J. R. CREAMER.

GAS HEATER.

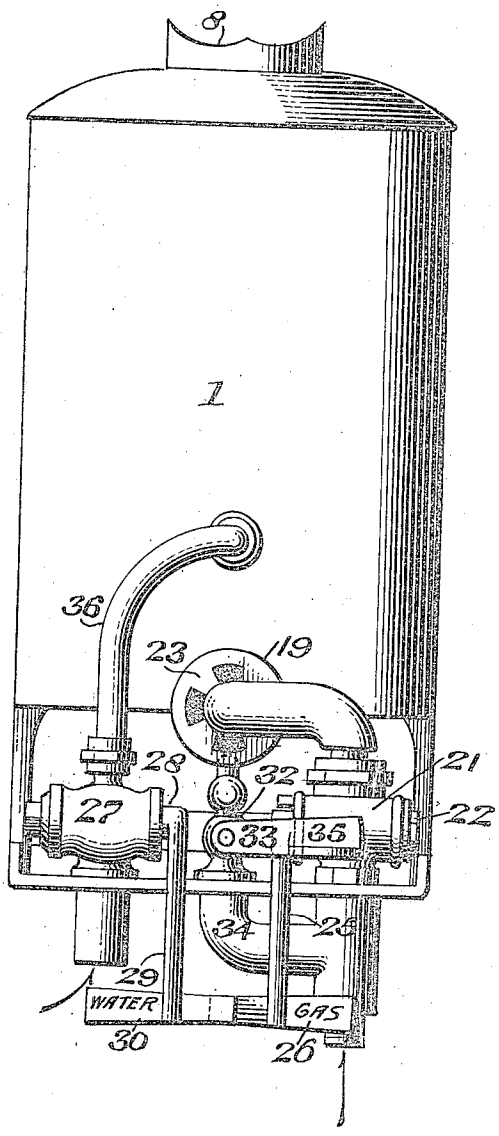
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1,165,571.

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2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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INVENTOR

BY John Ross Creamer.

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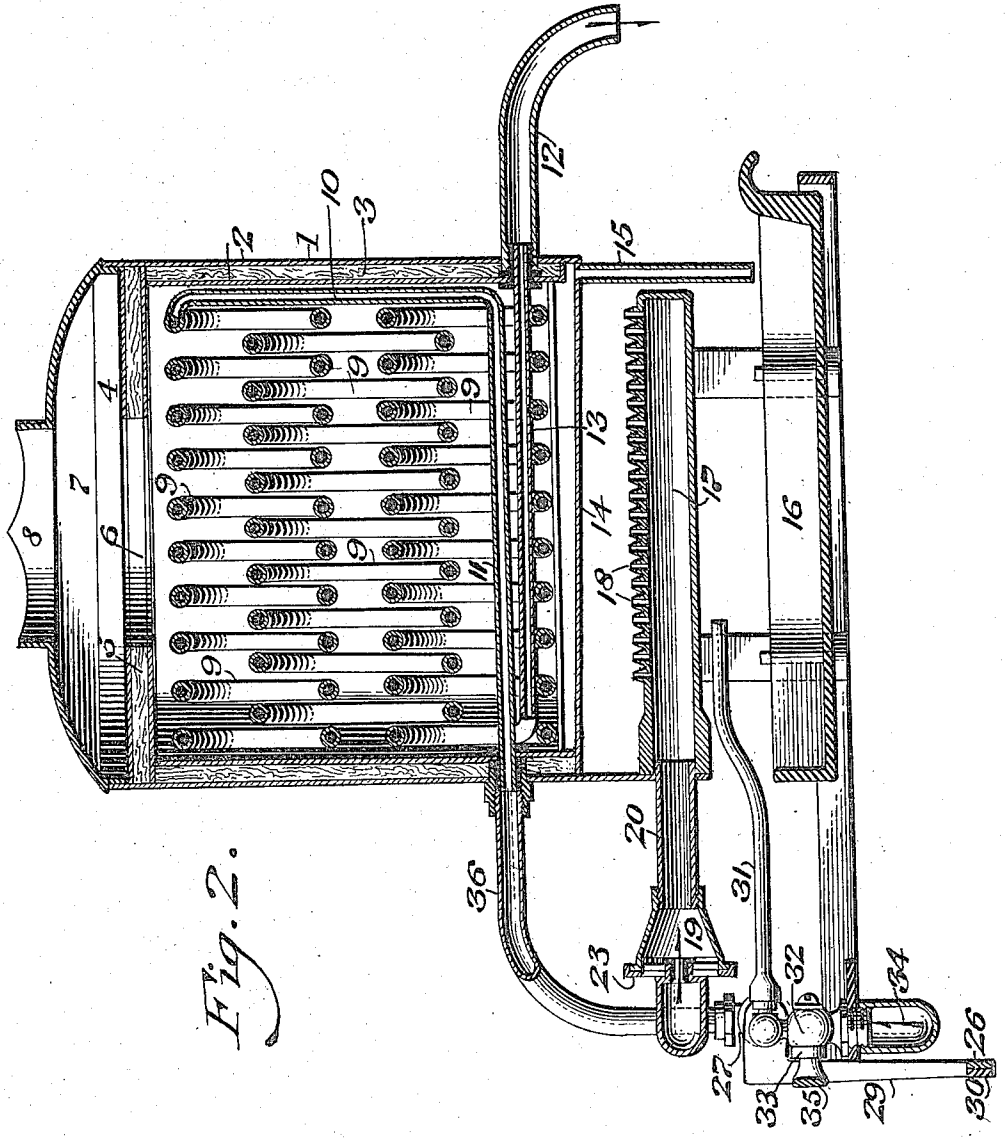


