US 20080098968A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0098968 A1

(43) Pub. Date: May 1, 2008

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(54) HEAT RECOVERY AND HEAT DISSIPATED FROM THE HEAT HARVESTING COIL

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(21) Appl. No.: **11/588,153**

(22) Filed: **Oct. 27, 2006**

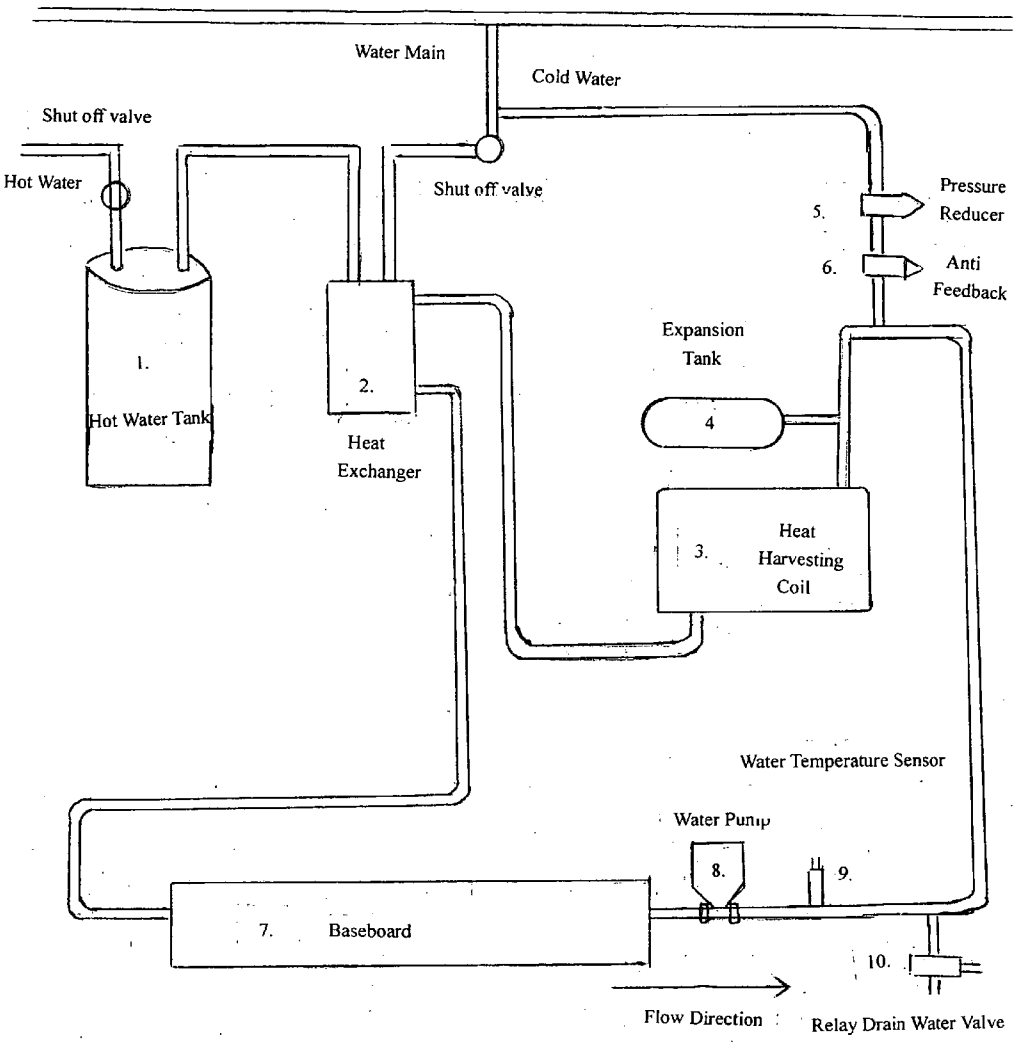
Publication Classification

(51) **Int. Cl.**
F22B 1/18 (2006.01)

(52) **U.S. Cl.** ..... **122/7 R**

(57) **ABSTRACT**

Condenser will create a lot of heat from compressor and exhaust heat has to be removed from it. This exhaust heat can be recovered to store in the hot water tank. More important the heat generated by freezer, air conditioner and refrigerator has to be removed either store in the hot water tank or dissipated by baseboard. We design this method to accomplish this goal. We use water to dissipate the heat and we do not waste the water. Water is very expensive about $5.00 per hundred cubic feet. This method will save fuel to pre-warm the water for hot water tank.



