BACKGROUND OF THE INVENTION

Field of the Invention:

The present invention Dolphin 5 generally relates to heating fluid and, more particularly, is concerned with a device and an article of manufacture that heats fluid for producing heated water on demand when in a mobile setting, and providing a lightweight means for a person to portably have the opportunity of choice for taking a warm shower and a method for making a hot beverage without using a pressurized main water supply line, AC electricity, fossil fuel, or wood for heating the fluid when that person may be in an emergency situation and needing hot water.

Description of the Prior Art:

Many individuals that are employed by the U.S. military and particularly the U.S. ARMY may find themselves in isolated geographic locations and placed in various diversified situations that are lacking clean hot water for a shower, or a beverage such as a hot cup of coffee. Also there are hunters and campers in locations where there is no AC electrical power source and burning wood may not be practical, as well as an available supply of propane gas that may not be readily available to heat water to clean up or make instant food of some kind.

More important though are the thousands of people each year that live in areas affected by nature in some way or another that sometimes prevents that individual that is in an adverse situation due to a non-planned disaster event of some type. That type of situation could prevent that person the access to AC electrical grid power, or possibly a lack of water supply from the main water line supplying the area with pressurized water to the households. The increased AC power outages and questionable quality of supply water associated with a national disaster has created a great need for a portable fluid heater that operates in a mobile situation using a battery for power that can be found in automobiles, solar systems, and other readily accessible mobile equipment.

There are several methods for producing hot water for purification purposes , some require AC electricity and are very bulky and not intended for mobile use. If there is no AC electricity available those water heaters will not function. Other methods of producing hot water require volumes of water to be stored and for example 50 U.S. gallons which is approximately 400lbs. in weight. These large storage tanks require a longer time to warm up and they are directed mostly to heating large volumes of water. There are other on demand water heating methods such as the Paloma brand or the Bosh Aquastar model which is designed for the purpose of producing hot water on demand, and there is no storage tank available for hot water.

These systems require a minimum of a supply water pressure into an inlet of cold water that is connected to a source water main, as well as an outlet hot water tube hooked up to exit the hot water. Also a propane gas bottle with a hose fitting requiring a wrench to tighten and unfasten the line carrying the gas fuel into the flame burner regulator (5psi) is also needed, along with a source of flame from fire to ignite the heater.

While those systems have been widely used throughout many years, all have their drawbacks when attempting to use them in a mobile setting located at a geographically isolated location or in a mobile emergency situation. The AC electric water heaters require that AC electricity is available; AC electricity cannot be stored and has to be generated on demand which requires fossil fuel to run an engine that rotates an alternator shaft which generates AC electricity, and the amount of AC electricity available from the alternator output is directly proportional to the input horsepower on the engine rotating the alternator shaft. This is a precise process that requires a specific RPM of the alternator shaft and also in this type of electrical power generating method there is an electrical noise produced called electromagnetic radiation (EMR) and also radio frequency interference (RFI) signal output and are detectable with inexpensive measurement meters.

The water heaters used in the past that have large storage tanks to fill take more time to heat the water than a water heater design not using a storage tank, and the storage tank is very heavy and bulky when filled with water to heat. There are water heater designs in use that do not have a storage tank but require a connection to the local water supply line offering a pressurized situation to cause the cooler water to flow into and through the heating element and out as hot water. Also there are methods of creating heated water on demand in a somewhat mobile setting, but also need a propane gas bottle hooked up to a regulator and supply hose which requires a wrench to seal the connection to the propane fitting. All methods reviewed in prior art water heaters are dedicated elements of heat transfer that prevents the usage of multiple variations in supply water input means. The heating elements of these types of water heaters cannot be removed and used with other methods or means of fluid delivery sources. These limitations makes those water heaters all limited for usage in multiple settings, that may be lacking water pressure supply lines, alternating current (AC) generating means, time or tools to hook up lines and hoses requiring wrenches, no available propane gas, and they are all cumbersome as well as bulky and heavy. These types of heaters are very sensitive to adverse conditions and have multiple sources of parts that can fail or be damaged easily.

Also the prior art referenced that uses a method of electrically heating water as it flows through the heat exchanger elements and to the end user, are using source thermal energy to heat fresh cool water or fluid as it enters and flows through the heaters portion of the prior art referenced. Most all water heaters have a heating element that has to be suberged in the water they are heating, and are not able to operate outside of their container as a normal function to heat fluid in multiple situations.

Consequently, a need exists for a battery powered stand alone water heater requiring no hoses or pressurized water pipes as well as hookups for a gas bottle or pressure regulator that require wrenches to assemble. In addition, the methods requiring a pressurized water supply hose or pipe to force the water through the heaters core and that allow them to produce the flow of the heated fluid, are all vulnerable to problems associated with a natural disaster affecting water systems.

Future advancements in emergency water heater designs will need to include DC power, coupled with the ability to supply pressurized hot water without being connected to a pressurized main water line inlet to make them function for the production of hot fluid quickly on demand, and have an ability for the heating element to operate outside the container as well. Enabling that water heater to function perfectly as designed in three methods, submerged in water, hanging from a tree in the open air, or in a conventional pressure pipe setting found in household plumbing.

