

Multi-Stage Water Treatment and Enrichment Method and Apparatus

Patent US 20120091070 A1 ABSTRACT

<http://www.google.com/patents/US20120091070>

Some embodiments provide a **multi-stage water treatment and enrichment apparatus** with an upper water reservoir, a lower water reservoir, a cartridge that is composed of a porous filter and multiple seep through chambers that treat and enrich water, a water dispensing tap valve, and a **preservation cartridge**. **Collectively**, these components function (1) to provide multiple levels of treatment including filtration and purification, (2) **to provide enrichment of water via mineralization, magnetization, softening, and alkalization**, (3) **to provide for customizability of the treatment and enrichment** so that different consumers can adapt these processes to satisfy their own personal preferences, (4) to provide an apparatus that operates **using gravitational forces and without the need for external power or pressure to perform the multi-stage treatment and enrichment of water**, and (5) to provide an **inexpensive apparatus that is suitable for primary usage in the home**.

~ The Patents 21 ~ Unique Claims

1. A water treatment and enrichment apparatus comprising:

A. a **first water reservoir** for **receiving** water that **is to be** treated and enriched;

B. a **second water reservoir** for **storing** treated and enriched water; and

C. a **cartridge** through which water from the first water reservoir is treated and enriched before being deposited in the second water reservoir, wherein the cartridge comprises **at least** (i) a **first chamber for purifying water to remove contaminants from the water in the first water reservoir** and (ii) a **second chamber for enriching water passing from the first chamber with at least one mineral**.

2. The water treatment and enrichment apparatus of claim 1 further comprising a **ceramic filter** with a porous outer surface and a hollow inner cavity, said porous outer surface comprising a plurality of pores that are **less than 0.4 microns** in size and **that filter contaminants from water** in the first water reservoir by **preventing passage of said contaminants** through the outer surface into the hollow inner cavity, **wherein filtered water from the inner cavity flows to the first chamber of said cartridge**.

3. The water treatment and enrichment apparatus of claim 1 further comprising a **tap valve** for dispensing water from the

second reservoir for drinking, wherein the tap valve **comprises a magnet** through which water passes through when being dispensed, said **magnet for magnetizing the water as it is dispensed**.

4. The water treatment and enrichment apparatus of claim 1 further comprising a **preservation cartridge** for preserving the quality of the water in the second water reservoir **by inhibiting growth of microorganisms**, wherein the preservation cartridge comprises (i) **particles of a mineral that are toxic to said microorganisms** and (ii) a **plurality of openings through which water contacts said particles**.

5. The water treatment and enrichment apparatus of claim 4, wherein the **mineral** comprises at least one of **zeolites and other mineral stones** that contain properties that are **toxic to organic contaminants**.

6. The water treatment and enrichment apparatus of claim 1, wherein the first chamber comprises a plurality of **activated carbon particles** that **purify water** that comes into contact with said **activated carbon particles**, and wherein the second chamber comprises a **plurality of particles of a mineral** from which an amount of the mineral is **infused with water** that comes into contact with said **mineral particles**.

7. The water treatment and enrichment apparatus of claim 6, wherein the amount of the mineral that is **infused with the water** modifies at least one of **alkalinity** of the water, **taste** of the water, and **softness** of the water.

8. The water treatment and enrichment apparatus of claim 6, wherein the **mineral particles are particles of a first mineral**, wherein the cartridge further comprises a **third chamber comprising a plurality of particles of a second mineral from which an amount of the second mineral is infused with water** that comes into contact with said particles of

the second mineral, wherein **the first mineral is different than the second mineral**.

9. The water treatment and enrichment apparatus of claim 6, wherein the **particles of the first chamber are separated from particles of the second chamber** with a **seep-through membrane** that regulates throughput of water through the first chamber.

Some of the Systems Key Features are:

- ✓ A Plurality of (7) Rare Earth Minerals, Particles & Mineral Stones
- ✓ A Plurality of filtering Chambers
- ✓ Ceramic Filter to **less than .4** microns
- ✓ Magnetically Treats Water
- ✓ Water Enrichment 'Apparatus'
- ✓ 'Perseveration' Cartridge
- ✓ Zeolites and 'other minerals' that are toxic to microorganisms
- ✓ Activated Carbon Particles
- ✓ Alkalinity creating Minerals; (which give the water Anti-Oxidant Properties [- ORP])
- ✓ Seep-Through Membrane
- ✓ Silver Activated/Impregnated Carbon
- ✓ Ion-Exchange Resin
- ✓ 'Far Infrared' Ceramic Balls
- ✓ Softens the water
- ✓ Silica Sand filtration
- ✓ Inhibits the growth of Microorganisms
- ✓ Containment Contaminant Traps, (also including Organic Coconut Fiber)
- ✓ Water Enrichment process
- ✓ Purification Particles
- ✓ Infrared treated Ceramic Balls
- ✓ Traps & Removes Contaminant's
- ✓ Adds a 'Particular' Vitamin
- ✓ Uses **only** Gravity, (no 'power' required)
- ✓ **INEXPENSIVE**, for Home use

10. The water treatment and enrichment apparatus of claim 6, wherein the mineral in the second chamber comprise at least one of **silver impregnated granulated activated carbon, ionic-exchange resin, far infrared ceramic balls, silica sand, zeolites, and mineral stones that enrich water** coming into contact with said mineral stones.

