

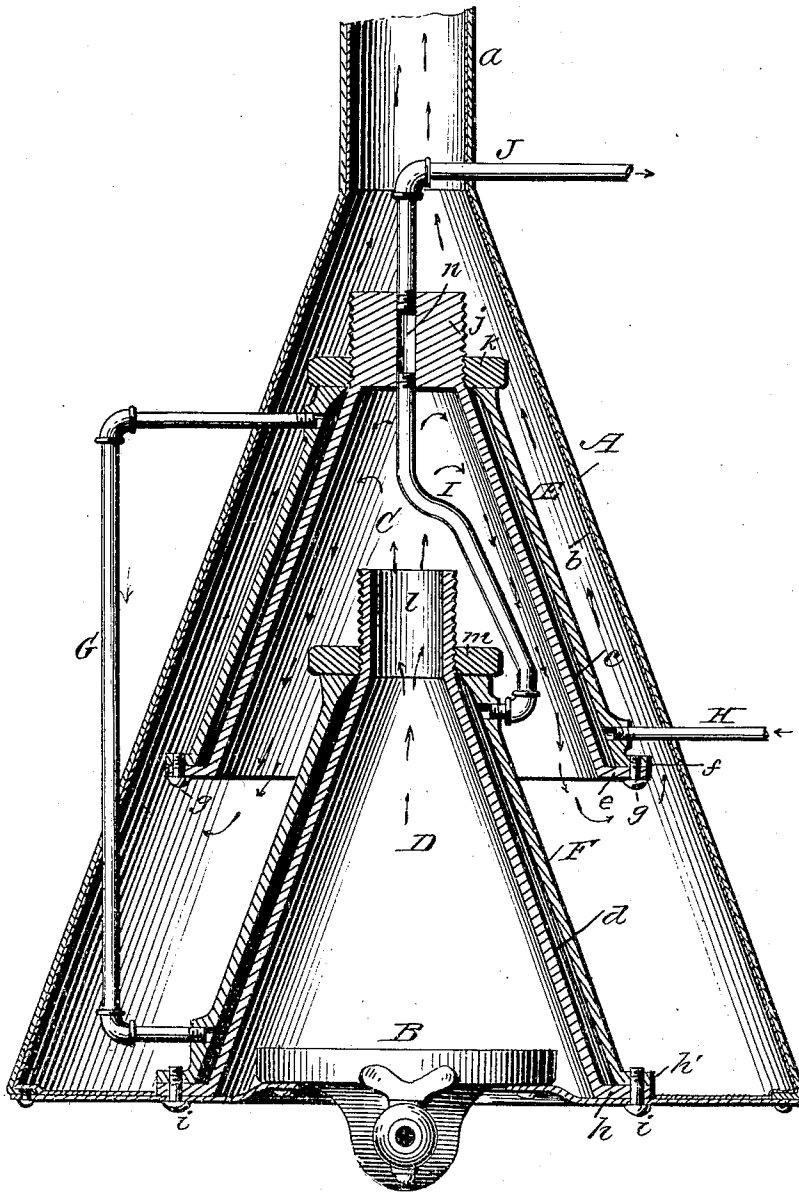
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L. S. FROST.
WATER HEATING ATTACHMENT.

APPLICATION FILED MAY 25, 1904.

NO MODEL.



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WATER-HEATING ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 773,864, dated November 1, 1904.

Application filed May 25, 1904. Serial No. 209,689. (No model.)

To all whom it may concern:

Be it known that I, LORENZO S. FROST, a citizen of the United States, residing at Cambridge, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Water-Heating Attachments; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification, and to the letters of reference marked thereon.

The present invention has for its object to provide a water-heating attachment that may be conveniently connected to the boilers in ranges or employed for heating the water in hot-water radiators and for other purposes where an attachment of this character may be found useful; and the purpose thereof is to so construct the attachment that the water will have a complete circulation while being heated and previous to passing into the boiler, whereby the circulating water will receive a maximum amount of heat with a minimum amount of fuel, the attachment being simple in construction and both strong and durable.

The invention consists in a water-heating attachment constructed substantially as shown in the drawing and hereinafter described and claimed.

In the accompanying drawing, which represents a sectional elevation of the attachment, A designates a conical-shaped casing of suitable metal having a pipe *a* connecting therewith which leads to the chimney to carry off the elements of combustion, said casing and pipe being preferably lined with asbestos, as indicated at *b*.

The base of the conical casing A is closed and is provided with a suitable heat-generating device B, such as a gas-burner, sufficient of the device only being shown to illustrate its location with relation to the other parts of the attachment, as any form of heat-generating device may be used.

