J. G. WALLMANN.

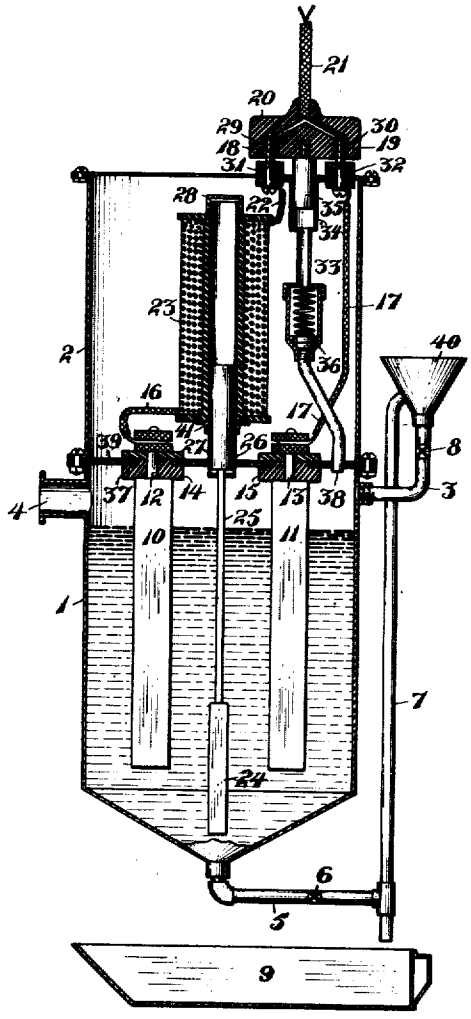
ELECTRIC STEAM HEATING APPARATUS.

APPLICATION FILED SEPT. 3, 1910.

1,023,602. **Patented Apr. 16, 1912.**

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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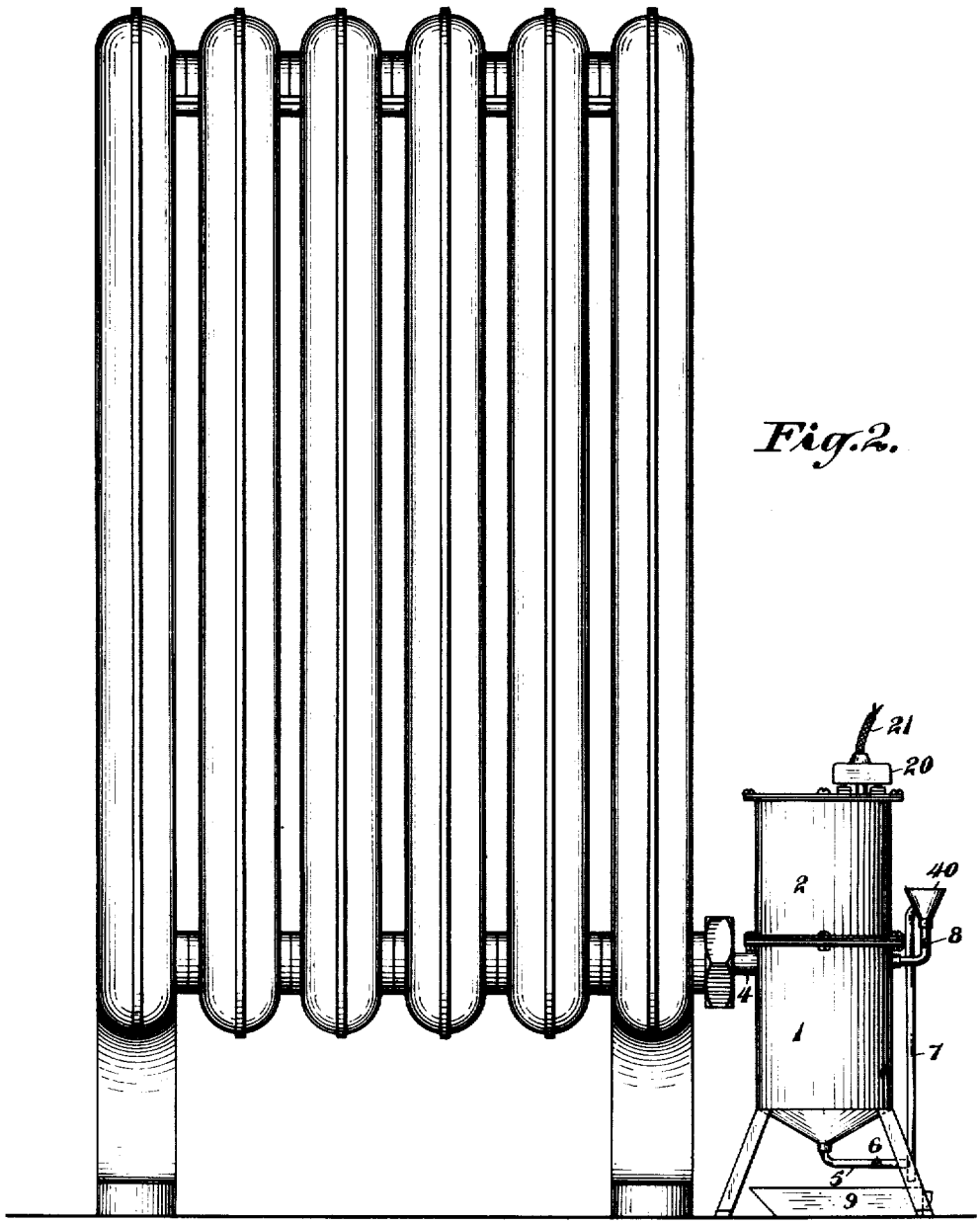

