April 17, 1928.

1,666,093

R. C. HOYT

WATER HEATER BASE

Filed Nov. 23, 1925

2 Sheets-Sheet 1

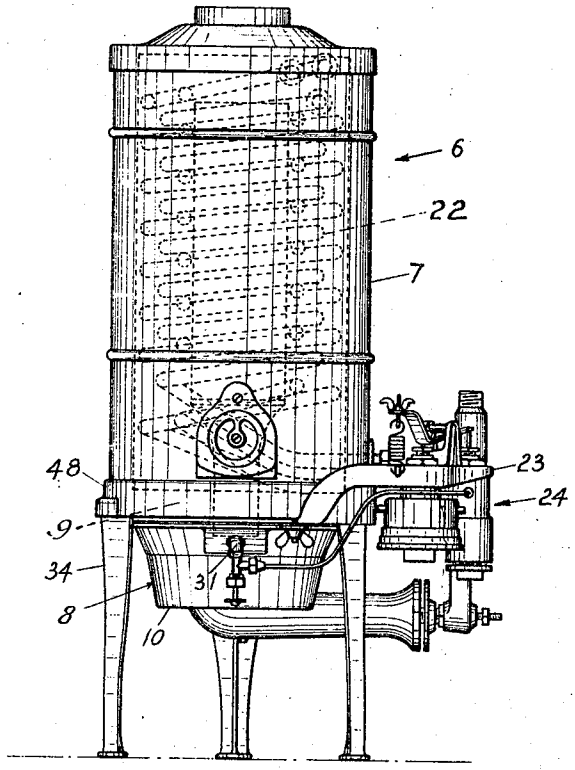

Fig. 1

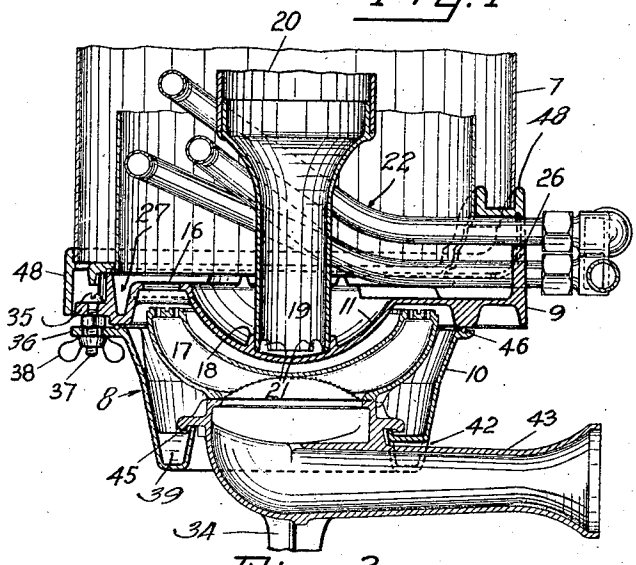

Fig. 3

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2 Sheets-Sheet 2

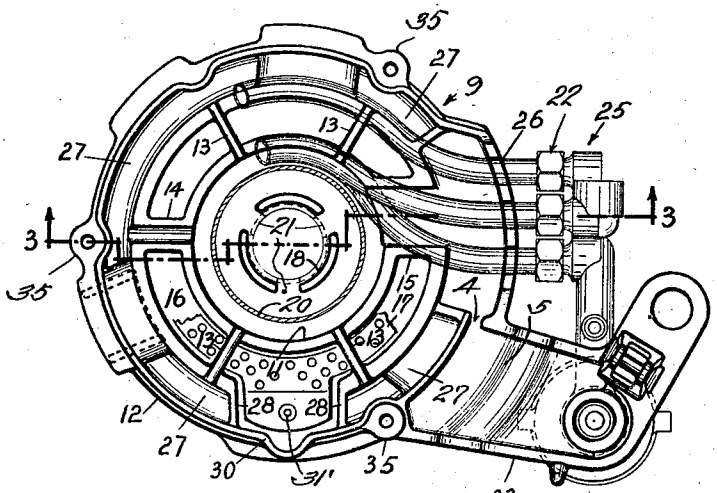

Fig. 2

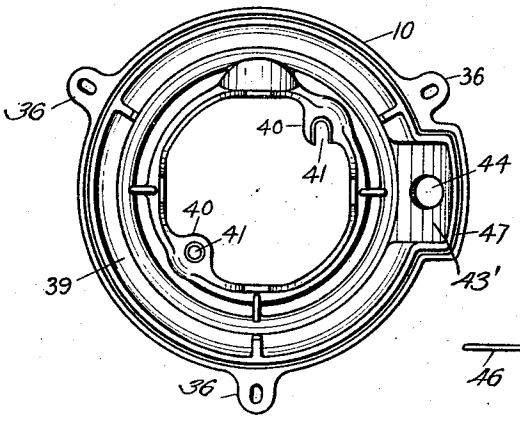

Fig. 4

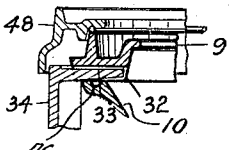

Fig. 6

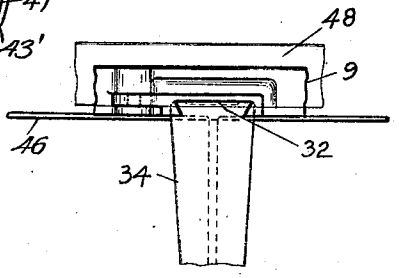

Fig. 7

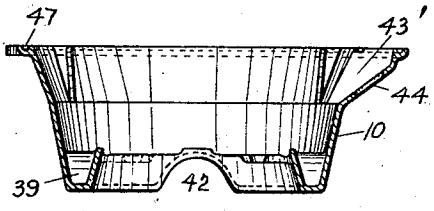

Fig. 5

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Patented Apr. 17, 1928. 1,666,093

UNITED STATES PATENT OFFICE.

ROBERT C. HOYT, OF OAKLAND, CALIFORNIA, ASSIGNOR TO HOYT HEATER COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

WATER-HEATER BASE.

Application filed November 23, 1925. Serial No. 70,827.

My invention relates to bases for water heaters, and it has special reference to bases for heaters of the types provided with heating coils, such as automatic water heaters.

In such heaters the condensation of moisture on the outside of the heating coils and on the inside walls of the jacket, form beads of water which drop to the floor below and eventually present a wet surface under the heater. In addition, when the ash or solid products of combustion, which collect on the outside of the coils finally drop therefrom it further presents a sight that is objectionable to persons and housekeepers of orderly habits. Sometimes the drops of condensation also fall upon the pilot light jet for the heater and extinguish the flame therefrom, so that a continuous leakage of unburned gas from the jet results. Furthermore, the pilot light is also insufficiently protected from drafts, and the flame is therefore easily extinguished by a sudden puff of air or downdraft which also causes a dangerous leakage of gas, and which when the burner is lighted, causes the flame from the pocketed gas to shoot out from the sides of the burner. These occurrences endanger the life of the person in the vicinity of the heater and in view of such defects existing in present heaters it is considered that they are none too safe for practical use in homes where the operator in most cases is unskilled.

