March 17, 1936. F. A. FOGG 2,034,612

ELECTRIC HEATER FOR STEAM RADIATORS

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Fig. 1.

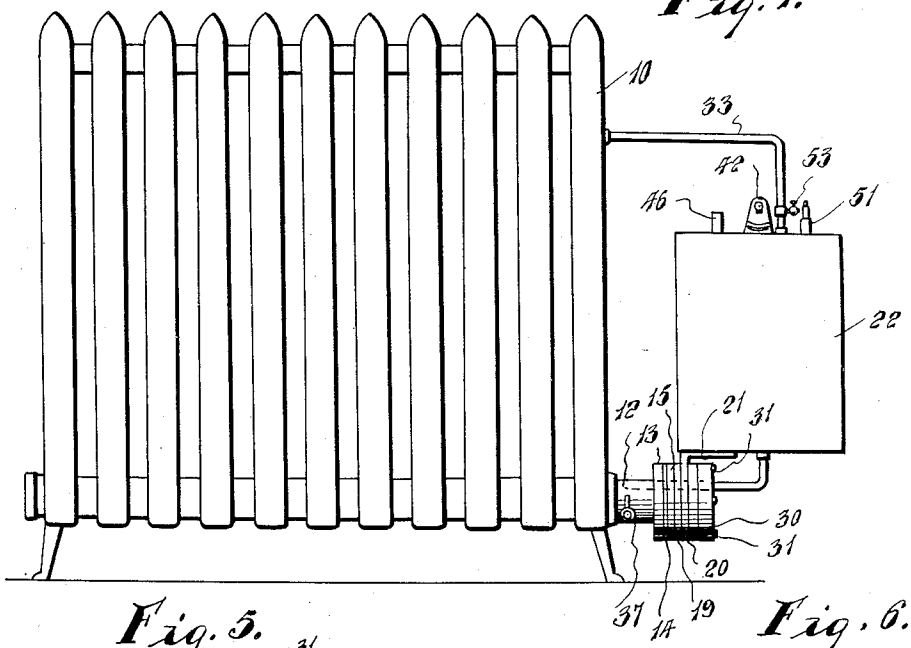


Fig. 5.

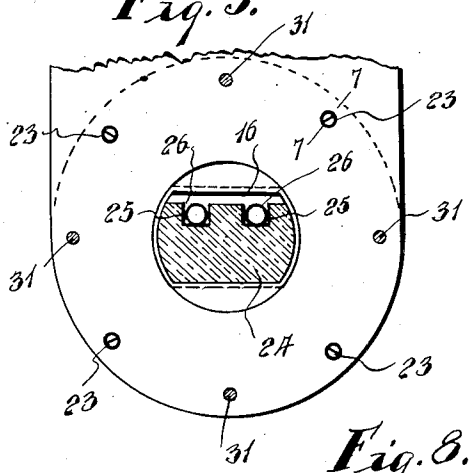


Fig. 6.

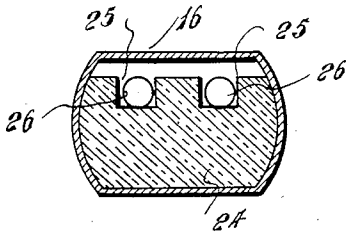


Fig. 8.

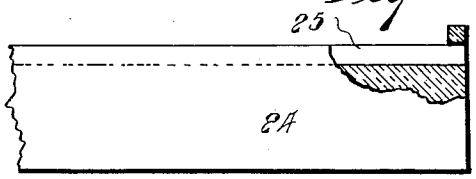


Fig. 9.

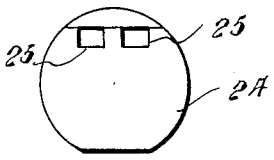
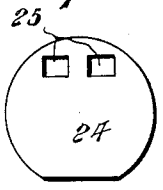


Fig. 10.



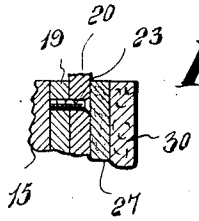


Fig. 7.

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ELECTRIC HEATER FOR STEAM RADIATORS

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Fig. 2.

