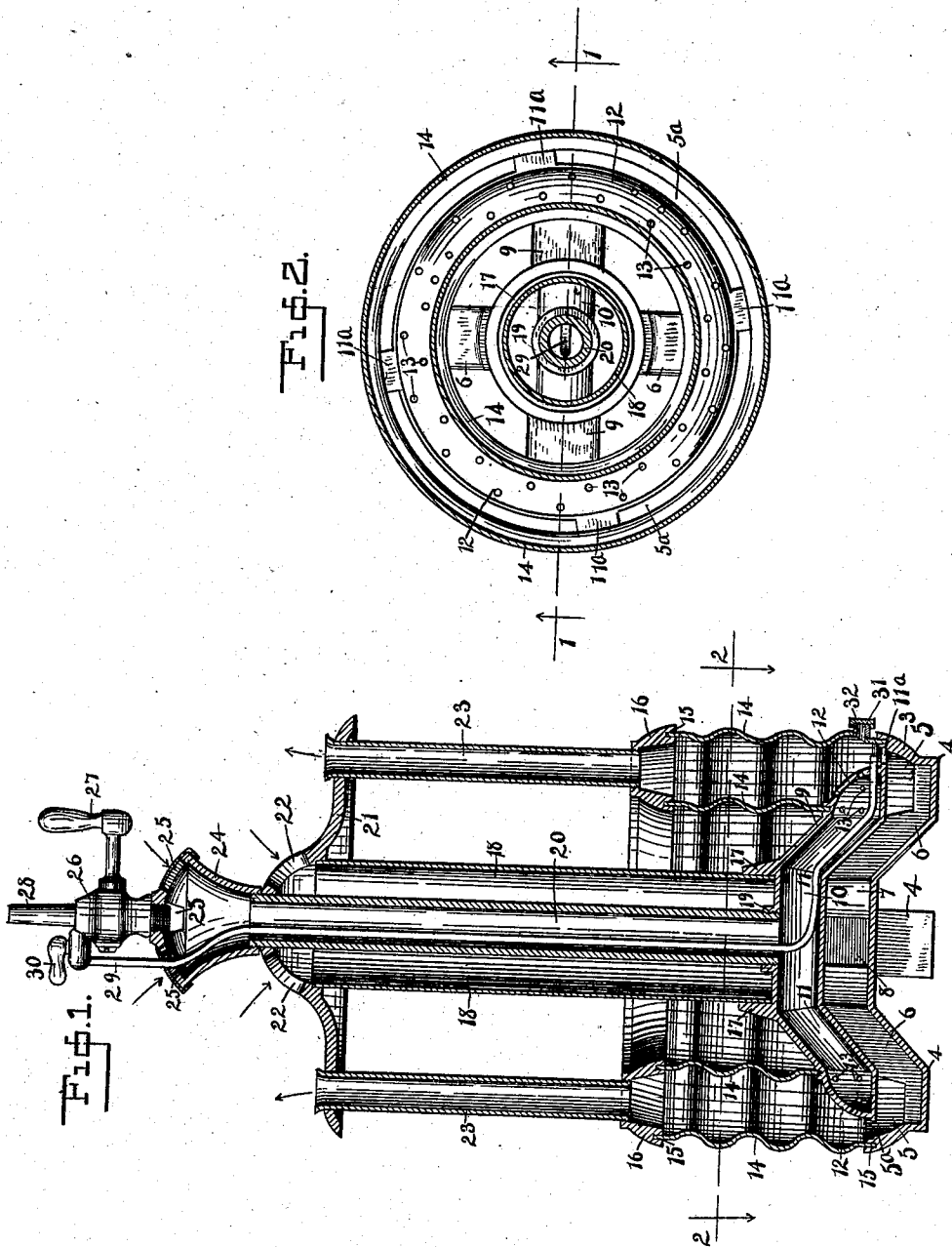


J. J. DIVEKEY & C. M. GENTHNER.
WATER HEATER.

APPLICATION FILED NOV. 18, 1906.

899,388.

Patented Sept. 22, 1908.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN J. DIVEKEY AND CHARLES M. GENTHNER, OF AURORA, ILLINOIS.

WATER-HEATER.

No. 899,388.

Specification of Letters Patent.

Patented Sept. 22, 1908.

Application filed November 16, 1906. Serial No. 343,670.

To all whom it may concern:

Be it known that we, JOHN J. DIVEKEY and CHARLES M. GENTHNER, citizens of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification.

Our invention relates to water heaters and is designed for heating water in open vessels for domestic purposes, although the apparatus may be employed for heating water wherever the conditions are suitable.

The chief objects of our invention are to provide an apparatus for heating water in which the combustion chamber is so constructed that it can be submerged in water to be heated; to furnish means for supplying fuel and air to the combustion chamber while submerged, to provide means for disposing of the products of combustion; to supply a convenient method for igniting the gas jet; to furnish means for readily attaching the device to a gas pipe or other source of supply, and to provide a simple efficient and economical device for the purpose stated that can be cheaply manufactured.

The usual method of raising the temperature of water is by applying the flame or other source of heat to the outside of the vessel or container, which may be in the form of a coiled pipe or series of tubes.