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN ROSS CREAMER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO VESTA MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

GAS-HEATER.

1,165,571. Specification of Letters Patent. Patented Dec. 28, 1915.

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To all whom it may concern:

Be it known that I, JOHN ROSS CREAMER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Gas-Heater, of which the following is a specification.

My invention consists of a water-heater employing gas as fuel, in which the water to be heated is carried through coils arranged above a burner and in which the terminals of the heating coil structure are directly exposed to the flames of the burner.

It further consists of such a heater in which the gas inlet for the burner is controlled by the water-admission valve, so that the fuel cannot be admitted to the burner until the water has been admitted into the heating coil.

It further consists of means for controlling the burner valve to prevent the same from being opened when the pilot-burner is closed.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detailed construction being but one of various mechanical forms in which the principle of the invention may be used.

Figure 1 represents an end elevation of my improved water-heater. Fig. 2 represents a longitudinal vertical section of said heater.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, the reference numeral 1 indicates an outer casing or jacket, the walls, 2, of which are double and have a non-conducting packing, 3, of asbestos, mineral wool or similar material. The top of said casing has a double head, 4, having a non-heat-conducting packing, 5, formed with an opening, 6, with which it communicates with a chamber, 7, having an outlet, 8, for the exit of smoke and waste-products from the heating-chamber within the casing. A plurality of horizontal pipe-coils, 9, is supported longitudinally within the casing, one coil above the other and having their contiguous sides intermeshing, and the end-convolution of the uppermost coil extends by a vertical pipe, 10, to the open bottom of the casing where it extends horizontally to the opposite end of the casing and through the same, forming an inlet heating pipe, 11. The ends of the pipe-coils are alternately connected with the ends of the adjoining coils, so that the water admitted to the upper coil will pass through the same and the connected intermeshed and superposed coils, the end of the lower of which coils is connected to an outlet-pipe, 12, in the end of the casing, by a horizontal pipe, 13, below the horizontal inlet heating pipe and extending at the end of the casing opposite to the inlet-pipe. An open gutter, 14, is supported below the lowermost pipe-coil and has a drip-pipe, 15, discharging into a removable open pan, 16, supported below the open bottom of the casing. A burner-chamber, 17, is supported below the open bottom of the casing and the coils, and has burner-nipples, 18, upon its upper side, directing flames upward into the casing and against the coils, and the waste-products escape at the top of the casing. A mixing chamber, 19, is connected to the feed-pipe 20 of the burner, and is connected to a valve-casing, 21, having a transverse rotatable valve-plug, 22, controlling the gas-supply. A suitable air-damper, 23, is provided for controlling supply of air into said mixing-chamber. The plug 22 of the gas-valve has a radially projecting handle, 25, having a transverse plate, 26, at its end, and said handle closes the valve when turned downward. The horizontal inlet-pipe 11 is connected outside the casing through a pipe, 36, with a valve-casing, 27, the plug, 28, of which is co-axial with the plug of the gas-valve, and has a radially projecting handle, 29, upon its inner end, upon which is a transverse plate, 30, the inner end of which overlaps and engages the inner end of the plate upon the gas-valve-handle. A pilot-light pipe, 31, is connected to a valve-casing, 32, having a plug, 33, and extends beneath the burner, and said casing is connected to the gas-pipe by a branch-pipe, 34. The pilot-plug is supported between and at a right angle to the inner ends of the water and gas valve plugs and has a laterally projecting handle, 35, which closes the pilot-valve when its handle is tilted in front of the handle of

the gas-valve and opens said valve when tilted out of the way of the gas-valve handle.