SUMMARY OF THE INVENTION

The present invention Dolphin 5 provides a “stand-alone-portable” fluid heater designed to satisfy the aforementioned needs. Hot water is produced by cooling a heated metal block by flowing fluid through it. The metal block is heated by an external polar array of DC electrical heating elements that are displaced in a radial formation located outward from the heated metal block center bore cooling passage and located centrally and equally around the exterior circumferal flat areas of the heated metal block. The DC heating elements are individually energized and separately positioned outside of the fluid to achieve a temperature differential in the heated fluid outlet product flow path. This allows for a selective blending of warm and hot fluids together to achieve the optimum temperature desired for usability and end user satisfaction. Furthermore the present invention DOLPHIN 5 does not need to have a pressurized line or hose attached at an inlet to provide a clean flow of heated water outward as a consumer product. . The present invention solves that problem by forcing fluid through hollow passages and through the heated metal block fluid heater of the present invention and the outer container housing the fluid heater of the present invention is sealed airtight and air is pressurized internally and allows the air pressure within the container to exert it’s pressure against the exposed surface area of the cool fluid within the container and causes the heated fluid to be expelled through an outlet passage port.

Furthermore the method used to supply fluid in this application of the present invention for producing hot fluids on demand uses a submerged heating element within a confined vessel or chamber while preventing additional cool water to flow inward and through the heated metal block, and is a more efficient method of translating a larger percentage of the thermal heat that is produced through convection of the DC IR heaters into the contained fluid to be heated. The conservation of the electrical energy input to create the thermal heat energy as the heat transitions into many small contained volumes of fluid within the present invention are an important factor for that more efficient method and means to heat the fluid.

A containment bucket that holds 5 U.S. gallons of fluid is filled and the present invention Dolphin 5 is submerged into the fluid to be heated. The lids are buckled onto the top & bottom portion of the container that retains the liquid capacity to be heated. The container is sealed airtight after the buckles on the roof and floor are clamped into their respective lock positions. The sealed container has flow check means to contain the pressurized air trapped within the inside area of the container housing the Dolphin 5 fluid heater of the present invention. The product Dolphin 5 of the present invention remains partially submerged within the pressurized fluid in this method of usage while flowing fluid internally through the device fluid heater and is used in the other two methods of operation of the present invention also, a gravity method and the commonly accepted household plumbing inline method.

The preferred method within a sealed container allows 5 gallons of fluid to be scooped from the source of the fluid with no pressure involved, and the fluid is dumped into the container housing Dolphin 5. After the fluid is in and the roof and floor are buckled in place the container is sealed airtight, a mechanical apparatus operated by a person then pressurizes the internal area inside the container that is not occupied by the fluid within the airtight sealed container, the hollow area within the multiple coolant passages allows fluid to flow from the exit bell port at the exit of the container housing the Dolphin 5 of the present invention. Therefore the problem of needing to connect to a main water supply that is pressurized does not exist in the fluid heating containment method of using the present invention.

The method of the present invention provides means for cool drinking water to be delivered from one outer cooling tube oulet port, and warm shower water can be delivered out of the center coolant outlet port and the warm water can flow for showering as soon as the temperature sensitive valving opens the inner cooling fluid passage as the temperature inside the heated metal block translates it's thermal heat energy into the fluid as it reaches a preset temperature that is set mechanically by the end user for their satisfaction and comfort. Pressurized flow of hot fluid for beverages is also available as a product of the present invention Dolphin 5. This allows the end user three choices of water temperature gradients simultaneously and provides a means to blend them together.

This method of the present invention that allows blending of water temperatures without the addition of a cold water input solves a major problem of convnetional water heating methods by allowing a mixture of water confined within individual flow paths of different temperature gradients.

Furthermore the product of the present invention Dolphin 5 solves another problem of the prior art designs. This problem solved is mobility and the assembled product Dolphin 5 fits in one container 16”W x 16”W x 21” L. The weight of the present invention without water is easily transported by one person, and when transported broken down into the individual elements comprising the present invention fluid heater can be contained within a very small cubical space, and this type of container is stackable both physically for storage and also cascaded together forming matrixes to make one large fluid heater. The present invention also can be utilized as a stand alone water heater and becomes very light and mobile in a portable disassembled configuration, and in fact the entire fluid heater of the present invention can be confined within a cubical area enclosed that is 8.5” wide, 9.0” long and 3” tall.The water heater of the present invention is intended to be used when the AC power grid goes out, and moreover in a certified emergency situation caused by any unforeseen tragedy. The product of the present invention utilizes source power from any readily available DC battery that is found in automobiles, mobile equipment, riding lawnmowers, motorcycles, boats, solar systems and many more applications as well as department stores.

There are millions of these batteries available to the general public and the DC power is stored energy, which solves the problem of finding a power source in an emergency situation like for example grid power AC after a national disaster, that renders people in those situations helpless without the AC grid power or water main supply lines, and provides an alternative potential to heat water for cleaning or for a hot beverage.