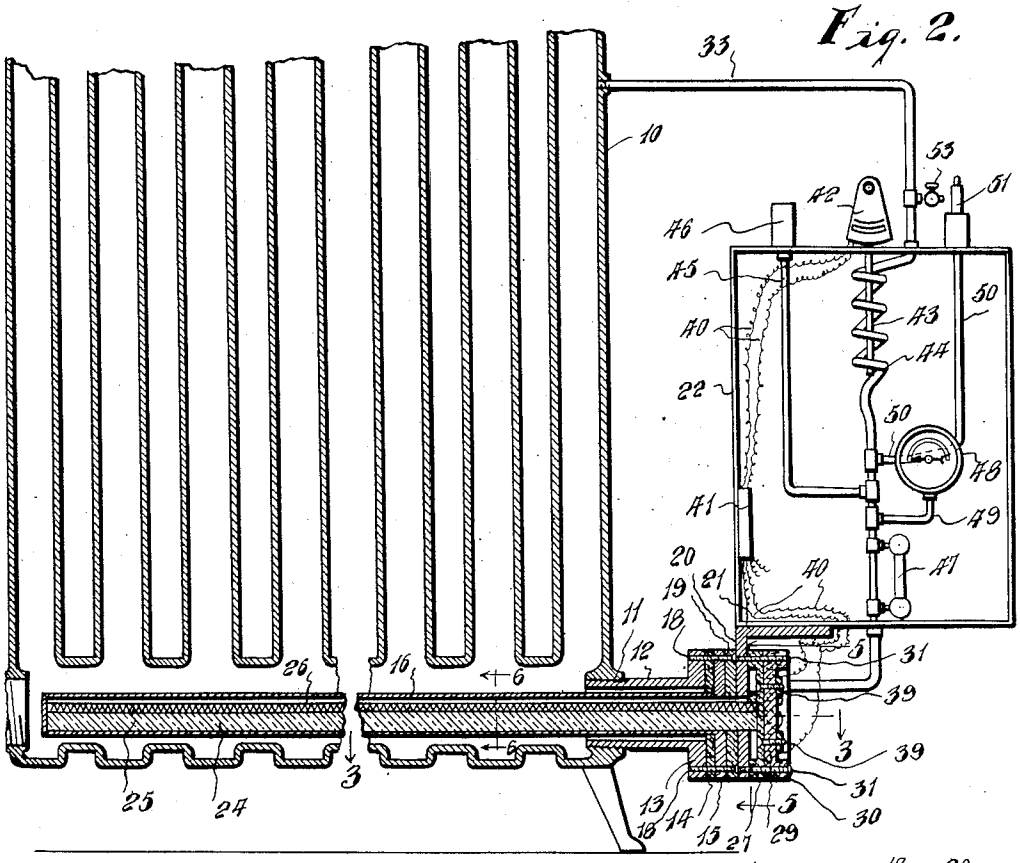


Fig. 3.

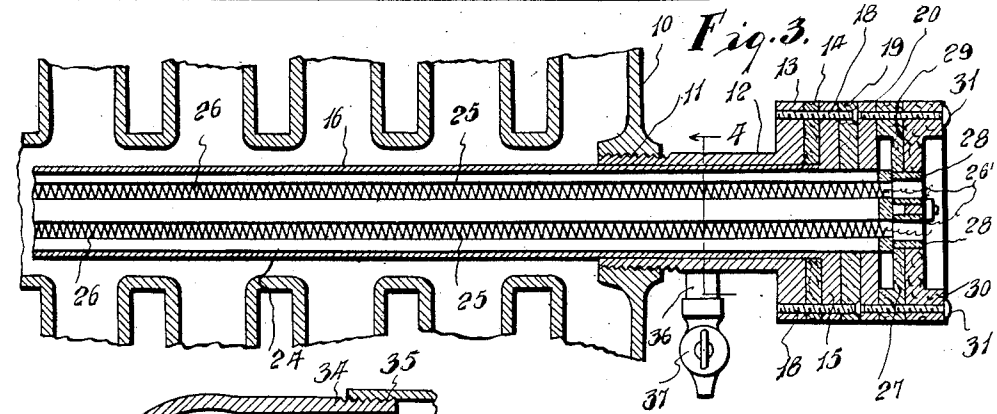
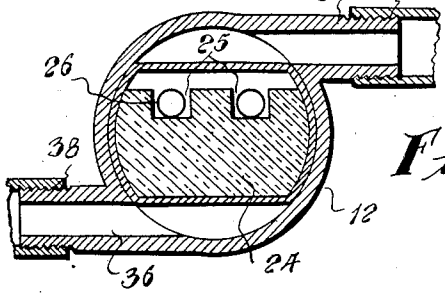


Fig. 4.



