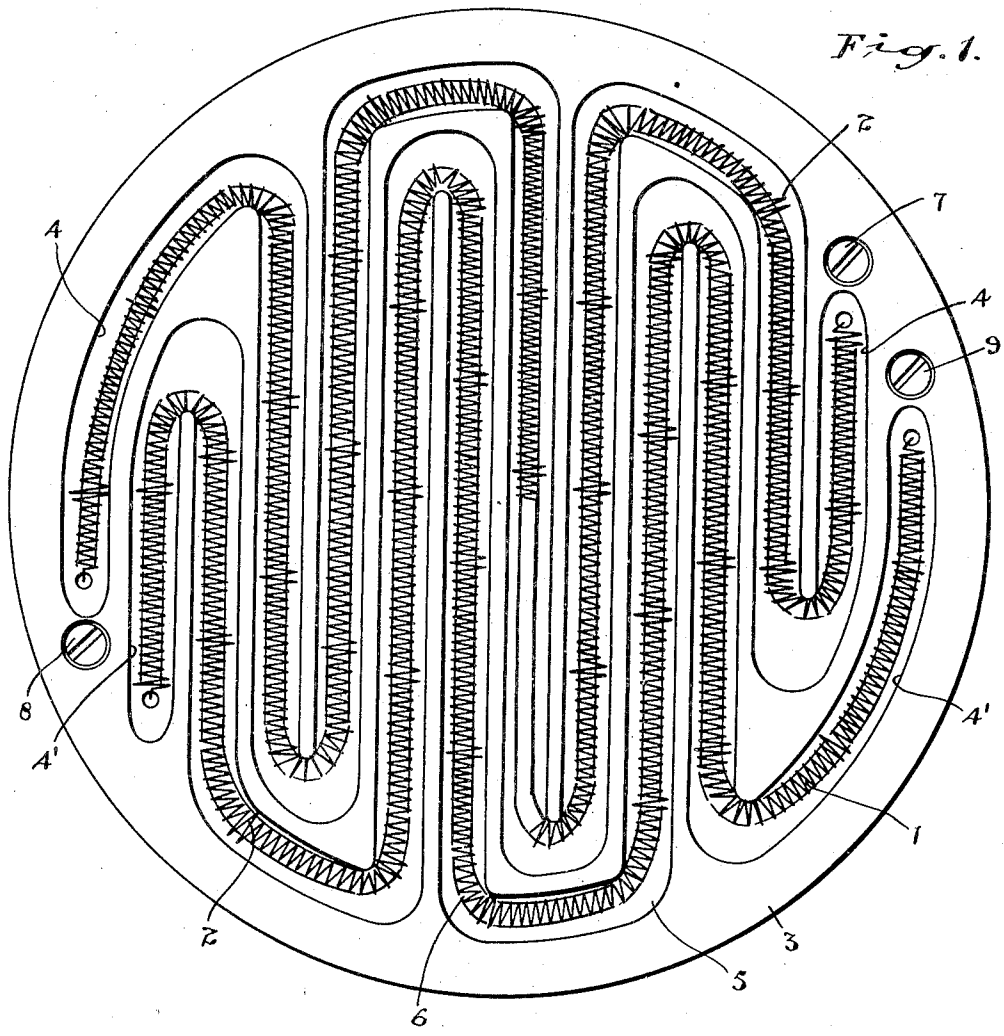
L. R. McCLATCHIE.

ELECTRIC HEATING UNIT.

APPLICATION FILED AUG. 1, 1921.

1,431,407. Patented Oct. 10, 1922.

Fig. 1.



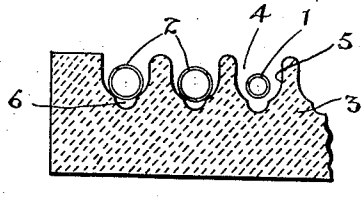


Fig. 2.

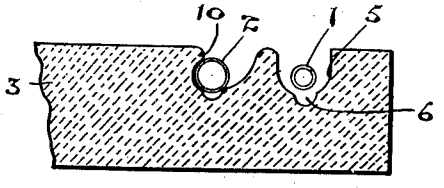


Fig. 3.

Inventor.

Lewis Roy McClatchie

by H. J. & Dennison

Atty

Patented Oct. 10, 1922. 1,431,407

UNITED STATES PATENT OFFICE

LEWIS ROY McCLATCHIE, OF PENETANGUISHENE, ONTARIO, CANADA.

ELECTRIC HEATING UNIT.

Application filed August 1, 1921. Serial No. 488,810.