The present invention uses common battery cables that are found in any auto parts store and are used for supplying the DC power potential to heat the cooling fluids. In fact the intended operative performance of the present invention Dolphin 5 can be accomplished by purchasing an inexpensive quick start auto battery/air compressor from any local auto supplier or major discount sales provider. This solves a major prime mover source power supply issue for powering the Dolphin 5, and provides many choices for the end user for inexpensive power supplies. The product of the present invention requires a DC battery to operate.

Another major problem the present invention solves is the limited ability of other art forms to operate with diversified means, by allowing the fluid heater and elements of the present invention to be used in three diversified applications whereas one as described is the submerged method, in addition a gravity configuration and method can be achieved for proper operation of the fluid heater of the present invention as well as conventionally attached inline to any pressurized water pipe used in a common household.

Accordingly, the present invention relates to an article of manufacture and a method to produce heated water on demand from a pool of liquid, and does not rely on a pressurized flow from external lines or pipes to produce hot water flow out to the end user as a final product, which includes the operative steps of : (a) to produce heat by DC current flow into an array if IR heating elements and exchange the thermal heat conductively into a metal block (mass) submerged in cool fluid ; and (b) exchange that heat from the metal block conductively into a centralized inner cooling passage tube and outward coolant passages and in specific two additional polar arrays of outward cooling tubes located within circular polar array heating bands and the hot fluid continuing thru the outward cooling passages and into the exiting hot fluid restrictor valve ; and (c) allow fluid to flow thru the heat exchanger by the application of gas pressure onto an area of exposed water surface sealed airtight within the present inventions container housing, and more specifically, the pressure of gas can be very low whereas a mechanical human method of producing compressed air is sufficient for proper operation of the product invention Dolphin 5, and in fact an example would be a small bicycle tire pump as sufficient to supply pressurized air for proper operation and produce water flow outward as a product of the present invention; and (d) to provide several temperature gradients of heated fluid simultaneously by blending together multiple heat gradients of fluid within the seperated hollow cooling fluid passage porting of the 3 metal blocks of the present invention Dolphin 5.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematical side elevational view of a preferred embodiment of the present invention Dolphin 5.

FIG. 2 is a side elevational view of a preferred embodiment of the anticipated product fluid heater of the present invention.

FIG. 3 is an end elevational view of a preferred embodiment of the housing and end face view of heat exchanger 2. of the present invention.

FIG. 4 is a side elevational view of a preferred embodiment of element 2. of the present invention and indicates the positioning of heating elements 15.

FIG. 5 is a end face elevational view of a preferred embodiment of element 2. indicating the porting bores and heating element positions.

FIG. 6 is an end elevational view of a preferred embodiment of element 6. and the porting bores positions of the present invention.

FIG. 7 is an end elevational view of a preferred embodiment of element 5. and the porting bores positions of the present invention.

FIG. 8 is a preferred schematical embodiment of the present invention Dolphin 5 cooling fluid flow paths.

FIG. 9 is an end elevational view of a preferred embodiment of the alignement heat exchanger 2. with inlet manifold 6. of the present invention.

FIG. 10 is an end elevational view of a preferred embodiment of the alignement heat exchanger 2. with outlet manifold 5. of the present invention.

FIG. 11 is a schematical elevational view of the preferred embodiments of the elements of the present invention.

FIG. 12 is a schematical side elevational view of three methods of supplying water to be heated into the inlet of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, and more particularly, to FIG. 1 a schematical side elevational view of the fluid heater of the present invention DOLPHIN 5, and generally designated 1. within the preferred embodiments in FIG(s). 1, 2, and 12 for producing heated fluid on demand using mobile DC electricity to power the device heaters. The device 1. includes a means for producing heated fluid to flow outward as a consumeable product. DC electricity is used to power the heating elements 15. in FIG(s). 4, 5, 9, 10,and 11, providing the thermal energy for heating the metal block 2. of FIG(s) 1, 2, 3, 4, 5, 8, 9, 10, 11, and 12.

In the preferred embodiment of the device 1. in FIG. 1 the view includes element 2. which is a block of metal internally bored with holes through the end faces, that allow fluid to flow through multiple individualy seperated hollow conduit passages for flowing fluid as well as one larger circular diameter hole directly within the center of the end faces. Referring now to element 6., which is also a metal block internally bored with holes through the end faces, that allow the fluid to flow through multiple individualy seperated hollow conduit passages for flowing fluid as well as well as one larger circular diameter hole directly within the center of the end faces and is the center coolant bore of 6.

Now referring to element 5. of the present invention which is a metal block internally bored with holes through the end faces, that allow the fluid to flow through multiple individualy seperated hollow conduit passages for flowing fluid as well as well as one larger circular diameter hole directly within the center of the end faces and is the center coolant bore of 5.

Referring now to the inlet bell and referenced as element 3. which provides a confined path for fluid to enter into the inlet distribution manifold 6. and the inlet bell 3. of the present invention threadably attaches into the center coolant bore of 6. the inlet distribution manifold 6. provides a hollow passage for fluid to flow that is bored through the end face centers providing a means that allow cool fluid to flow into and through the center coolant bore of 6. the inlet distribution manifold.