With the above in view it is an object of this invention to construct a base for heaters of the class referred to, in such a way that the products of condensation are prevented from falling outside of the heater, and to concentrate such products and reheat them so that the vapors therefrom will pass through the vent tube of the heater, thus disposing of the said products and thereby increasing the efficiency of the heater and doing away with condensation drippings entirely.

Another object is to provide an annular channel at the lowermost portion of the base for the collection of ash and any other matter that may pass the burner or fall therefrom.

A further object of the invention is to encase the burner within the base and to shape and seal the base so as to prevent any flashing flame from the burner from taking a sidewise or radial course through the sides of the base and thereby safeguard a person in the vicinity of the heater from possible injury.

A still further object is to prevent the pilot light from being accidentally extinguished and to provide room for a lateral extension whereby the pilot light is protected from condensation products or from unburned products of combustion falling thereon, thus making the heater safe for uninterrupted use.

Another object is to provide the base with means to envelop the supports of the legs of the heater and to serve conjunctively with the sealing means for the base to prevent the legs from backing out when once driven to position.

Other objects and advantages of my invention will be understood from the following detailed description having reference to the accompanying drawings in which:

Figure 1 is a front elevation of a heater provided with a base of my improved construction;

Fig. 2 is a plan of the upper part of the base and a portion of the burner with the pilot-light extension, and shows in light lines a portion of the heating-coil unit supported on the base, the coils being superposed over the drain ways.

