

Development of a mechanism for detonating anti-tank landmines

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Abstract— Most anti-tank landmines are known to detonate by applying an appropriate pressure force to the pressing surface. In this paper: The development of anti-tank landmines that explode with the appropriate pressure on the pressure surface and the addition of a new mechanism to detonate them, a new mechanism that makes the mine explode when it is discovered by the enemy forces and an attempt to neutralize it so that it prevents its heroes and makes it more dangerous and deadly by the enemy forces. A prototype was made using Solidworks program and made using 3D as a simulation of the actual anti-tank mines that explode with appropriate pressure, but in this model a new detonation mechanism is added when the enemy forces try to remove the Fuze to neutralize the mine, and thus it becomes impossible for the enemy forces to neutralize the mine and it becomes the most dangerous mine on enemies.

Keywords—landmine, landmine fuze , anti-tank landmine

I. Introduction

Land mines are considered one of the most important and most effective weapons and have a very influential history in the outcome of wars. Land mines prevent the enemy forces from advancing until a certain area of land is neutralized, so it does not constitute a danger from which the forces are afraid. Or it may force the hostile forces to go down a particular route so that they are easier to control and hunt. Thus, the advance of the forces, soldiers and vehicles, is hampered, and there are types of mines, including anti-tank landmines, and it is known that most anti-tank landmines explode by applying an appropriate pressure force on them, for example, US Landmine, AT, M6 [1], and that if they are discovered, there are steps to be followed from Specialized forces to neutralize these landmines: 1- Detecting the soil from the mine. 2- Detaching the fuze. 3- Tying the landmine with a rope. 4- Moving away from the landmine at an appropriate distance and tightening the landmine [2][3]

The problem here is the ability of the enemy forces to discover the landmine and to neutralize it by following the known steps, and there is no more effective method than side-boobytrap, which is a very, very old method that can be easily overcome, and all the military forces have become sufficiently capable of dealing with it.

From here we start where it is possible to add a new, more intelligent, and deceptive method that prevents the enemy forces from discharging the mine if it is discovered, by exploiting the traditional steps used to defuse the mine to make it detonate the landmine.

Specifically in exploiting the rotational movement resulting from the removal of the arming plug to defuse any anti-tank landmine, in making this movement also detonate the landmine as an additional method in detonating the landmine.

I. Methodology

- 1-Using the computer to search on the Internet and military references specialized in anti-tank landmines by detonating anti-tank landmines and their components and all parts and how to deal with them.
- 2 -Using engineering design programs, such as Solidworks, to design an engineering model that prevents enemy forces from nullifying the landmine, and it is the same shape as a regular landmine so that the enemy forces get confused and treat it as if it were a conventional landmine
- 3-Prototyping with 3D printing technology using 3D printers such: 3D Ender-3 V2 3D Printer 220 * 220 * 250mm Build and use PLA for make prototype only.
- 4-Installing the parts of the landmine and testing it without explosive materials by applying pressure on the pressure surface with appropriate pressure, then we install its parts again and then we try to defuse it and remove the fuze.

III. Results and discussion

The best solution in preventing the abolition of the landmine by the enemy forces is to take advantage of the rotational movement that is necessary to remove the detonator and neutralize the landmine.

In the next figure: the soldier tries to defuse the anti-tank landmine by rotate the arming plug to remove detonator we will use rotation movement to explosion the landmine.



Fig. 1. Attempting to defuse a landmine

From here: A prototype was manufactured that cannot to remove the detonator after activating the explosion mode by exploiting the rotational movement that results as a result of remove the arming plug or the fuze to defuse the landmine, and the model has been tested and works with 100% efficiency, and thus can to say that this design will be a modern revolution in the world of landmine manufacturing.

because it destroys the traditional military steps used by the enemy forces to control the anti-tank landmine, and we can also say that it is the strongest, most intelligent and deceitful in the world. The new landmine move from side booby-trapping to the idea of internal booby-trapping of the landmine.

The next figure shows only prototype of new landmine which explosion with pressure or when remove arming plug .



Fig. 2 prototype of new landmine

This prototype made from PLA material with dimension (8.5*8.5*13.5) cm. (this prototype is made for testing the mechanism only)

IV. Conclusion

the best method of development of a mechanism for detonating anti-tank landmines is by using internal boobytrap to exploit the rotational movement while removing the Arming plug or Fuze to detonate the landmine in Who wants to defuze it from the enemy forces and this internal boobytrap can be electrical or mechanical.

V. REFERENCES

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