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Fabrication of Modified Remote Control Grass Cutting Machine

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Abstract: In current days, a Grass cutting machines are operated by fuel and electrical energy which are costly and requires high maintenance. Hence, we make an improved remote controlled grass cutting machine capable to improve grass cutting process become easier. The machine is fully operated by remote controlled with the help of relay. The machine is able to cut with higher efficiency and can cut on different heights levels of grass. For higher movement efficiency geared motor is being introduced. We have used a battery of capacity of 12 V which is rechargeable. This Portable grass cutting machine can be used to maintain and trim grass in gardens, home, schools and agriculture purpose.

Keywords: Remote control, Motor, Grass cutting, Blades, Battery

I. INTRODUCTION

Currently in the world the problem of pollution is not worst one of the worst problems that humankind faces. To decrease the damage done by the pollution to the world there are ways. Mostly damage done to the environment is due to different types of fuels that are used in the industrial and also domestic uses for using different types of machines for different types of work that are done by man. It is good for the environment if we use renewable energies like hydropower energy, solar energy and other energy that is electrical energy that does none or as much as low pollution to the environment.

The main working principle of any grass cutter is to trim the grass with the help of the blades that are connected to them with precision. There are multiple types of the grass cutters available in the markets today that consists of the simple diesel engine based grass cutter, electrical grass cutter, solar energy based grass cutter. We are fabricating that is the electrical energy based remote controlled grass cutter with the height adjusted cutter.

The main objective of this product is to reduce the hard work done by the person for the lawn mowing or grass cutting. It also depends that it is also durable, portable and easy to operate as anyone can operate it from safe distance.

The first ever lawn mower that was invented by an English engineer Edward Budding in 1830 Gloucestershire, England. Budding's inventions was called cylinder mower and was granted patent in August, 1830 and became a popular choice for cutting grasses. As mentioned earlier, the lawn mower was invented by the English engineer Edward Budding.

He first thought of the idea after he saw a machine in a local cloth mill. Budding realized how the same mechanism that was being used to trim cloth to give it a smooth finish after weaving could be used for cutting grass as well. By mounting the same machine on a wheeled frame, so that the blades rotated close to the grass, the cylinder mower was born. Budding then went on to enter a partnership with another engineer, John Ferrabee, and together the two of them started to manufacture the cylinder mower in a factory at Stroud.

II. LITERATURE STUDY

A. Z. I. Rizman, 15 January 2008

In this paper the cutter machine is very useful to the people and more environmental friendly. The H-bridge circuit is the main circuit that controlled the direction of motor. Again, the H-bridge controls the DC motor for tire and blades. In the project, solar panel is used as the backup power and stored at the seal lead acid battery. The smart cutter machine easier to handle since the movement will control by using remote control.^[1]

B. Syeda Asra, July-aug, 2018

In this study the designed Model is highly efficient and accurate as it detects the objects and stops the movement. Thus, the Design and implementation of the project has been successful. Since there is no cost of fuel and any kind of pollution as the present system uses battery as a power source, the designed Robot will meet the Challenge of low cost of operation and a renewable energy.^[2]

C. Mamtaj Alam, Virendra vikram Singh , 4th April 2019

This paper has presented the advance use of the new technology in the fully automated grass cutter. Solar panel is environment friendly which is one of the best part of research paper for providing the power source to the battery and IOT is used for automation of the grass cutter. Also the main feature we have given is that we can trim the grass at different level according to our choice by using mobile phone .^[3]

D. Bhutada Shyam H. ,Shinde Gopal U. , 30 august, 2017

In this study I get information about use of flat type blade and mulch blade and comparison also.and also get information of both efficiency on field. The mulching type blade having field efficiency is 93.7% with average speed 1.822 km/hr and the flat type blade having field efficiency is 83.17% with average speed 1.89 km/hr. Results shown that the mulching type blade is most suitable.^[4]

E. R. Shivagurunatham, 2 february 2018

In this paper a prototype lawn mower has been designed, fabricated and tested which meets all the above mentioned design objectives. Moreover, the usage of this machine makes the grass cutting process faster by reducing the cutting time. Besides that, it is lighter, environmental friendly and cost effective which is helpful for non-commercial use (home users) in maintaining and trimming the grass in gardens, home, or yards.^[5]

III. PROBLEM STATEMENT

In a recent time there are many types of battery operated and robotic grass cutting is available in the market, but they are very costly and not affordable for a people who need it. And pollution is also a big problem. Many types of grass cutting machines are IC engine operated which are harmful for environment. And many are electricity operated but they are also not applicable where electricity is not there and also it difficult to use because wired connection is there. So, we tried to solve this problem and make a grass cutting machine which has less cost hence, it is affordable for everyone who need it. Also it is environment friendly and also applicable where electricity is not there. Ultimately, it reduce the work and easy to handle and also take care of environment.

IV. MAIN COMPONENTS

- A. 12 V DC Motor
- B. Wheels
- C. Battery
- D. Controller (Remote, Relay, IR sensor)
- E. Blades
- F. Body Frame

V. WORKING

The design contains a remote controller, IR sensor, DC motor, all these together combined we get a grass cutter Machine. Safety is the main concern when designing a machine with blades. Determining where to place our sensors is crucial to the overall effectiveness of our design. IR Sensor will be mounted directly in front of the machine for maximum detection. Batteries are use for power generation for the machine movement and the battery is rechargeable. The remote controlled sensor is range upto 30 meters. There is a need of relay circuit for operations like forward, reverse, motor ON and cutting operation ON OFF. And also it can able to cut with various height adjustment at different level of grass about 2 cm to 6 cm.

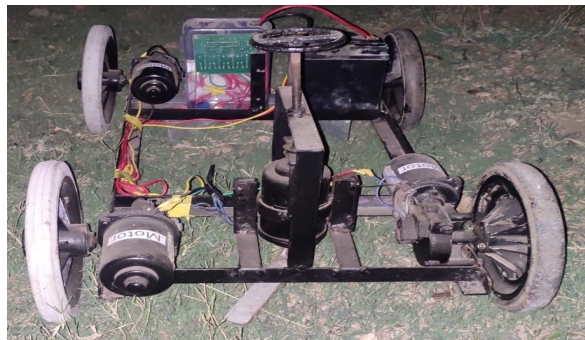


Fig. 1 Our Model Grass Cutting Machine

VI. RESULT AND DISCUSSION

After Integrating all the components which we are going to use we assembled all this our grass cutting machine is ready for testing. presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced remote sensing controlled with the help of growing technology, the project has been successfully implemented. Thus the project has been successfully designed and tested. This grass cutting machine will meet the challenge of environmental production and low cost of operation since there is no cost for fuel and electricity. The working of machine is very effective and very smooth.

VII. CONCLUSION

After studying all this it is conclude that the cutter machine is very useful to the people and more environmental friendly. The remote control is the main feature that controlled the direction of machine and cutting motor. A 12V battery and control circuit is control the DC motor and wheel and blades. In the project for future planning solar panel is used as the backup power and stored at the seal lead acid battery. The smart cutter machine easier to handle since the movement will control by using remote control.



Fig. 2 Top view of machine



Fig. 3 Rear view of machine

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