In practice, when the water-inlet and gas-inlet are connected, respectively, to a water-supply and a gas-supply, the pilot-valve is first turned upward and the light at the pilot pipe ignited. The water-valve handle is now tilted outward and upward, admitting water into the heating coils. The upward move of the handle for the pilot-valve and the outward move of the handle of the water-valve will admit of the handle of the gas-valve being tilted outward, opening the same to the burner, when the gas will be ignited by the pilot-light. The water in the coils will be heated by the flames from the burner and may be drawn as required. As the coils convey the water in a comparatively small diameter body and in a tortuous course, presenting a comparatively large heating surface, the water will be quickly heated to a high degree of temperature and will be continually heated as hot water is withdrawn at the discharge end of the pipe-coils. The inlet and outlet of the water passing through the horizontal pipes immediately above the burner, the heated water will be subjected to the highest temperature when entering and leaving the heater and, passing through the horizontal superposed coils and exposed to the heat and products of combustion from the burner, will be exposed to the direct action of the burner-flame during its entire passage through the heater.

When the operation of the heater is stopped, the handle of the gas-valve is tilted down and said valve closed and the flame extinguished. The handle of the water-valve can now be tilted down to close the water-valve and the overlapping inner end of its cross-plate will bear against the inner end of the cross-plate of the gas-valve and prevent the same from being opened. The pilot-valve will also lock the gas-valve handle if the pilot burner is turned off, so that the gas cannot be turned on when no water is admitted to the coils, and no burning out of the dry heating coils can be caused. The heating coils are preferably formed from copper, brass or similar good heat-conducting metal of sufficient strength to resist the interior steam-pressure generated in the coils.

The outer casing having the walls filled with asbestos or other heat non-conductive material, will cause practically all heat from the burner to be utilized for heating the coils and water therein and will retain hot water in the coils at high temperature after the burner has been turned off.

The gas cannot be lighted nor stay lighted excepting when the water-valve is open and the coils filled, as closing the water-valve will close the gas-valve by the plates upon the valve-handles engaging and one carrying the other with it, so there can be no burning out of the coils as the water must be turned on before the burner can be lighted.

Any leakage from the coils and any moisture which collects upon the coils will drop down upon the lower coil and thence drop into the longitudinal gutter from which it is conducted to the pan beneath the burner by the drip-pipe, so that no moisture can collect in the heating chamber and corrode the metallic elements when the heater is not in operation.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be made as regards the mechanism thus disclosed, provided the principles of construction set forth, respectively, in the following claims are employed.

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

1. A water-heater consisting of a casing having an open bottom, a horizontal pipe-coil supported within said casing, a horizontal inlet heating pipe supported in the coil and communicating with one end of the same, and an outlet-pipe within the coil and communicating with the opposite end of the coil, said coils being supported longitudinally within said casing one coil above the other and having their contiguous sides intermeshing, the end convolution of the uppermost coil having a vertical pipe extending downwardly therefrom toward the open bottom of the casing where it extends longitudinally to the opposite end of said casing.

2. A water-heater consisting of a casing having heat non-conducting walls and an open bottom and an outlet in its top, a plurality of horizontal inlet heating-pipe coils supported in said casing one above the other and having the adjoining portions of their loops intermeshing, an inlet heating pipe extending through the casing and longitudinally through the lower coil and communicating with the end of the upper coil, and an outlet heating pipe communicating with the lowermost coil and extending through the same.

3. A water-heater consisting of a casing having heat non-conducting walls and an open bottom and an outlet in its top, a plurality of horizontally arranged pipe-coils supported in said casing one above the other and having the adjoining portions of their loops intermeshing and connected alternately at opposite ends, an inlet heating pipe horizontally extending through the end wall of the casing and the lower coil and connected to one end of the upper coil, and

an outlet heating pipe communicating with the end of the lower coil and horizontally extending through the same and the casing.

4. In a water-heater, a casing open at its bottom and top and having an inlet pipe 11 extending across the bottom of the casing, said pipe having the upward extension 10 communicating with the loops 9 arranged in intermeshing staggered order, the outer of said loops 9 communicating at its lower portion with a laterally extending outlet pipe 13 arranged in proximity to the heating medium, said latter pipe terminating in the outlet pipe 12.

JOHN ROSS CREAMER.

Witnesses:
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C. D. MCVAY.

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