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HEATER LEG CONSTRUCTION

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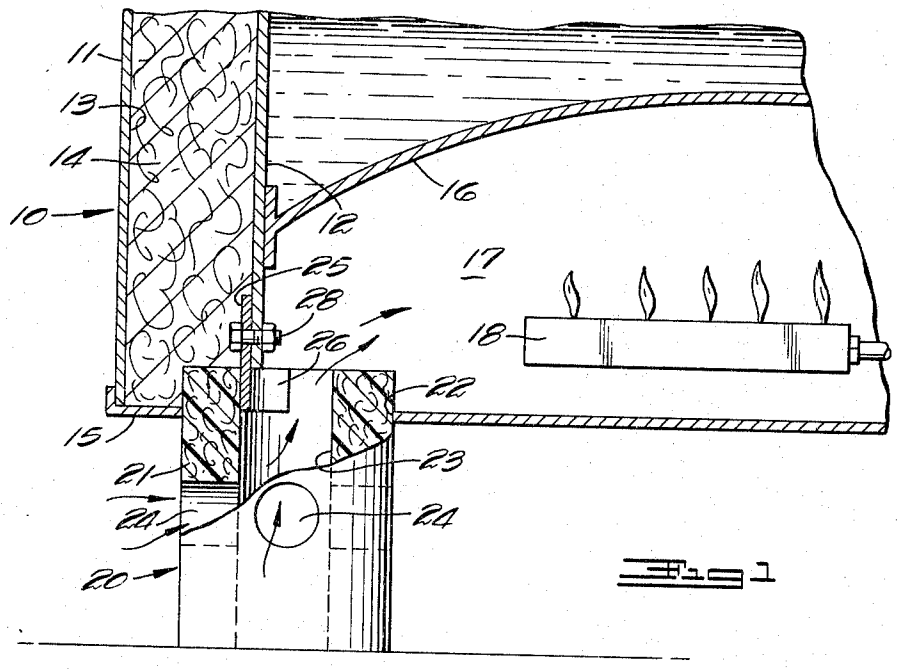

Fig 1

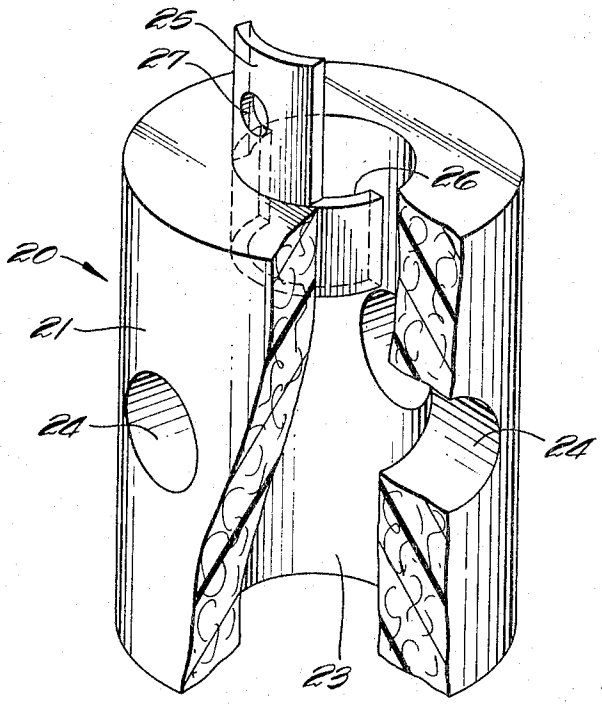

Fig 2

INVENTOR.
IRVIN D. JACOBSON
BY
Fay & Fay
ATTORNEYS

United States Patent Office

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HEATER LEG CONSTRUCTION

Irvin D. Jacobson, 10 Bryn Mawr Drive,
Painesville, Ohio 44077

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This invention relates to hot water heaters and more particularly to a leg construction for use with a hot water heater.

