Oct. 19, 1937. C. B. GOODWIN 2,096,635

ELECTRIC HEATING UNIT FOR RADIATORS

Filed June 25, 1936 2 Sheets-Sheet 1

Fig. 1.

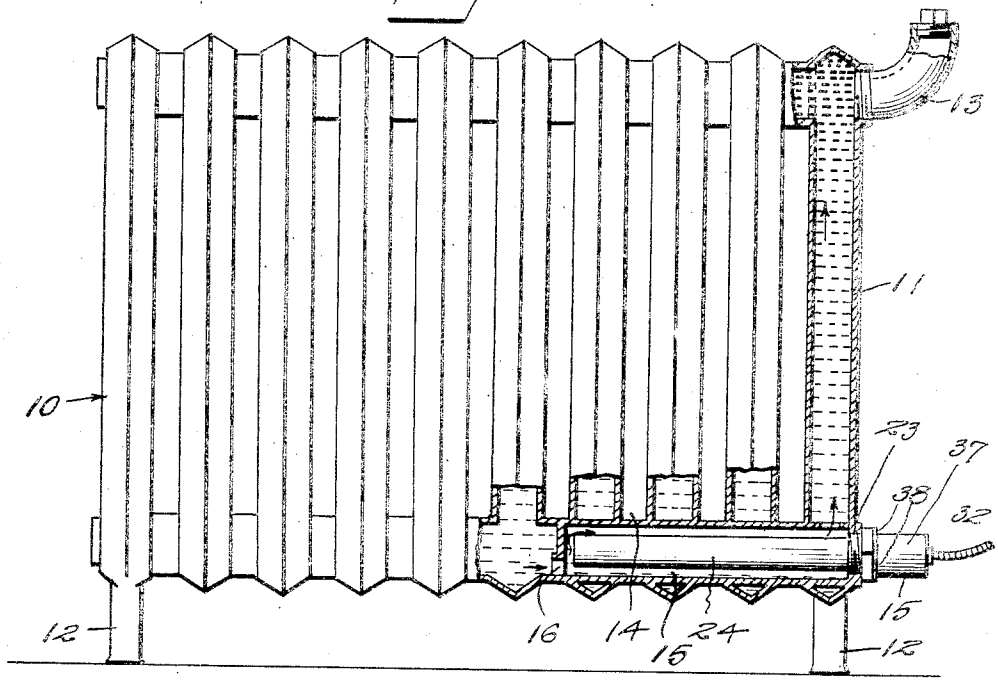
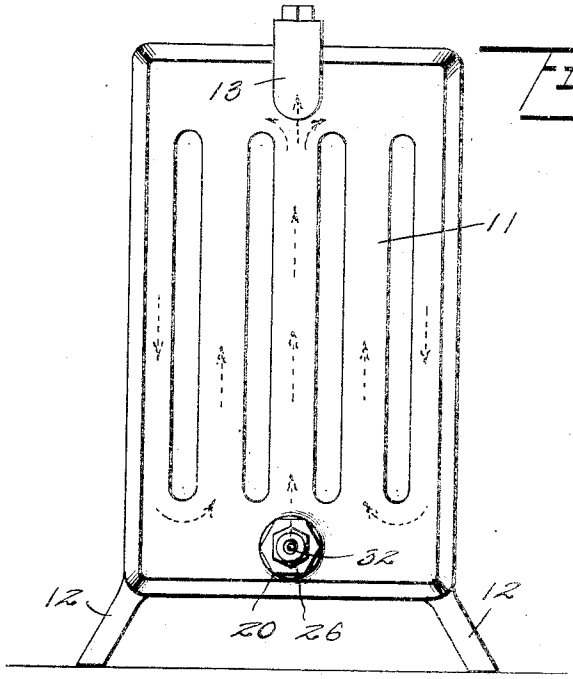


Fig. 2.



