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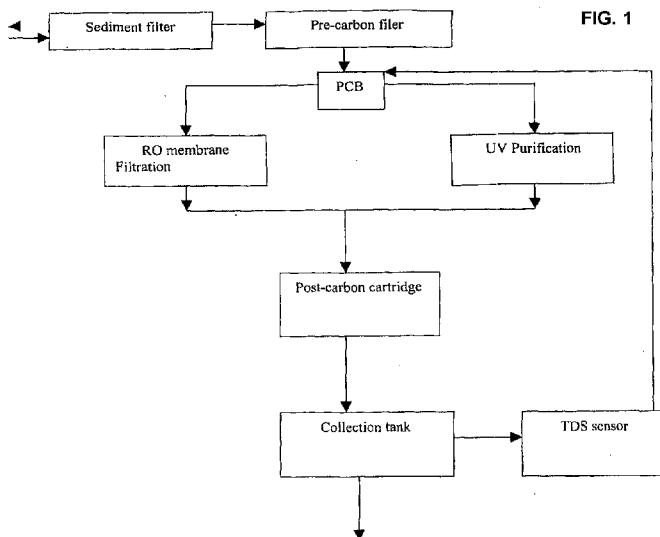
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(54) Title: AN INTEGRATED WATER PURIFIER ASSEMBLY WITH BUILT-IN WATER CONDITION ASSESSING SENSOR



(57) **Abstract:** This invention relates to an integrated water purifier assembly with built-in water condition assessing sensor, comprises a sedimentation filtration module sequentially connected to a pre carbon filtration module, reverse osmosis membrane filtration module through a first solenoid valve, and a UV filtration module through a second solenoid valve. Reverse osmosis and UV filtration modules being separately connected to a post carbon filtration module which is connected to an output water collection tank and a microprocessor programmed to operate said assembly. The collection tank is also provided with a TDS sensor means. The sensor means senses the TDS of purified water in the collection tank and signals the PCB to which it is connected. The PCB is capable of activating suitable module.

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AN INTEGRATED WATER PURIFIER ASSEMBLY WITH BUILT-IN WATER CONDITION ASSESSING SENSOR

5 TECHNICAL FIELD OF INVENTION

This invention relates to an integrated water purifier assembly with built-in sensor capable of assessing total dissolved salts (herein after referenced as TDS) in the purified water. After sensing the TDS content of the purified water, this assembly is capable of routing water through the desired purification modules and provide purified water with a target TDS, target TDS as fixed by the user.

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BACKGROUND ART

Domestic water purifiers currently available in the market are based on ultraviolet radiation based technology, reverse osmosis membrane based technology, and halogen resin based purifiers. Advantages of each of the above referenced water purifying modules serve, achieve a specific purification, and is based on the TDS of the water. Products currently available are designed to purify water and provide water blindly without the knowledge of water conditions. Change of place, change of season and other naturally occurring conditions are found to alter the TDS content in water.

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OBJECTS OF THE INVENTION

The main object of this invention is to ensure near absolute purification of water with desired TDS for human consumption. After identifying the TDS content of the purified water, the assembly according to this invention is capable of activating the suitable modules and purification elements without human intervention. This assembly is also capable of purifying water to produce an output with a set TDS content from an input with varying TDS content.

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30 When a customer uses a product which is not specifically designed for his water conditions, the water output there from may show the following drawbacks.

1. It may be low in mineral content.
2. It may be high in mineral content.
3. It may be high on heavy metal contaminant.

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Water purifier based on ultra violet purification in conjunction with carbon adsorption cartridge known in the art are useful in purifying water with TDS less than 200ppm, ultra violet radiation based purification keeps the mineral content of input water intact while disinfecting the water flow by eliminating bacterial and viral contamination 10 there from. Reverse Osmosis (RO) and Ultra Violet (UV) radiation technologies are not capable of being used inter changeably.

SUMMARY OF THE INVENTION

In this invention, membrane used for filtration could be Membrane filtration, Nano 15 Filtration membrane, Ultra Filtration or Reverse Osmosis filtration.

This invention relates to an integrated water purifier assembly with built-in water condition assessing sensor, comprises a sedimentation filtration module sequentially connected to a pre carbon filtration module, reverse osmosis membrane filtration 20 module through a first solenoid valve, and a UV filtration module through a second solenoid valve. Reverse osmosis and UV filtration modules being separately connected to a post carbon filtration module which is connected to an output water collection tank and a microprocessor programmed to operate said assembly. The collection tank is also provided with a TDS sensor means. The sensor means senses 25 the TDS of purified water in the collection tank and signals the PCB to which it is connected. The PCB is capable of activating suitable module for varying lengths of time to ensure target TDS in output water.

BRIEF DESCRIPTION

In this invention, the water is allowed to enter and flow through sediment filtration module and the pre-carbon cartridge, then the water enter into reverse osmosis based membrane or UV filtration cartridge based module.

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Membrane filter module is provided by RO membrane having minute pores to strains salts and microorganisms. A pump means and a reject water valve is also provided in RO filtration module. The pump creates the required osmotic pressure to force water through the pores of the membrane. The reject water valve controls and allows the out 10 flow of rejected water.

The UV purification chamber is provided by UV radiation of 253.7 nm wavelength by means of UV lamp. This enables deactivation of disease causing microorganism.

15 Water flowing out of the RO and UV modules enter post carbon filtration cartridge module.

The water collection tank is also provided with a TDS sensor. This sensor means electronically senses the TDS content in fixed time intervals or continuous mode in 20 the purified water and signals the PCB to which it is connected. The PCB is capable of activating suitable module without human intervention. If the TDS is more, it activates membrane based RO module and if TDS is less it activates UV based module.

25 The assembly is also provided with an option switch, which enables the user to select a purification method of his choice irrespective of the programmed microprocessor.

CLAIMS:

1. An integrated water purifier comprising a sediment filtration module, pre-carbon filtration module, UV filtration module, membrane based RO module, post carbon module and water collection tank with built in water condition assessing TDS sensor.

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2. The assembly as claimed in claim 1, with NF or UF instead of UV purification.

3. The assembly as claimed in claim 1, wherein said UV filtration module is provided with a UV lamp providing 253.7 nm wavelength of UV radiation.

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4. The assembly as claimed in claims 1 and 2, wherein said RO filtration module is provided with a reverse osmosis membrane to strains salts and microorganisms, a pump means to create sufficient water pressure and a reject water outlet provided with valve means.

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5. The assembly as claimed in claims 1 to 3, wherein the pre and post-carbon filtration modules have activated carbon in any form.

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6. The assembly as claimed in claims 1 to 5, wherein the sensor operates in fixed time intervals or continuously.

7. We claim a water purifier with a TDS sensor, single or multiple in any position in the water flow line and at various stages.

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8. The assembly as mentioned in claim 7, claim a water purifier with a display of target TDS of purified water and/or TDS of Input water.

9. We claim a water purifier with claim 1 to 8, with manual override to select a purification methodology.

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