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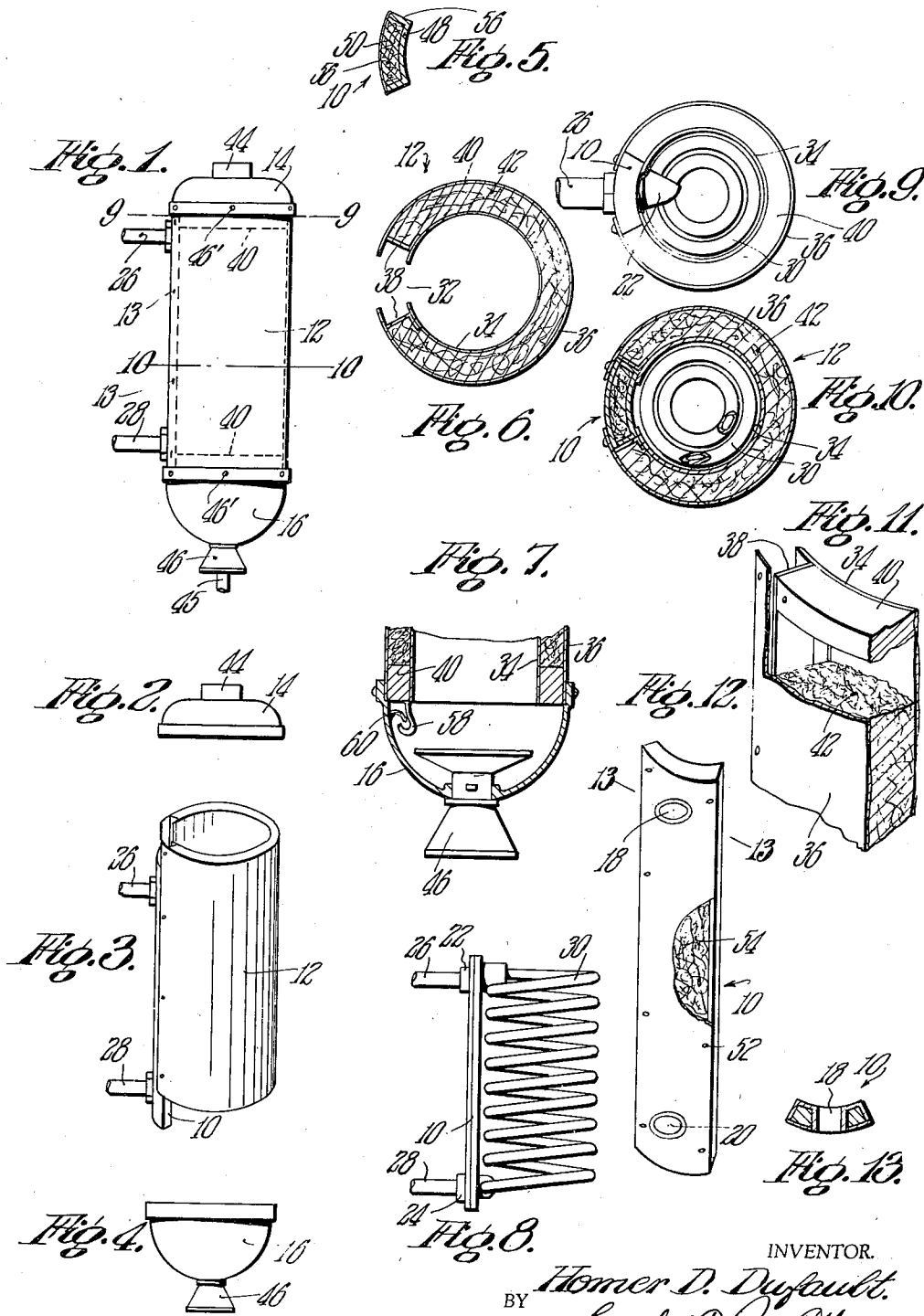
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2,245,332

