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PEDAL OPERATED WASHING MACHINE

Akshay Awate¹, Shubham Khatekar², Ashwin Dawkhar³, Akshay Modhave⁴ and Kolhe B.P⁵

^{1,2,3,4}Student, Department of Mechanical Engineering, Jaihind Polytechnic, Kuran, Pune, India

⁵Lecturer, Department of Mechanical Engineering, Jaihind Polytechnic, Kuran, Pune, India

ABSTRACT

In today is the problem of electricity in rural area as well as city. In city people required exercise for good health by using pedal operated washing machine, which is under taken to solve the problem of electric power of human. Electricity is the source to drive washing machine. Today is available human power for drive washing machine with less effort. In India most of village is suffering from shortage of electricity problem. So to overcome above problem we select the pedal power washing machine, which is operated manually. It required no power supply. This project is light weight and portable can be easily transported. We use simple cycling mechanism to run the washing machine shaft. In this project human power is converted into mechanical energy. It is a machine which generates power through human on pedaling and with the drive mechanism, converts the pedaling motion into required rotary motion of the drum. Its innovation lies in its simple design, use of inexpensive parts, very low repairing and maintenance cost, affordability to each member of the society and it does not affect the environment.

I. INTRODUCTION

Our team intends to directly address the problems faced in washing clothes, and thus have developed a new design for easy effort in washing, rinsing and drying clothes. Pedal power is the transfer of energy from a human source through the use of a foot pedal and crank system. This technology is most commonly used for transportation and has been used to propel bicycles for over a hundred years. Less commonly pedal power is used to power agricultural and hand tools and even to generate electricity. Some applications include pedal powered laptops, pedal powered grinders and pedal powered water wells. Some third world development projects currently transform used bicycles into pedal powered tools for sustainable development. The articles on this page are about the many wonderful applications for pedal power technology. This project covers one of the daily house-hold activities (washing clothes) but solves a lot of other problems with it as well. We all wash clothes either by our hands or use power driven washing machines. Over the years, this has been either a very strenuous and time consuming or an expensive process. This project intends to solve the problem faced by so many persons in their day-to-day life. In the undeveloped countries where electric supply is unavailable and expensive, powered washing machines becomes almost impractical. Several attempts have been made to develop alternative solution for these areas and to solve related to these problems, but either the project in itself becomes very expensive, or the repair and maintenance of the machines require more money and imported parts to replace.

Thus the project has the following objectives –

- Provide a low cost machine.
- This machine is not only cheap but has low maintenance cost.
- It should have readily available components and should be ergonomically efficient.
- Wash any type of cloth.
- Must have all the mechanisms – Washing, Rinsing, and Spinning.

II. NEED

In developing countries, rural women are among the least privileged. Women are both essential to the family unit and integral to the economy, yet they rarely have equal opportunities for education, career development, or social status when compared to men. One factor behind the inequality is the long list of responsibilities that traditionally fall to women. Not only do women perform agricultural duties and care for livestock alongside men, but women are also responsible for many domestic chores. Usually, new technology improves people's efficiency, but women benefit less from new technology for several reasons. First, women's duties are neglected by technological improvement efforts because domestic chores are often seen as cultural obligations for women so little effort is expended to diminish them. Second, foreign aid in the form of appropriate technologies is unevenly distributed because women are often considered less technically competent than men. Factors like these tend to prevent the development of improved technology for women's uncompensated, time-consuming, and laborious tasks.

An average woman may do two to three loads per week for a family of about five children and her husband. It generally takes at least 8 hours of washing time, not including the extra time needed to walk to the public washing

reservoir or hang up clothes to dry. Additionally, while washing clothes by hand, women spend hours leaning over a concrete basin. Clothes are washed by laboriously scrubbing each section of cloth over a cement washboard with their hands immersed in detergents that are harmful to the skin. A pedal-powered washing machine would allow women to wash clothes faster and with less strain. When asked what they would do with their free time, women said that they would try to generate income by making crafts or food to sell. Young daughters who help their mothers with domestic chores may also have the opportunity to concentrate more on their studies. Laundromat micro-enterprises may even arise if our washing machines are successful. Conditions vary in developing countries, but women in many regions are washing clothes manually while they could be doing more profitable or rewarding work elsewhere.

It will help to bring appropriate technology and opportunities to women in developing nations across the world and pave the way for other pedal-powered or appropriate technologies that would help women.

