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(54) **PERSONAL COOLING SYSTEM**

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(57) **ABSTRACT**

This invention relates to a device for personal cooling, warming and general hygiene. More particularly, it relates to the use of thermo-electric technology for personal cooling or warming to give relief from heat or chills and perspiration to anyone, anywhere. The system of this invention comprises a thermo-electric module that which in turn comprises a solid-state thermo-electric chip. The system also includes a heat sink, a cold sink and a direct current power source a well as a switch and associated hardware.

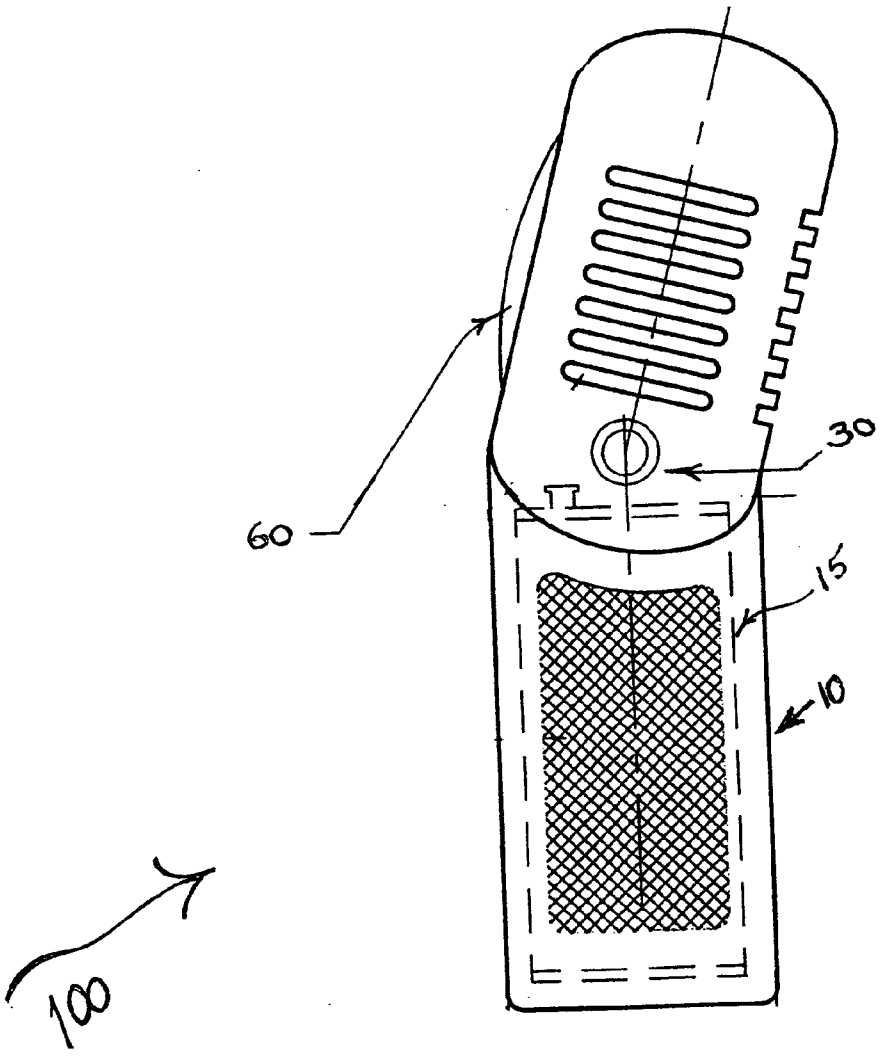
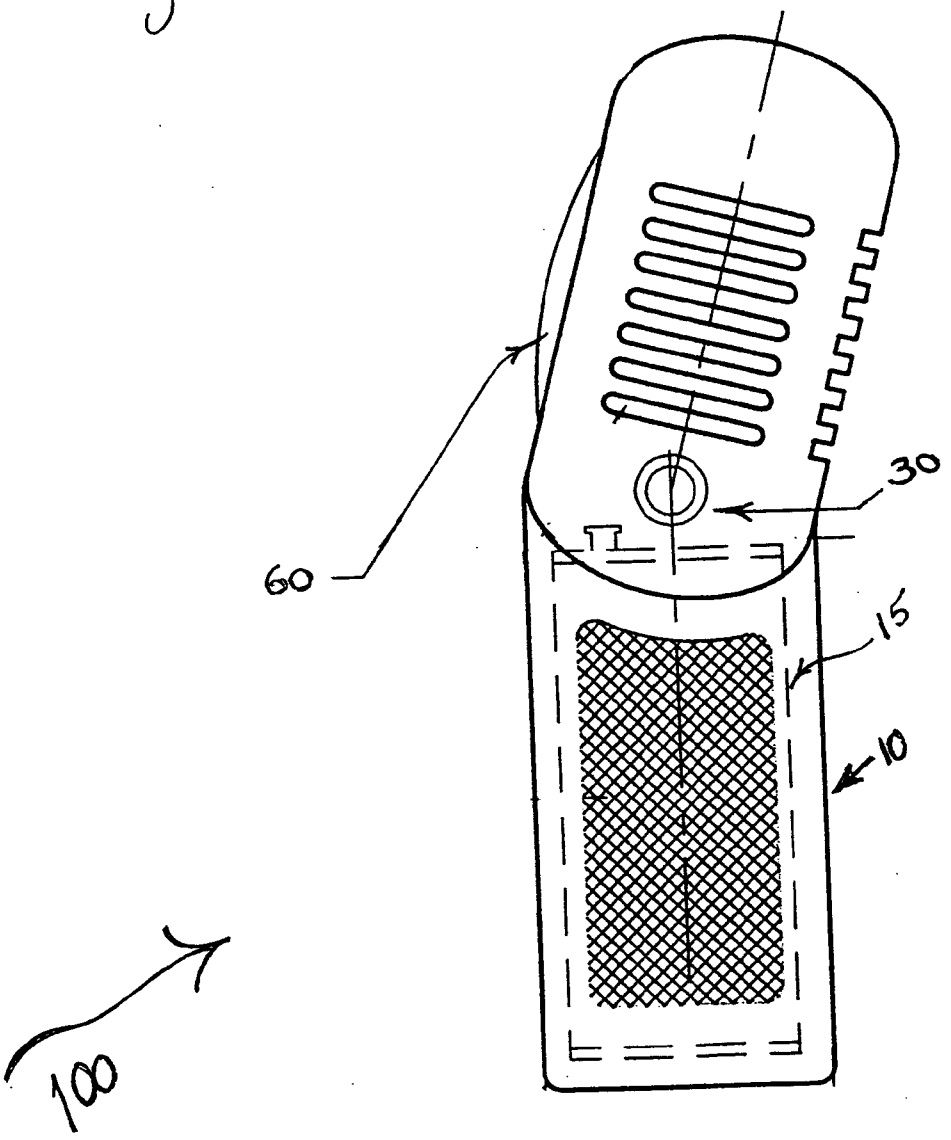