Two conical-shaped heaters C D are located within the casing A, one above the other, the base of the heater C extending on line with and surrounding the upper end of the heater D, the heaters having each a water-space *c* *d*, respectively.

The water-space *c* of the conical-shaped heater C is formed by the outer wall E, which incloses the heater and forms thereby a circumferential water-space, and the wall F in like manner forms the circumferential water-space *d*.

The conical-shaped heater C has an outwardly and horizontally extending flange *e*, and the wall E has a corresponding flange *f*, by which the two are connected together by suitable screw-bolts *g*, and the heater D is provided with a similar flange *h* and the wall F with a flange *h'*, by which the two are connected together by screw-bolts *i*.

The upper end of the heater C has an exteriorly-screw-threaded neck *j*, with which engages a screw-nut *k* to hold the upper end of the heater-wall F in place, and the upper end of the heater D terminates in a short discharge-pipe *l* for the discharge of the upwardly-passing heat to the upper heater, said pipe having exterior screw-threads to receive a screw-nut *m* to hold the upper end of the heater-wall F in place.

A pipe G connects the water-spaces of the two heaters C D at the top and bottom, respectively, and a pipe H connects with the water-space *c* at the base of the heater C, a pipe I in like manner connecting with the water-space *d* at or near the upper end of the heater D, said pipe extending upward into the heater and communicating with a passage *n* in the screw-threaded neck *j*.

A pipe J communicates with the upper end of the neck *j* and also communicates with the interior of the boiler, radiator, or other device containing the heated water.

The various pipes herein described have screw-threaded nipples to engage screw-threaded holes in the walls of the conical-shaped heaters and also in the screw-threaded neck; but any other suitable and well-known means may be employed for securing the pipes in place, and other means may be substituted for that shown in connecting the walls to the heaters, this being left to the discretion and judgment of the manufacturer.

The pipe *a* at the top of the casing A conducts the products of combustion into the chimney and prevents any odor in the room,

and the asbestos lining confines the heat within the casing, and thereby securing the full benefit thereof, and consequently economy in the amount of fuel used.

5 The attachment is of such construction as will admit of every part being taken apart and separated for cleaning or for other purposes, each part being strong and durable and easily connected together.

10 The water as it passes from the boiler or other source of supply into the pipe H will circulate around the water-space *c* and up and to the pipe G at the upper end of the heater C and thence passing down the pipe into the
15 water-space *d* at the base of the heater D and upward around said space into the pipe I at the top of the heater and passing through said pipe into the passage *n* and thence through the pipe J into the top of the boiler
20 or other source of supply, thereby giving a rapid and clear circulation of water while being heated.

The employment of the two heaters C D, of conical shape, the upper one partly inclosing
25 the lower one of the heaters, secures a most perfect heating of the water as it circulates around the water-spaces, the upper heater utilizing the waste heat to warm the water before entering the heater D, thereby secur-
30 ing the full benefits of the generated heat and providing a water-heating attachment both simple and inexpensive and particularly effective in heating the water.

Although any means may be employed for
35 securing the conical heaters C D and the walls thereof together at their base, the flanged bottom of the lower heater provides means for catching the condensed water from the upper heater, as when the heating attach-
40 ment is first started there is no condensation from the bottom heater, because the water is warm before it enters it.

The pipe G that takes the water from the
45 top of conical heater C may be constructed in various ways and, if preferred, may be con-

tained entirely within the casing A, as found most preferable, and it is evident that many changes or modifications in the several details of construction in both the conical heaters, the walls thereof, the casing, and the pipes
50 connecting with the heaters may be resorted to without in any manner departing from the principle of the invention or the essential features thereof.

The passage of the heat and the direction
55 it takes is shown in the arrows, and it will be apparent that the heat coming in contact with the interior of both the conical heaters will perfectly and effectually heat the water-space formed by the outer walls of the heaters and
60 the circulating water therein, presenting an attachment both simple and practical and readily connected to a boiler, radiator, or used for general heating purposes, as may be
65 desired.

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

A water-heater attachment comprising a
70 suitable casing having means for communicating with the chimney to conduct off the products of combustion, a conical heater connected to the base of the casing and having a circumferential water-space and a pipe at its upper
75 end, a conical heater extending over the end of the heater at the base of the casing to receive the heat therefrom and having a circumferential water-space, a pipe connecting the two
80 water-spaces together at the top and bottom of the upper and lower heaters respectively, and means for forming a communication with the water-spaces and boiler or other source of supply, substantially as and for the purpose
described.

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

LORENZO S. FROST.

Witnesses:

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