The inlet bell 3. provides a hollow passage for cool fluid to flow through and into the cool fluid inlet end face side of the inlet distribution manifold 6. by a centrally positioned internal diameter hollow passage bore and a thread pattern as to threadably affix in a female to male pipe relationship into the central hollow passage bore of the inlet destribution manifold 6., and also an outside diameter of threads as to threadably fit into a surface center bore of 6. the inlet distribution manifold.

A male pipe to female relationship and a centrally positioned hollow passage bored through the end faces of the inlet distribution manifold are indicated by a. in drawing FIG(s). 6, 8, 9.

Referring back now to FIG. 1 is a coolant center passage bore through 6. that allows for threadable attachment of an elongated hollow pipe 8. of FIG. 1 and also attaches by threadable means into the center inner cooling passage of 6. threaded in relation as to centrally innerfit snugly with one end of hollow pipe 8.

Now referring to 8. the inlet inner cooling pipe which is an elongated hollow pipe with pipe threads extending a portion of the distance inward between the opposing ends of the elongated hollow pipe outside surface, and also internally threaded as well on each oposing end. The inlet bell which is simply named from it's apearance indicated by 3. threadably attaches centrally into 6. center coolant passage through bore, which threadably innerfits with the center of one outer end of the inner coolant pipe 8. and attaches threadably into the centrally positioned inlet inner cooling bore area of the heat exchanger block 2. of the present invention that is indicated by reference 1. of FIG. 1 the Dolphin 5 .

Now referencing element 9. of FIG. 1 which is a pipe that forms an elongated hollow circular passage for heated fluid flowing out of 2. outlet face end and 9. is called the inner heated tube outlet pipe, with pipe threads extending a portion of the distance inward between the opposing ends of the elongated hollow pipe outside surface. Element 9. is iternally threaded on each oposing end. One threaded end of the elongated hollow pipe 9. is threadable affixed into the center cooling passage bore outlet end face of the heat exchanger heated metal block referenced as 2. in FIG. 1.

Now referencing element 5. of FIG. 1 which is a metal block with a center bore through the end faces that is also threaded as to innerfit into a threadable relationship with the other end of the elongated hollow pipe 9. This element 5. is the outlet collector distribution manifold which collects gradients of fluid temperature and then distributes them outward as the final product seperately. Outlet bell 4. has a central bore forming a hollow passage that is threaded as to innerfit into the metal block 5. outlet face center bore and is where the final product heated fluids exit, these fluids continue their flow through the center bore passage of 4. the outlet bell of the present invention and deliver the product result from using the present invention Dolphin 5.

Now referring to the preferred embodiment of FIG. 2 of the present invention and more particualarly all elements within the confined area of rectangle 12. and shows the present invention in the submerged method of operation.

Now referring to rectangle 12. of FIG. 2 and shows an embodiment of a pressurized container housing the device Dolphin 5 of the present invention as referenced as 1. The non numbered diagonal lines within the pressurized container of 12. indicate fluid, within FIG(s). 1, 2, and 12. Element 11. in FIG. 2 is the circle referenced and is indicating a gas of some type and in this embodiment and contained method of usage, the multiples of 11. reference air and are physically spaced apart in porportion to the pressure of air. As a pressure change develops higher air pressure within the container of element 12., the multiple circles 11. become viewed and referenced as less diameter and observably more in quantity within the same area. This would indicate a pressure rise within the container 12. Furthermore in reference to 10. which is indicating the exposed surface of the fluid and in this method of usage the fluid is water. The device of the present invention indicated by 1. of FIG. 1 is sealed into the container 12. airtight. Air that has been forced into the container and checked from exiting the container 12. is referenced by 11. and exerts its force onto water surface 10.

A force in inch pounds is developed by flowing air into the sealed container 12. and the pressure in inch punds can be easily extracted by a simple multiplication process of the exposed surface area of the fluid 10. times the pressure in compressed air 11. in psi (per square inch) measureable at the water surface, and that the water inlet pressure at the inlet bell 3. is directly in porportion to the air pressure 11 and the total surface of the fluid 10. exposed to that pressure from the compressed air.

The force in inch pounds of gas pressure affects the pressure of fluid applied at the inlet bell 3. opening center hollow passage and in turn forces the water up into the center cooling fluid passage bore of 3. and into the inlet face end of the center cooling passage bore of 6. the inlet distribution manifold, and continues flowing through the center cooling passage bore of 6. and into one end of an elongated hollow pipe 8. and continues flowing through the hollow passage of 8. and enteres the inlet face end center cooling fluid passage center bore of 2. the heat exchanger block inlet face end and continues flowing through the center cooling passage of 2. and through to the outlet face end of 2. As this cool water flows through the center cooling passage of 2. the heated metal block, the water becomes warm and is thermally independent of other water flowing through the outer colling passages of 2. The warm water exits the outlet face end of the heated metal block 2. center cooling passage bore as heated water.

This heated water that is now flowing outward of the sealed container 12. from the central hollow bores as outlined is blocked by a manually operated shut off valve. In reference to these bores and referenced in FIG(s). 5, 6, 7, 8, 9, & 10 as a. which indicate the isolated area that is hollowed centrally within all elements referenced as to centrally align elements 5., 6., to 2. and referenced as embodiments in 1. of FIG(s). 1, 2, & 12.