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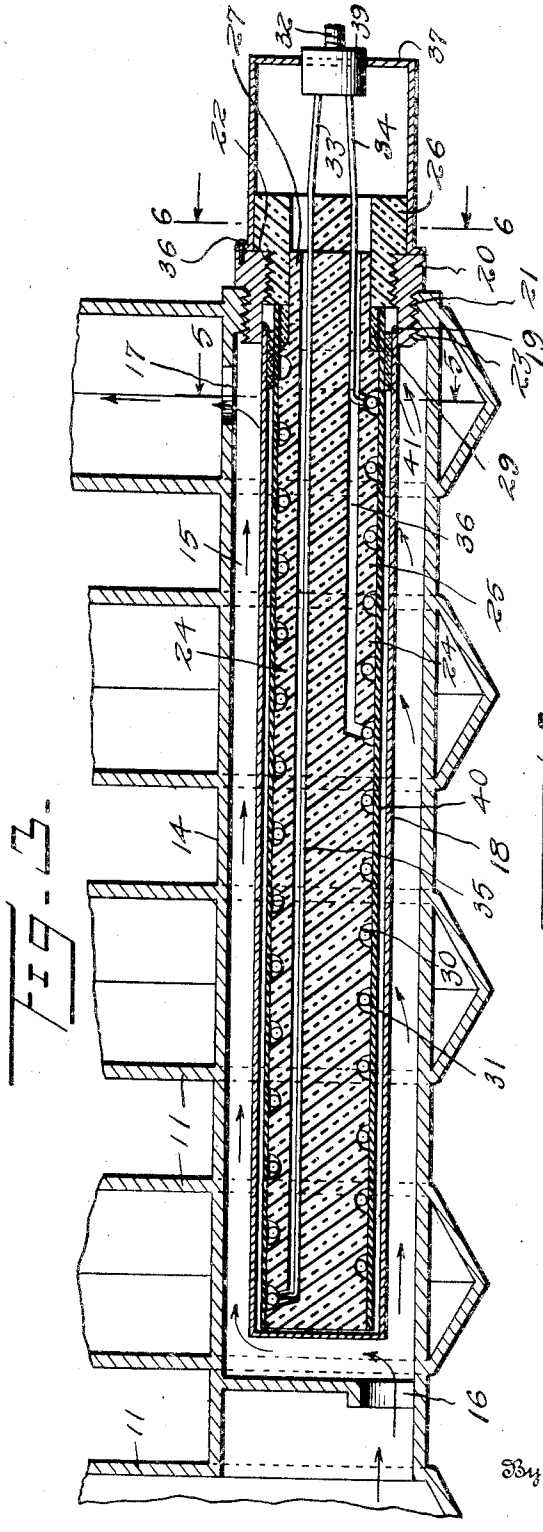


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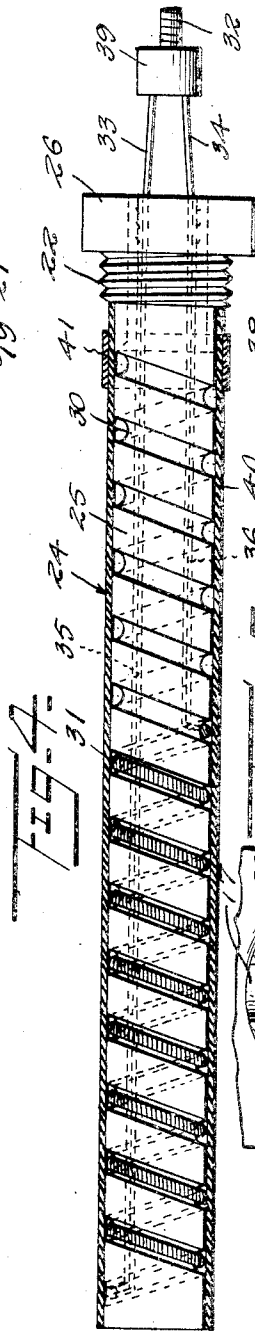


Fig. 2.

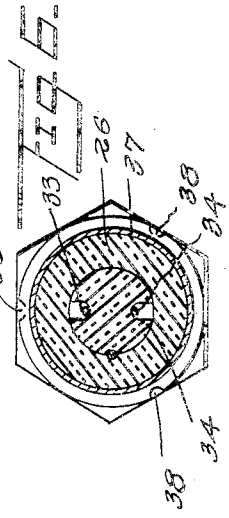


Fig. 3.

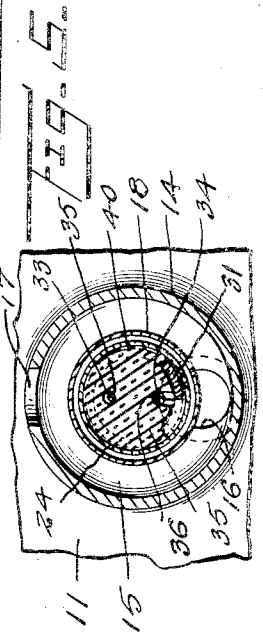


Fig. 4.

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Patented Oct. 19, 1937

2,096,635

UNITED STATES PATENT OFFICE

2,096,635

ELECTRIC HEATING UNIT FOR RADIATORS

Clint B. Goodwin, Indianapolis, Ind.

Application June 25, 1936, Serial No. 87,283

3 Claims. (Cl. 219—38)

This invention relates to a heating unit for radiators of the hot water or other liquid type.

It is aimed to provide a construction which is generally improved, having a tube or housing forming part of the radiator in which the heating means is disposed and through which the liquid circulates, the apparatus having means whereby the heating unit may be removed and replaced, without leakage or escape of the liquid.

