



## Electrochemical Sound Generating Repeller Gun

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### ABSTRACT:

Farmers are the backbone of Indian economy. Our is dependent on the people of India. the farmer is the most important factor. But the life of farmers is full of many difficulties. The biggest problem in that is the loss of crops due to the animals and to get rid of these animals, farmers and groups domestic. the Crop distortion in the Konkan region due to animals is the major impact. Animals like monkeys, wild boars, and deer can invade fields, consuming and damaging crops. This is especially problematic in areas near forests.

Local farmers can work together to share resources and strategies for managing wildlife. Planting less palatable crops or using deterrent plants can reduce the likelihood of animal invasion. These strategies can help mitigate the impact of wildlife on agriculture in the Konkan region. Due to this reason, a concept called calcium carbide gun which is a manually operated sound generating machine. Due to manual operation, it is difficult to operate day and night time for farmers.

But from all these demonstrations we can understand that due to this the farmers have both benefits and losses. Because if the animals suddenly come in the field at night, then the farmers have to go to pay attention at night to chase them away. Because of that from all these points, our direction is the same make Carbide gun is manual and made fully automatic at night, so we are going to make it automatic so as not visit to harm the farmers. From that machine we will help the farmers to get rid of the problems.

We are going to make that machine fully sensor base. by sensing in definite radius, it automatically feeds in that direction by opening solenoid valve and automatically spark generation with the help of spark generating mechanism. This all electronics components and mechanism are controlled by Arduino controller.

**Keywords:** Automatic rotating gun, calcium carbide mixture, automatic feeding, spark generation, Arduino

### 1. INTRODUCTION AND BACKGROUND OF PROBLEM

In konkan region, agriculture crops like rice, wheat, corns, etc., are most likely crops growing region. it is very important to protect the crops from animal distortions. It is very essential for farmers also to protect themselves from harmful methods used to protects the crops. The traditional method of calcium carbide gun explosion vessel is manually operated and the produced gases are very harmful and highly flammable.

Traditional manual wildlife different methods, including the use of calcium Carbide fire guns, have proven effective. But it requires continuous manual operation. which is Labour-intensive and time consuming. As it is Manual operated then need to go to in particular place/location to feed carbide in to the chamber including water to it and given spark to lighten up the gas formed inside the chamber, which creates small explosions that produces noise & light.

This our project focuses on the development of an automated calcium carbide fire gur designed to address these limitations. By automating 360° rotating Mechanism, this solution allows the device to operate at pre-set intervals. or in response to animal movement, effectively deterring wildlife without continuous human integration civilizes the modification of this device (Mechation a controlled releases of calcium carbide, water and spark with Sensors ding animals and 360° detecting rotation, creates small explosions that produce noise & light, thereby scaring away animals from the farmland. As shown in above fi

g. PVC Repeller Gun.

#### 1.1. Problem Statement

Design and manufacturing of blasting gun which works on calcium carbide (acetylene) gas.

## 1.2. Objectives

1. Develop animal location detecting system using sensors.
2. Develop feeding system for feeding Calcium Carbide quantity.
3. Develop 360° rotation system.
4. Develop spark ignition system.
5. Integrate detecting, rotating, feeding and spark ignition system with microcontroller

## 1.3. Scope of work

This project will be helpful to protect the crops from animal distortions and farmers also to protect themselves from harmful methods used to protect the crops. ReLeaf from staying alert during night time.

## 1.4. Proposed Detail Methodology Of Solving Th Identified Problem With Action Plan.

Agricultural Survey	• Focusing the problems which can be solved with automation.
Literature Survey	• For existing machines, components, mechanism to solve the problems identified through survey books.
Finalization of problem statement & objectives	• Decision over the problem statement and finalization of objective to fulfill the requirement.
Designing of Systems/Components	• Designing of motion detecting, feeding, positioning, timing and blasting systems. • Designing, drafting & selection of components.
Manufacturing & Purchasing of components	• Purchasing the required components. • Manufacturing custom components.
Assembly	• Assembly of systems of motion detecting, feeding, positioning, timing and blasting systems, etc. • Final assembly of all the systems.
Programming	• Programming of Arduino for integration of all the systems.
Trial & Testing	• Testing and trial of the prototype to get the desired results.
Results	• Interpretation of results & Conclusion.

