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Development of an Economical SolarPowered Lawn Mover

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Abstract: ***Common lawn- knife machines are operated by energy and electrical energy, which are precious, and need high conservation. To keep terrain clean and reduce use of energy a solar powered lawn trimmer has been designed in this exploration work. The purpose of this study is to design and fabricate a solar- powered lawn trimmer which is affordable, easy to operate and environment friendly. The lawn trimmer uses a 12V, 100AH battery to power a12V DC motor of 180W. A solar panel 1 000V system voltage is used tocharge the battery. A solar charge regulator of 20A is used to control the energy into the battery. The machine uses distance metal blade to cut the lawn. It can run for nearly two hours when completely chargedand there's no sun. It's easy to tell if the battery is completely charged or flat.***

This paper summarizes and reviews technological development for making effective and cost effective lawnknife. Our end is to study the colorful developments in the lawn knife machines and their performance.

Current technology generally used for cutting the lawn by the manually handled device From the check weplant that colorful types of lawn knife available in request which are run by means of solar, electric and internal combustion machine. Lawn knives are available in request having some limit to cut lawn at some height. We're trying to make the new innovative conception substantially used in agrarian field. We're going to fabricate the lawn cutting machine for the use of agrarian field, to cut the crops in the field as wellas to cut the lawn.

Index Terms: Components,

I. INTRODUCTION

Due to nonstop increase in cost of energy and effect of emigration of feasts from the burnt energy into the atmosphere, this bear the useof abundant solar energy from the sun as a source of power to drive a field transport, mover

A. What is Solar Energy?

Solar energy is radiant energy that's produced by sun. Every day the sun radiates, or sends out, an enormous quantum of energy. The sun radiates further energy in one second than people have used since the morning of time! Where does the energy come from that constantly is being radiated from the sun? It comes from within the sun itself. Like other stars, the sun is a big ball of feasts- substantially hydrogen and helium tittles. The hydrogen tittles in the sun's core combine to form helium and induce energy in a process called nuclear emulsion. During nuclear emulsion, the sun's extremely high pressure and temperature causes hydrogen tittles to come piecemeal and their capitals (the central cores of the tittles) to fuse to come one helium snippet. But the helium snippet contains lower mass than the four hydrogen tittles that fused. Roughly matter is lost during nuclear emulsion. The misplaced matter emitted into space as radiant energy.

II. LITERATURE STUDY

In this paper, we're assaying number of literature check for making final time design named " solar power lawn knife using solar shadowing system". This literature check helps us for making this design. This paper describes the different features and technologies present in Automated Solar Grass Cutter by overviewing multiple exploration done over time. In moment's world, Robotization is a veritably important part of invention. An solar power lawn knife is a machine that uses cutting bladeor thread to cut lawn at an indeed length. The solar power lawn knife an driver is needed for monitoring and controlling it. We also use a solar panel to charge thebattery.However, also we also have an option for charging the battery externally with the help of a centre-tapped motor, If the rainfall is cloudy and there's no source of sun for the working of solar panel to charge the battery.

Praful P. UlheIn this paper they've prepared manually operated lawn knife with helical comber blades due to helical bladesincreases the effectiveness of slice. For conforming the height roll knife is element placed on lawn knife. This lawn knife used to cut the lawn slightly and also it can cut the different types grasses.

Randsome: The first was produced by Ransomes in 1902. JP Engineering of Leicester, founded after World War I, produceda range of very popular chain-driven mowers. About this time, an operator could ride behind animals that pulled the large machines. These were the first riding mowers. In the United States, gasoline-powered lawn mowers were first manufacturedin 1914 by Ideal Power mower.[11]

Davidge E D: "I 'm planning on moving my entire line to propane. Not only is it better for the terrain, it also increases my productivity. I 'm saving plutocrat on energy, and labor costs as well, since my crew is n't spending time filling up at the pump. Propane has no complements and is a clean burning system. I save on conservation since there's no carburetor or energy sludge to maintain. (3)

Edwin Beard Expiring Expiring attained the idea of the field mower after seeing a machine in a original cloth shop which used a slice cylinder mounted on a bench to trim cloth to make a smooth finish after weaving. Expiring realized that a analogous conception would enable the slice of lawn if the medium could be mounted in a wheeled frame to make the bladesrotate close to the field's face

A. Outcome of Literature Survey

1) Cutting grass of secondary primary and tertiary field thereby reducing human effort needed.
2) Great portion of farmland can easily cut or brushed with lawn mower in one day.
3) This project reduced number of personnel that needed in a particular farm operation.
4) To reduce manpower.
5) To improve the economy of the country.

III. OBJECTIVE OF PROJECT

The specific objectives of the study can be summarised as follows.

A. To engineer the machine for cutting lawn grass.
B. To improve the cutting rate so that lead time will reduce.
C. To design a machine that is economical, safe and convenient.

Components

Sr No.	Resource used	Specification	Material used
1.	DC Motor	Outer Diameter: 60mm	Mild steel
2.	Frame	Length: 2'2" Breadth: 1'2"	Mild steel
3.	Wheel	4 Nos.	Plastic
4.	Solar Panel	10 Watts	_
5.	Solar Panel Adapter	250 v	Mild steel
6.	Cutting Blade	2 mm thick & 150mm long	Aluminium
7.	Connecting rod	77 mm CTC	Cast iron
8.	Cutting blade	6.5 x 1 x 0.1 inches (l x b x t)	Stainless steel
9.	Wire	-	Copper Wire
10.	Battery	12 v 8 Ah	Li Ion

Table I: Specification of components.

