Automatic Ground Grass Leveller By Using Sensor

Mr.C. Sakthivel[1], Mr.R. Sasi[2], Mr.V. Sivaraman[3], Mr.L. Stephen Xavier[4], Mr. U. Karthickeya(M.E)[5]
[1, 2, 3, 4, 5] Dept of Agriculture Engineering
[1, 2, 3, 4, 5] Paavai Engineering College, Namakkal, TamilNadu, India

Abstract- *Maintaining an even and well-trimmed grass level in gardens can be a time- consuming task. To address this challenge, the use of sensor-based technology is used. This abstract explores the concept of an automatic garden grass Leveler that utilizes sensors for moving and precise grass trimming. It discusses the cutting of uneven grass areas, and the adjustment of cutting mechanisms. The abstract highlights the benefits of this technology, such as improved precision, reduced human efforts, and the potential for integration with other smart garden systems. It also emphasizes the importance of weather and terrain adaptability, user-friendly interfaces, and future opportunities for optimization. Overall, the automatic grass leveler using sensors presents a promising approach to achieve consistent and well-maintained grass levels in gardens.*

Keywords- Trimming, Garden lands, terrains.

I. INTRODUCTION

Grass cutter machines have become very popular these days. Most not unusual any hassle. Now a day, there are masses of alternative from the machines are used gentle grass furnishing. The essential elements of grass reducing machines are DC motors, relay transfer for controlling the motor and rechargeable battery is used. It is positioned in a suitable machine shape. The motors having 12v DC motor are connected to the electrical delivery by using the usage of roll of wire.

The stainless-steel cutter connected to the device. The working precept of grass cutter offering a high velocity of rotation to the blade, which enables cutting the grass. The blade gets kinetic energy at the same time growing the rpm.

The electrically powered grass cutting machines are an awful lot easier to be used in lawn, garden, sports ground and grass fields. To enhance the splendour of domestic gardens, Grass reducing machines are high quality to be had an option in the industry. By this project we can reduce time consuming task.

II. PROBLEM IDENTIFICATION

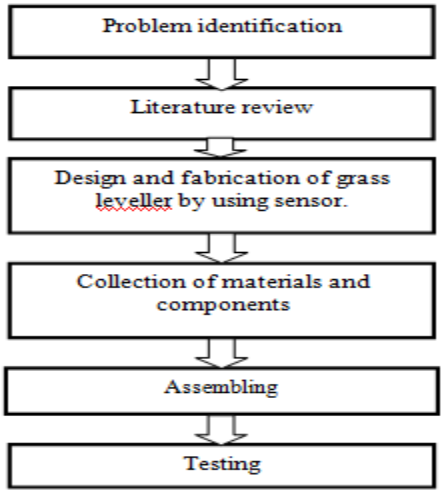
- A loose or damaged belt can cause the blades to stop rotating, resulting in power loss.
- Old or contaminated fuel, clogged fuel filter, or a faulty spark plug can prevent the engine from starting.

III. CUTTING GRASS

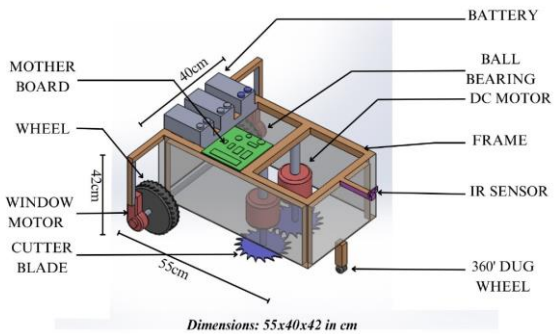
Cutting grass in sports areas and gardens is essential for several reasons:

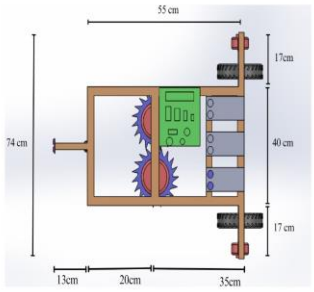
- Aesthetic Appeal: Regularly mowing grass keeps the area looking neat and well-maintained.
- Safety: Shorter grass reduces the risk of tripping and helps ensure a safe playing surface in sports areas.
- Pest Control: Trimming grass can help control pests and insects that might otherwise hide in tall grass.
- Encouraging Growth: Proper cutting can promote healthy grass growth by allowing sunlight and air to reach the lower parts of the plant.
- Uniformity: In sports areas, uniform grass height is important for fair play and consistent playing conditions.
- To cut grass, various tools are used, such as lawnmowers (manual or powered) or specialized sports turf maintenance equipment. The frequency and height of grass cutting can vary depending on the specific requirements of the area.for grazing animals.

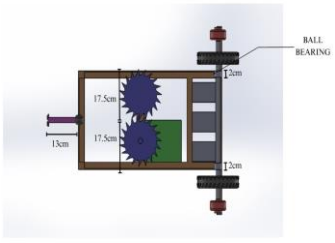
IV. WORKINGMETHODOLOGY

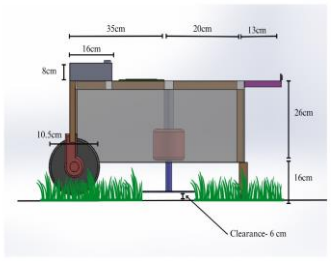


V. DESIGN









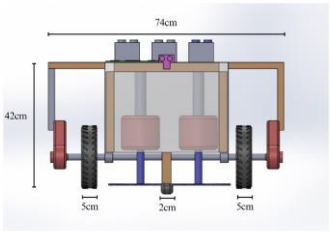


Figure: Automatic Ground Grass leveler using Sensor

VI. ELECTRICAL COMPONENTS

1. Frame
2. IR sensor
3. Battery
4. Ball Bearing
5. Window motor
6. DC Motor
7. Wheel
8. shaft
9. Grass cutter
10. Arduino Uno
11. Relay
12. HC-05 Bluetooth
13. Sheet metal
14. 360* dug wheel
15. Wire

VII. FABRICATION PROCESS

Manufacturing processes are the steps through which raw materials are transformed into a final product. The manufacturing process begins with the creation of the materials from which the design is made. These materials are then modified through manufacturing processes to become the required part. Manufacturing processes can include treating (such as heat treating or coating), machining, or reshaping the material. The manufacturing process also includes tests and checks for quality assurance during or after the manufacturing, and planning the production process prior to manufacturing.

SAWING:

Cold saws are saws that make use of a circular saw blade to cut through various types of metal, including sheet metal. The name of the saw has to do with the action that takes place during the cutting process, which manages to keep both the metal and the blade from becoming too hot. A cold saw is powered with electricity and is usually a stationary type of saw machine rather than a portable type of saw.

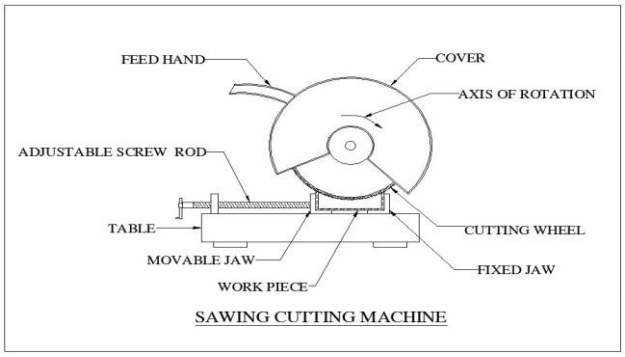


Figure 5.2 Sawing cutting machine

The circular saw blades used with a cold saw are often constructed of high speed steel. Steel blades of this type

are resistant to wear even under daily usage. The end result is that it is possible to complete a number of cutting projects before there is a need to replace the blade. High speed steel blades are especially useful when the saws are used for cutting through thicker sections of metal.

