

# ANTI-PERSONEL FIRING MINE.

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## ABSTRACT

*The objective of this project is to determine and confirm about the security of the nation. This project provides safety to the nation as well as to the soldiers also. Now days, many unwanted activities are done at border. And to secure the border it's necessary to implement this project. It results when a man tries to cross the border illegally, he will step on the case unknowingly as it's below the ground. As on applying load to case, the whole mechanism will start working. This results to the death or injury to the militant. On conclusion, it can be said that the border will be secured and there will be no chance to compromise towards the security.*

**Keywords:** *Security, Illegal, Compromise.*

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## 1. Introduction to Project:-

The antipersonnel firing mine. This is the project based on the security of nation. The security of our nation is going to be compromised now days due to the greed for settling down. Everyone in this nation wants a straight and simple life. They want money, luxury and a protection. But nobody wants to protect others. All want their kids to be a well settled but no one wants to see their children well living.

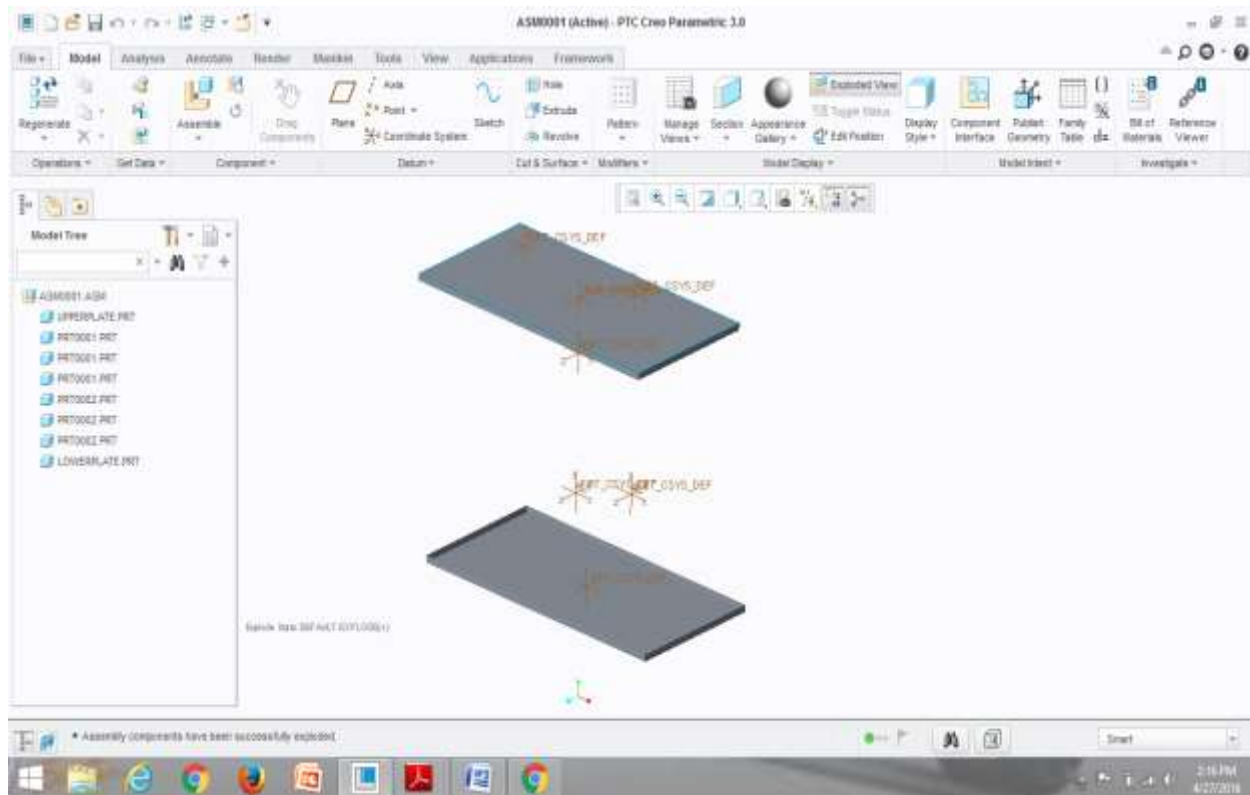
Rather to blame on each other its time to work for the nation by including this project. This project is to stop the militants or any non official person from entering the boundary of the nation. This is to secure the mother land rather to show selfishness.

