Sept. 12, 1933. G. H. LIPPENCOTT 1,926,342

INDIRECT WATER HEATER

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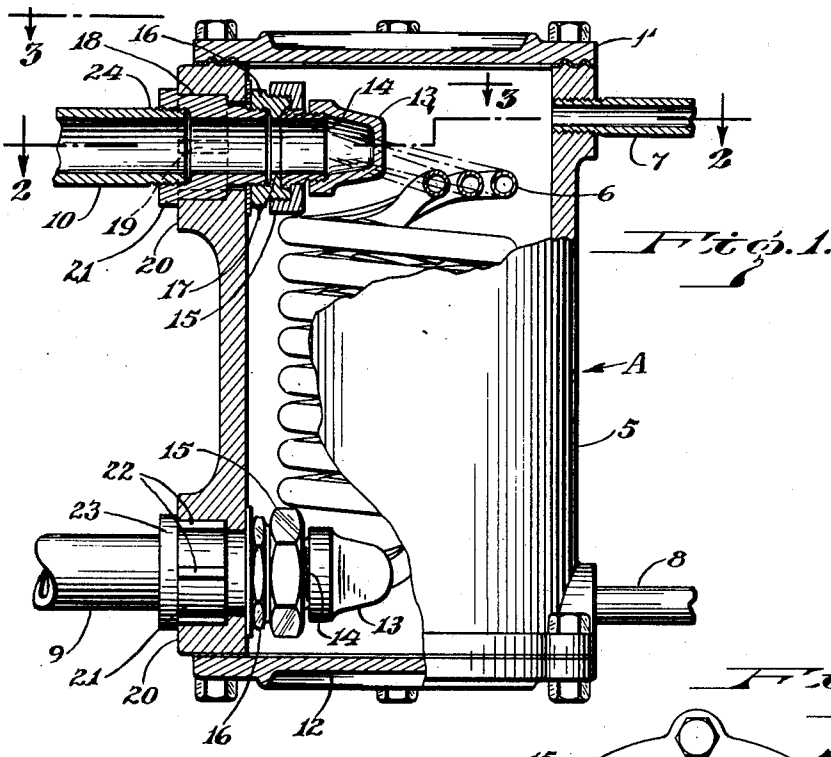


Fig. 1.

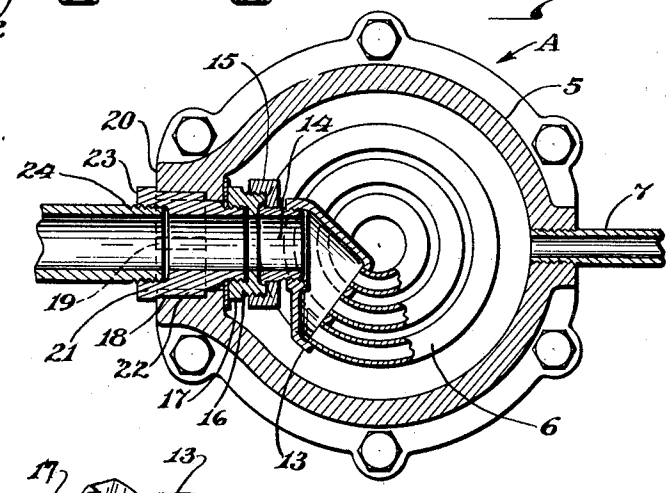


Fig. 2.

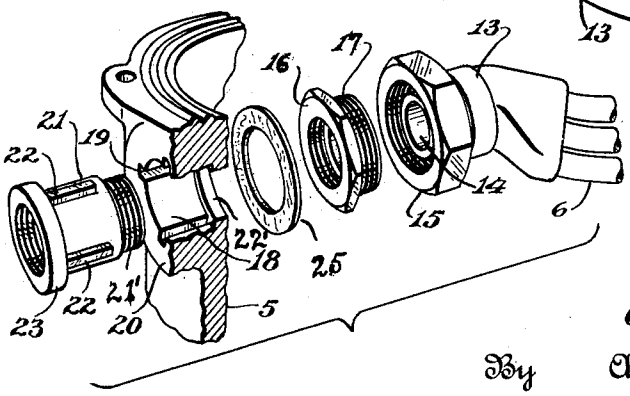


Fig. 3.

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INDIRECT WATER HEATER

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2 Claims. (Cl. 257—229)

This invention relates generally to water heating units and particularly to such units known as the indirect type wherein the heating medium such as steam vapor or hot water within a boiler is caused to circulate through a shell and around a coil within the shell, the coil being connected to a hot water storage tank of the usual hot water system.

An object of the invention is to provide a heater with a coupling between the coil and storage tank through the shell that will be of simple but efficient structure so that the coil may be placed in or removed from the shell without disturbing any exterior pipe fittings.