WATER HEATER

Filed May 6, 1940

2 Sheets-Sheet 1



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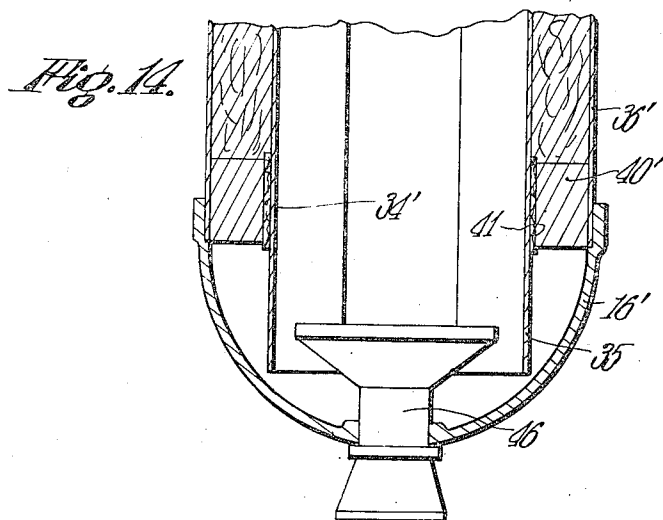
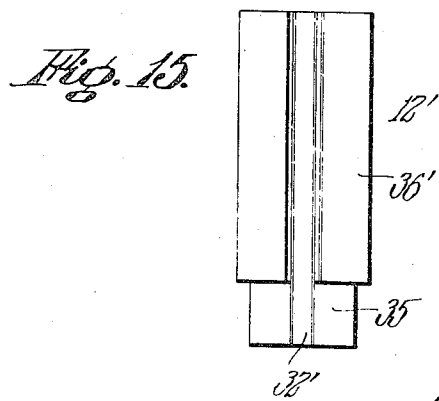
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WATER HEATER

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2 Sheets-Sheet, 2



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UNITED STATES PATENT OFFICE

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WATER HEATER

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Application May 6, 1940, Serial No. 333,500

5 Claims. (Cl. 122—250)

This invention relates to improvements in water heaters and is directed more particularly to an improved water-heater construction including removable parts so arranged that the heater may be readily taken apart for purposes of cleaning, repair, replacement, etc.

It is one of the principal objects of the invention to provide a water heater having a coil or tube support adapted to be more or less fixed in its desired location in a building and other casing parts which are movable relative to said support. That is to say, while the coil or tubing may be relatively fixed in place with respect to the water outlet and inlet, as is usual with water heaters, other parts of the heater may be either entirely removed or moved out of their normal working position to render various component parts of the heater accessible for cleaning, repair, replacement and handling or other desired purposes.

A still further object of the invention is to provide a water heater of unique construction having the particularly desirable characteristic of being well insulated whereby economy and efficiency in heating are accomplished. As will appear, the construction is such that the heater may be manufactured at low cost and may be easily assembled or disassembled.

With the foregoing and various other novel features and advantages and other objects of my invention as will become more apparent as the description proceeds, the invention consists in certain novel features of construction and in the combination and arrangement of parts as will be hereinafter more particularly pointed out in the claims hereunto annexed and more fully described and referred to in connection with the accompanying drawings wherein:

Fig. 1 is a side elevational view of a water heater construction embodying the features of my invention;

Fig. 2 is a side elevational view of the upper cap member;

Fig. 3 is a perspective view showing the main body of the heater with upper and lower cap members removed;

Fig. 4 is a side elevational view of the lower cap member;

Fig. 5 is a sectional plan view through the main support member of the heater of the invention;

Fig. 6 is a view similar to Fig. 5 but through the body of the casing;

Fig. 7 is a sectional elevational view showing a modified construction of the lower part of the water heater;

Fig. 8 is a side elevational view of the main support member which is shown in section in Fig. 5 with a coil and inlet and outlet pipes in association therewith;

Fig. 9 is a sectional plan view on the line 9—9 of Fig. 1;

Fig. 10 is a sectional plan view on the line 10—10 of Fig. 1;

Fig. 11 is a partial perspective view with parts in section of an end portion of the body member shown in Fig. 6;

Fig. 12 is a perspective view with parts in section of the support member shown in Fig. 5;

Fig. 13 is a sectional view on the line 13—13 of Fig. 12;

Fig. 14 is a view similar to Fig. 7 showing a modified form of construction; and

Fig. 15 is an elevational view of what is shown in Fig. 14.