To this point in the detailed description disclosed has been simply a recital of elements and one centrally located hollow passage centered within in the longitudinal axis of the present invention. The intended best method for the assembly of the present invention as described by the inventor to this point is simply hold block 2. in one hand and screw one end of pipe 8. into it's mating bore of 2. and snugly tighten by hand. Screw one end of pipe 9. into it's mating bore of 2. and snugly tighten by hand. On the open end of 9. rotate 5. onto the male pipe end and snugly tighten by hand, then rotate 6. onto the open pipe end of 8. and slightly snug into place. All bores are threaded respectively as to innerfit with their attaching elements making this assembly process of Dolphin 5 a manually hand assembled product with no wrenches needed for assembly to this point.

Referring to FIG. 3 is an end elevational view of elements 12. the container outer housing, element heat exchanger 2. and the stabalizing tubes retaining the heat exchanger block of 2. centrally within the housing of 12.These stabalizing tubes as referenced as 14. are held removably stationary by the jam nuts 13. FIG. 4 shows a side elevational view of the element heat exchanger 2. of the present invention and the locations of DC heating element(s) 15. These heating elements are called glow plugs in every day life and are available anywhere auto supply parts are sold making them available and inexpensive for the end user of the heat exchanger 2. of the present invention. These glow plugs of 15. in FIG. 4 are positioned centrally within each flat of the eight sided block of metal 2. and called the heat exchanger of the present invention. As DC voltage is supplied to one terminal and the circuit connects current and resistance to result in thermal heat energy. The stainless steel heat exchanger rapidly conducts the heat energy into the metal of the body of block 2. This type of configuration of glow plugs 15. on location from centers of flats allows a thickness change in the heated metal block without any changes to the positioning of the glow plugs referenced by 15. and in fact the total thickness of the heat exchanger block can be made as thin as the diameter of the glow plug heating elements of 15.

Now referring to FIG. 5 which is shown an embodiment of element 2. the heated metal block of the present invention and more specifically called the heat exchanger in it's application within the present invention, and this schematical embodiment details a pattern in which bores or holes are placed through the metal block mass of 2. and more in detail these holes are referred to as bores due to the anticipated machinery to be used in the manufacturing of the elements of the present invention. A bore provides a smooth inner surface for rubber o-rings to seal for example and a hole drilled does not have the smooth inner bore precision diameter as the bore however both provide a hollow passage that fluids could flow within. This is for clarity in the detailed description as to completely relay the specifics of the present invention regarding best method to manufacture according to the inventor of the present invention which is critical for the correct operation of the product Dolphin 5 as anticipated by the inventor.

Referring now to Fig. 5 and specifically to 2a. of which is the central bore of the heat exchanger 2. of the present invention and, is the primary locator referencing all other holes and bores from it's centerline of which fluid is allowed to flow in confined passages saturating through from the inlet cool end face of the heat exchanger block 2. and out of the warmer outlet face.

The central bore of 2. centeline cross is the locator reference point for circular patterns outward the center. These circular patterns are polar arrays of bores and holes as hollow passages to allow fluid to flow within. These circular patterns are identified and referenced as b, c, d, e, f, and have various functions in fluid flow dynamics to make the present invention of 1. function as anticipated by the inventor.

Referring now to FIG. 5 and in specific is 2b. and further referenced as circular polar array band b, and located a specific distance outward from centercross area a. This is specific for the sole purpose of simplicity in manufacturing reducing costs to manufacture. A simple hand operated mill with a simple mechanical indexer and a machinist with garage level machine skills can manufacture and use the present invention Dolphin 5 freely.

Referring now to polar array band c, which includes holes with machined bores and are used as singular passages for confined fluid to flow into the inlet face ports and through to the outlet end face ports within the heat exchanger 2. of the present invention. The polar array of machined bores are referenced as 2c. and are intended for the cooler fluid to flow into, within and through the heated metal block heat exchanger 2. and exit through the outlet bell 4. of the present invention Dolphin 5 as the end product of heated fluid of the present invention Dolphin 5 that is referenced as 1. in FIG(s). 1, 2, and 12.

Now referencing the polar array of 2e.L & 2e.R which are also bores in a polar array that define passages for cooler fluid to flow into the inlet face end of heated metal block 2.

These bores are machined and are used as singular passages for confined fluid to flow into and through to the outlet end face within the heat exchanger 2. of the present invention. The polar array of machined bores are referenced as 2e.L and 2e.R and are intended for the fluid to flow within and through to exit as the heated fluid end product of the present invention Dolphin 5.

Referenced polar arrays of bores within the circular bands of c & e are fluid end product flow passages. Now referencing polar array bands of 2b, & 2d, and are the holes that are intended for solid fuel of some type that creates thermal heat energy from a chemical exothermic reaction. These holes of polar array circular bands funvtion as a secondary backup for thermal heat energy to heat the metal block of 2. the heat exchanger of the present invention in the event there is no DC electricity to power the heating elements required to produce sufficient thermal heat energy to heat the metal block heat exchanger 2. of the present invention Dolphin 5 and further referenced as 1. of FIG. 1. Polar array 2f are holes for an attaching means of stabalizing the physical product fluid heater of the present invention and used as a secondary mounting system for stabalizing and attaching accessories to the hear exchanger 2.