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHANN G. WALLMANN, OF OAKLAND, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WALLMANN ELECTRIC HEATER COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

ELECTRIC STEAM-HEATING APPARATUS.

1,023,602. Specification of Letters Patent. Patented Apr. 16, 1912.

Application filed September 3, 1910. Serial No. 580,279.

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 Steam-Heating Apparatus, of which the following is a specification.

My invention relates to improvements in electric steam heating apparatus.

The object of my invention is to provide an electric water heater for generating steam combined with a radiator whereby the radiator may be used for heating any premises without the laying of pipes therein, which apparatus is portable so that the same may be readily carried from one part or room of a building to another as may be desired by the intending user, which moreover is safe and rapid in operation and may be constructed of any desired size for the creation of a greater or less quantity of heat.

Other advantages of said apparatus will hereinafter appear.

My invention consists in the novel combination and arrangement of parts shown in the accompanying drawing, described in the following specification and particularly pointed out in the appended claims.

Referring to the accompanying drawing, Figure 1 is a side view of my electric steam generating device having the outer casing thereof cut away thereby showing certain parts therein contained, as hereinafter mentioned. Fig. 2 is a side view of the exterior of said device combined with a radiator.

In the figures 1 represents a boiler having a cylindrical casing 2. In Fig. 1 the boiler is shown partly filled with water for the operation of the device. The boiler contains two electrodes marked respectively 10 and 11 and in the operation of the device the water therein between the faces of said electrodes acts as a resistance medium for the passage of the current, and the current passes from electrode 11 by way of pin 13 over wire 17 to connecting rod or screw 19, completing the circuit.

27 indicates a cylinder which is positioned above the electrodes, the upper end thereof being closed by a cap 28 so as to prevent escape of steam. The said cylinder has a square hole at its lower end to fit square rod 25 which is secured at its upper end to laminated core 26 and has its lower end secured to porcelain insulating plate 24. The cylinder 27 is preferably brazed to brass plate 39.

Various waters differ as to their electric resistance or conductivity, some of them containing more salts or mineral matters than others so that the same are of less resistance than waters having a higher degree of purity and consequently they would take too high an amperage. The solenoid 23 and insulating plate 24 are intended to regulate the currents as consumed so that there will be the same consumption although different waters are used.

When for the operation of the device the current is turned on if the water contained in boiler 1 is of high resistance insulating plate 24 will remain stationary as the amperage is not high enough to create sufficient induction in coil 23 surrounding the cylinder 27 to raise plate 24 by laminated core 26 and rod 25. If on the other hand water of great conductivity is used on account of the less resistance the amperage rises, causing a greater induction in coil 23 which draws laminated core 26, thereby raising plate 24 through rod 25, upwardly between electrodes 10 and 11 so that less surface of plates or electrodes 10 and 11 is exposed to electrical action. The cutting down of such exposed surfaces lessens the square surface of water against the plates or sectional area, causing a greater resistance and thereby making a uniform consumption of current. The water being used as a resistance and the current passing therethrough between electrodes becomes hot and forms steam which passes out of port 4 into radiator 41 and in condensing heat therefrom passes into the room in which the apparatus is contained and the liquid formed by such condensation flows back into the boiler 1 where the operation of forming the same into steam again by the action of electrodes 10 and 11 is repeated. The boiler may be built proportionately of sufficient size to accommodate radiators of various dimensions.

