

“SIX LEG VEHICLE FOR AGRICULTURE PURPOSE WHICH CAN SOW SEED AND SPRAY WATER”

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Abstract: This paper presents the design and development of a multipurpose machine for agricultural purposes, specifically focused on sowing seeds, fertilizing the land, and cutting grass. The machine operates mechanically, without the need for electrical or other external power sources, making it cost-effective and easy to use. The objective of this project is to enhance farming practices by introducing a versatile piece of equipment that can perform multiple tasks. The machine, named "Six Leg Vehicle for Agriculture Purpose Which Can Sow Seed and Spray Water," automates the processes of land cleaning, seed spraying, and soil filling, thereby simplifying agricultural operations. The device operates on a battery-powered system and is controlled using a toggle switch. The development of autonomous vehicles in agriculture has gained significant attention, offering hands-free and efficient operations.

This paper explores the concept of using multiple small autonomous machines instead of traditional large tractors and human labor for improved efficiency.

The designed machine incorporates features such as ploughing, seed sowing with controlled seed flow, soil leveling, and water spraying using a water pump. These functions are carried out autonomously by the machine,

contributing to its simplicity, cost-effectiveness, and suitability for agricultural applications

Keywords — Kinematic Robot; Seed Sowing; Water Spraying; Motor Operated

I. INTRODUCTION

The paper discusses the importance of mechanization in the agricultural sector to improve productivity and production in India. It highlights the conventional manual methods of planting and the need for a more efficient and cost-effective solution. The proposed machine aims to perform multiple simultaneous operations, reducing power consumption, sowing time, human effort, and in; examples of the type styles are provided throughout this document and are identified in italic type, within parentheses, following the example. Some components, such as multi-leveled equations, graphics, and labor costs.

India has a rich history of agriculture, and it currently ranks second globally in farm output. Fig. 1 shows Brubaker Box in earlier days.

However, the sector faces challenges such as rising input



Fig. 1 Brubaker Box

costs, the availability of skilled labor, water resource scarcity, and crop monitoring. Automation technologies have been introduced to address these issues and reduce the burden on farmers. Special vehicles designed for various applications in industries, medical fields, and the military have also found their place in agriculture. The paper suggests that the development of



Fig. 2 The Curtis. M. Brubaker

Fig. 2 shows Curtis. M. Brubaker who has contributed for the work in advancement and usage of the technology. Specialized vehicles for ploughing, seed sowing, leveling, and water spraying can significantly improve agricultural processes. However, the integration of these functions into a single vehicle has not yet been achieved. The proposed idea focuses on designing a vehicle that can perform ploughing, seed sowing, mud leveling, and water spraying autonomously and efficiently.

By integrating these functions into a single vehicle, the paper aims to streamline agricultural operations, reduce manual labor, and enhance productivity.

The implementation of automation in agriculture is expected to relieve farmers of some of their burdens and contribute to the growth and development of the sector in India. Fig. 3 shows six leg vehicle for sowing and spraying the three model used for the purpose.

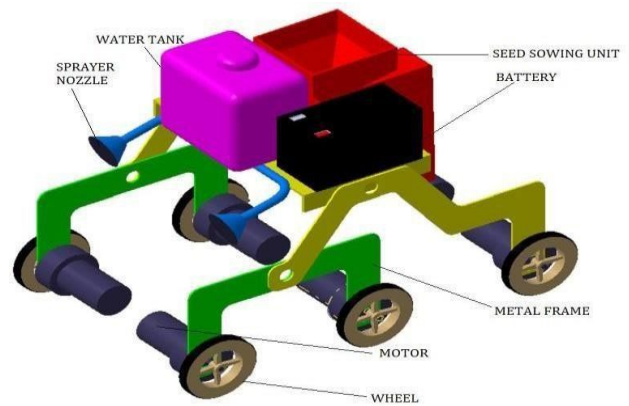


Fig. 3 Six leg vehicle for sowing and spraying

II MATERIALS

The present project focuses on the design of an intelligent robotic vehicle that can be controlled

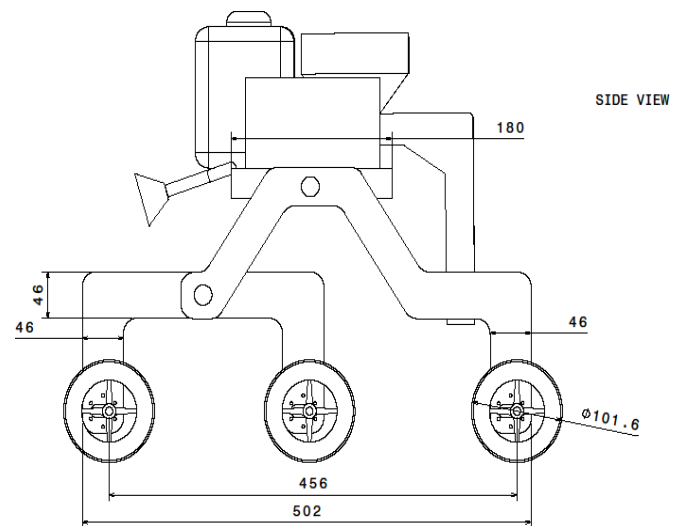


Fig. 4 Side view of Six leg vehicle for agriculture purpose which can sow seed and spray water.

remotely.