Fig. 1



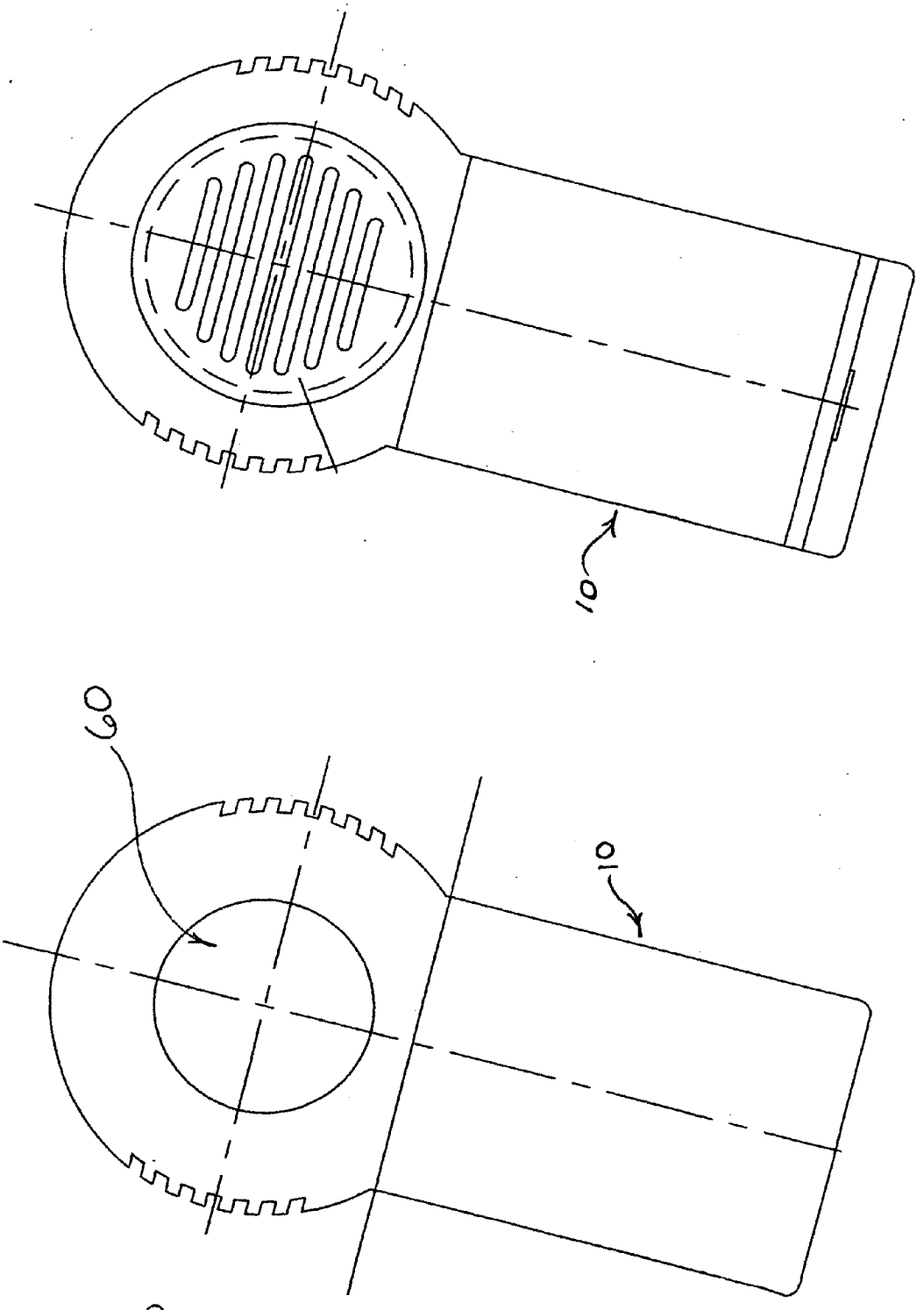



Fig. 2

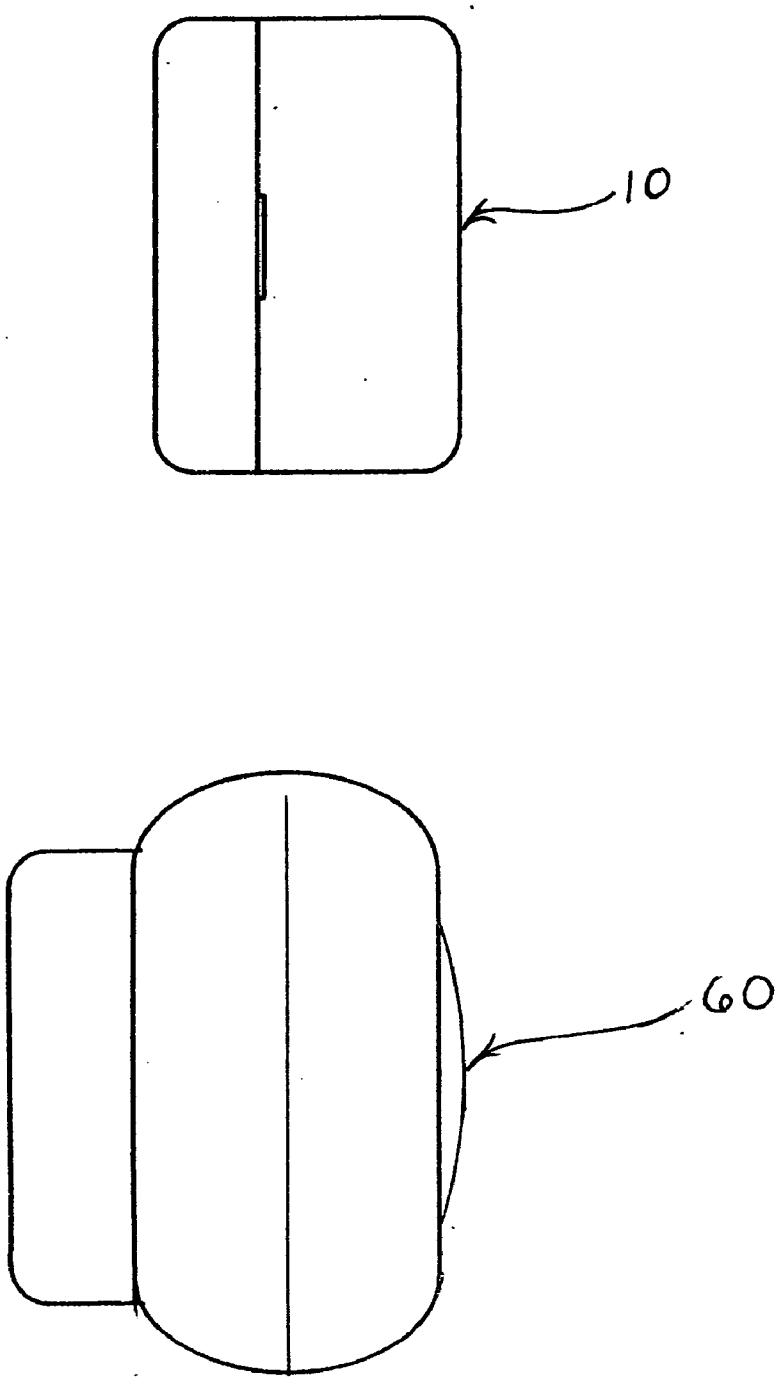