I will now proceed to describe a safety appliance and automatic throw off embraced in said apparatus as follows:—38 is a tube leading from the boiler 1 to a spring safety valve 36 set to blow off at 5 pounds pressure

said valve consisting of a casing having a valve seat in its lower end and a spring therein engaging a plug resting in said seat as shown. 33 is a tube leading from escape end of said safety valve upwardly to cylinder 34. 35 is a piston which fits into cylinder 34 and is secured to plug 20. If the pressure of steam exceeds five pounds as the device may be adjusted the safety valve 36 as shown opens and allows the ascending steam to enter cylinder 34, causing piston 35 to be forced out, and driving plug 20 upwardly, thereby breaking the electrical connection with the source of electric supply and causing the heating in the boiler through electric action to cease. 18 and 19 are pins which fit into seats 29 and 30 of plug 20, and 21 is a cord leading from the source of electric supply. 31 and 32 are porcelain washers to insulate pins 18 and 19 from the casing 2. 35 is the piston which is secured to plug 20 by a screw as shown. The smaller tube 33 is suitably connected to the case of spring valve 36, which case at its lower end receives steam from tube 38 which is secured therein. 22 is a wire connecting pin or screw 18 to solenoid 23, and 16 is a wire connecting solenoid 23 to electrode 10. A nut on connecting pin 12 clamps wire 16 in place. Pins 12 and 13 are preferably threaded into carbon electrodes 10 and 11. 14 and 15 are porcelain insulators. The cylinder 27 is preferably brazed to plate 39. Rod 25 is square so as to keep porcelain plate 24 from turning. 17 is a wire fastened to pin 19 and to electrode 11 by nuts and bolt 13. Bolts to hold the top plate to the casing 2 are placed as shown. 39 is a plate preferably of brass on boiler 1 and 37 is a rubber gasket. 5 indicates a waste pipe from boiler 1. 6 is a valve to waste pipe 5 and 3 is a supply pipe to boiler 1. 8 is a valve to be closed after the boiler is filled and 40 is a funnel for the filling of said boiler. 7 is an overflow pipe fitting in and leading from funnel 40 and 9 is a waste pan for waste water. 28 is a screw cap on cylinder 27 to close the end thereof and also to hold solenoid 23 in place. 41 is a shoulder on cylinder 27 in which solenoid 23 rests. Pipe 7 penetrates funnel 40 through its side and is secured thereto by soldering or other suitable method, the said pipe carrying off surplus water and preventing overflow from top of the funnel in filling or otherwise.

To operate the apparatus the valve 8 should be opened and the boiler 1 filled with water until it overflows through pipe 7 from funnel 40; then the valve 8 should be turned off, and plug 20 being thereupon forced down so that couplings 29 and 30 fit over pins 18 and 19, piston 35 will then fit into cylinder 34, and thereby the current passes over wire 22 to coil or solenoid 23 and thence through said solenoid and thence by means of wire 16 to pin 12 and to the submerged electrode 10, electrical connection being had with electrode 11 by means of wire 17 as shown and the current passing through the water between electrodes. Although in the filling of the boiler some water may escape into the radiator through pipe 4 as soon as a common level is reached the water will commence to rise in tube 3 until it overflows into pipe 7 to prevent the further escape whereof valve 8 is closed, after which electrical action and the evolution of steam may be permitted to commence.

I claim:—

1. In an electric water heater, a boiler having a casing thereon; a tube leading upwardly from said boiler into said casing, an escape valve connected to the upper end of said tube; an escape pipe leading upwardly from said valve; a cylinder of greater diameter than said escape pipe leading upwardly from said pipe; a piston in said cylinder, and a plug above said piston and operatively connected thereto, said plug having current conducting means extending downwardly therein and exposed to contact for transmitting the current into said casing.

2. In an electric water heater, a boiler having a casing provided with a top plate secured thereon; a tube leading upwardly from said boiler into said casing, a valve casing, a plug and a spring in said valve casing connected to said tube; a tube above said valve casing having its lower end opening into said valve casing; a cylinder opening into the upper end of said last mentioned tube; a piston in said cylinder; insulated pins projecting upwardly from said top plate; a plug above said piston and operatively connected thereto and having couplings engageable with said pins and wires leading to said couplings, and current conducting means leading downwardly from said pins and into said casing.

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

JOHANN G. WALLMANN.

Witnesses:
ALFRED JOHNSON,
C. J. HUGHES.