To all whom it may concern:

Be it known that I, LEWIS ROY MCCLATCHIE, a subject of the King of Great Britain, and resident of the town of Penetanguishene, county of Simcoe, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Electric Heating Units, described in the following specification and illustrated in the accompanying drawings, that form part of the same.

The principal objects of this invention are to devise an electric heating unit which will be extremely simple to manufacture and in which the major portion of the resistance element will be supported above and free from contact with the walls of the grooves in the porcelain plate.

A further object is to provide a plate construction which will ensure a thorough circulation of air around the resistance wire and which will obviate the difficulties met with in the accumulation of dirt in the bottom of the grooves.

The principal features of the invention consist in the novel formation of the resistance wire with enlarged coils arranged at intervals to support the intervening coils clear of the walls of the grooves in the insulator plate, and in the novel formation of the plate grooves with a narrow channel in the bottom whereby the resistance wire is supported with the minimum contact and held centrally in the grooves of the plate.

A further important feature consists in the novel arrangement of the grooves in the plate to enable the use of a uniformly distributed three heat element.

In the drawings Figure 1 is a plan view of my improved element.

Figure 2 is a cross sectional view through a portion of the plate.

Figure 3 is a sectional detail taken longitudinally of one of the plate ribs on the line x of Figure 1.

It has been found in practice to be very desirable to support the resistance coil in grooved plates so that the coil does not rest upon the plate for its entire length but this has hitherto been found difficult and expensive to accomplish.

In the construction herein shown, the resistance coil 1 is wound in spiral form and at intervals throughout its length individual coils 2 are enlarged and the greater diameter of the coils 2 supports the intervening coils clear of the groove in which the element is placed.

The plate 3 is formed with the grooves 4 preferably rounded at the bottom 5 and centrally of the said rounded bottom is formed a smaller longitudinal groove 6. When the wire coil is placed in the groove the enlarged coils 2 engage the edges of the smaller groove 6 and the contact is merely at these points. This construction also holds the wire coil centrally within the main groove so that there will be no contact with the side walls.

It will be readily seen that with such a construction of groove and coil the contact between the refractory plate and the live element is reduced to a negligible quantity and further, that by providing the secondary groove there will be a free air space all around the element which produces the very best results in the maintenance of the device. Further, any particles of dust or dirt falling into the grooves will not lodge around and foul the lower portions of the element as they will settle in the small central groove.

The arrangement of the grooves 4 and 4′ herein shown is peculiar in that two sets of serpentine grooves are internested. The groove 4 starting from the terminal 7 has alternate single and double return bends which terminate at the opposite side of the plate at the terminal 8. The groove 4′ starting at the terminal 9, which is arranged adjacent to the terminal 7, has alternate double and single return bends which terminate adjacent to the terminal 8.

The two resistance coils thus extend over the complete area of the plate and they may be so wired that the current may be directed through one coil alone or through both coils in series or in multiple, thus providing a three heat element which will radiate either heat over the entire surface.

The walls of the grooves 4 and 4′ are constructed with overhanging tips 10, as illustrated in Figure 3, at the bends and the element fits under said tips and is thus held securely in the plate without any form of fastener.

It will be understood from this description that the resistance coil will be free to expand and contract without danger of constriction as there are no projections of any kind transverse of the grooves which would restrict their free movement, consequently

the life of the wire will be greatly lengthened.

What I claim as my invention is:—

1. In an electric heating unit, a resistance coil having projections arranged at intervals in its length adapted to support the intervening coils clear of contact with the supporting insulator.

2. In an electric heating unit, a resistance coil having coils of enlarged diameter arranged at intervals in its length.

3. In an electric heating unit, an insulator plate having the groove for holding the heater coil formed of U-shaped cross section, the bottom thereof being depressed centrally to form a shallow secondary groove of lesser diameter than the main groove, and a heater coil supported on the edges of the secondary groove.

4. In an electric heating unit, the combination with an insulator plate having a groove formed with a longitudinal smaller groove centrally of its bottom, of a resistance coil having enlarged portions arranged at intervals and resting on the edges of the smaller groove centrally of the main groove.

5. In an electric heating unit, an insulator plate formed with a pair of internested serpentine grooves having their terminal ends arranged at opposite sides of the perimeter, and a pair of resistance coils supported therein.

6. In an electric heating unit, an insulator plate having a pair of internested serpentine grooves, each having alternating single and double return bends, resistance coils in each of said grooves, a terminal connecting one end of each coil, and terminals at each of the other ends of said coils.

LEWIS ROY McCLATCHIE.