

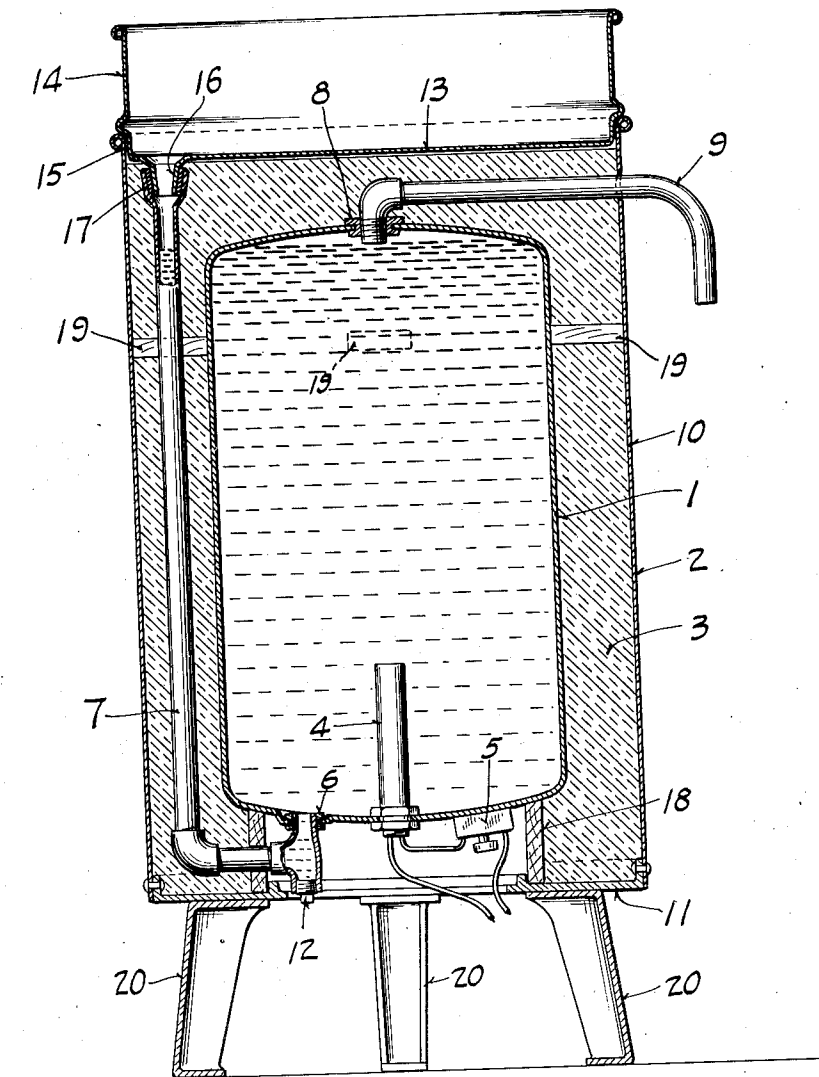
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F. PALM

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DISPLACEMENT ELECTRIC WATER HEATER

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Frederick Palm
INVENTOR.

BY *Wm. C. Anderson*
ATTORNEY.

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DISPLACEMENT ELECTRIC WATER HEATER

Frederick Palm, Shorewood, Wis., assignor to
A. O. Smith Corporation, Milwaukee, Wis., a
corporation of New York

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This invention relates to a water heater and more particularly to a water heater that is operable by gravity pressure to enable employment thereof in locations where pressure from water mains is not available.

One object of the invention is to provide a water heater that can be fabricated at low cost.

Another object is to provide a water heater of light weight construction that is readily portable from place to place.

A further object is to provide a water heater that is capable of withstanding hard use in service.

Other objects and advantages of the invention will appear in the following description and accompanying drawing illustrating an embodiment of the invention.

The single figure of the drawing is a vertical sectional view of a gravity water heater constructed in accordance with the invention.

Referring to the drawing there is illustrated a water heater comprising in general a sheet metal storage tank 1 separated from an external casing 2 by insulation 3 to insulate against loss of heat. Any suitable unit to heat the water in the tank may be disposed at or near the bottom of the tank. The unit shown consists of an electric heating element 4 and thermostat 5.

The storage tank 1 is preferably of cylindrical contour and may be provided with spud 6 in the lower end portion to receive the cold water inlet pipe 7 and with spud 8 in the upper end portion to receive the hot water outlet pipe 9. Spuds 6 and 8 may if desired, be disposed in the side walls of the tank rather than in the respective ends thereof.

The tank is protected against corrosion from contained liquid by galvanizing or any other suitable lining, or it may be constructed of a non-corrosive alloy metal.

The casing 2 comprises a cylindrical body section 10, and a bottom 11.

The casing bottom 11 has a suitable opening to provide access to the electric heating unit, the thermostat 5 and a drain 12 which may be interposed in the inlet pipe 7 to drain the contents of tank 1 if desired.

