Dec. 13, 1955 R. C. EDWARDS 2,726,643

HEATING UNIT

Filed Feb. 3, 1953

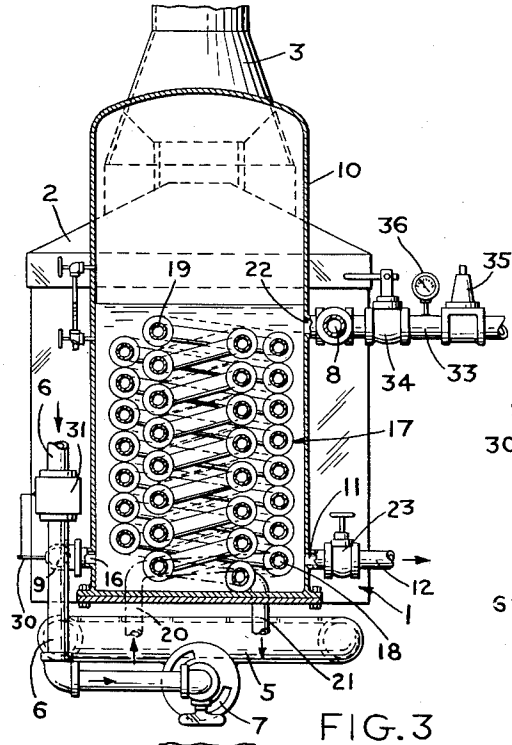



FIG. 3

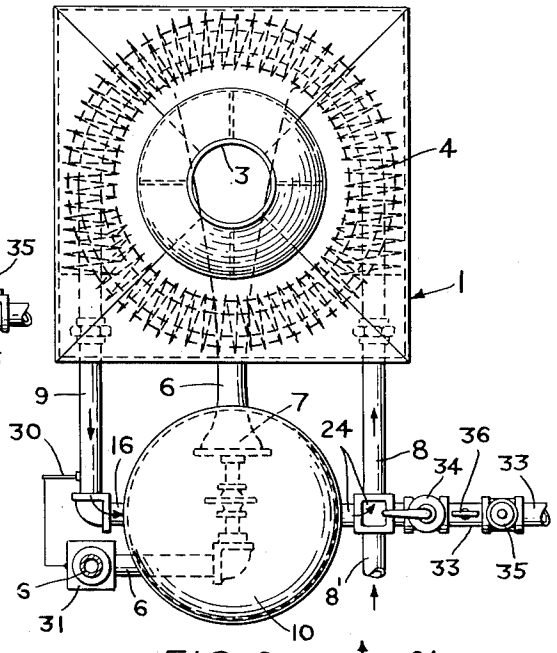



FIG. 2

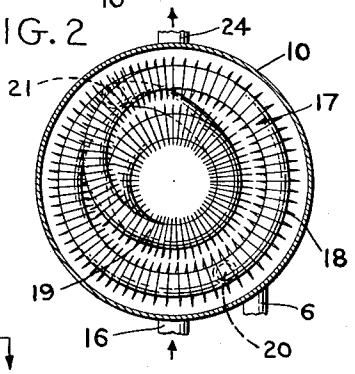



FIG. 4

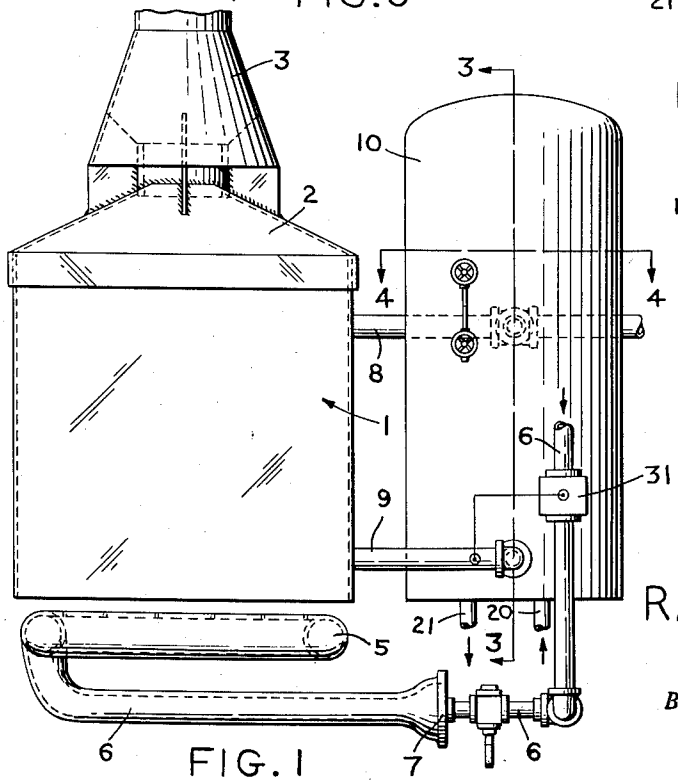



FIG. 1

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2,726,643

# HEATING UNIT

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Application February 3, 1953, Serial No. 334,873

1 Claim. (Cl. 122—33)

This invention relates to heating units for heating enclosures and more particularly to a heating unit primarily designed for heating dwellings, small stores and other similar enclosures where a separate source of hot water for domestic or other analogous uses is desirable, as well as where compactness in size and initial cost of the unit are desirable and practical characteristics. An object of the present invention is the provision of a heating unit which can be manufactured at a low cost in comparison with heating units of comparable heat producing capacity now available; which is compact and consequently will require small space of installation and one which utilizes the heat of the water used to heat the enclosure to heat water for domestic or other analogous uses.

