H. MEHN.

ELECTRICAL WATER HEATER.

APPLICATION FILED OCT. 12, 1921.

1,418,011.

Patented May 30, 1922.

Fig. 1

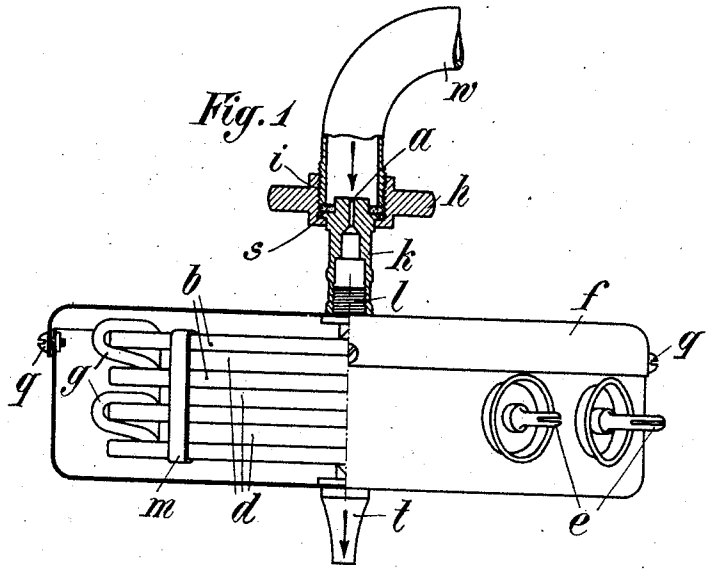


Fig. 2

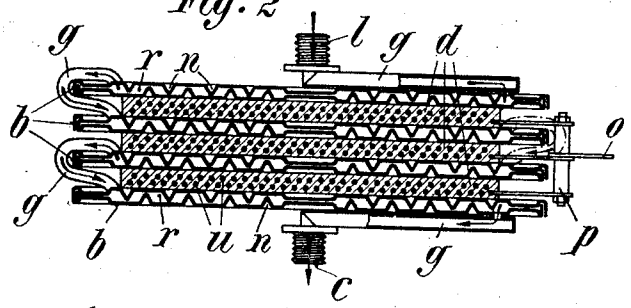
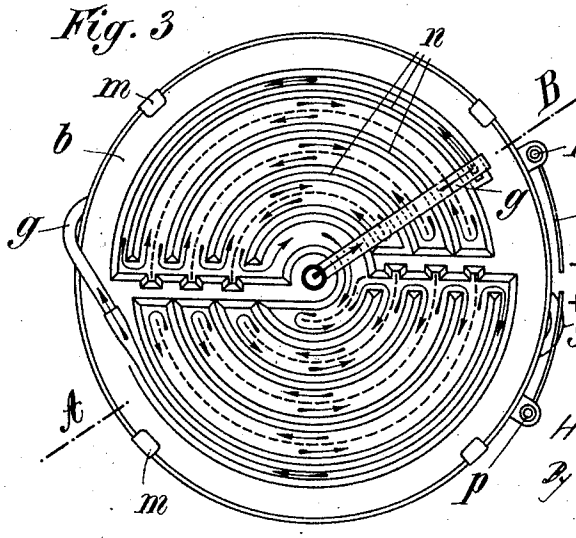


Fig. 3



Inventor:

Hermann Mehn

By Louis Quinal, Jr.

Attorney

UNITED STATES PATENT OFFICE.

HERMANN MEHN, OF BERLIN-TEMPELHOF, GERMANY, ASSIGNOR TO DR. KURT GLAHN, OF BERLIN-WILMERSDORF, PRUSSIA, GERMANY.

ELECTRICAL WATER HEATER.

1,418,011. Specification of Letters Patent. Patented May 30, 1922.

Application filed October 12, 1921. Serial No. 507,361.

To all whom it may concern:

Be it known that I, HERMANN MEHN, citizen of the German Republic, residing at Berlin-Tempelhof, in the State of Prussia, Germany, have invented certain new and useful Improvements in Electrical Water Heaters, of which the following is a specification.

This invention relates to an electrical water heater, a so-called hot-water dispenser. Such heaters or dispensers are, in general, known, but in particular they are possessed of certain drawbacks, especially great consumption of current, low efficiency, high purchasing price. In contradistinction to all this the improved water heater consumes but little current, its efficiency is excellent, it is of very simple construction, also very durable, and its purchasing price is low.