Now referring to FIG. 6 the inlet distribution manifold and in specific referenced as element 6. which is a metal block. The metal block of 6. is saturated with holes bores and passages for adjoining commonly to one another, as to achieve an equal distribution of fluid flowing within the hollow passages of ports a, c, and e within the inlet distribution manifold block 6.

The product Dolphin 5 as referenced in the preferred embodiment of 1. of FIG.1, element 6. and within it's design matrix of hollow passages, provides a metal block functioning as a distribution manifold that allows a combined flow of inlet fluid to be distributed into individual seperated hollow passages like a conduit directed outward and into the inlet face end of heat exchanger block 2. of FIG. 1, and as cool fluid is forced into the inlet bell 3. the cool fluid flows into the center hollow passage of area a. within the center of the inlet distribution manifold 6. inlet face end and outward of ports a, c, and e and flows through hollow conduit passages of 7 and into the inlet end face ports of 2., 2c. and 2e. the hollow passages that provide a path for the confined fluid to flow into,within the heat exchanger 2. and outward from the outlet face end of heat exchanger block 2. Now referring back to FIG. 5 and more specifically to areas within polar array circular bands of hollow passages 2c., and 2e. of which the hollow conduit passages extend from the outlet face end of 2. and into element 5. another metal block that is referenced in FIG. 7.

Referring now to FIG. 7 element 5. and in specific to areas within the circularly centered collector bands of the holes positioned within a circular paths formed as to reduce the need for layout for machining and the usage of practicle general machine tools that are hand operatedfor manufacturing, such as a general small hand mill and a manually operated indexer. An indexer is a rotatable platform that has degrees indexed within the outer circumference of a stationary table and a rotateable platform. The 3 metal blocks that comprise the present invention fluid heater are all designed as to allow anyone moderately skilled in operating a hand mill to easily build one model of the present invention and use it for themselves.

Furthermore referring back now to FIG. 7 element 5. collector band c. and in specific the polar array of holes of which are on a circular centerline and inner connecting with the hollow conduit passages that correspond with the 2c. bands and the 6c. cooling fluid passages. The band c. polar arrays of hollow passages that contain the heated fluid coming from the outlet face end of 2 are collected within the porting holes and bores of the hollow passages that allow the fluid to flow into a passage way and collecting heated fluid within that heated fluid band area and specifically indicated in reference c. of FIG. 7. All three hollow passages indicated as a, c, and e are seperately collected and distributed individually by the end user.

Referring now to FIG. 8 and in specific the schematical view of the hollow conduit fluid flow paths of a, c, and e and an embodiment of the present invention as reference 1. of FIG(s) 1, 2, and 12.

As the fluid is cool upon startup of the fluid heating method of the present invention a potential exists at the inlet distribution manifold schematically shown in FIG. 8 and in specific shows 3. the inlet distribution manifold and is the inlet passage of the cool volume of fluid exerting potential in the form of pressure and entering into the center hollow passage a of element 3., 6., 2., 5., and 4. the outlet collector distribution bell. Inlet distribution manifold 6., and the outlet collector distribution manifold bores, holes, and hollow passages are sycronis with one another both with reference to the radial placement of hollow areas a, c, and e polar array circular patterns and location, based upon the hollow passages bored within the heat exchanger block of 2. a, c, and e, and further all passage bore location references are based into the inlet face end of heat exchanger block 2. and furthered in exiting from the heat exchanger block hollow heated passages and referring to FIG. 11 and specifically to refernce 6-2c. and 5-2c.

Therefore after a potential of fluid flow is applied at inlet bell 3. the fluid begins to flow inward into the center cooling passage a, and continuing the flow of fluid into the hollow elongated pipe of 8. and continues flowing into and through heat exchanger block 2. center cooling hollow passage and referenced as a.

The cool fluid is then expected to become warmer as it cools the heat exchanger block but is blocked at r2 until the thermal sensor valve begins to open as the fluid becomes warmer and further allowing the fluid to flow past the center cooling passage a of heat exchanger 2. As the specific temeperature is achieved and regulated by a thermal sensitive variable opening valve that is mechanically forced to open and allowing the flow potential of heated fluid into the elongated hollow pipe 9. the heated outlet pipe.

The blocked fluid that is below the temperature causes the temperature sensitive valve r2 to remain closed to fluid flow and that the valve block has a sized hollow passage that allows a very small amount of cool fluid to pass through and flow into the outlet tube 9. This hole is for air bleeding purposes and is confined internally within the center bore in the outlet face end of the heat exchanger block 2. and protrudes into the outlet pipe 9. that removably threads into the heat exchanger block.

