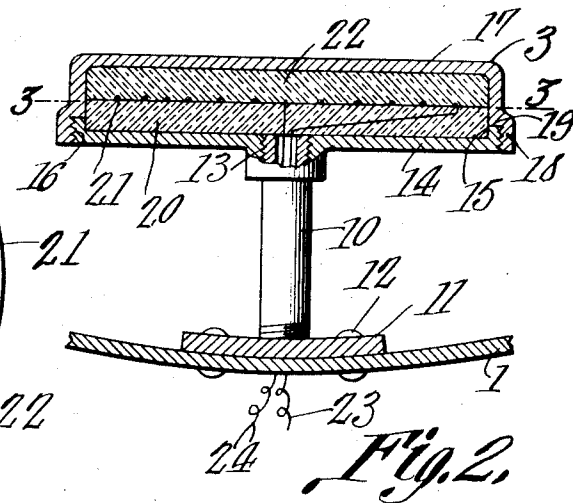
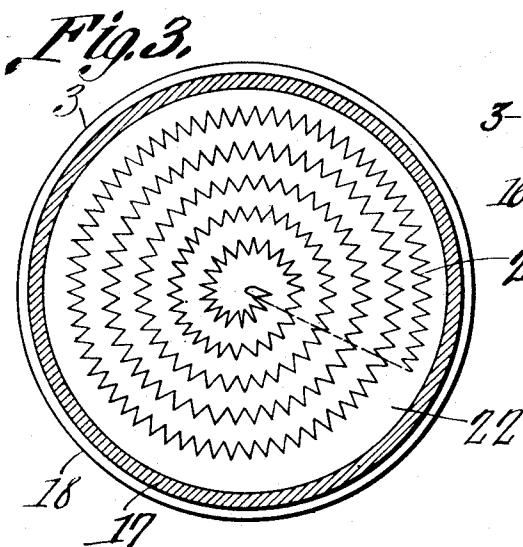
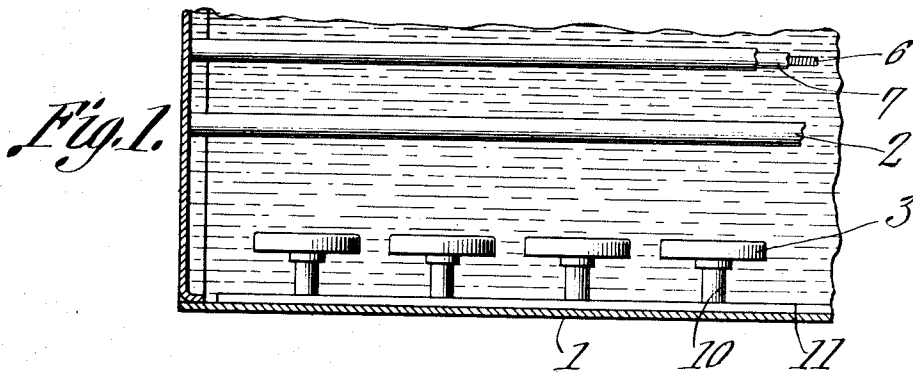


H. D. SHELTON.
ELECTRIC HEATER.
APPLICATION FILED AUG. 1, 1910.

1,010,191.

Patented Nov. 28, 1911.



Witnesses

J. D. Smith
William Ricketts Clark

Henry D. Shelton,
Inventor

by *Cashnow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

HENRY D. SHELTON, OF HUGHESVILLE, MISSOURI.

ELECTRIC HEATER.

1,010,191.

Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed August 1, 1910. Serial No. 574,762.

To all whom it may concern:

Be it known that I, HENRY D. SHELTON, a citizen of the United States, residing at Hughesville, in the county of Pettis and State of Missouri, have invented a new and useful Electric Heater, of which the following is a specification.

This invention relates to electric heating devices such as are adapted particularly for use in connection with the electric steam generator forming the subject matter of my application for United States Letters Patent filed June 11, 1910, Serial 566,459, although the device of the present invention can be used in other connections and for other purposes if desired.

The principal objects of the present invention are to improve and simplify the construction of said heating devices as well as to increase their efficiency in use and to decrease the expense attending their manufacture, installation and repair.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of the claims without departing from the spirit of the invention.

