FORM 2

THE PATENT ACT 1970

(39 OF 1970)

AND

The patent rules, 2003

COMPLETE SPECIFICATION

(See section 10: rule 13)

1. TITLE OF INVENTION

Apparatus for Treating Septic Tank Discharge

2 APPLICANTS

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3. PREAMBLE TO THE DESCRIPTION

COMPLETE

Following specification particularly describes the invention and the manner in which it is to be performed.

4. DESCRIPTION.

Technical field of invention:

Present invention in general relates to waste water treatment, and more particularly to purify liquid discharge from septic tank means liquid affluent.

Prior art:

Conventional septic tanks produce a liquid affluent which may be drained in to soil nearby or discharge in to public drainage system. Such discharge carries other than harmful micro organism, foul odor and thus cannot be reused for irrigation or other useful purposes or further processing. In order to achieve such objectives septic tank drainage purification systems are employed. It has been discovered that the efficiency of such plant improves by passing such discharge through some additives, plants, filtering material and further by air and oxygen known as ozone system. Such operation means processing renders the affluent free from solid due to its break down, and dissolved oxygen helps aerobic bacteria to digest any sludge.

Conventional systems comprise an open sludge settling tank, oxidizing system and are generally meant for large volume of drainage hence complex and expensive.

Prior art:

US 4250040

US 3741393

US 4250040

These systems are meant for large volume of drainage system intended for large cities however there appears to be a need to treat the affluent in-citu and reuse the purified water for garden, irrigation and other than direct consumption purposes, thereby conserving scare water recourses, minimize loading of municipal drainage systems, complexity of systems and most importantly area for installation etc.

Hence there was a long felt need in the art to have simple apparatus means system, which can be installed near the septic tank and said purified water could be saved for garden, agricultural irrigation.

Object:

1. The object of the present invention is to provide a simple mean to purify septic drainage water.
2. Another object of the present invention is to make the system intensive means vertical for gravity aeration instead of horizontal means extensive to save space and energy.
3. Another object of the present invention is to make utilize the said purified water to reuse for watering garden, agricultural land etc. thus to conserve natural resources.
4. Another object of the present invention is to dispense with complex sewage purifying system.
5. Another objective of the present invention is to provide compact and space saving system for installation and maintenance.
6. Another object of the present invention is to increase time for settlement, oxygenation of the said sewage water.
7. Another object of the present invention is to make provisions for filter material and support madium means foundation for the growth

of useful autotrophic, heterotrophic, phototrophic, chemotrophic organisms.

8. Another object of the present invention is to provide separate compartment means cells for the different use.
9. Still another object of the present invention is to provide a system for domestic, colonies and small group of residences.

Other objects, features and advantages will become apparent from detail description and appended claims to those skilled in art.

STATEMENT:

Accordingly following invention provides a novel and simple gravity aeration sewage water treatment system as compared to other system where it comprises a vertical supporting shaft means supporting member grouted to a firm foundation and plurality of open troughs means cells are attached and each of such trough is placed one above the other with certain degree of rotation with respect to each other, either clockwise or counter clock wise on the said shaft so as form a helix and the said angle rotation is such that the drain from the nearest top trough falls in to next lower trough and each of such trough may be in the form of a rectangular base with all its four side elevated or in the form of a bucket, bowl etc. and all such assembly is kept outdoor so as to get energy from sunlight and from the top trough and remaining may be filled with active charcoal, limestone, gravels, certain plants to facilitate the abortion of certain foul smelling gases, enhance the formation of algae, filter organic matter etc. and when the septic sewage water is pumped up fills the top trough at a regulated discharge, whereupon due to gravity cascades in the next trough through the holes provided at its bottom and in this manner the helical path taken by the said water is around a multi

turn helical enhances the contact period of the said water to enhance its purification process time and in order to increase such time further an internal round path is introduced in each trough and the said treated water is collected from the lower most trough in to another storage tank for further disposal.

BRIEF DESCRIPTION OF DRAWING:

This invention is described by way of example with reference to the following drawing where,

Figure 1A, Figure-1B and Figure 2 of sheet 4/1 show the top view, front elevation and perspective view of the top open trough of the said invention. Where,

100 denotes the trough embodiment.

101 denotes outer periphery means trough wall, 102 denotes a separator, 103 denotes a perforated separator and 106 denotes a space formed within 101, 102 and 103 for keeping supporting medium, 105 denotes plurality of percolating hole at bottom of 100 and 104 denotes a supporting hole through which the supporting shaft passes (not shown).

Figure 4 of sheet 4/2 shows the supporting medium kept in the space 106 (Ref. Figure-2) where Figure-3A, Figure-3B show the top view and side elevation and space 106 of trough 100, 108 denotes sewage water path, 111 denotes empty space, Figure-4A, Figure-4B show the top view and side elevation of trough 100, 112 denotes lime stone, Figure-5A, Figure-5B show the top view and side elevation of trough 100, 113 denotes plant medium, Figure-6A, Figure-6B show the top view and side elevation of trough 100, 114 denotes sand, Figure-7A, Figure-7B show the top view and side elevation of trough 100, 115 denotes gravel,

Figure-8A, Figure-8B show the top view and side elevation of trough 100, 116 denotes active charcoal.

Figure-9A, Figure-9B of sheet 4/3 shows the top view and elevation of the said invention where: 200 denotes the angular placement of the said trough embodiment 100 on supporting shaft 201, 101 denotes the top trough, 202 denotes inlet pipe, 203 denotes the direction of flow of said sewage water, 108 denotes the helical profile of the assembly of plurality of trough embodiment 100, 109 denotes the lower most trough embodiment 100, 201 denotes the outlet of purifies water after treatment.