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IV. WORKING

The main component of a solar power grass cutter is as follow:

A. Motor

D.C Motor (Rs-775 24V) is mounted on the base plate with help of motor covering. The motor is attached to the helical leftism-handed pinion. This motor will rotate the coil. It uses the principle of electromagnetic flux which converts electrical energy into mechanical energy to give the asked affair. This motor can also be called as the selector of the whole medium.

Figure 3: RS-775 D.C Motor

B. Frame

C. Wheel

D. Blade

Figure 7: Blade

E. Battery

F. Solar Pnael

V. RESULTS AND DISCUSSION

Number Of Blades and Name of Blades	Diameter of Blades	Rotation speed (rpm)	Heightfrom the ground level	Weight of collectedwaste	Time run	Distance travel
1. [Taper Blade]	300 mm	2800 rpm	50 mm	70 gram	40 sec	230 cm
2. [Straight Blade]	300 mm	2800 rpm	50 mm	30 gram	40 sec	230 cm
3. [Larger Blade]	440 mm	2800 rpm	50 mm	40 gram	40 sec	230 cm

VI. CONCLUSION AND FUTURE SCOPE

A. Conclusion

The solar lawn knife is substantially designed for the lot drawing in a sustainable and effective way. Lawn slice is one of the main operation that's carried out in the lot for cleanliness. It's a time consuming and labour ferocious process. In addition, it consumes a lot ofenergy. The conventional lawn knife that are used in the lot is expensive. Thus, the capital investment and operating cost both is veritably grandly. Also, one lawn knife isn't sufficient lot with large areas similar as education institution, playgrounds, theater areas, premises etc. As the knife burns diesel it creates air pollution to the lot. The noise pollution is also veritably disturbing for all the residers present in the lot. To amend all the problems mentioned above the solar lawn knife that we bandied is the good result.

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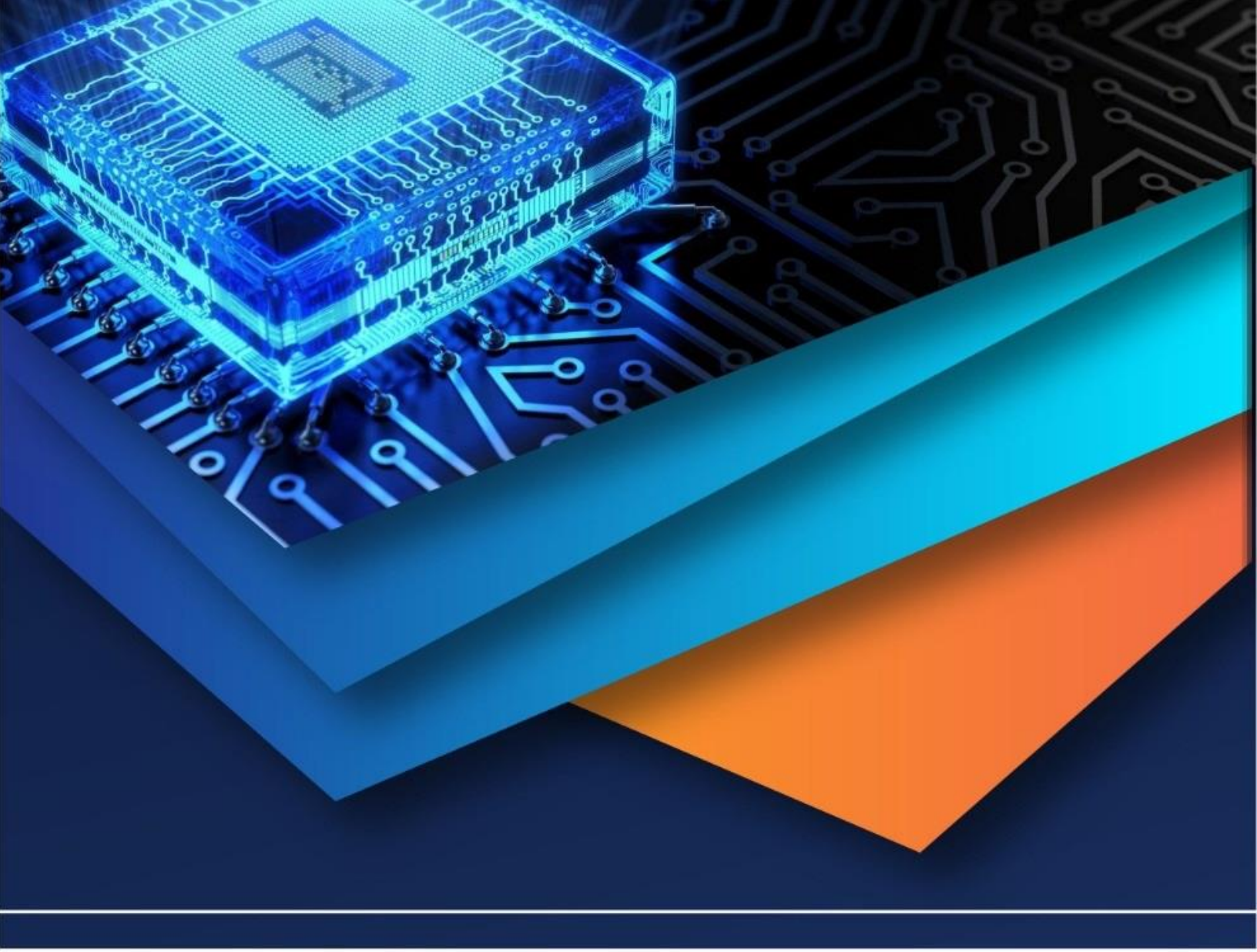

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