In the accompanying drawing forming part of this specification:—Figure 1 is a sectional view showing a portion of a steam generator or boiler provided with heating devices constructed in accordance with the present invention. Fig. 2 is a transverse vertical section, partly in elevation, showing a disk or mushroom form of the heating disks illustrated in Fig. 1. Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2.

Like reference numerals indicate corresponding parts in the different figures of the drawing.

Referring to the drawings, 1 indicates a portion of a steam boiler which may be a locomotive boiler or be arranged in the form of a horizontal or vertical stationary boiler, as desired. The boiler 1 is provided with two kinds of electric heating devices, or units, namely, the tubes 2 and the disks or hermetically sealed "mushroom" shaped heaters 3.

The heating devices 3 are constructed as best shown in Figs. 2 and 3 and include a

hollow cylindrical or tubular stem 10 which is threaded into or otherwise connected with a plate 11 bolted at 12 to the boiler and has threaded onto the upper end thereof at 13 a disk or plate 14 which is provided with an upstanding rim 15 the periphery of which is threaded as indicated at 16. A disk shaped casing cap or cover 17 is provided with an enlarged lower end or rim 18 which is rabbeted as indicated at 19 and formed with internal threads to engage the thread 16 of the plate 14, thus providing a hermetically sealed "mushroom" shaped heater. Mounted upon the plate 14 within its peripheral rim, but projecting thereabove, is a body or disk 20 of porcelain or other suitable insulating material upon the upper surface of which is laid a coil of resistance wire 21 which preferably is zigzagged and coiled as shown in Fig. 3 of the drawings. The resistance coil 21 may be laid down upon the body 20 when it is either in relatively soft plastic or hard condition. An outer body or disk 22 of substantially the same diameter and thickness of the disk 20 is laid down upon the resistance coil 21, preferably while in softened or plastic condition, thus causing the coil 21 to be embedded in said disk 22. The disk 22, of porcelain, or other plastic material, is then fused or vitrified so as to cause it to be amalgamated with the disk 20 and thus render the disks 20 and 22 with the coil 21 a practically solid or homogeneous mass of insulating material, the coil 21 being thus hermetically incased in the material of the disks 20 and 22. The terminals 23 and 24 of the resistance coil 21 are carried downward through the bore of the stem 10 and connected with any suitable source of electric energy. In operation, the disks 20 and 22 become heated and transmit their heat through the metal walls of the mushroom supported casing to the body of water in the boiler so as to result in the rapid and economical generation of steam.

The electric heating means of the present invention are strong, simple, durable and comparatively inexpensive in construction as well as thoroughly efficient and practical in operation.

By embedding the coil 21 in the disks 20 and 22, and fusing said disks, it is evident that the said bodies 20 and 22 form a homogeneous unit, whereby the same is readily insertible within or removable from the

"mushroom" shaped supporting casing, thus rendering it an easy matter, in case of the coil burning out, to renew, and be displaced with a perfect unit. Further by providing the supporting stem 10, and disk 14 and cap 22 as described and shown, and by mounting the heater, as shown in Fig. 1, the greatest efficiency in heating the surrounding liquid is possible. Also it is possible to render the casing a hermetically sealed one, to prevent the leakage of the surrounding liquid into the casing and bore of the stem to corrode the coil and wires 23 and 24, that would impair the operation of the heater.

15 What is claimed as new is:—

1. A hermetically sealed electrical water heater, comprising a hollow supporting tubular stem for the passage of conductor wires, a disk having an upstanding peripheral exteriorly threaded rim, a cover having a rim to engage the rim of the disk to form therewith a casing to be surrounded and in contact with a body of water, and a disk-shaped heating unit disposed within the

casing and having the terminal wires thereof passed through the tubular stem. 25

2. A hermetically sealed electrical water heater, comprising a hollow supporting tubular stem for the passage of conductor wires, a disk having an upstanding peripheral exteriorly threaded rim, a cover having a rim to engage the rim of the disk to form therewith a casing to be surrounded and in contact with a body of water, two disks of vitreous heat conducting electrical insulating material incased in said casing, and a coil of wire disposed between and sealed within the two bodies of vitreous material, the terminals of said wires being passed through the tubular stem. 30 35 40

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HENRY D. SHELTON.

Witnesses:

F. B. OCHSENREITER,
C. E. DOYLE.