Referring now to the drawings more in detail, the invention will be fully described.

In general, the heater-casing includes a main supporting member 10, a removable body 12, and upper and lower caps 14 and 16. While the casing body is shown as more or less circular in shape, it will be understood that this may vary.

The member 10 is adapted to be more or less fixed in desired location and has upper and lower openings 18 and 20 therethrough for receiving fittings 22 and 24 for pipes 26 and 28, the latter of which are for supplying water to, and carrying it off from, the heater. In Fig. 8 I have shown a water-coil 30 having its opposite ends connected to fittings 22 and 24, but it will be appreciated that other water-carrying means, such as finned tubes and the like, could also be employed.

The body 12 of the casing (shown in circular form for purposes of disclosure, as stated) is more or less of a hollow tube having a vertical slot 32 therein for slidably receiving the support 10. According to the form shown, the side faces of said member 10 converge inwardly (see Figs. 5 and 13) and the side faces of slotted member 12 diverge outwardly (see Fig. 6) and the arrangement is such that said member 12 may be slipped down or up relative to part 10 (see Fig. 3) so that eventually the side faces of members 10 and 12 are in substantial engagement throughout their lengths.

The member 12 is preferably formed to include spaced, concentric inner and outer shells 34 and 36 having extensions, as shown, on opposite ends thereof which are extended towards one another and beyond end walls 38 (see Fig. 6). Be-

tween said shells 34 and 36 there will be one or more, and preferably adjacent upper and lower ends of the body, relatively rigid spacers 40 which may take the form of slotted rings as indicated in Figs. 7, 9 and 11.

These parts are all suitably secured together to provide a unitary removable body and between the shells there is preferably some suitable insulating material such as is indicated by 42. When the body of the case is in place with respect to the support 10, which is relatively immovable when the heater is in operation, the extensions on the opposite ends of the shells 34 and 36 will embrace the opposite side marginal edge portions of the support as will be appreciated and are preferably removably attached thereto, as by screws 13. This all will prevent the body from unwantonly moving horizontally away from the back-bone or support 10 of the device.

The cap members 14 and 16, of course, serve to complete the enclosure of the heater parts and the upper cap 14 fits over the upper marginal edge portions of the casing members just described. Said member 14 may have a stack part 44 for connecting to a flue or stack for carrying off the products of combustion arising from the burner device, the latter of which will now be described.

A burner device, indicated by 46 may take any desired form and for purposes of disclosure have shown a gas-burner which, of course, will be capable of being suitably connected to a fuel-supply as by a pipe 45. The lower cap member 16 is preferably adapted to engage the lower marginal edge portions of the main casing parts and may be apertured to permit the upper part of the burner device to extend therethrough so as to be in position below the coil or other water-carrying means and to act thereupon.

According to the preferred form of the invention, the cap members are removably held in place by screws, such as 46', passing through the caps and into either or both the parts 10 and 12. Also preferably, the back-bone member 10 consists of a socketed more or less U-shaped casing 48 having the general form shown in Figs. 5 and 13 with an outer plate member 50 secured thereto in any desired manner as by rivets or screws 52, the inner and outer walls of said member 10 being spaced as shown.

There is preferably insulation 54 between said spaced walls of the back-bone as there is between the shells above-mentioned. Also there may be one or more relatively rigid spacers such as 56 between said walls, as shown.

In Fig. 7, I have shown how the lower cap member 16 may, if desired, be more or less hinged to the casing proper. That is there may be a hook 58 on the casing in movable engagement with a hook 60 on the cap member and this permits the cap member to drop down and away from the casing to permit one to get at the interior of the casing and the burner parts.

From the foregoing, it will be observed that the backbone or support 10 may be permanently or at least relatively fixed in place and that the upper and lower caps may be removed to permit the burner and coil or tubes to be cleaned, repaired, or otherwise worked upon. As described, the casing member 12 may, of course, be slid upwardly and out of engagement with the backbone.