The more specific objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:—

Figure 1 is a view of a radiator equipped with my improvements, being primarily in side elevation and partly in section to disclose details;

Figure 2 is an end elevation of said radiator;

Figure 3 is an enlarged vertical longitudinal sectional view through the heating unit and adjacent parts of the radiator;

Figure 4 is a vertical sectional view through the heating unit detached;

Figure 5 is a vertical sectional view taken on the line 5—5 of Figure 3; and

Figure 6 is a vertical sectional view taken on the line 6—6 of Figure 3.

Referring specifically to the drawings wherein like reference characters designate like or similar parts, 10 designates a radiator consisting of vertical legs or coils 11, in spaced relation, and all communicating at the top and bottom. The radiator contains water or any other desired liquid. Legs 12 are provided on the radiator as well as a filling tube 13 adjacent the top thereof.

Cast integrally or otherwise provided at the bottom of the radiator is a wall 14 providing a compartment 15 having an inlet opening at its inner end wall at the bottom thereof as at 16, and having an outlet opening in its top as at 17 communicating with the central leg or coil 11 at one end of the radiator. The wall 14 and compartment 15 may be of any desired length and the same communicate only with the central row of coils or legs by the single inlet and single outlet shown, so that the heating element hereinafter described, will cause circulation of the water or liquid through the radiator according to the various arrows shown in the drawings.

Removably disposed within the compartment 15 is a shell or tube 18, preferably of brass. Such shell or tube 18 is closed at its inner end and at its other end is open and brazed or welded as at 19 to a suitable bushing 20 having standard exterior screw threads at 21 and standard interior screw threads at 22. The screw threads 21 removably engage screw threads 23 provided integrally on the wall 14 of the joint being sealed, packed, or made water tight in any desired manner.

Located removably within the shell 18 is the heating element 24 as best detailed in Figure 4. This heating element consists of a core 25 conveniently made of porcelain or other insulating material and is carried by a ring or attaching nipple 26 also preferably made of porcelain.

The core 25 is telescoped into the nipple 26 at a reduced portion 27, cementitious material being used to secure such parts together as at 28.

The core 25 has a spiral peripheral groove 30 occupied by a resistance coil or heating element 31. It is clear that any desired number of coils or convolutions of the heating element 31 may be used as preferred. A cable in communication with any suitable source of electric energy is shown at 32 having conductors 33 and 34, both of which extend through the bore of the nipple 26 and respectively through passages 35 and 36 in the core, and being connected to the opposite ends of the heating coil 31, or at any desired coils thereof. A cover 37 is preferably telescoped over a part of the nipple 26, having a flange secured by means of screws 38 to the bushing 20. The cable 32 may be anchored to a block of insulation 39, carried by the cover 37.

Surrounding the core and heating coil carried thereby is a tube of porcelain insulating cement or other insulating material which is shown at 40 and which is secured in place by the previously mentioned binding or cementitious material 28. Primarily to prevent rattling and to maintain the parts tight, a ring of asbestos may surround the tube 40 at 41 and engage the inner wall of the shell 18.

It will be realized that when the heating element is energized, its heat will be imparted to the water within the space 15 and that such heat will cause the water to circulate and flow in the directions of the arrows. It will also be clear, that in case of inspection, repair or substitution, the heating element may be removed since the shell 18 will remain in place and prevent leakage or escape of the water or other liquid used in the radiator. It will also be clear that the radiator is preferably of that type having thermostatic means associated therewith and forming no part of my invention, which will cut off and restore the flow of electric energy, within predetermined temperature limits.

I claim as my invention:—

1. A heating element of the class described having a core, an attaching nipple connected thereto, said core having a peripheral groove, a heating element disposed in said groove, conductors extending through the core to the heating element, and a tube of insulating material about the core and heating element, said insulating material, core and nipple being initially separate, and binding material securing them in unitary relation, an attaching bushing screw threaded to the nipple, a cover telescoped over the nipple, and means detachably securing the cover to the bushing.

2. A heating element of the class described having a core, an attaching nipple connected thereto, said core having a peripheral groove, a heating element disposed in said groove, conductors extending through the core to the heating element, and a tube of insulating material about the core and heating element, said insulating material, core and nipple being initially separate, and binding material securing them in unitary relation, an attaching bushing screw threaded to the nipple, a cover telescoped over the nipple, means detachably securing the cover to the bushing, and a cable carrying the said conductors having a block carried by the said cover.

3. A heating element of the class described having a core, an attaching nipple connected thereto, said core having a peripheral groove, a heating element disposed in said groove, conductors extending through the core to the heating element, and a tube of insulating material about the core and heating element, said insulating material, core and nipple being initially separate, and binding material securing them in unitary relation, an attaching bushing screw threaded to the nipple, a cover telescoped over the nipple, means detachably securing the cover to the bushing, a cable carrying the said conductors having a block carried by the said cover, in combination with packing between the insulating tube and shell, and a radiator having a wall providing a space in which the shell is disposed, said wall having screw threads, and said bushing having screw threads engaging the last mentioned screw threads.

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