May 9, 1950 L. KLUCK 2,506,721

HEATER COIL FOR USE WITH BUTANE OR PROPANE GAS SYSTEMS

Filed Aug. 14, 1946

Fig. 2.

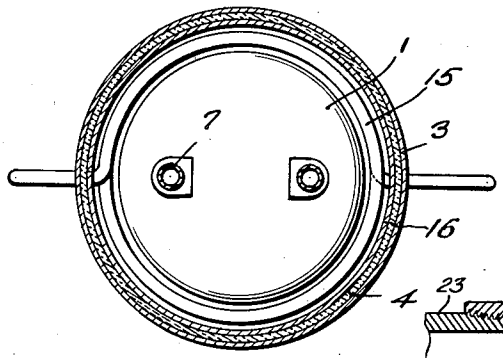


Fig. 3.

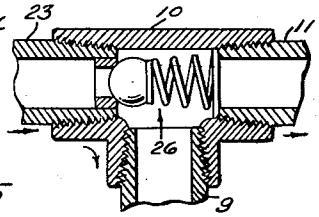
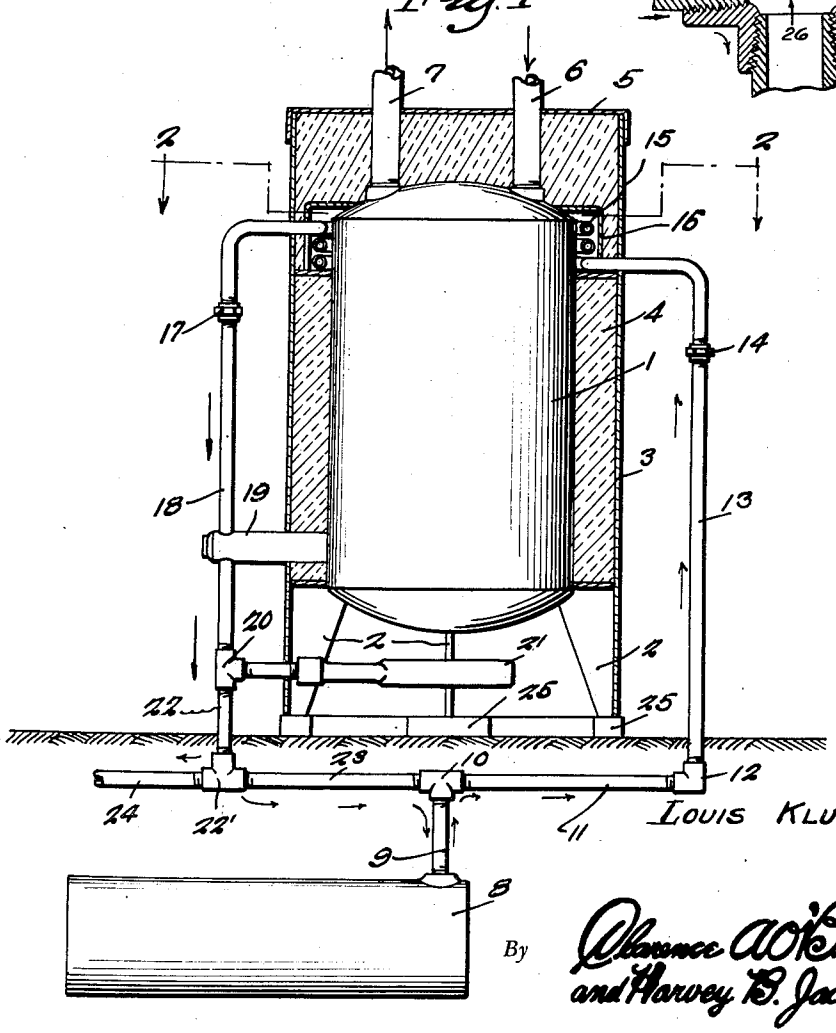


Fig. 1.



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HEATER COIL FOR USE WITH BUTANE OR PROPANE GAS SYSTEMS

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1 Claim. (Cl. 126—350)

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This invention relates to improvements in heater coils for use with butane or propane gas systems.

An object of the invention is to provide a hot water heater with a heating coil surrounding a portion thereof for heating butane or propane gas used for heating the water in said hot water heater, and for operating other appliances.

Another object of the invention is to provide an improved heater coil for use with butane or propane gas systems which will be disposed about a portion of a tank in a hot water heater which will be heated by the butane or propane, to prevent the vaporized gas from freezing up in the regulator of the storage tank, and reducing the flow of vaporized gas necessary for efficient operation of appliances in cold weather.

A further object of the invention is to provide a butane or propane gas system including a tank for storing the gas, and an automatic hot water heater associated therewith being heated by the butane or propane gas, and the pipe line of said tank leading to a coil disposed about the water tank prior to the gas being led to the tank heating burner element, and from thence to other equipment as desired.

Another object of the invention is to provide an improved insulated hot water heater which will be heated by butane or propane gas from a storage tank suitably disposed below ground, and said gas being led to the hot water heater burner through a suitable pipe coiled about the tank portion of said hot water heater, whereby the gas will be heated at all times to prevent the same from returning from a vapor into a liquid state.