Heat recover and Heat dissipation of the condenser with Heat Exchanger.

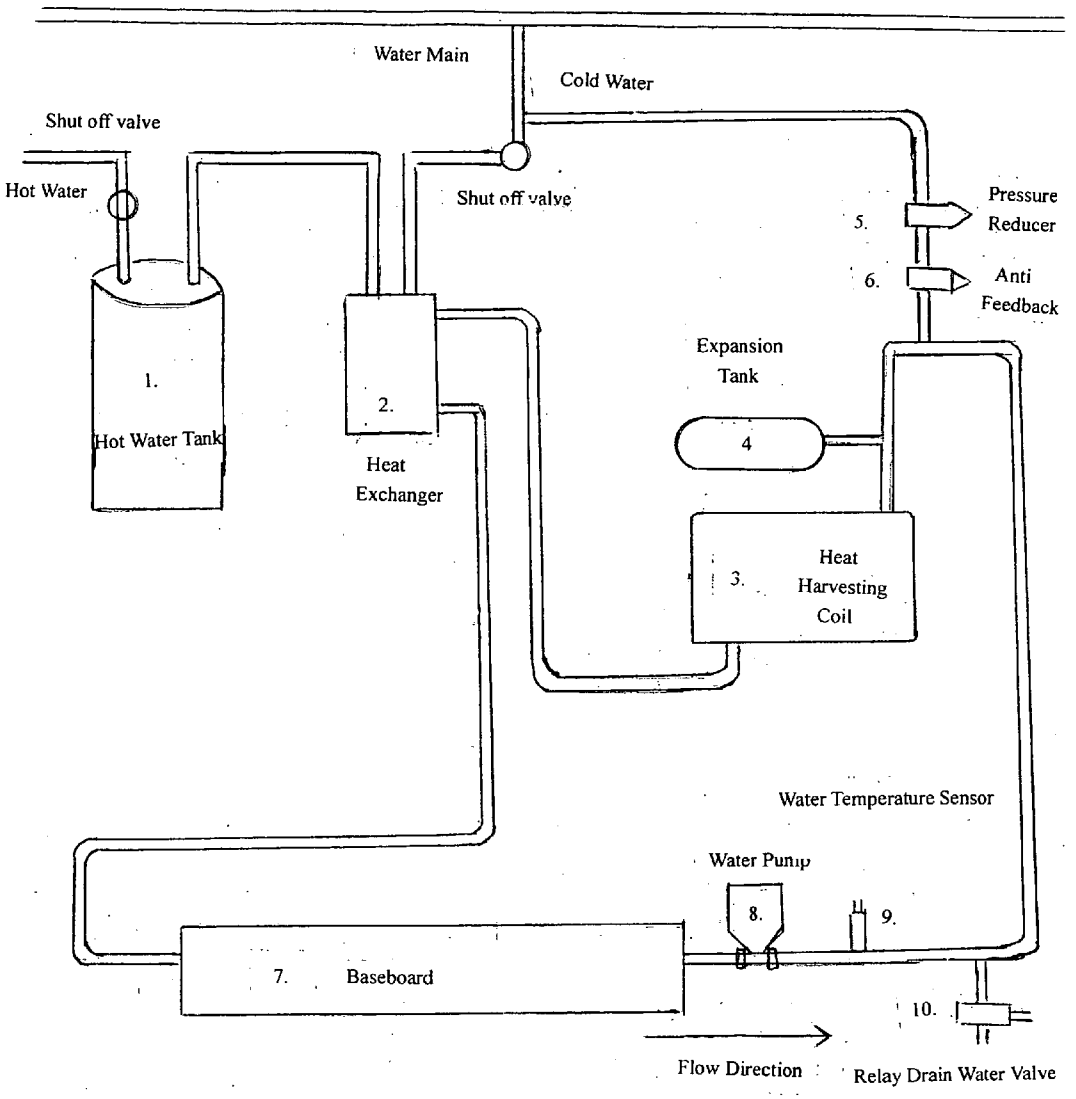


Diagram 1. Heat recover and Heat dissipation of the condenser with Heat Exchanger.

