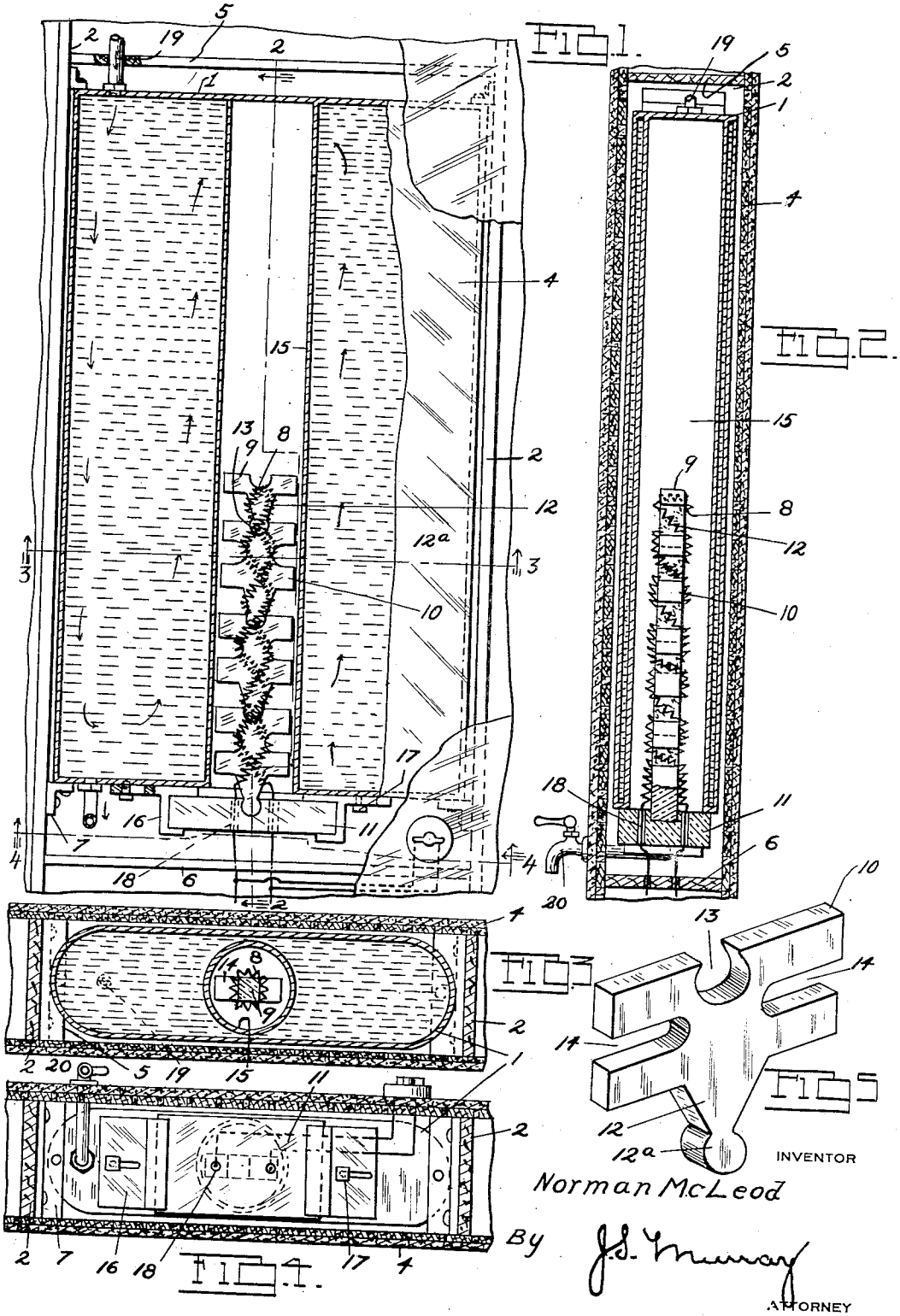
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ELECTRIC WATER HEATER

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ELECTRIC WATER HEATER

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3 Claims. (Cl. 219—38)

This invention relates to electric heaters and particularly to electric water heaters.

An object of the invention is to wind the resistor of an electric heating element upon an elongated core, built up of similar non-conducting refractory units arranged end to end in an interlocking relation, and interlocked to maintain their end to end relation without requiring rods or bolts.

Another object is to utilize a resistor, wound upon a built-up core, to maintain assembly of the units forming such core.

A further object is to establish such an interlocking relation between the units of a built-up core, as to afford the core a considerable lateral flexibility, whereby the heating element comprising said core may be introduced into a confined space, prohibiting insertion of the element rectilinearly.

A further object is to adapt an electric water heater to be installed interiorly of a hollow partition wall, where it be both concealed and completely out of the way, and to utilize the dead air space consequently surrounding the heater to conserve its heat.

A further object is to establish a readily detachable connection between the water tank of an electric water heater and its heating element.

