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RESETTABLE WATER METER**FIELD OF INVENTION**

This invention relates to water meter for measuring volume of water, and more particularly, the invention relates to a electro-mechanical meter having resettable display to show the amount of water dispensed or discharged.

BACKGROUND OF INVENTION

Meters for measuring municipal water consumption comes in differing constructions. Generally, these meters are mechanical in nature and display the accumulated volume of water that had flowed through it from its totalising counter. Generally, a meter is installed in the main water supply line of each household for the purpose of computing the water consumption over a period of time. The water supply company then bill the household for the water consumed at whatever set rate of charge.

OBJECT OF THE INVENTION

It is the primary object of the invention to provide a compact in-line water meter having resettable display when installed in a water supply line can be used to show the quantity of water consumed or flowed through.

Another object of the invention is to provide a water meter having no mechanical gears resulting in a more durable and more reliable meter.

Still another object of the invention is to provide an inexpensive to produce display of quantifiable measurement to a person who can monitor his or her own water consumption.

It is a further object of the invention to provide a convenient visual display close to the dispensing tap to show the quantity of water dispensed through a specific outlet. This display can serve as an educational aid especially for young children to inculcate the good habit of conserving water while using the water for any particular purpose. An example of application is to display the amount of water we consumed for our high water consumption bathing.

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SUMMARY OF THE INVENTION

According to the invention, a water meter for measuring the amount of water flowing through it comprises a vane wheel with magnetic vane which could provide the means to actuate a magnetic reed switch creating contact closure and open functions which in turn cause an electrically powered counter, characterised by it being able to totalise and to display predetermined unit measurement and also characterised by it being able to have the totalised display resettable.

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BRIEF DESCRIPTION OF DRAWINGS

The preferred embodiments in accordance with the present invention will now be more particularly described with reference to the accompanying drawings wherein :

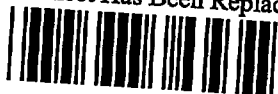
FIG. 1 is a side view of the resettable water meter assembly of the present invention.

FIG. 2 is a sectional plan view of the resettable water meter assembly taken on a plane indicated by A-A in FIG. 1.

FIG. 3 is a sectional view showing the essential parts of the present invention.

FIG. 4 is a block diagram of a magnetic reed switch, a totaliser, a reset switch and a battery for use in the electronic part of the present invention.

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DESCRIPTION OF THE EMBODIMENT OF THE INVENTION

FIG. 1 of the accompanying drawing shows an in-line water meter with resettable display according to a preferred embodiment. Referring to FIG. 1, 2 and 3, the present invention comprises a vane wheel housing 1, a plate 8, a plate 9, four screw 10, four nuts 11 uniting the vane wheel housing 1 and plates 8 and 9 into a watertight unit with two annular seals 7 interposed between via mounting hole 3. The watertight unit so created permits water to flow through via entry at the either port 1a or port 1b into the water chamber 2 and exit at the exit port. The multi-blade vane wheel 4 with affixed spindle 6 is supported between bearings (not shown) housed on the inner side of plate 8 and plate 9.

The multi-blade vane wheel 4, shown in FIG. 3, comprises a plurality of vanes and is constructed from non-magnetic material. A permanent magnet insert 5 is embedded within the outer tip of the vane 4a. A magnetic reed switch 12 is affixed close to plate 8 by adhesive (not shown). The magnetic reed switch 12 has normally open contacts and is positioned such that its contacts could be closed when the permanent magnet insert 5 on the vane wheel 4 is moved within the actuation zone of the magnetic reed switch.

An electronic counter 17 comprising display 16, reset button 18 and circuitry hardware (not shown) are housed within a counter enclosure. An electrical source in the form of battery 19 is used to drive the electronic counter 17. Electrical wires and contacts (both not shown) are used to connect the electronic counter 17, magnetic reed switch 12 and battery 19 in accordance to the circuit shown in FIG. 4.