A problem which has arisen in recent years in connection with the design of hot water heaters which employ high energy burners is that by conduction, convection and radiation, the heaters raise the temperature of the floor on which they rest to an impermissible level. A significant part of the problem has been caused by the use of heater legs which assist in transmitting the heat to the floor. The prior art has attempted to combat this by the use of longer legs which raises the heater a considerable distance above the floor thereby reducing the amount of heat conveyed to the floor in the area of the heater. The problem raised in turn by this solution is that the heater requires a larger space than is ordinarily desirable.

It is an object of this invention to provide a heater construction which employs legs that reduce the heat transmitted to the floor beneath the heater.

It is another object of this invention to provide a ventilated leg construction for hot water heaters.

More specifically, the present invention contemplates a hot water heater leg construction which comprises an elongated hollow member fabricated from an insulating material. Bonded within the hollow section of the upper end of the leg is a suitable metal fitting arrangement by which the leg is attached to the shell of the tank with the weight of the tank resting on the upper end of the hollow member. Radial ports are formed in the wall of the hollow member and communicate at their inner ends with the hollow interior and at their outer ends with the atmosphere. The hollow section of the leg communicates at its upper end with the fire box at the bottom of the tank, thereby providing access of the cooler air through the hollow leg to the fire box.

Other objects and features will become more apparent upon a complete reading of the following description which sets forth in detail but one approved means of carrying out the invention. Such disclosed means is not meant to be limiting inasmuch as it constitutes but one of the various ways in which the principles of the invention may be applied.

In the drawings wherein like reference numerals indicate like parts in the various views:

FIG. 1 is a sectional view in elevation showing a portion of a hot water tank supported on the leg comprising the instant invention;

FIG. 2 is a perspective view illustrating the details of the leg structure.

Referring to the drawings and particularly FIG. 1, there is illustrated a portion of a conventional hot water heater **10** which comprises an outer shell **11** and an inner tank shell **12**. These shells are ordinarily cylindrical in configuration and define therebetween a space **13** in which there is received an insulation material **14**. A bottom closure **15** is provided for the outer shell **11** and a floor **16** is secured to the tank shell **12**. The floor **16** is spaced vertically above the closure **15** defining therebetween a fire box area **17**. Disposed in this fire box area is a burner mechanism, schematically indicated at **18**, which is employed to provide the heat for the water in the tank **12**. It is usually the practice to provide a central aperture extending through the tank **12** so that the tank takes the form of a hollow cylinder with the central aperture

permitting escape of the heated gases. Other designs of tanks employ a cylinder containing the water which is heated around the outside with the products of combustion being carried to the flue between the inner shell or jacket and the outer tank wall.

The ordinary practice has been to support either of the above described heater tank construction on a plurality of legs. These legs ordinarily have taken the form of metal stampings which simply support the hot water heater spaced above the floor. Since it is desirable to make the hot water heater as compact as possible and thereby minimize the space requirements for a hot water heater, the usual practice has been to make the legs as short as possible to minimize the overall height of the unit. However, it is necessary to support the tank spaced above the floor since there must be a circulation of air into the fire box from beneath the burner. A result of this type of construction has been that the floor immediately beneath the burner has become heated due to the convection and radiation from the fire box and also due to conduction of the heat along the metallic legs.

In accordance with the principles of this invention, there is provided a leg structure indicated generally by the reference numeral **20**. Although only one of these legs has been illustrated herein, it is to be understood that a plurality of such legs ordinarily would be employed in supporting a hot water heater tank. The leg **20** is illustrated as a hollow cylindrical body **21** which is received through an aperture **22** in the bottom floor **15** of the hot water tank. The body **21** includes a central passage **23** which extends longitudinally of the body or may terminate adjacent the lower end thereof. In either event, there are provided spaced around the periphery of the body **21** a plurality of apertures **24**. These apertures extend from the periphery of the body **21** into the interior of the body and are in communication with the central passage **23**, thus providing access from the exterior of the body **21** to the interior passage. It is contemplated that a plurality of these apertures would be employed with each leg **20**.

