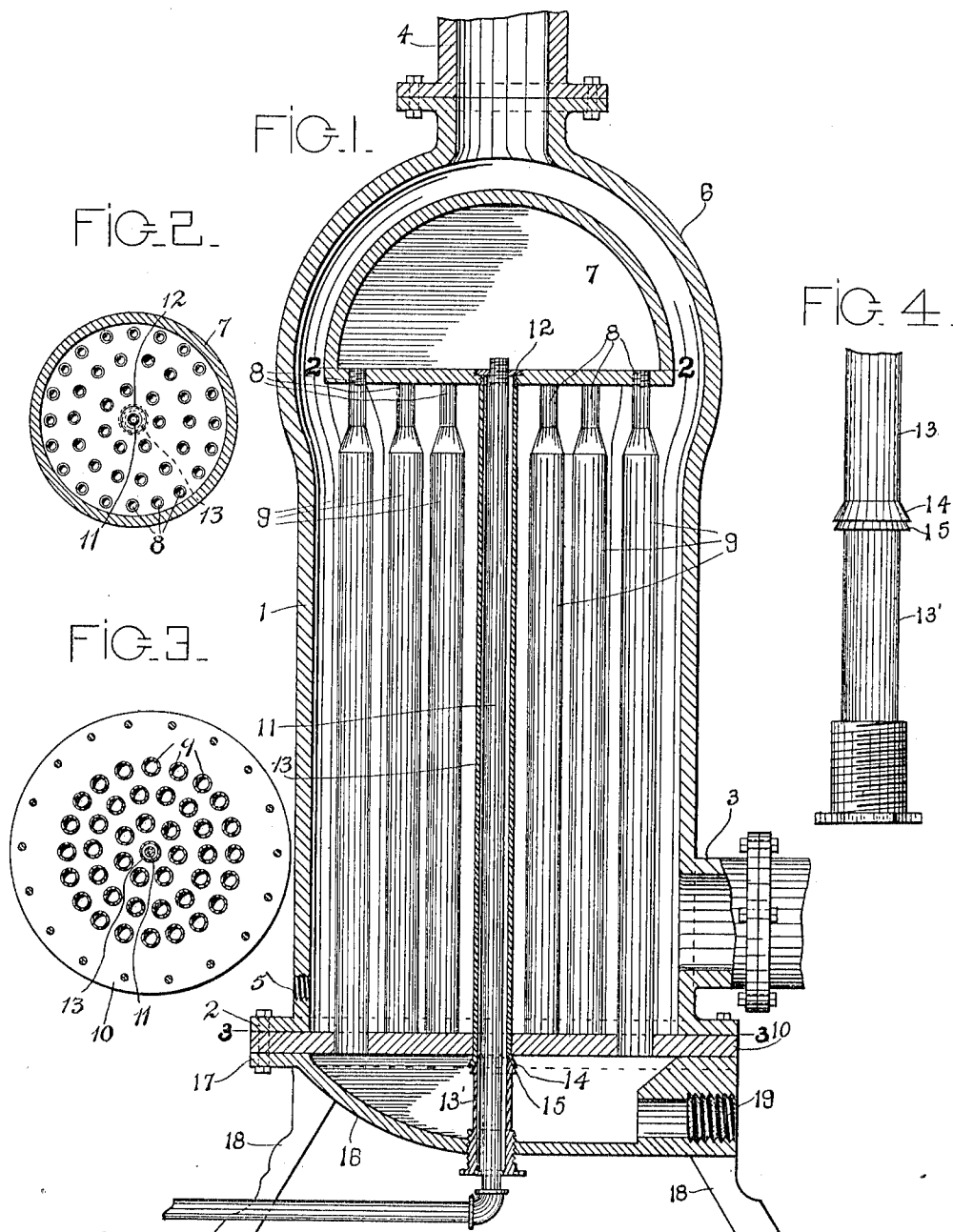


J. W. GUIMONT.
WATER HEATER.
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Witnesses:

Henry H. Babcock,
A. Bastien

Joseph W. Guimont. Inventor

By

Marion Marion

Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH WILLIAM GUIMONT, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR TO HARRIS CONSTRUCTION COMPANY LIMITED, OF MONTREAL, CANADA.