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UNITED STATES PATENT OFFICE

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ELECTRIC HEATER FOR STEAM RADIATORS

Forest A. Fogg, Bath, Maine

Application September 19, 1935, Serial No. 41,315

5 Claims. (Cl. 219—38)

This invention relates to an electric heater for steam radiators, and it generally aims to provide a construction affording a fully equipped steam heating unit out of a radiator to which it is attached or connected.

A particular object is to provide a construction wherein the auxiliary or accessory parts of the heater are very compact and occupy a minimum space within the room relatively to the size of the radiator.

The more specific objects and advantages will in part be pointed out and otherwise 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 in side elevation of a radiator equipped with my improvement;

Figure 2 is an enlarged longitudinal sectional view taken through the major part of Figure 1;

Figure 3 is a horizontal sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a cross sectional view taken on the line 4—4 of Figure 3;

Figure 5 is a detail section taken on the line 5—5 of Figure 2;

Figure 6 is a detail cross section taken on the line 6—6 of Figure 2;

Figure 7 is a detail section taken on the line 7—7 of Figure 5;

Figure 8 is a side elevation of one of the core blocks used in the heating unit; and

Figures 9 and 10 are opposite end views of the block of Figure 8.

Referring specifically to the drawings, 10 designates a conventional steam radiator, in one end of which, adjacent to base, a screw-threaded opening 11 is provided, into which an attaching pipe 12, preferably of brass, is screw-threaded as shown, said pipe 12 preferably having an annular flange 13 at its outer end. Disposed against said flange 13 is a gasket 14, and against said gasket an annular flange 15 is disposed. Such flange 15 is integral with a heater tube 16, preferably of copper, and closed at its inner end as shown. Such tube 16 extends through the gasket 14 and pipe 12 and is preferably of substantially the same length as the radiator afforded to give maximum heating efficiency. Said flange 13, gasket 14, and flange 15 are preferably secured together as a unit, as by means of bolts 18 extending therethrough. Said bolts 18 also preferably pass through and secure a metallic plate or disc 19 against the flange 15. It will be realized that the tube 12 and all of the parts connected together by the bolts 18 constitute a unit which is attachable and detachable at the screw thread 11.

A vertical plate or disc 20 is disposed against the plate or disc 19, and it has a shelf 21 mounting a control box or housing 22. Such shelf or plate 20 is secured to the plate 19 through the medium of screws 23 passing through the shelf and engaging screw-threaded openings in the plate 19.

Disposed within the heater tube 16 and plates 19 and 20 are one or more blocks of suitable insulation designated 24, grooved in the upper surface 25 thereof so as to accommodate a heating coil 26 of nichrome steel or other metallic wire, the ends or terminals of which pass through insulating bushings 28 in an asbestos body 27. Said body is fastened to the plate 20 as by means of bolts or screws 31.

A pipe 33, preferably of copper, extends through the housing 22, being fastened thereto and communicates with a nipple 34 formed on the attaching pipe 12, the adjacent section of pipe 33 preferably being screw-threaded to the nipple as at 35. There is sufficient current in the pipe 12 above the tube 16 to enable circulation of the water, and water and sediment may be withdrawn or drained off from the radiator through an outlet nipple 36 formed on attaching pipe 12, and to which a normally closed drain valve 37 is screw-threaded, as at 38.

The terminals of the heating coil 26, designated 26', are connected to a binding post 39 in the form of bolts, secured to the packing 29 and plate 30. Conductors 40, preferably asbestos covered, extend from the binding post 40 to a switch box 41, which is operable from the exterior of box 22, to turn the electric current on or off. Such conductors 40 under box 41 extend to a thermostatically-controlled switch 42 of a conventional construction, having a dependent 43 removably extending into box 22, and above which the pipe 33 is coiled as at 44.

Water is adapted to be supplied in the radiator through a filling pipe 45 connected to the pipe 33, the upper or filling end of pipe 45 is normally closed steam tight by a removable cap 46. The device may operate with water at any predetermined level within the radiator 10 and the pipe 33 preferaby has a water gauge 47 connected therein and located within the box 22. A pressure gauge 48 is also connected to the pipe 33 by branch conduit 49, and a safety valve 51 is connected to the top of a pipe 50 also in communication with pipe 33, as shown.