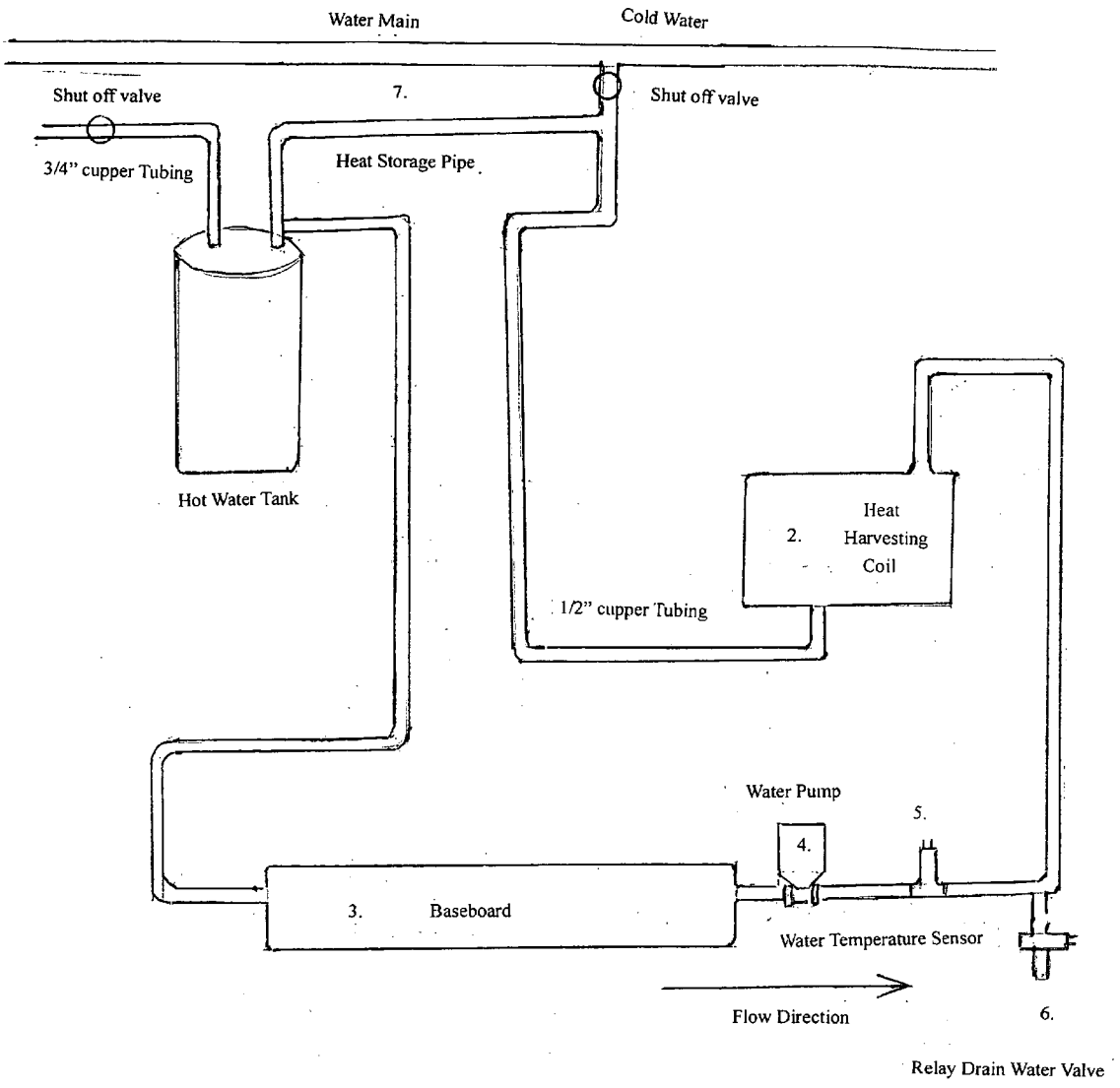


Diagram 2. Heat recover and Heat dissipation of the condenser without Heat Exchanger.

