam compartments and said water compartments, and means for maintaining the level of the water in said water compartments at the said intercommunicating openings.

7. A heating apparatus of the character described comprising a steam radiator having a steam inlet communicating with a steam supply, a steam chamber consisting of a series of vertical sections having intercommunicating openings at the top and bottom, a communicating hot water chamber comprising a series of vertical sections having
110 inter-communicating openings at the top and bottom, means for maintaining the water at a predetermined level in the intermediate inter-communicating openings of said steam chamber and said water chamber and means for drawing the water off from said water chamber.

8. A heating apparatus of the character described comprising a steam radiator having a steam inlet communicating with a steam supply, a series of vertical sections having intercommunicating openings at the top and bottom, communicating openings intermediate the ends of said vertical sections, means for maintaining the water at
125

a predetermined level within said intermediate communicating openings and means for drawing the water off from the bottom of said radiator.

5 9. A heating apparatus of the character described comprising a steam radiator having a steam inlet communicating with a steam supply, said radiator consisting of a series of sections having inter-communicating openings at the top and bottom and a third series of inter-communicating openings intermediate the top and bottom, that portion of the sections above the intermediate openings constituting a steam chamber and that portion below said intermediate openings constituting a hot water chamber, and a means for forming a water seal communicating with said water chamber and adapted to maintain the water level within
10 said intermediate openings.

10. A steam radiator having a steam inlet communicating with a steam supply, said radiator consisting of a series of sections having inter-communicating openings at the top and bottom and inter-communicating openings intermediate the top and bottom, that portion of the sections above the intermediate openings constituting a steam chamber and that portion below said intermediate openings constituting a water chamber, and a means for forming a water seal communicating with said water chamber and adapted to maintain the water level at said intermediate openings.

11. A steam radiator having a steam inlet communicating with a steam supply, said radiator consisting of a series of sections having inter-communicating openings intermediate the top and bottom, that portion of the sections above the center of the inter-communicating openings constituting a steam chamber and that portion below the center thereof constituting a hot water chamber, a water outlet at the bottom of said water chamber, and a means for forming a water seal communicating with said outlet and adapted to maintain the water level at the center of said inter-communicating openings.

12. A device of the character described, comprising a series of vertically disposed sections, all of which are intercommunicating at their upper extremities, at their lower extremities and at a point intermediate their extremities and means for maintaining the level of condensation at said intermediate point.

13. A device of the character described comprising a series of vertically disposed sections all of which are intercommunicating at their upper extremities, at their lower extremities and at a point intermediate their extremities, a two way cock connected to the lower portion of said device,

a means for forming a water seal connected to said cock and an outlet pipe communicating with said means for forming a water seal and said cock.

14. A heating apparatus of the character described, comprising a steam radiator having a steam inlet communicating with a steam supply, a steam chamber consisting of a series of vertical sections having inter-communicating openings at the top and bottom, a communicating hot water chamber comprising a series of vertical sections having inter-communicating openings at the top and bottom, a two way cock connected to the lower portion of said device, a means for forming a water seal connected to said cock and an outlet pipe communicating with said means for forming a water seal and said cock.

15. A heating apparatus of the character described comprising a steam radiator having a steam inlet communicating with a steam supply, said radiator consisting of a series of vertical sections having inter-communicating openings at the top and bottom and a third series of intercommunicating openings intermediate the top and bottom, that portion of the sections above the center of the intermediate openings constituting a steam chamber, and that portion below the center thereof, constituting a hot water chamber, a two way cock connected to the lower portion of said device, a means for forming a water seal connected to said cock and an outlet pipe communicating with said means for forming a water seal and said cock.

16. A device of the character described comprising a plurality of steam compartments, a plurality of water compartments located beneath said steam compartments, said water compartments adapted to receive the water of condensation from said steam compartments, intercommunicating openings located at the juncture of said steam and said water compartments and providing intercommunication between the various steam compartments and between said steam compartments and said water compartments, a two way cock connected to the lower portion of said device, a means for forming a water seal connected to said cock and an outlet pipe communicating with said means for forming a water seal and said cock.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

JOSEPH W. JONES.

Witnesses:

F. W. BOND,
WILLIAM H. MILLER.