Fig. 3 is a vertical section of the base with the heater jacket supported thereon, the view being taken along the line 3—3 in Fig. 2 and includes a broken section of the vent tube supported in the central bowl of the base. It also shows the burner positioned and a portion of the heating-coil unit. The lines of the base and vent tube and the angle ring of the jacket are shown heavy and those of the walls of the jacket, the burner and heating coil light.

Fig. 4 is a plan of the lower element of the base; and

Fig. 5 is a vertical section through it.

Fig. 6 is a sectional elevation of a fragmental portion of the upper part of the base showing the dovetail opening and a supporting leg therein; and

Fig. 7 is a side view of Fig. 6 and at right angles thereto.

Referring to the figures of the drawing:

In Fig. 1 is shown one form of an auto-

matic water heater 6 provided with a jacket 7 and being supported upon a base 8, which comprises an upper, comparatively flat and shallow element 9 and a lower, comparatively deep element 10.

The upper element 9 comprises a central bowl 11 and an outer annular portion 12, Fig. 2, concentric with the bowl and connected therewith by ribs 13 and channel arms 14 and 15 in such a way that an annular space 16 is provided between the bowl and the outer portion 12, for the flame arising from an annular burner 17 mounted below the upper element, while the ribs and the channel arms are adapted to be heated by the flame to convey heat to the central bowl.

On the bottom of the bowl 11 are concentric ribs 18, which are spaced apart and adapted to receive between them the lower end of a vent tube 19 having an enlarged upper end and being provided with a shoulder for receiving thereon the upper part 20 of the vent tube; the lower portion 19 has one or more openings 21, each adapted to register with one of the spaces between the ribs 18 in order to lead the drippings to the center of the bowl 11 where they will be reheated and the arising vapors pass through the vent tube and out of the heater 6.

Arranged around the vent tube portions 19 and 20 and inside of the jacket 7 is the heating-coil unit 22, and the upper element 9 has a lateral extension 23 for mounting the control-valve mechanism 24 and the lower header 25 for the heating-coil unit of the heater thereon, while supports 26 are provided for supporting the lower ends of the heating-coil unit. The extension is elevated a little so that its floor 5 may drain the drippings from the control valve toward the central bowl 11 through the passageway 4. It should be noted that the channel member 15 is of a comparatively great width and is located directly below a part of the heating-coil unit so that it thereby serves the purpose of protecting that part from being overheated by the flame from the burner.

In the outer portion 12 are pockets 27 provided for the purpose of collecting such products of condensation from the heating-coil unit and the inside walls of the jacket as do not fall directly through the annular space 16, and the pockets have end walls 28 adjacent to the pilot-light extension of the burner 17. These end walls 28 together with a rim section 30 of the outer portion 12 extend above the tip 31′ of the pilot light 31 and thus serve as means for shielding the flame of the pilot light from draft or sudden puffs of air and down-drafts, and thereby help prevent the accidental extinguishing of the pilot light flame.

On the underside of the upper element 9 and in the outer portion 12 thereof are dovetail grooves 32, Figs. 6 and 7, in which are driven lateral dovetail extensions 33 at the upper ends of legs 34 for supporting the base and the assembled heater 6 thereon. At the rim of the upper element are lugs 35 having openings therein adapted to register with openings in similarly arranged lugs 36 in the rim of the lower element 10, so that by means of bolts 37 through the lugs, and nuts 38 in engagement therewith, the elements may be secured together and form the base 8. By means of a heat-resisting sealing medium 46, such as asbestos or cement composed of heat-resisting ingredients between the elements 9 and 10 in a continuous circumferential groove 47 and under the leg extensions 33, they are further sealed so that the flash or discharge of burning gases from the sides of the base is prevented and so that the legs 34 are additionally secured and prevented from working loose from the base.

A further holding means for the legs to prevent their being backed out of position is provided in the form of an angle ring 48, which constitutes the lower extremity of the jacket unit 7 and is adapted to slip over the upper element 9, the lower ends of the coil unit above the supports 26, as shown in Fig. 3, and the dove-tail connection of the legs and base, and at the same time presents a neat exterior band adapted to cover the structural joints of the invention.

