

“PEDAL OPERATED MULTIPURPOSE MACHINE”

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ABSTRACT

Pedal Operated Multipurpose Machine is explained which is used in irrigation, filtration and generate electricity at small scale. The Pedal Operated Multipurpose Machine can be constructed using local material and skill. This machine comprises of a centrifugal pump and alternator operated by pedal power. The pump and alternator stand is made up of a housing in which a foot pedal and a drive shaft rotates. It works on the principal of force vortex by creating negative pressure in the tube and this vacuum created draw water from the sump. Thus, providing irrigation and drinking water where electricity isn't available to operate the machine. The setup can be built for rural areas and can be easily adapted to suit the needs of local people. It frees the user from rising energy cost, can be used anywhere, produces no pollution and provide healthy exercise.

The cognizance about the human health, this unique innovative design has been invented and developed for small communities with no electricity or as a first response unit in the aftermath of flooding, earthquakes etc. when there is water available but it is not clean or safe. The pedal powered water bike is capable of delivering microbiologically pure water from some of the world's most contaminated water sources .The treated water is clean, clear and safeguarded from all worms, cysts, a wide range of bacteria and even most waterborne viruses.

Pedal Operated Multipurpose Machine (POMM) is an eco-friendly water pump with alternator. The POMM works on mechanical energy without electricity. POMM provides drinking water, irrigation and electricity at small scale in rural remote areas where electricity is not available. POMM is not only free from pollution but also provide healthy exercise. POMM reduces the rising energy costs. POMM is designed as a portable one which can be used for irrigation and generation of electricity in rural areas. POMM consists of a centrifugal pump operated by pedal power. The centrifugal pump is positioned on its stand in such a way that driven shaft of the centrifugal pump is butted to the bicycle wheel. By pedaling the bicycle, the bicycle wheel rotates with the help of chain and gear, thereby rotating the centrifugal pump which in turns discharges water from the sump.

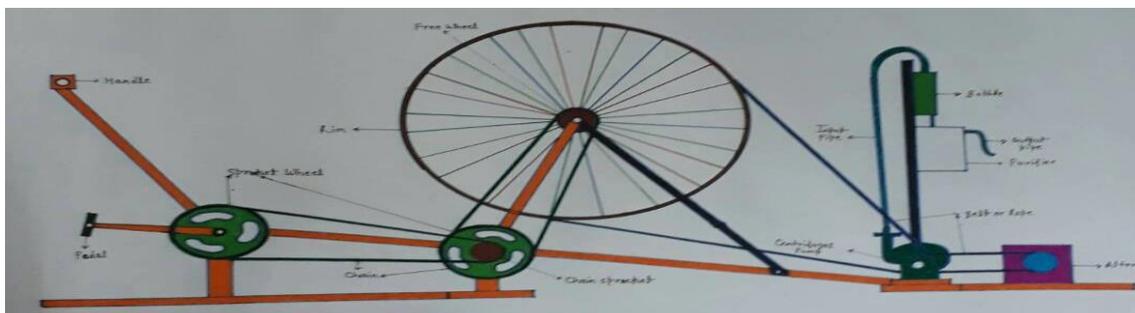
This paper analyzes the design of a pedal powered purified water supply device to be used by local dwellers. It works on the principle of forced vortex by creating negative pressure in the tube and this vacuum created draws water from the sump into the pump while water is supplied to the filter where adsorption takes place to purify the water. This design will reduce the labor cost and weariness caused by transporting and sanitizing drinkable water for use in the homes of villages.

The Earth is covered by 75% water, yet one of the world's greatest issues is a lack of drinking water. Every year, almost four million people die from water-related diseases and 98% of those occur in the developing world. In response to such a need, this idea is proposed to produce clean drinking water by reverse osmosis filtration by means of human power. There are several means to purify water; however, because of its incredible thoroughness, a reverse osmosis system has been preferentially selected for this design.

According to a 2007 World Health Organization (WHO) report, 1.1 billion people lack access to an improved drinking water supply, 88 percent of the 4 billion annual cases of diarrheal disease are attributed to unsafe water and inadequate sanitation and hygiene, and 1.8 million people die from diarrheal diseases each year.

The WHO estimates that 94 percent of these diarrheal cases are preventable through modifications to the environment, including access to safe water. Water may be the world's most abundant resource, but the need for sanitary and clean water is exponentially increasing. Currently available water purification systems require large scale expensive facilities or disposable filters which require costly maintenance and replacement. Deaths in developing countries and rural areas have increased in the past ten years due to lack of clean water, and countries such as the United States have pledged to give over a billion dollars towards water related fields. Around the world there is a growing need and interest in clean water.

LAYOUT OF THE PROJECT





Experimental hardware picture



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