Another object of the invention is to provide a heating unit which may be readily combined with refrigeration equipment in a neat, compact unit to provide for cooling and conditioning the air in an enclosure when desired.

With these and other objects in view, as may appear from the accompanying specification, the invention consists of various features of construction and combination of parts, which will be first described in connection with the accompanying drawings, showing a heating unit of a preferred form embodying the invention, and the features forming the invention will be specifically pointed out in the claim.

In the drawings:

Figure 1 is a side elevation of the improved unit.

Figure 2 is a top plan of the heating unit.

Figure 3 is a vertical section through part of the unit taken on the line 3—3 of Figure 1.

Figure 4 is a cross section taken on the line 4—4 of Figure 1.

Referring more particularly to the drawings, the improved heating unit includes a housing 1 which may be rectangular or of any suitable shape and has an open bottom and a tapering top or cover 2 which terminates in a stack 3. A water heating coil 4 which is formed of a single length of finned tubing is located in the housing 1 and the water therein is heated by a burner 5 of any suitable type located beneath the open bottom of the housing 1. In the drawings, the burner 5 is shown as a gas burner with the usual type of gas supply pipe 6 leading thereto and embodying the usual type of mixing valve 7 but it is to be understood that any suitable type of burner such as an ordinary oil burner, coal grate or the like may be substituted for the gas burner 5 illustrated without departing from the spirit of the present invention.

Finned tubing is utilized in the making of the heating coil 4 because of its high heat transfer properties.

Water enters the heating coil 4 through a water inlet pipe 8, passes through the coil 4 where it is heated and out through the outlet pipe 9. The outlet pipe 9 opens into a closed tank or reservoir 10 positioned alongside the housing 1 and flows from the reservoir 10 through



the outlet 11 into the pipe 12 which leads to the radiators (not shown) in the enclosure to be heated. The circuit for the water delivered to and passing through the radiators (not shown) is a closed circuit and the water from the radiators returns to the coil 4 through the return pipe 8' and the inlet pipe 8.

The outlet 9 of the tank 10 is placed near the bottom of the tank and substantially diametrically opposite to the inlet 16 to the tank from the pipe 9.

A coil 17 is positioned within the tank 10. The coil 17 is made of a single length of finned tubing coiled to provide an outer coil 18 and an inner coil 19 located one within the other and in parallel relationship. One end of the tubing, namely, the end of the tubing which joins to the outer coil 18 forms the inlet 20 while the end of the tube at the terminus of the inner coil 19 forms the outlet 21 for water which is circulated through the coil 17. An overflow outlet 22 is provided for the tank 10 at a position well above the normal outlet 11 and located such that a water level will be maintained in the tank 10 sufficient to maintain the coil 17 submerged at all times, it being understood that sufficient volume of water in excess of the outflow from the tank 10 is provided to maintain the desired water level in the tank 10. Such water level may be controlled initially by means of the valve 23 in the outlet pipe 12.

A thermo-static element 30 of any approved type which may be purchased upon the open market is inserted in the hot water outlet pipe 9 from the coil 4 and it is connected in the usual manner to a control valve 31 connected in the gas supply pipe 6. The automatic control valve 31 is of the type of valve which may be purchased upon the open market such as a Robertshaw Grayson control and it is operated through the thermo-static element 30 by variances in the temperature of the water in the pipe 9 to control the delivery of fuel to the burner 5 for controlling the heating of the water in the coil 4 in accordance with the temperature of the water therein.

A safety outlet in the form of an outlet pipe 33 is connected to the water inlet pipe 8 and this safety outlet pipe 33 has a safety valve 34 of any approved construction mounted therein which is set so that when the pressure in the pipe 8 rises above a predetermined degree the safety valve will open and permit the escape of water or steam from the closed water heating system through the safety outlet pipe 33. A water pressure regulator 35 of any approved construction may be mounted in the pipe 33 outwardly of the safety valve 34 and if it is so desired a pressure gauge 36 of any approved type may be connected to the pipe 33.

It will be understood that the invention is not to be limited to the specific construction or arrangement of parts shown, but that they maye be widely modified within the invention defined by the claim.

What is claimed is:

In a heating unit, means for heating water to provide heat for heating an enclosure and means for heating water for domestic use, including a housing, a coil of finned tubing contained in said housing, a water inlet and a hot water outlet connected to said coil, a safety outlet pipe connected to said water inlet, a safety valve in said safety outlet, a pressure reducing valve in said safety outlet outwardly of said safety valve, thermal means for controlling the heating of water in said coil, a tank, a domestic water coil in said tank and having a water inlet and outlet, said outlet from said first coil or finned tubing entering said tank whereby domestic water in said domestic water coil will be heated by hot water from the first coil, an overflow outlet for said tank above the level of the uppermost part of said domestic water coil, said overflow outlet connected to the

inlet of said finned tube coil whereby overflow water from the tank will be returned to the initial heater through the finned tube coil.

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