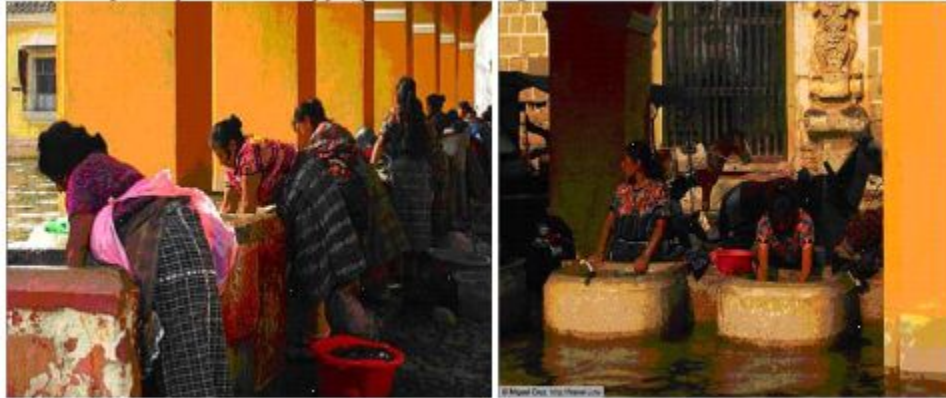


Fig.1 washing clothes

III. LITERATURE REVIEW

In modern trend consumption of energy is required so we use pedal operated washing machine for daily purpose. In this machine we provide detail information according to pedal operated washing machine. In this pedal operated washing machine we use bicycle pedal mechanism for converting human power into mechanical energy. This project covers one of the daily house-hold activities (washing clothes) but solves a lot of other problems with it as well. In city people required exercise for good health by using pedal operated washing machine, which is under taken to solve the problem of electric power of human.

Ranjan et.al [2014] has studied on Pedal Powered Washing Machine (PPWM) is a low cost washing machine made up of easily and readily available scrap parts in daily life. It is a machine which generates power through human pedaling and with the drive mechanism, converts the pedaling motion into required rotary motion of the drum. Its innovation lies in its simple design, use of inexpensive parts, very low repairing and maintenance cost, affordability to each member of the society and it does not affect the environment. Our team intends to directly address the problems faced in washing clothes, and thus have developed a new design for easy effort in washing, rinsing and drying clothes. PPWM is a completely new concept, which in its one laundry cycle does washing, rinsing and drying of clothes similar to that of an automatic washing machine available in the market.

Bhatawadeka [2015] have studied the paddel operated washing machine is a project, which is under taken to solve the problem of electric supply of people. At village, to run washing machine source of power is electricity. In India most of village is suffering from shortage of electricity. So to overcome above problem we select the washing machine, which is operated manually. It required no power supply or diesel supply. This project is low weight & portable can be easily transported. We use simple cycling mechanism to run the washing machine shaft.

IV. CONSTRUCTION

Construction a cylindrical drum using metal of require dimension. Present the bicycle and make the bicycle carriers using tube, angles or other flat irons available. All elements are together to the bicycle. Slots are drilled into the plates, which allow for the adjustment of teh voltage belt. Place the bicycle on the chassis, measuring using a string

the length of the belt if necessary. Drill four holes into the frame and secure. Use chain to transmit power from pedal to pulley putting it in place, tighten tension and the machine is ready effectively. Clean your clothes, the rotation of the tank should not be too fast about 70- 80 rpm. Manufacture, use and maintenance of the pedal powered washing machine is available.



Fig.2 pedal operated bicycle

V. PRINCIPAL

The machine entitled — PEDAL OPERATED WASHING MACHINE Works on the principle of rotating impeller by peddling and causes to washing cloths. The basic idea is to use a stationary bicycle stand as the power source, and use an assembly of chain drive to connect it to an old, salvaged washing machine tub

VI. PROCEDURE

On Washing machine shaft two set of chain is fixed which rotates by means of peddling. In paddle rotates the rotor of washing machine. The paddle sprocket is attached with the help of chain to heavy flywheel which store energy and transmit it when required.



Fig.3 pedal rotor of washing machine

VII. ADVANTAGES

Pedal Operated Washing Machine offers certain advantages over a standard (Electric) washing machine used. Some of the advantages is given below –

- It is Eco friendly and non-polluting machine.
- It Produce Less Noise.
- The manufacturing cost of this machine is Low.
- It is mostly economical to all class of people. It works without electricity so it is an ideal machine for the people which lives in the electricity deficient villages.
- Less tiring than conventional washing techniques by hand. This would greatly contribute in increasing the productivity of the manual laundries all over the world.

- Less chances of failure than electric washing machine as the mechanical systems used in the machine have stood the test the time.
- More reliable: Due to simple design the chances of failure are reduced thus making the machine parts is the more reliable.
- Less maintenance required: Maintenance of pedal operated washing machine involves mostly lubricatinn of the various parts which can be done even at home so maintenance cost is less.
- Operating cost is Zero: Since the machine is manually operated.
- Very effective in protecting the hands of people from the harmful effects of the chemicals in the detergents.
- It helps to reduce the physical stresses which is applied on the hands of working men during washing clothes.
- It encourages pedaling which is a good physical exercise and keeps oneself fit. A person now can easily wash clothes while performing daily exercise which would save time.
- It is made up of recycled scrap.
- No energy usage & easy to use.

VIII. CONCLUSION

The main objective is to provide a product with an alternative way to wash clothes when there is no electricity. It has to be understood that in rural areas, it is a very stressful and laborious task. So the product which is a pedal driven machine, it satisfies the need of rural people by giving them an alternative way of washing clothes which is quick, cost-effective and eco-friendly. The product designed has zero operating cost, cost-effective, and it can be used with minimal effort

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