The components of the water meter described above are enclosed by the back casing 14 and front casing 15 which are affixed to each other forming a drip-proof unit. Provisions are made on the casings to reach the reset switch 18 and to view the display 16. A battery opening lid 13 is provided to enable battery 19 installation and replacement.

The water meter is to be installed in-line to the supply line so that water flowing through it enable the water meter to register the flow. The water meter is connected to matching pipe or hose fittings (not shown) via its threaded port 1a and threaded port 1b. The water meter has a symmetrical construction in the areas of water chamber 2 and threaded ports 1a and 1b which enable it to be connected to an incoming supply at either the port 1a or port 1b.

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In the operation of the water meter in accordance with the present invention, water flows through the water meter to rotate the vane wheel 4 moving the permanent magnet insert 5 to cause the contacts closing and opening of the magnetic reed switch 12, thereby provide input signals to the electronic counter 17 to totalise and indicate the volume of water flowed through in predetermined unit of measurement via the display 16. The rate of the closing and opening of the contacts in the magnetic reed switch 12 is proportional to the volume of water flowing through the water meter. Actuation of the reset switch 18 will cause the counter display 16 to reset to "zeros".

From the foregoing it can be seen that the present invention can be easily and economically installed within the bathroom for a person to read-out the amount of water (in a predetermined unit of measurement) used for their bath or shower. This feature is also applicable to other applications.

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CLAIMS

The foregoing detailed description is to be clearly understood as being given by way of illustration and example only, the spirit and scope of the present invention being limited solely by the appended claims.

What is claimed is:

1. A water meter having an electronic display comprising:
 - a) a housing with a plurality of holes, a water chamber, an inlet port and an outlet port;
 - b) a water passage formed by said housing, plates with a plurality of holes and a sleeve means for pivoting a rotatable shaft, sealing means and connecting means for uniting said housing, said sealing means and said plates;
 - c) a rotatable vane wheel with a plurality of vane blades and a shaft concentric to the axis of said rotatable vane wheel, supported at said shaft by said sleeve means provided on each said plate for rotational motion of said rotatable vane wheel;
 - d) a magnetic field generating member disposed within said vane blade;
 - e) a magnetically operated switch device disposed within the magnetic field of said magnetic field generating member for generation of pulse signals when water flowing through said water passage causes said rotatable vane wheel to rotate;
 - f) an electronic counter having processing means to convert said pulse signals from said magnetically operated switch device to output signals for driving an indicating means to display the amount of water flowed through said water meter in terms of predetermined unit of volume;
 - g) a switch device for generation of reset pulse signal to reset said electronic counter which thereby drive said indicating means to display a zero value;
 - h) an electrical energy source for energising said electronic counter and said indicating means;
 - i) means between said electrical energy source, said electronic counter and said indicating means;



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- j) means between said electrical energy source, said magnetically operated switch device, said electronic counter and said indicating means;
 - k) means between said electrical energy source, said switch device, said electronic counter and said indicating means; and
 - l) enclosing means to protect said water passage, said electrical source, said electronic counter, said indicating means, said magnetically operated switch device, said switch device and said means between said electrical energy source, said electronic counter, said indicating means, said magnetically operated switch device and said switch device.
2. A water meter according to claim 1, wherein measurement of water passing through the said water passage connected to a water supply line is measured by said water meter in said terms of predetermined unit of volume.
3. A water meter according to claim 1, wherein said pulse signal generation means comprises:
- a) said magnetic field generating member disposed within said vane blade of said rotatable vane wheel; and
 - b) said magnetically operated switch device responsive to each revolution of said rotatable vane wheel.
4. A water meter according to claim 1, wherein said electrical energy source comprises a plurality of batteries.
5. A water meter according to claim 1, wherein said enclosing means is further including access means for installation and removal of said electrical energy source, access means for actuation of said switch device, window means for human viewing of said indicating means and housing means for excluding water moisture.
6. The water meter according to claim 1, wherein said water passage is bi-directional and suited to all planes of installation.

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