liquid in the rearing tank 1 is pumped with the water supply pump 3 to be fed to the water supply pipe 4, and the liquid is branched into the distribution pipes 7 from the water supply pipe 4 to be supplied to the cultivation bed 2 in each of the stages. Further, the liquid in the cultivation beds 2 is collected with the bell siphons 5 to be fed to the water discharge pipe 6 and caused to fall onto the rearing tank 1 through the water discharge pipe 6. In this case, the liquid in the cultivation bed 2 in the lowest stage is caused to fall onto the rearing tank 1 directly from the bell siphon 5 mounted on the cultivation bed 2 in the lowest stage. The liquid in the rearing tank 1 is stirred with the falling discharged liquid, and oxygen in ambient air is supplied to the liquid in the rearing tank 1 (the liquid in the rearing tank 1 is aerated). In this case, the liquids from the cultivation bed 2 in the stages are merged in the water discharge pipe 6 and caused to fall onto the rearing tank 1. Therefore, the discharged liquid becomes a relatively strong water stream, thereby being able to aerate the liquid in the rearing tank 1 sufficiently. The liquid in the rearing tank 1 is pumped with the water supply pump 3 and caused to circulate through the system of the water supply pipe 4, the cultivation beds 2, the bell siphons 5, the water discharge pipe 6, and the rearing tank 1, to thereby perform rearing of fish and shellfish and cultivation of a plant. During this time, it is desired that water quality management of the liquid in the rearing tank 1, refilling of the liquid in a required amount, replacement of the contaminated

[0063] [Rearing and Cultivation Method using System of FIG. 2] Rearing of fish and shellfish and cultivation of a plant are performed through use of the aquaponics system illustrated in FIG. 2 in the same manner as in the case of using the aquaponics system of FIG. 1. In FIG. 2, the liquid in the water storage tank 16 is pumped with the water supply pump 3 and fed to the water supply pipe 4, and the liquid is fed from the water supply pipe 4 to the cultivation bed 2 in each of the stages, to thereby cultivate a plant in the cultivation bed 2. The liquid in the cultivation beds 2 is caused to fall onto the water storage tank 16 from the bell siphons 5 through the water discharge pipe 6. The liquid in the cultivation bed 2 in the lowest stage may be caused to fall onto the water storage tank 16 directly from the bell siphon 5 mounted on the cultivation bed 2 in the lowest stage. The liquid in the water storage tank 16 is aerated with the falling liquid. The liquid having dissolved oxygen increased by the aeration is pumped with the water supply pump 3 and fed to the return passage 22, and the liquid is supplied from the return passage 22 to the rearing tank 1, to thereby rear fish and shellfish in the rearing tank 1. The liquid in the rearing tank 1 is fed to the feed passage 18 with the circulation pump 17 and fed to the physical filtration device 19, the biological filtration device 20, the sterilization device 21, and the water storage tank 16. During this time, the water quality is managed in the same manner as in Embodiment 1, to thereby improve a plant

cultivation environment.

[0064] [Refilling of Liquid]

Also in the case of FIG. 2, it is desired that refilling, replacement, and the like of the liquid in the rearing tank 1 be performed. The circulation of the liquid from the water storage tank 16 and the circulation of the liquid from the rearing tank 1 may be performed constantly or regularly (intermittently) at a preset timing.

[0065] (Aquaponics System according to Embodiment 3)

The aquaponics system of the present invention may be an aquaponics system other than those illustrated in FIG. 1 and FIG. 2. The number of stages of the cultivation beds 2 may be set to any number other than the illustrated number. The cultivation beds 2 having different sizes and shapes may also be stacked in multiple stages. Two or more rearing tanks 1 and two or more water storage tanks 16 may also be arranged. In this case, the rearing tanks 1 and the water storage tanks 16 may have different sizes and shapes, respectively. The water quality management device may include the above-mentioned equipment and device or may not include a part thereof. For example, both or any one of the physical filtration device 19 and the biological filtration device 20 may also be arranged in two stages. The water storage tank 16 may also be buried in the ground.

[0066] (Aquaponics System according to Embodiment 4)

In the aquaponics system illustrated in FIG. 1, the rearing

with the liquid circulating through the rearing and cultivation circulating system of the rearing tank, the pump, the water supply pipe, the distribution pipes, the cultivation beds, the bell siphons, the water discharge pipe, and the rearing tank in the aquaponics system.

[Claim 12] A fish and shellfish rearing and plant cultivation method using an aquaponics system, which is configured to rear fish and shellfish in a rearing tank, and to cultivate a plant in cultivation beds in two or more stages,

the aquaponics system comprising the aquaponics system of any one of claims 4 to 6,

the method comprising cultivating the plant in the cultivation beds with the liquid circulating through the cultivation circulating system of the water storage tank, the pump, the water supply pipe, the distribution pipes, the cultivation beds, the bell siphons, the water discharge pipe, and the water storage tank in the aquaponics system, and rearing the fish and shellfish in the rearing tank with the liquid circulating through the rearing circulating system of the rearing tank, the water storage tank, and the rearing tank.

[Claim 13] A fish and shellfish rearing and plant cultivation method using an aquaponics system according to claim 11 or claim 12, wherein while the liquid in the rearing tank circulates through the rearing and cultivation circulating system in which the liquid

circulates through the rearing tank, the pump, the water supply pipe, the distribution pipes, the cultivation beds, the bell siphons, the water discharge pipe, and the rearing tank, or the rearing circulating system in which the liquid circulates through the rearing tank, the water storage tank, and the rearing tank, the liquid is subjected to both or any one of physical filtration and biological filtration.

[Claim 14] A fish and shellfish rearing and plant cultivation method using an aquaponics system according to any one of claims 11 to 13, wherein while the liquid in the rearing tank circulates through the rearing and cultivation circulating system in which the liquid circulates through the rearing tank, the pump, the water supply pipe, the distribution pipes, the cultivation beds, the bell siphons, the water discharge pipe, and the rearing tank, or the rearing circulating system in which the liquid circulates through the rearing tank, the water storage tank, and the rearing tank, both or any one of water quality management of the liquid and refilling of the liquid is performed.