Thus, by the virtue of this national security this project has to be introduced.

## 2. Mechanism:-

It contains the following components:-

- Upper plate
- Firing pins
- Springs
- Lower plate.



The upper plate is a place where the force is exerted. The force exerted here is passed to the firing pin with the help of spring.

The spring creates a deformation for a firing pin which is in contact with the upper plate.

Thus the force is transmitted by the means of spring.

The force obtained from the upper plate is focused here.

The upper surface of the firing pin is in contact with the upper plate. The lower point of the pin is free to reciprocate in vertical direction.

This comes in contact to sensor when the force is applied more than desirable.

The touching of the pin to the sensor is the key of the whole success of the project.

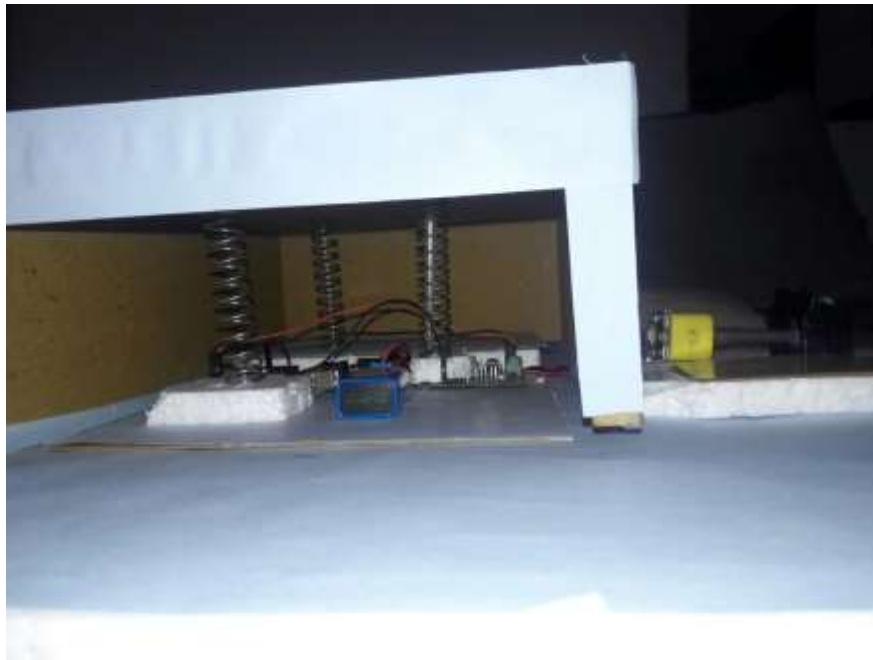
The spring is the component which restores the force applied to the surface.

The spring here works as a force transmitter. The force applied on upper plate transmitted to the spring. The spring on application of force gets deformed.

This deformation causes the firing pin to touch the sensor and to proceed towards the signal.

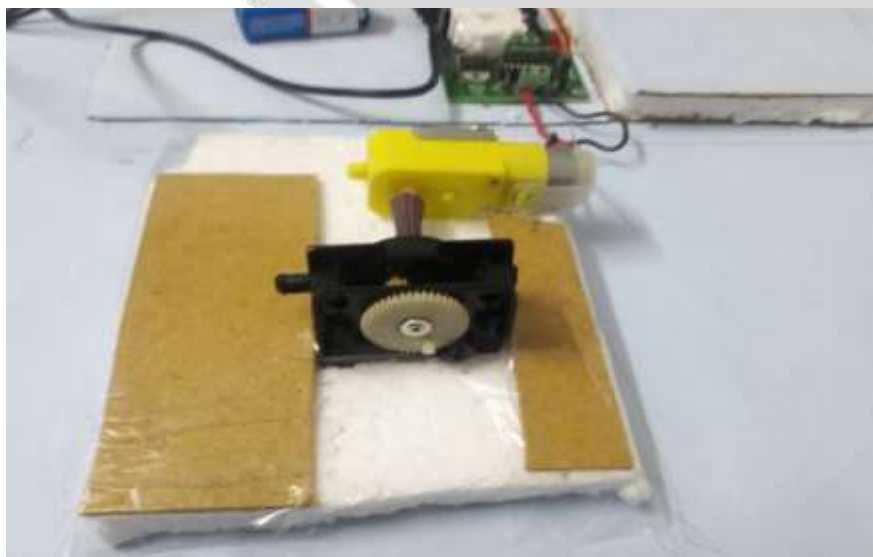
Lower plate is the base or platform of the whole model.