A cover 13 provided for the casing 2 is of pan-shape having a body wall portion 14 projecting upwardly a substantial distance to provide a pan or receptacle to temporarily confine the feed water for tank 1. The pan-shaped cover 13 may be secured to the casing body section 10 in any suitable manner such as by a yielding slip joint 15 to thereby make the cover of the casing freely removable.

The casing cover 13 is provided with an outlet which in general comprises a tapered nipple 16 secured within a suitable opening in the bottom of the cover. The nipple 16 is preferably located

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at a position opposite the location of hot water outlet 9.

Nipple 16 is complementary to and fits within the upper flared end of inlet pipe 7 and a suitable seal between the pipe and nipple may be provided such as a rubber bushing 17. The seal employed permits ready removal of casing cover 13.

Inlet pipe 7 extends downward between tank 1 and casing 2 within insulation 3 from nipple 16 in cover 13 to spud 6, the latter being disposed in the lower end of the tank as illustrated or in the side of the tank adjacent the bottom or lower end thereof. By bringing the pipe into tank 1 in the manner described the inflowing cold water enters the coolest water at the bottom of the tank without flowing through a pipe passing through the hot water at the top of the tank. This results in little loss of heat due to conduction.

The discharge of hot water from the tank 1 is accomplished through outlet pipe 9 which extends to the outside of the heater from spud 8 of tank 1 through insulation 3 and a suitable opening in casing 2. The outer end of pipe 9 may be bent downwardly to siphon off water from the top of the tank and provide a space for expansion while the water is being heated and thus prevent dripping from the outlet pipe when the hot water is not running out of the tank in service.

The tank 1 may be supported on bottom 11 by ring member 18 which also serves as an inner wall to define the insulation space. The tank may be held in desired spaced relation to the casing 10 in any suitable manner such as by several spacer blocks 19. The ring member 18 and the spacers 19 are preferably made of wood or other heat insulating material. Legs 20 may be secured to the bottom 11 to support the heater at a desired elevation from the floor and to provide access to the drain and thermostat adjustment.

The water heater of the invention is operated by first heating the water contained in tank 1 as by heating element 4. A quantity of cold water is then poured into the pan-shaped cover 13 of casing 2. Under the pressure of gravity the cold water in receptacle 13 and inlet pipe 7 flows into the bottom of tank 1. The ingress of cold water into the bottom of the tank forces an egress of a similar quantity of hot water from the tank through outlet pipe 9. Similar subsequent discharges of hot water from outlet 9 may be obtained by pouring water into the pan-shaped cover 13 of casing 2 as described, the quantity of water poured into the cover determining the quantity of hot water discharged from pipe 9.

The water heater of the invention provides a low cost, light weight unit that finds ready em-

ployment, such as in the dairy industry and the like, where it is desirable to have a portable water heating unit that is inexpensive and capable of withstanding hard use in service.

Various embodiments of the invention may be employed within the scope of the accompanying claims.

I claim:

1. A water heater comprising a substantially cylindrical water tank, an external casing spaced from said tank and disposed to confine insulating material therebetween, a freely removable water receptacle provided as the top enclosure or cover for said casing, insulating material surrounding said tank inside said casing and overlying the top of the tank beneath said receptacle, and a water inlet pipe disposed in the insulating material between the spaced vertical walls of the tank and casing and secured at its lower end within an opening in the lower end portion of the water tank and connected by a slip joint at its upper end to an opening in the bottom of said water receptacle to convey water from said receptacle to the bottom of said tank, said receptacle being freely removable from said casing and said inlet pipe for cleaning and leaving said insulation on the water tank to protect the latter from heat loss.

2. A water heater comprising a substantially cylindrical water tank, an external casing spaced therefrom and disposed to confine insulating material therebetween, a water receptacle of generally pan-shape provided as the top enclosure or cover for said casing, insulating material surrounding said tank inside said casing and overlying the top of the tank beneath said receptacle, said receptacle being secured to said casing by a yielding slip joint for ready removal and having an outlet opening in the bottom thereof, near one side, a tapered nipple member disposed within said outlet opening and projecting downwardly, and a cold water inlet pipe disposed in the insulating material between the spaced vertical

walls of the tank and casing and secured at its lower end within an inlet opening at the bottom of the water tank and tapered at its upper end to receive said tapered nipple member to thereby removably connect said receptacle to said pipe without interfering with the free removal of said receptacle from the casing and the pipe.

3. A water heater comprising a substantially cylindrical water tank, an external casing spaced from said tank, insulating material disposed between the water tank and said casing, a removable cover for said casing comprising a water receptacle resting thereon, insulating material filling said casing over the top of said tank to insulate the latter from said receptacle, a heating unit provided at the bottom of said tank to heat the water contained in the tank, a hot water outlet pipe secured within an opening in the upper end portion of the water tank and extending through the casing wall, and a cold water inlet pipe disposed in the insulating material between the spaced vertical walls of the casing and tank and extending from said water receptacle to the bottom of the tank to convey cold water from the receptacle to the bottom of the tank and effect discharge of hot water from the outlet pipe at the top of the tank, said receptacle being freely removable from said casing and inlet pipe for cleaning purposes without disturbing the insulation on top of the tank.

FREDERICK PALM.

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