The larger volume of cool fluid that is blocked from flowing past valve r2, backpressures into the outlet end face of the inlet distribution manifold 3. This cooling fluid remains blocked at the outlet face end of the heat exchanger block of 2. and remains confined within area 2a. IN, producing an additional flow potential at porting passages 6-2c. Area 2a, 2c, and 2e, IN have been referred to as located on the inlet face end of the heat exchanger block 2. As r2 opens, a pressure drop in fluid (Δp) is observed within the hollow cooling passage a, and inlet fluid potential flow increases causing a backpressure situation at 3. IN. forcing cooler fluid outward and into porting areas e. When the fluid temperature increases upward that is confined within the center hollow passage a and in specific the OUT area of a. causes another temerature sensitive flow restrictor valve to be reacted upon by the hot fluid, this valve referenced as r3 is a normally open to flow shutoff valve however when heated fluid reaches a temperature which is considered to hot for showering water this valve reacts and closes causing a fluid Δp to be observed in the out end passage of 4. center heated warm fluid outlet passage from the outlet collector distribution manifold 5. center hollow passage indicated by a. and backpressures area a with hot fluid and into the outlet end face of 2. which in turn backpressures cooler fluid with more flow potential to flow the higher volume of cooler fluid into inlet distribution manifold ports c, and e, and allowed to flow into the hotter fluid cavity by a humanly mechanical open close valve not shown that is located past the outlet bell 4.

Referring now to the preferred schematical embodiments of FIG. 9 and specifically within the preferred embodiments 2. the heat exchanger and 6. the inlet distribution manifold of which show schematical outlines of the shapes of two eight sided elements. In reference from point 2. to reference point 6. is a clockwise rotation of 157.5 degrees and specifically the difference of 22.5 degrees between point locations from the reference heat exchanger block of 2. to the points of 6. allowing the compact nature to be achieved by the assembly of the present invention article of manufacture 1. FIG. 9 shows the schematical porting configurations of the assembled inlet end faces of 2. and 6. combined porting of the hollow passages that the confined fluid is provided a path to flow within.

Referring now to the preferred schematical embodiments of FIG. 10 and specifically within the preferred embodiments 2. the heat exchanger and 5. the outlet collector distribution manifold of which show schematical outlines of the shapes of two eight sided elements. In reference from point 2. to reference point 5. is a clockwise rotation of 157.5 degrees and specifically the difference of 22.5 degrees between point locations from the reference heat exchanger block of 2. to the points of 5. allowing the compact nature to be achieved by the assembly of the present invention article of manufacture 1.

FIG. 10 shows the schematical porting configurations of the assembled inlet end faces of 2. and 5. combined porting of the hollow passages that the confined fluid is provided a path to flow within.

Now referring to FIG. 11 which is a porportionally scaled view of all elements that the present invention fluid heater is comprised of and in specific shows a cube shape with the dimensions in inches. The entire product of the present invention with all elements as embodied preferably in FIG. 1 as element 1. can be located within a 3 inch by 8.5 inch by 9 inch cubical for easy storage and portability.

Referring now to FIG. 12 and specifically to the article of manufacture fluid heater of the present invention and referenced as 1. shows the three methods of usage which are S. the submerged method, G. the gravity method, and P. the pressure method that is conventionally accepted within the household plumbing.

To assemble the present invention fluid heater of the present invention referenced by 1. in embodiment FIG. 1 and written upon within this provisional patent application, an individual wanting to learn entry level skills is a prime candidate for a kit assembly, whereas the heat exchanger block 2. is the primary part of this invention as perceived by the inventor and by screwing one threaded end of the elongated hollow tube of 8. into the inlet side of the heat exchanger block 2. that matches the diameter of the inlet inner cooling tube end, tube 9. can then be rotated into the out face end of 2. at the inner cooling passage a. outlet. Then the inlet distribution manifold 6. is hand tightened to it's open outlet end by rotating it onto the inlet inner cooling pipe open threaded end. The outlet distribution manifold 5. is then rotated onto the open end of the inner cooling tube outlet open end of 9. and also hand tightened. The inlet bell 3. is then rotated into the open end of the inlet distribution manifold center inner cooling port and hand tightened.

The assemblies are then snugged together by rotating the inlet and outlet bells simutaneously in a clockwise direction until the inlet and outlet distribution manifolds porting is aligned at 22.5 degrees in relation to outer flats to heat exchanger 2. flat positions. This aligns all ports and allows for the outer cooling tube arrays to be installed. The product fluid heater is complete however when a container is used such as element 12. in FIG. 2 there are other steps to take for the completion of the final product embodiment as exampled in FIG. 2, and more specifically element 1.

There are several variations of methods used for the product fluid heater of the present invention.

Referring to Fig. 4 element 15. the heater element is an Autolite glow plug. This particular glow plug is manufactured for a Ford product and it may fit into other manufacturers products, however there is intended usage for the U.S. military and therefore 15. heating element can be substututed to a Hummer glow plug which is readily available and retails for around 10 to 15 U.S. dollars making it easy to replace 15. the DC heating element whenever the need arises.

The 15. glow plug that fits into the cylinder head of a Hummer engine is a Bosh brand #80034, and the Dodge glow plug is a #CH-48 Champion brand, and the GMC glow plug an #AC61G and is the AC Delco brand. These heating elements are sold by the millions which makes them very easy to purchase and inexpensive in the 10 to 20 dollar range.