HEAT RECOVERY AND HEAT DISSIPATED FROM THE HEAT HARVESTING COIL

[0001] I design this method to store the wasted heat generated from condenser of air conditioner, freeze or refrigerator to save fuel and water. By introduction of baseboard which is used in normal heating system, we are able to dissipate the wasted heat by the baseboard. See diagram **1**. We have (**1**) hot water tank, (**2**) heat exchanger, (**3**) heat harvesting coil, from condenser, (**4**) expansion tank, (**5**) pressure reducer, (**6**) Anti feedback, (**7**) baseboard, (**8**) water pump (circulator), (**9**) water temperature sensor, and (**10**) Drain water valve. The relay at the condenser makes contact to drive the water out and drive the water pump to push the water at the flow direction. The water will carry the heat to move to the heat exchanger, which will warm the cold water to get the pre warm water. Then the water moves to the baseboard which releases the heat for the remaining heat of water. Water moves to pass the water temperature sensor which will check the water temperature is less than 100 degree Fahrenheit. If the water temperature is over 100 degree Fahrenheit, the sensor will activate the drain water valve to drain the water to cool the system until the water temperature is less than 100 degree Fahrenheit. We can select the size of the baseboard to accommodate the heat transfer to avoid the water draining. The baseboard can be mounted along the water main to dissipate heat which will help warm the pipes and avoid the condensation water over the water main pipes. This water system (heat recover and heat dissipation) can be used to replace the cooling tower for buildings air conditioners. This installation is much less expensive than cooling tower. Even the cooling tower wastes some water to evaporate the water to steam. And wasted heat is gone. The baseboard can be mounted along the basement and outside of the buildings. In the winter, if the baseboard is along the outside of the buildings, the frozen pipes have to be taken care of. (Winterized pipe is needed)

[0002] The 2^{nd} design of the water system is presented here, See Diagram **2**. In this method the heat exchanger is omitted for the cost. The heat storage pipe (**7**) is added here. The length of this heat storage pipe is varied according to the situation. (**1**) hot water tank, (**2**) heat harvesting coil, (**3**) baseboard, (**4**) water pump (circulator), **5** water temperature Sensor, and (**6**) relay drain water valve of Diagram **2**.

[0003] Herein the water pressure is around 40 psi. No need for expansion tank, pressure reducer, and anti feedback flow. Again the size of baseboard is according to the system. The method of this diagram is similar to the method of the above diagram **1**.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Diagram. **1**. Heat recover and Heat dissipation of the condenser with heat exchanger

[0005] Diagram. **2** Heat recover and Heat dissipation of the condenser without heat exchanger.

DESCRIPTION OF THE DRAWINGS

[0006] Diagram **1**. The hot water tank is supplied with pre-warm water which is warmed by heat harvesting coil. This water system is used to remove the heat generated by compressor. In order to run this freeze and cooling system, we have to remove the heat. In this application, we use water to cool the condenser. But the water is very expensive, we have to reuse the water, we do not want to waste this expensive water. We use (**2**) Heat Exchange to transfer the heat from (**3**) Heat Harvesting Coil to (**1**) Hot water Tank. In addition to the above, we use (**7**) Baseboard to release the heat from (**3**). We use (**8**) Water Pump to push the water in the flow direction. Water Pump will be activated by Heat Harvesting coil. We use (**9**) water temperature sensor to make sure the water is below 100 degree F. If the water temperature is over 100 degree F. We activate the relay drain water valve. We do not want the water to hot to cool the condenser. Therefore the hot water tank is used less gas to heat up the water to 140 degree F. This arrangement will save the water and the gas to heat the hot water tank. We have (**4**) expansion tank, (**5**) pressure reducer and (**6**) Anti feedback. This set up is like hot water heating system.

[0007] Diagram **2**. The hot water tank is supplied with pre-warm water which is warmed by heat harvesting coil. The heat exchanger is quite expensive. We omit this device. This is replaced with heat storage pipe. The length of the heat storage pipe can be varied in accommodation with application. Also the pipe can be replaced with a tank. Hot water tank (**1**) will get the pre-warm cold water. The cold water will get warm by (**2**) heat harvesting coil. If this set ups is not enough to cool the (**2**) heat harvesting coil. We need the baseboard (**3**) to dissipate the heat. The Water pump (**4**) is used to move the water, which is energized by condenser needed to cool the coil (**2**). The (**5**) water temperature sensor is used to control the drain water valve, depends upon the water temperature is over 100 degree F. We need to drain the water to lower the temperature whence the temperature is over 100 degree F.

1. Baseboard is introduced here which is used to dissipate heat.

2. Hot water Tank is used to store the wasted heat released from the condenser.

3. Heat storage pipe is introduced here.

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