Fig. 3

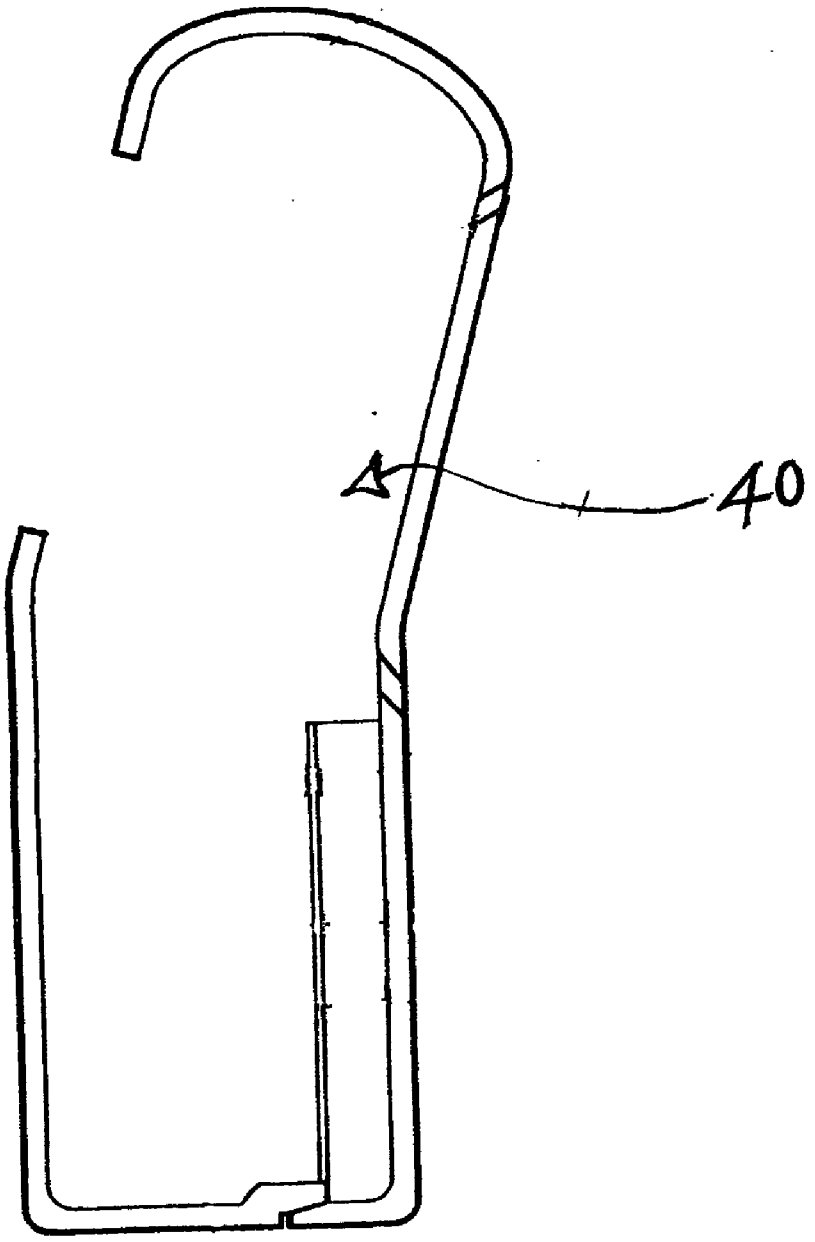



Fig. 4

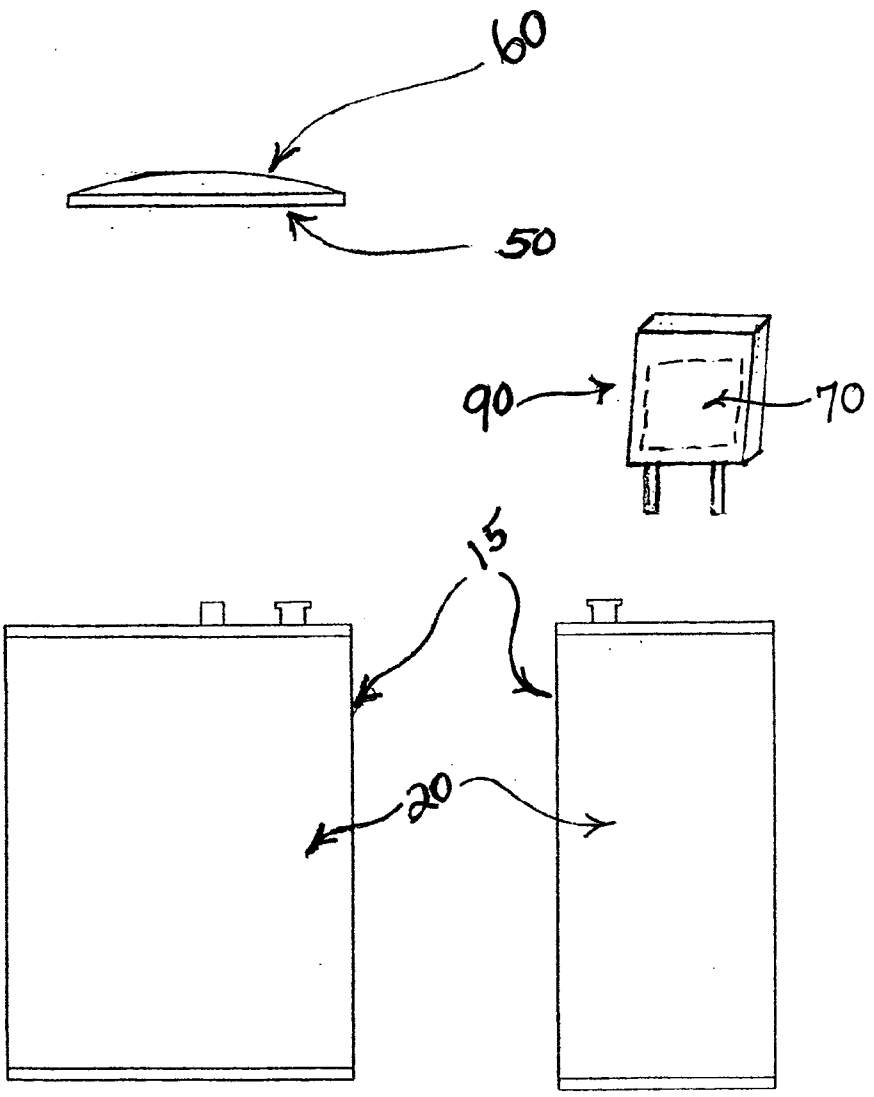



Fig. 5

# PERSONAL COOLING SYSTEM

## RELATED DOCUMENTS

[0001] No related documents or priorities are claimed.