A normally closed pet cock **53** is provided in the pipe **33** adjacent to top of the box **22**.

In order to operate the apparatus, pet cock **53** is opened and cap **46** is removed. Thereupon water is poured through the tube **45** until the heater tube **16** is submerged to the desired extent. Thereupon cap **46** is replaced and switch **41** is turned to on position. The thermostatic switch **42** is then set at about half way on its dial and left in that position until steam starts to flow freely from pet cock **53**. Then said pet cock **53** is closed and the steam gauge **48** watched until it indicates four or five pounds pressure, whereupon the thermostatic switch **42** is set in order to trip at that pressure, or said switch may be set to trip at any desired pressure within the range for which it is designed, which will usually be from zero to ten pounds pressure. The operation thereafter is automatic, hence as the steam pressure drops, the thermostat again turns on the current. This action will be indefinite, thus insuring a steady, even pressure effecting a saving in electric current, for the reason that when the thermostat cuts off the current, the radiator will still be putting out heat and the intervals occur frequently.

Various changes may be resorted to, provided they fall within the spirit and scope of the invention.

I claim as my invention:

1. A device of the class described, comprising a radiator, a pipe detachably connected to said radiator having a flange extending therefrom, a heater tube carried thereby extending into the radiator and having a flange connected to said first flange, heating coil means within the tube, a circulating pipe connected to the first-mentioned pipe and connected to the radiator, a thermostatic switch coacting with the circulating pipe, electric circuit means to which said heating means and said thermostatic switch are connected.

2. A device of the class described, comprising a radiator, a pipe detachably connected to said radiator having a flange extending therefrom, a heater tube carried thereby extending into the radiator and having a flange connected to said first flange, heating coil means within the tube, a circulating pipe connected to the first-mentioned pipe and connected to the radiator, a thermostatic switch coacting with the circulating pipe, electric circuit means to which said heating means and said thermostatic switch are connected, a filling pipe for the second-mentioned pipe, and a pressure gauge for said second-mentioned pipe.

3. A device of the class described, comprising a radiator, a pipe attached to said radiator, a heater tube carried by the pipe and extending into the radiator, heating coil means within the tube, a circulating pipe connected to the first-mentioned pipe and connected to the radiator, a thermostatic switch coacting with the circulating pipe, electric circuit means to which said heating means and said thermostatic switch are connected, a filling pipe for the second-mentioned pipe, a pressure gauge for said second-mentioned pipe, a water gauge for the second-mentioned pipe, and said second-mentioned pipe being coiled about said thermostatic switch.

4. A device of the class described, comprising a radiator, a pipe attached to said radiator, a heating tube having a flange, a flange on the first-mentioned pipe, a plate engaging the first-mentioned flange, a means securing said plate and flanges together as a unit, a bracket, a means securing said bracket to one of said plates, a housing supported by said bracket, a circulating pipe attached at one end to said radiator, said circulating pipe extending through said housing and communicating with the first-mentioned pipe, a thermostatic switch carried by the housing coacting with the second-mentioned pipe, a heating means within the tube, a means connecting terminals of said heating means secured to said bracket, and electric circuit means connected to said terminals and to the thermostatic control switch.

5. A device of the class described, comprising a radiator, a pipe attached to said radiator, a heating tube having a flange, a flange on the first-mentioned pipe, a plate engaging the first-mentioned flange, a means securing said plate and flanges together as a unit, a bracket, a means securing said bracket to one of said plates, a housing supported by said bracket, a circulating pipe attached at one end of said radiator, said circulating pipe extending through said housing and communicating with the first-mentioned pipe, a thermostatic switch carried by the housing coacting with the second-mentioned pipe, a heating means within the tube, a means connecting terminals of said heating means secured to said bracket, and electric circuit means connected to said terminals and to the thermostatic control switch, said heating means comprising a heating coil, groove block means accommodating said coil, a water gauge on the second-mentioned pipe located within the housing, a pressure gauge connected with the second-mentioned pipe, and a safety pipe and valve connected with said second-mentioned pipe disposed exteriorly of the housing.

FOREST A. FOGG.