Our improved water heater is designed to be placed directly into the vessel containing the water to be heated, the combustion chamber being below the water level and furnished with suitable inlet tubes for the fuel supply and air to support the flame, and outlet pipes for the escape of the products of combustion, suitable provision being made for lighting the gas.

We have shown our device adapted to employ gas for fuel but we do not wish to be limited to the use of gas alone as it will be evident that other agents may be employed such as gasoline, alcohol, or charcoal.

We accomplish the above results and others of minor importance by the use of the apparatus illustrated in the accompanying drawing, which forms a part of this specification and in which:—

Figure 1 is a vertical section of our improved water heater, and Fig. 2 is a transverse section on the line 2—2 of Fig. 1.

Referring to the drawing the numeral 3 indicates the base supported upon projections

4 which serve as feet. A peripheral channel 5 communicates by means of inclined passages 6, rectangular in cross section, with a central circular chamber 7 through orifices 8. There are four of said passages 6 radiating at right angles, and above two of these passages diametrically opposite each other are placed inclined tubes 9 which communicate with a connecting horizontal tube 10. The bores 11 of the tubes 9 serve to connect the tube 10 with an annular passage triangular in cross section. The outer wall of this passage is supplied with a series of small holes. This part, which constitutes the burner, is supported around the outer edge of lugs 11^a which rest upon the base 3. The diameter of the burner ring is less than that of the base and the intervening spaces 5^a permit of the introduction of air to the surface of the burner to support combustion, the supply being furnished in a manner hereinafter described. Placed over the burner 12 is an annular combustion chamber, conforming transversely, to the ring shape of the burner, and composed of corrugated walls 14.

The lower edge of the outer wall is received into a channel 15 in the upper margin of the base 3 and the inner wall is supported in a similar manner upon the inner margin of the burner 12. The upper edges of the walls 14 are received in channels formed in a cap 16 which covers the top of the combustion chamber. A collar 17 formed integral with the structures 9 and 6 receives the lower end of a vertical pipe 18 and a collar 19 projecting from the upper side of the tube 10 is threaded to receive the lower end of a tube 20 which is thus held concentric with the pipe 18. A circular plate 21 is shouldered to receive the upper end of the pipe 18 and has a central perforation through which the pipe 20 projects. The said plate is provided with apertures 22 which communicate with the interior of the pipe 18 and is perforated near the periphery to receive the upper ends of pipes 23 which are received into openings in the cap 16 thus communicating with the combustion chamber 14. Upon the upper end of the central tube 20, which projects above the plate 21, is secured a mixing chamber 24 provided with a plurality of openings. A gas cock 26 provided with a handle 27 is inserted into the top of the mixing chamber and is furnished with a nipple adapted to receive the end of a flexible tube for attachment to any convenient source of

gas supply. Communication is made with the nipple 28 by a tube 29 which is supplied with a gas key 30. The said tube enters the mixer 24 through one of the openings 25, passing down the central pipe 20 and thence through one of the passages 11 to the burner ring 12, which it crosses and terminates in the lower part of the combustion chamber in close proximity to the orifices of the burner. Directly opposite the end of the tube is a small opening 31 in the wall 14 in which is inserted a nipple provided with a removable cap 32.

The method of using our apparatus is as follows:—Connection having been made by means of a flexible tube with the gas supply, the key 30 of the pilot light is then turned to allow the gas to flow through the tube 29 to the combustion chamber. The cap 32 is then removed and the gas lighted. The cap is then replaced and the gas turned on at the main cock. The gas will flow down the central tube and the pilot light will ignite it as it passes out of the orifices 13. Air sufficient to support combustion will enter the openings 22 and pass down the pipe 18 and through the passages 6 whence it will find its way through the slots 5^a to the combustion chamber. The heated air and products of combustion will naturally rise and fill the combustion chamber and then pass off through the pipes 23 which act as chimneys. Air will also enter the openings 25 to mix with the gas in the proper proportions to give a heating flame. The pilot light is now turned off and the apparatus placed in the water to be heated. The level of the water can be varied, care being taken that it does not rise high enough to enter the tops of the chimneys.

It is obvious that many changes may be made in the devices of our invention as herein disclosed without departing from the spirit and scope thereof, and we do not wish, therefore, to be limited to the precise construction set forth.

Having thus described our invention what we claim as new, is:—

1. A water heater comprising a hollow base, an annular burner concentric with and spaced from said base, a gas and air mixing chamber, a fuel supply tube leading from said chamber, radial passageways leading from said tube to said burner, an annular cap, parallel walls connecting said cap and base, and forming a combustion chamber, flues secured in said cap and communicating with said chamber, and means for introducing gas to said mixing chamber.

2. A water heater comprising a base having an annular chamber and radial passages leading thereto, an air-supply pipe communicating with said passages, a burner having an annular chamber, and radial passages leading thereto, a fuel-supply tube communicating with said passages, means for supplying gas, and means for supplying air, to said tube, means for regulating the supply of gas to said tube, an annular combustion chamber communicating with said burner and with said base, flues leading from said combustion chamber, and means for igniting the fuel at said burner.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN J. DIVEKEY.

CHARLES M. GENTNER.

Witnesses:

E. M. MANGAN,
S. N. HOOVER.