Also, the lower cap member provides a means for supporting the burner below the coil and,

said burner being within said cap, it is more or less away from the casing so that the latter is not objectionably affected by the heat. As will be appreciated, if the burner device should become unfit for use for some reason, it may be removed and a new one put in place without the necessity of the owner's going to the expense of obtaining a whole new heater construction.

In Fig. 14 there is a partially sectional view of a modified form of the lower end portion of the heater construction of the invention. Here there are spaced concentric outer and inner shells 34' and 36', somewhat similar to shells 34 and 36 except that the inner shell 34' has an extension 35 on its lower end which projects down below the lower edge of the outer shell 36'.

A cap member 16' may be attached to the outer shell in the same manner as described with reference to cap 16 and there may be a burner 46' extending upwardly therein as in the case of burner 46. With this arrangement, the lower marginal edge of the inner shell is so located with respect to the burner that the heat is directed upwardly within shell 34' and not against outer shell 36', all as is desirable.

According to this form, too, there are spacers 40' between the shells which are insulated by asbestos, as in the form of an asbestos ring 41, from one or both of the shells as shown. This, of course, serves to prevent transfer of heat from the inner shell to the outer shell so that the outside of the casing will not be objectionably overheated.

In Fig. 15, there is shown the modified form of casing body indicated generally by 12' having the outer shell 36' with the extension 35 of the inner shell extending below the lower edge of said member 36'. The body 12' will be provided with a vertical slot 32' similar to the slot 32 of the casing 12 for receiving what I have called the supporting member.

While I have described the invention in great detail and with respect to the present preferred form thereof, it is not desired to be limited thereto since changes and modifications may be made therein without departing from the spirit and scope of the invention. The invention may be embodied in other specific forms without departing from the essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What it is desired to claim and secure by Letters Patent of the United States is:

1. A water-heater of the class described comprising in combination, a support member adapted to be connected to an inlet and outlet of a hot-water system and having associated therewith a water-carrying means, a casing member in removable engagement with said support member, and upper and lower cap members for removably engaging said support and casing members, said lower cap member being hingedly engaged with said casing member, all adapted and arranged whereby said members when in engagement substantially enclose said water-carrying means.

2. A water-heater of the class described comprising in combination, a back-bone member adapted to be relatively fixed to an inlet and out-

let of a hot-water system and having associated therewith a water-carrying means, a shell-like casing member having a vertical slot which slidably receives said back-bone member, an upper cap removably engaging the upper ends of said back-bone and casing members, and a lower cap hinged to one of said members for swinging into and out of engagement with the lower ends thereof.

3. A water-heater of the class described comprising in combination, a back-bone member adapted to be relatively fixed to an inlet and outlet of a hot-water system and having associated therewith a water-carrying means, a shell-like casing member having a vertical slot which slidably receives said back-bone member, an upper cap removably engaging the upper ends of said back-bone and casing members, a lower cap hinged to one of said members for swinging into and out of engagement with the lower ends thereof, said lower cap being provided with an opening therethrough, and a burner device extending upwardly through said opening and having a heating member within said lower cap and below said water-carrying means.

4. A water heater of the class described comprising in combination, a back-bone member having upper and lower water connections for

connecting in vertical position in a hot water system, a cylindrical casing having outer and inner spaced secured together walls having longitudinal marginal edges, the said marginal edges forming spaced slots in which opposite longitudinal side edges of the back-bone are receivable as the casing is moved longitudinally of the back-bone to assemble the back-bone and casing, and upper and lower caps engageable with the assembled back-bone and casing.

5. A water heater of the class described comprising in combination, a back-bone member adapted to be relatively fixed to an inlet and outlet of a hot water system and having associated therewith a water-carrying means, a shell-like casing member having a vertical slot which slidably receives said back-bone member, said back-bone and slot being relatively narrow, an upper cap removably engaging the upper ends of said back-bone and casing members, a lower cap for engagement with the lower ends thereof, said lower cap being provided with an opening therethrough, and a burner device extending upwardly through said opening and having a heating member within said lower cap and below said water-carrying means.

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