The leg **20** may be fabricated from any suitable insulating material. One such material is a fiberglass impregnated polyester resin. However, nearly any material is suitable which includes the characteristics of (1) sufficient bearing strength; (2) capability of withstanding elevated temperatures; (3) having a very low cold flow; and (4) a low coefficient of thermal conductivity.

As a means of attaching the leg **20** to the hot water tank, there is press fitted in the upper end of the central passage **23** an arcuate metal plate **25**. This arcuate metal plate is preferably bonded within the hollow passage **23** at the upper end thereof and extends into the passage only a sufficient amount to provide an adequate connection between the plate **25** and the body member **20**. As illustrated in FIG. 2, the metal plate includes a projecting flange **26** at either side of the lower portion of the plate **25**, thereby to increase the area of engagement between the plate **25** and the body **21**. An aperture **27** is provided in the upper end of the plate **25**.

Referring to FIG. 1, the leg is assembled to the hot water tank by inserting the body **21** through the aperture **22** with the arcuate plate **25** conforming to the arcuate shape of the tank shell **12**. The upper end of the body **21** protrudes into the fire box **17** with a portion of the passage **23** thereby providing communication between the fire box **17** and the atmosphere. A fastener such as a threaded nut and bolt **28** may be used to secure the leg to the tank shell **12**.

It is important to note that the weight of the tank rests on the upper end of the body **21** rather than on the metal fitting with the sole purpose of the metal plate **25** being merely to anchor the leg to the tank shell. Moreover, the

metal plate must not be permitted to extend too far into the leg body since the natural high heat conductively of the metal leg must be minimized as much as possible.

In the use of the above described leg with a hot water heater, it is readily apparent that as the burner is ignited and the air in the burner box **17** is warmed, additional air will be drawn through the radial ports or apertures **24** and upward of the central passage **23** into the box **17**. The flow of the unheated air through the leg **20** thus induces an upward flow of the air with a resultant circulation of air on the floor. This air circulation provides a cooling effect on the leg and, to the extent that the leg tends to conduct the heat, this conduction is dissipated by the flow of the air.

Although the leg construction has been shown as being cylindrical in shape, it is to be understood that almost any configuration would be suitable so long as a central passage in communication with the fire box together with radial ports in communication with the passage are provided. Additional modifications and changes will suggest themselves to those having ordinary skill in the art. Changes such as these are contemplated by the principles of this invention so that although for ease of description, the principles of the invention have been set forth in connection with but a single illustrated embodiment, it is not intended that this illustrated embodiment or the terminology employed in describing it is to be limiting, but rather, it is my desire to be restricted only by the scope of the appended claims.

I claim:

1. In a hot water heater having an outer tank shell, a bottom closure, an inner shell adapted to contain water having a floor spaced above said closure and defining a fire box therebetween, the improvement comprising:

a plurality of separate leg supports for said heater;

each of said legs comprising a body member fabricated from a material having a low coefficient of thermal conductivity;

a central passage in said body member opening upwardly of one end;

a plurality of radial ports in said body member communicating with said central passage;

said one end of said body member being received in an aperture in said bottom closure of said heater with said passage in communication with said fire box; and

means securing said body member to said heater.

2. The combination of claim **1** wherein said heater rests on the upper surface on said body member of said leg supports.

3. The combination of claim **1** wherein said securing means comprises a metal plate with the lower end thereof extending into said central passage;

at least the upper portion of said plate having a configuration corresponding to the configuration of said inner shell; and

fastening means securing said upper portion to said inner shell.

4. A leg construction for a hot water heater, said leg construction comprising:

a body member fabricated from a material having a low coefficient of thermal conductivity;

a central passage in said body member opening upwardly of one end;

a plurality of ports in said body member communicating with said central passage;

an arcuate plate having a coefficient of thermal conductivity higher than the coefficient of said body member and having one end thereof extending into said one end of said central passage;

said one end of said plate terminating at a point in the passage in said body member intermediate said ports and said open end of said passage;

the other end of said plate having means adapted to be secured to said hot water heater.

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CHARLES J. MYHRE, *Primary Examiner.*