

J. G. WALLMANN.
ELECTRIC HEATER.
APPLICATION FILED MAR. 18, 1913.

1,037,518.

Patented Feb. 17, 1914.

Fig. 1.

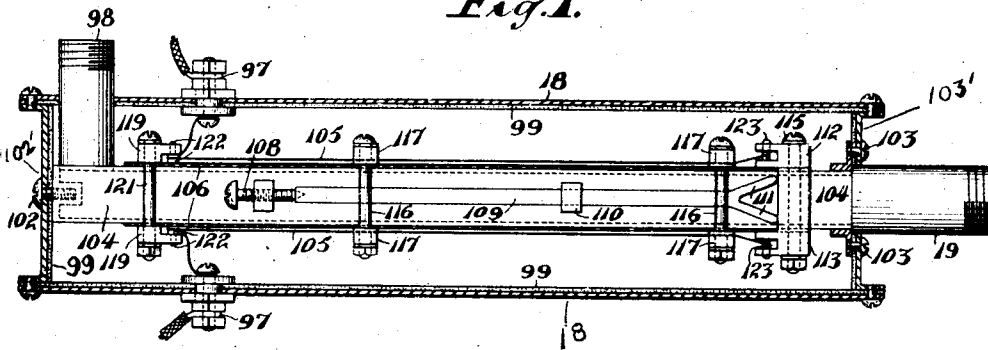


Fig. 2.

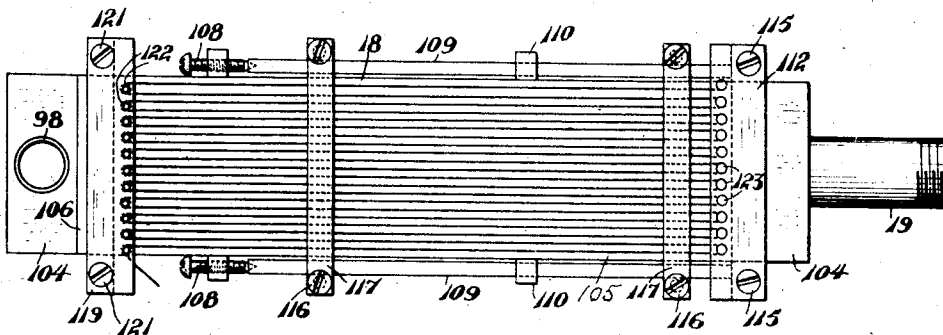


Fig. 3.

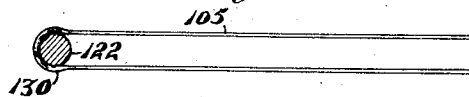
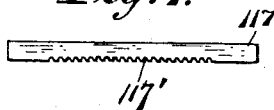


Fig. 4.



WITNESSES:

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JOHANN G. WALLMANN, OF OAKLAND, CALIFORNIA.

ELECTRIC HEATER.

1,087,518.

Specification of Letters Patent.

Patented Feb. 17, 1914.

Application filed March 18, 1913. Serial No. 755,222.

To all whom it may concern:

Be it known that I, JOHANN G. WALLMANN, a citizen of the United States, residing at the city of Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

My invention relates to improvements in electric heaters.

The object of my invention is to provide a novel electric heater having certain advantages which will hereinafter appear.

My invention consists in the combination and arrangements of parts shown in the accompanying drawing, described in the following specification and claimed in the appended claims.

Referring to the drawings, Figure 1 is a longitudinal section of the device, showing one side of the same. Fig. 2 is another longitudinal view of the device, showing a different side of the same. Fig. 3 is a detail of resistance wire 105, showing the reinforced part 130. Fig. 4 is a side elevation of the porcelain insulator 117 showing ridges or notches 117'.

In the drawings 18 are the side plates and 102' and 103' are end plates, comprising the casing of the device. One of the end plates is penetrated by pipe 19 and one of the side plates is penetrated by pipe 98. The device is provided with an asbestos lining 99, lying next to the side and end portions of the casing. A flat boiler preferably of brass, is in connection with inlet pipe 98 and outlet pipe 19. Resistance wires 105 having reinforced parts 130 run longitudinally in the device being held in place by pins 122 and 123 respectively. Porcelain insulators 117 running transversely are penetrated and held in place by bolts 116, the said insulators being provided with notches 117' equidistantly separating and holding wires 105.

106 shows sheets of mica insulation.

Bolts 121 hold in place fixed end supports 119. Pins 122 are set in said end supports as shown and hold wires 105. At one end the end supports 112 and 113 are held together with bolts 115 and such end supports are penetrated by and are slidable on boiler 104. Bars 109, preferably of copper, have end prongs 111 as shown. Said bars are slidably held in place by brackets 110 and turnable tension screw 108, which

screw is turnably supported as shown, and has a pointed end seated in the counter sunk end of bar 109. The pins 123 fit firmly in supports 112 and 113, as do pins 122 in support 119. The wires 105 are turned on pins 122 and 123, and are held in place by porcelain bars or insulators 117, the wires fitting in the notches 117' thereof to space said wires so as to prevent them from contacting. The screws 102 hold the end piece 102' in place, and screws 103 hold the opposite end-piece in place. The insulated terminals 97 are for the purpose of conducting electric current to the device. Supports 112 and 113 constitute a slide. Supports 119 are secured by screws 121. The enlargement 130 as shown adds strength to wire 105.

In the operation, water is admitted into the boiler 104 by inlet pipe 98 and electric current passing over resistance wires 105 of the electric element adjacent to said boiler, the said wires are heated and in turn heat the water in said boiler, steam is formed, which may be permitted to enter a radiator for the purpose of heating the same. The heat created in said resistance wires also causes bars 109 to expand lengthwise, forcing the combined slidable elements 112 and 113 forward, thus taking up any slack in the hot resistance wires 105 and preventing them from short-circuiting. The bar 109 may also be forced forward by the turning of screw 108. The wires 105 lying upon a flat piece of mica as mentioned, the mica is consequently not cracked as in the old process of winding, thus insuring against grounding. The expansion of the prongs of bar 109 by heating facilitates the forward movement of the slide composed of elements 112 and 113.

I claim:—

1. In an electric heater, a casing having an inlet pipe and an outlet pipe extending therethrough, a boiler in said casing having openings containing said pipes, and a plurality of non-contacting wires adjacent to and running longitudinally with said boiler, end supports securing said wires and slidable on said boiler, and means for conducting electric current to said wires.

2. In an electric heater, a casing having an inlet pipe and an outlet pipe extending therethrough, a boiler in said casing having openings containing said pipes, a plurality of non-contacting wires adjacent to

and running longitudinally with said boiler, a slidable bar having prongs at one end thereof on each side of said boiler, a slide connected to said wires and movable on said boiler and engageable with said prongs, and means for conducting electric current to said wires.

3. In an electric heater, a casing having an inlet pipe and an outlet pipe extending therethrough, a boiler in said casing having openings containing said pipes, a plurality of non-contacting wires adjacent to and running longitudinally with said boiler, a

slidable bar on each side of said boiler, means for the forward movement of said bar engaging said bar rearwardly, insulating bars having notches containing said wires, a slide connected to said wires and movable on said boiler, and means for conducting electric current to said wires. 15 20

In testimony whereof I affix my signature in presence of two witnesses.

JOHANN G. WALLMANN.

Witnesses:

JAMES P. HOLMES,
J. F. DONEGAN.