Figure 10A, Figure-10B of Sheet 4/4 show elevation and top view of general plant layout of the said invention where: 301 denotes conventional septic tank, 302 denotes storage tank for the septic sewage water storage tank, 302 denotes connection between 302, 305 denotes the lifting sewage water pump, 306 denotes the suction pipe of said pump 305, 307 denotes discharge pipe of the said pump 305, 200 denotes the assembly of the embodiment 100 of the said invention, 201 denotes the supporting member for 200, 309 denotes the outlet of 200, 303 denotes the storage tank for said purified water, 313 denotes discharge pump, 314 denotes suction inlet and 311 denotes discharge outlet of pump 313.

In order that the manner in which the above-cited and other advantages and objects of the invention are obtained, a more particular description of the invention briefly described above will be referred, which are illustrated in the appended drawing. Understanding that these drawing depict only typical embodiment of the invention and therefore not to be considered limiting on its scope, the invention will be described with additional specificity and details through the use of the accompanying drawing.

Detailed description:

The present invention provides a novel apparatus for purifying septic tank discharge water effectively and efficiently dispensing with complex system used for similar purposes.

The conventional septic tank 301 (not part of the said invention) commonly attached to household, community toilets, urinals and may be to drainage system allowing solids to be digested anaerobically thus reducing the volume of solid and the excess liquid component drains through outlet drain pipe 304 to attached storage tank 302. A sewage pump 305 lifts the said drain water through suction pipe 306 and delivers through pipe 307 in 106 compartment, having active charcoal , of upper most trough 101 of the said embodiment 200. The said drain water then passes through a perforated partition 103 and flows along a semicircular path to chamber 107 where perforated outlet drain holes are provided at bottom of trough 101 and trickles down in the form of droplets in the chamber 106 of the next lower trough thus in the process air and oxygen get dissolved, means a process known as oxygenation. The said next lower trough is rotated through some degrees with respect to upper trough such that the drain holes of upper trough are aligned to chamber 106 of the next lower trough. In this manner the plurality of troughs are placed while each is having same degree of rotation till the lowest trough 109 is placed thus forming a helical profile comprising the plurality of said troughs. In this manner the path of the drain water is enhanced many fold for the dissolved oxygen and cultured developed on filter media etc to act on the harmful culture of the drain water. Depending on the culture of the drain, a medium/ filter material such as rubble, sand is filled in the chambers 106 of selected troughs 101through 109 and similarly lime, active charcoal is filled in the chambers 106 of

selected troughs 101through 109. Further certain plants, known to digest harmful metals, can be grown in few of the said troughs. In this manner the septic drain water passes through various medium and filter to render the drain water free of odor and harmful bacteria, protozoa, metals etc. The treated water drains through 309 to a storage tank 303. The treated water from tank 303 is further pumped by pump 313 through suction pipe 314 and discharge through pipe 311 to the area where irriagation or watering is required.

Additional advantages and modification will readily occur to those skilled in art. Therefore, the invention in its broader aspect is not limited to specific details and representative embodiments shown and described herein. Accordingly various modifications may be made without departing from the spirit or scope of the general invention concept as defined by the appended claims and their equivalents.

CLAIMS

We claim:-

1. An apparatus using gravity aeration process for purifying septic tank discharge means drain water comprising a central supporting shaft or structure on which rotatable plurality of troughs mounted and each of said trough having a compartment having space means first compartment to store different mediums and the said compartment having a perforated partition for easy horizontal flow of drain water to remaining compartment, means second compartment, such that the path of the drain water increases and the said second compartment having perforations means holes at the bottom to be drained in a form of droplets in the similar compartment said space of next lower trough means the perforation of the upper trough and said lower trough space vertically aligned means the said lower trough rotated through certain degree on the supporting shaft for said alignment and plurality of troughs thus mounted form a helical profile means the plurality of said troughs form a continuous path for said septic tank drain water;
2. The apparatus claimed in 1, the said trough having different partitions, compartment form and shapes including rectangular;
3. The apparatus claimed in 1, the said supporting shaft means structure in form of wall;
4. The apparatus claimed in 1, 2 the said trough made from galvanized sheet, plastic, RCC;
5. The apparatus claimed in 1, 2,3 comprises filtering, growing medium for aerobic bacteria means useful micro-organism, active charcoal for deodorizing;

Abstract:

The invention provides a novel and simple gravity aeration sewage water treatment system as compared to other system where it comprises a vertical supporting member grouted to a firm foundation and plurality of open troughs means cells are attached and each of such trough is mounted one above the other with certain degree of rotation with respect to each other so as form a helix and the drain from the nearest top trough falls in to next lower trough and all such assembly is kept outdoor so as to get energy from sunlight and from the top trough and remaining may be filled with active charcoal, limestone, gravels, certain plants to facilitate the abortion of certain foul smelling gases, enhance the formation of algae, filter organic matter, absorption of certain metals etc. and when the septic sewage water is pumped up fills the top trough at a regulated discharge, whereupon due to gravity cascades in the next trough through the holes provided at its bottom and in this manner a continuous helical path taken by the said water around a multi turn helical enhances the contact period of the said water to enhance its purification process time and the said treated water is collected from the lower most trough in to another storage tank for further disposal. The said invention saves space as mounted vertically, enhances filtration time, simple in construction, erection and cost effective.