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PEDAL POWERED OPERATED WASHING MACHINE

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ABSTRACT

In many developing countries is impossible to machine wash clothes due to absence or scarcity of electricity or the absence of machine itself. In rural areas there is a lack of electricity. A washing machine is a machine designed to wash laundry, such as clothing, towels and sheets. Generally these machines have been powered by electrical energy but pedal powered machine runs with our energy. The Pedal Operated Washing Machine is the project which is best option for rural area where there is a problem of electric supply or there is shortage of electric supply. In order to overcome and to solve this problem we selected washing machine which operates manually. This does not require any electric power supply or diesel supply. Also, in developed countries these pedal operated machine can be used to save electricity and doing some work out. This project is low in weight and portable so that it can be easily transported. We use the simple cycling mechanism to run the machine shaft. In this project fabrication and analysis of pedal based washing machine is done, performance parameters are calculated on the basis of load and weight.

INTRODUCTION

We all say that India is a developing country and all but in actual in our developing nation the women which are not educated are not able to take the benefits of new technologies. Women are both essential to the family unit and integral to the economy, yet they rarely have equal opportunities for career development, or social status when compared to men. The one factor behind the inequality is the work which is traditionally held on women. Not only do women perform agricultural duties and care for livestock alongside man, but female are responsible for many domestic works. New technology increase people efficiency, but women benefits less from new technology for new reasons. First, women's duties are minimize by technological increase efforts because of domestic works are often seen as cultural obligations for women little efforts is expended to minimize them.

Second, Abroad help in a form of appropriate technologies is unevenly distributed because women are often considered less technically competent than man. Factors like this these care to avoid the development of improve technology for women uncompensated, time-using and laborious task. Our team aim intends to direct address the situation faced by laborious task. Our team intends to directly address the plight face a women by a developing pedal-powered washing machine. An average woman may do two to three loads per week for a family about four child and husband. It generally take at least 7 hours of washing a cloth, dose not adding the extra time needed to walk to the public washing machine reservoir or hang up clothes to a drying.

when washing clothes in machine by hand, women consume time over a concrete basin. Clothes are washing by laboriously scrubbing each section of clothes over a cement washboard with their hands immersed in detergents that are harmful to the skin.

MATERIALS AND METHODS

Process

- Select the drum material and by proper dimension the stand is prepare for support
- The drum is kept horizontally on the frame and put the net on the drum
- The net is fixed on the shaft then by using pedestal bearing shaft is fitted on the stand
- By using gear and chain sprocket we give motion to the drum by using pedal. The drum is fixed and net is rotating



Fig1: Pedal operated washing machine

Working Principle

It is based on very simple concept. The basic idea is to use a stationary bicycle stand as the power source, and use an assembly of chain and sprocket to connect it to washing drum. This machine has pedals which are connected with shaft inside the drum or box. When we pedal, the shaft inside the drum revolves with clothes and detergent; it started to work like any electric machine.

Hardware Requirements

1. Chain sprocket
2. Drum
3. Stand
4. Pedestal bearing
5. Spinning tumbler
6. Shaft

Formulae

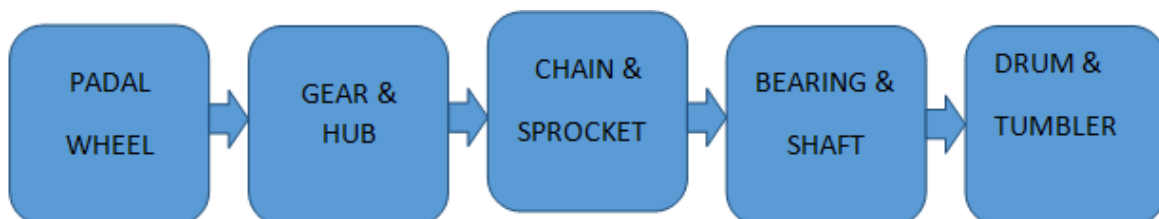
$$P = \frac{2\pi NT}{60} \dots\dots\dots(1)$$

$$\sigma t = \frac{Syt}{Nf} \dots\dots\dots(2)$$

$$B.M = \frac{M}{I} = \frac{\sigma}{y} \dots\dots\dots(3)$$

$$D = \frac{P}{\sin \frac{180}{z}} \dots\dots\dots(4)$$

BLOCK DIAGRAM



Experimental Procedure

1. Fill the drum with water; pour enough amount of detergent powder.
2. Now dip the clothes in the drum and close the cover to avoid the water spilling from the drum. After covering the drum sit and start pedaling.



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3. Measure the time using a stopwatch at different speeds and loads at different operating weights.

RESULTS AND DISCUSSION

In many developing countries it is not possible to machine wash clothes due to the absence or scarcity of electric power or the absence of machine itself washing clothes by hand leaves one to wash laundry, such as clothing, towels and sheets. Generally these machine have been powered by electrical energy but pedal power machine runs with our energy. In order to overcome the limitations of electricity.

CONCLUSION

A lot of electricity is consumed in households through washing machines. This not only adds to the environmental problems but also adds to our financial woes at a time when prices everything are soaring all over the world.

Our Pedal Based Washing Machine aims to address both the issues. Moreover, pedaling can be a good exercise that you can do without having to hit the gym for your daily exercise.

The washing machine has greatly influenced people's life styles by providing easy means of washing clothes and drying them out to a considerable extent.

FUTURE SCOPE

1. In future fulfill the need washing.
2. In future saving a electricity is important by this machine.
3. Pedal powered machines would be ideal in the present context of our changed lifestyle and search for alternative 'green' sources of power.
4. Not just this, these machines are ecofriendly as they do not contribute to environmental pollution.

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REFERENCES

1. *Invention of the washing machine*. Retrieved September 14, 2002, from <http://www.ideafinder.com/history/inventions/story067.htm>
2. *ENGGEN203 - Sustainability Engineering (2002). Lecture handout, Assignment 3, The University of Auckland*.
3. *Leong, A. (2002). Compare prices of Fisher & Paykel EcoSmart Washer GWL10 at Epinions.com*. Retrieved September 14, 2002, from http://www.epinions.com/content_44428594820
4. *GWL10*. Retrieved September 14, 2002, from <http://www.eldersweb.com/gwl10.htm>
5. *Fisher & Paykel Innovative Living*. Retrieved September 14, 2002, from <http://www.fisherpaykel.co.nz>
6. *Health hazards of compounds used in the electronic industry*. Retrieved September 14, 2002, from <http://www.adhesives.de/seiten/results/wt16healthhazardsofcompoundusedintheelectronicindustry/healthhazardsofcompoundusedintheelectronicindustry.htm>
7. *Copper Poisoning*. Retrieved September 14, 2002, from <http://www.waterfiltersaustralia.com.au/copper.htm>.