## BACKGROUND

[0002] This invention relates to a device for personal hygiene and for comfort. More particularly, it relates to the use of thermo-electric technology in a compact, portable, pocket-sized device for personal cooling or warming to give relief from hot flashes/overheat or chills for anyone, anywhere.

## THE PROBLEM

[0003] Portable personal cooling devices (for example a battery-operated hand-held fans, ice bags or chemical cooling or heating packs) are of limited effectiveness and therefore, not very practical when one considers how cumbersome and inconvenient they are. The purpose of this invention is to provide a personal cooling/warming system that uses solid-state electronics and is, therefore compact, fast, efficient and resilient, requiring no compressors, CFC gases or coolant coils.

[0004] When people exert themselves in play or work, their body temperatures rapidly rise. Additionally, some physiological conditions, for example, female menopause, can cause frequent, uncomfortable sensations of chilling or overheat ("hot flashes") accompanied by profuse perspiration. Dealing with these can be difficult and inconvenient, particularly in public places or while on the job.

[0005] With respect to "hot-flashes," it is common knowledge that they are often concentrated at nodes in the vicinity of points where arteries pass near the surface of the skin. (These are most often identified as being the points where pulse can be measured.) If these nodes are cooled, then relief is quickly experienced and the rapid circulation of cooled blood carries on to the brain. With this quick rush of soothing relief also often comes a disproportionately calming effect leaving the user more relaxed and confident.

[0006] However, consistent and convenient access to such relief has been difficult. Ice cubes or chemical packs have been used to cool nodal points, but they are, as mentioned, hard to transport or preserve and can be messy or bulky to use. In example, one would be hard pressed to use bulky cooling packs or melting ice cubes while participating in sports, riding a train, giving a public presentation, or even merely walking on the street.

[0007] This invention provides the relief desired while overcoming all the above disadvantages of prior art.

## SUMMARY

[0008] This invention comprises a thermo-electric module that, in turn, comprises a solid-state thermo-electric chip. The invention also comprises a heat-sink, a "cold-sink" and a direct current power source as well as a switch and associated hardware.

[0009] The preferred embodiment uses two "D" size dry cells as a direct current power source incased in a housing attached to a head containing the thermo-electric module. The housing also serves as a convenient handle.

## PRIOR ART

[0010] The primary forms of prior art are battery operated cooling fans, cooling pads and hot pads.

[0011] U.S. Pat. No. 6,125,636, issued to Taylor and Fai Lau, teaches a thermo-voltaic device mounted on a headband such that it can be affixed in the center of the forehead. The device is powered and controlled by a self-contained battery source with reversible polarity, allowing it to heat or cool the brow as the user desires. This invention is designed to be used to cool only one point on the body (the forehead) and must be used in an overt, rather than discrete, manner. Although it might be appropriate for use during sporting activities, it would not be acceptable in most social situations.

[0012] U.S. Pat. No. 5,956,963, issued to Lerner teaches a chemical cooling unit to be worn on the wrist. This system is not controllable and is designed for use upon only one point on the body (the wrist). The chemical cooling agent may be used only once, after which it must be discarded and replaced. It cannot produce warming energy. As with the previously described (Taylor) device, it must be used in an overt, rather than discrete manner, and would not be appropriate in more formal social situations.

[0013] None of the prior art overcomes the difficulties mentioned in "PROBLEMS" above, or provides all the features or meets the objectives of this system as enumerated below.

[0014] Objectives

[0015] 1. One objective of this invention is to provide a method, device and a system for personal hygiene and cooling/heating.