The lower element 10, which is open centrally and of a bowl-like contour, has at its bottom an annular channel 39 provided with lugs 40 in its inner wall. These lugs, Fig. 4, have openings 41 therein adapted to receive bolts for securing the burner 17 to the element, which element is further provided with a radial recess 42 adapted to receive therein the air-mixture tube 43 of the burner. In the element 10 is also a passage 43′, which is provided with an opening 44 therein for the pilot light 31 of the burner. This passage slopes from the top of the element and extends under the pilot-light extension of the burner downwardly towards the annular channel 39, and the outer wall of this channel is also the outer wall of the element, so that ashes or solid products of combustion from the pilot-light extension, as well as the solid products of combustion from the annular portion of the burner or such products of condensation as may fall outside of the pockets 27 and the bowl 11 in the upper element 9 and pass the burner, will thereby be prevented from falling outside of the base and will thus finally be forced to drop into the annular channel 39.

In order to further assure that no drops of condensation may pass through the central opening in the lower element, the tube 43 has thereon a beaded flange 45 Fig. 3 which, when the burner is secured in the

base, extends over the annular channel 39 and thus serves as a means to lead such drops directly into the channel.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States the following:

1. A water-heater base adapted to support therein the burner for the heater, said base comprising an upper and a lower element; legs for supporting the heater provided with lateral dovetail extensions shaped to be driven into corresponding dovetail grooves provided in the underside of the upper element; and sealing means between the elements for additionally securing the legs to the upper element and for joining the elements so that products of combustion can not escape from the sides of the base, the said sealing means seated in a circumferential groove provided between the elements including the driven legs.

2. In a water-heater comprising a heating coil unit and jacket therefor, a base including an upper and lower part and shaped for mounting therebetween an annular burner, the upper part of the base shaped for mounting and supporting thereon the heating-coil unit and the jacket, said upper part comprising a central bowl and a spaced outer annular portion provided with pockets for collecting products of condensation from the heating-coil unit; and channel arms connecting the bowl and said outer portion for leading the said products to said bowl.

3. In a water-heater comprising a heating coil unit and jacket therefor, a base including an upper and lower part and shaped for mounting therebetween an annular burner, the upper part of the base shaped for mounting and supporting thereon the heating-coil unit and the jacket, said upper part comprising a central bowl and an outer annular portion provided with pockets for collecting products of condensation from the heating-coil unit; ribs and channel arms connecting said bowl and said outer portion and spacing said bowl from said outer portion, said ribs and channel arms being heated by said burner for conveying heat to said bowl, and the channel arms for leading the said products to said bowl.

4. In a water-heater comprising a heating coil unit and jacket therefor, a base including an upper and lower part and shaped for mounting therebetween an annular burner, the upper part of the base shaped for mounting and supporting thereon the heating-coil unit and the jacket, said upper part comprising a central bowl and an outer annular portion provided with pockets for collecting products of condensation from the heating-coil unit; ribs and channel arms connecting said bowl and said outer portion and spacing said bowl from said outer portion, said ribs and channel arms being heated by said burner for conveying heat to said bowl, and one of the channel arms being of a comparatively great width in order to protect a part of the coil unit from overheating.

5. In a water-heater comprising a heating coil unit and jacket therefor, a base including an upper and lower part and shaped for mounting therebetween an annular burner, the upper part of the base shaped for mounting and supporting thereon the heater-coil unit and the jacket, said upper part comprising a central bowl and an outer annular portion communicating with the central bowl for collecting products of condensation from the heating-coil unit and for leading said products to said bowl, and said bowl having concentric ribs spaced apart for holding a vent tube in concentric relation to the bowl, the tube carrying away the products of vaporization from the condensation collected in said bowl.

6. A base for an automatic water heater comprising an upper and a lower element secured to each other and shaped to support therebetween the burner for the heater, the upper element provided with a central bowl; and a lateral extension on said upper element for mounting thereon the control-valve mechanism and one of the headers for the heating coils of the heater, the floor of the extension sloping toward the central bowl for drainage; and supports on said upper element for supporting the lower ends of the heating coils connected with said header.

7. A water-heater base comprising an upper and a lower element concentrically arranged and secured to each other, the upper element shaped for mounting and supporting thereon the heating-coil unit and the jacket for the heater and comprises a central bowl and an outer annular portion spaced apart from and communicating with said central bowl, and the lower element supporting in the space between said annular portion and said central bowl an annular burner provided with a lateral pilot-light extension, the outer annular portion of said upper element provided with a walled space adapted to register with the pilot-light extension, and the lower element having at its bottom an annular channel and a passage sloping from the top of said lower element and extending under said pilot-light extension towards said annular channel, all substantially as and for the purposes set forth.

In testimony whereof I affix my signature.

ROBERT C. HOYT.