The main objective of the project is to develop a solar-operated digging machine, utilizing solar power as its energy source. The machine incorporates a solar panel to capture and convert solar energy into electrical energy. This electrical energy is then used to charge a battery, which provides the necessary power to a shunt wound DC motor capabilities, the project aims to enhance the efficiency and functionality of the digging machine.

Overall, the project emphasizes the use of renewable energy and advanced control systems to develop an intelligent robotic vehicle for digging operations. By harnessing solar power and implementing efficient power-sharing mechanisms, the project contributes to sustainable and eco-friendly solutions in the field of robotics and automation, Power and remote control.

The integration of various agricultural functions into a single vehicle using automation technologies is a promising idea to enhance productivity and reduce the efforts of farmers. By combining tasks such as ploughing, seed sowing, mud leveling, and water spraying into one vehicle, the agricultural processes can be streamlined and made more efficient. The use of automation in agriculture has the potential to address some of the major challenges faced by Indian farmers, such as rising input costs, availability of skilled labor, water scarcity, and crop monitoring. By automating these tasks, farmers can save time and labor, leading to increased productivity and reduced operational costs.

Agricultural automation vehicles can be equipped with advanced technologies such as sensors, GPS, computer vision, and robotics to perform their tasks autonomously. These vehicles can be programmed to follow predefined routes, detect and avoid obstacles, adjust their actions based on real-time data, and optimize the use of resources such as water and seeds. For example, the vehicle can be designed to plough the fields, sow seeds at the right depth and spacing, level the mud to ensure proper water drainage, and spray water or fertilizers as required. By integrating these functions into a single vehicle, farmers can save time and resources that would otherwise be required for multiple vehicles or manual labor.

Additionally, the automation vehicles can collect and analyze data on soil conditions, crop health, and other parameters, providing valuable insights to farmers for better decision-making. This data-driven approach enables precision

agriculture, where resources are targeted and utilized more efficiently, resulting in improved yields and reduced environmental impact.

A wheel is indeed a circular component designed to rotate on an axle bearing. It is an essential part of the wheel and axle mechanism, which is one of the six simple machines. By combining with an axle, wheels enable the easy movement of heavy objects, aiding in transportation and supporting loads. They are widely used in various applications, particularly in transport.

A DC motor is a type of electrical motor that converts electrical energy from a direct current power source into mechanical energy. It operates based on the principle of the interaction between magnetic fields and electric current. In a DC motor, a coil of wire is placed within a magnetic field. When an electric current flows through the coil, it generates a magnetic field that interacts with the existing magnetic field. As a result, a force is produced, causing rotor to rotate.

A battery is a device that stores and provides electrical power. It typically consists of one or more electrochemical cells that convert chemical energy into electrical energy. Each cell has two electrodes, a positive terminal (cathode) and a negative terminal (anode), with an electrolyte between them. The basic structure of a battery includes the electrodes and electrolyte contained within a metal or plastic outer case. The electrodes are typically made of different materials, such as zinc and manganese dioxide, which undergo chemical reactions to generate electrical energy.

The positive and negative terminals of a battery are used to connect the battery to external devices, allowing the flow of electrical current. The positive terminal is connected to the cathode, which is the electrode where reduction reactions occur, while the negative terminal is connected to the anode, where oxidation reactions take place.

A sprayer is a device used to spray liquids onto a surface. Sprayers are commonly employed for various purposes, including the projection of water, weed killers, crop performance materials, pest maintenance chemicals, and ingredients in manufacturing and production lines. In agriculture, sprayers play a crucial role in applying herbicides, pesticides, and fertilizers to agricultural crops. They allow farmers to efficiently and effectively distribute these substances over a large area, helping to control pests, manage weeds, and provide necessary nutrients to plants.

Sprayers come in different types and sizes, ranging from handheld sprayers for small-scale applications to large tractor-mounted or self-propelled sprayers for larger agricultural operations.

III CONCLUSION

The development and refinement of advanced computer programming, editing techniques, diagnostic software, and algorithms require a strong multidisciplinary team with a solid engineering foundation. This project provided the team with an opportunity to apply their limited knowledge and gain practical experience in planning, purchasing, assembling, and machining.

The power generated from the battery is transmitted to the rear wheel of the vehicle through gear drives. The project aims solar power, the project aims to reduce dependence on conventional energy sources and promote sustainable energy solutions to achieve an efficient power-sharing mechanism between the electric and mechanical systems of the vehicle. By utilizing The intelligent robotic vehicle is designed to be controlled remotely, allowing for greater flexibility and ease of operation. With the integration of solar despite the time constraints, the team successfully completed the project and achieved satisfactory conditions with the "Six Leg Vehicle for Agriculture Purpose Which Can Sough Seed and Spray Water." The project highlighted the challenges in maintaining tolerances and ensuring quality.

The team utilized the available facilities to the best of their ability and skills. In conclusion, the project resulted in the development of the mentioned vehicle, but it can be further modified and improved by employing additional techniques according to specific applications.

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