[0016] 2. Another objective of this invention is to provide a system as described in objective 1 that is solid state, having virtually no moving parts.

[0017] 3. Another objective of this invention is to provide a system as described in objective 1 that it be long lasting and durable.

[0018] 4. Another objective of this invention is to provide a system as described in objective 1 that is easy to use, store and carry in a purse or pocket, or on a belt like a pager.

[0019] 5. Another objective of this invention is to provide a system as described in objective 1 the use of which is intuitive, requiring little instruction or training.

[0020] 6. Another objective of this invention is to provide a system as described in objective 1 that is safe in both normal and extreme or accidental situations.

[0021] 7. Another objective of this invention is to provide a system as described in objective 1 that is environmentally friendly, and to the extent possible, biodegradable when discarded as refuse.

[0022] 8. Another objective of this invention is to provide a system as described in objective 1 that meets all federal, state, and local guidelines, recommendations and standards, public or private with respect to safety, quality, energy consumption and environmental friendliness.

[0023] 9. Another objective of this invention is to provide a system as described in objective 1 that provides quick relief from heat and perspiration or chills.

[0024] 10. Another objective of this invention is to provide a system as described in objective 1 that is constructed of modular parts and units that can easily interface with each other.

[0025] 11. Another objective of this invention is to provide a system as described in objective 1 that is suitable as an accessory for OEM.

[0026] 12.Another objective of this invention is to provide a system as described in objective 1 that is suitable for use virtually anywhere.

[0027] 13. Another objective of this invention is to provide a system as described in objective 1 that is suitable for use by anyone at all.

[0028] 14. Another objective of this invention is to provide a system as described in objective 1 that is suitable for gift giving.

[0029] 15. Another objective of this invention is to provide a system as described in objective 1 that is suitable for promotional gifts complete with a message from the sponsor.

[0030] 16. Another objective of this invention is to provide a system as described in objective 1 that is of high esthetic quality and appealing appearance.

[0031] 17. Another objective of this invention is to provide a system as described in objective 1 that has a small footprint.

[0032] 18. Another objective of this invention is to provide a system as described in objective 1 that is capable of cooling to sub-zero temperatures.

[0033] Other objectives of this invention reside in its simplicity, elegance of design, ease of manufacture, service and use and even esthetics, as will become apparent from the following brief description of the drawings and concomitant description.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0034] a). **FIG. 1** is a side view of the invention.

[0035] b). **FIG. 2** displays front and back views thereof.

[0036] c). **FIG. 3** shows plan views from the top and from the bottom.

[0037] d). **FIG. 4** is a cut-away side view of this invention.

[0038] e). **FIG. 5** shows the thermo-electric module, solid-state chip, "cold-sink" and power source.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0039] The compact, convenient and solid state personal cooling/warming system of this invention as shown in the drawings wherein like numerals represent like parts throughout the several views, generally disclosed the invention in **FIGS. 1 through 5**.

[0040] The overall system **100** of this invention comprises a thermo-electric module **90** that, in turn, comprises a solid-state thermo-electric chip **70**. The system also includes a heat sink **40** and a "cold sink"**60**, a direct current power source **15** as well as a switch **30** and standard but essential hardware means of connecting, interfacing and integrating the several parts **80** (not illustrated).

[0041] The preferred embodiment uses two "D" sized cells **20** for the direct current power source **15** in a rounded housing **10** that may, optionally, be foldable via a hinge **55** over the thermo-electric module **90**. The housing **10** also serves as a convenient handle.

[0042] **FIG. 3** shows the interface between the thermo-electric module's solid state chip and the "cold sink" in greater detail. In the preferred embodiment, the inventor also used Melcor model CP0.8-71-06L ™ as the thermo-electric chip **70**. The approximate cooling area of the device is forty-thousand square millimeters or sixty square inches.

[0043] The solid state electronic cooling thermo-electric chip is 21st Century technology. Without bulky compressors, CFC gases and coils, the chip cools. It can cool up to sub-zero temperatures and beyond. They can be designed to various BTU capacities. Their life is at least 200,000 hours, guaranteed.