The sensor for the sensing of force is placed here. The sensing of force will send signal to the servo motors to work



The force when applied to the upper plate passes to the firing pin by the deformation of the spring.

The firing pin comes in contact to the sensor which passes the signal. This is how the whole assembly works.



**3. Engineering Economics and Design:-**

S.NO	PARTICULARS (Quantity)	DESIGN	COST	TYPES OF MATERIL
1	Upper plate (1)	Length =4m Breadth=2m	1500/-	Poly- propylene.
2	Gear box (optional) (1)	Gear ratio (depending upon the output voltage)	3,000/-	Iron
3	Firing Pin (3)	Outer diameter =14mm	1500/-	Stainless steel
4	Spring (3)	Diameter=15mm Wire dia.=3.05mm p=4.94mm	120/-	Stainless steel
5	Lower plate (1)	Length =3.9m Breadth=1.9m	1500/-	Poly- propylene.
6	Arduino Board (1)		1500/-	
7	Machine gun (1)	<b>M19194A</b>	45,000/-	
8	Other materials: (Bolts,wires,batteries,etc)	As required	2000/-	
Total			56,120/-	<b>Material cost.</b>

This was only the material cost. The cost of labor and shipping are also to be introduced. The cost of legalizing the production can also be introduced.

S.NO	Types of cost.	COST
1	Production	56,120/-
2	Labor	3,000/-
3	Shipping	10,000/-
TOTAL COSTING OF THE PRODUCT.		70,000/-

#### 4. Sustainability:-

Sustainability could be defined as an ability or capacity of something to be maintained or to sustain itself. It's about taking what we need to live now, without jeopardizing the potential for people in the future to meet their needs. If an activity is said to be sustainable, it should be able to continue forever.

On referring to the above definition, it shows that the process should go on forever. Actually, the thing is we need to maintain the product the maintenance of the machine gun is required to be done at regular interval.

The cleansing of the machine gun is necessary as to reach the desired action plan from the gun. The battery of the machine gun is to be charged at regular interval.

The care is to be taken for reducing the possibility of short circuit in the plates. The motor is to be maintained well for the effective output.

Time interval of working of the project:-

The rpm of the machine gun is around 400-600.

Each time the plate is pressed the firing is done for 5 seconds

This shows the use of  $7 \times 5 = 35$  bullets per time.

As its 400-600 round it can work for  $400/35 = 11$  times.

Thus it will stop the militant 11 times from entering the border.

After that, it's to be re filled.

Thus this was the limit of the sustainability of the project.

The another option for maintaining the sustainability is to connect the machine gun with the ammo box. But this also won't run forever.

Thus, sustainability can never be 100 % it's only to be maintained till 100 %.

#### 5. FUTURE SCOPE:-

The future of this project seems to be successful. After the failure of land mines, no more progress is done in this area or sector of defense. The project is at its peak of evolution and revolution in mechanical sector. The project is to be implemented at the border. on application of any activities like entering border, the foot will step over the plate.

The placement of foot on the plate will press the firing pin. On detonation of the circuit connections is to be done easily by this. This will make circuit close. On closing of circuit, current will pass and makes the motor to start. This motor is connected to the trigger of the gun by the small rod (shaft).

The position is to be sensed by the microprocessor for where to fire. The position is passed to gun and the gun changes its direction on the basis of that. The firing is done a step ahead of the point pressed as to minimize the error of moving man. The bullets get released at some definite height to reduce the height error.

The project seems to be extremely successful and have a vast future scope. Many things can be implemented on a higher level of this project.

## 6. CONCLUSIONS:-

The major contribution of the project is towards the defense or the protection of the nation's boundary or border. The technical arrangements is used as a mechanism towards the sector.

The current situation without this project is not like that , nation will be down or the security can't be maintained. But its an additional toppings done on national security. It's like adding fragrance to gold.

The project minimizes the error remained in any other defensive approach. The theoretical analysis done in this is included in the design calculations. The gaps in research is only due to the greed of getting technologically fast. Thus this was the conclusion of the APFM project.

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