SPECIFICATION

TITLE OF THE INVENTION

~~CIRCULATING FISH CULTURE METHOD AND CIRCULATING FISH CULTURE DEVICE~~

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a circulation type aquaculture method and a circulation type aquaculture apparatus, which are, in particular, suitably used for a closed-type aquaculture system for fishes/shellfishes, and decompose ammonia contained in the cultivation water for culturing and cultivating fishes/shellfishes, so as to remove the ammonia therefrom.

BACKGROUND OF THE INVENTION

[0002] In the cultivation water of culturing farms, cultivating farms and aquariums, ammonia contained in excrements from fishes/shellfishes, residues of feeds, or the like are decomposed in water by microorganisms, with the result that ammonia is left in the water, and the ammonia is accumulated at the lapse of time. Since ammonia is high in biological toxicity and harmful to fishes/shellfishes, as countermeasures against this problem, it has been known that, for example, ammonia is removed by using a removing method by biodegradation utilizing microorganisms. In the aquaculture method for removing ammonia by using such a biological treatment, however, problems are raised in that a large area is required as a treatment tank, or large power is required for an aeration pump to cause high costs, or the ammonia decomposition treating performance becomes unstable due to influences of temperatures and amounts of loads.

[0003] For these reasons, in recent years, a decomposing treatment has been proposed in which ammonia is removed by using a physical treatment in which ozone or electrolyzed hypochloric acid

SPECIFICATION

TITLE OF THE INVENTION

CIRCULATION TYPE AQUACULTURE METHOD AND CIRCULATION TYPE AQUACULTURE APPARATUS

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a circulation type aquaculture method and a circulation type aquaculture apparatus, which are, in particular, suitably used for a closed-type aquaculture system for fishes/shellfishes, and decompose ammonia contained in the cultivation water for culturing and cultivating fishes/shellfishes, so as to remove the ammonia therefrom.

BACKGROUND OF THE INVENTION

[0002] In the cultivation water of culturing farms, cultivating farms and aquariums, ammonia contained in excrements from fishes/shellfishes, residues of feeds, or the like are decomposed in water by microorganisms, with the result that ammonia is left in the water, and the ammonia is accumulated at the lapse of time. Since ammonia is high in biological toxicity and harmful to fishes/shellfishes, as countermeasures against this problem, it has been known that, for example, ammonia is removed by using a removing method by biodegradation utilizing microorganisms. In the aquaculture method for removing ammonia by using such a biological treatment, however, problems are raised in that a large area is required as a treatment tank, or large power is required for an aeration pump to cause high costs, or the ammonia decomposition treating performance becomes unstable due to influences of temperatures and amounts of loads.

[0003] For these reasons, in recent years, a decomposing treatment has been proposed in which ammonia is removed by using a physical treatment in which ozone or electrolyzed hypochloric acid