WATER-HEATER.

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To all whom it may concern:

Be it known that I, JOSEPH WILLIAM GUIMONT, a subject of the King of Great Britain, residing at 633 Notre Dame street east, Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Water-Heaters; and I do hereby declare that the following is 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.

The invention to be hereinafter described relates to water heaters.

In order to more clearly disclose the construction, operation, and use of the invention, reference should be had to the accompanying drawings forming part of the present application.

Throughout the several figures of the drawings like reference characters designate the same parts.

In the drawings: Figure 1 is a central, vertical, cross section through the heater; Fig. 2 is a horizontal cross section through the dome, on line 2—2 of Fig. 1; Fig. 3 is a like view of the bottom plate on line 3—3 of Fig. 1; and Fig. 4 is a side elevation of the lower part of the insulating pipe.

The main objects of the invention are to provide a simple, efficient, durable, economical, compact, and substantially jointless hot water heater which will give maximum results with a minimum consumption of heating medium; one which may be readily and quickly assembled or taken apart for repairs; and one which may be manufactured in large quantities at a relatively low cost of production.

Referring to the drawings in detail, 1 indicates an outer shell, casing, or jacket, having a lower open end provided with an attaching flange 2, and having a water inlet 3 in the lower part of one side, and a water outlet 4 in the top, and a blow out opening 5 in the lower part of the opposite side to receive the nozzle of an injector for "blowing out" or cleaning the interior of the

heater. The body of this shell is of U shape in longitudinal cross section, but its upper portion or head is considerably enlarged in bulbous form as at 6 to surround or inclose a semispherical steam dome or chamber 7 having a plurality of threaded openings in its lower wall to receive the reduced and threaded upper ends 8 of vertical heating tubes 9, the lower ends of which are expanded into openings in a base plate 10 which closes the lower open end of the shell 1. Thus, the dome 7, tubes 9, and base plate 10, form, practically, a single unit adapted to be inserted as one piece into or removed from the shell 1. By having the portions 8 of reduced diameter, the steam is twice detained, once in dome 7 during its first expansion, until it passes through the reduced portions 8, and a second time, in the bodies of the tubes 9, during its second expansion, after passing through the restricted portions 8. In this manner, the maximum heating effect is obtained and it has frequently been found that no steam, as steam, issues from the lower ends of the heating tubes, which shows clearly that practically all heat of the steam has been completely consumed.

To supply steam to the dome and heating tubes, a steam pipe 11 is provided. This pipe extends up through the base plate and is threaded into a nut or washer 12 which, in turn, is threaded into the upper end of an enlarged, central, threaded bore in the bottom wall of the dome. About this steam pipe, concentric therewith, spaced therefrom, and extending the entire length thereof, is an outer or insulating pipe or tube 13, the lower end of which is provided with an outwardly and downwardly inclined or flared skirt flange 14 adapted to receive and cooperate with a similar flange 15 formed on the upper end of a lower section 13' of the insulating pipe or tube 13. This lower section is threaded through the lower wall of a circular dished or concaved exhaust head or chamber 16 provided with a lateral attaching flange 17 and supporting feet 18. By rotating the lower section 13' in one di-

resection or the other, the flange 15 may be made to approach toward or recede from the cooperating flange 14. When flange 15 is nested closely within flange 14, there will be a tight joint between the two and the pipe 13 and section 13' will be, practically, one continuous pipe. During operation, there will be a certain amount of sweating on the outside of pipe 11 and on the inside of pipe 13. The sweat water is drained off by simply lowering the pipe section 13' and its flange 15 to separate flanges 14 and 15, thus giving a clear passage for the out flow. After draining, this passage is closed, as previously set forth.

