

**POWER OPERATED SOLID WASTE REMOVAL DEVICE FROM AQUARIA**

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**Technical details**

**1. Problem Description:**

Removal of solid waste and contaminants from aquarium is very essential to maintain the good ecosystem and quality of water. Excess food which leads to formation of waste, fecal matter, and other metabolic waste are big concerns and are the main sources of toxic ammonia production and bad smell can be eliminated from the aquarium by a filtration process. This is essential to maintain a healthy aquarium. Overfeeding leaves uneaten food that nourishes the ammonia, nitrites and nitrates which can kill the fish; and it means more fish waste. As the fish excrete, the aquarium's filter should remove most waste, but some uneaten food and solid biological waste may still make it to the tank bottom where it will remain causing havoc with the elevated nitrite and ammonia levels. For these problems, a cleaning tool that siphons the waste while cleaning the substrate during water changes is useful. If a very effective filter is used, partial water changes are necessary only two or three times a year. In general, solid removals which are deposited at the bottom of the aquarium are done either by exchange water or removing solids by syphoning method.

Therefore, to minimize the use of water, there is a need to develop a Power Operated Solid-Waste Removal Device by which solid waste can be removed at faster rate and in an easy manner so that huge water can be saved and quality of water can be maintained in the aquarium for improving the health and growth of the fish.

**2. Solution Description: Please explain (in simple terms) how this innovation addresses or solves the problem.**

Sediment's removal equipment consists of a perforated suction pipe, submersible pump, and a container to collect the waste. The submersible pump is mounted with submersible pump on a PVC pipe as shown in the figure. The suction arrangement consists of a rectangular shaped frame work of PVC pipes with one of its sides having perforations to suck the sediments of unfinished feed and fecal matter from the bottom of the aquarium. Plastic tubes are inserted in the perforations for convenience in sucking the sediments. The suction pipe is attached to the inlet of the submersible pump. A plastic container is attached to the outlet pipe of the submersible pump to collect the sediments lifted by the suction pipe. An electric cable supplies the electricity to the submersible pump. The submersible pump along with

the suction arrangement is mounted to a handle bar made up of PVC pipe upon which the power supply switch is fitted for smooth operation of the equipment.

When electricity is supplied, the suction pipe sucks the sediments of waste and unfinished feed, fecal matter, and other foreign particles through the plastic tubes and thus the waste solids are removed from the bottom of the aquarium or any tank having culture species. The waste solids are collected in a detachable plastic container attached to the outlet of the submersible pump. The device can be moved in any direction with the help of the handle bar to remove the waste particles deposited on the bottom of the aquarium or fish tank.



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