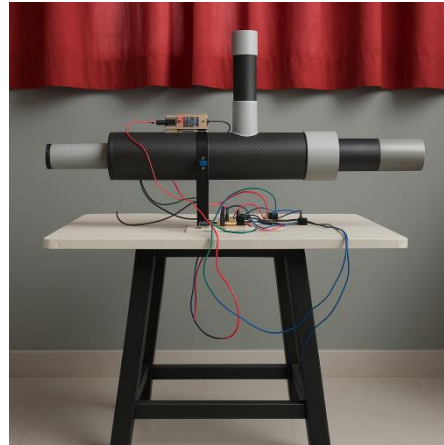


Figure 1 Methodology

## 1.5. Working Principle

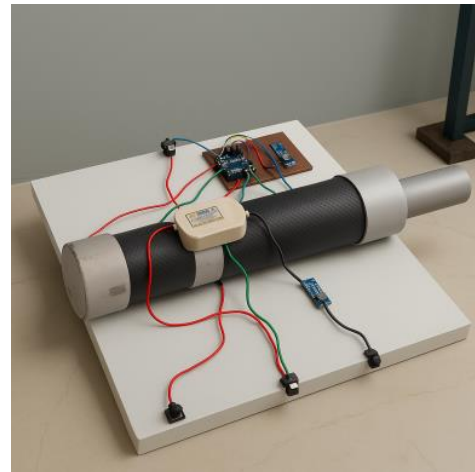
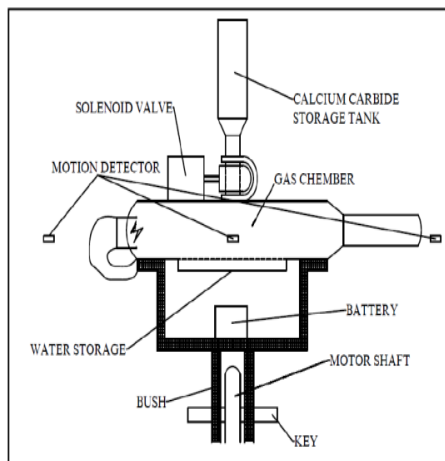


Figure 2 Working principle

## 1.6. Components and Its Functions

### 2. Calcium carbide storage tank:

This storage tank will store the calcium carbide stones. And work as a feed. The tank should water-tight.

### 3. Solenoid valve:

It helps to feed the calcium carbide stone in the gas chamber. A solenoid valve is an electromechanical device that controls feeding stone by opening or closing a valve orifice. When an electrical signal is applied to the solenoid, it creates a magnetic field that moves

the plunger. This movement opens or closes the valve orifice, which controls the flow, direction, and pressure of the fluid.

**4. Gas Chamber:**

Calcium Carbide reacts with WATER and MOISTURE to produce flammable Acetylene gas and Lime. The heat of the reaction may ignite the Acetylene. Calcium Carbide reacts water to form explosive compounds such as METAL ACETYLIDES.

**5. Spark Ignition circuit:**

A spark ignition circuit works by generating a high voltage from the battery and sending it to the spark to ignite the Acetylene mixture in the gas chamber.

**6. Motion Sensors:**

The motion sensor works by detecting changes in infrared radiation or the presence of heat and movement within their coverage area. The most common type of motion sensor is a passive infrared (PIR) sensor, which detects changes in the infrared radiation emitted by objects in its field of view.

**7. Arduino Controller:**

An Arduino controller works by reading inputs and turning them into outputs. Arduino is an open-source electronics platform with easy-to-use hardware and software.

**8. DC motor:**

A DC motor works by converting direct current (DC) electrical energy into mechanical energy. This is done by creating a rotating magnetic field that interacts with the magnetic fields of the motor's stationary part, called the stator. The interaction of these fields creates a torque that causes the motor's rotating part, called the armature, to spin. The rotation of the armature is then transferred to the motor's output shaft, which can be used to power a machine like a fan or pump.

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