By inclosing the steam supply pipe 11 within and spaced from the pipe 13, it is completely insulated from the water within the body of the heater, thus absolutely insuring delivery of the steam at its highest temperature into the dome 7 from whence it passes into the heating tubes or pipes. Thus, the temperature is highest at the moment when it should be highest—at the instant when it is delivered into the heating dome and given its first expansion for heating.

Obviously, the space between pipe 11 and tube 13 may be filled with a heat insulating material of any suitable kind, if desired, though the spacing of the pipe and tube is considered sufficient to prevent any appreciable lowering of temperature of the steam in pipe 11.

The water of condensation from the dome 7 and tubes 9 passes into the exhaust exit for the steam and may be drawn or led through a pipe or the like connected thereto by means of a threaded outlet opening 19. The same is true of any steam which may pass from the tubes into the exhaust head 16.

The exhaust head, base plate, and casing are all rigidly connected by bolts or the like passed through flanges 2 and 17 and plate 10, as clearly shown in Fig. 1. By providing the upper end of the casing with a bulbous enlargement, it is possible to have the steam heating dome 7 of the same diameter as the interior diameter of the body of the casing, and yet have it considerably spaced from the wall of the casing at all points, when in place, as clearly shown in Fig. 1. Furthermore, it makes it possible to manufacture the whole heater in practically three pieces—*i. e.*, the inclosing shell; the interior comprising, heating dome 7, base plate 10, and heating and steam supply tubes, all rigidly connected as one element; and the exhaust head.

The whole construction is extremely simple and compact and may be put up or assembled by simply slipping the casing 1 down over the heating elements, and bolting it in place.

It is thought that the construction, operation, and use of the invention will be clear from the preceding detailed description.

Changes may be made in the construction, arrangement, and disposition of the several parts of the invention without in any way departing from the field and scope of the same, and it is meant to include all such within this application wherein only a preferred form has been disclosed.

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

1. A heater of the character described comprising, an outer shell provided with inlet and outlet openings and having a bulbous enlargement at its upper end, a steam dome of substantially the same diameter as the inner diameter of the body of said shell and adapted to be arranged within said bulbous enlargement, a base plate, straight steam tubes connected to and communicating with the interior of said dome and connected to said base plate, and having reduced upper ends, and means for delivering steam to said dome.

2. A heater of the character described comprising, an outer shell provided with inlet and outlet openings and having a bulbous enlargement at its upper end, a steam dome of substantially the same diameter as the inner diameter of the body of said shell and adapted to be arranged within said bulbous enlargement, a base plate, steam tubes connected to and communicating with the interior of said dome and connected to said base plate, means for delivering steam to said dome, and a circular, dished exhaust head connected to said plate.

3. A heater of the character described comprising, an outer shell provided with inlet and outlet openings and having a bulbous enlargement at its upper end, a steam dome of substantially the same diameter as the inner diameter of the body of said shell and adapted to be arranged within said bulbous enlargement, a base plate, steam tubes connected to and communicating with the interior of said dome and connected to said base plate, a steam pipe extending through said base plate and into said dome, and a concentric spaced heat insulating pipe inclosing the same.

4. A heater of the character described comprising, an outer shell provided with inlet and outlet openings and having a bulbous enlargement at its upper end, a steam dome of substantially the same diameter as the inner diameter of the body of said shell and adapted to be arranged within said bulbous enlargement, a base plate, steam tubes connected to and communicating with the interior of said dome and connected to

said base plate, a steam pipe extending
through said base plate and into said dome,
a concentric spaced heat insulating pipe in-
closing the same, and provided with an an-
5 nular skirt flange about its lower end, a
tube section separate therefrom, in aline-
ment therewith and provided with a simi-
lar and coöperating skirt flange, and means

for adjusting said pipe section toward the
lower end of said insulating pipe.

In witness whereof I have hereunto set
my hand in the presence of two witnesses.

JOSEPH WILLIAM GUIMONT.

Witnesses:

L. A. GAUVIN,

A. BASTIEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."