This is very important in an emergency situation where scavenging parts may be the only replacement source for heating elements.

It is thought that the fluid heater and methods of usage of the present invention and many of its attendant advantages will be understood from the foregoing description and it will be apparent that various changes may be made in the form, construction and arrangement of the parts thereof without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form herein described being merely a preferred or exemplary embodiment thereof.

CLAIM(S)

I claim:

1. An article of manufacture for producing hot fluid quickly, comprising:

(a) means for cooling a heated metal block;

(b) means of dispencing said cooling means.

2. Fluid heater as recited in claim 1, wherein said means for cooling a heated metal block includes:

a pressurized cooling fluid;

an inlet bell having a hole;

an inlet manifold having a plurality of holes;

a heated metal block having a plurality of holes;

3. Fluid heater as recited in claim 1, wherein said means for dispencing said cooling means includes:

an outlet manifold having a plurality of holes; and

an outlet bell having a hole.

4. Fluid heater as recited in claim 2, wherein said means for cooling a heated metal block includes a pressurized cooling fluid including:

a container sealed airtight; and

the cooling fluid chosen by the end user.

5. Fluid heater as recited in claim 2, wherein said means for cooling a heated metal block includes an inlet bell having a hole includes:

a means for attaching the said inlet manifold onto the heated metal block and having a hole centrally bored through the said inlet bell.

6. Fluid heater as recited in claim 2, wherein said means for cooling a metal block includes an inlet manifold having a plurality of holes which includes;

a polar array of 8 holes positioned within a defined circular path and bored partially through the thickness and the circular path is defined and positioned centrally with a specific radius in the inner end face of the said manifold;

a central bore of a specific diameter through and positioned within the center of the said manifold as to allow coolant fluid to flow through; and

a circumferal array of 16 holes drilled inward as to adjoin porting for the distribution outward of cooling fluid through 24 cooling passages.

7. Fluid heater as recited in claim 2, wherein said means for cooling a heated metal block includes a heated metal block having a plurality of holes including:

a central bore of a specific diameter through and positioned within the center of the said heated metal block as to allow coolant fluid to flow through;

5 polar arrays of holes bored and centered outward from the center of the heated metal block end faces;

2 polar arrays of holes bored and centerd outward from the center of the heated metal block end faces are used for coolant fluid and there are 24 total; and

a circumferal array of 8 holes for the insertion of the heating elements.

8. Fluid heater as recited in claim 3, wherein said means for dispencing said coolant means includes an outlet manifold having a plurality of holes includes: a central bore of a specific diameter through and positioned within the center of the said outlet manifold as to allow heated fluid to flow out of the 3 polar arrays of hollow passages that are bored in a circular pattern and are centered outward circularly from the center of the outlet manifold end faces and are used for distributing fluid with multiple temperature gradients and there are 24 total used for heated coolant;

and an outward circumferal array of 16 holes as to allow the flow of heated coolant outward and is separate from the other polar array of heated coolant passages whereas an array of 40 heated coolant passage holes and is divided in two bands and including the center coolant passage the outlet is seperated 3 ways in circular band centerlines allowing final mixing of fluid temperature gradients to achieve the perfect temperature of the outlet fluid.

9. Fluid heater as recited in claim 3, wherein said means for dispencing said cooling means includes an outlet bell having a hole including:

a means for attaching the said outlet manifold onto the heated metal block and having a hole centrally bored through the said outlet bell; and

a means to dispence the heated fluid outward while keeping the fluids from the three heated coolant bands seperated and released by choice individually.

10. Fluid heater as recited in claim 4, whereas said means for cooling a heated metal block includes a pressurized cooling fluid and including two additional means for supply fluid ; and

a means to use a gravity method for supply fluid; and

a means to use pressurized fluid from a conventional pipe plumbing system found in most all households.

ABSTRACT OF THE DISCLOSURE

A Fluid Heater that; is mobile and lightweight for people living in geographically isolated areas is comprised of electrically conducting elements that translate DC electrical current flow into heat directly through conduction. The thermal heat is translated into a metal block housing, and further into an outer polar array of isolated fluid passages, and an isolated singular center cooling passage. Water or other fluid types are forced to enter into a restricted inlet manifold and flow into multiple isolated passages through the heated block. The cool fluid flow is blocked at the outlet of the heated block center cooling tube passage, and as a result the fluid back pressures within the center outlet port of the inlet distribution manifold, and in turn distributes back-pressured fluid into the outer cooling passage arrays of the inlet manifold and the cool fluid flows into the outer cooling tube bores in the heat exchanger block. The fluid continues through the external array of tubing thru the outer heat exchanger cooling ports and into the outer heated ports of the outlet collector distribution manifold and are separated from the internal cooling tube hollow passage that is centrally located within all three metal blocks. This fluid flow separation allows a simultaneous differential in water outlet temperatures providing hot water for a beverage, or lower temperature water for showering and for the cleaning of a human body or animal as well as cooler fluid. The present invention Dolphin 5 can be used efficiently by three independent methods.