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BOILER OR THE LIKE

Filed April 21, 1926
This invention relates to improvements in boilers having particular reference to small steam generating boilers.

The objects attained in the invention consist in a quick action boiler having relatively high steam generating capacity, the boiler being without flues and simply designed in other respects for low cost production, the construction being such as will insure dependable operation of the boiler with the minimum of maintenance.

A feature of the boiler consists in a plurality of removable tanks or compartments, one within which serve for admitting and effecting gradual diffusion of cold water in the boiler without materially checking the temperature of the heated water, the arrangement being thus effective to maintain a uniform steam pressure.

The interposed relation of the tanks, one within another, and the further provision of a removable boiler head, also serves the further double purpose of preventing or minimizing the formation of scale in the bottom of the main tank which receives the direct action of the heat, and affords convenient accessibility to the interior of the boiler for removing from the inner tanks the accumulation of soft sediments.

The improved boiler is especially adaptable for small plants where a small supply of steam is required, as for sterilizing in dairies, and in preparing stock foods etc., for hand laundries and garment cleaning plants, for laboratories, etc.

In the accompanying drawings:

Fig. 1 is a view illustrating the boiler in elevation;

Fig. 2 is a view in vertical section.

As here shown the boiler consists of a suitable outer casing 1 which serves as the heat chamber, a conventional gas burner 2 as here shown serving to represent any suitable heating means, a door 3 affording access to the heat chamber, a vent or smoke pipe 4 being connected to casing 1 in the usual manner. The main boiler tank 5 is suspended in casing 1 from a suitable connection 6, the outer casing being offset inwardly as indicated at 7 to effect a suitable spacing 8 between the casings for the action of heat on tank 5. The upper portion of tank 5 extends above casing 1 and is closed by a removable head 9 bolted to an annular flange 10 secured to tank 5.

The head 9 affords suitable connections for the water supply line 11, steam riser line 12, a steam pressure gauge 13, safety valve 14, the tank 5 being further provided with a water gauge 15.

Supported removably in tank 5 by means of brackets 16—18 is a tank 17, the brackets acting to effect an annular space 18 between tanks 5 and 17 thus to present a shallow body of water in cross section to the action of the heat in space 8 which results in quick heating of the water in space 18 and generating of steam in the boiler, the rapid action being further accelerated by confining the water of lower temperature in tank 17, the water passing from tank 17 to tank 5 through an outlet 19 extended upward from the bottom of tank 17, thus the water passing from one tank to the other, when the boiler is at normal temperature, is already near the temperature of the water in space 18 with the result that the temperature in space 18 will not be materially lowered, uniformity of temperature, or steam pressure being thus maintained.

Water is supplied to the boiler through pipe 11 which discharges into a tank 20, the water overflowing to tank 17. Tank 20 is supported free in the open end of tank 17 by means of overhanging brackets 21, thus when head 9 is removed tank 20 can also be removed and cleaned. Removal of the tank also affords convenient access for cleaning the interior of tank 17.

The greater portion of the sediment from the water will remain in tank 20 and the greater portion remaining suspended in the overflow water from tank 20 will settle in the bottom of tank 17, the outlet 19 being raised above the bottom to further minimize the passing of foreign matter or sediment to the outer tank 5. The sediment in tanks 17 and 20 will not readily form into scale because there is no direct action of heat on the tanks, but will remain soft and can easily be cleaned out. The formation of sediment and scale in the outer tank will be so slight that it will be of little or no harmful consequence.

From the drawings and the foregoing detailed description the improved construction and action of the boiler will be apparent and their importance in the effective operation of small boilers recognized.

Having described my invention, I claim:

1. A boiler for the like, comprising an outer casing 1, a heat chamber 2, a door 3, a vent or smoke pipe 4, a water supply line 11, a steam riser line 12, a steam pressure gauge 13, a safety valve 14, a water gauge 15, a removable head 9, an annular flange 10, a tank 5, a tank 17, brackets 16—18, an annular space 18, a water supply line 11, a steam riser line 12, a steam pressure gauge 13, a safety valve 14, a water gauge 15.

2. A boiler for the like, comprising an outer casing 1, a heat chamber 2, a door 3, a vent or smoke pipe 4, a water supply line 11, a steam riser line 12, a steam pressure gauge 13, a safety valve 14, a water gauge 15, a removable head 9, an annular flange 10, a tank 5, a tank 17, brackets 16—18, an annular space 18, a water supply line 11, a steam riser line 12, a steam pressure gauge 13, a safety valve 14, a water gauge 15.
1. A boiler comprising a heat chamber, an outer water tank supported in the heat chamber with heating space surrounding the tank, a second tank approximating in size the outer tank supported in and discharging into the outer tank with a shallow space between the tanks and a third open top tank supported in the second tank acting to receive water supplied to the boiler and to discharge into the second tank.

2. A boiler comprising a heat chamber, a water tank supported in and extended above said chamber, a removable head for said tank, a second tank approximating in size the outer tank supported in the outer tank, thereby effecting a shallow space for water between the tanks, and a third open top tank removably supported in the second tank adjacent said head for receiving the water supplied to the boiler.

3. A boiler comprising a heat chamber, a water tank supported in and extended above said chamber, an open end, removable intermediate tank, approximating in size the outer tank, supported in and adapted to discharge into the outer tank through an outlet above the bottom of the intermediate tank thus permitting sediment to settle in the intermediate tank below the outlet, the relative size of the tanks serving to effect a shallow space for water between the tanks, an inner removable tank supported in the intermediate tank for receiving water supplied to the boiler and overflowing into the intermediate tank, thus permitting sediment to settle in the inner tank, and a removable head for the outer tank for removing the inner tanks.

In testimony whereof, I affix my signature.

ALBERT H. KEMPER.