WELDING:

Welding is a process for joining similar metals. Welding joins metals by melting and fusing **1,** the base metals being joined and **2,** the filler metal applied. Welding employs pinpointed, localized heat input. Most welding involves ferrous-based metals such as steel and stainless steel. Weld joints are usually stronger than or as strong as the base metals being joined.

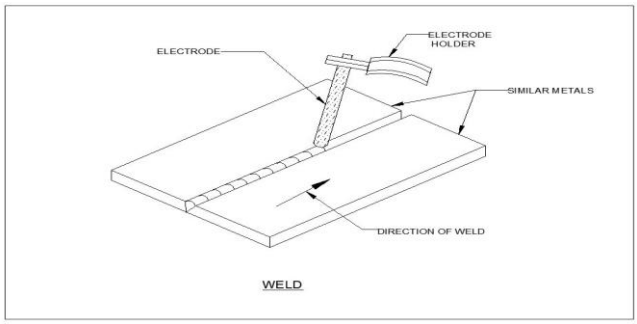


Figure 5.3 Weld

Welding is used for making permanent joints. It is used in the manufacture of automobile bodies, aircraft frames, railway wagons, machine frames, structural works, tanks, furniture, boilers, general repair work and ship building.

OPERATION:

Several welding processes are based on heating with an electric arc, only a few are considered here, starting with the oldest, simple arc welding, also known as shielded metal arc welding (SMAW) or stick welding.

In this process an electrical machine (which may be DC or AC, but nowadays is usually AC) supplies current to an electrode holder which carries an electrode which is normally coated with a mixture of chemicals or flux. An earth cable connects the work piece to the welding machine to provide a return path for the current. The weld is initiated by tapping ('striking') the tip of the electrode against the work piece which initiates an electric arc. The high temperature generated (about $6000^{o}C$) almost instantly produces a molten pool and the end of the electrode continuously melts into this pool and forms the joint.

The operator needs to control the gap between the electrode tip and the work piece while moving the electrode along the joint.

DRILLNG:

Drilling is a cutting process that uses a drill bit to cut or enlarge a hole of circular cross-section in solid materials. The drill bit is a rotary cutting tool, often multipoint. The bit is pressed against the work piece and rotated at rates from hundreds to thousands of revolutions per minute. This forces the cutting edge against the work piece, cutting off chips (sward) from the hole as it is drilled.

VIII. WORKINGPRINCIPLE

In our project we design and fabrication of a system that integrates various components, including a mobile app, Bluetooth module, Arduino board, relays, IR sensor, DC motors, and embedded C programming. The design and dimensions are crucial considerations in the fabrication process. The manufacturing process encompasses steps like sawing, welding, and drilling to shape and modify materials for the required parts. The mobile app serves as a user interface for controlling the system, allowing users to input commands for movements like forward, backward, left, right, stop, and sequence.The Bluetooth HC-05 module facilitates wireless communication between the Arduino board and a Smartphone or PC. The Arduino board acts as the central controller, interpreting commands received through Bluetooth and coordinating the operation of the system components. The relays play a key role in controlling various motors and functions, such as left and right side motors, centre weeder, and obstacle detection using the IR sensor. The DC motors, especially a high-speed motor for cutting weeds, contribute to the physical movement and functionality of the system. Embedded C programming is essential for the microcontroller (8051) in the Arduino board, allowing it to interpret and execute commands efficiently. The programming involves language extensions to address commonality issues in different embedded systems. The working principle revolves around the seamless interaction of these components: the mobile app sends commands via Bluetooth, the Arduino interprets these commands, and the relays and motors execute the corresponding actions, providing a versatile and controlled system for various applications, such as agriculture or automation.

IX. CONCLUSION

The fabrication of an automatic ground grass leveller using sensors can greatly improve the efficiency of

maintaining a well-groomed lawn. In conclusion, this project demonstrates how technology can be harnessed to simplify landscaping tasks. By integrating sensors to detect variations in ground height and using actuators to adjust the grass level accordingly, the system offers a practical solution for achieving an even lawn surface. Further developments could include refining the sensor accuracy and exploring energy-efficient designs to make this technology more accessible and eco-friendly**.**

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