Another object is to provide a coupling that will afford a water-tight connection between the shell and fittings leading to the hot water storage tank.

Another object is to provide for facilitating the operation of cleaning the interior of the heater when deposits of solids accumulate therein.

These and other objects will appear and be better understood as the specification proceeds, reference being made to the accompanying drawing forming a part thereof in which:

Figure 1 is an elevation, partly in section, of the heater, showing the coil in position and the coupling between the heater and connections to the hot water storage tank and heating source.

Figure 2 is a plan view taken on line 2—2 of Figure 1.

Figure 3 is a fragmentary section taken on line 3—3 of Figure 1, showing the parts unassembled.

Referring more specifically to the drawing, the heater as a unit is designated by A.

The unit includes a shell or casing 5, within which is detachably positioned a coil 6. The casing accommodates inlet and outlet heat conduits 7 and 8, and water conduits to and from the coil 6 indicated by 9 and 10 respectively.

The casing 5 is preferably drum-shaped and is provided with covers 11 and 12 at the top and bottom. The heat conduits 7 and 8 and water conduits 9 and 10 located respectively on opposite sides of the wall of the casing.

The construction facilitates cleaning of the casing as it is merely necessary to remove the bottom cover in order to eliminate deposit.

The construction also affords access to the coil 6 without removing exterior pipe fittings. It also permits of forming a battery of heating units, not shown, in a minimum space by removing a top and bottom cover respectively of two units and arranging them in a superposition end to end. This will permit of increasing the volume of water to be heated in a minimum of space in a series of coils.

The water pasages 9 and 10 from the coil 6 consist of the usual headers 13 formed on opposite ends of the coil in the usual manner. The free ends of the headers are provided with internal threads to receive flanged elements 14 detachably connected to annular elements of ground joint unions 15, which accommodate intermediate elements indicated by 16. The elements 16 are internally threaded at their front ends and have threaded flanges 17 at the rear thereof to receive the unions 15.

Openings 18, having recesses 19 in bosses 20 of the casing 5 are adapted to receive sleeves 21 on which are formed lugs 22 for engagement with the recesses 19. The recesses 19 extend but part way through the bosses 20 to form annular flange 22′ and the lugs 22 register with the recesses so as to form tight connections and prevent the sleeves from turning in the openings. The sleeves 21 have heads 23 formed on their outer ends to engage the bosses 20 and are internally threaded to receive pipes 24. The inner ends of the sleeves have reduced portions 21′ and are externally threaded for engagement with elements 16 and for reception of gaskets 25.

When it is desired to assemble and connect the heating unit A, sleeves 21 are inserted in bosses 20 so that the lugs 22 fit into recesses 19, and the inner ends extend into the casing. The elements are then screwed into place. The covers 11 and 12 are, of course, removed from the casing 5 and the coil 6, on which have previously been assembled headers 13 and flanged elements 14 with their unions 15 may be placed therein. Upon alignment of the unions 15 with the elements 16, engagement there between may then be effected by turning unions 15 to the right which will force flanged elements 14 into tight engagement with 17. This can readily be accomplished as lugs 22 in recesses 19 will prevent sleeves 21 from turning, and the possibility of twisting the headers and thereby damaging the coil during this operation is eliminated. Element 16 then acts as a lock-nut between the sleeve 21 and union 15. Pipes 24 and conduits 7 and 8 may then be connected to the heater unit and to their corresponding sources and covers 11 and 12 placed in position.

Thus it will be seen the access to the interior of the heating unit may be had and the coil positioned in and removed from the casing without

disturbing outside pipe connections or the requirement of special tools for such operations.

The construction affords a heating unit that is of simple design, requires a minimum number of parts and which reduces the cost of machine work, tapping and lock-nuts and at the same time provides water tight connections.

I claim:

1. A water heating unit of the indirect type including a casing having the interior thereof adapted for connection with a heating medium and having the one side provided with openings having recesses in the walls thereof, a coil detachably located within the casing, sleeves detachably positioned within the openings in the side of the casing and adapted for connection with inlet and outlet water conduits, lugs carried by the sleeves and engaging in the recesses, and couplings for detachably connecting the ends of the coil to the sleeves.

2. A water heating unit of the indirect type including a casing having the interior thereof adapted for connection with a heating medium and having one side thereof provided with openings, sleeves detachably and non-rotatively positioned within the openings and each having its inner end externally threaded and extending beyond the surface of the wall of the casing, annular elements received by said ends, a coil detachably located within the casing, annular elements detachably connected with the ends of the coil and having flanges formed on their outer ends, and intermediate connections between the sleeves and the annular elements of the coil.

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