Another object of the invention is to provide an improved heater coil for use with butane or propane gas systems including an automatic hot water heater heated by the butane or propane gas, said gas being led to said heater by means of a pipe which will be wound in several convolutions about the tank portion of said heater, and then to the tank burner, whereby the gas will be heated to prevent the same from returning from a vapor state to a liquid state.

Another object of the invention is to provide an improved heater coil for use with butane or propane gas systems which will be highly efficient in operation, and relatively inexpensive to manufacture and produce.

Other objects will appear as the description proceeds.

In the accompanying drawings which form a part of this application,

Figure 1 is a side elevation partly in section of the improved automatic hot water heater showing the heater coil connected with the butane or propane gas tank and with the burner for said hot water heater.

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

Figure 3 is an enlarged sectional view showing the check valve for the return conduit.

Like characters of reference are used throughout the following specification and the accompanying drawings to designate corresponding parts.

In carrying out the invention, there is provided an improved form of automatic hot water heater including a tank 1 suitably supported in spaced relation from the ground or floor by means of the legs 2 which are formed by a continuation of the outer jacket 3 placed about the layer of insulating material 4, positioned between said tank 1 and said jacket 3 and over the upper end thereof. A suitable metal cover 5 will be disposed on the upper end of the outer jacket 3 to overlie the insulating material 4 and to give a finished effect to the hot water heater.

A cold water inlet pipe 6 will extend through the upper insulating material 4 and be connected with the upper end of the storage tank 1, while the hot water outlet pipe 7 will also extend through the upper portion of the insulating material 4 and be connected with the upper end of the hot water storage tank 1, as clearly illustrated in Figure 1 of the drawings.

The storage tank 8 for the butane or propane gas will be buried under the ground and will be provided with an outlet pipe 9 connected therewith, the same being connected at its upper end with the T-connection 10, and a pipe 11 will be connected to one end of the T-pin and connected with an L 12, to support the upwardly extending pipe 13 which will be connected by means of the union 14 to the inlet end of the gas-feeding coil comprising three convolutions of tubing disposed about the upper end of the storage tank 1 and in close proximity thereto.

The metal cover plate 16 will be disposed about the heater coil 15 to completely encase the same, and the insulating material 4 will be disposed about the outer edge of the said cover plate 16 between the same and the inner surface of said outer jacket 3, as clearly illustrated in the drawings.

The depending end or outlet end of the heater coil 15 is connected by means of the union 17 with the pipe 18, which in turn is connected to the thermostat control 19 connected with the storage

tank 1, and from thence extends downwardly to the T-connection 20, and inwardly to the gas burner 21. A return pipe 22 is connected with the opposite side of the T-connection 20, and is connected to the central portion of the T-connection 22', one end of which is connected by means of the pipe 23 to the adjacent end of the T-connection 10 for return to the said tank 8. The pipe 24 connected with the outer end of the T-connection 22' is adapted to be connected with other gas operated accessories (not shown).

A suitable base 25 will be disposed beneath the legs 2 of the heater to form a firm support for the same.

It is a well known fact that in butane or propane gas systems, especially in cold weather, unless the butane or propane gas is kept at a reasonably warm temperature the gas which is normally in a vapor state will readily return to a liquid state, rendering it unfit for burning as a gas. Consequently, the improved heater coil has been provided and placed in series with the butane or propane gas line from the storage tank to the burner, and disposed about the hot water tank to heat the gas at all times to keep it warm and to positively prevent it from returning to a liquid state.

The T-connection 10 houses a check valve 26 for the pipe 23 that is so arranged as to cause the butane gases rising in the pipe 9 to enter the pipe 11 rather than the pipe 23. However, when the pressure of the butane gas in the pipe 23, acting on the check valve, exceeds the pressure of the butane gas in the pipe 9, aiding in urging the check valve to its closed position, the check valve will be open and the gas in the pipe 23 can enter the pipe 9 and return to the tank 8.

From the foregoing description, it will be apparent that there has been devised and provided a highly efficient form of automatic hot water heater and a heating coil connected in series with the butane or propane gas supply to the heater burner for retaining the butane or propane gas as a relatively high temperature, thereby preventing the gas from passing from a vapor state to or returning to the liquid state.

While the preferred embodiment of the instant invention has been illustrated and described, it will be understood that it is not intended to limit the scope of the invention thereto, as many minor changes in detail of construction may be resorted to without departure from the spirit of the invention.

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

In the combination of a hot water tank having an insulated covering thereabout, a fuel burner disposed beneath the tank for directly heating said tank, and a gaseous supply for said burner; a heater coil embracing the upper portion of the tank, said heater coil having at least three convolutions of tubing disposed about the tank and in close proximity thereto, and a cover plate disposed about the heater coil and completely encasing the heater coil, said cover plate spacing the heater coil from the insulated covering, said heater coil having first and second end portions projecting outwardly from the insulated covering, a supply pipe connecting the first end portion of said heater coil to the gaseous supply for said burner, and a further supply pipe connecting the second end portion of the coil to the burner.

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