These and various other objects the invention attains by the construction hereinafter described, and illustrated in the accompanying drawing, wherein:

Fig. 1 is a vertical sectional view, in partial side elevation, of the water heater installed in a partition wall.

Fig. 2 is a transverse vertical section of the same, taken on the line 2—2 of Fig. 1.

Fig. 3 is a cross section of the same, on the line 3—3 of Fig. 1.

Fig. 4 is a cross section, taken on the line 4—4 of Fig. 1, showing the quick-detachable connection between the heating element and water tank.

Fig. 5 is a perspective view of one of the core-forming units of the heating element.

In these views, the reference character 1 designates a water tank, of any desired height and of a width and thickness adapting it to fit freely between two of the studding uprights 2 of a partition wall 4. Above and below the tank, the uprights 2 are rigidly connected by braces 5 and 6, which combine with said uprights and the sides of the wall to form a dead air space which will largely prevent wasteful dissipation of heat. The tank is supported some distance above the brace 6, as by brackets 7 secured to the uprights, whereby there is formed, below the heater, an adequate working space for insertion and removal of the heating element.

The heating element comprises a coiled wire resistor 8 wound upon a vertically elongated core, built up of units 9, 10 and 11 formed of an insulating and refractory material, such as porcelain. Said units are of generally rectangular form, as best appears in Fig. 5, and are each formed, excepting the base unit 11, with a tongue 12 projecting centrally downward and terminating in a circular enlargement 12*a*, each unit being further formed with a circular socket 13, opening centrally in its upper edge, and also in the side faces of the unit, to receive the enlargement 12*a* of an overlying unit. The units 9 are each formed with a pair of opposed slots 14, opening from the ends of the units, through which slots the resistor is coiled. The tongues 12 are of a length to space apart the bodies of the units to form additional spaces accommodating the resistor. The uppermost unit 9 omits the slots 14, but preferably retains the socket 13, for accommodation of the resistor.

The described heating element fits freely within a tubular chamber 15, rising centrally off the tank, the full height thereof, and sealed off from the water space, said chamber having an opening in the tank bottom for insertion and removal of the heating element. The base unit 11 of the core has a somewhat greater width and length than the other units, so that it may underlie the tank and form a closure for the chamber 15.

The heating element is normally held in place by a pair of clips 16, of an approximate Z-shape which are secured to the tank bottom by bolts 17 and are slotted for engagement by the bolts so as to afford them a limited sliding travel to engage them with or disengage them from the base unit 11. Preferably the base unit is formed with a pair of vertical openings 18 therethrough to receive wires supplying current to the resistor.

A pipe 19 opening into the top of the tank serves to supply water thereto, and a faucet 20 for drawing off heated water is arranged exteriorly of the wall 4, being connected through the latter to the bottom of the tank.

An important feature of the described construction is the lateral flexibility of the described heating element, resulting from adaptability of the enlargements 12*a* to rock in and about the

axes of the sockets 13. Thus, for the purpose of inspection or repairs, the heating element may be readily withdrawn from the chamber 15 and reinstalled therein, as is indicated in dash lines in Fig. 1, without disturbing the location of the water tank in the wall.

The unitary construction of the core 9, 10, 11 further permits the unit to be built up to any desired capacity.

The illustrated mounting of the described heater within a partition wall is only one of numerous installations to which the invention is adapted and the invention is presented as including all such modifications and charges as come within the scope of the following claims.

It is to be noted that the heating element, as installed in the described heater, tends to promote a circulation of the water in the tank 1, as indicated by the arrows in Fig. 1. That is to say, the effect of the heating element is largely to heat the air in the lower portion of the chamber 15, whereby such air rises into the top portion of said chamber, and remains in said portion until its heat is largely given off to the water in the adjacent portion of the tank. Thereupon such air is replaced by a further rise of air from the vicinity of the heating element. Thus heat is applied to the water in the tank primarily in its top portion, and to a lesser extent from the lower and intermediate portion of the chamber 15, whereby water tends to rise throughout the region surrounding the chamber 15 descends in the more remote regions, as the arrows indicate.

What I claim is:

1. In an electric water heater, the combination with a hollow building wall, of a water tank disposed within such wall and having a substantially central chamber, means for delivering water to the tank, means passing through the wall for drawing off water from the tank, and an electric heater disposed within said chamber.

2. The combination with a building wall comprising spaced uprights, of an electric water heater positioned between two of such uprights and enclosed by the wall, means passing through the wall for drawing off water from the heater, means for supplying water to the heater, and means jointly carried by said two uprights supporting the heater at a desired level in the wall.

3. In a water heater, the combination with a wall comprising spaced uprights and wall panels engaging opposite edges of the uprights, of a water tank proportioned to extend substantially from panel to panel and between two of the uprights, means upon the uprights for supporting the tank at a desired elevation, a heater within the tank, means for delivering water to the tank, and a faucet arranged to deliver water from the tank through one of said panels.

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