This heater consists of a plurality of flat boxes which are arranged one above, or below, the other, but alternate with electrical heating bodies. The walls of the boxes are so shaped that the water, in passing through any one of them, is compelled to take a long way, preferably in such a manner, that it flows through concentric channels of semi-circular shape which are connected with each other in series, each box having two such sets of channels and the two set being also connected in series with each other, as are also the boxes themselves. The thus communicating channels form a very long way, in which the water is highly heated by the electrical heating bodies which are in close contact with the walls of the said boxes. Also the heating bodies are flat, and their diameter corresponds to that of the boxes; they consist of a heat-proof, refractory, substance enclosing the wires traversed by the current. Preferably china is employed as refractory material, but any substance may be made use of.

The boxes consist each of two plates which form a space between them and are tightly united with each other at their rims or edges. Each plate has a plurality of semi-circular ribs which project into the before-mentioned space, and the ribs of the one plate extend into the grooves formed by the ribs of the other plate, whereby the long channel consisting of semi-circular parts which are connected with each other in series is produced.

In order to make my invention more clear, I refer to the accompanying drawing, in which similar letters denote similar parts throughout the several views, and in which Figure 1 is a sideview of the novel heater, the outer casing and the connection with the water-supply being shown in vertical section; Fig. 2 is a vertical section through the set of boxes and the set of heating bodies; and Figure 3 is a plan of the heating device proper, showing, however, merely the upper box and some surrounding parts.

The water cock w has at its end an external thread i a socket k is attached by a cap nut h to that cock; s is a packing ring inserted between the parts w and k. The heater casing f has a threaded branch l which may be screwed into the lower end of the socket k. This latter has a fine bore a by which the pressure of the water passing from the cock w through the socket k into the heater is greatly throttled; whereby bulging out of the flat hollow boxes, as well as their becoming untight, is prevented.

The socket k is connected by tube g with the periphery of the uppermost box b. Every box consists of an upper plate and a lower plate both of which are united with each other at their peripheries by folds and soldering. Each of these plates have semi-circular ribs n which extend into the interior of the box; the ribs of the upper plate extend into the grooves between the ribs of the lower plate, and reversely, and the arrangement is such that semi-circular channels r are formed which are connected in series with each other, as shown in Figure 3. There are two sets of such channels in each plate and these sets are also connected in series with each other. The same is true of the connection of the boxes with each other. There are curved pipes g^1 which conduct the water from one disk to the next, in the direction from the inlet socket k to the delivery nozzle t which is screwed to the threaded branch c attached to the lowest pipe g^2. The arrows shown in Figure 3 indicate the direction of the water in the uppermost box. The same direction is in the other boxes, viz, from the periphery to the centre and back to the periphery.

Between every two boxes is a heating body d consisting of china or the like and containing the heating wires through which the electric current is passed. Each heating body is in direct contact with two boxes b (Figure 2), and the whole structure (b d b d b

d b) is held together by angular bands *m* as shown in Figures 1 and 3. The heating wires are connected in parallel by means of bolts *p*, of which there are two, one for the positive supply wire, the other for the negative one. *o* are these wires which lead to plugs *e e* projecting laterally from the casing *f* enclosing the whole heating structure. This casing consists of a body and a cover or lid which are connected to each other by screws *q*.

Having now described my invention, what I desire to secure by a patent of the United States is:

1. An electric water heater, comprising, in combination, disk-shaped electric heating bodies, and flat boxes arranged in alternation with said bodies and having each inwardly extending ribs in its top and in its bottom, the upper ribs extending into the grooves between the lower ones, and reversely, all grooves forming a continuous water passage.

2. An electric water heater, comprising, in combination, disk-shaped electric heating bodies, and flat boxes arranged in alternation with said bodies and having each inwardly extending ribs of semi-circular shape in its top and in its bottom, the upper ribs extending into the grooves between the lower ones, and reversely, and all grooves forming a continuous water passage.

3. An electric water heater, comprising, in combination, disk-shaped electric heating bodies, and flat boxes arranged in alternation with said bodies and having each two sets of inwardly extending ribs of semi-circular shape in its top and in its bottom, the upper ribs extending into the grooves between the lower ones, and reversely, and all grooves forming a continuous water passage.

In testimony whereof I have affixed my signature.

HERMANN MEIIN.