[0044] A 30 to 50 BTU thermo-electric chip is attached to an anodized aluminum/copper heat-sink by the help of thermal epoxy. A copper or aluminum button ("cold-sink") having a 1 to 2 inch diameter is in contact with the cold side of the chip. The chip is energized by dry cells (conventional or rechargeable) **20** housed in the handle **10**. The entire apparatus is enclosed in a "hair brush" like mold. The switch **30** extends about ⅛ of an inch on one side and the heat sink is exposed to ambient air on the other side. A slide switch activates the UBKool™ personal cooling system of this invention.

[0045] The use and operation of this device is simple and intuitive. The operator merely unfolds the device, switches it on and touches it to the desired area of the body or gently rubs it over the area for effective conduction of heat away from the skin.

[0046] The super cold button ("cold-sink") may be gently pressed against any spot on the human body to effectively and efficiently cool that particular area. Yet, the UBKool is so small that it can be carried in a purse or pocket or worn on the belt like a cell phone.

[0047] The following description is intended to be non-limiting. The broad simplicity of this design makes it difficult to "design around." Nonetheless, many changes may be made to this design without deviating from the spirit of the invention. Examples of such variations contemplated include the following:

[0048] 1. The shape and size of material of the various components may be modified.

[0049] 2. A different thermo-electric module may be used.

[0050] 3. The color, aesthetics and materials may be enhanced or varied.

[0051] 4. Additional complimentary functions and features may be added.

[0052] 5. A more economical version of the device may be adapted with an informational or advertising message for promotional gifts.

[0053] 6. A different type of handle may be provided.

[0054] Other changes such as aesthetic alterations and substitution of newer materials as they become available, that perform substantially the same function in substantially the same manner with substantially the same result may be made without deviating from the spirit of the invention.

[0055] The following is a listing of the components using the preferred embodiment arranged in ascending order of the reference numerals for convenient use of the reader.

[0056] **10**=housing and handle

[0057] **15**=direct current power source

[0058] **20**=cells

[0059] **30**=switch

[0060] **40**=heat sink

[0061] **50**=thermo-electric module holder

[0062] **55**=optional hinge between handle **10** and module holder **50**

[0063] **60**="cold sink" aluminum plate

[0064] **70**=thermo-electric chip

[0065] **80**=hardware such as screws, washers, nuts, etc. (not illustrated)

[0066] **90**=thermo-electric module

[0067] **100**=personal cooling system generally (in total)

## DEFINITIONS AND ACRONYMS

[0068] Great care has been taken to use words according to their conventional dictionary definitions. Nevertheless, the following definitions are included below for clarity.

[0069] 3D=Three Dimensional

[0070] CFC=Carbon Fluoro-Carbon gases

[0071] DIY=Do It Yourself

[0072] Integrated=Two entities combined such that they act as one

[0073] Interface=Junction between two dissimilar entities

[0074] Isometric=Characteristic of drawings such that they display equality of dimensions with the prototype after which.

[0075] OEM=Original Equipment Manufacturer

[0076] Symmetrical=Characteristic of the shape of an object or integrated entity such that it can be split along a given axis and the two halves with form mirror images of each other.

[0077] Thermo-electric=Characteristic of a device whereby it has both thermal and electrical properties

[0078] While this invention has been described with reference to illustrative embodiments, this description is not intended to be construed in a limiting sense. Various modifications and combinations of the illustrative embodiments as well as other embodiments of the invention will be apparent to a person of average skill in the art upon reference to this description. It is, therefore, contemplated that the appended claim(s) cover any such modifications, embodiments as fall within the true scope of this invention.

**1**. A personal cooling/warming system comprising:

a thermo-electric module further comprising a solid state thermo-electric integrated chip;

a cold sink connected to said solid state thermo-electric integrated circuit chip,

a direct current source connected to said thermo-electric module;

a heat sink connected to said thermo-electric module;

a thermally conductive pad thermodynamically contacting said heat sink whereby said pad comes into contact with the skin of a user; and

a switch connected in series with said direct current source.

**2**. The personal cooling/warming system of claim 1 wherein said direct current source comprises pairs of cells in a round first housing which also may serve as a foldable handle via a hinge connected between said first housing and a second rectangular housing around the said thermo-electro module.

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