11. The water treatment and enrichment apparatus of claim 1, wherein the cartridge comprises a plurality of chambers that are interchangeable, wherein each chamber of the plurality of chambers comprises outer screw threading at a first end and inner screw threading at a second end whereby any one chamber can be coupled to any other chamber in any order by screwing the first end of one chamber into the second end of another chamber, wherein each chamber of the plurality of chambers further comprises a plurality of particles of different minerals.

12. A method for treating and enriching water with a multi-stage water treatment and enrichment apparatus, the method comprising:

- A. receiving water in a first water reservoir that is coupled with a filter having a porous outer surface and a hollow inner cavity;
- B. filtering said water by trapping contaminants in the water against the outer surface of said filter while water permeates through the outer surface into said hollow inner cavity;
- C. passing said water from the hollow inner cavity through a first chamber comprising a plurality of purification particles that remove contaminants from said water as said water comes into contact with said purification particles in the first chamber;
- D. passing said water from the first chamber through at least a second chamber, wherein the second chamber comprises a plurality of particles of a first mineral that enrich said water with the first mineral as said water comes into contact with the particles in the second chamber; and
- E. preserving said water with particles of a second mineral that are toxic to microorganisms, wherein the particles of the second mineral are contained in a second water reservoir that receives water from the second chamber.

13. The method of claim 12 further comprising dispensing said water from the second water reservoir through a magnetized tap valve that magnetizes said water as it is dispensed.

14. The method of claim 12 further comprising passing said water from the second chamber through a third chamber, wherein the third chamber comprises a plurality of particles of a third mineral that enrich said water with the third mineral as said water comes into contact with the particles in the second chamber.

15. A configurable cartridge for use in treating and enriching water in conjunction with a personal water treatment and enrichment apparatus, said cartridge comprising:

- A. a first set of chambers, each chamber of the first set of chambers containing a plurality of purification particles that remove contaminants from water that comes into contact with

the purification particles, each chamber of the first set of chambers comprising outer screw threading on a first end and inner screw threading on a second end; and

- B. a second set of chambers, each chamber of the second set of chambers containing a plurality of enrichment particles of a particular mineral that are used to enrich water with the particular mineral when water comes into contact with the enrichment particles, each chamber of the second set of chambers comprising outer screw threading on a first end and inner screw threading on a second end,
- C. wherein any chamber of the first set of chambers and second set of chambers can be coupled to another chamber by screwing the first end of one chamber to the second end of another chamber such that treatment and enrichment of water provided by said personal water treatment and enrichment apparatus is customized.

16. The configurable cartridge of claim 15, wherein the configurable cartridge configured with different combinations of chambers from the second set of chambers produces different levels of enrichment that modify at least one of mineral content of the water, alkalinity of the water, and softness of the water.

17. The configurable cartridge of claim 15 further comprising a porous filter that is used in combination with the first and second sets of chambers, said porous filter comprising a plurality of pores for filtering contaminants from water passing through the porous filter.

18. The configurable cartridge of claim 15, wherein each chamber of the first set of chambers contains at least one of (1) activated carbon particles, (2) silver impregnated granulated activated carbon particles, and (3) ion exchange resins.

19. The configurable cartridge of claim 18, wherein each chamber of the second set of chambers contains at least one of silver impregnated granulated activated carbon, ionic-exchange resin, far infrared ceramic balls, silica sand, zeolites, and mineral stones that enrich water coming into contact with said mineral stones.

20. The configurable cartridge of claim 15, wherein the plurality of enrichment particles of a chamber of the second set of chambers modifies at least one of mineral content in water, alkalinity of water, and softness when water comes into contact with the enrichment particles.

21. The configurable cartridge of claim 15 further comprising a third set of chambers that can be coupled in any combination with chambers of the first and second sets of chambers, wherein a chamber of the third set of chambers contains a plurality of enrichment particles of a particular vitamin that are used to enrich water with the particular vitamin when water comes into contact with the enrichment particles, and wherein said chamber of the third set of chambers comprises outer screw threading on a first end and inner screw threading on a second end.